Minutes of the Ordinary Meeting of the Campbelltown City Council held on 15 December 2015

Present His Worship the Mayor, Councillor P Hawker

Councillor F Borg
Councillor G Brticevic
Councillor A Chanthivong
Councillor W Glynn
Councillor G Greiss
Councillor R Kolkman
Councillor P Lake
Councillor D Lound
Councillor A Matheson
Councillor C Mead
Councillor M Oates
Councillor T Rowell
Councillor R Thompson

Acknowledgement of Land

An Acknowledgement of Land was presented by the Chairperson Councillor Hawker.

Council Prayer

The Council Prayer was presented by the General Manager.

1. APOLOGIES

It was **Moved** Councillor Greiss, **Seconded** Councillor Rowell that the **APOLOGY** from Councillor Dobson be received and accepted.

225 The Motion on being Put was CARRIED.

2. CONFIRMATION OF MINUTES

2.1 Minutes of the Ordinary Meeting of Council held 17 November 2015

It was **Moved** Councillor Borg, **Seconded** Councillor Lake that the Minutes of the Ordinary Meeting of Council held 17 November 2015, copies of which have been circulated to each Councillor, be taken as read and confirmed.

226 The Motion on being Put was CARRIED.

3. DECLARATIONS OF INTEREST

Declarations of Interest were made in respect of the following items:

Pecuniary Interests

Non Pecuniary – Significant Interests

Non Pecuniary – Less than Significant Interests

Councillor Chanthivong advised that as a member of the NSW State Parliament he will seek legal advice regarding his need to declare an interest on any issues that may potentially involve the NSW State Government. Councillor Chanthivong noted that if issues arise where he considers there may be a perceived conflict necessitating him to declare an interest he will do so and if appropriate leave the chamber.

Councillor Greiss - Planning and Environment - Item 3.4 - Alteration and use of an existing dwelling as a boarding house - No. 23 Turimetta Avenue, Leumeah - Councillor Greiss advised during the Planning and Environment Committee meeting held 8 December 2015 that one of the owners is possibly known to him however further investigations revealed that neither the applicant nor the owner is known to him.

Councillor Brticevic advised that he is an employee of the NSW Police Force and if he considers there may be a perceived conflict necessitating him to declare an interest, he will do so and if appropriate, leave the Chamber.

Councillor Hawker - City Works - Item 3.3 - T15/18 Street Lighting on Eagle Vale Drive - Councillor Hawker advised that an employee of one of the tenderers is known to him.

Other Disclosures

4. MAYORAL MINUTE

No mayoral minute this round

5. PETITIONS

No Petitions this round

6. CORRESPONDENCE

No correspondence this round

Reports of the Planning and Environment Committee Meeting held at 7.30pm on Tuesday, 8 December 2015.

•		_	_	_	-	^
Λ	u	<i>r</i> 1	 7 N	<i>.</i>	ΙF	•
-	_	. ,	. ,	١,	-	. 7

ACKNOWLEDGEMENT OF LAND

DECLARATIONS OF INTEREST

Pecuniary Interests

Non Pecuniary - Significant Interests

Non Pecuniary – Less than Significant Interests

ITEM	TITLE	PAGE
1.	WASTE AND RECYCLING SERVICES	3
No rep	orts this round	3
2.	ENVIRONMENTAL PLANNING	3
2.1	Proposed Road Names for use within the Claymore Urban Renewal Project	3
2.2	Proposed Road Names - Western Sydney University Campbelltown Residential Project Stages 2 and 3	9
2.3	2014-2015 State of the Environment Report	14
3.	DEVELOPMENT SERVICES	66
3.1	Development Services Section Statistics October 2015	66
3.2	The ability of Council to monitor and control Affordable Housing properties in terms of occupancy and rental pricing	68
3.3	Seniors Housing Site Compatibility Certificate Application Update - St Johns Church Site, George Street, Campbelltown	78
3.4	Alteration and use of an existing dwelling as a boarding house - No. 23 Turimetta Avenue, Leumeah	95
4.	COMPLIANCE SERVICES	124
4.1	Legal Status Report	124
4.2	North Area Alcohol Free Zones	138
5.	GENERAL BUSINESS	152
5.1	Hurlstone Agriculture High School	152
5.2	Pet Adoption Program	157
20.	CONFIDENTIAL ITEMS	158
No rep	orts this round	158

Minutes of the Planning and Environment Committee held on 8 December 2015

Present His Worship the Mayor, Councillor P Hawker

Councillor G Greiss
Councillor R Kolkman
Councillor D Lound
Councillor A Matheson
Councillor M Oates
Councillor T Rowell
Councillor R Thompson

General Manager - Mrs L Deitz Director Strategy - Mr J Lawrence

Acting Director Planning and Environment - Mr J Baldwin

Acting Manager Development Services - Mr B Leo Manager Environmental Planning - Mr A Spooner

Manager Information Management and Technology - Mrs S Peroumal

Policy and Governance Coordinator - Ms J Warner

Executive Assistant - Mrs D Taylor

Apology Nil

Chairperson

His Worship the Mayor, Councillor Hawker, chaired the meeting.

Also in Attendance

At the conclusion of the City Works Committee meeting the following Councillors attended the Planning and Environment Committee:

Councillor G Brticevic - from item 3.2 to the conclusion Councillor C Mead - from item 3.2 to the conclusion

Councillor P Lake - from general business to the conclusion

Acknowledgement of Land

An Acknowledgement of Land was presented by the Chairperson Councillor Hawker.

DECLARATIONS OF INTEREST

Declarations of Interest were made in respect of the following items:

Pecuniary Interests - Nil

Non Pecuniary - Significant Interests

Councillor Greiss - Item 3.4 - Alteration and use of an existing dwelling as a boarding house - No. 23 Turimetta Avenue, Leumeah - Councillor Greiss advised that one of the owners is possibly known to him and he will leave the chamber and not take part in debate nor vote on the matter.

Non Pecuniary - Less than Significant Interests - Nil

Other Disclosures - Nil

1. WASTE AND RECYCLING SERVICES

No reports this round

2. ENVIRONMENTAL PLANNING

2.1 Proposed Road Names for use within the Claymore Urban Renewal Project

Reporting Officer

Manager Environmental Planning

Attachments

Revised list of proposed road names (using surnames only) for use within the Claymore Urban Renewal project area (contained within this report)

Purpose

To seek Council's endorsement to publicly exhibit a revised list of proposed road names (using surnames only) to be used within the Claymore Urban Renewal project area following the Secretariat of the Geographical Names Board of NSW (GNB) rejecting the road names (using both first and surname) previously proposed by Council for this area.

History

Council at its meeting of 17 November 2015, Planning and Environment Committee Item 2.2 - Proposed Road Names for use within the Claymore Urban Renewal Project, resolved:

- 1. That Council approve the proposed road names (including first and surname) listed in the attachment to this report for use within the Claymore Urban Renewal Project area.
- 2. That Council publicly exhibit its proposal to use these road names for a period of 28 days by placing advertisements in local newspapers and notifying the authorities prescribed by the *Roads Regulation 2008*.
- 3. That should no objections to the proposal to use the exhibited road names be received during the exhibition period, Council publish notice of the new road names in the NSW Government Gazette.

Report

In accordance with Council's resolution, the authorities prescribed by the *Roads Regulation* 2008 were notified of the proposal to use the road names (including first and surnames) listed in the attachment to the previous report by the lodgement of a proposal in the NSW Online Road Naming System (NORNS) on 25 November 2015.

On 27 November 2015, Council received notification through NORNS that the Secretariat of the GNB had objected to all of the road names in this proposal on the grounds that:

"The use of given or first names in conjunction with a surname is not acceptable for road naming, as prescribed by Principle 6.7.5 (Acceptable Road Names) of the NSW Addressing User Manual."

Legislation and Authority

Road naming is legislated under the *Roads Act 1993*. Section 162 of this Act empowers the roads authority in charge of a road with the rights to name it. Section 7 of this Act prescribes that the council of a local government area is the roads authority for all public roads within the respective local government area, other than for any freeway, Crown road, or any public road for which some other public authority is declared by the regulations to be the roads authority. Campbelltown Council therefore has the authority under this Act to name all of the local roads within the Claymore Urban Renewal Project.

The process Council must follow when naming roads is outlined in Division 2 of the *Roads Regulation 2008*. Clause 10 of this Regulation states that 'A roads authority may not proceed with a proposal to name or rename a road against an objection made by any of the following persons or bodies except with the approval of the Minister'. The Surveyor General of NSW is one of these prescribed persons or bodies. As the Chair of the GNB, the Surveyor General of NSW has delegated this responsibility to the Secretariat of the GNB to initially assess all road naming proposals for compliance with current policies and guidelines.

The NSW Address Policy and NSW Addressing User Manual were developed to outline principles, procedures and processes to standardise the production, aggregation, publication and usage of address data (including road names) in an open and timely manner. The principles relating to road naming conform to Australian Standard AS/NZS 4819:2011 and are designed to ensure that naming practices in NSW will be of the highest possible standard, resulting in intuitively clear road names for all which minimise confusion, errors and omissions.

The overriding principle for road naming is that road names shall not risk public and operational safety for emergency response or cause confusion for transport, communication and mail services. Both the NSW Address Policy and the NSW Addressing User Manual were endorsed by the GNB on 31 March 2015 and replace all previous GNB guidelines and policies relating to road naming.

Options available to Council

As Council has now received an objection from the Secretariat of the GNB on behalf of the Surveyor General of NSW, it cannot proceed with its current proposal to name the roads (using both first and last names) within the Claymore Urban Renewal Area. The following options are available to Council in relation to this road naming proposal:

1. Council may request that the current road naming proposal be submitted to the next full meeting of the GNB for consideration. The next meeting of the Board is scheduled for 15 March 2016. At this meeting the Board can overturn the objection raised by the Secretariat and approve the road naming proposal; uphold the Secretariat's objection to the proposal; or defer a decision and seek further information from Council. Having recently endorsed the principles contained in the NSW Addressing User Manual, it is believed that the Board would be unlikely to overturn the objection raised by the Secretariat on the grounds of non-compliance with one of these principles.

Should the Board uphold the Secretariat's objection to the current road naming proposal, Council may then appeal this decision and apply directly to the Minister for Roads, Maritime and Freight for approval.

2. Council can amend the current road naming proposal to comply with the principles of the NSW Addressing Manual by using surnames only. This revised proposal would then be advertised and notified to the authorities prescribed by the *Roads Regulation* 2008. As the proposal would then comply with the principles contained in the NSW Addressing Manual, it is expected that the road names (using surnames only) would be approved by the Secretariat of the GNB through its delegated authority.

Notwithstanding the above options, given the renewal of the Claymore area and the demolition of existing roads, although not the preferred option, the developer of the land could reuse existing approved street names without further approval as alternatives to that which it has recently requested endorsement for.

Conclusion

UrbanGrowth NSW have indicated to Council that delays in the approval of street names will have a significant adverse impact on the timing of the release of land within the Claymore renewal area (potentially six months), will have ongoing significant impacts on the release of finance to potential purchasers, impacts on house building timeframes and subsequent financial impacts on the purchasers with increased house building contract prices and extended rental periods whilst awaiting the completion of their future homes.

Given the lengthy timeframe and likely outcomes of the processes outlined in Option 1, it is therefore recommended that Council approve the revised list of proposed road names (using surnames only) listed in the attachment to this report for use within the Claymore Urban Renewal Project area to ensure the timely delivery of affordable housing land to the community.

Subject to Council's endorsement to publicly exhibit the proposed road names, should no objections be received from the public or authorities prescribed in the Regulation as a result of the exhibition of this proposal, it is recommended that Council complete the road naming process by publishing a notice of these new road names in the NSW Government Gazette. Should any objections be received during the exhibition period, a further report will be presented to the next available Council meeting.

Officer's Recommendation

- 1. That Council approve the revised list of proposed road names (using surnames only) listed in the attachment to this report for use within the Claymore Urban Renewal Project area.
- 2. That Council publicly exhibit its proposal to use these road names for a period of 28 days by placing advertisements in local newspapers and notifying the authorities prescribed by the *Roads Regulation 2008*.
- 3. That should no objections to the proposal to use the exhibited road names be received during the exhibition period, Council publish notice of the new road names in the NSW Government Gazette.

Committee's Recommendation: (Thompson/Greiss)

That the Officer's Recommendation be adopted.

Amendment: (Oates/Kolkman)

- 1. That Council approve the revised list of proposed road names (using surnames only) listed in the attachment to this report for use within the Claymore Urban Renewal Project area.
- 2. That Council publicly exhibit its proposal to use these road names for a period of 28 days by placing advertisements in local newspapers and notifying the authorities prescribed by the *Roads Regulation 2008*.
- 3. That should no objections to the proposal to use the exhibited road names be received during the exhibition period, Council publish notice of the new road names in the NSW Government Gazette.
- 4. That Council write to the Minister for Roads and Maritime Services requesting support for the use of both first and surnames as a sign of both respect and identification when individuals names are being used as street names in new subdivisions.

LOST

Motion: (Greiss/Thompson)

That the Officer's Recommendation be adopted.

CARRIED

Council Meeting 15 December 2015 (Hawker/Rowell)

That the Officer's Recommendation be adopted.

Amendment (Oates/Kolkman)

- 1. That Council approve the revised list of proposed road names (using surnames only) listed in the attachment to this report for use within the Claymore Urban Renewal Project area.
- 2. That Council publicly exhibit its proposal to use these road names for a period of 28 days by placing advertisements in local newspapers and notifying the authorities prescribed by the *Roads Regulation 2008*.
- That should no objections to the proposal to use the exhibited road names be received during the exhibition period, Council publish notice of the new road names in the NSW Government Gazette.
- 4. That Council write to the Minister for Roads Maritime and Freight requesting support for the use of both first and surnames as a sign of both respect and identification when individuals names are being used as street names in future subdivisions.

Council Resolution Minute Number 227

That the above amendment be adopted.

A **Division** was called in regard to the Resolution for Item 2.1 - Proposed Road Names for use within the Claymore Urban Renewal Project with those voting for the Motion being Councillors Borg, Brticevic, Chanthivong, Kolkman, Lake, Lound, Oates.

Voting against the Resolution were Councillors Greiss, Hawker, Matheson, Mead, Rowell, Thompson.

Note: Councillor Glynn had already retired from the meeting prior to Item 2.1.

ATTACHMENT 1

Revised list of proposed road names (using surnames only)

Road Name	Origin
Arkley	Howard Arkley (5 May 1951 – 22 July 1999) Australian artist born in Melbourne known for his airbrushed paintings of houses, architecture and suburbia.
Crowley	Grace Crowley (28 May 1890 – 21 April 1979) Born at Forrest Lodge, Barraba, in north-western New South Wales, she had an extraordinary career spanning over five decades. She was best known for her cubist paintings of the 1920s and 1930s.
Dowie	John Dowie (15 January 1915 – 19 March 2008) Australian painter, sculptor and teacher, he was born in the suburb of Prospect in Adelaide, South Australia, and studied architecture at the University of Adelaide.
Glover	John Glover (18 February 1767 – 9 December 1849) An English-born Australian artist during the early colonial period of Australian art. He has been dubbed "the father of Australian landscape painting".
Hart	Pro Hart (30 May 1928 – 28 March 2006) Australian artist, born in Broken Hill, New South Wales, who was considered the father of the Australian Outback painting movement and his works are widely admired for capturing the true spirit of the outback.
Hester	Joy Hester (21 August 1920 – 4 December 1960) Australian artist who played an important role in the development of Australian modernism.
Jackson	James R Jackson (1882-1975) Australian painter, best known for his paintings of views of Sydney harbour and the Great Depression.
Lawrence	George Lawrence (1901–1981) Regarded as one of the foremost painters in the impressionist style.
Minns	Benjamin Edwin Minns (17 November 1863 – 21 February 1937) Recognised as one of Australia's foremost water-colourists, he also drew for the Sydney Mail and regularly contributed to The Bulletin.
Molvig	Jon Molvig (27 May 1923 – 15 May 1970) An Australian expressionist artist, considered a major developer of 20th-century Australian expressionism.
Officer	Edward Officer (19 September 1871 – 7 July 1921) An Australian artist and inaugural president of the Australian Art Association.
Olley	Margaret Olley (24 June 1923 – 26 July 2011) One of Australia's most loved artists, she was the subject of more than 90 solo exhibitions. Her work concentrated on still life and in 1997 a major retrospective of her work was organised by the Art Gallery of New South Wales. She received the inaugural Mosman Art Prize in 1947.

2.2 Proposed Road Names - Western Sydney University Campbelltown Residential Project Stages 2 And 3

2.2 Proposed Road Names - Western Sydney University Campbelltown Residential Project Stages 2 and 3

Reporting Officer

Manager Environmental Planning

Attachments

List of proposed road names for use in Stages 2 and 3 of the Western Sydney University (WSU) Campbelltown Residential Project (contained within this report)

Purpose

To seek Council's endorsement to publicly exhibit proposed road names to be used within Stages 2 and 3 of the WSU Campbelltown Residential Project area.

History

Council at its meeting of 8 April 2014, (Planning and Environment Committee Item 2.3 - Proposed Road Names - Western Sydney University (WSU) Campbelltown Residential Project Stage 1), approved a list of 12 road names for use in Stage 1 of the previously named UWS Campbelltown Residential Project drawn from an astronomy theme.

On 6 November 2014, Council issued development consent for the construction of bulk earthworks and a subdivision into 111 allotments and a residue lot comprising Stage 2 of this development.

On 18 June 2015, Council issued development consent for a subdivision into 57 residential allotments and one residue lot comprising Stage 3 of this development.

Council has now received a request from UrbanGrowth NSW seeking approval for the use of particular road names in the naming of new roads created by Stages 2 and 3 of this development.

On 30 August 2015, the University of Western Sydney (UWS) officially changed its name to Western Sydney University (WSU).

Report

It has been Council's protocol for some time to select specific themes in an effort to harmonise road names within suburbs and development areas.

UrbanGrowth NSW, in partnership with Western Sydney University (WSU) Campbelltown, commissioned CLOUSTON Associates with Susan Conroy Cultural Planning to develop an integrated landscape, public art and place making strategy for the WSU Campbelltown Residential Project. Research carried out as part of this place making strategy established that the site of this development has a long history that can be traced back to activities undertaken by the Dharawal people, through colonial and farming settlement, to the more recent use of the site as a university campus. From this research, the overarching theme proposed for the place making and public art program is "Bringing Knowledge to Life: Public Art, Environment and Science". Underpinning this theme are four sub-themes drawn from the history, character, profile and evolution of uses of the site. These are: University Influences, Dharawal Roots, Productive Keepers Past and Present, and Natural Corridors. As the various stages of this estate are separated into distinct residential precincts by areas of open space, it is proposed to apply these separate place making sub-themes to the individual stages of this development.

Stages 1, 2 and 3 of this residential development are located close to the existing university campus and are within the area covered by the "University Influences" place making subtheme. The proposed road names for Stages 2 and 3 have therefore been selected to acknowledge some of the international academics who historically have made significant contributions to the various disciplines offered by the university.

A list of proposed road names suggested by UrbanGrowth NSW for use in Stages 2 and 3 of the WSU Campbelltown Residential Project is included in the attachment to this report. These proposed road names comply with the requirements of the NSW Addressing Policy and the NSW Addressing User Manual which were adopted by the Geographical Names Board (GNB) of NSW on 31 March 2015.

Division 2 of Part 2 of the *Roads Regulation 2008* (the Regulation) outlines the procedure that Council must follow when naming public roads under its control. In accordance with these procedures, Council must publicly exhibit the proposed road names in local newspapers for a period of 28 days and notify Australia Post, the Registrar General, the Surveyor General and all emergency services specified by the Regulation of its intention to name new roads, including the GNB.

Having regard to the above, subject to Council's endorsement to publicly exhibit the proposed road names, should no objections be received from the public authorities prescribed in the regulation as a result of the exhibition of this proposal, it is recommended that Council complete the road naming process by publishing a notice of these new road names in the NSW Government Gazette.

Should any objections be received during the exhibition period, a further report will be presented to the next available Council meeting.

Notwithstanding the above request which seeks Council's endorsement to publicly exhibit the last name of the person being recognised, more recently Council has provided direction in that it would prefer that both the first and last names of the person being recognised, be exhibited as the preferred name for use on the respective street sign. Council staff continue to make enquires with the GNB in this regard, however given that the GNB have recently formulated a policy that specifically precludes (other than for feature roads) the use of more than one word on a street sign, no support for the use of more than one word on a street sign has been forthcoming from the GNB.

2.2 Proposed Road Names - Western Sydney University Campbelltown Residential Project Stages 2 And 3

In light of the above, and to assist the Council with its desire to ensure the public can easily distinguish the actual person the street name relates to, it is proposed that Council investigate the feasibility to include the full name of the person (first and last names) at the bottom of the street sign plate.

In addition to this, it is proposed that Council investigate the feasibility of a QR Code being placed on the sign plate providing people with direct access via their smart device, to a short but concise account of the significance of the person the street has been named after, and the theme of which they are a part of.

Officer's Recommendation

- 1. That Council approve the proposed road names in the attachment to this report for use within Stages 2 and 3 of the Western Sydney University Campbelltown Residential Project.
- 2. That Council publicly exhibit its proposal to use these road names for a period of 28 days by placing advertisements in local newspapers and notifying the authorities prescribed by the *Roads Regulation 2008*.
- 3. That should no objections to the proposal to use the exhibited road names be received during the exhibition period, Council publish notice of these new road names in the NSW Government Gazette.
- 4. That Council investigate the feasibility of including the full name (first and last) of the person being recognised at the bottom of the respective street sign plate.
- 5. That Council investigate the feasibility of including a QR Code link alongside the full name of the person, which provides the public with direct access via their smart device, to a short but concise account of the significance of the person the street has been named after, and the theme of which they are a part.
- 6. That a future report be presented to the Council discussing the feasibility of recommendations 4 and 5 above.

Committee's Recommendation: (Rowell/Kolkman)

That the Officer's Recommendation be adopted.

Amendment: (Oates/Kolkman)

- 1. That Council approve the proposed road names in the attachment to this report for use within Stages 2 and 3 of the Western Sydney University Campbelltown Residential Project.
- 2. That Council publicly exhibit its proposal to use these road names for a period of 28 days by placing advertisements in local newspapers and notifying the authorities prescribed by the Roads Regulation 2008.

- 2.2 Proposed Road Names Western Sydney University Campbelltown Residential Project Stages 2 And 3
- 3. That should no objections to the proposal to use the exhibited road names be received during the exhibition period, Council publish notice of these new road names in the NSW Government Gazette.
- 4. That Council investigate the feasibility of including the full name (first and last) of the person being recognised at the bottom of the respective street sign plate.
- 5. That Council investigate the feasibility of including a QR Code link alongside the full name of the person, which provides the public with direct access via their smart device, to a short but concise account of the significance of the person the street has been named after, and the theme of which they are a part.
- 6. That a future report be presented to the Council discussing the feasibility of recommendations 4 and 5 above.
- 7. That Council write to the Minister for Roads and Maritime Services requesting support for the use of both first and surnames as a sign of both respect and identification when individuals names are being used as street names in new subdivisions.

LOST

Motion: (Greiss/Rowell)

That the Officer's Recommendation be adopted.

CARRIED

Council Meeting 15 December 2015 (Hawker/Rowell)

That the Officer's Recommendation be adopted.

Council Resolution Minute Number 227

That the Officer's Recommendation be adopted.

ATTACHMENT 1

List of proposed road names

Road Name	Origin
Curie Road	Marie Sklodowska Curie (7 November 1867 – 4 July 1934) A Polish and naturalized-French physicist and chemist who conducted pioneering research on radioactivity. She was the first woman to win a Nobel Prize, the first person and only woman to win twice, the only person to win twice in multiple sciences, and was part of the Curie family legacy of five Nobel Prizes.
Mahoney Drive	Mary Eliza Mahoney (May 7, 1845 – January 4, 1926) The first African American to study and work as a professionally trained nurse in the United States, graduating in 1879. Mahoney was one of the first African Americans to graduate from a nursing school, and she prospered in a predominantly white society.
Eddington Road	Sir Arthur Stanley Eddington (28 December 1882 – 22 November 1944) An English astronomer, physicist, and mathematician of the early 20th century who did his greatest work in astrophysics.
Turing Street	Alan Mathison Turing (23 June 1912 – 7 June 1954) A British pioneering computer scientist, mathematician, logician, cryptanalyst and theoretical biologist. He was highly influential in the development of computer science, providing a formalisation of the concepts of algorithm and computation with the Turing machine, which can be considered a model of a general purpose computer. Turing is widely considered to be the father of theoretical computer science and artificial intelligence.
Fleming Drive	Sir Alexander Fleming (6 August 1881 – 11 March 1955) A Scottish biologist, pharmacologist and botanist. His best-known discoveries are the enzyme lysozyme in 1923 and the antibiotic substance benzylpenicillin (Penicillin G) from the mould Penicillium notatum in 1928, for which he shared the Nobel Prize in Physiology or Medicine in 1945 with Howard Florey and Ernst Boris Chain.
Younger Road	Irving Younger (November 30, 1932 – March 13, 1988) An American lawyer, law professor, judge, and writer. He is well known among lawyers and law students for his exciting talks on effective trial advocacy and legal history.
Knox Street	Robert Knox (4 September 1791 – 20 December 1862) A Scottish anatomist, zoologist, ethnologist and doctor. He was the most popular lecturer in anatomy in Britain, where he introduced the theory of transcendental anatomy.
Ehrlich Street	Paul Ehrlich (14 March 1854 – 20 August 1915) A German physician and scientist who worked in the fields of hematology, immunology, and antimicrobial chemotherapy. In 1908, he received the Nobel Prize in Physiology or Medicine for his contributions to immunology.

2.3 2014-2015 State of the Environment Report

Reporting Officer

Manager Environmental Planning

Attachments

Campbelltown City Council 2014-2015 State of the Environment Report (contained within this report)

Purpose

To present the State of the Environment Report for the 2014-2015 reporting period.

History

Previously, under the provisions of the *Local Government Act 1993*, Council was required to prepare an annual 'State of the Environment Report' (SoE Report) for the Local Government Area (LGA) and submit the report to the NSW Department of Local Government.

The SoE Report was required to:

- a. establish relevant environmental indicators for each environmental objective
- b. report on, and update trends in, each environmental indicator
- c. identify all major environmental impacts (being events and activities that have a major impact on environmental objectives).

Accordingly, the SoE Report was designed to be utilised by Council to assess its progress towards sustainability and to assist Council in continuing to implement the principles of ecological sustainable development. The SoE Report has been a valuable technical and education tool used by staff and the community.

Under the Integrated Planning and Reporting framework, councils are encouraged to integrate their SoE reporting into the environmental objectives of their Community Strategic Plans and thereby address issues of concern to their local communities. As a result, a standalone SoE Report is only required to be prepared every four years.

However, it is still important to continue to collect the environmental indicator data and information regarding Council's achievements in the interim in order to prepare for the four year SoE Report and continue to monitor the health of our local environment. The review and analysis of this information helps guide the future strategic direction of Council's activities and identify actions to address the pressures on Campbelltown's environment. With this in mind the 2014-2015 SoE Report has been prepared (see attachment).

Report

The 2014-2015 SoE Report (see attachment) summarises the major environmental achievements made by Council during the 2014-2015 reporting period. It also provides an account of Council's progress against identified annual environmental indicators where the information is available. Key attributes from the 2014-2015 SoE Report are summarised below:

1. Our Land

a. Future coal seam gas development cancelled

During the previous reporting period the NSW Government introduced coal seam gas exclusion zones within two kilometres of residential areas. Following this announcement, AGL have completed a comprehensive review of its upstream gas business and will now focus on core gas projects and divest non-core and underperforming gas assets and activities. As a result, AGL will surrender three of its Petroleum Exploration Licenses associated with stage 3 of the Camden Gas Project, including those that cover the Scenic Hills and most of Western Sydney.

b. Ingleburn Reserve Plan of Management

Council commenced a comprehensive review of the Plan of Management for Ingleburn Reserve with the aim of developing new ideas and directions for the reserve. In undertaking the review, local school students from Campbelltown Performing Arts High School were engaged to better understand how young people perceive and interact with the natural environment, and how they think the reserve could be improved.

Our partnership with the high school will continue throughout the review of the Plan of Management, with student observations and feedback becoming an integral component to the reserve's future. It is anticipated that the revised Plan of Management will be completed by the end of 2015.

c. Draft Campbelltown Local Environmental Plan 2015

During the reporting period, Council considered more than 163 submissions (133 community and 30 government authorities and agencies) from the public exhibition period of the Draft Campbelltown Local Environmental Plan 2015. The draft plan seeks to guide the development of the LGA over the next decade, meeting the challenges that lie ahead while facilitating quality lifestyle opportunities. The draft plan details what development is permitted within the LGA and where certain development can take place. Controls are established to guide the revitalisation, redevelopment and expansion of the business centres and suburbs as part of a growing vibrant city.

The draft plan has been forwarded to the Department of Planning and Environment for adoption, which is anticipated to take place by the end of December 2015. Following the adoption of the plan, a number of revisions are likely to be undertaken including the:

- incorporation of the outcomes of a number of current planning proposals
- incorporation of outcomes of the Glenfield to Macarthur Urban Renewal Corridor Strategy and the Greater Macarthur Land Release Investigation.

2. Our Biodiversity

a. Biobanking opportunities for Council reserves

Biobanking feasibility study assessments were undertaken on several reserves across Campbelltown City to identify opportunities and source funds to preserve and enhance conservation values. Credits generated from the protection and management of these sites will be used to offset development impacts at other locations.

The site with the foremost potential was identified as Noorumba Reserve, Rosemeadow. Noorumba Reserve has also been identified by the NSW Office of Environment and Heritage (OEH) and the Commonwealth Department of the Environment (DotE) as one of three candidate lands for inclusion within the Priority Conservation Lands across the Cumberland Plain. These Priority Conservation Lands represent the best remaining opportunities to secure long-term biodiversity benefits in the region at the lowest possible cost, including the least likelihood of restricting land supply. Council is currently in the process of undertaking a formal Biobanking credit assessment at the reserve.

b. Green and Golden Bell Frog sightings confirmed in Blair Athol

Targeted frog surveys undertaken within the suburb of Blair Athol, confirmed that Green and Golden Bell Frogs (*Litoria aurea*) are inhabiting the area. A frog was found in a drainage line on Council lands in the same general area as a previous sighting in 2013, indicating that there may be a breeding population of these rare frogs in the area.

The Green and Golden Bell Frog is a threatened species, listed as 'endangered' under the *Threatened Species Conservation Act 1995*, and as 'vulnerable' under the *Environment Protection and Biodiversity Conservation Act 1999*. Prior to 2013, the closest sightings had been in the suburbs of Hammondville, Holsworthy and Liverpool, where the Green and Golden Bell Frog is currently classified as presumably extinct by the Commonwealth Department of the Environment.

Council is currently preparing a site-specific management plan for the Green and Golden Bell Frog in Blair Athol, in order to appropriately manage this threatened species and its habitat in the Campbelltown area.

c. Indian Myna Bird Action Program

In August 2014, Council launched its Indian Myna Bird Action Program to reduce the impacts of this pest species across Campbelltown City. The program incorporates educational workshops for interested community members focusing on promoting simple ways residents can reduce Myna bird breeding and feeding opportunities, and demonstrating effective trapping and humane euthanasia methods. Through the program Council works closely with local Men's Sheds, who produce and sell traps. During the reporting period, 13 workshops were held with 308 participants. The local Men's Sheds have sold 214 traps generating income to purchase equipment and materials for the sheds.

3. Our Waste

a. Community Recycling Centre

Council was awarded \$276,000 from the NSW Government to build a new community recycling centre for the safe disposal of problem household waste. The centre, which will be located at Council's Junction Road depot, will provide a free drop off service for residents across the region. There will also be a trial of recycling cluster stations across the LGA for the deposit of batteries, mobile phones and compact fluorescent lights for recycling.

b. Illegal dumping crackdown

In an effort to combat illegal dumping, Council installed fencing at illegal dumping hotspots across the LGA. The fencing was installed in key isolated and/or bushland fringe spots where the disposal of anything from burnt cars to industrial waste materials is common. These areas include Menangle Reserve, Menangle; Richmond Crescent, Campbelltown; Karrabul Reserve, St Helens Park and Rose Street, Campbelltown. The fencing is designed to deter would-be dumpers and prevent illegal waste ending up in local bushland and waterways.

c. Clean Up Australia

Local residents participated in Clean Up Australia Day on Sunday March 1 at Milton Park, Ingleburn. The event attracted more than 20 people who used their man-power to clean up Milton Park and Redfern Creek.

In addition to rubbish of a larger scale including vacuum cleaners, tyres, suitcase bags and a fire extinguisher, 40 bags of rubbish were collected as a result of the day.

4. Our Water

a. Water Quality Monitoring Program

Water quality testing took place at a number of strategically selected sites within the Campbelltown LGA. Monitoring was carried out across 13 locations in accordance with Councils Water Quality Monitoring Strategy 2012.

The results of the sampling were compared to the National Guidelines for Fresh and Marine Water Quality, developed by the Australian and New Zealand Environment and Conservation Council (ANZECC). The most popular recreational swimming sites at Menangle Bridge and Simmo's Beach were also compared to the National Health and Medical Research Council Guidelines, Managing Risks in Recreational Areas (NHMRC 2008). The NHMRC guidelines are considered the most industry relevant for assessing human health risks within recreational water bodies.

The results demonstrated poor water quality for aquatic health and secondary contact within some areas of the highly urbanised Bow Bowing Bunbury Curran Creek catchment. Analysis of water quality against the NHMRC guidelines at Simmo's Beach and Menangle Bridge showed the water quality to be poor for recreational purposes.

Classification of Recreational Water Environments (NHMRC 2008)

Site	Category
Simmo's Beach, Georges River	Poor
Menangle Bridge, Nepean River	Poor
Woolwash, O'Hares Creek	Good

b. Sustainable Catchments Working Party projects

Our Sustainable Catchments Working Party launched two projects focused on improving the health of our local catchments - 'Let's get Quirky' and 'Catchments Connecting Communities'. The 'Let's get Quirky' project aims to revitalise Quirk Reserve in Bradbury through modifications to the water course, increased planting of endemic species, and the introduction of no-mow zones. 'Catchments Connecting Communities' was delivered in partnership with the Western Sydney University's 'Love Your Lagoons' program. Students from Campbelltown Performing Arts High School investigated environmental and social issues surrounding the Park Central wetland and developed a suite of management actions aimed to improve the local environment, increase awareness about the wetland and engage local residents with the space. Council is currently bringing two of these student projects to life; publishing a children's storybook and development of an interactive wildlife tile game.

c. A treatment train approach to cleaning our waterways

The construction of a wetland in Cleopatra Reserve, which forms the headwaters of the Spring Creek catchment was completed during the reporting period. Undertaken in partnership with the Greater Sydney Local Land Services, the project aims to improve water quality by filtering stormwater runoff from nearby Lake Mandurama and the surrounding residential area. The wetland covers an area of almost 4,000 square metres and has been planted with more than 15,500 aquatic and terrestrial plants.

It is anticipated that the wetland will also improve biodiversity in the area by providing habitat for birds and aquatic animals such as frogs. Council will continue to monitor and maintain the area to improve the environmental health of the broader Georges River catchment.

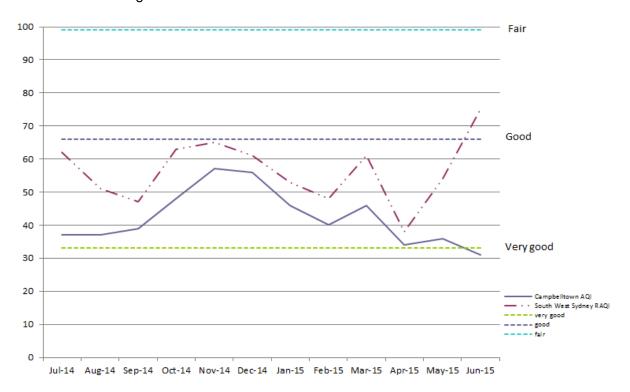
5. Our Air

a. Regional and Local Air Quality Index

The NSW Government measures and records ambient levels of air pollutants across Sydney, Illawarra, the Lower Hunter and selected rural sites around NSW twice daily. Monitoring stations located in Sydney's South West Region include Bargo, Bringelly, Camden, Campbelltown West and Oakdale. The information provided by these stations is summarised into a Regional Air Quality Index (RAQI) score and a site specific Air Quality Index (AQI) score. Both index scores assist to identify the nature and severity of air pollution within the LGA.

The RAQI and site specific AQI are based on the five criteria pollutants (as per national standards) plus visibility (as per a standard set by NSW). These values are categorised as very good, good, fair, poor, very poor or hazardous. Very good has a value of 0-33, good has a value of 34-66, fair has a value of 67-99, poor has a value of 100-149, very poor has a value of 150-199 and hazardous air quality has a value of greater than 200.

The following graph illustrates the monthly averages of the RAQI for Sydney's South West and the site specific AQI for Campbelltown West. During the reporting period, the RAQI average was found to be good with a score of 56 and the AQI average was found to be 'good' with a score of 42.



6. Our Sustainability

a. Paper reduction

In accordance with Council's commitment to purchase recycled paper for general office use, Council endorsed a Sustainable Paper Authorised Statement. The authorised statement is guided by three main objectives including:

- 1. to reduce our paper consumption by 40 per cent by 2015-2016
- 2. to ensure that all white A4 paper purchased contain a minimum of 80 per cent recycled content, and are sourced from sustainable forests/plantations
- 3. to provide guidance and encourage our employees to adopt sustainable purchasing and printing practices.

b. Electricity savings

In striving to further reduce Council's electricity consumption, Council continued to support the installation of solar panels on key large energy consuming facilities. During the reporting period, consultants were engaged to design and install an 85 kilo-watt (kW) system at Greg Percival Library and Community Centre. The system will be installed by December 2015 and is anticipated to save around 113,000 kWh per year.

During the reporting period, previously installed energy saving projects continued to provide significant reductions in cost and electricity, they included:

- an energy efficient air conditioning system and building management system installed at the HJ Daley Library, is achieving an average annual saving of just over \$52,000 and approximately 494,000 kWh
- solar pool heating systems on all of Council's leisure centres are achieving a collective average annual saving of over \$69,000 and approximately 580,000 kWh
- installation of 770 solar panels on the Civic Centre and Campbelltown Arts Centre are achieving a collective average annual saving of approximately \$35,000 and 282,000 kWh.

c. Urban heat island effect

Council participated in a national research project aimed at understanding and mitigating the effects of the urban heat island effect. The urban heat island effect is a phenomenon which describes the temperature variation between cities and their rural surrounds. Previous studies have found that temperatures in urban areas are typically higher and energy demands associated with cooling are consequently increased. Findings from the project will provide localised urban design recommendations to assist with strategic planning to mitigate the urban heat island effect, as well as form key elements for the development of climate-sensitive urban design guidelines and an Australian standard for urban heat resilience. It is anticipated that preliminary findings will be available within the following year.

7. Our Heritage

a. Heritage Festival activities

The National Trust Heritage Festival was held between 11 April and 26 May 2015 and explored the theme of 'Conflict and Compassion' in the spirit of the Anzac Centenary. In recognition of the theme, we focussed on how past events have shaped Campbelltown City's local identity.

A range of events were held as part of the festival, paying particular respect to our Indigenous heritage and local artistic communities, as well as highlighting the supreme sacrifice made by men and women during World War I, they included:

- an exhibition featuring the history of nurses and medical organisations from Campbelltown that aided the war effort
- a special display of new World War I memorabilia accompanied by a 3D model of a Gallipoli battleground

- a free author talk by renowned Australian writer, Peter Rees, providing a unique insight into his highly-acclaimed and profoundly moving book, The Other ANZACS: The Extraordinary Story of Our World War I Nurses
- a Heritage Forum at the Campbelltown Arts Centre, titled 'Art and Wedderburn', with the panel discussion exploring the suitability of artist communities in relation to studio practices.

The community was also able to explore the Macarthur region's unique natural heritage, joining a walking tour of the Dharawal National Park to learn about the Indigenous heritage of the park, providing a fresh look at the landscape from a Koori perspective.

b. NAIDOC Week

NAIDOC Week is held each year to celebrate the history, culture and achievements of Aboriginals and Torres Strait Islanders.

Council recognised NAIDOC Week from 5 to 12 July, with a host of events aimed at sharing the richness of the Australian Indigenous people's culture and heritage. This year's NAIDOC theme was 'We all Stand on Sacred Ground: Learn, Respect and Celebrate', highlighting Aboriginal and Torres Strait Islander peoples' strong spiritual and cultural connection to land and sea.

As part of local celebrations, Council hosted a flag raising ceremony, followed by a street march and Community Fun Day at Bradbury Oval. A NAIDOC touch football competition was also held at Minto, including a lunch and activities for children.

8. Our Community

a. Environmental education in schools

During the reporting period, Council continued to grow its relationship with local schools through the engagement of a number of environmental education programs, which included the following:

- The Waterwise Waterways program saw Macquarie Fields, Blairmount and Robert Townson primary school students learn about the Georges River catchment and the importance of keeping stormwater clean. Students worked in teams to develop bright and colourful educational artworks that were transformed into drain stencils and placed on stormwater drains around the school and in high traffic areas throughout Campbelltown City
- Council continued to partner with Keep Australia Beautiful NSW to deliver environmental education workshops to five primary schools (Sherwood Hills Christian, St Andrews Primary, Kentlyn Primary, Eschol Park Primary, St Helens Park Primary) across Campbelltown City. The curriculum-based workshops explored concepts of waste avoidance and the effects of excessive food packaging
- Council continued to work with Campbelltown Performing Arts High School on a number of community-based initiatives to promote the voice of young adults within the community. Catchments connecting communities, Macarthur Nature Photography Competition, and consultation for Ingleburn Plan of Management.

b. Making good of a noxious species

Council hosted the third annual Catch a Carp competition at Eagle Vale Pond, Eagle Vale in March of 2015. The competition engaged community members within their local environment, highlighting responsible fishing practices and helping to educate participants on the threats impacting local waterways.

In addition to the hundreds of spectators, 501 people registered to participate on the day, almost 100 more than the previous year. A total of 45 carp were caught, less than half the amount caught the previous year. This, along with the fact there were almost 100 more people fishing this year, demonstrates that the competition is having the desired effect of reducing the numbers of carp in Eagle Vale pond.

Carp are a noxious species that have detrimental impacts on waterways and the health of our rivers. All carp caught were placed on ice and delivered to the Sydney Fish Markets where they were made into an organic fertiliser.

c. Nature through a lense

The Macarthur Nature Photography competition celebrated its ninth year, and continued to be a great success. The competition is held in partnership with neighbouring councils across the Macarthur region and aims to engage the community with their local environment through enhancing appreciation and fostering stewardship of natural assets.

A record number of 441 entries were received compared to the previous year's total of 240. Images reflected the diverse natural and environmental heritage of the Macarthur region, showcasing a range of subject matter including misty waterfalls, picturesque woodland expanses and detailed macro shots of spiders and other insects.

For the first time in the competition's history, the awards night was hosted by a local high school, Campbelltown Performing Arts High School. Students provided catering, sound and technical assistance, musical entertainment and public speaking duties. In doing so, a number of curriculum-based learning outcomes were achieved, enabling students to receive genuine real-life professional experiences that can be acknowledged in their curriculum vitae as they seek work and other opportunities.

Conclusion

The 2014-2015 SoE Report provides an overview of the major achievements of Council in respect to the following eight identified areas of the Environment: Our Land, Our Biodiversity, Our Waste, Our Water, Our Air, Our Sustainability, Our Heritage and Our Community. Within each of these areas, key threats have been identified, new environmental impacts and trends have been recognised, and Council's major achievements outlined.

The SoE Report also provides an assessment of Council's performance against identified annual environmental indicators, which will be used to produce and analyse long term trends.

Officer's Recommendation

That the information be noted.

Committee's Recommendation: (Matheson/Thompson)

That the Officer's Recommendation be adopted.

CARRIED

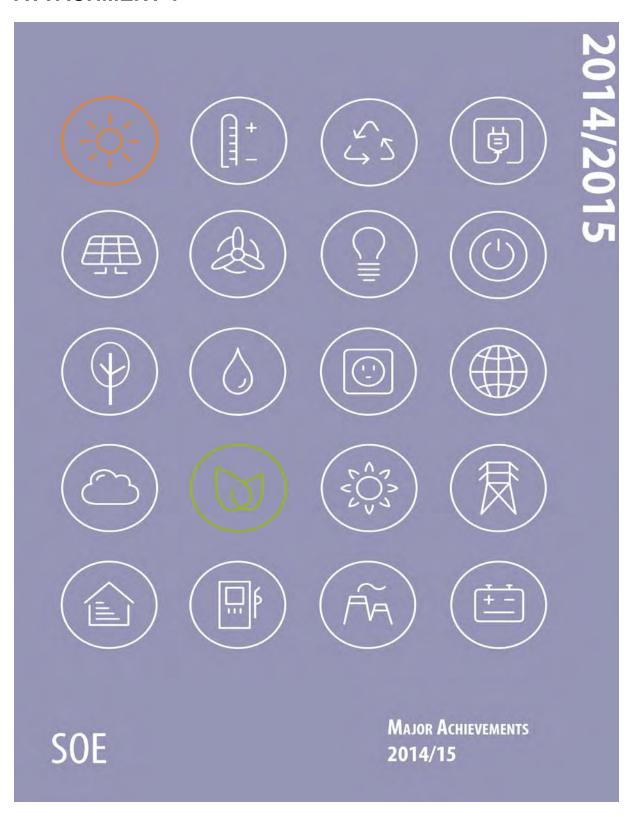
Council Meeting 15 December 2015 (Hawker/Rowell)

That the Officer's Recommendation be adopted.

Council Resolution Minute Number 227

That the Officer's Recommendation be adopted.

ATTACHMENT 1



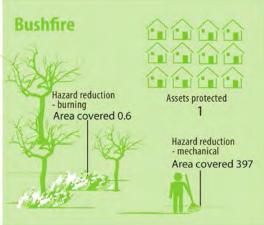
CONTENTS

OUR LAND	2-7
OUR BIODIVERSITY	8 - 13
OUR WASTE	14-17
OUR WATER	18 - 23
OUR SUSTAINABILITY	24 - 27
OUR COMMUNITY	28 - 33
OUR HERITAGE	34 - 37
OUR AIR	38 - 41













OUR LAND

Foture coal seam gas development cancelled

A huge win for the area was announced during the previous reporting period with the introduction of coal seam gas exclusion zones within two kilometres of residential areas. Following this announcement, AGL have completed a comprehensive review of its upstream gas business and will now focus on core gas projects and divest non-core and under-performing gas assets and activities. As a result, AGL will surrender three of its Petroleum Exploration Licenses associated with stage 3 of the Camden Gas Project, including those that cover the Scenic Hills and most of Western Sydney.

Inglobum Reserve Plan of Management

Council commenced a comprehensive review of the Plan of Management for Ingleburn Reserve with the aim of developing new ideas and directions for the reserve. In undertaking the review, we engaged local school students from Campbelltown Performing Arts High School to better understand how young people perceive and interact with the natural environment and how they think the reserve could be improved.

Our partnership with the high school will continue throughout the review of the Plan of Management, with student observations and feedback becoming an integral component to the reserve's future. It is anticipated that the revised Plan of Management will be completed by the end of 2015.

Bustifile management

Bushfire management on public lands within the LGA is undertaken in partnership with a range of fire and government agencies under the auspice of the Macarthur Bush Fire Management Committee.

As an active member of the Committee, and a significant landholder/manager, each year we routinely plan and undertake strategic bushfire hazard reduction works across key sites to reduce the risk of bush fire to the community and the environment. This includes the management of asset protection zones, fire trails, roadside vegetation, hazard reduction burning and arson prevention.

Achievements for the reporting period included:

- approximately 4760m² of fire trail surface improvement works
- approximately 7.486km of fire trail vegetation maintenance
- a Draft Fire Management Plan was prepared for Smith's Creek Reserve
- hazard reduction preparation works for proposed burns at Kentlyn and Varroville. This work included vegetation treatments to achieve optimum ecological benefits and reduction in exotic woody weeds.

Rondside Vergecation Management Plan-

The Campbelltown LGA contains approximately 400 hectares of roadside reserves and adjacent vegetation that are home to a large number of plants, animals and vegetation communities many of which are protected species.

Council is responsible for the management of road reserves invested to local government. This responsibility extends to providing safe passage for vehicles, as well as minimising bushfire risk and environmental damage. To ensure these areas are appropriately managed, we engaged a consultant to develop a Roadside Vegetation Management Plan for road reserves along the rural and semi-rural roads. The Plan, which is now under review, assesses the nature conservation value of roadside vegetation and outlines actions for effective, safe and environmentally senstive roadside vegetation management.

Light Compbelltown Local Environment Flan 2015

During the reporting period, Council considered more than 163 submissions (133 community and 30 government authorities and agencies) from the public exhibition period of the Draft Campbelltown Local Environmental Plan 2015. The draft plan seeks to guide the development of the LGA over the next decade, meeting the challenges that lie ahead while facilitating quality lifestyle opportunities. The draft plan details what development is permitted within the LGA and where certain development can take place. Controls are established to guide the revitalisation, redevelopment and expansion of the business centres and suburbs as part of a growing vibrant city.

The draft plan has been forwarded to the Department of Planning and Environment for adoption, which is anticipated to take place by December 2015. Following the adoption of the plan, a number of revisions are likely to be undertaken including the:

- · incorporation of new Council biodiversity directions
- incorporation of outcomes of the Glenfield to Macarthur Urban Renewal Corridor Strategy and the Greater Macarthur Land Release Investigation.

Write a Regional City Contra

During the reporting period, the NSW Government released its updated Metropolitan Strategy, 'A Plan for a Growing Sydney', and in doing so formally identified the Campbelltown-Macarthur CBD as a Regional City Centre. As one of only three Regional City Centres located outside of the Sydney and Parramatta Central Business Districts, Campbelltown City will be in a position to attract a range of new business, government, health, cultural, retail and recreational opportunities to support our growing population.

Since the release of the plan, the following new planning projects have commenced:

- the development of the Glenfield to Macarthur Urban Renewal Corridor Strategy, focussed on the rail line and transit orientated development
- Greater Macarthur Land Release Investigations, focussed on urban development prospects for land south of St Helens Park and Rosemeadow.

It is important to note that supplementary information and commentary identifies the strategic importance of the Scenic Hills, as well as the environmental values of the Georges and Hawkesbury Rivers and the Dharawal National Park.

Draft Sustainable City Development Control Plan 2015

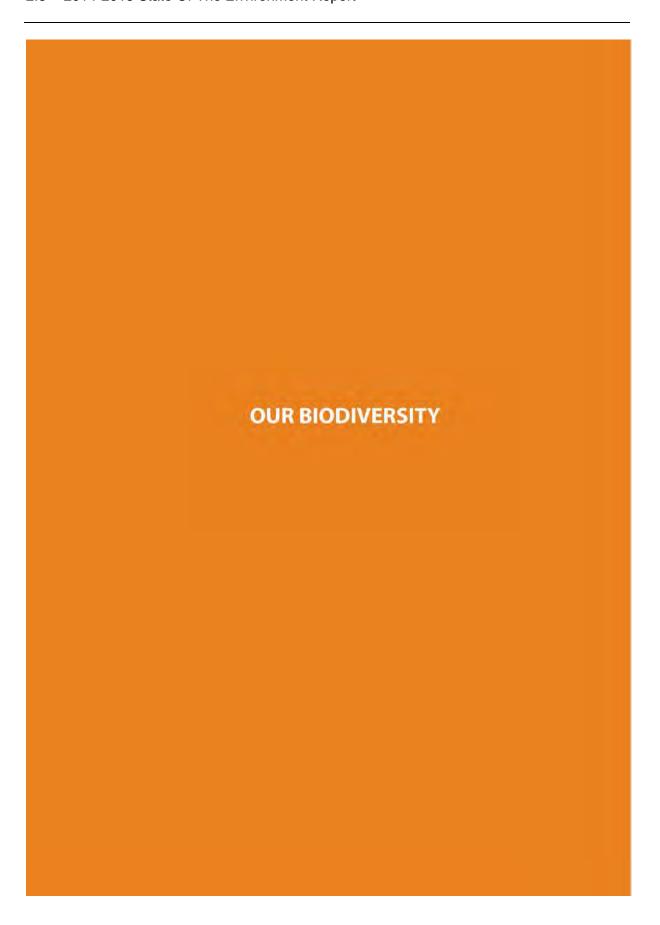
During the reporting period Council adopted revisions to the Draft Campbelltown (Sustainable City) Development Control Plan 2014 Volume 1, which addressed inconsistencies with state environmental planning policies and presented a number of revised development controls.

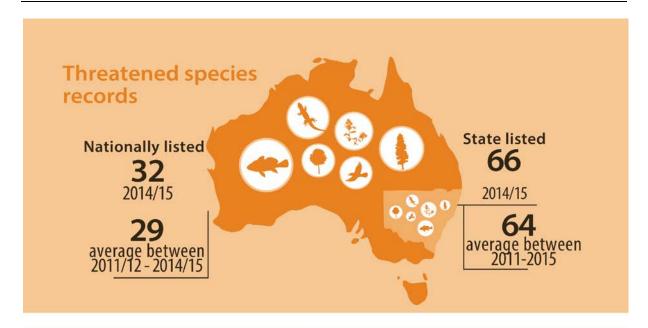
A further revised Development Control Plan, ensuring consistency with the Draft Campbelltown Local Environmental Plan and issues such as truck parking in sensitive settings and advertising signage, is likely to be publicly exhibited in late 2015 or early 2016.

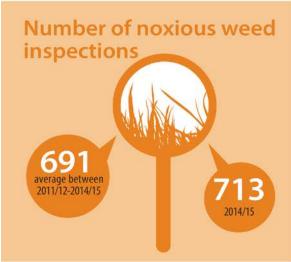


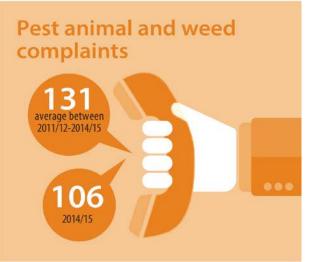
			Re	Reporting year			
Category	Indicator	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	4 year trend
	Hazard reduction - mechanical						
	Number of sites	83	82	82	88	29	→
	Number of treatments	294	347	328	370	449	*
	Area covered (ha)	263	341	293	296	397	←
Bushfire	Number of assets protected	2034	1867	1918	2052	2899	←
	Hazard reduction - burning						
	Number of sites	8	2	1	-	-	\$
	Area covered (ha)	28	16	2.3	35	9.0	\rightarrow
	Number of assets protected	108	45	10	œ	_	\rightarrow
	Number of approvals for new residential dwellings	437	489	494	1366	1640	
and use	Number of new commercial premises approvals	18	26	15	80	80	
200	Number of new industrial premises approvals	25	22	41	14	14	
	Length of new road construction (km)	2.0	1.0	10.8	0.3	0.5	→
	Number of premises licensed by the EPA to release emissions	missions 17	18	18	18	N/A	-
	Number of illegal construction and development complaints		244	319	323	329	· (-
	Number of environmental complaints		281	289	254	291	- ←-
	Number of trail bike complaints	77	71	45	19	90	-
Compliance	Number of Council actions for illegal trail bike activity		55	10	2	N/A	
	Number of tree removal applications	40	33	37	881	919	←
	Number of premises inspected for public health	212	229	196	144	190	←
	Number of specialist litter patrols	m	4	2	4	N/A	
	Number of litter penalty notices issued	99	27	=	∞	N/A	
Public amenity	Length of new cycle ways constructed (m)	630	970	1880	1150	1851	←
	Length of new walking tracks/footpaths constructed (m)		100	0	2570	2658	←
Contaminated	Number of EPA record of notices	-	1	0	8	8	1
land sites	Number of sites on the EPA's list of contaminated sites	es 10	12	10	10	10	←
Plans of Management	Number of performance indicators in Plans of Management achieved	70	75	85	80	80	\$













OUR BIODIVERSITY

Nuorumba Reserve: Menangle Creek Riyarian Restoration project

Council received \$30,000 in grant funding from the Greater Sydney Local Land Services, for a biodiversity conservation project at Noorumba Reserve. The 'Rehabilitation of Menangle Creek Corridor' aims to improve the integrity and resilience of a key riparian corridor within Noorumba Reserve which includes Cumberland Plain Woodland, a state and federally listed Critically Endangered Ecological Community.

The project addresses the invasion of noxious weeds, stream bank erosion and the severe impacts of Bell Miner Associated Dieback (BMAD) through revegetation, bank stabilisation and ecological burns.

The project also incorporates the development of an environmental awareness and engagement campaign through the production of a recyclable coffee cup art series. The coffee cups incorporate an illustrative Aboriginal art design to communicate the biodiversity and Indigenous heritage values associated with the reserve's Cumberland Plain Woodland vegetation community. The cups will be made available to local coffee retailers.

Improving Urban Koala Habitar Linkages and Community Stewardship project

Council secured \$35,000 in grant funding from Greater Sydney Local Land Services for the Improving Urban Koala Habitat Linkages and Community Stewardship project centred around Smiths Creek, Ruse. The project will focus on bush regeneration works to improve koala corridors and habitat including Critically Endangered Shale Sandstone Transition Forest Vegetation found within the reserve. The project also aims to educate school students about the importance of clean storm water through the Waterwise Waterways drain stenciling program and is due for completion in early 2016.

Fallen trees for habitat

The removal of dead wood and dead trees is listed as a key threatening process under both state and federal threatened species legislation. The presence of standing dead trees and woody debris is an important component of the structure of forests and woodlands, and helps determine the habitat value for a wide range of fauna. In the Campbelltown LGA, the presence of abundant logs and fallen timber are important components of the foraging and breeding habitats of threatened forest bird species such as the Scarlet Robin, and mammals such as the Antechinus.

Council has been proactively salvaging habitat logs form locally felled trees, to be installed back into local reserves to maintain fauna habitat values.

Biobanking opportunities for Council reserves

Biobanking Feasibility Study assessments were undertaken on several reserves across Campbelltown City

to identify opportunities and source funds to preserve and enhance conservation values. Credits generated from the protection and management of these sites will be used to offset development impacts at other locations.

The site with the foremost potential was identified as Noorumba Reserve, Rosemeadow. Noorumba Reserve has also been identified by the NSW Office of Environment and Heritage (OEH) and the Commonwealth Department of Environment (DotE) as one of three candidate lands for inclusion within the Priority Conservation Lands across the Cumberland Plain. These Priority Conservation Lands represent the best remaining opportunities to secure long-term biodiversity benefits in the region at the lowest possible cost, including the least likelihood of restricting land supply. Council is currently in the process of undertaking a formal Biobanking credit assessment at the reserve.

Green and Golden Bell Freg sightings confirmed in Blair Athol.

Targeted frog surveys undertaken within the suburb of Blair Athol, confirmed that Green and Golden Bell Frogs (Litoria aurea) are inhabiting the area. A frog was found in a drainage line on Council lands in the same general area as the previous sighting in 2013, indicating that there may be a breeding population of these rare frogs in the area.

The Green and Golden Bell Frog is a threatened species, listed as 'Endangered' under NSW legislation, and as 'Vulnerable' under Commonwealth legislation. Prior to 2013, the closest sightings had been in Hammondville, Holsworthy and Liverpool, where the Green and Golden Bell Frog is currently classified as 'Presumably Extinct' by the Commonwealth Department of the Environment.

Council is currently preparing a site-specific Management Plan for the Green and Golden Bell Frog in Blair Athol, in order to appropriately manage this threatened species and its habitat in the Campbelltown area.

Indian Myna Bird Action Program

In August 2014, Council launched its Indian Myna Bird Action Program to reduce the impacts of this pest species across Campbelltown City. The program incorporates educational workshops for interested community members focusing on promoting simple ways residents can reduce Myna bird breeding and feeding opportunities, and demonstrating effective trapping and humane euthanasia methods. Through the program we work closely with local Men's Sheds, who produce and sell traps. During the reporting period, 13 workshops were held with 308 participants. The local Men's Sheds have sold 214 traps generating income to purchase equipment and materials for the sheds.

Weed Action Program

Council successfully obtained funding during the reporting period through the NSW Government's Weed Action Program. Works funded through the program focused on priority biodiversity assets such as endangered ecological communities and aim to complement and

extend on previous works while ensuring past work sites are maintained. The program also aimed to prevent new incursions of high risk noxious weeds through inspections of private properties and high risk pathways for weed distribution such as nurseries, aquariums, main roads, railway lines and previously identified sites. We completed a range of works including aquatic weed control, bush regeneration and management of high risk weed species such as Boneseed, Serrated Tussock and African Olive.

Agustic weed control

Throughout the reporting period, a range of programs were implemented targeting eradication or containment of aquatic noxious weeds to improve local waterways. Under the program, 51 linear kilometres of waterway within the upper Georges River catchment was mapped and treated for invasive Class 3 noxious weeds such as Alligator Weed, Ludwigia, Salvinia and Water Hyacinth. We also worked in partnership with Camden and Wollondilly Councils to treat Alligator Weed along an 11.8km stretch of the Upper Nepean River and invasive woody weeds such as A.negundo, G.tricanthos and C.camphora along 23km of the Nepean River.

Nextous weed control

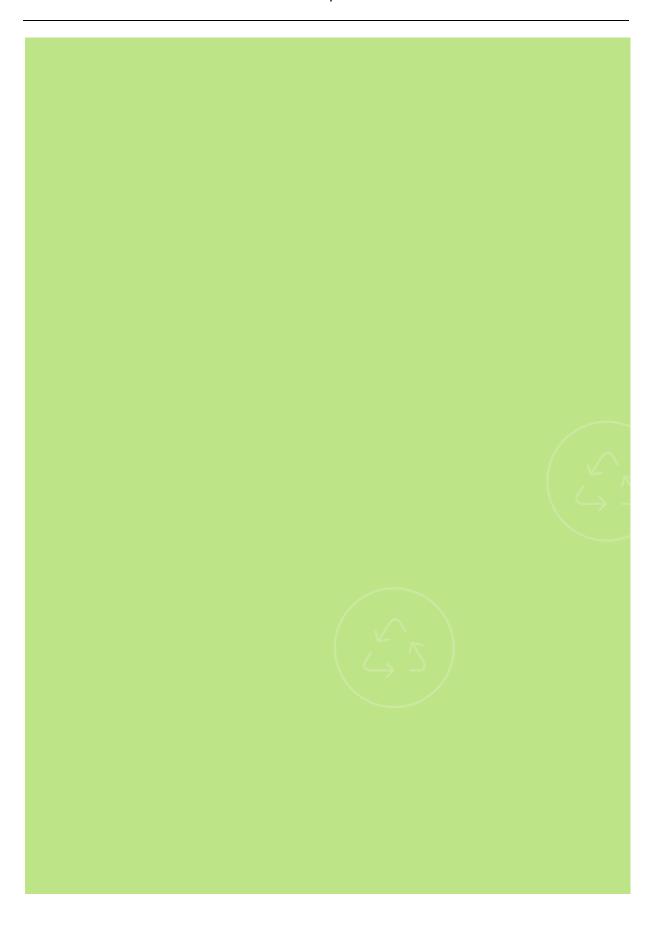
High risk noxious weeds such as Boneseed and Cats Claw Creeper found in scattered infestations across Campbelltown City were targeted through a range of programs. A targeted Maidera Vine project was delivered to contain and prevent the further spread of infestations in key environmental areas. Serrated Tussock control was undertaken on an infestation on agricultural land within the Menangle Park area and an African Olive containment line project continued within the Georges River Corridor. These projects form part of a regional approach to weed management facilitated through the Sydney Weeds Committee and Sydney South West Sydney Regional Weeds Committee.

Auch regeneration

Bush regeneration works continued in sensitive natural areas, including Macquarie Rd Reserve – Macquarie Fields, Milton Park – Ingleburn, John Kidd Reserve – Blair Athol, Smiths Creek Reserve – Ruse and Cook Park – Ruse. The works targeted invasive noxious weeds, Weeds of National Significance and environmental weeds to protect and improve the condition of threatened species habitat and/or Critically Endangered Ecological Communities across the Campbelltown LGA.

OUR BIODIVERSITY

			Keporting	ng year			
Category	Indicator	2010-2011	2010-2011 2011-2012	2012-2013	2013-2014 2014-2015	2014-2015	4 year trend
	Number of state listed threatened species recorded Number of state listed threatened ecological	09	62	64	65	99	←
	communities recorded	6	10	11	11	11	1
Biodiversity	Number of Nationally listed threatened species recorded Number of Nationally listed threatened ecological	27	28	28	29	32	+
protection	communities recorded	3	4	4	4	4	1
	Number of Illegal clearing events reported	-	2	7	9	12	+
	Area of native vegetation protected by zoning or				200 40	2000	
	conservation agreements (Ha)	15,383	15,383	15,383	15,383	15,383	1
	Number of biobanking sites	0	-		1	-	1
	Number of pest animal and weed complaints	48	96	160	162	106	→
Noxious Pest	Number of noxious weed inspections	101	536	779	734	713	-
and Weed Management	Number of Weed Advice Program letters issued Number of Weed Control notices issued under the	15	25	20	43	15	\rightarrow
	Noxious Weeds Act 1993	12	0	0	0	0	1
Bush	Area of bush regeneration works (Ha)	38.6	93.2	2.06	34.4	38.4	→
Regeneration	Number of trees/plants planted by Council	11,000	40,000	25,000	12,000	30,450	←















OUR WASTE

Community recycling centre

Council was awarded \$276,000 from the NSW Government to build a new community recycling centre for the safe disposal of problem household waste. The centre, which will be located at our Junction Road Depot, will provide a free drop off service for residents across the region. There will also be a trial of recycling cluster stations across Campbelltown City for deposit of batteries, mobile phones and compact fluorescent lights for recycling.

Hegal dumping crackdown

In an effort to combatillegal dumping, we installed fencing at illegal dumping hot-spots across Campbelltown City. The fencing was installed in key isolated and/or bushland fringe spots where the disposal of anything from burnt out cars to industrial waste materials is common including Menangle Reserve, Menangle; Richmond Crescent, Campbelltown; Karrabul Reserve, St Helens Park and Rose Street, Campbelltown. The fencing is designed to deter would-be dumpers and prevent illegal waste ending up in our bushland and waterways.

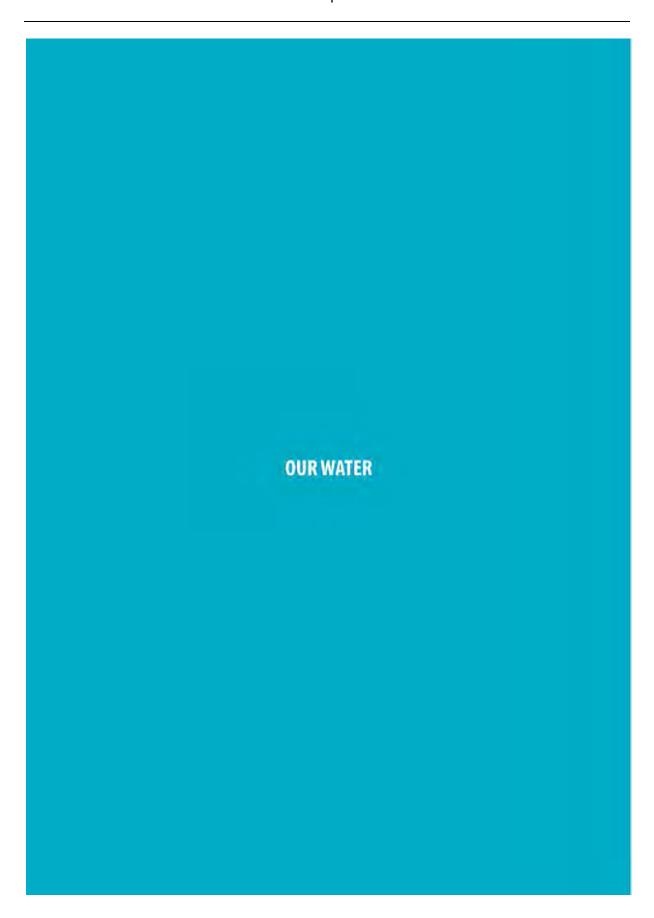
Clean up Australia

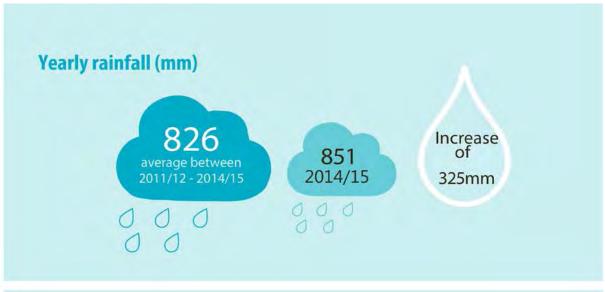
Local residents participated with us in Clean Up Australia Day on Sunday March 1 at Milton Park, Ingleburn. The event attracted more than 20 people who used their manpower to remove clean up Milton Park and Redfern Creek.

Overall, 40 bags of rubbish were collected as well as larger dumped rubbish, including vacuum cleaners, tyres, suitcase bags and a fire extinguisher.

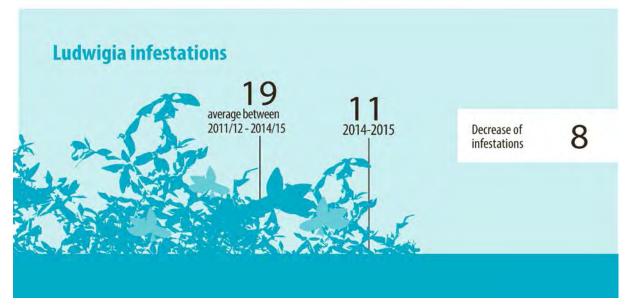
			Rep	Reporting year			
Category	Indicator	2010-2017	2011-2012	2012-2013	2013-2014	2014-2015	4 year t
	Amount of waste generated per person per year (kg)	409	426	410	411	445	→ •
	Number of illegal dumping reports 4,531 Weight of Illegally dumped rubbish collected² (tonnes) 748	748	7007	96/7	708.74	389	
Marto	Weight of waste sent to landfill ³ (tonnes)	25,831	23,515	21,861	18,741	22,834	-
Waste	Weight of waste recovered (tonnes)	41,436	47,163	45,449	48,754	47,912	+
	Weight of resources recovered from general						
	waste stream (tonnes)	10,113	13,635	15,193	18,723	17,143	+
	Number of Council clean-ups	33,752	37,730	39,402	42,420	45,519	+

I. Includes clean-up waste, general waste, recycling and organics bin only
 Includes waste from parks
 Includes clean-up waste









OUR WATER

A treatment train approach to cleaning our waterways

The construction of a wetland in Cleopatra Reserve, which forms the headwaters of the Spring Creek catchment was completed during the reporting period. Undertaken in partnership with the Greater Sydney Local Land Services, the project aims to improve water quality by filtering stormwater runoff from nearby Lake Mandurama and the surrounding residential area. The wetland covers an area of almost 4,000 square metres and has been planted with more than 15,500 aquatic and terrestrial plants.

It is anticipated that the wetland will also improve biodiversity in the area by providing habitat for birds and aquatic animals such as frogs. We will continue to monitor and maintain the area to improve the environmental health of the broader Georges River catchment.

Water Quality Monitoring Program

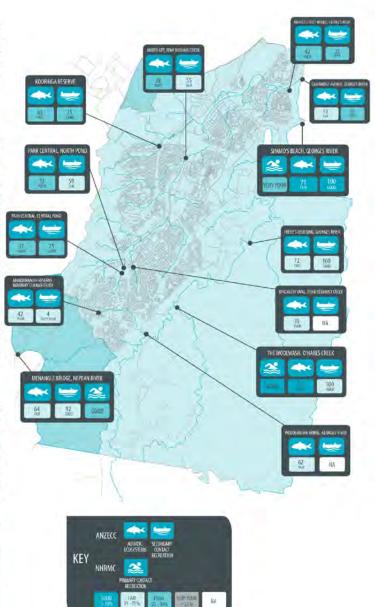
Water quality testing took place at a number of strategically selected sites within Campbelltown City. Monitoring was carried out in accordance with our Water Quality Monitoring Strategy 2012 across 13 locations.

The results of the sampling were compared to the National Guidelines for Fresh and Marine Water Quality, developed by the Australian and New Zealand Environment and Conservation Council (ANZECC). The most popular recreational swimming sites at Menangle Bridge and Simmo's Beach were also compared to the National Health and Medical Research Council Guidelines, Managing Risks in Recreational Areas (NHMRC 2008). The NHMRC guidelines are considered the most industry relevant for assessing human health risks within recreational water bodies.

The results demonstrated poor water quality for aquatic health and secondary contact within some areas of the highly urbanised Bow Bowing Bunbury Curran Creek catchment. Analysis of water quality against the NHMRC guidelines at Simmo's Beach and Menangle Bridge showed the water quality to be very poor and good for recreational purposes, respectively.

Classification of Recreational Water Environments (NHMRC 2008)

Site	Category
Simmo's Beach, Georges River	Very poor
Menangle Bridge, Nepean River	Good
Woolwash, O'Hares Creek	Good



Our Sustainable Catchments Working Party launched two projects focused on improving the health of our local catchments - 'Let's get Quirky' and 'Catchments Connecting Communities. The 'Let's get Quirky' project aims to revitalise Quirk Reserve in Bradbury through modifications to the water course, increased planting of endemic species, and the introduction of no-mow zones. 'Catchments Connecting Communities was delivered in partnership with the Western Sydney University's Love Your Lagoons program. Students from Campbelltown Performing Arts High School investigated environmental and social issues surrounding the Park Central wetland and developed a suite of management actions aimed to improve the local environment, increase awareness about the wetland and engage local residents with the space. We are currently bringing two of these student projects to life.

Site	Report Card Grade
Stakes Crook	Att
Woolwash, D'Hares Ereek	
Inglaburn Weir, Georges River	Att
Simmos Brack, Grange Hiver	Au
Cambridge Ant, Grouges Tiver	N .
Woolwash, Georges River	A+
Bunbury Curran Creek	B-

Georges River Combined Councils Committee

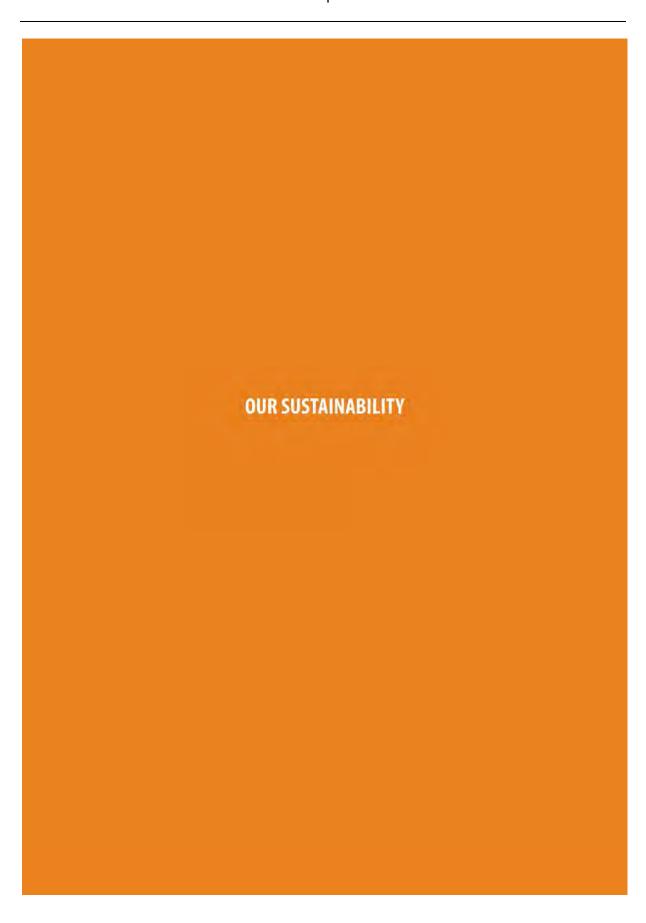
The Georges River Combined Councils Committee (GRCCC) is an incorporated association of local councils working in partnership with State and Federal Government agencies and community representatives within the Georges River catchment. Council is an active member of the GRCCC and works in association with the committee on a range of projects and programs. These include the Riverkeeper Program, which involves rubbish removal, bushland regeneration, terrestrial and aquatic weed control, and monitoring river health along the Georges River.

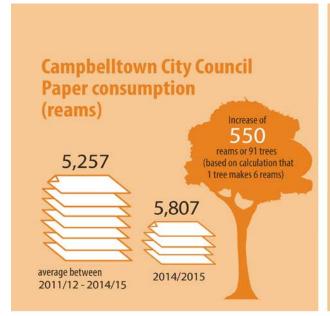
Some of the GRCCC's major achievements include:

- The GRCCC Riverkeeper teams spent 2451.5 working hours across 14 project sites throughout Campbelltown City, collecting a total of 12.67 tonnes of waste from the Georges River catchment.
- The GRCCC successfully obtained a \$1.6 million grant under the Federal Government's NSW Biodiversity Fund for an Aboriginal Bush Regeneration Team to work within the Georges River Catchment. The team will work at promoting resilience within high priority biodiversity areas and will also complete tertiary qualifications in conservation and land management. Two sites, Mansfield Creek and Spring Creek at St Helens Park, were chosen for works under the program. During the reporting period, the Aboriginal Riverkeeper Team completed a total of 760 hours.
- The GRCCC has been managing Green Army teams in partnership with Conservation Volunteers Australia to undertake bush regeneration across member council areas. Sites selected complement our Bushcare program; Campbelltown Golf Course – Glen Alpine, Quirk Reserve – Bradbury and Redfern Creek – Ingleburn/Macquarie Fields. The GRCCC Green Army Team completed a total of 1653 hours.

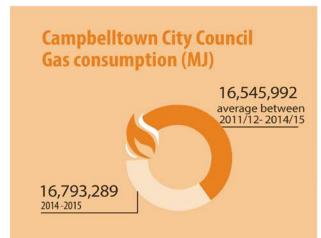
			Rep	Reporting year			
Category	Indicator	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	4 year trend
Climate and stream flows	Variation to monthly mean maximum and minimum temperatures (°C) Yearly rainfall (mm)	-0.5	-0.65	-3 1011	-0.98	0.04	\leftarrow \rightarrow
Water quality	Compliance with ANZECC water quality objectives in the catchment GRCCC River Health Monitoring Report Card rating for Upper Georges catchment	B air	Fair B+	Fair A	Fair A+	Fair A	\$ →
Aquatic weeds	Number of Alligator Weed infestations Number of Ludwigia infestations	88	3 E	19	15	11	\rightarrow \rightarrow
Point sources of water pollution	Number of licensed discharge points to waterways Number of septic systems Number of septic systems inspections Septic system compliance (%)	5 >900 110 63	5 1232 190 82	5 1016 171 96	5 1011 202 96	5 1014 152 91	↑ →← ↑
Water quality improvement devices	Number of water quality improvement devices installed Amount of pollutants collected from GPTs (m^3)	2 473	2 510	4 1759	3574	2 4731	→ ←
Compliance	Number of compliance actions for water issues Number of water quality complaints received by the OEH	40	4 33	35	NA 01	NA 8	\rightarrow
Water extraction	Number of surface water licences Number of licensed groundwater bores	30	36	36	25	35	← ←















OUR SUSTAINABILTY

Sustainability Committee and its working parties

Council's Sustainability Committee, responsible for supporting organisational sustainability, continued to regularly meet to discuss and facilitate a diverse range of initiatives. These initiatives involved the development of policies, the design and implementation of on-ground works, the expenditure of funds and project accounting.

The committee is supported by five working parties, each charged with a specific sustainability focus. During the reporting period, each group worked on a number of significant projects including development of a sustainable council intranet site to share, inform, educate and consult with staff on organisational sustainability through the Sustainable Council Working Party.

Speak for the trees

Following Council's commitment to purchase recycled paper for general office use, we endorsed a Sustainable Paper Authorised Statement. The Authorised Statement is guided by three main objectives including:

- To reduce our paper consumption by 40% by 2015/2016
- To ensure that all white A4 paper purchased contain a minimum of 80% recycled content, and are sourced from sustainable forests/plantations
- To provide guidance and encourage our employees to adopt sustainable purchasing and printing practices.

Droft Sustainability Strategy

In recognising the important role that we all play in creating a sustainable future, as well as Council's legislative obligations, a Draft Sustainability Strategy was finalised during the reporting period. The strategy aims to embed the concept of sustainability into the culture, spirit and operation of Council by engaging staff, management and elected representatives in a united movement guided by a broader vision.

The strategy consists of three core sections, including sustainable leadership, sustainable environment and sustainable community which explore topics including administrative governance, environmental protection and management and community wellbeing, each prescribing goals and actions to progress towards a sustainable organisation. The strategy is due to be endorsed by December 2015.

Sustainability Accounting Tool (SAT)

We continued to utilise our Sustainability Accounting Tool (SAT) to monitor and report on our sustainability performance across six key areas – electricity, gas, water, waste, fuel and paper. The SAT captures accurate environmental data and holds it in a single system of

record. Staff are able to easily view resource consumption down to an individual facility level, identify trends and anomalies in usage, and develop initiatives to improve sustainability performance. This is instrumental in informing sound and sustainable decisions.

Electricity sawings

In striving to further reduce Council's electricity consumption, we continued to support the installation of solar systems on key large energy consuming facilities. During the reporting period, we engaged a consultant to design and install an 85 kilo-watt (kW) system at Greg Percival Library and Community Centre. The system will be installed by December 2015 and is an anticipated to save around 113,000 kWh per year.

During the reporting period, our previously installed energy saving projects continued to provide significant reductions in cost and electricity. They included:

- an energy efficient air conditioning system and building management system installed at the HJ Daley Library, is achieving an average annual saving of approximately 494,000 kWh
- solar pool heating systems on all of Council's leisure centres are achieving a collective average annual saving of approximately 580,000 kWh
- Installation of 770 solar panels on the Civic Centre and Campbelltown Arts Centre are achieving a collective average annual saving of approximately 282,000 kWh.

Urban heat island effect

Council participated in a national research project aimed at understanding and mitigating the effects of the urban heat island effect. The urban heat island effect is a phenomenon which describes the temperature variation between cities and their rural surrounds. Previous studies have found that temperatures in urban areas are typically higher and energy demands associated with cooling are consequently increased. Findings from the project will provide localised urban design recommendations to assist with strategic planning to mitigate the urban heat island effect, as well as form key elements for the development of climate-sensitive urban design guidelines and an Australian standard for urban heat resilience. It is anticipated that preliminary findings will be available within the following year.

ı		3	F	i	7
Į	i				3
				ï	i
		į	ī	į	1
I	4				Į
ľ		ĺ		•	1
	Z	4	=		d
		=		_	4
	-			ī	4
F					
I					
	i k				
I					

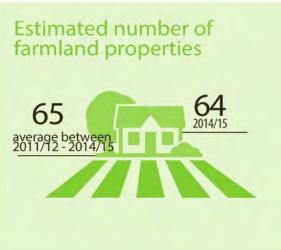
Category	Indicator	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	4 year trend
	Amount of paper purchased (reams)	2907	6174	4723	4322	2807	←
	Amount of electricity consumed from large						
	contract sites (kWh)	5,429,863	5,280,806	4,874,178	4,647,380	4,796,364	\rightarrow
Council	Amount of gas consumed (MJ)	20,396,422	16,562,012	17,591,935	16,545,992	16,793,289	-
Sustainability	Amount of petrol consumed by Council's passenger						
	fleet (L)	128,671	245,951	232,324	210,338	241,041	←
	Amount of diesel consumed by Council's passenger						
	fleet (L)	63,268	81,845	85,825	89,239	106,528	-
	Amount of water consumed (kL)	204,995	189,283	271,644	352,479	329,985	*



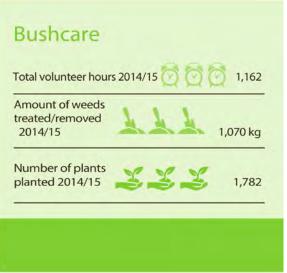












OUR COMMUNITY

Invironmental education in scionals

During the reporting period, Council continued to grow its relationship with local schools through the engagement of a number of environmental education programs. They included:

- Our 'Waterwise Waterways' program saw Macquarie Fields, Blairmount and Robert Townson primary school students learn about the Georges River catchment and the importance of keeping stormwater clean. Students worked in teams to develop bright and colourful educational artworks that were transformed into drain stencils and placed on stormwater drains around the school and in high traffic areas throughout Campbelltown City
- We continued to partner with Keep Australia Beautiful NSW to deliver environmental education workshops to five primary schools (Sherwood Hills Christian, St Andrews Primary, Kentlyn Primary, Eschol Park Primary, St Helens Park Primary) across Campbelltown City. The curriculum-based workshops explored concepts of waste avoidance and the effects of excessive food packaging
- We continued to work with Campbelltown Performing Arts High School on a number of community-based initiatives to promote the voice of young adults within the community.

Making good of a norrous species

Our third annual Catch a Carp competition was held at Eagle Vale Pond, Eagle Vale in March 2015. The competition engaged community members within their local environment, highlighting responsible fishing practices and helping to educate participants on the threats impacting local waterways.

In addition to the hundreds of spectators, 501 people registered to participate on the day, almost 100 more than the previous year. A total of 45 carp were caught, less than half the amount caught the previous year. This, along with the fact there were almost 100 more people fishing this year, demonstrates the competition is having the desired effect of reducing the numbers of carp in Eagle Vale pond.

Carp are a noxious species that have detrimental impacts on waterways and the health of our rivers. All carp caught were placed on ice and delivered to the Sydney Fish Markets where they were made into an organic fertiliser.

A month of celebration in recognition of our most voluerable species

September is Biodiversity Month – a month to celebrate some of our most vulnerable native species and educate the community on the threats impacting their survival. Threatened Species Day also falls on 7 September, marking a time to reflect on the impacts we have had in the past and how we can protect these species into the future. We once again held the annual Threatened Species

Art Competition in recognition of these significant dates. Children across the Macarthur region were asked to prepare an art piece depicting a local threatened species and explain why they chose that species. A total of 661 entries were received, a massive increase on the previous year's total of 332 entries. Entries featured a variety of local threatened species including the Powerful Owl, Eastern Quoll, Cumberland Plain Land Snail and the Spiked Rice Flower.

STY TIMES

The Macarthur Nature Photography Competition celebrated its ninth year, and continued to be a great success. The competition is held in partnership with neighbouring councils across the Macarthur region and aims to engage the community with their local environment through enhancing appreciation and fostering stewardship of natural assets.

A record number of 441 entries were received compared to the previous year's total of 240. Images reflected the diverse natural and environmental heritage of the Macarthur region, showcasing a range of subject matter including misty waterfalls, picturesque woodland expanses and detailed macro shots of spiders and other insects.

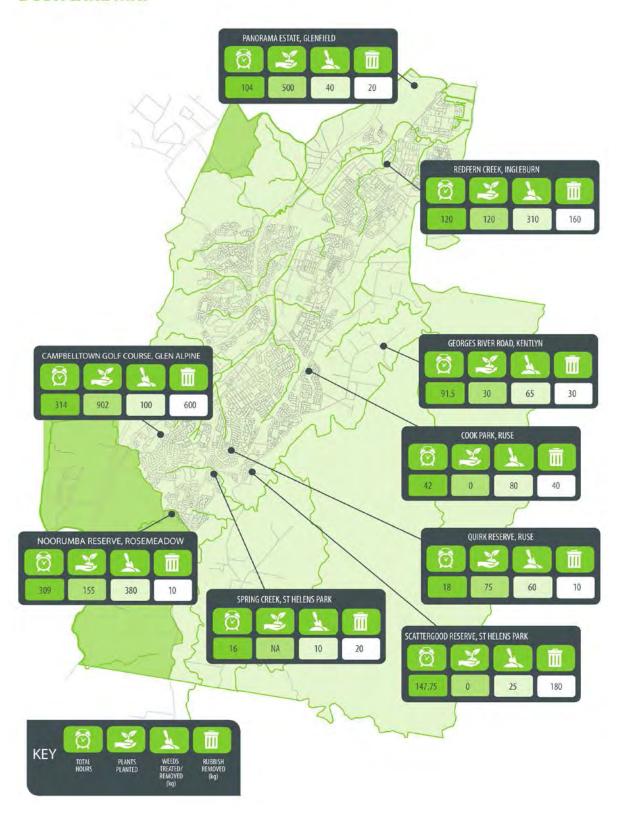
For the first time in the competition's history, the awards night was hosted by a local high school, Campbelltown Performing Arts High School. Students provided catering, sound and technical assistance, musical entertainment and public speaking duties. In doing so, a number of curriculum-based learning outcomes were achieved, enabling students to receive genuine real-life professional experiences that can be acknowledged in their curriculum vitae as they seek work and other opportunities.

Environmental education in child care rentres

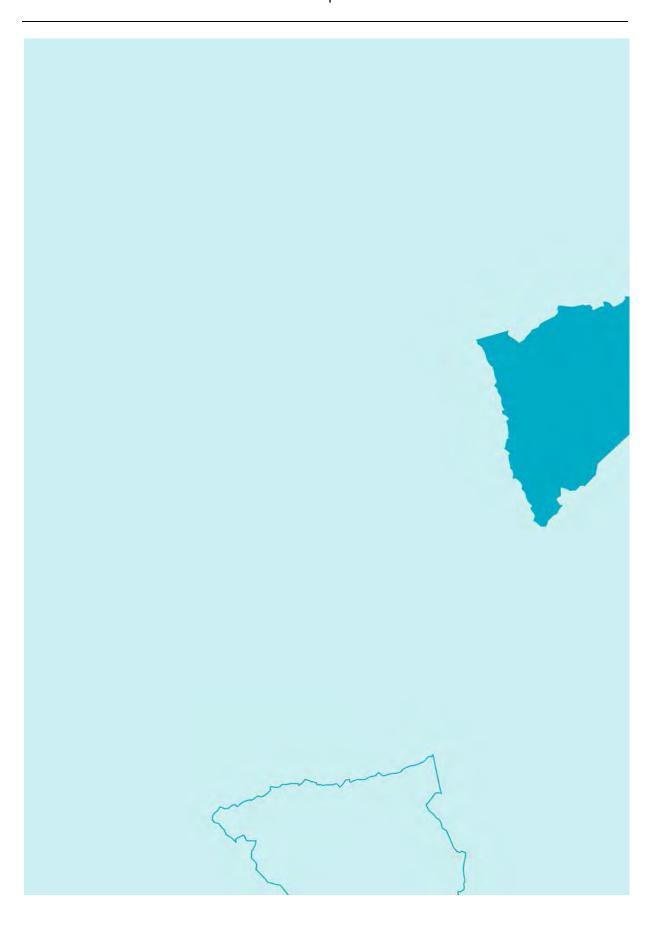
We continued to engage with Council child care centres through a number of sustainable and environmental educational activities. During the reporting period, 10 child care centres received either a compost or worm farm workshop to demonstrate simple and effective ways of reducing food waste.

We also participated for the first time in International Composting Awareness Week (ICAW). Gardening personality, Costa Georgiadis from ABC's Gardening Australia, also attended a child care centre to take part in a compost workshop.

BUSHCARE MAP



			Rep	Reporting year			
Category	Indicator	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	4 year trend
	Number of community events	13	19	92	51	74	←
Community	Number of Bushcare locations	3	4	1	6	~	←
	Amount of Bushcare volunteer hours completed	615	692	984	751	1028	←
	Estimated population	150,318	151,173	152,612	154,538	156,572	←
	Estimated number of residential properties	50,466	50,805	51,333	51,920	52,269	←
Population	Estimated number of business properties	2768	3776	2787	2805	2819	←
	Estimated number of farmland properties	19	19	64	99	64	→
	Estimated number of mining properties	~	~	~	~	7	











OUR HERITAGE

Heritage Festival

The National Trust Heritage Festival was held between 11 April and 26 May 2015 and explored the theme of Conflict and Compassion' in the spirit of the Anzac Centenary. In recognition of the theme, we focussed on how past events have shaped Campbelltown City's local identity.

A range of events were held as part of the festival, paying particular respect to our Indigenous heritage and local artistic communities, as well as highlighting the supreme sacrifice made by men and women during World War I. They included:

- an exhibition featuring the history of nurses and medical organisations from Campbelltown that aided the war effort
- a special display of new World War I memorabilia accompanied by a 3D model of a Gallipoli battleground
- a free author talk by renowned Australian writer, Peter Rees, providing a unique insight into his highlyacclaimed and profoundly moving book, The Other ANZACS: The Extraordinary Story of Our World War I Nurses
- a Heritage Forum at the Campbelltown Arts Centre, titled 'Art and Wedderburn', with the panel discussion exploring the suitability of artist communities in relation to studio practices.

The community was also able to explore the Macarthur region's unique natural heritage, joining a walking tour of the Dharawal National Park to learn about the Indigenous heritage of the park, providing a fresh look at the landscape from a Koori perspective.

NAIDOC Week

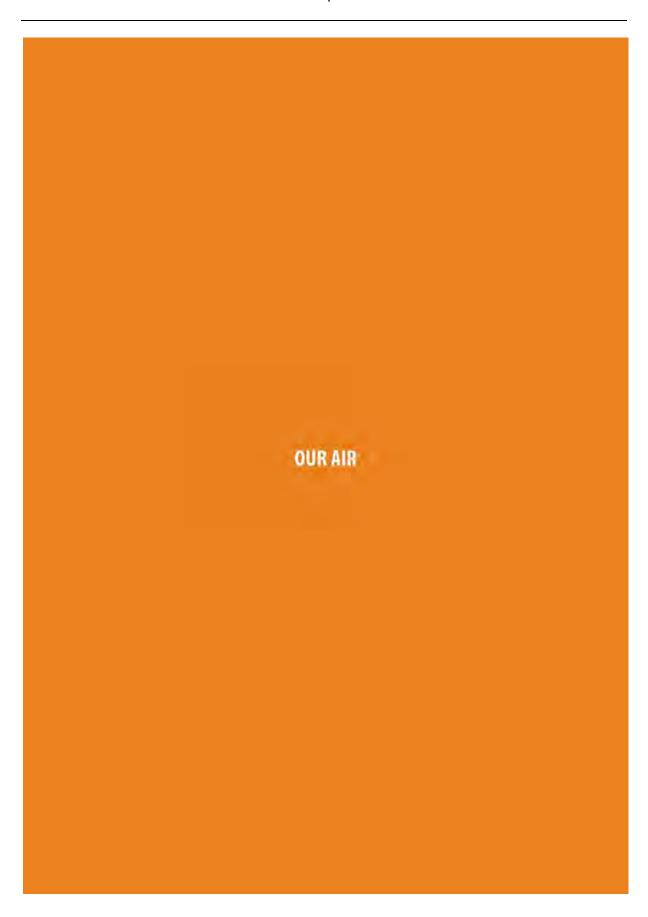
NAIDOC Week is held each year to celebrate the history, culture and achievements of Aboriginals and Torres Strait Islanders.

We recognised NAIDOC Week from 5 to 12 July, with a host of events aimed at sharing the richness of the Australian Indigenous people's culture and heritage. This year's NAIDOC theme was 'We all Stand on Sacred Ground: Learn, Respect and Celebrate', highlighting Aboriginal and Torres Strait Islander peoples' strong spiritual and cultural connection to land and sea.

As part of local celebrations, we hosted a flag raising ceremony, followed by a street march and Community Fun Day at Bradbury Oval. A NAIDOC touch football competition was also held at Minto, including a lunch and activities for children.

	Reporti
	Ē
;;;	
UR HER	
8	

Catamory							
(infant	Indicator	2010-2011	2010-2011 2011-2012		2012-2013 2013-2014	2014-2015	4 year trend
	Number of heritage items listed on the NSW State						
Heritage	Heritage Register	71	71	71	22	77	1
	Number of heritage items listed on the Local						
	Heritage Register	105	105	105	105	105	1
	Amount of funding for conservation projects from						
	Council's Local Heritage Fund (\$)	2000	2000	2,000	2,000	000'9	←
	Number of development applications considered by	. 2					
	the Heritage Protection	4	~	0	7	0	\rightarrow
	Number of major heritage events	~	9	9	9	7	←









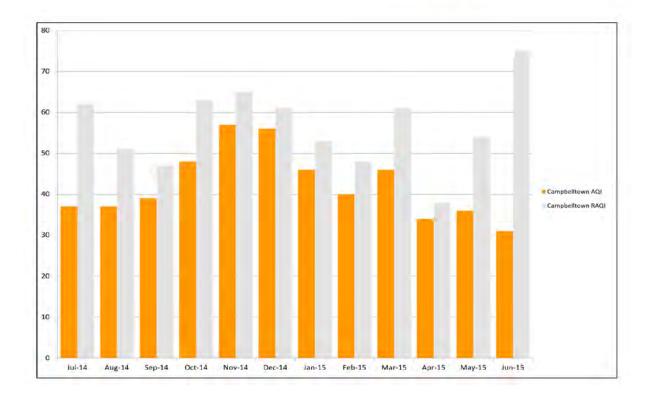
OUR AIR

REGIONAL AND LOCAL AIR QUALITY INDEX

The State Government measures and records ambient levels of air pollutants across Sydney, Illawarra, the Lower Hunter and selected rural sites around NSW twice daily. Monitoring stations located in the Sydney South West Region include Bargo, Bringelly, Camden, Campbelltown West and Oakdale. The information provided by these stations is summarised into a Regional Air Quality Index (RAQI) score and a site specific Air Quality Index (AQI) score. Both index scores assist to identify the nature and severity of air pollution within the LGA.

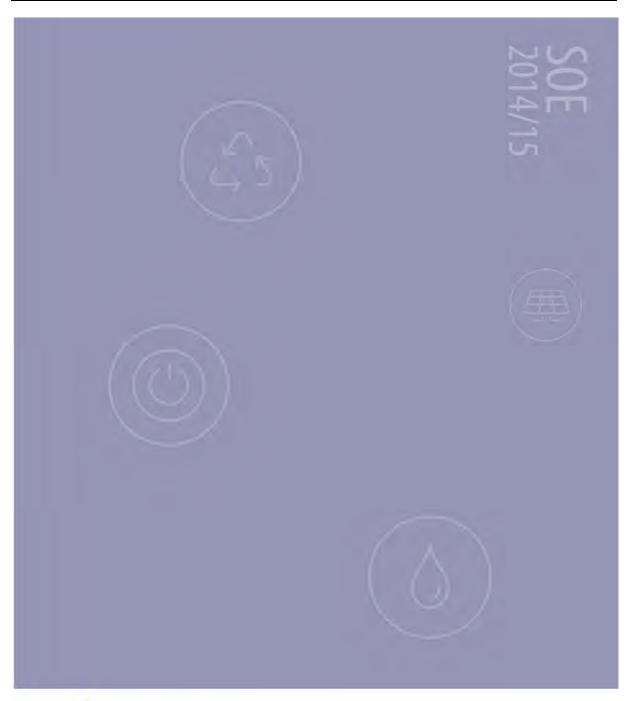
The RAQI and site specific AQI are based on the five criteria pollutants (as per national standards) plus visibility (as per a standard set by NSW). These values are categorised as very good, fair, poor, very poor or hazardous. Very good has a value of 0-33; good has a value of 34-66; fair has a value of 67-99; poor has a value of 100-149; very poor has a value of 150-199 and hazardous air quality has a value of greater than 200.

The following graph illustrates the monthly averages of the RAQI for South West Sydney and the site specific AQI for Campbelltown West. During the reporting period, the RAQI average was found to be 'good' with a score of 56 and the AQI average was found to be 'good' with a score of 42.



r		
b		
r	_	-
7		=
H		
E		=
7	=	=
h		_

Category	Indicator	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	4 year trend
	Macarthur Air Quality Index rating	p009	p009	p009	900 <u>9</u>	p005)	\$
	Sydney South West Regional Air Quality Index rating	p005	Fair	p009	p005	000g	\$
All Quality	Air quality complaints received by Council	74	54	%	83	107	←
	Air quality complaints received by the OEH	70	18	H	2	2	\rightarrow
		33	23	23	73	N/A	





PO Box 57, Campbelltown NSW 2560 Phone: 02 4645 4000 Facsimile: 02 4645 4111 Visit our website at campbelltown.nsw.gov.au

3. DEVELOPMENT SERVICES

3.1 Development Services Section Statistics October 2015

Reporting Officer

Acting Manager Development Services

Attachments

Development Services application statistics for October 2015 (contained within this report)

Purpose

To advise Council of the status of development and other applications within the Development Services section.

Report

In accordance with Council's resolution of 23 August, 2005 that Councillors be provided with regular information regarding the status of development applications, the attachment to this report provides details of key statistics for October 2015 as they affect the Development Services section.

Officer's Recommendation

That the information be noted.

Committee's Recommendation: (Kolkman/Lound)

That the Officer's Recommendation be adopted.

CARRIED

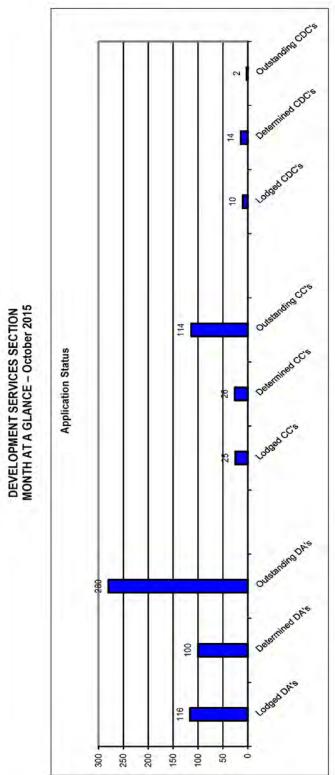
Council Meeting 15 December 2015 (Hawker/Rowell)

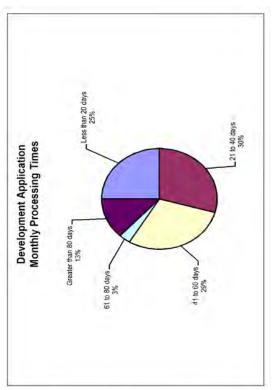
That the Officer's Recommendation be adopted.

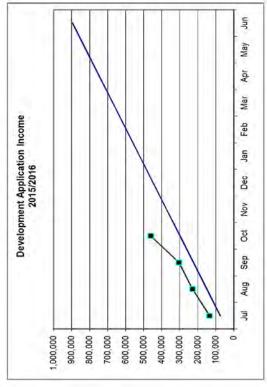
Council Resolution Minute Number 227

That the Officer's Recommendation be adopted.

ATTACHMENT 1







3.2 The Ability Of Council To Monitor And Control Affordable Housing Properties In Terms Of Occupancy And Rental Pricing

3.2 The ability of Council to monitor and control Affordable Housing properties in terms of occupancy and rental pricing

Reporting Officer

Acting Manager Development Services

Attachments

Nil

Purpose

Council at its meeting held 27 July 2015, raised a Question without Notice concerning Council's ability to regulate Affordable Housing Properties. This report provides information on Council's role in the regulation of Affordable Rental Housing.

History

The State Environmental Planning Policy (Affordable Rental Housing) 2009 (ARHSEPP) was gazetted on 31 July 2009 following two years of global recession which was triggered by the subprime mortgage crisis in the United States. The globally connected nature of financial markets meant that the shock in international markets was felt in Australia. Financial asset prices declined sharply and accessing international capital became increasingly difficult. More broadly, business and consumer confidence fell, as did external demand, and domestic spending weakened. Investment in the NSW property market was very low and residential property developers found it difficult to obtain finance at that time. This lead to fewer dwellings being constructed than was required to meet demand and housing affordability grew as a key issue at this time within the Sydney Metropolitan Area and remains so today.

Given the circumstance surrounding the inception of ARHSEPP it can be seen in many ways as an attempt by the NSW State Government to offer an incentive to community housing providers, property developers and families to invest in the residential housing market to address housing affordability, and provide for the rising demand for affordable accommodation especially amongst key workers. These affordability issues have since increased following periods of stronger economic growth, low interest rates and changes to the rules for Self-Managed Superannuation Funds which encouraged property investment and speculation which all contributed to rising housing costs during a period of low wage growth.

3.2 The Ability Of Council To Monitor And Control Affordable Housing Properties In Terms
Of Occupancy And Rental Pricing

Over the years since the commencement of ARHSEPP Council has received a number of development applications for multi dwelling medium density residential developments such as town houses and villas as infill development within established areas. Council has also received a number of development applications for boarding house developments. Each of these development applications utilise the more generous development provisions of the ARHSEPP instead of Council's Sustainable City Development Control Plan (SCDCP) and many have been the subject of significant community objection.

The requirements of ARHSEPP are not only more lenient for developers in many areas such as private open space, minimum dwelling floor area, car parking and setbacks but they also allow for increased dwelling densities by virtue of floor space ratio bonuses. The ARHSEPP is also silent on many development standards and requirements contained within the SCDCP.

Many members of the local community as well as objectors to this type of development are confused about the use of these more generous State mandated development standards in lieu of Council's Local Environmental Plan and Sustainable City Development Control Plan. Furthermore they feel a degree of suspicion concerning the future occupants of affordable rental housing often confusing affordable rental housing with public housing. Questions have also been raised concerning the legitimacy of reduced rental arrangements in affordable rental housing.

Report

What is the ARHSEPP?

The ARHSEPP is a State Government planning policy that applies to the whole of the State. The way it was drafted specifically provided that if there is any inconsistency between this policy and any other environmental planning instrument, the ARHSEPP prevails over the other policy to the extent of the inconsistency and therefore, effectively overrides all relevant Council planning policy. Furthermore many of the few standards contained within the ARHSEPP to control the delivery of affordable housing development are written as "Standards that cannot be used to refuse consent". This has the effect of creating generous minimum standards which if satisfied, the consent authority has no power to refuse the consent or enforce a higher development standard.

The ARHSEPP's aims are as follows:

- (a) to provide a consistent planning regime for the provision of affordable rental housing
- (b) to facilitate the effective delivery of new affordable rental housing by providing incentives by way of expanded zoning permissibility, floor space ratio bonuses and non-discretionary development standards
- (c) to facilitate the retention and mitigate the loss of existing affordable rental housing

3.2 The Ability Of Council To Monitor And Control Affordable Housing Properties In Terms
Of Occupancy And Rental Pricing

- (d) to employ a balanced approach between obligations for retaining and mitigating the loss of existing affordable rental housing, and incentives for the development of new affordable rental housing
- (e) to facilitate an expanded role for not-for-profit-providers of affordable rental housing
- (f) to support local business centres by providing affordable rental housing for workers close to places of work
- (g) to facilitate the development of housing for the homeless and other disadvantaged people who may require support services, including group homes and supportive accommodation.

To achieve these aims the ARHSEPP introduced a variety of affordable housing types to be provided in residential areas throughout the State including; infill affordable housing, secondary dwellings (granny flats), boarding houses, supportive accommodation, group homes and residential flat buildings by or on behalf of a public authority or community housing providers. The ARHSEPP went further to reduce costs and stream line the approval process for secondary dwellings (granny flats) and group homes by making them Complying Development subject to certain criteria. This means proponents of these forms of affordable housing development can avoid the need to obtain Council's Development Consent and a Construction Certificate by instead getting a Private Certifier to issue a Complying Development Certificate.

What controls apply to Infill Affordable Housing?

"Infill affordable housing" means development for the purposes of dual occupancies, multi dwelling housing or residential flat buildings. Infill affordable housing is generally proposed in existing residential areas and often generates significant objection from the established local community.

Infill affordable housing can achieve floor space ratio bonuses over and above floor space ratio controls specified in Council Policy if they include at least 20 per cent of floor space as affordable housing. The remainder of the dwellings can be sold off to private individuals or companies or retained and rented by the developer. The floor space ratio bonus increases as the percentage of affordable housing increases above 20 per cent.

Standards then cannot be used to refuse consent include minimum site area, landscaped area, solar access to living rooms and private open space, parking and dwelling size despite the proposal not complying with Council's standards. The design of infill affordable housing must also take into consideration the provision of the Seniors Living policy: Urban Design Guidelines for Infill Development and should consider the compatibility of the design of the development with the character of the local area.

Where dwellings are proposed to be used for the purpose of affordable housing a consent authority must impose conditions requiring that those dwellings are used for affordable housing for 10 years from the date of the occupation certificate and this restriction must be registered against the title of the property under Section 88E of the *Conveyancing Act 1919*. The restriction on the title must also include an obligation for all dwellings used for affordable housing to be managed by a registered community housing provider.

3.2 The Ability Of Council To Monitor And Control Affordable Housing Properties In Terms
Of Occupancy And Rental Pricing

What controls apply to Boarding Houses?

"Boarding house" means a building that:

- (a) is wholly or partly let in lodgings
- (b) provides lodgers with a principal place of residence for three months or more
- (c) may have shared facilities, such as a communal living room, bathroom, kitchen or laundry
- (d) has rooms, some or all of which may have private kitchen and bathroom facilities, that accommodate one or more lodgers

but does not include backpackers' accommodation, a group home, hotel or motel accommodation, seniors housing or a serviced apartment.

Boarding houses are a type of residential accommodation and are only permissible in residential, some commercial and mix use zones. Boarding houses can be constructed with floor space ratios up to the maximum applying to any form of permissible development on the land.

Standards that cannot be used to refuse consent include building height up to the maximum permissible in the zone, solar access to communal living areas, private open space, parking and room size.

Minimum standards include one communal living room per five bedrooms, bedrooms cannot exceed 25sqm, no more than two adult lodgers per room, 20 or more lodgers requires a manager and boarding houses must be deemed to be compatible with character of the local area.

What is Affordable Housing?

"Affordable housing" is defined under the ARHSEPP as housing for very low income households, low income households or moderate income households, being such households as prescribed by the regulations or as provided for in an environmental planning instrument. Under the ARHSEPP, a household is taken to be a very low income household, low income household or moderate income household if the household:

- (a) has a gross income that is less than 120 per cent of the median household income for the time being for the Sydney Statistical Division (according to the Australian Bureau of Statistics) and pays no more than 30 per cent of that gross income in rent
- (b) is eligible to occupy rental accommodation under the National Rental Affordability Scheme and pays no more rent than that which would be charged if the household were to occupy rental accommodation under that scheme.

The following table shows approximate maximum gross annual income that can be received by prospective and current tenants in order to meet the eligibility criteria under the National Rental Affordability Scheme for Affordable Rental Housing in 2015 to 2016:

3.2 The Ability Of Council To Monitor And Control Affordable Housing Properties In Terms
Of Occupancy And Rental Pricing

Household Size	Maximum Gross Annual Income
1 Adult	\$48,707
2 Adults	\$67,340
1 Adult, 1 child	\$64,862
1 Adult, 2 children	\$81,017
2 Adults, 1 child	\$83,495
2 Adults, 2 children	\$99,650
2 Adults, 3 children	\$115,805
Each additional child	\$16,155

Affordable rental housing is housing offered at a price that very low, low and moderate income households can reasonably afford to pay whilst meeting costs of living.

Ideally households would only be required to pay up to 30 per cent of gross annual income as rent as paying more than this leads to Housing Stress. Housing Stress is defined as a situation where the cost of housing (either as rental or mortgage payments) is high relative to the household income. The maximum percentage of gross annual income payable in rent to Registered Community Housing providers is capped at 40 per cent.

Rents are set for affordable rental housing properties at 74 per cent of fair market rent for the local area and standard of accommodation and are established by an independent valuer. Rents can only increase by the published consumer price index or as prescribed by the National Rental Affordability Scheme for the first four years. Following this, the rent can be reviewed again by independent valuation.

What is the National Rental Affordability Scheme?

The National Rental Affordability Scheme (NRAS) is a Federal and State Government backed incentive scheme for property investors creating a new investment asset class designed to:

- encourage investors to develop additional new affordable houses for the rental market
- provide an affordable rent program for average Australian wage earners as individuals, couples and families
- yield higher than usual returns for investors in the residential property market
- increase the number of rental dwellings built through the stimulation of demand and investment, while supporting the building industry and related jobs and the Australian economy.

The government aims to achieve this by providing a tax incentive for investors for 10 years for NRAS properties in return for the properties being rented at a discounted rate to eligible tenants through registered community housing providers. This has the effect of significantly improving the rental affordability in high growth areas for very low, low and middle income families by stimulating the building of rental homes.

The NRAS scheme is not housing commission, public or social housing. NRAS properties are rented to private individuals and families with incomes not exceeding the established thresholds. It is estimated that approximately 1.5m Australians are eligible to be NRAS tenants. There are strict guidelines for properties to qualify under the NRAS scheme. NRAS properties must be close to transport, schools, shops etc. making NRAS properties desirable for tenants and property investors. There are also specified guidelines for the management of NRAS properties. The manager is responsible for ensuring that tenants meet the income criteria and that they are reviewed against the criteria at least every two years.

For our society to operate efficiently and effectively, people need affordable forms of accommodation and need to live in close proximity to the areas they work. This generally means that they should not have to spend more than 30 per cent of their household income on rent. Similar with key workers such as nurses, teachers, police officers, fire fighters, ambulance operators and other contributing members essential to our society, all people need to be able to access housing which is affordable.

The NRAS incentive is available to nearly all dwelling types such as houses, apartments, villas, flats and town houses.

The design and quality of NRAS dwellings are no different to what was already going to be delivered into the market by the developer. In fact, the Government in its criteria of assessment spends considerable focus on insuring this is the case. So a great quality build with the added advantage of a NRAS endorsement, provides a better return guaranteed to investors.

Who operates Affordable Rental Housing?

Registered Community Housing Providers are defined under the *Housing Act 2001* as an organisation that provides housing (other than public housing) for people on very low, low or moderate income or people with additional needs. These include not-for profit, religious or community based organisations. Types of community housing providers include:

- housing providers
- religious or church owned providers
- co-operate housing providers.

Housing providers are professional not-for-profit organisations that mainly manage rental housing but often provide other support services as well such as health, mental health, disability, financial, housing support and other support services to the needy. The largest providers are significant businesses with large asset bases with some working nationally. There are over 50 registered Community Housing Providers operating in NSW.

Council has no involvement, nor does it have any regulatory powers in relation to the selection and moving of tenants.

3.2 The Ability Of Council To Monitor And Control Affordable Housing Properties In Terms
Of Occupancy And Rental Pricing

Who regulates Community Housing Providers?

Community Housing Providers are required to be registered by the NSW Government, Registrar of Community Housing. This Government body is responsible for registering and regulating all Community Housing Providers operating in NSW under the *Housing Act 2001* (NSW) and the National Regulatory System for Community Housing (NRSCH) established by the Community Housing Providers National Law which is contained in an appendix to the *Community Housing Providers (Adoption of National Law) Act 2012 (NSW)*. The Registrar is an independent statutory officer reporting directly to the NSW Minister for Family and Community Service. The Registrar is supported by two specialist teams of staff including analysts, financial analysts, sector liaison staff and administrators.

How are Community Housing Providers regulated?

The ongoing regulation of the registered community housing sector is actively managed through risk based compliance promotion and assessment to ensure that all registered Community Housing Providers maintain performance in accordance with the National Regulatory Code, which is contained in the Community Housing Providers National Law.

The proactive monitoring of registered providers involves a combination of periodic formal compliance assessments which occur annually for large providers and every two years for smaller providers along with ad-hoc compliance assessments.

Ad-hoc compliance assessments may be triggered by investigation and notified complaints, other intelligence received by the Registrar, or by anomalies in audit materials picked up by the Registrar's team of analysts.

Complaints and notification can be made by anybody with concerns that registered housing providers are failing to meet any of their obligations. Complaints and notification can be made confidentially, anonymously, by tenants, tenant advocates, staff of providers, ex-staff of providers, neighbours or members of the public. Any complaint or notification received is treated seriously as the Registrar considers this an important source of information and intelligence for the Registrar.

Notifications and complaints can be made to the Registrar on any issue and the Registrar has the powers to intervene to resolve disputes in most any circumstance between individual tenants and the registered providers.

Disputes on complaints relating to:

- termination of tenancy agreements
- rent and rent increases
- repairs and maintenance
- shared facilities charges
- breach of rental tenancy agreement.

are however, resolved by the Consumer and Commercial Division of the NSW Civil and Administrative Tribunal.

3.2 The Ability Of Council To Monitor And Control Affordable Housing Properties In Terms
Of Occupancy And Rental Pricing

Complaints relating to disputes over eligibility to affordable housing programs, priority, entitlement to different types of housing, emergency housing and forced relocations, succession of tenancy, disability modification to dwellings and calculation of the extent of rental subsidy is handled by another body the Housing Appeals Committee.

How do prospective tenants find Affordable Rental Housing properties?

Advice from the NSW Federation of Housing Associations suggests that there are three main ways that people in need of affordable housing are able to search for and secure an affordable housing dwelling:

- (a) referral of prospective social housing tenants by Housing NSW to community housing providers
- (b) direct application to a community housing provider by people with prior knowledge of their existence
- (c) advertisements for rental properties by Community Housing Providers on websites such as realestate.com.au and Domain.

The federation advised that the waiting lists of Community Housing Providers are generally long, but there have been some instances of Community Housing Providers not having any applicants to occupy affordable housing properties. There appears to be a low level of awareness of the target market about the existence of affordable housing and Community Housing Providers.

How do Community Housing Providers check tenant's incomes?

Registered Community Housing Providers asses the eligibility of prospective tenants to occupy affordable rental housing by reviewing past group certificate income/tax returns to establish average annual income and request the last 12 weeks of payslips at the point of application. Once tenants commence a residential tenancy agreement they are required to provide their group certificates to the registered Community Housing Provider at the end of each financial year and this is cross referenced with bank statements and income tax returns as part of the residential tenancy obligation.

How can Council control Infill Affordable Housing development approved under the ARHSEPP?

Clause 17 of the ARHSEPP provides that infill affordable housing development must be used for affordable housing for 10 years. In this regard a consent authority has an obligation to impose conditions on the consent to the effect that:

- (a) for 10 years from the date of the issue of the occupation certificate:
 - (i) the dwellings proposed to be used for the purposes of affordable housing will be used for the purposes of affordable housing
 - (ii) all accommodation that is used for affordable housing will be managed by a registered community housing provider, and
- (b) a restriction will be registered, before the date of the issue of the occupation certificate, against the title of the property on which development is to be carried out, in accordance with section 88E of the *Conveyancing Act 1919*, that will ensure that the requirements of paragraph (a) are met.

3.2 The Ability Of Council To Monitor And Control Affordable Housing Properties In Terms Of Occupancy And Rental Pricing

Whilst it is not certain, Council may be able to justify including a further condition on infill affordable housing development that requires the restriction referred to above, to include a term to the following effect:

"The owner of the land must for 10 years from the date of the registration of this instrument provide Campbelltown City Council with an annual statutory declaration by 30 June/31 December each year that includes:

- (a) details of the gross income of each household that has occupied the dwelling on the land during the preceding 12 months
- (b) details of the gross rent paid by each household that has occupied the dwelling on the land during the preceding 12 months
- (c) the name of each registered community housing provider who has managed the dwelling on the land in the preceding 12 months."

Conclusion

The infill affordable rental housing occupancy and rental pricing appears to be heavily regulated by the State and Federal Governments and the associated approved registered Community Housing Providers. Imposition of the additional condition detailed above, could be applied to future development consents to further reinforce owners obligations but it may be superfluous given the requirements of tenancy agreement with Community Housing Providers.

Council has no power in the management of affordable housing however, Council (as the Consent Authority) retains its powers with respect to ensuring ongoing consent compliance and can/will act in the cases where the operation of the housing type is found to be in breach of their consent.

Officer's Recommendation

- 1. That the information be noted.
- 2. That any future development consents issued by Council for Infill Affordable Rental Housing under the ARHSEPP include a condition as described above requiring the owners of the development to furnish Council with an annual statutory declaration detailing the taxable income of occupants and the details of the registered community housing provider who has managed the dwelling(s).

Committee's Recommendation: (Oates/Kolkman)

That the Officer's Recommendation be adopted.

Amendment: (Greiss/Thompson)

That the information be noted.

CARRIED

Council Meeting 15 December 2015 (Hawker/Rowell)

That the information be noted.

Council Resolution Minute Number 227

That the information be noted.

3.3 Seniors Housing Site Compatibility Certificate Application Update - St Johns Church Site, George Street, Campbelltown

Reporting Officer

Acting Manager Development Services

Attachments

- 1. Letter to Campbelltown City Council advising determination of Site Compatibility Certificate Application and Certificate of Site Compatibility issued by the Department of Planning and Environment (contained within this report)
- 2. Site Compatibility Certificate Determination Assessment Report (contained within this report)

Purpose

To update Council of the outcome of an application for a Site Compatibility Certificate for a Seniors Housing Development at the St John's Church site, George Street Campbelltown.

Report

At the Council meeting of 14 October 2014 Council resolved to write to NSW Planning and Environment raising concerns and issues that needed due consideration as part of the assessment of a Site Compatibility Certificate (SCC) application for Seniors Housing at the St John's Church site in George Street. The project was described at the time as being for a Seniors Housing development which included a residential care facility, self-care housing and ancillary community facilities, services and a café.

The submission Council made to NSW Planning and Environment requested that should a SSC be issued then it should be conditional upon the following issues detailed in the submission being satisfactorily addressed and responded to:

a. Heritage Impacts – The SCC needs to ensure that any future development of the site has careful regard to the important and significant heritage value of the site. The site is home to the St Johns Church group which is the subject of a Permanent Conservation Order No. 193 and is a State Significant Heritage Item. St Johns Catholic Church is understood to be the oldest catholic church still standing in Australia and is therefore of premium conservations value both in terms of its build fabric and the surrounding curtilage. Council considers the retention and enhancement of the significant heritage value of the site as of critical importance to any development that may be considered for the site. Although it is welcomed that such a development could ensure the retention and protection of the heritage items for the longer term, this aspect will be given significant consideration and importance during the assessment of any development application lodged with the Council.

- b. Visual Prominence and Landscaping/Skyline Impacts The SCC needs to ensure that notwithstanding its possible residential compatibility, an SCC must not be issued in a way that infers an approval to adversely impact on the visual importance of the site. Any future development of the site has to have careful regard to the significant and prominent position within the Campbelltown City that the site enjoys. The site sits high on the hill directly to the east of Campbelltown's CBD and is highly visible within the local and wider areas. The site is visible from some distance including from the Scenic Hills and the Mt Annan Botanic Gardens to the west. Council considers the protection and retention of this visually prominent and important landscape and skyline of critical importance to the City, its identity and its future. The Council has consistently demonstrated this strong stance against non-sympathetic development of its important visual landscapes. As with the matters of heritage significance, this aspect will be given significant consideration and importance during the assessment of any development application lodged with the Council.
- c. Traffic and Transport Impacts The SCC needs to have regard to the ability for the surrounding road networks to suitably accommodate traffic generated by such a development as that proposed. Many streets in the surrounding locality are also steep which makes any increase in traffic and on street car parking problematic. George St in particular is narrow with double lines down the centre of the carriage way. Given the narrowness of the road it is not possible to park motor vehicles and maintain 3 metres of clearance to the double lines. Such an increase in residential densities in the locality may necessitate road upgrades to the local road networks in order to maintain an adequate level of vehicular and pedestrian safety and appropriate service levels for people living in surrounding streets. Furthermore whilst a public bus service operates in the locality, the steepness of the area and the lack of foot path is not conducive to ready access to bus stops by mobility challenged senior residents.
- d. Stormwater Capture, Reuse and Disposal The SCC needs to have regard to the fact that the site is currently largely undeveloped and when having regard to the change from a predominantly pervious environment to an impervious environment, it is of high concern that the receiving downstream draining infrastructure is insufficient to cope with the large scale redevelopment of the site. As a consequence the SCC must give regard to the capacity for the development to sensitively manage the post development stormwater leaving the site to ensure it does not exceed the capacity of the downstream drainage network and create localised flooding issues.
- e Amenity Impacts for Surrounding Land Users The SCC needs to have regard to the fact the increase in residential density will lead to a significant erosion of residential amenity in the locality. The increased pressure on the local road network to accommodate traffic and car parking on weekends generally, and especially around special days likely to trigger peak visitation numbers i.e. Christmas, Easter, Mother's Day, Father's Day. The height of any proposed structure over two stories is likely to lead to privacy impacts due to overlooking of surrounding residential properties and will need to be sensitively managed to ameliorate negative amenity impacts on the existing users of surrounding sites.

- f. Built Scale and Density Relationships with the Local Neighbourhood The SCC needs to have regard to the fact that the surrounding neighbourhood is predominately low density single and two storey detached dwellings and the introduction of a multi storey high density form of development is likely to overwhelm the existing built scale and result in a significant departure from the current and expected built form of the surrounding neighbourhood. As with others, this aspect will be given significant consideration and importance during the assessment of any development application lodged with the Council.
- g. Emergency Services Access The SCC needs to have regard to the fact that a high density Seniors Housing project is going to increase the demand for emergency services, and as such it needs to be considered whether safe, fast and convenient vehicular access to and within the site is/can be provided or designed to ensure access for all types of emergency vehicles.

In late May 2015, Council received advice that the Department of Planning had issued a Certificate of SCC for the subject site shown in attachment 1.

On review, it was noted that despite the matters raised by the Council, the SSC contained just one requirement imposed upon the determination being the need for the applicant to consult with the Heritage Division of the Office of Environment and Heritage during the preparation of concept plans prior to lodgement of the development application with Council. It appears that the other issues raised by Council in its submission were not considered relevant to the SCC assessment process and as such, did not warrant inclusion in the SCC determination.

Following receipt of this advice Council contacted the responsible officer in the Department of Planning to seek further clarification as to why the other requirements raised by Council were apparently not considered. The officer advised that the Council's submission was considered as part of the assessment of the application and following the assessment it was deemed appropriate to issue the SCC with only the requirements to consult with the Heritage Office prior to lodging the development application with Council.

Subsequently, on 25 August 2015, Council officers made an application under the *Government Information (Public Access) Act 2009 (GIPA Act 2009* to obtain a copy of the SCC application assessment report. On 22 September 2015 a decision was made by the government's Public Access to Information Unit to release in full the assessment report to the Council (see attachment 2).

A review of the assessment report reveals that although the issues raised by Council were considered as part of the assessment, they were also considered on the most part to be matters outside the scope of the SCC assessment process and could be better dealt with as part of the development application process. Specifically the assessment report states:

"Council has raised a number of concerns regarding the potential impact of the proposal on the surrounding area. These concerns are primarily related to the built form, visual and traffic impacts and density of development, which are detailed design matters that are appropriately addressed at the development application stage. Clause 24(3) states that the consent authority may refuse or reduce the size and scale of a development application submitted in relation to a site compatibility certificate.

A site compatibility certificate can only assess the site's suitability for the more intensive use of seniors housing particularly in relation to the site's location relative to support services and infrastructure. Such assessment will take into account the matters discussed below to determine whether the intrinsic built form of the proposed use is appropriate in the location. As such, this assessment need only ensure the use proposed could be accommodated in a compatible built form and design layout."

Notwithstanding the above, what is of concern is the statement made by the assessing officer within their report "that the consent authority may refuse or reduce the size and scale of a development application submitted in relation to a site compatibility certificate". This statement appears to have been made in order to provide the Council with some level of comfort that although an SCC may be approved by the government, the power still lies with the Council to either refuse or allow a future development on its terms.

Although this statement is technically correct, in that the consent authority would have the last say through the development assessment process, it fails to give regard to the fact that the proposal for a Seniors Living Development on the subject site to a scale as proposed, would in all likelihood be of a value in excess of \$20 million for which the consent authority would be by default, the Sydney West Joint Regional Planning Panel. In these circumstances, the Council appears to have little recourse other than to make a submission on any development application lodged with the Council for the subject development.

Officer's Recommendation

- 1. That the information be noted.
- 2. That in the circumstances where a development application is lodged with the Council for a Seniors Living Development on the subject site, that a report be provided to the Council in order for it to make a submission to the Sydney West Joint Regional Planning Panel where warranted.

Committee's Recommendation: (Greiss/Lound)

That the Officer's Recommendation be adopted.

CARRIED

Council Meeting 15 December 2015 (Hawker/Rowell)

That the Officer's Recommendation be adopted.

Council Resolution Minute Number 227

That the Officer's Recommendation be adopted.

ATTACHMENT 1



MAY26/15 01014150

Our ref: 14/20425

Ms Lindy Deitz A/General Manager Campbelltown City Council PO Box 57 Campbelltown 2560

Dear Ms Deitz

Determination of application for a site compatibility certificate for 34 Sturt St, Campbelltown - State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004

I refer to the above application for a Site Compatibility Certificate for the above site in Campbelltown. I have considered your comments in my assessment of this application.

I have determined the application under clause 25(4)(a) of State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004 by issuing a site compatibility certificate subject to satisfaction of certain requirements specified in the certificate (clause 25(7)). I have attached the Certificate of Site Compatibility.

If you have any questions in relation to this matter, please contact Ms Rachel Cumming, Director, Metropolitan (Parramatta), at the Department on (02) 9860 1174.

Yours sincerely

Carolyn McNally Secretary 2

Encl: Site Compatibility Certificate

IM MW-

State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004 Certificate of Site Compatibility

I, Secretary of the Department of Planning and Environment, determine the application made by Southern Cross Care by issuing this certificate under clause 25(4)(a) of the State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004.

I certify that in my opinion:

- the site described in Schedule 1 is suitable for more intensive development; and
- the development described in Schedule 1 is compatible with the surrounding environment having had regard to the criteria specified in clause 25(5)(b); and
- that development for the purposes of seniors housing of the kind proposed in the development application is compatible with the surrounding land uses only if it satisfies certain requirements specified in Schedule 2 of this certificate.

Carolyn McNally Secretary

Date certificate issued: 25 -5-15

mmy

Please note: This certificate will remain current for 24 months from the date of this certificate (clause 25(9)).

SCHEDULE 1

Site description: 34 Sturt St, Campbelltown, identified as Lot 1 DP 1037742; Lot 2 DP 758217 and Lot 1 DP 246268.

Project description - Seniors housing including a residential care facility, self-care housing and ancillary community facilities, services and a café.

SCHEDULE 2

Application made by: Mr Mark Garden of Southern Cross Care (NSW and ACT)

Requirements imposed on determination:

The applicant is to consult with the Heritage Division of the Office of Environment and Heritage during the preparation of concept plans, prior to lodgement of the Development Application with Council.

ATTACHMENT 2



14/20425 Department Generated Correspondence (Y)

DEPARTMENT OF PLANNING AND ENVIRONMENT

Planning Services

SITE COMPATIBILITY CERTIFICATE DETERMINATION- STATE ENVIRONMENTAL PLANNING POLICY (HOUSING FOR SENIORS OR PEOPLE WITH A DISABILITY)

2004 FOR SITE COMPATIBILITY CERTIFICATE FOR ST JOHNS CHURCH,

CAMPBELLTOWN AT 34 STURT ST, CAMPBELLTOWN

PURPOSE

 To recommend that the Secretary issues a site compatibility certificate under clause 25(4)(a) of the State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004 (the SEPP) for seniors housing at 34 Sturt Street, Campbelltown.

RECOMMENDATIONS

- It is recommended that the Secretary:
 - o notes the attached planning officer's assessment report (Tag A);
 - considers Campbelltown City Council's comments regarding the consistency of the proposed development with the criteria in clause 25(5)(b) of the SEPP (Tag A – Attachment 3);
 - forms the opinion that the proposed development site is suitable for more intensive development;
 - forms the opinion that development for the purposes of seniors housing of the kind proposed in the site compatibility certificate application is compatible with the surrounding environment having regard to the criteria specified in clause 25(5)(b) of the SEPP;
 - forms the opinion that development for the purposes of seniors housing of the kind proposed in the site compatibility certificate application is compatible with the surrounding land uses only if it satisfies requirements specified in the certificate;
 - determines the application by signing the site compatibility certificate (<u>Tag B</u>), subject to the proposed development satisfying certain requirements specified in the certificate; and
 - signs the letters to the applicant (<u>Tag C</u>) and Council (<u>Tag D</u>) advising of this decision.

CURRENT POSITION

- Southern Cross Care (NSW and ACT) has submitted an application for a site compatibility certificate under the SEPP.
- The proposal is to develop a residential care facility, containing 107 beds and 73 self-care housing dwellings together with ancillary community facilities, services and a café, at 34 Sturt St, Campbelltown (Tag A – Attachment 2).
- The site contains the heritage listed St John's Church and Cemetery. It is proposed that St John's Church will be incorporated as part of the community centre.
- The SEPP permits seniors housing on land where it is prohibited under current zoning through a site compatibility certificate issued by the Secretary.

- A site compatibility certificate can only be issued where the proposal adjoins land zoned for urban purposes (e.g. residential or business) and where the land is suitable for more intensive development.
- Under the SEPP, the assessment for a site compatibility certificate involves only assessing the site's suitability for the more intensive use of seniors housing. In particular this assessment gauges whether the site is located in proximity to essential support services and infrastructure. The planning officer's assessment report (Tag A) takes into account the site's location and the likely impact on surrounding uses to determine whether the intrinsic built form of the proposed use is appropriate in the location. As such, this assessment need only ensure the use proposed could be accommodated in a compatible built form and design layout.
- Subsequent to the issue of a site compatibility certificate, a development application must be submitted to Council. The majority of detailed design concerns raised by Council will be assessed at the development application stage, including site layout, density and built form.
- As the site is listed on the State Heritage Register, the Heritage Division of the Office of Environment and Heritage will be involved in the assessment of the application under two mechanisms. Firstly, under the Environmental Planning and Assessment Act 1979 (the Act), the Heritage Division will be consulted as part of the integrated development application process. Under Section 60 of the Heritage Act 1977, a separate application must also be made to carry out any development in relation to land or alter a building which is listed on the State Heritage Register.
- While the Heritage Division will be consulted, it is recommended that a condition also be applied to the certificate which ensures this consultation occurs early in the project conception stage.
- The subject site is currently zoned 5 (a) Special Uses Church/Cemetery under the Campbelltown (Urban Area) Local Environmental Plan 2002 (LEP). Seniors housing is a prohibited use in this zone, but adjoining lands within the LEP are zoned for urban purposes (being zoned 2(b) Residential).
- The proposal will not result in significant environmental impact and is considered to be suitable for more intensive purposes.
- Approval of a site compatibility certificate is recommended in this instance as the proposal represents a logical use for the site, is compatible with development in the adjoining residential zone and will facilitate the re-use and restoration of an item of State Heritage significance.

Tim Hurst Islalia **Executive Director** Regions

Carolyn McNall Secretary

Deputy Secretary

Marcus Ray

Planning Services

Approved / Not Approved / Noted

Rachel Cumming (MDellagiacoma) Director, Metropolitan (Parramatta)

Phone: (02) 9860 1556

Report to the Secretary on an application for a Site
Compatibility Certificate under State Environmental Planning
Policy (Housing for Seniors or People with a Disability) 2004

File No: 14/20425

SITE: 34 Sturt St, Campbelltown, identified as Lot 1 DP 1037742; Lot 2 DP 758217 and Lot 1 DP 246268 (The site location is at Attachment 1).

APPLICANT: Southern Cross Care

PROPOSAL: Seniors housing including a residential care facility, self-care housing and ancillary community facilities, services and a café.

The proposal is for the redevelopment of a site at 34 Sturt St, Campbelltown, which contains the heritage listed St John's Church and Cemetery. The proposal includes a residential care facility containing 107 beds and 73 self-care housing dwellings together with ancillary community facilities, services and a café. The proposal would incorporate St John's Church as part of a community centre. The applicant's original submission, compiled by Planning Ingenuity, was considered to be inadequate and incomplete. Following several discussions and requests to the consultant, final information was provided in February 2015. (The planning proposal is at Attachment 2).

LGA: Campbelltown

PERMISSIBILITY STATEMENT

The site is zoned 5(a) Special Uses Church/Cemetery under the *Campbelltown (Urban Area) Local Environmental Plan 2002*. Seniors housing is a prohibited use in this zone. The objectives of this zone are to provide land for special uses which would otherwise be prohibited by the zoning of the surrounding area. This zone permits only churches or cemeteries.

Land adjoining the site is zoned 2(b) Residential B, the objective of this zone is to permit the development of a range of housing types, and to encourage a variety of forms of housing that are higher in density than traditional dwelling houses, including accommodation for older people and people with disabilities.

Although the proposed seniors housing development is not permissible within the 5(a) Special Uses Church/Cemetery zone, it adjoins land that is zoned for urban purposes, thus fulfilling clause 4(1) which requires adjoining land to be zoned for urban purposes.

CLAUSES 24(2) AND 25(5)

The Secretary must not issue a certificate unless the Secretary:

- (a) has taken into account any written comments concerning the consistency of the proposed development with the criteria referred to in clause 25(5)(b) received from the General Manager of the council within 21 days after the application for the certificate was made; and
- (b) is of the opinion that:
 - the site of the proposed development is suitable for more intensive development; and

(ii) the proposed development for the purposes of seniors housing is compatible with the surrounding environment and surrounding land uses having regard to the criteria specified in clause 25(5)(b).

COMMENTS FROM COUNCIL

Council's submission on the proposal is at Attachment 3. Council does not object to a site compatibility certificate being issued, however it lists a range of matters for consideration which are summarised below:

- Heritage Impacts the proposal should have adequate regard for the significant heritage value of the site which contains St John's Church which is the subject of a Permanent Conservation Order as a State Significant Heritage Item.
- Visual, landscape and skyline impacts the site is situated in a prominent location and is highly visible. Council regards the site as being located within a visually important landscape and skyline which is critically essential to the City.
- Traffic and Transport the proposal will generate additional traffic, which should be assessed. Council anticipates that upgrades to surrounding roads may be required, noting that George St which adjoins the proposal, is particularly narrow.
- Council notes that the steep grade of surrounding streets would impede ready access of frail senior residents to bus stops.
- Stormwater the proposal must deal with the increased overland flow.
- Local residential amenity will be adversely affected.
- Incompatible built form that the proposal's multi-storey built form will be noticeably different from the adjoining single and two storey development.
- Emergency service access needs to be assessed.

COMMENT

Council has raised a number of concerns regarding the potential impact of the proposal on the surrounding area. These concerns are primarily related to the built form, visual and traffic impacts and density of development, which are detailed design matters that are appropriately addressed at the development application stage. Clause 24(3) states that the consent authority may refuse or reduce the size and scale of a development application submitted in relation to a site compatibility certificate.

A site compatibility certificate can only assess the site's suitability for the more intensive use of seniors housing particularly in relation to the site's location relative to support services and infrastructure. Such assessment will take into account the matters discussed below to determine whether the intrinsic built form of the proposed use is appropriate in the location. As such, this assessment need only ensure the use proposed could be accommodated in a compatible built form and design layout.

SUITABILITY FOR MORE INTENSIVE DEVELOPMENT

The Secretary must not issue a certificate unless of the opinion that the site of the proposed development is suitable for more intensive development (clause 24(2)(a)):

The site of the proposed development is suitable for more intensive development (clause 24(2)(a)) as:

 The site is located within an established urban area, has good road access and is well served by public transport and located close to public open spaces, local shops and major retail and service facilities of Campbelltown City Centre.

- The proposed development form is consistent with that on adjoining sites also surrounding the cemetery - aerial photograph of the site (<u>Attachment 4</u>).
- The site would contribute to a need for seniors housing in the south west of Sydney.
- There are no environmental constraints that would preclude the development of the site for senior's housing.
- The applicant has indicated that permissible uses of the land as a church and cemetery are no longer viable. The applicant has indicated that both the church and cemetery are subject to vandalism and require ongoing restoration works. Subject to the proposal seeking and incorporating comments from the Heritage Division, as recommended, it is anticipated that the redevelopment of the site will integrate and restore the existing historic church for community use by residents and visitors.

COMPATIBILITY WITH THE SURROUNDING ENVIRONMENT AND SURROUNDING LAND USES

The Secretary must not issue a certificate unless of the opinion that the proposed development for the purposes of seniors housing is compatible with the surrounding environment and surrounding land uses having regard to the following criteria (clause 25(5)(b) and clause 24(2)(b)):

- The natural environment (including known significant environmental values, resources or hazards) and the existing and approved uses of land in the vicinity of the proposed development (clause 25(5)(b)(i))
- The site does not contain, nor is it the vicinity of any known significant environmental values, resources or hazards.
- The impact that the proposed development is likely to have on the uses that, in the opinion of the Secretary, are likely to be the future uses of that land (clause 25(5)(b)(ii))
- The existing church is not used and is dilapidated. St John's church and cemetery are both listed on the State Heritage Register. The applicant, Southern Cross Care, has indicated that both the church and cemetery are subject to vandalism and require restoration works. Further heritage advice was requested from the applicant, and in a letter dated 9 December 2014 (<u>Attachment 5</u>) the applicant's heritage consultant, Mr Paul Davies, stated that the proposed use for senior's housing would both enable the restoration and ensure the survival of the church and cemetery.
- It is proposed that St John's Church also be restored, altered and extended to function as a community facility for the site. Given the substantive changes proposed, it is important to involve the Heritage Division at an early stage of planning. The Heritage Division will be involved in the assessment of the application under two mechanisms. Under the Environmental Planning and Assessment Act 1979, the Heritage Division will be consulted as part of the integrated development application process. Under section 60 of the Heritage Act 1977, a separate application must also be made to carry out any development in relation to land or alter a building which is listed on the State Heritage Register.
- The Heritage Division indicated that they would prefer to be consulted as early as
 possible. Accordingly it is recommended that a condition be applied to the certificate
 which ensures this consultation occurs early in the project conception stage prior to
 lodgement of the development application.

- The redevelopment of the site will integrate and restore the existing historic church for community use by residents and visitors. It will also, by establishing site activity, ensure an active presence.
- Given that the surrounding area is developed for residential development, the
 proposed use will be compatible with the surrounding area and represents a logical
 use of the land.
- The Council submission raised concern about traffic impacts, and states that an
 increase in residential densities may necessitate road upgrades to local road
 networks. It is considered that a detailed assessment of traffic impact could be
 considered as part of the development application process, which would provide the
 opportunity for requiring road upgrades as conditions of consent.
- Council raised concerns about amenity impacts for surrounding land users, particularly the impact on the road network during peak visitation times (i.e. Christmas, Mother's Day and Easter), and privacy impacts due to overlooking. It is considered that the proposed use of the site for seniors housing does not preclude effective traffic management or building design to minimise overlooking. Again these matters are more appropriately dealt with as part of the development assessment process.
- The services and infrastructure that are or will be available to meet the demands arising from the proposed development (particularly, retail, community, medical and transport services having regard to the location and access requirements set out in clause 26) and any proposed financial arrangements for infrastructure provision (clause 25(5)(b)(iii))
- The site is located approximately one kilometre from Campbelltown City Centre and 1.4 kilometres from Campbelltown shopping centre. Campbelltown medical centre is 1.2 kilometres away, while Campbelltown public and private hospitals are located two kilometres from the site. Local neighbourhood shops are located approximately 400 metres away and provide for day to day grocery and meal options.
- The site is well served by public transport. A bus stop is within 90 metres of the site
 and provides regular services to Campbelltown City Centre, which is well served by
 rail services to the metropolitan area.
- The initial proposal did not contain adequate information to demonstrate that the
 site complies with gradient requirements for pathways to appropriate services and
 public transport. On 19 February 2015, the applicant submitted additional
 information which demonstrates that the proposal could comply with the required
 length and gradient limits (<u>Attachment 6</u>). This information addresses Council's
 concern regarding the gradient of pathways to public transport. In particular, the
 new information showed that:
 - the length from the site to the bus stop is 86.3 metres;
 - the steepest section of the survey, which is the George Street crossing, is shown as 6.29% (as a ratio 1:16) which is less than the maximum permitted gradient of 1:14; and
 - no part of the pathway between the site and the bus stop is steeper than the maximum disability ramp AS1428.1 disability requirements.

- 4. In the case of applications in relation to land that is zoned open space or special uses - the impact that the proposed development is likely to have on the provision of land for open space and special uses in the vicinity of the development (clause 25(5)(b)(iv))
- The site is zoned Special Uses Church/Cemetery under the Campbelltown (Urban Area) Local Environmental Plan 2002. The zone primarily permits use of the land with consent for churches and cemeteries, and a limited range of other land uses. Seniors housing is a prohibited use in this zone. The historic cemetery will be maintained and the historic unused church will be restored and used as a community based facility.
- The proposal will not likely generate any significant need for additional open space, as it is for the purposes of an aged care facility and open space and communal areas form part of the concept design. Hurley Park and Centenary Park are existing major open public space areas in close proximity to the site. The proposal is unlikely to result in a need for additional open space any greater than that currently provided within this locality.
- Without limiting any other criteria, the impact that the bulk, scale, built form and character of the proposed development is likely to have on the existing uses, approved uses and future uses of land in the vicinity of the development (clause 25(5)(b)(v))
- The proposed seniors housing includes a residential care facility, self-care housing and ancillary community facilities, services and a café. It is considered possible that such uses could be designed to be compatible with the immediate adjoining residential areas which include one, two and three storey housing, including villas and townhouses. The draft Campbelltown Principal Local Environmental Plan permits a similar housing form as the prevailing Plan; both include multi-dwelling housing and residential care facilities as permissible uses.
- Adjoining sites also surrounding the cemetery comprise townhouse/villa style of housing.
- The predominant scale is 1-2 storey consistent with the surrounding area and adjoining sites, some of the buildings contain 3 storey elements. The concept architectural plans provided with the application are indicative only. The Department is not endorsing a final design. It is expected that a development application could be prepared with detailed designs compatible with surrounding uses and assessed at the development application stage. This detailed design would need to be considerate of the relationship with surrounding development and the impact on heritage.
- If the development may involve the clearing of native vegetation that is subject
 to the requirements of section 12 of the Native Vegetation Act 2003—the
 impact that the proposed development is likely to have on the conservation
 and management of native vegetation (clause 25(5)(b)(vi))
- The site is cleared; the proposal does not involve the clearing of native vegetation.

RECOMMENDATION

It is recommended that the Secretary:

- considers Campbelltown City Council's written comments concerning the consistency of the proposed development with the criteria referred to in clause 25(5)(b) (Attachment 3);
- forms the opinion that the site of the proposed development is suitable for more intensive development;
- forms the opinion that the proposed development for the purposes of seniors housing is compatible with the surrounding environment having had regard to the criteria specified in clause 25(5)(b);
- forms the opinion that development for the purposes of seniors housing of the kind proposed in the site compatibility certificate application is compatible with the surrounding land uses only if it satisfies certain requirements specified in the certificate; and
- determines to issue a site compatibility certificate for seniors housing at 34 Sturt Street Campbelltown, subject to satisfying certain requirements specified in the certificate.

Tim Hurst 5/5/15 **Executive Director**

Regions

Marcus Ray

Deputy Secretary Planning Services

Carolyn McNally

Secretary

Approved / Not Approved / Noted

Rachel Cumming (MDellagiacoma) Director, Metropolitan (Parramatta) Phone: (02) 9860 1174

State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004 Certificate of Site Compatibility

I, Secretary of the Department of Planning and Environment, determine the application made by Southern Cross Care by issuing this certificate under clause 25(4)(a) of the State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004.

I certify that in my opinion:

- the site described in Schedule 1 is suitable for more intensive development; and
- the development described in Schedule 1 is compatible with the surrounding environment having had regard to the criteria specified in clause 25(5)(b); and
- that development for the purposes of seniors housing of the kind proposed in the development application is compatible with the surrounding land uses only if it satisfies certain requirements specified in Schedule 2 of this certificate.

Carolyn McNally Secretary

Date certificate issued: 25 -5-15

MMWN

Please note: This certificate will remain current for 24 months from the date of this certificate (clause 25(9)).

SCHEDULE 1

Site description: 34 Sturt St, Campbelltown, identified as Lot 1 DP 1037742; Lot 2 DP 758217 and Lot 1 DP 246268.

Project description - Seniors housing including a residential care facility, self-care housing and ancillary community facilities, services and a café.

SCHEDULE 2

Application made by: Mr Mark Garden of Southern Cross Care (NSW and ACT)

Requirements imposed on determination:

The applicant is to consult with the Heritage Division of the Office of Environment and Heritage during the preparation of concept plans, prior to lodgement of the Development Application with Council.

Our ref: 14/20425



Southern Cross Care (NSW & ACT) c/o Mark Garden Cardinal Gilroy Village 45 Barcom Street Merrylands NSW 2160

Dear Mr Garden

Determination of application for a site compatibility certificate for 34 Sturt St, Campbelltown - State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004

I refer to your application for a site compatibility certificate under clause 25(1) of State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004 (the SEPP) in relation to 34 Sturt St, Campbelltown.

I have determined the application under clause 25(4)(a) of the SEPP by issuing a site compatibility certificate subject to satisfying certain requirements specified in the certificate (clause 25(7)). I have attached the Certificate of Site Compatibility.

If you have any questions in relation to this matter, please contact Ms Rachel Cumming, Director, Metropolitan (Parramatta), at the Department on (02) 9860 1174.

Yours sincerely

Carolyn McNally Secretary

Encl: Site Compatibility Certificate

m m sva

Our ref: 14/20425



Ms Lindy Deitz A/General Manager Campbelltown City Council PO Box 57 Campbelltown 2560

Dear Ms Deitz

Determination of application for a site compatibility certificate for 34 Sturt St, Campbelltown - State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004

I refer to the above application for a Site Compatibility Certificate for the above site in Campbelltown. I have considered your comments in my assessment of this application.

I have determined the application under clause 25(4)(a) of State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004 by issuing a site compatibility certificate subject to satisfaction of certain requirements specified in the certificate (clause 25(7)). I have attached the Certificate of Site Compatibility.

If you have any questions in relation to this matter, please contact Ms Rachel Cumming, Director, Metropolitan (Parramatta), at the Department on (02) 9860 1174.

Yours sincerely

Carolyn McNally Secretary 2

Encl: Site Compatibility Certificate

3.4 Alteration and use of an existing dwelling as a boarding house - No. 23 Turimetta Avenue, Leumeah

Reporting Officer

Acting Manager Development Services

Attachments

- 1. Recommended conditions of development consent (contained within this report)
- 2. Locality plan (contained within this report)
- 3. Boarding house plan of management (contained within this report)
- 4. Site plan (distributed under separate cover confidential for privacy reasons this plan is not available to the public)
- 5. Floor plans (distributed under separate cover confidential for privacy reasons this plan is not available to the public)
- 6. Landscaping plan (distributed under separate cover confidential for privacy reasons this plan is not available to the public)
- 7. Notification plan (distributed under separate cover confidential for privacy reasons this plan is not available to the public)

Purpose

To assist Council in its determination of a development application, pursuant to the requirements of the *Environmental Planning and Assessment Act 1979*.

Property Description Lot 33 DP 31182, No. 23 Turimetta Avenue, Leumeah

Application No 1322/2013/DA-MAH

Applicant J S Dhillon

Owner J S and M K Dhillon

Provisions Campbelltown 2025 – 'Looking Forward'

State Environmental Planning Policy (Affordable Rental Housing)

2009

Campbelltown (Urban Area) Local Environmental Plan 2002

Draft Campbelltown Local Environmental Plan 2014

Campbelltown (Sustainable City) Development Control Plan

Date Received June 2013 (additional information received June 2014)

Report

A development application has been received which proposes to undertake modifications to an existing dwelling and use it as a boarding house at the subject site in Leumeah. The application has been made pursuant to the objectives and controls listed in State Environmental Planning Policy (Affordable Rental Housing) 2009 (ARHSEPP), which to the extent of any inconsistencies, supersedes Council's relevant planning controls.

The application was notified to adjoining and nearby owners and five submissions in objection to the proposal have been received.

Officers are of the opinion that use of the site as a boarding house has already been commenced.

The Site

The site is located on the northern side of Turimetta Avenue in Leumeah. It has an area of approximately 645sqm and contains a two storey residential building and associated outbuildings including a shed and car port.

The site is located within an existing residential area, which predominantly features a range of detached one storey dwellings on their own allotments.

Attachment 4 to this report provides a site plan, which illustrates the current position of buildings on the site and their proximity to adjoining dwellings.

The Proposal

The development application seeks Council's consent for the undertaking of some minor internal modifications to the building and its use as a boarding house.

The proposal includes the following features:

- eight boarding rooms
- two indoor communal rooms
- shared amenities such as bathrooms, laundry and kitchen
- communal outdoor veranda, storage lockers and vegetable/herb gardens
- two nominated car parking spaces
- a dedicated motorcycle and bicycle parking area
- upgrades to the building's existing fire safety measures
- associated landscaping and site works.

The building, being an existing dwelling would not be modified from the exterior. The upper storey extension of what would have been a single storey dwelling was approved by Council in 1986 and was constructed during 1987.

The proposed internal works include removal and replacement of one internal wall on the ground floor and removal and replacement of one wall on the upper floor. The floor plans in attachment 5 to this report illustrate the proposed minor internal works and identify the proposed use of each room throughout the existing dwelling.

Council's records indicate that the shed and car port in the rear yard were also both issued with appropriate approvals, during 1989 and 1993 respectively.

The building is used to provide accommodation for persons on a 'fee and reward' basis and as such is a registrable boarding house pursuant to the *Boarding Houses Act 2012*.

A comprehensive 'Boarding House Plan of Management' has been submitted with the application, which has been prepared in accordance with the requirements of the *Boarding Houses Act 2012* and its accompanying Regulation. The Plan of Management addresses details such as (but is not limited to):

- appointment of head tenant/manager
- register of tenants to be maintained
- requirements that tenants of the boarding house do not impact on the amenity of neighbours
- hours that activities may be undertaken outside of the building
- the house manager's mobile telephone number must be visible from a public place and must be provided to immediate neighbours. The house manager is available 24 hours a day
- restricting the number of residents to a maximum of 10 and no visitors are permitted to stay overnight
- waste management requirements
- complaints management procedure.

A full reproduction of the plan of management forms attachment 3 to this report.

1. Vision

Campbelltown 2025 – 'Looking Forward'

'Campbelltown 2025 Looking Forward' is a statement of broad town planning intent for the longer term future of the City of Campbelltown that:

- responds to what Council understands people want the City of Campbelltown to look, feel and function like
- recognises likely future government policies and social and economic trends
- sets down the foundations for a new town plan that will help achieve that future.

The document establishes a set of strategic directions to guide decision making and development outcomes. These directions are broad in nature and form a prelude to a new statutory town plan for the City.

The strategic directions relevant to this application are:

- growing the Regional City
- building a distinctive Campbelltown sense of place
- getting around the City
- retaining and creating jobs.

The proposed development is generally consistent with these directions.

Some of the relevant desired outcomes of the strategic directions included in Campbelltown 2025 include:

- creating opportunities for ongoing private investment
- developing urban environments that are safe, healthy, exhibit a high standard of design, and are environmentally sustainable
- increase local area self-containment to lessen dependence on private cars
- create an impression of architecture that engages its environmental context in a sustainable way
- encourage development and land use that matches environmental capacity and capability.

The proposal has been assessed having regard to Campbelltown 2025 – 'Looking Forward'. It is considered that the development application is generally consistent with the Vision's desired outcomes having regard to the proposed density, design and impact on adjoining development and the locality.

2. Planning Provisions

The development has been assessed in accordance with the matters for consideration under Section 79C of the *Environmental Planning and Assessment Act 1979*, and having regard to those matters, the following issues have been identified for further consideration.

Section 79C(1)(a) requires Council to consider environmental planning instruments and development control plans that apply to the site.

2.1 State Environmental Planning Policy (Affordable Rental Housing) 2009

The application has been made pursuant to the requirements of State Environmental Planning Policy (Affordable Rental Housing) 2009 (the 'ARHSEPP').

Relevant aims of the Policy are:

- (a) to provide a consistent planning regime for the provision of affordable rental housing
- (b) to facilitate the effective delivery of new affordable rental housing by providing incentives by way of expanded zoning permissibility, floor space ratio bonuses and non-discretionary development standards
- (f) to support local business centres by providing affordable rental housing for workers close to places of work.

Clauses 26 – 28 of the ARHSEPP provide for the construction of new boarding houses in various residential zones. The subject site is zoned accordingly and therefore the boarding house is permissible with development consent pursuant to the ARHSEPP.

Clause 29 of the ARHSEPP contains standards for which development consent cannot be refused if compliance with such is demonstrated. A summary of these standards is discussed below:

 Floor Space Ratio: the ARHSEPP provides that the floor space ratio of the development may match that of existing maximum for any form of residential accommodation.

In this case, Council's Campbelltown (Sustainable City) Development Control Plan (SCDCP) provides a floor space ratio of 0.55:1 for dwelling-houses.

The subject proposal has a floor space ratio of 0.32:1 and therefore complies with the SEPP's requirement.

• Building height: the ARHSEPP states that the building height shall not exceed that which is stated within an environmental planning instrument.

In this case, there is no maximum height within an existing applicable environmental planning instrument. However, Council's draft Local Environmental Plan stipulates a maximum building height of 8.5 metres and Council's SCDCP does specify a two-storey height limit.

The subject proposal has a maximum height of two storeys and is lower than 8.5 metres and therefore, complies.

 Landscaped area: the ARHSEPP requires that the landscaped area within the front setback shall be compatible with the streetscape on which the building is located.

In this case, the existing setbacks of the building are considered to be compatible with adjoining and nearby residential buildings. The front setback contains existing, relatively substantial vegetation, which is used to screen the proposed car parking space.

• Solar access: the ARHSEPP requires that where a communal room is supplied, that room shall receive a minimum of three hours of direct sunlight.

The ground floor communal room receives at least three hours of direct sunlight. proposed building does contain a communal room on its Moore Street frontage. The room would receive direct sunlight access for more than three hours per day, due to its favourable north-easterly orientation and having regard to location and design of the existing adjoining dwelling at No. 21 Turimetta Avenue.

In addition, the communal rear veranda would receive almost uninterrupted sunlight throughout each day, so the proposal is considered to comply.

 Open Space: the ARHSEPP requires a minimum of 20sqm of private open space for the use of lodgers.

The existing rear yard would be available to residents for use as private open space. The rear yard (excluding area dedicated to car parking and the existing shed) has an area of approximately 180sqm, so the proposal is considered to easily comply with this requirement.

• Car parking: where the boarding house site is located in an accessible area, at least 0.2 car parking spaces are required per boarding room. For the purposes of the ARHSEPP, an accessible area is defined as one that is within 800 metres walking distance of a public entrance to a railway station or within 400 metres of a bus stop used by a regular bus service that has at least one bus per hour during certain times of the day (including weekends).

In this case, the development site is approximately 175 metres away from a bus stop served by Busabout services operating on Transport for New South Wales' routes 881 and 882. The services operates half-hourly or hourly during the specified times, therefore, the site meets the criteria for an 'accessible area'.

The proposed boarding house contains eight rooms and would therefore require just 1.6 car spaces pursuant to the ARHSEPP. The proposal provides for two formal car parking spaces (as well as motorcycle and bicycle parking), and therefore complies.

 Accommodation size: the ARHSEPP stipulates the minimum room sizes for boarder accommodation that cannot be used as a reason to refuse consent. For rooms available to one lodger, the room size is 12sqm and for rooms available to two lodgers, the room size is 16sqm, up to a maximum of 25sqm.

In this case, some of the rooms are smaller than the nominated room size for one boarder. The table below details the size of each room.

Boarding room number	Boarding room area
Room 1	18.4sqm
Room 2	10.4sqm
Room 3	17.7sqm
Room 4	11.1sqm
Room 5	10.5sqm
Room 6	9.9sqm
Room 7	10.7sqm
Room 8	14.9sqm
Average Room Size	13.0sqm

Five of the rooms are smaller than the minimum recommended size. In the submitted statement of environmental effects, the applicant makes the following comments regarding the room sizes in the proposed boarding house:

The heading of the Clause in which the control appears within the ARHSEPP is titled 'New Affordable Rental Housing'. In the applicant's opinion, this means that the controls are predominantly intended to apply to new buildings. The applicant also notes the requirement relating to room sizes is located in Clause 29 of the ARHSEPP, which provides flexibility for Council's and applicants, as opposed to the prescriptive controls in Clause 30 (discussed below).

Comment:

While the heading is acknowledged, in this case, the building is considered to be a 'new boarding house' as that that is what consent is being sought for under the ARHSEPP.

Notwithstanding, it is acknowledged that use of an existing residential building as a boarding house is considered likely to have a reduced impact on the surrounding neighbourhood with regard its compatibility with nearby development and loss of amenity. This is because the building is already in existence and has been in its present built form since 1987 and in this case particularly, there is no extension or other external changes being made to the building in order to allow it to be used as a boarding house.

 The proposal to adapt an existing building as a boarding house is cheaper than demolition and reconstruction of a new purpose-built development, meaning that the rooms can be provided at a cheaper rate to people requiring this type of housing.

Comment:

The applicant provides a detailed assessment of the need for boarding houses in the Campbelltown area, including references from local short term crisis housing providers such as Vinnies Youth Housing, Uniting Care Burnside and Department of Housing data, which illustrates that affordable accommodation for singles, primarily in the 18 to 25 year age bracket, is within very short supply locally.

A letter from Argyle Housing that accompanied the application confirms that it has long waiting times for accommodation suitable for singles. They are two to five years for studio dwellings and five to 10 years for one-bedroom units.

The applicant's statement of environmental effects continues:

"The median rent for one-bedroom units in Campbelltown LGA is \$275 per week and the first quartile rent (bottom 25 per cent of one-bedroom units) is \$210 per week (source, Housing NSW Rent and Sales Report No. 103, March 2013). Room tariffs in the proposed boarding house will range from \$105 to \$150 per week, depending on room size, including electricity, water, gas, bed, mattress, mattress cover, wardrobe, desk, chair and (if required) bed sheets, pillow, quilt and blankets. This will make it amongst the most affordable private accommodation available in the LGA.

The proposed development provides decent quality accommodation that will be affordable to people on lower incomes, and therefore directly addresses the chronic lack of housing for this group in the local private rental market.

It will also have the social benefit of enabling existing low income residents such as students, apprentices, key workers and pensioners to continue living in the area and to maintain their social, educational and business networks. This stability and continuity is not only of benefit to the residents themselves but also of wider benefit by maintaining the social fabric of the local community."

The purpose of the ARHSEPP is to provide affordable housing for people in accessible areas. The proposal appears to fit these criteria. With the additional reporting requirements for boarding houses required under the *Boarding Houses Act 2012* (discussed later in the report) and the applicant's proposed management of the boarding house (also discussed later), use of the building as proposed is not inconsistent with the ARHSEPP's requirements.

 The minimum area of the smallest room within the proposed boarding house exceeds the minimum area requirement for a single lodger pursuant to the requirements of the *Boarding Houses Regulation 2013*.

Comment:

This statement is correct. Schedule 1(7)(2) of the Regulation requires that a room must be at least 7.5sqm in area and the smallest room proposed in the subject boarding house would be 9.9sqm.

- The applicant also states that smaller rooms are more efficient and therefore, more economical to heat and cool.
- The Building Code of Australia does not nominate the minimum size for boarding rooms, however does set amenity criteria for bedrooms with regard to window sizes for access to sunlight and ventilation. The Code requires that each room shall have a window area not less than five per cent of the floor area of the room.

Comment:

In the subject proposal's case, the smallest window to floor area ratio is 20 per cent, which significantly exceeds the Code's minimum requirement for natural light and ventilation.

- Storage lockers would be provided within the existing shed, meaning that large and bulky items can be securely stored outside bedrooms, freeing up space inside each bedroom.
- The boarding house has two indoor and two outdoor communal areas, which exceeds the ARHSEPP minimum requirement and offers break out space for residents to get out of their rooms.

Having regard to the abovementioned comments and discussion of compliance, the boarding house proposal is considered to be complimentary to the requirements of the ARHSEPP, notwithstanding the fact some rooms are smaller than the recommended minimum size.

Clause 30 of the ARHSEPP contains further standards for boarding houses. The standards must be met in order for Council to grant its development consent. An assessment of the proposal against relevant standards is discussed below:

- If a boarding house has five or more rooms, a communal living room shall be provided

 the building contains a communal living room on the ground floor and on the upper
 floor, therefore complies with this requirement.
- No boarding room will have a gross floor area greater than 25sqm (excluding bathrooms and private kitchens) the development's largest room has a floor area of 18.4sqm, therefore complying with the requirement.
- No boarding room will be occupied by more than two adult lodgers given the size of
 existing rooms within the dwelling, the applicant has submitted information with the
 application to the effect that most rooms would be limited to one lodger at all times. A
 total of 10 residents in the eight rooms is proposed. Recommended condition of
 consent number 5 also stipulates this maximum occupancy rate and the proposal is
 considered to comply.
- Adequate kitchen and bathroom facilities will be available to each lodger the ARHSEPP does not specify the maximum number of people that might share facilities. In this case, up to 10 people sharing a kitchen, two bathrooms (each containing a shower and toilet) is not considered to be unreasonable. The floor plans submitted with the proposal illustrate that one washing machine would be available for residents. This is not considered appropriate and as such, recommended condition 10 requires the installation of additional laundry facilities at the site, either inside the existing dwelling at a site to be illustrated on amended plans or within the existing shed. Once the laundry facilities have been upgraded, it is considered that the proposal will comply with this requirement.
- At least one parking space shall be provided for a bicycle and one will be provided for a motorcycle for every five boarding rooms – adequate space has been provided for the two motorcycle and two bicycle spaces that are required under the ARHSEPP. The proposal therefore complies with this requirement.

Clause 30A of the ARHSEPP requires Council to consider whether the design of the development is compatible with the character of the local area.

The design of the development is considered to be compatible, having regard to its size, scale and appearance in comparison to nearby residential development, noting the fact that the building currently exists and has done for some time and is not proposed to be modified externally as a result of its conversion to a boarding house.

The provision of open space at the rear of the site is also consistent with surrounding properties, which adds to the development's compatibility with the area's character.

Having regard to the above comments and the previous assessment of the proposal's compliance with the ARHSEPP's aims and standards, the development is considered to be a suitable response to the State Government's relevant environmental planning instrument.

2.2 Campbelltown (Urban Area) Local Environmental Plan 2002

Campbelltown (Urban Area) Local Environmental Plan 2002 (the LEP) applies to the development site. Pursuant to the LEP, the site is zoned 2(b) – Residential B Zone.

The development is complementary to several zone objectives, including:

- (a) to make general provision for land to be used for housing and associated purposes
- (b) to permit the development of a range of housing types
- (c) to encourage a variety of forms of housing that are higher in density than traditional dwelling houses, including accommodation for older people and people with disabilities, in locations which are accessible to public transport, employment, retail, commercial and service facilities
- (d) to allow development which:
 - (i) is compatible with residential use
 - (ii) is capable of visual integration with the surrounding buildings
 - (iii) serves the needs of the surrounding population without conflicting with the residential intent of the zone
 - (iv) does not place demands on services beyond the level reasonably required for residential use.

Pursuant to Clause 9(4) of the LEP, boarding houses are permissible with Council's consent in the 2(b) – Residential B Zone.

Accordingly, the proposal is considered to be consistent with Council's environmental planning instrument and Council may grant consent should it deem appropriate to do so.

2.3 Draft Campbelltown Local Environmental Plan 2014

The draft Campbelltown Local Environmental Plan (draft CLEP) has been publicly exhibited and is therefore a matter for consideration pursuant to Section 79C(1)(a)(ii) of the Environmental Planning and Assessment Act 1979.

Under the draft CLEP, the site would be zoned R2 – Residential Low Density zone. Pursuant to the 'Land Use Table' which forms part of the draft Plan, 'boarding houses' are permissible with development consent in the R2 zone.

The proposal is considered to be complementary to several objectives for the R2 zone, such as:

- to provide for the housing needs of the community within a low density residential environment
- to enable other land uses that provide facilities or services to meet the day to day needs of residents

- to enable development for purposes other than residential only if that development is compatible with the character of the living area and is of a domestic scale
- to minimise overshadowing and ensure a desired level of solar access to all properties
- to facilitate diverse and sustainable means of access and movement.

The proposal is therefore considered to be permissible development at the site pursuant to the draft environmental planning instrument.

2.4 Campbelltown (Sustainable) City Development Control Plan

Campbelltown (Sustainable City) Development Control Plan (the SCDCP) applies to the development site, although does not contain controls that are specific to this type of development. Notwithstanding, it is pertinent to consider the SCDCP's controls for residential development, as they convey Council's intention with regard to the desired outcomes across the City.

Relevant portions of the SCDCP are discussed below:

Part 2 of the SCDCP applies to all development. Relevant components of the Part are:

Part 2.5 – Landscaping

This section of the SCDCP sets out Council's requirements for the provision of landscaping for new development. The proposal includes the retention of several large trees and the establishment of new screen shrubbery throughout the site, as well as the establishment of vegetable and herb gardens for residents. It is considered to be compliant with the SCDCP.

Part 2.13 – Security

This section of the SCDCP details Council's requirements for ensuring that buildings are designed in a manner that minimises the potential for crime, both on the site and outside by providing a means of casual surveillance for public areas. The subject building currently contains a front balcony and windows to surrounding public areas. Entry to the building would be by secure key. Direct access to the building for the public would not be provided.

External lighting would be provided to light pedestrian access areas for safety and security. Lighting will be required to cause no disturbance to nearby residential properties. The proposal is considered to be compliant with Council's controls.

2.15 – Waste Management

This section of the SCDCP sets out Council's requirements for the storage and disposal of waste. In this instance, the applicant intends using Council's existing waste collection service, with bins stored along the driveway and screened by vegetation. Perusal of Council's records does not indicate that additional bins have been provided to the site, despite its existing presumed use as a boarding house. Recommended condition 11 in attachment 1 to this report requires the provision of adequate garbage and recycling bins, which must be reviewed periodically by the boarding house management to ensure that appropriate volumes of garbage and recycling storage are provided to residents.

Having regard to the above, the proposal is considered to exhibit a high level of compliance with Council's SCDCP.

3. Planning Assessment

3.1 Impacts on the Natural and Built Environment

Section 79C(1)(b) of the *Environmental Planning and Assessment Act 1979* requires Council to assess the development's potential impacts on the natural and built environment, as well as potential social and economic impacts.

Having regard to the fact this application proposes use of an existing building, which would not be altered externally or made larger to enable its use as a boarding house, the development's impact on the natural and built environment are considered to be relatively low. The building has existed in its present form at the site since 1987, with the outbuildings proposed for use as part of the boarding house (a shed and car port) approved by Council in 1989 and 1993 respectively.

The proposal complies with the Affordable Rental Housing SEPP's minimum car parking and cycle parking requirements. Occasional surveillance of the boarding house, which as mentioned earlier is considered to have commenced use, has revealed that the off-street parking available on the site is generally used, including a second, informal space in the front setback. Notwithstanding the abovementioned comment, should on-street parking be used, Turimetta Avenue in the vicinity of the subject site is a straight road, with good visibility, meaning that drivers in cars passing parked vehicles would not unreasonably be hindered in safe and clear passage.

It is important to note that the development does comply with the ARHSEPP in terms of the number of car parking spaces it provides. The accessibility requirements embedded into the ARHSEPP are designed to ensure that these developments are located in close proximity to suitable public transport, with the goal to decrease reliance on private transport (and hence, a reduction in cars required to be on site at any given time).

Pursuant to Clause 29 of ARHSEPP, Council cannot refuse the application on the grounds that it does not provide enough parking for future residents.

Social and economic impacts of the development are anticipated to be positive, as the boarding house's operation would provide a means of alternative, low-cost accommodation for residents of (and potentially employees working in) the City.

The Boarding Houses Act 2012 sets strict criteria for the letting of rooms and the behaviour of proprietors and residents. Registration and inspection of the boarding house by the Department of Family and Community Services will ensure that the site is properly run and cause minimal disturbance to surrounding existing residents.

Recommended conditions of development consent numbers 3, 4 and 13 stipulate that the house shall be run in accordance with the provisions of the *Boarding Houses Act 2012*. Council will also have an ongoing inspection role under the provisions of that Act.

3.2 Site Suitability

Section 79C(1)(c) of the *Environmental Planning and Assessment Act 1979* requires Council to assess the suitability of the site for the proposed development.

As mentioned previously in the report, the development site is located within an 'accessible area' as defined by the ARHSEPP, meaning that it is in relatively close proximity to public transport and other amenities.

As further detailed, the proposal is considered to be complementary to the existing character of its neighbourhood, having regard to the size and physical appearance of the building in comparison to nearby residential development.

3.3 The Public Interest

Section 79C(1)(e) of the *Environmental Planning and Assessment Act 1979* requires Council to consider the public's interest in consenting to a development application.

The public interest is a comprehensive requirement that requires Councils to consider the long term impacts of development and the suitability of the proposal in a larger context. Implicit to the public interest is the achievement of future built outcomes adequately responding to and respecting the desired future outcomes expressed in SEPPs, LEPs and DCPs.

The application is considered to have satisfactorily addressed the State Government's and Council's relevant objectives and controls required for development of this type, in this area.

The use of the existing dwelling as a boarding house is considered to encourage affordable housing, in a manner consistent with Section 5(a)(viii) of the *Environmental Planning and Assessment Act 1979* and if managed in accordance with the submitted plan of management, is not considered likely to have a significant detrimental impact on the neighbourhood.

4. Public Participation

Section 79C(1)(d) of the *Environmental Planning and Assessment Act 1979* requires Council to consider submission made to the proposal.

The application was notified to adjoining and nearby owners for a period of 14 days. Confidential attachment 7 to this report illustrates the properties that were notified and also highlights the location from which submissions were received.

During the notification period, five submissions were received in objection to the proposal. A discussion of the matters raised is detailed below.

Compatibility with surrounding development

Concerns were raised in submissions regarding the compatibility of the development with its surrounds. The concerns related to the potential impacts that future residents may have on the neighbourhood.

Also mentioned earlier in the report, the subject boarding house would be controlled by its registration under the *Boarding Houses Act 2012*. Reference is made to the report prepared by Council's then Acting Manager of Compliance (tabled at Council's Ordinary meeting held on 26 February 2013), which outlines the purposes of the Act and Council's role in inspecting and monitoring boarding houses to ensure compliance with relevant State and local requirements.

Whilst at this time it is not known 'who' exactly occupies the boarding house, the proposal exhibits a good level of compliance with relevant State and local planning controls and would be required to registered under the *Boarding Houses Act 2012*, meaning that it would be monitored and inspected for ongoing compliance issues.

As mentioned earlier in the report, the applicant has prepared a comprehensive 'Boarding House Plan of Management', which details the procedures to be followed for the orderly operation of the house and the arrangements made for its management as well as handling of any complaints received from neighbours. It includes a requirement that all nearby neighbours would be provided with the house manager's mobile telephone number, a requirement reflected in recommended condition 4 in attachment 1 to this report. A full reproduction of the plan of management forms attachment 3 to this report.

It should be noted that to date, Council has received one anonymous telephone call about the house, which as mentioned, is already in operation. The call was made during 2014 to report suspicious behaviour at the site, including the parking of cars on the driveway overnight. The report did not specifically complain about the house's operation and did not describe any unreasonable noise or other activity occurring at the site. One submission notes that the house is currently operating without impact on the neighbourhood.

Suitability of the existing dwelling to be converted

Submissions raised concern with the building's suitability for conversion and use as a boarding house, with comments made regarding the appropriateness of the following:

- the size of the kitchen
- provision of laundry facilities
- the size and location of communal areas
- management of the boarding house
- a new, purpose-built building would be more appropriate.

As stated above, the application has been accompanied by a detailed plan of management, which is required to be implemented at the site. This requirement would be a condition of consent as well as a mandatory requirement under the *Boarding Houses Act 2012*. As part of the plan of management, nearby owners would be provided with the boarding house manager's mobile telephone contact details so they can report any anti-social behaviour as it occurs, should it occur.

The space provided within the boarding house for resident amenity is considered to be acceptable, noting its relative compliance with the ARHSEPP and Building Code of Australia. It is noted that recommended condition 10 requires the provision of additional laundry facilities as those proposed in the application are not considered to be appropriate for use by up to 10 residents.

Impacts on the value of nearby properties

Submissions raised the issue of the development's potential to decrease the value of nearby properties.

The submissions did not contain evidence from a qualified person or persons to qualify or quantify the statement. Notwithstanding, conditions are intended to be imposed relating to the operation of the boarding house, with the intention being that the house be operated with no impact on the local neighbourhood, above that which would be expected from a single dwelling.

Operation of the boarding house

Submissions raised issue with the potential noise impacts of the development.

The plan of management required to be implemented for the house, pursuant to recommended condition 4 stipulates the following in relation to noise emanating from the property:

- residents shall not drink alcohol or play music in the outdoor areas of the property after
 8.00pm and before 10.00am each day
- residents shall not use the outdoor areas of the property between 10.00pm and 7.00am each day
- a maximum of nine persons only shall be accommodated in the outdoor area at any one time and between the abovementioned hours.

These hours are not considered to be inconsistent with what neighbours would ordinarily expect to occur at any dwelling within a residential area.

A full reproduction of the plan of management forms attachment 3 to this report.

5. Conclusion

A development application has been received for use of an existing dwelling as a boarding house at No. 23 Turimetta Avenue, Leumeah. The application has been made pursuant to State Environmental Planning Policy (Affordable Rental Housing) 2009.

The boarding house has been operating without consent for some time, without specific complaint about its operation having been received by Council.

The boarding house contains eight separate accommodation rooms, with shared use of communal rooms, storage areas, bathrooms and kitchen. An outdoor recreation area and parking for motorcycles, cars and bicycles is also proposed.

The boarding house residents will generally be existing local people who for a range of circumstances or by personal choice seek accommodation that is more affordable than the usual offering in the private rental market.

A comprehensive plan of management has been submitted with the proposal, which has been incorporated into the recommended conditions of consent, meaning it must be adhered to by management and residents of the house should consent be granted.

Several submissions in objection to the proposal were received, regarding matters such as compatibility of the development with its surroundings, noise and the suitability of the existing dwelling for conversion to a boarding house.

An assessment of the development proposal has been undertaken against relevant State and local planning controls. The development exhibits a high level of compliance with relevant aims, objectives and controls.

Officer's Recommendation

- 1. That development application 1322/2013/DA-MAH for the alteration and use of an existing dwelling as a boarding house at No. 23 Turimetta Avenue, Leumeah be approved, subject to the conditions detailed in attachment 1 of this report.
- 2. That objectors to this application be advised of Council's decision and be provided with a copy of the consent document and boarding house plan of management.

Having declared an interest in regard to Item 3.4, Councillor Greiss left the Chamber and did not take part in debate nor vote on this item.

Committee's Recommendation: (Kolkman/Oates)

That the application be refused based on the inadequacy of the bedrooms to provide residents with a satisfactory quality of life in their living quarters.

CARRIED

Voting for the Committee's Recommendation were Councillors: Hawker, Kolkman, Lound, Oates, Rowell and Thompson.

Voting against the Committee's Recommendation was Councillor: Matheson.

At the conclusion of the discussion regarding Item 3.4, Councillor Greiss returned to the Chamber for the remainder of the meeting.

Council Meeting 15 December 2015 (Hawker/Rowell)

That the Committee's Recommendation be adopted.

Foreshadowed Motion (Greiss/Mead)

- 1. That development application 1322/2013/DA-MAH for the alteration and use of an existing dwelling as a boarding house at No. 23 Turimetta Avenue, Leumeah be approved, subject to the conditions detailed in attachment 1 of this report.
- 2. That objectors to this application be advised of Council's decision and be provided with a copy of the consent document and boarding house plan of management.

Council Resolution Minute Number 228

That the Foreshadowed Motion be adopted.

Voting for the Council Resolution were Councillors: Greiss, Hawker, Lake, Lound, Matheson, Mead, Rowell and Thompson.

Voting against the Council Resolution were Councillors: Borg, Brticevic, Chanthivong, Kolkman and Oates.

Note: Councillor Glynn retired from the meeting during discussion of Item 3.4.

ATTACHMENT 1

Recommended Conditions of Consent

GENERAL CONDITIONS

The following conditions have been applied to ensure that the use of the land and/or building is carried out in such a manner that is consistent with the aims and objectives of the planning instrument affecting the land.

For the purpose of these conditions, the term 'applicant' means any person who has the authority to act on or benefit of the development consent.

1. Approved Development

The development shall take place in accordance with the approved development plans containing Council's approved development stamp and all associated documentation submitted with the application, except as modified in red by Council and/or any conditions of this consent.

2. Building Code of Australia

The boarding house must at all times be kept and maintained in accordance with the provisions of the Building Code of Australia. In this clause, a reference to the Building Code of Australia is a reference to that Code as in force on the date the application for the relevant construction certificate is made.

The house shall also be maintained in accordance with the record of inspection undertaken by Australia Wide Consulting Services (ref. ACS 2014 004, dated 4 June 2014) and the Annual Fire Safety Statement by RADI Electrical (dated 26 June 2013).

3. Boarding Houses Act 2012

The boarding house shall be operated in accordance with the requirements of the *Boarding Houses Act 2012* at all times.

4. Plan of Management

The 'Plan of Management' as submitted with the development application and found at Appendix 1 of the statement of environmental effects (ref. Mark Shanahan Planning Pty Ltd, dated 17 June 2013) shall form the 'House Plan of Management' which must be instituted at all times which the premises operates as a boarding house.

A copy of the plan along with the house manager's mobile telephone number shall be provided to all owners of properties within 20 metres of a boundary with the subject site within one month of the date of development consent being granted. Evidence that each affected land owner has received the plan shall be provided to Council.

Pursuant to the plan and the *Boarding Houses Act 2012*, a register of all tenants' names and any complaints must be kept on-site at all times, available for inspection by public authorities.

The manager shall be responsible for ensuring that the development's impact on the neighbourhood is minimised and that the boarding house is managed in accordance with the requirements of the conditions of consent, relevant legislation and so as to minimise its impact on the existing neighbourhood.

5. Occupancy Rates

The maximum occupancy rate of the boarding house shall not exceed 10 persons, with all rooms restricted to being occupied to one person except rooms 1 and 3 which may be occupied by a maximum of two people.

6. Lighting

Illumination of the site is to be arranged to provide an appropriate level of lighting and in accordance with the requirements of Australian Standard 4282 so as not to impact upon the amenity of the occupants of adjoining and nearby residential premises.

7. Unreasonable Noise

The development, including operation of vehicles, shall be conducted so as to avoid the generation of unreasonable noise and cause no interference to adjoining or nearby occupants.

8. Landscaping

The provision and maintenance of landscaping shall be in accordance with the approved landscape plan containing Council's approved development stamp including the engagement of a suitably qualified landscape consultant/contractor for landscaping works.

9. Parking Spaces

The car parking spaces shall be designed, sealed, line marked and made available to all users of the site in accordance with Australian Standards 2890.1 and 2.

The motorcycle and bicycle parking space shall be line marked and made available for parking at all times.

Parking of vehicles on turf and landscaped areas is not acceptable.

10. Laundry Facilities

Within one month of development consent being granted, the applicant shall submit for the written approval of Council's Manager of Development Services, a plan which illustrates the installation of additional laundry facilities at the site.

The additional facility must be installed within one month of receiving the written approval of Council's Manager of Development Services.

11. Waste Management

The boarding house shall at all times be supplied with an appropriate number of garbage and recycling bins to ensure that waste is not stored on the site at any time, except within the approved waste receptacles supplied at a cost by Council.

The bins shall be stored out of view of the public and returned to the nominated storage area within a reasonable time after emptying by Council's waste collection contractor and in accordance with the 'House Plan of Management'.

BOARDING HOUSE CONDITIONS

The following conditions have been applied to ensure that the use of the building is carried out in such a manner that is consistent with the *Public Health Act 2010* and Regulation, the *Local Government Act 1993* and associated technical standards.

12. Sleeping Accommodation

The occupier of the premises must not allow any room or cubicle in the premises to be used for the purposes of sleeping accommodation unless the room or cubicle has a floor area of 5.5sqm or more for each person sleeping in it (in the case of long-term sleeping accommodation) or 2.0sqm or more for each person sleeping in it (in any other case) (Public Health Regulation 2012).

13. Acts and Regulations

The boarding house must comply (where relevant) with the following Acts and Regulations:

Public Health Act 2010
Public Health Regulation 2012
Boarding Houses Act 2012
Local Government Act 1993
Local Government (General) Regulation 2005
Protection of the Environment (Noise Control) Regulation 2008

ADVISORY NOTES

The following information is provided for your assistance to ensure compliance with the *Environmental Planning and Assessment Act 1979*, Environmental Planning and Assessment Regulation 2000, other relevant Council Policy/s and other relevant requirements. This information does not form part of the conditions of development consent pursuant to Section 80A of the Act.

Advice 1. Provision of Equitable Access

Nothing in this consent is to be taken to imply that the development meets the requirements of the *Disability Discrimination Act 1992* (DDA1992) or Disability (Access to Premises – Buildings) Standards 2010 (Premises Standards).

Where a Construction Certificate is required for the approved works, due regard is to be given to the requirements of the Building Code of Australia (BCA) and the Premises Standards. In this regard it is the sole responsibility of the certifier, building developer and building manager to ensure compliance with the Premises Standards.

Where no building works are proposed and a Construction Certificate is not required, it is the sole responsibility of the applicant and building owner to ensure compliance with the DDA1992.

Advice 2. Smoke Alarms

All NSW residents must have at least one working smoke alarm installed on each level of their home. This includes owner occupier, rental properties, relocatable homes and any other residential building where people sleep.

The installation of smoke alarms is required to be carried out in accordance with AS 3786. The licensed electrical contractor is required to submit to Council a certificate certifying compliance with AS 3000 and AS 3786.

Advice 3. Adjustment to Public Utilities

Adjustment to any public utilities necessitated by the development is required to be completed prior to the occupation of the premises and in accordance with the requirements of the relevant Authority. Any costs associated with these adjustments are to be borne by the applicant.

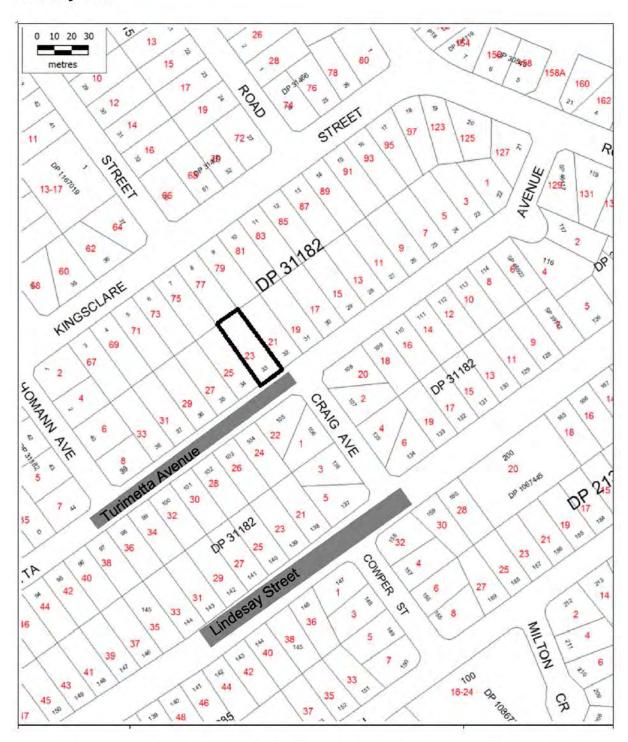
Advice 4. Smoke Free Environment Act 2000

Nothing in this consent is to be taken to imply that the development meets the requirements of the *Smoke Free Environment Act 2000* (SFEA2000) or the *Smoke Free Environment Regulations 2007* (SFER2007). In the event that the occupier wishes to facilitate smoking within any enclosed public place of the premises (in accordance with Clause 6 of the SFER2007), the occupier must first contact NSW Department of Health to ensure that the design and construction of the area proposed to facilitate smoking fully complies with the requirements of the SFEA2000 and the SFER2007.

END OF CONDITIONS

ATTACHMENT 2

Locality Plan



Subject site - No. 23 Turimetta Avenue, Leumeah

ATTACHMENT 3

BOARDING HOUSE PLAN OF MANAGEMENT AND HOUSE RULES FOR 23 TURIMETTA AVE, LEUMEAH

Preliminary

23 Turimetta Ave, Leumeah is a registrable boarding house under Section 5(1) of the Boarding Houses Act 2012, being operated as a general boarding house with 8 boarding rooms (6 single rooms and 2 double rooms). It is not an assisted boarding house.

This management plan implements those occupancy principles for boarding houses in force under Section 30(1) of the Boarding Houses Act 2012 that relate to the management and operation of the boarding house.

The occupancy principles in force at the time this management plan was authorised are set out in Schedule 1 of this plan.

1. Object of this Plan

- 1.1 A primary purpose of this Management Plan is to ensure that neighbours' amenity is not reduced by the operation of the premises as a Boarding House. To achieve this, the Management Plan has been drafted with the following matters in mind:
- a) to minimise disturbance to neighbours;
- b) to discourage late night arrival and departure of occupants which may cause neighbour's amenity to be reduced;
- c) to provide a procedure to receive and resolve complaints;
- d) to maintain the internal and external appearance of the premises;
- e) to ensure a responsible person is readily contactable to assist in the ongoing implementation of this Management Plan;
- f) to ensure that this Management Plan is enforceable, and
- g) to make provision for this plan to be amended from time to time with the approval of Campbelltown City Council in order to facilitate timely and responsive operational changes to improve residential amenity within and external to the site.

2. Primary Person Responsible

- 2.1 The owner of the premises is responsible for ensuring that this Management Plan is properly implemented at all times. The owner will exercise this personally or through an appointed Property Management Agent ('Manager'). References in this Management Plan to 'Manager' means the specialist boarding house manager appointed to that role or if none is appointed, means the owner (see cl. 3.1 below).
- 2.2 The Manager may appoint a lodger to act as Head Lodger/Caretaker to assist in undertaking the Manager's duties, including reporting to the Manager any emergencies or incidences of lodgers not complying with this Management Plan or the House Rules. The Head Lodger/Caretaker must be given appropriate training by the Manager to undertake these duties but compliance with this Management Plan always remains the responsibility of the Manager and cannot be sub-delegated to the Head Lodger/Caretaker.
- 2.3 This Management Plan shall be displayed in a common area of the boarding house at all times. The Manager shall give occupants copy of a

document called "Boarding House Rules" ("the Rules") before they move into the boarding house. The Rules include guidelines for the conduct of occupants to minimise inappropriate behaviour that might reduce the amenity of neighbours or other lodgers. The Rules may not be inconsistent with this Management Plan or the conditions of development consent.

- 2.4 All residents in the boarding house are to sign an Occupancy Agreement which includes a requirement to comply with the Rules. The length of occupancy shall not be less than 90 days, on the explicit understanding that accommodation is not to be provided on a temporary basis to persons on recreational pursuits.
- 2.5 The Manager is responsible for enforcing the Rules.
- 2.6 The Manager shall have discretion to remove any person from the Boarding House who fails to comply with any Rule after due warning. The owner must (if requested to do so) assist the Manager to the extent necessary to give effect to this provision.
- 2.7 The Manager shall maintain a register of occupants who have been evicted from the Boarding House and shall ensure that those people are prevented from entering the premises in the future.
- 2.8 The Manager shall take all reasonable steps necessary to ensure that occupants of the Boarding House do not affect the amenity of neighbours. The Manager may evict occupants who unreasonably affect the amenity of neighbours. The owner must (if requested to do so) assist the Manager to the extent necessary to give effect to this provision.
- 2.9 The Manager shall ensure that the Rules are displayed in the entrance, dining room, corridors and rooms of the Boarding House.
- 2.10 A sign shall be maintained at the entrance to the Boarding House advising occupants to be aware and mindful of the amenity of neighbours when entering or leaving the premises.
- 2.11 A mobile phone number for contacting the Manager shall be displayed on the outside wall at the entrance to the boarding house, so that it is visible from outside the boarding house.
- 2.12 The Manager shall provide mobile and home numbers to immediate neighbours and to lodgers on which the Manager can be contacted 24 hours a day.

3. Manager

- 3.1 As the total number of residents will be no more than 10 people at any given time, there is no requirement for a Resident Manager. The owner will manage the property or may appoint a specialist boarding house manager to manage the property (see cl.2.1 above).
- 3.2 The Manager shall inspect the premises at a minimum fortnightly interval to ensure compliance with all relevant provisions of this Management Plan and the Boarding House Rules, and any applicable conditions of development consent.

4. Residents Register

4.1 The Manager shall maintain a register which includes the lodger's name, previous address, drivers license details (if any), room number,

date of commencing occupancy and date of ceasing occupancy. The register may be kept in writing and/or on computer.

- 4.2 A maximum of two (2) lodgers can be registered at any one time to occupy each of Bedroom 1 or Bedroom 3. A maximum of one (1) lodger can occupy each of the other rooms. There are to be no more than 10 lodgers of the boarding house at any time. Inspections of the property and the Register may be undertaken by properly authorised officers of Campbelltown City Council from time to time to ensure that this requirement is being satisfied.
- 4.3 Any rooms that become vacant will be offered first to existing lodgers currently occupying any smaller rooms.

5. Boarding House Rules

5.1 The Boarding House Rules shall include the following:

Lodgers:

- a) Will not smoke or drink alcohol inside the Boarding House.
- b) Will not drink alcohol or play music in the outdoor areas of the property between 8.00pm and 10.00am.
- c) Will not use the outdoor areas of the Boarding House for recreation between the hours of 10.00pm and 7.00am. Not more than 9 persons (lodgers or visitors) may use the outdoor recreation areas at any time (other than on special occasions with the approval of the Manager).
- d) Will not play music or make noise inside or outside the boarding house at a level that disturbs neighbours or other lodgers.
- e) Will not operate musical instruments or sound equipment (radios, TVs, tape recorders, record, compact disc, MP3 players or computer games) from 12 midnight to 8am on any Friday, Saturday or day immediately before a public holiday, or 10pm to 8am on any other day, inside a bedroom or communal area unless windows are closed and noise levels do not cause offensive noise to neighbours or other lodgers.
- f) May use the kitchen areas at any time other than between the hours of 12 midnight and 5.00am.
- g) May use the indoor communal areas at any time other than between the hours of 12 midnight and 5.00am, unless with the agreement of the Manager.
- h) Will clean and put away any plates, pots and other utensils after using them and leave the kitchen in a clean and tidy condition.
- i) Will not give or lend their key to the premises to anyone who is not a current lodger of the premises.
- Will not bring visitors to stay overnight.
- k) Will not be rude to other lodgers or neighbours.
- Will not disrupt peace and quiet or create tension with other lodgers or neighbours.
- m) Will not jeopardize the safety of other lodgers or neighbours.
- n) Will not bring illegal drugs or substances onto the property.
- o) Will not bring pets onto the property.

- p) Will not use candles, incense, element heaters or other device or thing that is likely to cause a fire in their room or common areas.
- q) Will pay lodging fees by the due date.
- r) Will vacuum, clean and maintain their room.
- s) Will restore communal areas to a neat, clean and tidy condition after using them.
- t) Will turn the water, lights and power off when not in use.
- u) Will put garbage and recyclable materials into the appropriate bin.
- v) Will safely go in and out of the driveway and property without causing danger to other lodgers or neighbours.
- w) Will only park motor cars, motorcycles or bicycles in the appropriate allocated parking space and not on any other part of the property. Any vehicle parked in the driveway must be moved immediately if access to another vehicle is required or at any time requested by the Manager.
- x) Will let the owner or Manager inspect their room at least once a month.
- y) Will notify the Owner immediately when there is reason to believe that the behaviour or action of other lodgers may cause harm or endanger lives or may cause damage to the premises/property.

6. Safety

- 6.1 The Manager shall ensure that all fire safety requirements of the Boarding House are met at all times, including ensuring the following:
- a) Fire exit signs are in working order.
- b) Emergency access routes are clear.
- c) Smoke detectors/alarms are in good working order.
- d) Any items that are a fire hazard are removed from the premises without delay.
- e) Generally maintain the premises in a fire-safe condition.
- 6.2 All occupants are to be provided with a pamphlet outlining the fire evacuation procedures for the Boarding House. This pamphlet shall contain details of any fire exits, fire blankets, fire hydrants and fire warning devices installed in the Boarding House.

7. Cleaning & Waste Management

- 7.1 The premises are to be professionally cleaned on a weekly basis, and garbage bins placed at the kerbside for collection. Arrangements for this will at all times be the responsibility of the Manager.
- 7.2 An adequate number of bins, including recycling bins, shall be provided to accommodate waste generated by the boarding house.

8. Pets

8.1 No pets of any kind are allowed on the boarding house premises.

9. Public Complaints Resolution Procedure

9.1 The Manager shall maintain a Complaints Register of public (external) complaints.

- 9.2 This register shall comprise of forms to be completed by the Manager, lodgers and/or complainants. The form is to record the nature and date of any complaint and the name, address and phone number of the person making the complaint.
- 9.3 The Manager shall respond by telephone to a written or oral complaint within 24hrs (provided that the complainant has provided a phone number).
- 9.4 The Manager shall respond in writing within 7 days to a complaint (provided that the complainant has provided contact details).
- 9.5 The Manager shall use best endeavours to arrange a meeting with complainants every 3 months until the complaint is resolved. The owner must be present at such meetings. The Manager shall keep minutes of such meetings and keep these minutes in the Complaints Register. The register is to be made available for inspection at any time by a duly authorised officer of the Council.
- 9.6 If a complaint cannot be resolved and the complainant wishes to escalate the matter, the complaint may be referred for resolution to the Community Justice Centre.

10. Variations to Plan of Management and House Rules

- 10.1 This approved Plan of Management may be varied from time to time by an authorised officer of the Council, on the application of the owner, without the need for formal modification of the development consent, providing Council's written approval is recorded below. A copy of the approved Plan of Management shall be kept by the owner, the Manager and Council at all times.
- 10.2 The object of this clause is to facilitate timely and responsive alterations to the Plan of Management where Council agrees that such alterations are appropriate and beneficial in preserving and enhancing residential amenity for occupants and/or neighbours.

11. Authorisation

This Plan of Management was approved by:

Name of authorised Council officer:
Position held by authorised officer:
Signature of officer:
Date signed:

Schedule 1 Occupancy principles

(in force under Section 30 of the Boarding Houses Act 2012)

1 State of premises

A resident is entitled to live in premises that are:

- (a) reasonably clean, and
- (b) in a reasonable state of repair, and
- (c) reasonably secure.

2 Rules of registrable boarding house

A resident is entitled to know the rules of the registrable boarding house before moving into the boarding house.

3 Penalties for breaches of agreement or house rules prohibited

A resident may not be required to pay a penalty for a breach of the occupancy agreement or the rules of the registrable boarding house.

4 Quiet enjoyment of premises

A resident is entitled to quiet enjoyment of the premises.

5 Inspections and repairs

A proprietor is entitled to enter the premises at a reasonable time on reasonable grounds to carry out inspections or repairs and for other reasonable purposes.

6 Notice of increase of occupancy fee

A resident is entitled to 4 weeks written notice before the proprietor increases the occupancy fee.

7 Utility charges

- (1) The proprietor is entitled to charge a resident an additional amount for the use of a utility if:

 (a) the resident has been notified before or at the time of entering the occupancy agreement of the use of utilities in respect of which the resident will be charged, and
 - (b) the amount charged is based on the cost to the proprietor of providing the utility and a reasonable measure or estimate of the resident's use of that utility.
- (2) A utility for the purposes of this clause is each of the following:
 - (a) the supply of electricity,
 - (b) the supply of gas,
 - (c) the supply of oil,
 - (d) the supply of water,
 - (e) the supply of any other service prescribed by the regulations.

8 Payment of security deposits

- (1) The proprietor may require and receive a security deposit from the resident or the resident's authorised representative only if:
 - (a) the amount of the deposit does not exceed 2 weeks of occupancy fee under the occupancy agreement, and
 - (b) the amount is payable on or after the day on which the resident (or the resident's authorised representative) enters the agreement.
- (2) Within 14 days after the end of the occupancy agreement, the proprietor must repay to the resident (or the resident's authorised representative) the amount of the security deposit less the amount necessary to cover the following:
 - (a) the reasonable cost of repairs to, or the restoration of, the registrable boarding house or goods within the premises of the boarding house, as a result of damage (other than fair wear and tear) caused by the resident or an invitee of the resident,
 - (b) any occupation fees or other charges owing and payable under the occupancy agreement or this Act.
 - (c) the reasonable cost of cleaning any part of the premises occupied by the resident not left reasonably clean by the resident, having regard to the condition of that part of the premises at the commencement of the occupancy,
 - (d) the reasonable cost of replacing locks or other security devices altered, removed or added by the resident without the consent of the proprietor,
 - (e) any other amounts prescribed by the regulations.

(3) The proprietor may retain the whole of the security deposit after the end of the occupancy agreement if the costs, fees or charges referred to in subclause (2) (a)—(e) are equal to, or exceed, the amount of the security deposit.

(4) In this clause:

security deposit means an amount of money (however described) paid or payable by the resident of a registrable boarding house or another person as security against:

- (a) any failure by the resident to comply with the terms of an occupancy agreement, or
- (b) any damage to the boarding house caused by the resident or an invitee of the resident, or
- (c) any other matter or thing prescribed by the regulations.

9 Information about occupancy termination

A resident is entitled to know why and how the occupancy may be terminated, including how much notice will be given before eviction.

10 Notice of eviction

- (1) A resident must not be evicted without reasonable written notice.
- (2) In determining what is reasonable notice, the proprietor may take into account the safety of other residents, the proprietor and the manager of the registrable boarding house.
- (3) Subclause (2) does not limit the circumstances that are relevant to the determination of what is reasonable notice.

11 Use of alternative dispute resolution

A proprietor and resident should try to resolve disputes using reasonable dispute resolution processes.

12 Provision of written receipts

A resident must be given a written receipt for any money paid to the proprietor or a person on behalf of the proprietor.

4. COMPLIANCE SERVICES

4.1 Legal Status Report

Reporting Officer

Manager Compliance Services

Attachments

Planning and Environment Division Monthly Legal Matters Status and Costs Summary (contained within this report)

Purpose

To update Council on the current status of the Planning and Environment Division's legal matters.

Report

This report contains a summary of the current status of the Division's legal matters for the 2015-2016 period as they relate to:

- The Land and Environment Court
- The Supreme Court
- The District Court
- The Local Court
- matters referred to Council's solicitor for advice.

A summary of year-to-date costs and the total number of matters is also included.

Note: The year to date cost totals itemised in sections one to seven inclusive of the report do not necessarily correlate with the costs to date total of individual matters listed in each section, as the costs to date total of individual matters shown refer to total costs from commencement of the matter, which may have commenced before 1 July.

Officer's Recommendation

That the information be noted.

Committee's Recommendation: (Kolkman/Lound)

That the Officer's Recommendation be adopted.

CARRIED

Council Meeting 15 December 2015 (Hawker/Rowell)

That the Officer's Recommendation be adopted.

Council Resolution Minute Number 227

That the Officer's Recommendation be adopted.

ATTACHMENT 1

 Land and Environment Court Class 1 Matters – Appeals Against Council's Determination of Development Applications

Total ongoing Class 1 DA appeal matters (as at 24/11/2015)
Total completed Class 1 DA appeal matters (as at 24/11/2015)
Costs from 1 July 2015 for Class 1 DA appeal matters:

2 2 \$78,672.70

1 (a) RAMM INVESTMENTS PTY LIMITED

Issue: An appeal against Council's refusal of development application

No. 1473/2012/DA-MAH that sought consent for construction of 26 two-storey dwellings and construction of a cul-de-sac in

Collis Place, Minto.

Property: Lot 101 DP 1044069, 124 Minto Road, Minto.

Property Owner: Ramm Investments Pty Limited

Council File: Development Application No: 1473/2012/DA-MAH

Court Application: Filed on 27 March 2015 - File No. 10275 of 2015

Applicant: Ramm Investments Pty Limited

Costs Estimate: \$25,000 (exclusive of Barristers, Court Appointed Experts or

disbursement fees)

Costs to date: \$21,183.65

Status: Appeal proceedings completed, cost recovery action ongoing.

Progress: The Applicant filed an appeal in the Land and Environment

Court of NSW against Council's refusal of development application No. 1473/2012/DA-MAH that sought consent for construction of 26 two-storey dwellings and construction of a cul-de-sac in Collis Place, Minto. The matter was listed for first

directions hearing on 24 April 2015.

On 24 April 2015, the Registrar made certain procedural directions and adjourned the proceedings to 14 May 2015 for

section 34 conciliation conference.

On 14 May 2015, no agreement was reached at the conciliation conference; accordingly, the Commissioner made certain procedural directions and adjourned the proceedings to 21 May 2015, and then further adjourned the proceedings to 2 June 2015 for call over hearing listing before the Registrar.

On 2 June 2015, the Registrar made certain procedural

directions and adjourned the proceedings to 4 and 5 August 2015 for directions hearing commencing on-site.

Matter was before the Court on 31 July for hearing the applicant's Notice of Motion seeking to amend the development application and vacate the hearing dates for 4 and 5 August 2015. The Commissioner ordered that the applicant's Notice of Motion is dismissed; and leave was granted for the Applicant to discontinue the proceedings on the basis that the Respondent is not precluded from making an application seeking that the Applicant pays the Respondents costs of the proceedings (Subsequently the applicant discontinued the proceedings). Since the discontinuance, Council's legal representative has taken action and is in the process of pursuing legal cost recovery. Cost recovery has since been delayed due to a request by the Applicant's solicitor to have the wording of the court orders and the judgement amended in accordance with the Civil Procedure Rules.

1 (b) FLIP OUT (CASTLE HILL) PTY LTD

Issue: An appeal against Council's refusal of development application

No. 2014/2013/DA-C that sought consent for construction of

fitout and use of premises for recreation facility.

Property: Lot 17 DP 1113810, 31 Mount Erin Road, Campbelltown.

Property Owner: Mr Vijay Sood and Mrs. Nutan Sood

Council File: Development Application No: 2014/2013/DA-C

Court Application: Filed on 19 May 2015 - File No. 10429 of 2015

Applicant: Flip Out (Castle Hill) Pty Ltd

Costs Estimate: \$20,000 (exclusive of Barristers, Court Appointed Experts or

disbursement fees)

Costs to date: \$7,351.03

Status: Ongoing – listed for hearing on 3 and 4 February 2016.

Progress: The Applicant filed an appeal in the Land and Environment

Court of NSW against Council's refusal of development application No. 2014/2013/DA-C that sought consent for construction of fitout and use of premises for recreation facility. The matter was listed for first directions hearing on 17 June

2015.

On 17 June 2015, the Registrar made certain procedural directions and adjourned the proceedings to 7 August 2015 for

section 34 conciliation conference.

Conciliation conference is part-heard and was adjourned for mention on 8 October 2015 to allow the applicant to prepare amended plans addressing the issues discussed during the conference. Given the failure by the applicant to address issues raised during the conciliation conference it was terminated. The proceedings were listed for directions hearing on 29 October, 2015.

At the directions hearing the Registrar listed the proceedings for hearing on 3 and 4 February 2016.

1 (c) Multiplan Constructions Pty Ltd

Issue: An appeal against Council's refusal of development application

No. 2775/2014/DA-MAH that sought consent for construction of nine two-storey dwellings and associated strata subdivision.

Property: Lot 36 DP 13118, 17 Lyndia Street, Ingleburn.

Property Owner: Mr Ramy Maher Youssef and Mrs Nevine Magdy Youssef

Council File: Development Application No: 2775/2014/DA-MAH

Court Application: Filed on 22 September 2015 - File No. 10848 of 2015

Applicant: Multiplan Constructions Pty Ltd

Costs Estimate: \$25,000.00 (exclusive of Barristers, Court Appointed Experts

or disbursement fees)

Costs to date: \$9,940.17

Status: New matter – proceedings listed for a telephone callover on 16

December 2015.

Progress: The Applicant filed an appeal in the Land and Environment

Court of NSW against Council's refusal of development application No. 2775/2014/DA-MAH that sought consent for construction of nine two-storey dwellings and associated strata

subdivision.

On 22 October, the proceedings were adjourned to 23

November 2015 for a section 34 conciliation conference.

At the conclusion of the section 34 conciliation conference held on 23 November 2015, the applicant agreed to make some amendments to the application as discussed. The Commissioner made certain procedural direction and listed the

matter for telephone callover on 16 December 2015.

 Land and Environment Court Class 1 and 2 Matters – Appeals Against Notices, Orders, or Directions issued by Council

Total ongoing Class 1 and 2 appeal matters (as at 24/11/2015) Total completed Class 1 and 2 appeal matters (as at 24/11/2015) Costs from 1 July 2015 for Class 1 & 2 appeal matters:

1 \$1,578.13

1

2 (a) FLIP OUT (CASTLE HILL) PTY LTD

Issue: An appeal against Council's order 1 & 12 in the table to section

121B of the Environmental Planning and Assessment Act 1979 requiring the occupier Flip Out (Castle Hill) Pty Ltd to cease use of the property at 31 Mount Erin Road, Campbelltown, as a recreation facility and to restore the property to the condition it

was prior to the unauthorised occupation.

Property: Lot 17 DP 1113810, 31 Mount Erin Road, Campbelltown.

Property Owner: Mr Vijay Sood and Mrs. Nutan Sood

Council File: Council Order 503/2015/N-EPA

Court Application: Filed on 19 May 2015 - File No. 10427 of 2015

Applicant: Flip Out (Castle Hill) Pty Ltd

Costs Estimate: \$20,000 (exclusive of Barristers, Court Appointed Experts or

disbursement fees)

Costs to date: \$0.00

Status: Ongoing – appeal adjourned until further direction pending

outcome of appeal in respect of Development Application

2014/2013/DA-C - see item 1(b) of this report.

Progress: The Applicant filed an appeal in the Land and Environment

Court of NSW against Council's order 1 & 12 in the table to section 121B of the Environmental Planning and Assessment Act 1979 requiring the occupier Flip Out (Castle Hill) Pty Ltd to cease use of the property at 31 Mount Erin Road, Campbelltown, as a recreation facility and to restore the property to the condition it was prior to the unauthorised occupation. The matter was listed for first directions hearing

on 17 June 2015.

On 17 June 2015, the parties, by consent, notified the Court that agreement had been reached to seek adjournment of the proceedings pending the outcome of the appeal in respect of Development Application 2014/2013/DA-C. The Registrar

made those directions.

 Land and Environment Court Class 4 Matters – Civil Enforcement in respect of non-compliance with Planning Law or Orders issued by Council

Total ongoing Class 4 matters before the Court (as at 24/11/2015)

Total completed Class 4 matters (as at 24/11/2015)

Costs from 1 July 2015 for Class 4 matters

\$0.00

4. Land and Environment Court Class 5 - Criminal enforcement of alleged pollution offences and various breaches of environmental and planning laws

Total ongoing Class 5 matters before the Court (as at 24/11/2015)

Total completed Class 5 matters (as at 24/11/2015)

Costs from 1 July 2015 for Class 5 matters

\$0.00

5. Land and Environment Court Class 6 - Appeals from convictions relating to environmental matters

Total ongoing Class 6 matters (as at 24/11/2015) 0
Total completed Class 6 matters (as at 24/11/2015) 0
Costs from 1 July 2015 for Class 6 matters \$0.00

6. Supreme Court of NSW – Contractual proceedings with WSN Environmental Solutions concerning South West Sydney Councils Resource Recovery Project

Total ongoing matters (as at 24/11/2015)
Total completed (as at 24/11/2015)
Costs contribution from 1 July 2015 for this matter

0 \$34,359.97

1

6 (a) CAMPBELLTOWN CITY COUNCIL AND OTHERS -v- WSN

ENVIRONMENTAL SOLUTIONS PTY LTD.

Issue: Civil commercial proceedings concerning the South West

Sydney Councils Resource Recovery Project Contract T05/17 for Processing Waste, Recyclables and Garden Organics with

WSN Environmental Solutions Pty Ltd (WSN).

Court Case Number: 371801 of 2014

Case name: Campbelltown City Council and Others (other related Councils

under the contract) -v- WSN Environmental Solutions Pty Ltd

Costs to date: \$82,035.72, being Campbelltown City Council's one-quarter

part contribution to the overall legal costs.

Status: Appeal proceedings completed, cost recovery action ongoing.

Progress: Appeal proceedings considered before the Supreme Court

NSW concerning contractual issues in respect of the South West Sydney Councils Resource Recovery Project Contract T05/17 between the joint party Councils of Campbelltown, Camden, Wollondilly and Wingecarribee for processing waste, recyclables and garden organics with the service contractor

WSN Environmental Solutions Pty Ltd.

Proceedings finalised before the Court of Appeal on 30 September 2015 with Councils' appeal allowed and orders made that WSN pay Councils' legal costs of the proceedings. Council's legal representative is in the process of commencing

action for cost recovery.

4.1 Legal Status Report

7. Local Court prosecution matters

The following summary lists the current status of the Division's legal matters before the Campbelltown Local Court.

Total ongoing Local Court Matters (as at 24/11/2015) 5
Total completed Local Court Matters (as at 24/11/2015) 31
Costs from 1 July 2015 for Local Court Matters \$5,955.66

File No: LP44/15 – Penalty Notice Court Election

Offence: Stand in disabled person parking space without

authority displayed.

Act: Local Government Act 1993

Final Costs: \$0.00 – Matter dealt with by Council's Legal and

Policy Officer in conjunction with the Police

Prosecutor.

Status: Completed - Proved/Dismissed without penalty

Progress: The matter was before the Court for first mention

on 13 October 2015 where the defendant entered a plea of guilty with explanation. After considering the evidence and submissions the Magistrate found the offence proved and determined the

matter without penalty.

File No: LP45/15 – Penalty Notice Court Election

Offence: Stand in disabled person parking space without

authority displayed.

Act: Local Government Act 1993

Final Costs: \$0.00 - Matter dealt with by Council's Legal and

Policy Officer in conjunction with the Police

Prosecutor.

Status: Completed – Withdrawn/Dismissed

Progress: Matter was before the Court for first mention on 6

October 2015 where the defendant entered a not guilty plea. The registrar adjourned the

proceeding to 6 November 2015 for hearing.

On 6 November 2015 the Court granted Council's application for the matter to be withdrawn and dismissed, as in prior representation to Council the defendant produced a mobility parking permit obtained from RMS replacing the illegible permit that was displayed on the vehicle at the time of

the alleged offence.

File No: LP46/15 – Penalty Notice Court Election

Offence: Disobey no-stopping sign.

Act: Road Rules 2014

Final Costs: \$0.00 – Matter dealt with by Council's Legal and

Policy Officer in conjunction with the Police

Prosecutor.

Status: Completed – Fine and Court costs imposed

Progress: The matter was before the Court for first mention

on 27 October 2015 where the defendant, Mandeep Singh, made no appearance. The Magistrate granted Council's application to hear the matter in the defendant's absence and after hearing the evidence found the matter proved and convicted the defendant imposing a \$450.00

fine and an order for \$85.00 court costs.

File No: LP47/15 – Penalty Notice Court Election

Offence: Stand in disabled person parking space without

authority displayed.

Act: Local Government Act 1993

Final Costs: \$0.00 - Matter dealt with by Council's Legal and

Policy Officer in conjunction with the Police

Prosecutor.

Status: Completed – Fine and Court costs imposed

Progress: The matter was before the Court for first mention

on 13 October 2015 where the defendant, Beejai Leigh Abrahams, entered a guilty plea. After hearing the evidence and submissions the Magistrate found the offence proved, imposing a \$250.00 fine and an order for \$85.00 court costs.

File No: LP48/15 – Penalty Notice Court Election Offence: Disobey no-stopping sign (school-zone)

Act: Road Rules 2014

Final Costs: \$0.00 - Matter dealt with by Council's Legal and

Policy Officer in conjunction with the Police

Prosecutor.

Status: Completed – Fine and Court costs imposed

Progress: The matter was before the Court for first mention

on 20 October 2015 where the defendant, Andrew Paul Sukkar, made no appearance. The Magistrate granted Council's application to hear the matter in the defendant's absence and after

	hearing the evidence found the matter proved and convicted the defendant imposing a \$400.00 fine and an order for \$85.00 court costs.		
File No: Offence: Act:	LP49/15 – Penalty Notice Court Election Disobey no-stopping sign (school-zone) Road Rules 2014		
Final Costs:	\$0.00 – Matter dealt with by Council's Legal and Policy Officer in conjunction with the Police Prosecutor.		
Status:	Completed – Fine and Court costs imposed		
Progress:	The matter was before the Court for first mention on 10 November 2015 where the defendant, Glen Robert Campbell, entered a guilty plea. After hearing the evidence and submissions the Magistrate found the offence proved, imposing a \$100.00 fine and an order for \$85.00 court costs.		
File No: Offence: Act:	LP50/15 – Penalty Notice Court Election Not stand vehicle in marked parking space. Local Government Act 1993		
Final Costs:	\$0.00 – Matter dealt with by Council's Legal and Policy Officer in conjunction with the Police Prosecutor.		
Status:	Completed - Proved/Dismissed without penalty		
Progress:	The matter was before the Court for first mention on 3 November 2015 where the defendant entered a guilty plea with explanation. After considering the evidence and submissions the Magistrate found the offence proved and determined the matter without penalty.		
File No: Offence: Act:	LP51/15 – Charge matter Stop heavy/long vehicle longer than 1 hour Road Rules 2014		
Final Costs:	\$89.00 – Matter dealt with by Council's Legal and Policy Officer.		
Status:	Completed – Fine imposed		
Progress:	Matter was before the Court for first mention on 24 November 2015 where the defendant Anthony Bruce O'Brien, entered a guilty plea with explanation. After considering the evidence and submissions the Magistrate found the offence		

	proved and imposed a \$400 fine.		
File No: Offence: Act:	LP52/15 – Penalty Notice Court Election Own dog that attacked animal. Companion Animals Act 1998		
Costs to date:	\$0.00 – Matter being dealt with by Council's Legal and Policy Officer in conjunction with the Police Prosecutor.		
Status:	Ongoing - Listed for mention on 15 December 2015		
Progress:	Listed for first mention on 17 November 2015. On 17 November 2015 the matter was adjourned by consent to 15 December 2015 for further mention.		
File No: Offence: Act:	LP53/15 – Penalty Notice Court Election Stop on path/strip in built-up area Road Rules 2014		
Costs to date:	\$0.00 – Matter being dealt with by Council's Legal and Policy Officer in conjunction with the Police Prosecutor.		
Status:	New matter		
Progress:	Listed for first mention on 24 November 2015.		
File No: Offence: Act:	LP54/15 – Penalty Notice Court Election Own dog that attacked animal. Companion Animals Act 1998		
Costs to date:	\$0.00 – Matter being dealt with by Council's Legal and Policy Officer in conjunction with the Police Prosecutor.		
Status:	Ongoing - Listed for mention on 15 December 2015		
Progress:	Listed for first mention on 17 November 2015. On 17 November 2015 the matter was adjourned by consent to 15 December 2015 for furthe mention.		
File No: Offence: Act:	LP55/15 – Penalty Notice Court Election Stop on path/strip in built-up area Road Rules 2014		
Final Costs:	\$0.00 - Matter dealt with by Council's Legal and		

200	Policy Officer in conjunction with the Police Prosecutor.			
Status:	Completed – Fine and costs imposed			
Progress:	Matter was listed for first mention on 24 November 2015 where the defendant, Kemeti Faimanifo, made no appearance. The Magistrate granted Council's application for the matter to proceed in the defendant's absence and after considering the evidence and submissions found the offence proved and convicted the defendant imposing a \$100 fine and order for \$89 court costs.			
File No: Offence: Act:	LP56/15 – Penalty Notice Court Election Stand in disabled person parking space without authority displayed. Local Government Act 1993			
Costs to date:	\$0.00 – Matter being dealt with by Council's Legal and Policy Officer in conjunction with the Police Prosecutor.			
Status:	New matter			
Progress:	Listed for first mention on 8 December 2015.			
File No: Offence: Act:	LP57/15 – Penalty Notice Court Election Transport waste to unlawful waste facility Protection the Environment Operations Act 1997			
Final Costs:	\$0.00 – Matter dealt with by Council's Legal and Policy Officer in conjunction with the Police Prosecutor.			
Status:	Completed – Fine and costs imposed			
Progress:	Matter was listed for first mention on 24 November 2015 where the defendant, Kemeti Faimanifo, made no appearance. The Magistrate granted Council's application for the matter to be heard in the defendant's absence and after considering the evidence and submissions found the offence proved and convicted the defendant imposing a \$4,000 fine and order for \$89 court costs.			
File No: Offence: Act:	LP58/15 – Penalty Notice Court Election Disobey no-stopping sign (school-zone) Road Rules 2014			

4.1 Legal Status Report

Costs to date: \$0.00 – Matter being dealt with by Council's Legal

and Policy Officer in conjunction with the Police

Prosecutor.

Status: New matter

Progress: Listed for first mention on 8 December 2015.

8. Matters referred to Council's solicitor for advice

Matters referred to Council's solicitors for advice on questions of law, the likelihood of appeal or prosecution proceedings being initiated, and/or Council liability.

Total Advice Matters (as at 24/11/2015)
Costs from 1 July 2015 for advice matters

\$5,717.60

9. Legal Costs Summary

The following summary lists the Planning and Environment Division's net legal costs for the 2015/2016 period.

Relevant attachments or tables	Costs Debit	Costs Credit
Class 1 Land and Environment Court - appeals against Council's determination of Development Applications	\$78,672.70	\$0.00
Class 1 and 2 Land and Environment Court - appeals against Orders or Notices issued by Council	\$1,578.13	\$0.00
Class 4 Land and Environment Court matters - non- compliance with Council Orders, Notices or prosecutions	\$0.00	\$0.00
Class 5 Land and Environment Court - pollution and planning prosecution matters	\$0.00	\$0.00
Class 6 Land and Environment Court - appeals from convictions relating to environmental matters	\$0.00	\$0.00
Supreme Court hearing and appeal matters	\$34,359.97	\$0.00
District Court appeal matters	\$0.00	\$0.00
Local Court prosecution matters	\$5,955.66	\$100.00
Matters referred to Council's solicitor for legal advice	\$5,717.60	\$0.00
Miscellaneous costs not shown elsewhere in this table	\$0.00	\$0.00
Costs Sub-Total	\$126,284.07	\$100.00
Overall Net Costs Total (GST exclusive)	\$126,1	84.07

4.2 North Area Alcohol Free Zones

Reporting Officer

Manager Compliance Services

Attachments

Maps of Alcohol Free Zones for Claymore (as amended), Glenfield, Ingleburn, Macquarie Fields, Minto, Minto (Zone 2) (as amended), Raby and St Andrews (contained within this report)

Purpose

To submit to Council for endorsement a proposal to re-establish Alcohol Free Zones (AFZ's) at Claymore (as amended), Glenfield, Ingleburn, Macquarie Fields, Minto, Minto (Zone 2) (as amended), Raby and St Andrews.

The management and operation of an Alcohol Free Zone (AFZ) is a collaborative approach between Council and Police Local Area Commands. Council's role is to organise for the establishment and sign posting of the zones, while Police are responsible for enforcement.

History

On 14 January 2015 an email was received from a member of a local community group requesting that the Claymore Alcohol Free Zone be extended to include the following locations:

- Claymore Community Centre and Gumnut building (Gould and Dobell Roads, Claymore, between Fullwood Place and Abrahams Way)
- Mission Australia (Lot 507 Dobell Road, behind Claymore Shopping Centre).

The email stated that the abovementioned buildings are targeted areas for vandalism as they are not in sight from the main roads, and that staff at the Claymore Community Centre are cleaning up broken bottles on a weekly basis.

In view of the above request it was proposed in a report to Council's Planning and Environment Committee on 11 August 2015 that the current zone be amended to extend the zone along Dobell Road to the intersection of Fullwood Place, Claymore (as shown in the AFZ map at attachment 1). In addition, it was considered the request to extend the zone marginally along Gould Road from the intersection of Boyd Street to Abrahams Way and along Boyd Street to Leigh Crescent will be of limited effect and that as a preferred alternative, consideration be given to including the adjoining public housing open space in lieu (as shown in the AFZ map at attachment 1). NSW Police and NSW Land and Housing have both indicated their support for the proposed alternative extension of the existing Claymore AFZ.

In addition, a general business item was raised in the City Works Committee Meeting of 12 May 2015, suggesting that consideration be given to making Redfern Park Minto an Alcohol Free Zone in light of anti-social behaviour and vandalism in the vicinity. The Crime Coordinator of the NSW Police Macquarie Fields Local Area Command reviewed reports held by Police regarding incidents in the vicinity of Redfern Park and confirmed their support for extending the Minto (Zone 2) AFZ to include Redfern Park. Accordingly, it was recommended in a report to Council's Planning and Environment Committee on 11 August, 2015 that the Minto (Zone 2) AFZ be extended to include Redfern Park, Minto.

The abovementioned zones are due to expire on 24 December 2015 and accordingly, in the interest of continuing to promote the safe use of the roads, footpaths, open space and car parks within the zones and reduce the potential for alcohol related incidents, it is proposed these zones be re-established and extended as proposed in the body of the report and as shown on the attached plans (attachment 1).

Council at its Ordinary Meeting on 18 August 2015 considered a recommendation from its Planning and Environment Committee regarding the proposal to re-establish the Alcohol Free Zones at Claymore (as amended), Glenfield, Ingleburn, Macquarie Fields, Minto, Minto (Zone 2) (as amended), Raby and St Andrews and resolved:

- 1. That a notice be placed in a local paper inviting submissions from any person or group, in response to Council's intention to re-establish and amend Alcohol Free Zones over the streets, car parks, public housing open areas and footpaths detailed in attachment 1 to this report for the proposed Alcohol Free Zones of:
 - (a) Claymore (as amended)
 - (b) Glenfield
 - (c) Ingleburn
 - (d) Macquarie Fields
 - (e) Minto
 - (f) Minto Zone 2 (as amended)
 - (g) Raby
 - (h) St Andrews.
- 2. That all submissions received during the exhibition period be reported to Council.
- 3. That the creation of a new zone in Macquarie Fields to include Saywell Road (adjoining the property at number 46) and in the vicinity of Atchison and Parliament Roads not be recommended as it relates to an isolated situation which is able to be regulated separately by the NSW Police; and the applicant be informed of the reasons for this accordingly.
- 4. That should no submissions be received during the exhibition period, advice be given and comment be sought on Council's intention to re-establish and or amend Alcohol Free Zones over the areas specified in Recommendation 1 above to:
 - (a) The Anti Discrimination Board
 - (b) The Officer in charge of the Police Station nearest to the zone
 - (c) The liquor licensees and secretaries of registered clubs whose premises border on or adjoin or are adjacent to the proposed zone
 - (d) Any known group or organisation that might be affected by the creation of the Alcohol Free Zone.

5. That a further report be provided to Council on the re-establishment and amendment of the Alcohol Free Zones specified in Recommendation 1 at the completion of the period for comment by the organisations/groups listed in Recommendation 4.

Report

In accordance with Council's previous resolution of 18 August 2015, advertisements were placed in local papers on 1 and 2 September 2015 advising of Council's intention to reestablish the Alcohol Free Zones at Claymore (as amended), Glenfield, Ingleburn, Macquarie Fields, Minto, Minto (Zone 2) (as amended), Raby and St Andrews and inviting comments from the public.

In accordance with the Ministerial Guidelines and Council's previous resolution, Council wrote to the following organisations seeking written comment on the proposal:

- the Anti-Discrimination Board
- the Officer in charge of Macquarie Fields Police Station
- liquor licensees and registered clubs whose premises are adjacent to any of the affected zones
- any known group that might be affected by the re-establishment of the Alcohol Free Zones.

Council received a written reply from the Anti-Discrimination Board and the Macquarie Fields Police Local Area Command indicating no objection to Council's intention to amend and/or re-establish the abovementioned Alcohol Free Zones. No other related responses were received.

In view of the above, Council is now in a position to declare the re-establishment and/or amendment of Alcohol Free Zones over the following streets, footpaths, reserves, public housing open areas and car park areas:

Claymore:

Dobell Road (between Fullwood Crescent and the western boundary of Claymore Public School) Gidley Crescent (between Dobell Road and the southern boundary of Davis Park) Gould Road (between Boyd Street and Dobell Road) and adjoining public housing open areas).

Glenfield:

Belmont Road (between Railway Parade and Hosking Crescent)
Hosking Crescent
Magee Lane
Railway Parade (between Chesham Parade and Belmont Road)
Trafalgar Street (between Railway Parade and Baldwin Avenue)
Waterloo Place

Ingleburn:

Boots Lane

Cambridge Street

Carlisle Street (between Cambridge Street and Suffolk Street)

Cumberland Road (between Cambridge Street and Suffolk Street)

Ingleburn Road (between Macquarie Rd and Suffolk Street)

Macquarie Road (between Ingleburn Road and Oxford Road)

Nardoo Street (between Oxford Road and Suffolk Street)

Norfolk Street

Oxford Road (between Ingleburn Road and Lionel Street)

Palmer Street (between Norfolk Street and Suffolk Street)

Salford Street

Suffolk Street

Macquarie Fields:

Berrigan Crescent

Brooks Road (between Victoria Road and Parliament Road)

Clematis Place

Eucalyptus Drive (between Hibiscus Crescent and Rosewood Drive and between Rosewood

Drive and Maple Place)

Harold Street (between Parliament Road and Victoria Road)

Maple Place

Mulga Place

Risdoni Wav

Rosewood Drive (between Harold Street and Eucalyptus Drive)

Rubida Way

Saligna Way

Victoria Road (between Brooks Road and Mary Street)

Minto:

Burrows Lane

Erica Lane

Kent Street (between Stafford Street and Redfern Road)

Minto Road (between Stafford Street and Redfern Road)

Pembroke Road (between Stafford Street and Redfern Road)

Redfern Road

Ruth Place

Stafford Street

Surrey Street (between Stafford Street and Redfern Road)

Susan Place

Unnamed lane 6.1w (between Erica Lane and Surrey Street)

Unnamed lane 6.1w (between Ruth Place and Redfern Road)

Somerset (from Wiltshire Street north 200m)

Ben Lomond Road (from Pembroke Road to Selwyn Avenue)

Selwyn Avenue

Perisher Circuit

Snowy Avenue

Longhurst Road (from Selwyn Avenue to Ben Lomond Road)

Curruthers Street
Trickett Street
Gawler Avenue
Glass House Street (from Trickett Street to Ellery Street)
Gardiner Street
Patching Close
Smart Close
Tate Place
Edward Edgar Street
Blane Street
Norman Dunlop Crescent
Jenner Street
Lind Street
Redfern Park

Minto (Zone 2) continued:

Lemon Tree Crescent
Harrison Place
Ellery Street
Woodroffe Street
Guernsey Avenue (from Longhurst Road to Durham Street)
Durham Street (from Guernsey Avenue to Pembroke Road)
Pembroke Road (from Durham Street to Ben Lomond Road)
Monaghan Street
Brookfield Road
Car Parks of Minto Marketplace
Redfern Park, Minto

Raby:

Hurricane Drive (between Thunderbolt Drive and Sunderland Drive)
Shuttleworth Avenue
Spitfire Drive
Sunderland Drive
Thunderbolt Drive (between Hurricane Drive and Shuttleworth Avenue)

St Andrews:

Ballantrae Drive (between Arisaig Place and St Andrews Road) Stranraer Drive (between Ballantrae Drive and Aberfeldy Crescent) Cupar Place Deveron Place

Having regard to the above, it is recommended that Council proceed to publicly notify its intention to re-establish the Alcohol Free Zones at Claymore (as amended), Glenfield, Ingleburn, Macquarie Fields, Minto, Minto (Zone 2) (as amended), Raby and St Andrews, to expire on 24 December 2019, and re-establish the zones as indicated in the recommendations of this report.

Officer's Recommendation

- 1. That Council re-establish Alcohol Free Zones over the streets, footpaths, reserves and public housing open areas and car park areas detailed in attachment 1 to this report for the Alcohol Free Zones at:
 - a. Claymore (as amended)
 - b. Glenfield
 - c. Ingleburn
 - d. Macquarie Fields
 - e. Minto
 - f. Minto (Zone 2) (as amended)
 - g. Raby
 - h. St Andrews.
- 2. That the Alcohol Free Zones referred to in Recommendation 1 commence on 25 December 2015 and that a public notice advising of Council's decision be placed in a local paper at least seven days in advance of re-establishing the zones.
- 3. That the Alcohol Free Zones referred to in Recommendation 1 be sign posted in accordance with Council's standard Alcohol Free Zone sign template including a contact phone number of the appropriate Police Local Area Command.
- 4. That the Alcohol Free Zones referred to in Recommendation 1 be reviewed prior to the expiration of the re-establishment period, being 24 December 2019.

Committee's Recommendation: (Thompson/Greiss)

That the Officer's Recommendation be adopted.

CARRIED

Council Meeting 15 December 2015 (Hawker/Rowell)

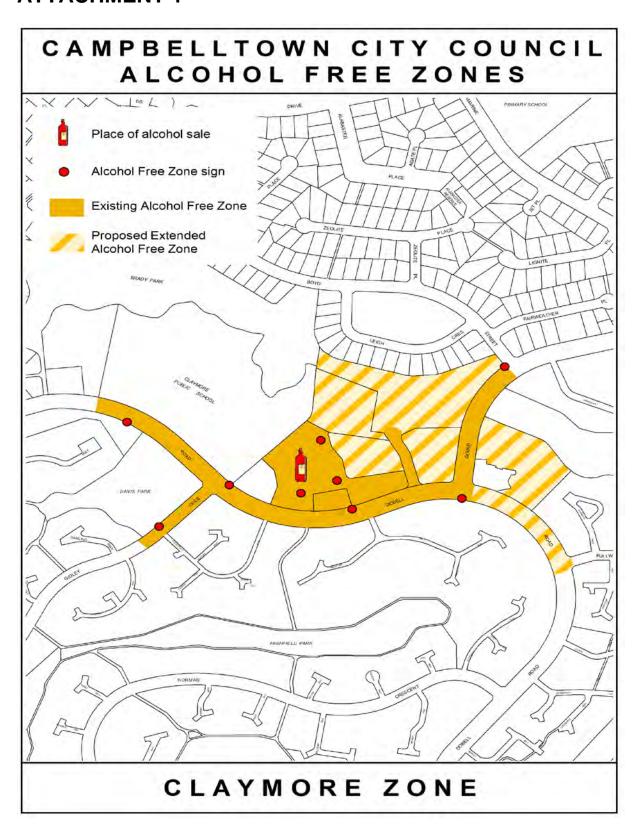
That the Officer's Recommendation be adopted.

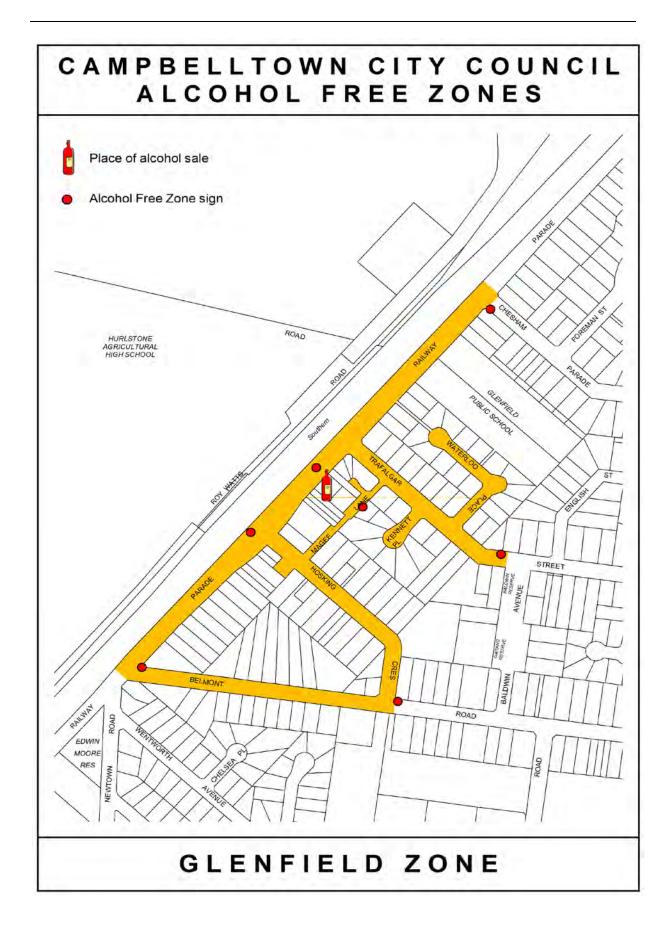
Council Resolution Minute Number 227

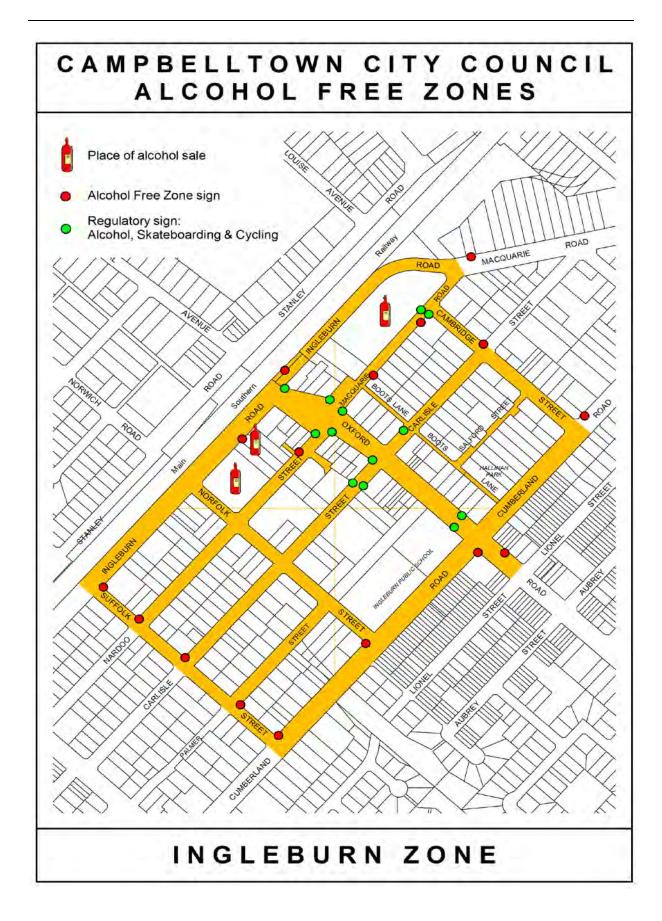
That the Officer's Recommendation be adopted.

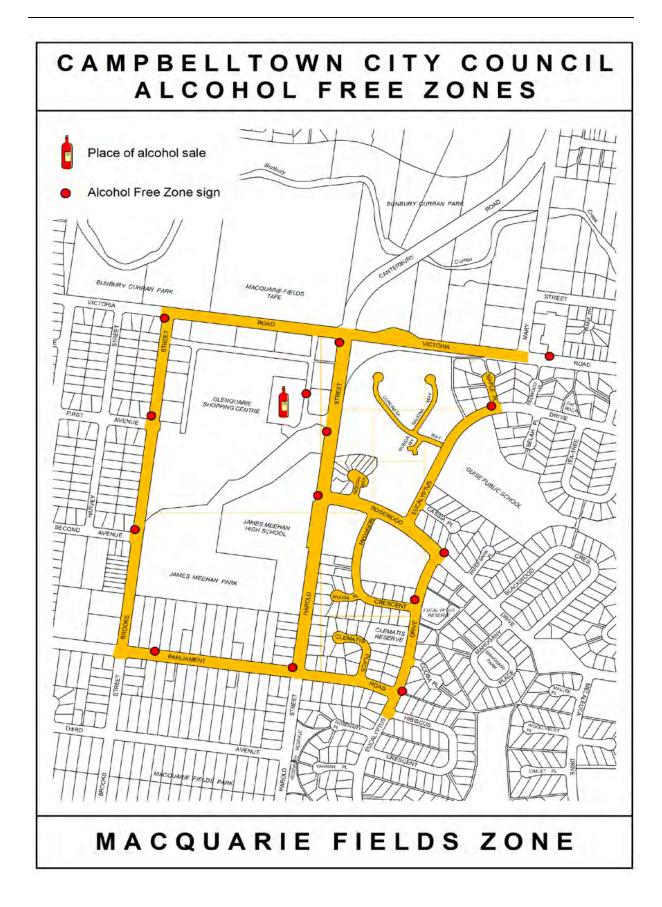
Councillor Mead asked for his name to be recorded in opposition to the resolution for Item 4.2 – North Area Alcohol Free Zones.

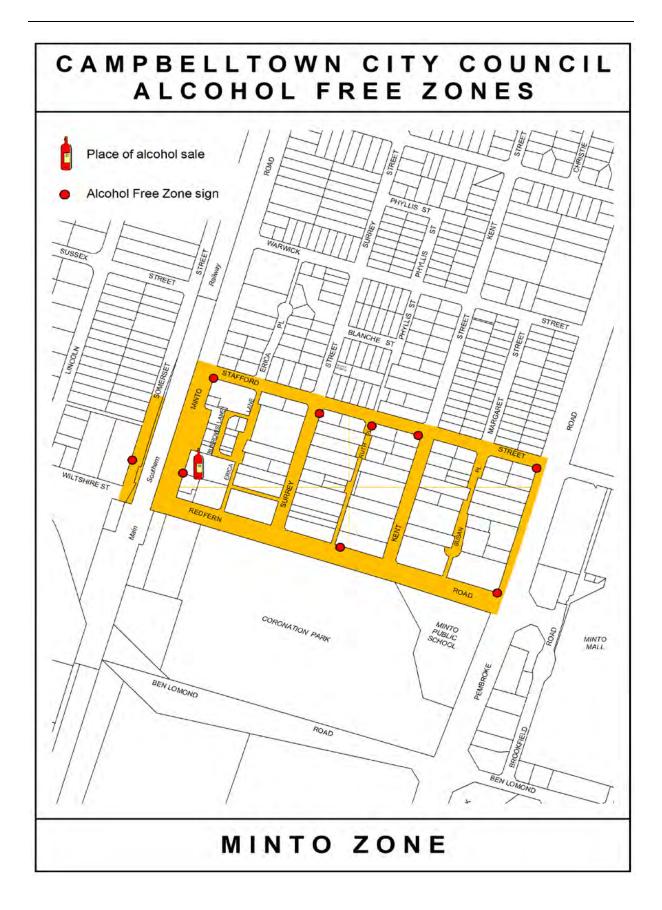
ATTACHMENT 1

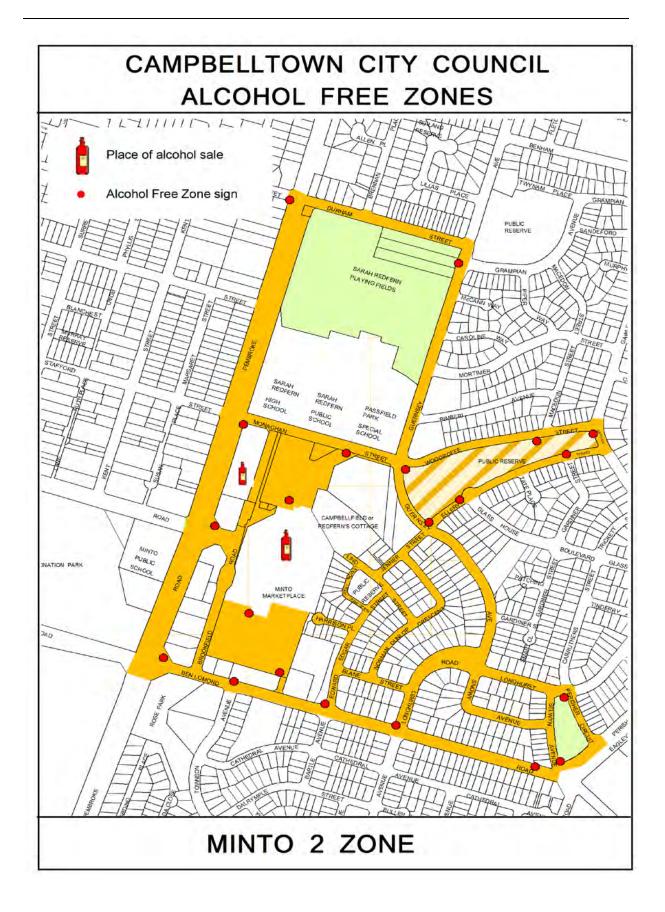


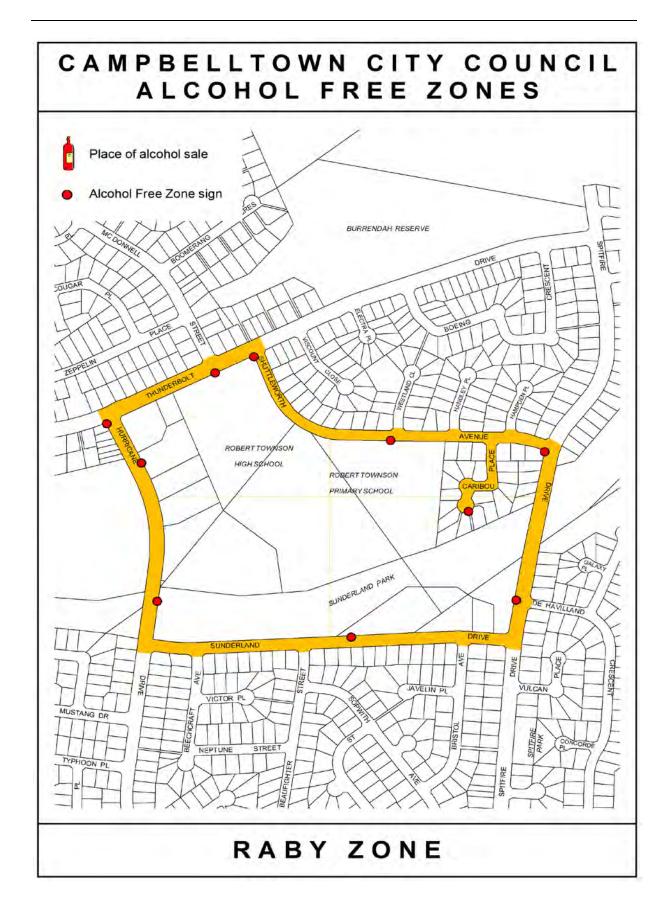


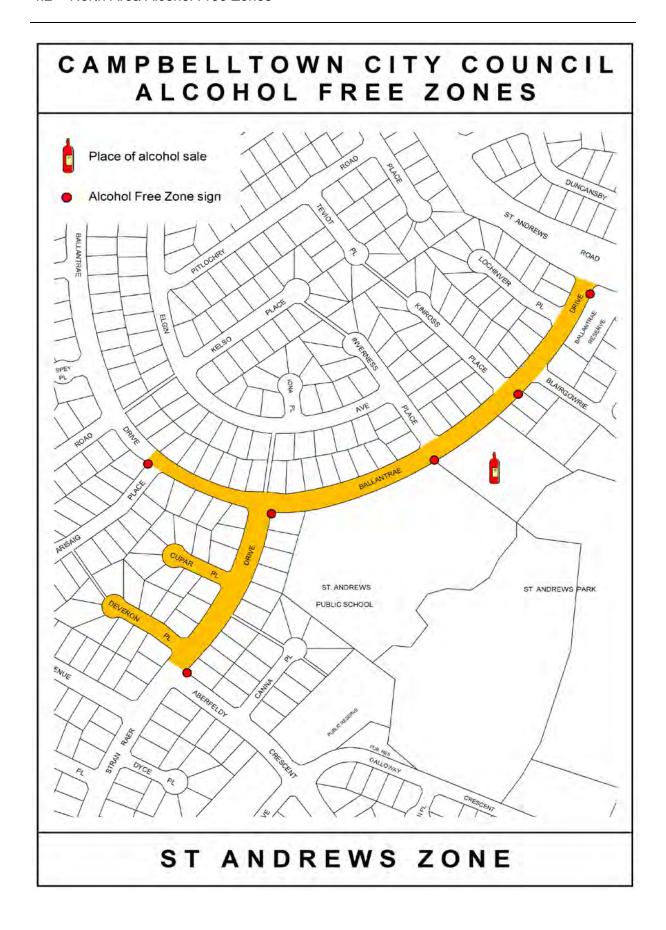












5. GENERAL BUSINESS

5.1 Hurlstone Agriculture High School

Committee's Recommendation: (Hawker/Thompson)

1. That Council writes to the Premier, Minister for Education and the Department of Education requesting that they reconsider moving Hurlstone Agricultural High School from Glenfield to Hawkesbury.

The correspondence is to articulate the following:

- expresses Council's disappointment to the Minister for Education and his Department for the lack of consultation with Campbelltown City Council and school community regarding the relocation of an iconic School
- the Historical and heritage value of the school's name to Campbelltown and the Macarthur region
- the social significance and military heritage connection to the Memorial Forest within the local area
- the current Macarthur agricultural student enrolment and the future skills knowledge demands for agricultural studies and Science, Technology, Engineering and Mathematics (STEM) within the Macarthur and South West Sydney region
- the need for the preservation of appropriate environmental buffers on the Glenfield site as part of any redevelopment of the land
- any redevelopment of the land must incorporate new and significant employment development initiatives to balance the extent of urban development on the land and elsewhere in the Glenfield to Macarthur Corridor.
- 2. That Council request the NSW Government to review the Glenfield Precinct Land use and Infrastructure Plan (Glenfield to Macarthur Urban Corridor Strategy) as a matter of urgency, and in collaboration with Council, to take account of the potential future development of surplus land at the Hurlstone Agricultural High School.

Such review must articulate an appropriate vision for the whole Glenfield precinct and involve the engagement of the community to reconsider:

- housing supply and density
- services, facilities and community amenity
- job creation

- the movement network including traffic and transport
- built and environmental outcomes
- infrastructure capacity.
- 3. That Council advise the NSW Government that the revised Land use and Infrastructure Plan for the Glenfield Precinct as agreed to by Council shall:
 - form the basis of detailed site planning for the surplus land at Hurlstone
 - complement the planning outcomes set out in the Glenfield Precinct Land use and Infrastructure Plan.

CARRIED

Council Meeting 15 December 2015 (Chanthivong/Kolkman)

That Corporate Governance Item 7.1 - Hurlstone Agriculture High School be brought forward and dealt with in conjunction with Item 5.1 - Hurlstone Agriculture High School.

Council Meeting 15 December 2015 (Hawker/Rowell)

That the Committee's Recommendation be adopted.

Amendment (Chanthivong/Kolkman)

That this Council:

- (i) Recognise the value of green open space at Hurlstone Agricultural High School (AHS) and its farm to the people of Campbelltown and South West Sydney.
- (ii) Recognises and reaffirms the value and prestige of Hurlstone AHS at Glenfield as one of NSW's finest schools and its educational value to South West Sydney.
- (iii) Remind the Baird Liberal Government and Minister Piccoli in particular of their previous opposition to any sale of Hurlstone AHS and its farm.
- (iv) Condemns the Baird Liberal Government and Minister Piccoli for their hypocrisy in the proposed total sell off of Hurlstone AHS and its farm to property developers.
- (v) Calls on the Baird Liberal Government to abandon the proposed sell off of Hurlstone AHS and its farm.
- (vi) Re-endorse the Councils original motion as moved by Hawker/Rule in December 2008 calling for Hurlstone AHS and its farm to be heritage listed and Councils subsequent submission to the independent Peters inquiry.

- (vii) Calls on the Baird Liberal Government to implement the recommendations in the 2009 Peters Inquiry and make further investment in education into Hurlstone AHS and its farm at Glenfield from the proceeds of its recent \$10.3b sale publicly owned electricity asset.
- (viii) Reaffirm its support for Councils motion as moved by Oates/Rowell in December 2009 opposing the sale of Hurlstone AHS and its farm.
- (ix) Requests that the Mayor and General Manager seek an urgent meeting with the Premier and Minister for Education outlining Council's total opposition to the sale of Hurlstone AHS and its farm and the relocation of Hurlstone AHS to Hawkesbury.
- (x) Organise a community rally and information forum in early 2016 to voice our community's opposition to the proposed sell off of Hurlstone AHS and its farm to developers.

LOST

A **Division** was called in regard to the Amendment for Item 5.1 - Hurlstone Agriculture High School with those voting for the Amendment being Councillors Borg, Brticevic, Chanthivong, Glynn, Kolkman, Lound and Oates.

Voting against the Amendment were Councillors Greiss, Hawker, Lake, Matheson, Mead, Rowell and Thompson.

The Amendment was **LOST** on the casting vote of His Worship the Mayor.

Motion (Hawker/Rowell)

1. That Council writes to the Premier, Minister for Education and the Department of Education requesting the NSW Government abandon its decision to move Hurlstone Agricultural High School from Glenfield to Hawkesbury.

The correspondence is to articulate the following:

- expresses Council's disappointment to the Minister for Education and his Department for the lack of consultation with Campbelltown City Council and school community regarding the relocation of an iconic School
- the Historical and heritage value of the school's name to Campbelltown and the Macarthur region
- the social significance and military heritage connection to the Memorial Forest within the local area
- the current Macarthur agricultural student enrolment and the future skills knowledge demands for agricultural studies and Science, Technology, Engineering and Mathematics (STEM) within the Macarthur and South West Sydney region
- the need for the preservation of appropriate environmental buffers on the Glenfield site as part of any redevelopment of the land

- any redevelopment of the land must incorporate new and significant employment development initiatives to balance the extent of urban development on the land and elsewhere in the Glenfield to Macarthur Corridor.
- 2. That, in the event that surplus land is sold then; Council requests the NSW Government to review the Glenfield Precinct Land use and Infrastructure Plan (Glenfield to Macarthur Urban Corridor Strategy) as a matter of urgency, and in collaboration with Council, to take account of the potential future development of surplus land at the Hurlstone Agricultural High School.
- 3. That such review must articulate an appropriate vision for the whole Glenfield Precinct and involve the engagement of the community to reconsider:
 - housing supply and density
 - services, facilities and community amenity
 - job creation
 - the movement network including traffic and transport
 - built and environmental outcomes
 - infrastructure capacity.
- 4. That Council advise the NSW Government that the revised Land use and Infrastructure Plan for the Glenfield Precinct as agreed to by Council shall:
 - form the basis of detailed site planning for the surplus land at Hurlstone
 - complement the planning outcomes set out in the Glenfield Precinct Land use and Infrastructure Plan.

Council Resolution Minute Number 230

1. That Council writes to the Premier, Minister for Education and the Department of Education requesting the NSW Government abandon its decision to move Hurlstone Agricultural High School from Glenfield to Hawkesbury.

The correspondence is to articulate the following:

- expresses Council's disappointment to the Minister for Education and his Department for the lack of consultation with Campbelltown City Council and school community regarding the relocation of an iconic School
- the Historical and heritage value of the school's name to Campbelltown and the Macarthur region
- the social significance and military heritage connection to the Memorial Forest within the local area
- the current Macarthur agricultural student enrolment and the future skills knowledge demands for agricultural studies and Science, Technology, Engineering and Mathematics (STEM) within the Macarthur and South West Sydney region
- the need for the preservation of appropriate environmental buffers on the Glenfield site as part of any redevelopment of the land

- any redevelopment of the land must incorporate new and significant employment development initiatives to balance the extent of urban development on the land and elsewhere in the Glenfield to Macarthur Corridor.
- 2. That, in the event that surplus land is sold then; Council requests the NSW Government to review the Glenfield Precinct Land use and Infrastructure Plan (Glenfield to Macarthur Urban Corridor Strategy) as a matter of urgency, and in collaboration with Council, to take account of the potential future development of surplus land at the Hurlstone Agricultural High School.
- 3. That such review must articulate an appropriate vision for the whole Glenfield Precinct and involve the engagement of the community to reconsider:
 - housing supply and density
 - services, facilities and community amenity
 - job creation
 - the movement network including traffic and transport
 - built and environmental outcomes
 - infrastructure capacity.
- 4. That Council advise the NSW Government that the revised Land use and Infrastructure Plan for the Glenfield Precinct as agreed to by Council shall:
 - form the basis of detailed site planning for the surplus land at Hurlstone
 - complement the planning outcomes set out in the Glenfield Precinct Land use and Infrastructure Plan.

A **Division** was called in regard to the Resolution for Item 5.1 - Hurlstone Agriculture High School with those voting for the Motion being Councillors Greiss Thompson, Rowell, Mead, Matheson, Lake and Hawker.

Voting against the Resolution were Councillors Borg, Brticevic, Chanthivong, Glynn, Kolkman, Lound and Oates.

The Council Resolution was **CARRIED** on the casting vote of His Worship the Mayor.

5.2 Pet Adoption Program

Committee's Recommendation: (Greiss/Rowell)

- 1. That Council trial a free pet adoption program for all pets adopted from Campbelltown City Council pound in February 2016 to encourage the adoption of animals resulting from unwanted Christmas presents.
- 2. That the offer is to be advertised to Campbelltown City Council residents and a report to be presented about the outcome of the trial.

CARRIED

Council Meeting 15 December 2015 (Kolkman/Oates)

That the report of the Acting Director Planning and Environment - Item 12.2 - Further information for consideration in dealing with the Planning and Environment Committee Item 5.2 - Pet Adoption Program - be brought forward and dealt with in conjunction with Item 5.2 - Pet Adoption Program.

Council Meeting 15 December 2015 (Hawker/Rowell)

That the Committee's Recommendation be adopted.

Amendment (Kolkman/Oates)

- 1. That a full report be presented to Council outlining the cost of a pet giveaway and the likely implications for sales from the Animal Care Facility in the balance of the year.
- 2. That the report include information about the potential for pets freely given from the Animal Care Facility to be abandoned by virtue of the fact that they were acquired at no cost.
- 3. That a decision on proceeding with a pet give away be deferred until the information sought in part 1 and 2 is available.

A **Division** was called in regard to the Amendment for Item 5.2 - Pet Adoption Program with those voting for the Amendment being Councillors Borg, Brticevic, Chanthivong, Kolkman, Lake, Lound and Oates.

Voting against the Amendment were Councillors Greiss, Hawker, Matheson, Mead, Rowell and Thompson.

Council Resolution Minute Number 232

That the above amendment be adopted.

A **Division** was called in regard to the Resolution for Item 5.2 - Pet Adoption Program with those voting for the Motion being Councillors Borg, Brticevic, Chanthivong, Kolkman, Lake, Lound and Oates.

Voting against the Resolution were Councillors Greiss, Hawker, Matheson, Mead, Rowell and Thompson.

20. CONFIDENTIAL ITEMS

No reports this round

There being no further business the meeting closed at 8.42pm.

P Hawker CHAIRPERSON

Reports of the City Works Committee Meeting held at 7.30pm on Tuesday, 8 December 2015.

Δ	CK	NC	WI	FD	GEN	IFNT	OF.	LAND
_	\mathbf{r}	-	7 V V L	ᅟᆫᄓ	ᅜᄔᆘ		OI.	LAND

DECLARATIONS OF INTEREST

Pecuniary Interests

Non Pecuniary – Significant Interests

Non Pecuniary – Less than Significant Interests

ITEM	TITLE	PAGE
1.	TECHNICAL SERVICES	3
1.1	Traffic Committee	3
1.2	Community Information Signage - Electronic Signs	20
1.3	Queen Street Public Domain Master Plan	25
2.	OPERATIONAL SERVICES	54
No rep	orts this round	54
3.	ASSETS AND SUPPLY SERVICES	54
3.1	T15/24 Extension of Minto Indoor Sports Centre	54
3.2	T15/21 Supply and Deliver Crane Truck	57
3.3	T15/18 Street Lighting on Eagle Vale Drive	59
3.4	T15/14 Catering at Campbelltown Sports Stadium	63
4.	EMERGENCY SERVICES	66
No rep	orts this round	66
5.	GENERAL BUSINESS	66
21.	CONFIDENTIAL ITEMS	67
21.1	Confidential Report Directors of Companies - City Works	67

Minutes of the City Works Committee held on 8 December 2015

Present Councillor S Dobson (Chairperson)

Councillor F Borg Councillor G Brticevic Councillor P Lake Councillor C Mead

Director Business Services - Mr M Sewell

Acting Director Community Services - Mrs J Uluibau

Director City Works - Mr W Rylands

Acting Manager Assets and Supply Services - Mr W Miller Acting Manager Compliance Services - Mr G Lussick Manager Emergency and Facility Management - Mr R Blair

Manager Executive Services - Mr N Smolonogov Manager Financial Services - Mrs C Mears Manager Healthy Lifestyles - Mr M Berriman Manager Human Resources - Mr B Clarence Manager Library Services - Mr G White Manager Operational Services - Mr A Davies Manager Technical Services - Mr K Lynch

Executive Assistant - Mrs K Peters

Apology (Lake/Brticevic)

That the apology from Councillor Chanthivong and Glynn be received and accepted.

CARRIED

Acknowledgement of Land

An Acknowledgement of Land was presented by the Chairperson Councillor Dobson.

DECLARATIONS OF INTEREST

There were no Declarations of Interest at this meeting.

1. TECHNICAL SERVICES

1.1 Traffic Committee

Reporting Officer

Manager Technical Services

Attachments

Minutes of the Local Traffic Committee Meeting of 12 November 2015 (contained within this report).

Purpose

To seek Council's endorsement of the recommendations arising from the Local Traffic Committee meeting held on 12 November 2015.

Report

RECOMMENDATIONS OF THE LOCAL TRAFFIC COMMITTEE ON 12 NOVEMBER 2015

Reports Listed for Consideration

LTC 15/24 Goldsmith Avenue, Pegasus Street and Milton Way, Campbelltown - parking restrictions associated with development

That Council approve the signposting plan Drawing No. 01453_241 Rev. 01 by C&M Consulting Engineers with amendment notes as described in the body of the report.

LTC 15/25 Glenfield Release Area Multiple Subdivisions - signs and Line Marking Proposals

That Council approve the signs and line marking plans prepared by JMD Development Consultants, Plan 10211(S) E3 Rev.A, 10211(T) E3 Rev. and 104203(B) E2 Rev.A for the respective subdivisions in the Glenfield Release area DA 2200/2014, DA 2167/2014 and DA 2124/2014.

LTC 15/26 Kellicar Road, Campbelltown - Macarthur Square Stage 4 final

- 1. That Council approve the Lend Lease signs and line marking plans for Kellicar Road, Campbelltown, being Cardno Drawings C1-3035A and C1-3036A, subject to:
 - (i) That 'Give Way' control be replaced with a 'Stop Sign' control at the internal access road intersection with Kellicar Road.
 - (ii) That the 'No Left Turn' sign at the opposite side of the internal access road be installed separately to the No Stopping sign.

- (iii) That a supplementary 'No Left Turn' sign be placed on the development side of the internal access road intersection.
- (iv) That the existing 'No Stopping' sign be relocated east of the existing pram ramp reducing the unrestricted parking from 38m to 32m.
- (v) That the existing parking lane on both sides of Kellicar Road be widened to 2.5m between the internal access road and Geary Street roundabout.
- (vi) That the ends of the proposed double barrier line be enhanced with a painted chevron island approaching the existing median and roundabout splitter island.
- (vii) That the existing advance kerbside painted median on the westbound approach to the roundabout be removed.
- 2. That Council require Lend Lease to dedicate the areas shown in Kellicar Road Proposed Road Dedication at Geary Street Roundabout, Council Plan No. 12782, as public road.
- That Lend Lease amend its 'Heavy Vehicle Management Plan' for Macarthur Square Stage 4 so that all delivery vehicles must use Geary Street to access the delivery docks.
- 4. That Council seek the support of Lend Lease to consider the design and installation of sunlight diffusing gantries prior to the entry of the 'under-croft' area.
- 5. That Council investigate bus zone operations in Kellicar Road, between the 'undercroft' area and Geary Street, with the view of rationalising facility support of these bus zones.

LTC 15/27 Potoroo Avenue, St Helens Park - Proposed Traffic Calming

- 1. That Council approve the concept plan (Job No. 12773) for the proposed traffic calming devices on Potoroo Avenue, St Helens Park and proceed to detailed design and installation.
- 2. That one extra set of rumble bars be installed opposite No. 61 Potoroo Avenue, St Helens Park.

Officer's Recommendation

That the recommendations of the Local Traffic Committee as detailed in the Minutes of the meeting held on 12 November 2015 be adopted.

Committee's Recommendation: (Borg/Brticevic)

That the Officer's Recommendation be adopted.

CARRIED

Council Meeting 15 December 2015 (Hawker/Lake)

That the Officer's Recommendation be adopted.

Council Resolution Minute Number 233

That the Officer's Recommendation be adopted.

ATTACHMENT



LOCAL TRAFFIC COMMITTEE MINUTES

12 November 2015

LOCAL TRAFFIC COMMITTEE

Traffic matters related to the functions delegated to councils under the *Transport Administration Act 1988*.

Minutes Summary

ITEM TITLE

LOCAL TRAFFIC COMMITTEE MINUTES

- 1. ATTENDANCE
- 2. APOLOGIES
- 3. CONFIRMATION OF MINUTES
- 4. BUSINESS ARISING FROM MINUTES
- 5. REPORTS LISTED FOR CONSIDERATION

LTC 15/24	Goldsmith Avenue, Pegasus Street and Milky Way, Campbelltown -
	parking restrictions associated with development

LTC 15/25 Glenfield Release Area Multiple Subdivisions - Signs and Line Marking Proposals

LTC 15/26 Kellicar Road, Campbelltown - Macarthur Square Stage 4 final

LTC 15/27 Potoroo Avenue, St Helens Park - Proposed Traffic Calming

6. LATE ITEMS

No reports this round

7. GENERAL BUSINESS

No reports this round

8. DEFERRED ITEMS

No reports this round

LOCAL TRAFFIC COMMITTEE MINUTES

Traffic matters related to the functions delegated to Councils under the *Transport Administration Act 1988*.

Minutes of the Local Traffic Committee held on 12 November 2015

1. ATTENDANCE

Campbelltown City Council

Manager Technical Services - Mr Kevin Lynch (Chairperson) Coordinator Traffic and Road Design - Mr Ajay Arora Team Leader Traffic Investigation - Mr Frank Sirc Administrative Assistant - Mrs Sue Lambert

Roads and Maritime Services

Ms Kaye Russell

Police Representatives

Senior Constable Maree Davies

Bus Companies

Interline - Mr Bill East

Representatives of Local Members of Parliament

Nil.

Acknowledgement of Land

An Acknowledgement of Land was presented by the Chairperson Mr Kevin Lynch.

2. APOLOGIES

Councillor Paul Lake
Police Representative - Sergeant Marcus Cotton
Representative of Local Member of Parliament - Mr Ray James

3. CONFIRMATION OF MINUTES

The Minutes of the previous meeting held on 15 October 2015 were recommended by the City Works Committee on 8 December 2015 and adopted by Council on 15 December 2015.

4. BUSINESS ARISING FROM MINUTES

No reports this round

5. REPORTS LISTED FOR CONSIDERATION

LTC 15/24 Goldsmith Avenue, Pegasus Street and Milky Way,

Campbelltown - parking restrictions associated with

development

Previous Report: Nil

Electorate: Campbelltown

Author Location: Traffic and Road Design Unit

Attachments

1. Locality Plan

- 2. Signposting plan Drawing No. 01453_241 Rev. 01 by C&M Consulting Engineers.
- 3. Turning movement plan, Drawing No. 01453_251: Rev 01 C&M Consulting Engineers
- 4. Urban Growth Additional Subdivision Developments on existing lots

Background (12/11/2015)

Council has approved a proposed development on Lot 1417 (refer Attachment 1), in the Western Sydney University precinct bounded by Goldsmith Avenue, Pegasus Street and Milky Way. The development involves the construction of 28 two storey terrace dwellings and 1 dedicated allotment for public laneway.

A line marking and sign posting plan (refer Attachment 2) prepared by C&M Consulting Engineers has been forwarded by the developer, Capital Developments for review and endorsement by Council. The plan shows a 6m wide service lane which will provide access for garbage collection between Pegasus Street and Milky Way. Parking restrictions are proposed in the service lane, Pegasus Street and Milky Way (refer to attachment 2) to accommodate the turning movements of an 8.8m service design vehicle (refer Attachment 3).

Council Officers have reviewed the submitted plans and recommend that the Line marking and Signposting Plan 01453_241 Rev 0I (Attachment 2) be approved subject to the following amendments:

- That an additional 'No Stopping' sign, R5-400 arrow right, be provided on Pegasus Street on the approach to Goldsmith Avenue (marked as Note A on Attachment 2) to restrict parking on the kerb return and define a 12m unrestricted parking space prior to the intersection.
- That a 'No Stopping' sign, R5-400 arrow right, be positioned in Milky Way on the western kerb (marked as Note B Attachment 2) on the approach to the right angle bend.
- 3. That pram ramps be provided on the footpath (marked Note C on Attachment 2)
- During the assessment of this plan further investigation revealed that there will be a series of developments along Goldsmith Avenue that will have service lanes at the

rear of dwellings (refer Attachment 4). It is recommended that a 'Give Way' sign and holding line be provided on the south western end of the laneway with Pegasus Street as it will become a cross intersection (marked as Note D Attachment 2).

At this stage it is unknown to Council Officers if the future cross intersections will be either a 'Give Way' or a 'Stop Sign' control pending on the development, position of buildings and landscaping on the corner sites with the intersections. This consideration will be undertaken in the future.

It is also recommended that the subdivisions along Goldsmith Avenue that involves the provision of public laneways be assessed for traffic impacts.

Officer's Recommendation

- 1. That Council approve the signposting plan Drawing No. 01453_241 Rev. 01 by C&M Consulting Engineers with amendment notes as described in the body of the report.
- 2. That Council assess the traffic impacts of future laneways at the rear of developments along Goldsmith Avenue as described in the body of the report.

Discussion (12/11/2015)

The Committee discussed the matter and supported the recommendations as presented.

Recommendation of Local Traffic Committee

That Council approve the signposting plan Drawing No. 01453_241 Rev. 01 by C&M Consulting Engineers with amendment notes as described in the body of the report.

LTC 15/25 Glenfield Release Area Multiple Subdivisions - Signs

and Line Marking Proposals

Previous Report: Nil

Electorate: Macquarie Fields

Author Location: Traffic and Road Design Unit

Attachments

Locality Plan – Subdivision Sites

2a & b Signs and Line Marking Plan 10211(S) E3 Rev.A Subdivision 1, DA 2200/2014

- 3. Signs and Line Marking Plan 10211(T) E3 Rev.A Subdivision 2, DA 2167/2014
- 4. Signs and Line Marking Plan 104203(B) E2 Rev.A Subdivision 3, DA 3124/2014

Background (12/11/2015)

Council has received the following signs and line marking plans from JMD Development Consultants on behalf of Mirvac Homes and Borvac for three subdivisions in the Glenfield Release Area as shown on the attached Locality Plan (refer Attachment 1):

- 1. Mirvac Homes Site 3.01A, Lot 29, DA 2200/2014, Hebe Terrace, Glenfield for 3 residential lots and a residue lot for road and drainage.
- 2. Mirvac Homes Lot 34, DA 2167/2014, DP 1192946, Atlantic Boulevard for 16 residential lots and dwellings and associated roads and earthworks.
- 3. Borvac, Stages 1 and 2, DA 3124/2014 for 19 residential lots, 6 residue lots, public reserve and associated roads and drainage.

Subdivision 1, Mirvac Homes- DA 2200/2014 (Attachment 2A)

This subdivision consists of 3 residential lots, a 40m minor road extension of Hebe Terrace and a T-intersection with stub road No 143 (Attachment 2 B). Both these roads are 6.5m wide. This stub road will service only a couple of lots for the short term but will ultimately be extended to the local road network in the future stages. A 'Restriction to User' condition is being imposed by Council on the small number of lots off Road No. 143 to have their garbage bins serviced on Hebe Terrace.

The signs and line marking plan 10211(S) E3 Rev. A (refer Attachment 2A and 2B) for this subdivision has the following features;

- Extension of the existing 'No Parking' restriction along the Riparian Environmental Corridor on the southern kerb of Hebe Terrace with the provision of a 'No Parking' R5-40 (L&R) sign.
- 2. Provision of C3 yellow 'No Stopping' edge lines on the kerb returns.

It is recommended that the signs and line marking plan 10211(S) E3 Rev. A be approved.

Subdivision 2, Mirvac Homes - DA 2167/2014 (Attachment 3)

This subdivision consists of 16 residential lots, the extension of Rolla Road and the provision of two 6.5m wide roads, Road 818 and 811.

The signs and line marking plan 10211 (T) E3 Rev. A (refer Attachment 3) for this subdivision has the following features;

- Provision of yellow 'No Stopping' C3 edge lines at all T intersection kerb returns and the right angle elbow bend of Road 811.
- Provision of 'No Parking' signs, R5-40, on the roads fronting the Riparian Environmental Corridor which is required to allow access to the Bush Fire Prone areas.
- 3. Provision of 'No Stopping' signs accompanying the yellow 'No Stopping' edge lines on the outside of the elbow bend of Road 811.
- The temporary provision of reflectorized guide posts and a hazard marker sign at the end of Road 811. This treatment will be removed upon the construction of Subdivision 3 as below.

It is recommended that the signs and line marking plan 10211(T) E3 Rev. A be approved.

Subdivision 3, Borvac, DA 3124/2014 (Attachment 4)

This subdivision consists of 19 residential lots, the extension of Rolla Road and the provision of Road 817, both roads being 6.5m wide.

The signs and line marking plan 10211 (T) E3 (refer Attachment 3) for this subdivision and has the following features;

- 1. Provision of R5-40 (L&R) 'No Parking' sign on the northern kerb of Rolla Road, along the Riparian Environmental Corridor.
- 2. Provision of yellow 'No Stopping' C3 edge lines on the kerb returns of two intersections as shown on attachment 4.

It is recommended that the signs and line marking plan 104203(B) E2 Rev. A be approved.

Officer's Recommendation

That Council approve the signs and line marking plans prepared by JMD Development Consultants, Plan 10211(S) E3 Rev. A, 10211(T) E3 Rev.A and 104203(B) E2 Rev.A for the respective subdivisions in the Glenfield Release area DA 2200/2014, DA 2167/2014 and DA 3124/2014.

Discussion (12/11/2015)

The Committee discussed the matter and supported the recommendation as presented.

Recommendation of Local Traffic Committee

That Council approve the signs and line marking plans prepared by JMD Development Consultants, Plan 10211(S) E3 Rev. A, 10211(T) E3 Rev.A and 104203(B) E2 Rev.A for the respective subdivisions in the Glenfield Release area DA 2200/2014, DA 2167/2014 and DA 3124/2014.

1.1 Traffic Committee

LTC 15/26 Kellicar Road, Campbelltown - Macarthur Square

Stage 4 final

Previous Report: CTC 07/27

Electorate: Campbelltown

Author Location: Traffic and Road Design Unit

Attachments

1. Locality sketch

Signs and line marking plan CI-3035A

3a & b Intersection Details on Kellicar Road Geary Street roundabout (Attachments 3a - Signs and line marking plan CI-3036A, and 3b -Turning path plan CI-3081A)

Intersection Kellicar Road and Internal Access Turning path plans CI-3080A

5. Roundabout exit lane kerb return details plan Cl-3041B

6. Kellicar Road Proposed Road Dedication at Geary Street Roundabout, Council

Plan No. 12782

Background (12/11/2015)

Lend Lease Property Management Australia Pty Ltd, owners of Macarthur Square Shopping Centre, has forwarded plans prepared by Cardno Limited, the consultant for the project, to Council for our consideration. The plans identify proposed changes to traffic control devices in Kellicar Road, Campbelltown, between Geary and Tailby Streets, associated with Stage 4 works for the Macarthur Square Shopping Centre.

The plans include the development of a new internal access off Kellicar Road, between Geary Street and Stowe Avenue, and modifications to the roundabout on Kellicar Road and Geary Street. A maintenance access is also proposed off Kellicar Road within the existing bus zone on the westbound approach to the Geary Street roundabout (refer Attachment 1).

The proposal includes the following:

- Provision of a 'Give Way' intersection treatment at the internal access and Kellicar Road. The access will service a major loading dock for 19m articulated delivery vehicles and an at grade car park (refer note 1, Attachment 2).
 - Council comment: The internal access road has a link to Gilchrist Drive and will be treated with traffic calming devices. The internal access road will also provide a new opening across the footpath on Kellicar Road, which is anticipated to have increased pedestrian traffic in the future. It is recommended that this 'Give Way' control be replaced with a 'Stop Sign' control for traffic management purposes and to enhance the safety of pedestrians.
- 2. Provision of a R2-5A sign, 'No Left Turn', 'Vehicles Over 6m' restriction out of the internal access onto Kellicar Road. This provision discourages delivery vehicles travelling through the residential areas south/west of Macarthur Square via Stowe Avenue.

Council comments: It is recommended that this sign be installed separately from a proposed 'No Stopping' sign placed opposite the intersection (northern kerb) and that a second 'No Left Turn' supplementary sign be placed on the development side (south west corner) of the intersection as vehicles leave the property (refer note 2 Attachment 2).

3. The removal of approximately 72m of on-street parking, which consists of 39m on the northern kerb and 33m on the southern kerb, with 'No Stopping' restriction at the intersection of the internal access road (refer note 3 Attachment 2). This restriction is required to cater for the turning path of 19m articulated delivery vehicles (refer note 3 Attachment 4).

Council comments: The 39m 'No Stopping' opposite the intersection will leave a residue of 28m of unrestricted parking on Kellicar Road between the intersection and the right angle bend with Stowe Avenue. On the southern side, it is recommended that the unrestricted parking be reduced from 38m to 32m by relocating the existing 'No Stopping' sign to the east of an existing pram ramp (refer note 3a Attachment 2).

4. The removal and replacement of 75m long, 1.5m wide central median with double barrier centre line on Kellicar Road between the roundabout of Geary Street and the new internal access road (refer note 4 Attachment 2). The removal of the median is to accommodate the right hand turn movement of 19m articulated delivery vehicles onto Kellicar Road and provide improved clearance between heavy vehicles and parked cars. The existing carriageway with the median is approximately 5.6m each way, accommodating a 3.5m lane and 2.1m parking area. The removal of the existing 1.5m wide central median will widen the through lane.

Council comments: With these changes, it is recommended that the parking lane be widened to 2.5m leaving a travel lane of 3.9m. It is also recommended that the end sections of the double barrier lines be marked with short sections of painted median to align the line marking with the alignment of the remaining section of median and also the splitter island at the roundabout with Geary Street.

5. Modifications to the roundabout at the entry into Macarthur Square. The geometry of the entry curve has been altered so that there are two lanes entering Macarthur Square. The developer has advised that the return radius has been increased from the existing 15m to 25m, with slight adjustments on the existing chevron painted median, pavement arrows and continuity lines (refer notes 5 and 5A Attachment 3a and 3b).

Council comments: Council Officers have anecdotally observed in past seasonal shopping periods that the parking demand is higher than normal with motorists queuing out of the entry onto Kellicar Road and the roundabout. Even with the introduction of new technology (refer Point 9 below) it is recommended that the existing advance kerb side painted median in Kellicar Road, on the approach to the roundabout and the departure side of the bus zone be removed with the view of improving access.

- 6. Provision of traffic calming speed cushions on the entry access off the roundabout into Macarthur Square (refer note 6 Attachment 3a). These devices are within the private property of the shopping centre and will be signposted with advance warning signs.
- 7. Improved pedestrian crossing points at the entry into Macarthur Square at the splitter island of the roundabout. The existing 1m wide crossing point is being replaced with two 2m wide islands providing improved protection to pedestrians. Pedestrian

1.1 Traffic Committee

pavement 'LOOK' stencils are proposed at these points. (refer note 7 Attachments 3a and 5).

- 8. Introduction of a service driveway within the existing bus zone (refer note 8 Attachment 3a). This will necessitate the relocation of one of two Council's Bus Shelters further west of the proposed driveway in Kellicar Road. The driveway is an access for maintenance of a grease arrestor and electrical substation and not for general deliveries and parking. Access is likely to be infrequent, potentially in the order of 3-5 week's interval.
- 9. Provision of Parking Management Technology will improve the level of service at peak shopping periods/seasons especially at the entry into Macarthur Square off the Kellicar Road and Geary Street roundabout. Number plates of cars will be recorded by plate recognition cameras so that the drivers do not have to stop to take a ticket. Automated boom gates will be used at the entrances when required to stop vehicles attempting to exit the car park through the entrance.

In regards to the sign and line marking plans presented, Council Officers are recommending that the submitted plans CI-3035A and CI-3036A be approved subject to amendments as described above.

It should be noted that traffic devices on Geary Street, adjacent to the roundabout on Kellicar Road are currently in Lend Lease's ownership. Council has had to undertake regular maintenance of these traffic devices. Staff also has concerns that the current property boundaries require pedestrians and vehicles to use the private land to traverse the public roadway (Kellicar Road). As such, to allow the public unfettered access to the road carriageway and footpaths on Kellicar Road, it is recommended that Council require Lend Lease to dedicate the areas shown in Council Plan No 12782 (Attachment 6) as public road.

A 'Heavy Vehicle Management Plan' has also been submitted by the developer for the expansion of Stage 4 which indicates the following:

- a) Delivery vehicles approaching from Menangle will use Menangle Road, Geary Street and Kellicar Road to enter the dock (refer Attachment 4).
- b) Delivery vehicles approaching from the Gilchrist Drive end will use Kellicar Road.

Council Officers have reviewed the delivery truck routes and have noted that Kellicar Road between Bolger Street and Geary Street is an existing 'No Truck' route which was approved by Council at its meeting of 26 June 2007. In regards to these restrictions, it is recommended that the delivery vehicles approaching from Gilchrist Drive, as per point (b) above, use Menangle Road rather than Kellicar Road by diverting via Bolger Street or Tindall Street before entering from Geary Street, similar to point (a) above.

The re-diversion of trucks via Geary Street will reduce the amount of heavy vehicle traffic through the Macarthur Square under-croft area, where a pedestrian crossing exists. This pedestrian crossing has been the subject of concerns with respect to the difficulty for motorists in sighting pedestrians within the shadow environment of the under croft area. At the insistence of Council, additional lighting was provided by the management of Macarthur Square but the issue of lighting differential still remains. Additional lighting at the portal entry is considered necessary to improve the lighting differential from the bright daylight experienced on Kellicar Road compared to the shadow in the under-croft. It is suggested that other options be investigated such as the installation of diffuser gantries on the approach to the under croft, particularly at Bolger Street. As such, it is recommended that Council seek the support of Lend Lease to consider the design and installation of sunlight diffusing gantries prior to the entry of the 'under-croft' area.

Since the development of the bus interchange at Macarthur Rail Station, bus standing areas have been provided on Menangle Road together with the pre-existing bus standing areas on Kellicar Road. There appears to be an oversupply of bus zones with many bus stand areas being underutilised. With the increasing development of Macarthur Square (Stage 4) and increasing traffic demand on Kellicar Road it is recommended that Council investigate the possibility of rationalising bus stops in this precinct.

Officer's Recommendation

- That Council approve the Lend Lease signs and line marking plans for Kellicar Road, Campbelltown, being Cardno Drawings CI-3035A and CI-3036A, subject to:
- (i) That 'Give Way' control be replaced with a 'Stop Sign' control at the internal access road intersection with Kellicar Road.
- (ii) That the 'No Left Turn' sign at the opposite side of the internal access road be installed separately to the No Stopping sign.
- (iii) That a supplementary 'No Left Turn' sign be placed on the development side of the internal access road intersection.
- (iv) That the existing 'No Stopping' sign be relocated east of the existing pram ramp reducing the unrestricted parking from 38m to 32m.
- (v) That the existing parking lane on both sides of Kellicar Road be widened to 2.5m between the internal access road and Geary Street roundabout.
- (vi) That the ends of the proposed double barrier line be enhanced with a painted chevron island approaching the existing median and roundabout splitter island.
- (vii) That the existing advance kerbside painted median on the westbound approach to the roundabout be removed.
- That Council require Lend Lease to dedicate the areas shown in Kellicar Road Proposed Road Dedication at Geary Street Roundabout, Council Plan No 12782, as public road.
- That Lend Lease amend its 'Heavy Vehicle Management Plan' for Macarthur Square Stage 4 so that all delivery vehicles must use Geary Street to access the delivery docks.
- That Council seek the support of Lend Lease to consider the design and installation of sunlight diffusing gantries prior to the entry of the 'under-croft' area.
- That Council investigate bus zone operations in Kellicar Road, between the 'undercroft' area and Geary Street, with the view of rationalising facility support of these bus zones.

Discussion (12/11/2015)

The Manager Technical Services outlined the proposed changes to traffic control devices in various locations associated with Stage 4 works for the Macarthur Square Shopping Centre, including plans for a new internal access off Kellicar Road between Geary Street and Stowe Avenue and modifications to the roundabout on Kellicar Road and Geary Street.

The RMS representative asked if the new internal access road links to existing road in Gilchrist Road, and also will pedestrian access be incorporated into the upgrade.

The Manager Technical Services advised that the developer is still working on designs to provide improved access from the nearby senior living complex.

The RMS representative advised that the lighting in the under croft needs to be upgraded and should be on twenty four hours a day seven days a week. The Manager Technical Services advised that Lend Lease are looking at options to improve the lighting in the under croft.

The RMS representative also advised that in reference to point (i) that 'Give Way' control be replaced with a 'Stop Sign' this should meet the stop line warrant.

The Committee discussed the matter and supported the recommendations as presented.

Recommendation of Local Traffic Committee

- That Council approve the Lend Lease signs and line marking plans for Kellicar Road, Campbelltown, being Cardno Drawings CI-3035A and CI-3036A, subject to:
- (i) That 'Give Way' control be replaced with a 'Stop Sign' control at the internal access road intersection with Kellicar Road.
- (ii) That the 'No Left Turn' sign at the opposite side of the internal access road be installed separately to the No Stopping sign.
- (iii) That a supplementary 'No Left Turn' sign be placed on the development side of the internal access road intersection.
- (iv) That the existing 'No Stopping' sign be relocated east of the existing pram ramp reducing the unrestricted parking from 38m to 32m.
- (v) That the existing parking lane on both sides of Kellicar Road be widened to 2.5m between the internal access road and Geary Street roundabout.
- (vi) That the ends of the proposed double barrier line be enhanced with a painted chevron island approaching the existing median and roundabout splitter island.
- (vii) That the existing advance kerbside painted median on the westbound approach to the roundabout be removed.
- That Council require Lend Lease to dedicate the areas shown in Kellicar Road Proposed Road Dedication at Geary Street Roundabout, Council Plan No 12782, as public road.
- That Lend Lease amend its 'Heavy Vehicle Management Plan' for Macarthur Square Stage 4 so that all delivery vehicles must use Geary Street to access the delivery docks.
- That Council seek the support of Lend Lease to consider the design and installation of sunlight diffusing gantries prior to the entry of the 'under-croft' area.
- That Council investigate bus zone operations in Kellicar Road, between the 'undercroft' area and Geary Street, with the view of rationalising facility support of these bus zones.

LTC 15/27 Potoroo Avenue, St Helens Park - Proposed Traffic

Calming

Previous Report: Nil

Electorate: Campbelltown

Author Location: Traffic and Road Design Unit

Attachments

Locality Plan (contained within the report)

Concept Plan - Job No. 12773 (contained within the report)

Background (12/11/2015)

Council has received numerous concerns from the local community regarding the speed of vehicles travelling through Potoroo Avenue, St Helens Park, creating a potential for 'loss of control' accidents.

Potoroo Avenue links Larapinta Crescent, Boongary Street and Kowari Street (refer to Attachment 1). Potoroo Avenue is a residential area and provides access to 75 houses.

Council Officers investigated the issues raised by installing a CCTV camera. The analysis of the captured footage indicate that motorists are cutting corners at the bends between Larapinta Crescent and Kowari Street. The locations which require traffic calming devices in order to reduce the speed and potential loss of control and to enhance the safety of the road users and the residents have been identified, following Council Officers investigation and analysis of the problems identified.

Council Officers have subsequently prepared a concept plan showing the location of the proposed traffic calming devices which include series of rumble bars and kerb side medians to reduce speed and prevent corner cutting (refer to Attachment 2) by motorists.

Community consultation was carried out and consultation letters were sent to 43 residents in the vicinity of the proposed devices together with a copy of the concept plan (Attachment 2) for their comments. The consultation resulted in two responses. One response supported the proposal requesting that these traffic calming devices be installed as soon as possible. The other response suggested installing a 'STOP' sign on Kowari Street, at Potoroo Avenue. This suggestion was investigated further. It was noted that there is no history of accidents in the last 5 years at this location and the sight distance is adequate. As such, a 'STOP' sign is not considered to be an appropriate solution.

It is recommended that in order to enhance the safety of the residents and road users, Council approve the concept plan for the installation of traffic calming devices on Potoroo Avenue, St Helens Park and prepare a design in accordance with Australian Standards and Roads and Maritime Services requirements.

Officer's Recommendation

That Council approve the concept plan (Job No. 12773) for the proposed traffic calming devices on Potoroo Avenue, St Helens Park and proceed to detailed design and installation.

Discussion (12/11/2015)

The Manager Technical Services advised that following a number of concerns raised by the community it is proposed to install traffic calming devices in Potoroo Avenue.

The RMS representative expressed concern that Council is creating an 'S' treatment for motorists which will make the area much worse. It was suggested that double centre lines be installed, although it was felt that drivers would not take note of the centre lines.

Following further discussion it was suggested one extra set of rumble bars be installed opposite No. 61 Potoroo Avenue.

Recommendation of Local Traffic Committee

- That Council approve the concept plan (Job No. 12773) for the proposed traffic calming devices on Potoroo Avenue, St Helens Park and proceed to detailed design and installation.
- 2. That one extra set of rumble bars be installed opposite No. 61 Potoroo Avenue, St Helens Park.

6. LATE ITEMS

No reports this round

7. GENERAL BUSINESS

No reports this round

8. DEFERRED ITEMS

No reports this round

There being no further business the meeting closed at 9.50am.

Kevin Lynch CHAIRPERSON

1.2 Community Information Signage - Electronic Signs

Reporting Officer

Manager Technical Services

Attachments

Nil

Purpose

To advise Council on the feasibility and cost of purchasing and erecting fixed permanent electronic signs in the Campbelltown Local Government Area along major transport corridors to promote Council community events.

History

Council at its meeting held 6 May 2014 requested that a report be presented outlining the feasibility and cost of purchasing electronic signs in the Campbelltown Local Government Area.

Council is currently using a number of methods to advise the community of events and activities. These include:

- website
- Facebook
- banners
- variable message boards
- community and road safety trailers (CARs)
- fixed message boards
- bus shelter posters.

Council erects banners at various locations to inform the community about upcoming events. These banners are erected at temporary sites in predominant locations within the city. These events are also advertised on 13 Council community bus shelter locations. In the lead up to events, Council also uses both variable message boards and the CaRS trailers.

This report will compare various physical signage methods that could be considered.

Report

In order for Council to achieve the most effective strategy to publicise community information the two main transport corridors (being rail and road) were considered. Each of the transport corridors have significant differences in the method in which messages can be displayed and the amount of content that can be displayed.

Location Types

Road corridors

Within the road corridor, the messages can generally be displayed along the carriageway or at intersections. When displayed along the carriageway, the message has to be very concise as the amount of content that can be absorbed by a person within the vehicle is dependent on the travel speed. Obviously the faster the speed, the simpler the content of the message and the larger size font used. In placing messages along a road corridor, Council has to be extremely mindful not to distract the driver as it may result in road accidents.

Placing messages at intersections must also not be a distraction to the driver and again the design of the sign is very important. At these locations, the amount of content may be slightly increased, but it is only effective for the vehicle stopping at the intersection. The location of these signs should restrict the reading of the message while driving through the intersection.

Bus shelter displays are also common throughout most local government areas and convey messages to both walking and driving public. These displays can consist of large text providing the main message to the vehicle occupants, while smaller text can convey more detail to people on foot or bicycle.

Rail corridor

Messages positioned for the attention of rail commuters can generally be located at two types of locations:

- 1. outside the train stations, for the benefit of people walking to/from
- 2. along the rail corridor, for commuters travelling on the train.

Messages aimed at the rail public have a distinct advantage in that they can capture a more concentrated audience of people, while those people travelling on roads are far more dispersed.

In both cases, it would be easier if these messages were located on Council owned land rather than on State Rail or RMS land. To negotiate a deal to place this infrastructure on State owned land can be quite complicated, and may take considerable time to finalise an arrangement. The ongoing access to this infrastructure would also require special training and access permissions.

Messages aimed at the commuter while travelling on the train would be limited in terms of the amount of content provided, and would generally have to be quite large to allow the messages to be read. Messages aimed at people walking to and from the station would be able to have more content and be smaller in font size as commuters would be able to stop and read the content.

Non-electronic forms for signage are primarily used by Council, along with one electronic sign and a number of variable message boards (these are mainly used on road works).

Display types

Electronic signage

Electronic signage can be generally classified into types. The first type is a text only display similar to that used in variable message boards. These can be either full or single colour. The other more popular type is the full graphical display (which allows text and graphics).

A full graphic sign would need to have strict guidelines around the graphic art displayed if used along main road corridors to ensure that the message does not become a distraction to drivers. The guidelines may not need to be as strict for signs erected near the rail corridor.

The cost of providing graphic displays varies significantly depending on the size and distance from which the display is to be read. The closer the reader is to the display, the lesser the spacing between the LED on the panel and therefore the greater the number of LEDs required.

The standard bus shelter size sign is 1800mm high by 1100mm wide. A sign of this size, double sided and being able to be read from a distance not less than 5m, would cost in the order of \$35,000 (supply only). The installation and provision of power would be an additional cost of approximately \$2,000 and this would be dependent on power availability in the near vicinity. It should be noted that this style of sign cannot be currently run on solar power due to the high amount of energy required.

For a display to be legible closer than 5m, the cost of the display would rise to approximately \$45,000. When catering for transport that is travelling at speed (on road or rail), the size of the sign would need to be at least doubled and the cost is estimated at \$60,000 (double sided sign).

Generally, the information is uploaded to these electronic displays by the cellular network and the cost would be approximately \$400 per year per device. The information can be uploaded through a wireless connection on site, but would require a person to visit each display individually to upload the information, which would not be the preferred approach.

A distinct advantage of this type of display is that multiple messages can be displayed and the message changeover costs are more economical than the poster style displays.

Poster signage

This is similar to Council's current bus shelter signage. The shelters are generally double sided displays with the posters manually installed. The display can be either powered by solar or off the street lighting circuit. This type of display is by far the least expensive in terms of capital outlay, as well as ongoing maintenance. This type of display can be graphical or text only.

The cost to purchase and install one display would be in the order of \$4,000 with the lighting of the display being an additional charge. This type of display can either be mounted in a bus shelter or be a free standing unit (FSU). There is the opportunity to offset both the capital and operating costs of providing additional FSUs to areas such as train stations by negotiating a contract with an external provider such as Adshel. Such a deal would require some of these units to be used for advertising and it would need to be confirmed if it is permissible under our planning regulations.

Currently, the design, printing and installation of the posters for Council's 13 bus shelters is managed entirely in house. The cost to produce and install one full set of posters is approximately \$1,600.

Poster signage can also be provided on rotating displays which allows for two different messages to be displayed. These displays are more expensive than the static poster displays and Council would need to outsource the printing and installation of the posters. The advantage of this type of signage would be that more than one message could be displayed at the one time.

Summary

To provide information to people travelling along main transport corridors where vehicles are moving at speeds greater than 50kph is difficult, in terms of the size of the display and the amount of information that can be disseminated. This applies to both main road and rail transport corridors.

As mentioned in the report, displays provided within the road corridor would have to consider the impact on drivers. This consideration affects both the location of the sign and the content of the display. This would also apply to displays at intersections. Displays at intersections designed to capture the stationary driver are also limited by the number of people that actually get to view the sign as it is possible that the front vehicles would be the only vehicles that can see the display.

In order to ensure Council delivers the message to as many people as possible, it is suggested that these display would have to be erected in a number of locations along the road and rail network. The cost of each electronic display would make the cost of a purely electronic solution very expensive and cost prohibitive for Council. The use of any display targeting a fast moving audience (in a vehicle or train) will have to be greater in size than for pedestrians or stationary audience, and finding the correct available space may prove difficult.

When considering the cost, readability and safety issues, a strategy Council may consider is to provide a static poster display in each rail station precinct, with the view of capturing as many commuters on foot as possible. This strategy will allow more information to be disseminated on any one display, as well as allowing people to more accurately note the information. This may be in the form of taking a photo of the sign, scanning a QR code or simply jotting down some points.

The second part of the strategy would be to extend the poster scheme to more Council managed bus shelter sites throughout the city. Alternately, more FSUs could be provided at busy pedestrian locations - i.e outside shopping centres, leisure facilities, etc. These sites will allow both slow moving vehicles as well as people on foot to view the information.

It is recommended that a trial take place in the Campbelltown CBD. As part of the trial, City Works will liaise with Communications and Marketing to ascertain the effectiveness of this type of signage in delivering key Council messages. In addition to the trial work undertaken, if the cost of this type of display becomes more economically viable, they would be considered for other locations in the CBD or other town centres such as Ingleburn or Macarthur.

It is suggested that the use of event banners, variable message boards and CaRS trailers continue to be used for specific events. In regard to banner sites, it is suggested that in order to provide a more professional appearance, permanent support structures be installed at the major sites used by Council to promote events.

Officer's Recommendation

- 1. That Council explore the opportunities to install Free Standing Units on designated bus routes and within rail station precincts that can be used for Council information and advertising messages.
- 2. That one electronic signage unit be installed within the Campbelltown CBD to trial its cost effectiveness in delivering Council messages, and staff report back to Council within twelve months of installation on the results of the trial.

Committee's Recommendation: (Lake/Mead)

That the Officer's Recommendation be adopted.

CARRIED

Council Meeting 15 December 2015 (Hawker/Lake)

That the Officer's Recommendation be adopted.

Council Resolution Minute Number 233

That the Officer's Recommendation be adopted.

1.3 Queen Street Public Domain Master Plan

Reporting Officer

Director City Works

Attachments

Department of Planning and Environment "Campbelltown Precinct Land Use and Infrastructure Analysis Report" (contained within the report)

Purpose

To provide an update to Council regarding the reconstruction of the footpath in the Queen Street CBD.

Report

Council at its meeting of 12 November 2013 requested a further report on the findings of the Expressions of Interest for footpath reconstruction in Queen Street, Campbelltown. The report recommended the replacement of the various pavement treatments with a coloured stamped or 'saw-cut' patterned concrete. A budget of \$2.15m was estimated by the City Works Division as adequate to undertake the footpath reconstruction of Queen Street in one of these pavement treatments.

Funds were provided (approximately \$200,000) in the City Works Divisional 2014-2015 budget to further the design and investigative work in response to Council's request for the footpath reconstruction of Queen Street. However, prior to commencing this work, the Department of Planning & Environment released their 'Glenfield to Macarthur Urban Renewal Corridor Strategy'.

This strategy included a significant amount of work regarding the public domain in the Campbelltown CBD, including Queen Street. Page 24 of the Campbelltown Precinct Land Use and Infrastructure Analysis Report that was prepared by the Department of Planning & Environment, and provided as attachment 1, details a "Queen Street Public Domain Vision" and provides six design principles that would need to inform any public domain upgrade.

In considering the Department's vision for the Campbelltown CBD, it is recommended that Council prepare a Public Domain Master Plan for the Campbelltown CBD, that includes Queen Street. This Plan would need to consider the broad range of factors identified in the State's 'Land Use & Infrastructure Analysis' undertaken for the Campbelltown precinct as well as planning work that Council is currently undertaking for the CBD relating to traffic, parking and land use. A Public Domain Master Plan would assist Council in determining the most appropriate way to upgrade the footpaths and interface to the adjacent spaces and buildings.

It should be noted that Council is already being approached by a number of developers/land owners with preliminary proposals for redeveloping properties that either front onto Queen Street or the adjacent areas. At this point of time, Council does not have an overall strategy to provide these parties with information relating to the type/character of public domain it wants to see in Queen Street or the adjoining public and private spaces within the Campbelltown CBD that will be created with any redevelopment.

As such, and in light of impending redevelopment of properties on or near to Queen Street and prior to Council undertaking any major reconstruction of the footpaths in Queen Street, it is recommended that in the first instance, Council develop a Public Domain Master Plan for the Campbelltown CBD that includes the Queen Street precinct. It is believed that the Master Plan should align with the design principles that relate to the Department of Planning's 'Queen Street Public Domain Vision' (p24 of attachment 1), and include consideration of any amendments that may result from the outcomes of the public exhibition, and the finalised Land Use and Infrastructure Analysis. The Public Domain Master Plan will also help to inform Council on any major upgrade work that should occur on, and adjacent to, Queen Street.

As such, it is considered more important and appropriate to utilise some of the funds that have been set aside for the footpath reconstruction in Queen Street, for the development of a Public Domain Master Plan for the Campbelltown CBD, including Queen Street.

Aside from the need to develop a public domain master plan before any major upgrade is undertaken, it was realised that the look of Queen Street could be improved in the interim through a series of 'simple' enhancements. As such, the City Works Division is in the process of undertaking a program of minor works to improve the appearance of Queen Street in the short-term. This work includes:

- 1. repair of the paved areas where service authorities had undertaken work, but not lodged the paperwork with Council to initiate the repairs
- 2. engagement of an appropriate company to provide a professional steam clean of all of the pavers and concrete seats, to help improve their look
- 3. repair of all of the tactile tiles along Queen Street to better assist pedestrians who are blind or visually impaired
- 4. replacement of the torn shade structure cloth over Queen Street, and adjacent to the Lithgow Street mall
- 5. removal of the trees in Queen Street that are causing damage to the pavers and kerb and gutter, and repair of the affected pavers and kerb and gutter
- 6. installation of bollards in locations where vehicles had been driving onto the footpath and causing damage to the pavers.

Officer's Recommendation

- 1. That Council note the report, particularly with respect to the release of the Department of Planning's "Campbelltown Precinct Land Use & Infrastructure Strategy" and its' impact on any upgrade proposed for Queen Street.
- 2. That Council complete the interim work on improving the current public domain in Queen Street.
- 3. That Council revote some of the funds originally set aside in the 2015-2016 budget for the reconstruction of Queen Street, towards development of a Public Domain Master Plan for the Campbelltown CBD, including Queen Street.
- 4. That as a matter of urgency, staff arrange for quotations to be sought from suitably qualified consultancies to develop a Public Domain Master Plan for Queen Street.

Committee's Recommendation: (Lake/Brticevic)

That the Officer's Recommendation be adopted.

CARRIED

Council Meeting 15 December 2015 (Hawker/Lake)

That the Officer's Recommendation be adopted.

Council Resolution Minute Number 233

That the Officer's Recommendation be adopted.

ATTACHMENT 1

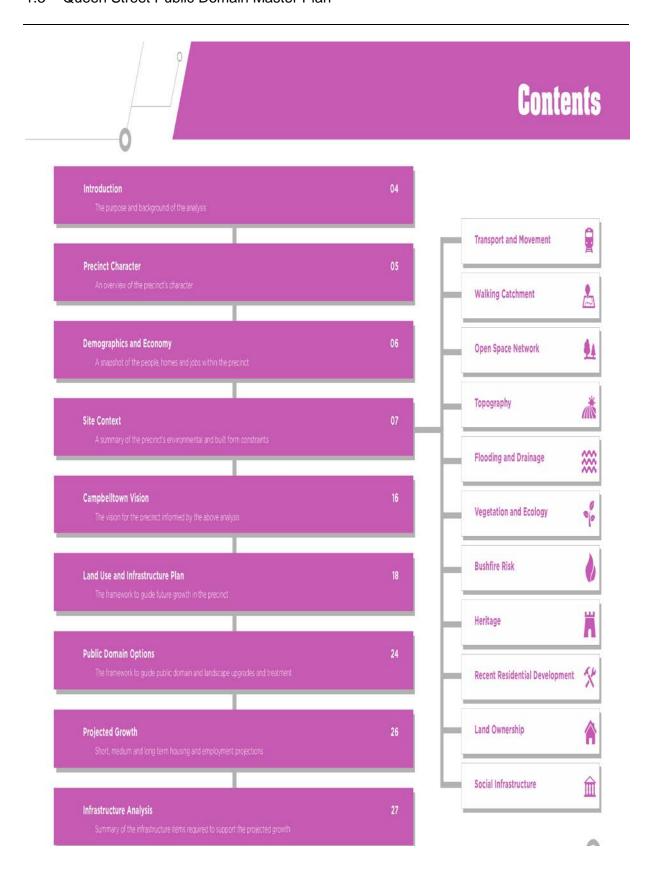


Campbelltown Precinct

LAND USE AND INFRASTRUCTURE ANALYSIS

JULY 2015





Introduction

Purpose of the Land Use and Infrastructure Analysis

This Analysis forms part of the Glenfield to Macarthur Land Use and Infrastructure Strategy and describes the methodology and evidence base that informed the vision and projected growth for the Campbelltown precinct. Applying the principles of ecologically sustainable development has been intrinsic to this process.

The Analysis has incorporated a review of the character, demographics and economy of Campbelltown.

A comprehensive audit of the precinct's environmental and built form characteristics identified areas to be protected and unconstrained land suitable for development.

The vision and growth projections for the precinct have been informed by economic feasibility and market demand analysis and reflect the long term housing and employment needs for the area.

Recommended improvements to the transport network aim to encourage more people to walk, cycle and use public transport for local and regional trips.

Improved connections to ecological corridors and open spaces have been identified and recommendations made to improve the quality of open spaces and the public domain.

A summary of the infrastructure requirements to support the precinct's growth is also provided to guide more detailed service and infrastructure delivery investigations.

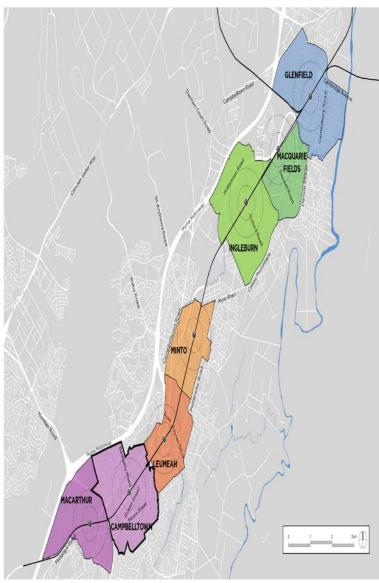


Figure 1: Genfield to Macarthur Urban Reneval Corridor



Precinct Character

Precinct Character

Campbelltown is located approximately 44kms south west of the Sydney, located between Leumeah and Macarthur Stations on the Cumberland, Airport, Inner West and South Line. The precinct is a 50 minute commute from Sydney CBD and also has direct train services to Kingsford Smith Airport. The Southern Highlands Line also commences at Campbelltown Station. Campbelltown is the largest train station in the corridor and receives a high level of commuter trains.

The study area is bound by the Hume Highway to the north, including the suburb of Blair Athol, Narellan Road to the west, George Street to the south and a significant drainage corridor to the east. The boundary of the precinct is based on a radius of 800m - 15km from Campbelltown Station, which represents a 10-20 minute walking trip.

The precinct is the major business and cultural centre for the region, with a mix of commercial, cultural, retail, civic and residential land uses. Queen Street is the focus of retail and commercial development in the precinct, with mixed-use and commercial development varying greatly between single storey shop fronts to multi-storey buildings with a range of retail and commercial and uses.

The precinct is characterised by a major split between the eastern and western sides of the railway station. The eastern side is a mix of retail, commercial, civic and residential uses, while light industrial and bulky goods uses are predominant on the western side of the station along Blaxland Road.

Residential development on the eastern side of the station is characterised by 3-4 storey medium rise housing and low rise housing further from the station. There are areas of medium rise development located close to the station and a number of high rise developments currently under construction.

Large areas of land surrounding the station contain at-grade car parking, particularly to the north-west of the station, with the station being a key Park & Ride location.

The vast majority of residential development within the precinct is focused towards the south and east of the precinct, however, Blair Athol in the north west of the precinct adjoining the Hume Motorway also features significant low density residential development.

Campbelltown station plays a vital role in connecting the precinct to Sydney and to other major centres to the north, most notably. Liverpool. Many major roads also run adjacent to the precinct, including; the Moore-Oxley bypass to the south, Hume Motorway to the North and Narellan Road to the west.

An aerial image of the precinct is provided in Figure 3. A series of photos that illustrate the existing built form and character of the wprecinct are provided on page 7.

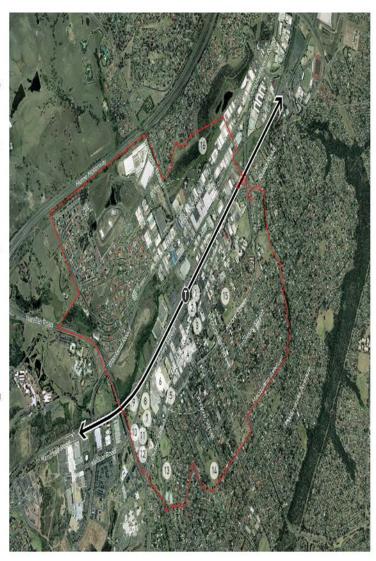




Figure 3: Campbelltown precinct, with key landmarks identified

Demographics and Economy

Demographics

At the last census in 2011, the precinct had a population of 7.526 people, making up close to 20% of the population of the corridor. Key characteristics of the precinct population include:

- ▶ The median age is 33.3 years, the youngest of all precincts along the corridor
- A larger proportion of young children, teenagers and people in their 20's and 30's compared to Sydney
- The precinct has more residents born overseas compared with Campbelltown LGA, but slightly lower than the Corridor and Sydney. The Philippines, England and India were the most common countries of birth other than Australia
- A substantially smaller proportion of houses were detached dwellings compared to Campbelltown LGA
- A significantly greater proportion of flats, units or apartments than the corridor and Campbelltown LGA, but significantly lower than Sydney as a whole

- Families consisting of parents with children made up close to one third of all households - a lower proportion than Campbelltown LGA and Sydney
- Over a quarter of households were lone person households a significantly higher proportion than Campbelltown LGA and Sydney
- ▶ The average household size of the precinct is smaller than Campbelltown LGA and Sydney, with 2.47 persons per household
- A smaller proportion of dwellings are owned outright or with a mortgage than for households in Campbelltown LGA and Sydney
- A higher proportion of residents walked to work than across the corridor, but significantly fewer residents travelled to work by train than in Campbelltown LGA and Sydney.

Economy

In 2011 there were 11,717 jobs in the precinct. The precinct has a diverse mix of employment including large healthcare, education, retail, industrial and business sectors and has a high business concentration in the centre.

Campbelltown is a major employment centre for the Macarthur Region and generates a notable proportion of the region's business, administration, health and retail jobs.

Health and education make up the largest proportion of jobs, followed by retail and business jobs. There is a smaller proportion of industrial jobs in the precinct than neighbouring precincts to the neighbouring.

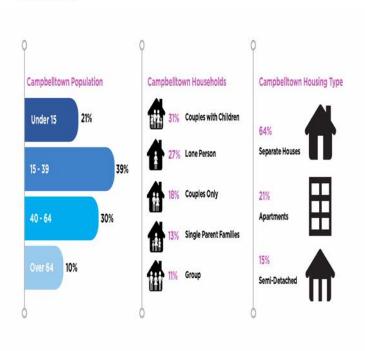


Figure 4 Key demographic facts for the Campbelltown precinct

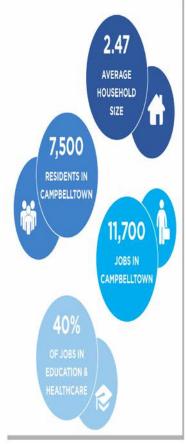


Figure 5: Key demographic facts for the Campbelltown precinct



Constraints Analysis

This section is an assessment of the constraints within the precinct. The physical characteristics of the precinct have been mapped and analysed to identify constrained and unconstrained sites for renewal. These characteristics include transport and movement; open space; topography, flooding, vegetation; bushfire risk heritage; recent residential development; land ownership; and social infrastructure.

The combination of these elements reveal the overall level of development constraint within the precinct. However, not all constraints that are identified are necessarily barriers to change, often they are opportunities for renewal in the future.



Figure 6 Images demonstrating the existing character and built form of the Comptellowin product













Transport and Movement

Blaxland Road and Campbelltown Road/Moore Street serve as the primary northsouth access ways in the precinct, while the Hume Motorway provides the main regional route for through traffic in the area. The main access points include Badgally Road and Broughton Street.

The southern half of the precinct from Moore Street contains a well connected local road network, largely due to the many north-south streets that provide access to Moore and Queen Streets. Traffic signalisation provides safe and convenient connections along Moore Street, Queen Street, Hurely Street and Oxley Street for pedestrians and cyclists.

There are a lack of east-west connections over the rail corridor providing limited regional connections to the city centre. Access is constrained by the rail corridor and limited to two road crossings. The precinct also has high demand for retail, commerical, industrial and commuter carparking.

Walking Catchment

Legend

Station

•••• Bus Route

• • • • Cycle Path

Traffic Signals

Figure 8 below demonstrates the 5, 10 and 20 minute walking catchments from Campbelltown station. Pedestrian and cycling accessibility in the north of the precinct is greatly restricted by a number of factors, including the rail corridor, limited north-south connections, and the lack of dedicated and signalised crossings along Blaxland Road.

There are also a number of local streets with limited street lighting and pedestrian footpaths that further restrict active modes of transport.





Figure 7. Access and movement within the Campbelltown precinc



Figure 8.5.10 and 20 minute waking calcinnent within the Campbellowin precinct









Figure 9(6). Open space network in the Campbelltown precinct

Topography

The topography within the precinct is undulating with a ridgeline that runs along the north-western edge of the precinct to the University of Western Sydney site, affording dwellings and the industrial area to the west views of Campbelltown.

The eastern half of the precinct has an undulating ridge to the south-east, that rises and then slopes down to the Smiths Creek Reserve to the east.

Flooding and Drainage

Figure 11 shows the location of waterways and associated riparian corridors in the precinct.

Campbelltown City Council is currently preparing a Floodplain Management. Plan to idenifty areas subject to flooding. Once finalised, this Plan will be used to manage flood risk and inform future planning for the precinct.

Any development of land within the precinct will need to consider whether the land is flood prone and address any relevant flooding controls.





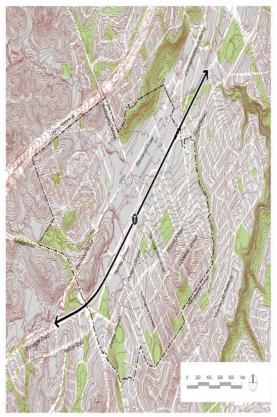


Figure 10: Topography within the Campbeltown precinct

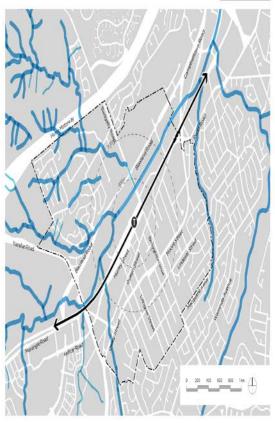
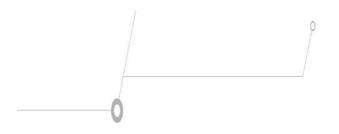


Figure 11: Riparian comdoxs and waterways within the Campbelltown precinct



Vegetation and Ecology

The precinct contains some dispersed areas of vegetation that are classified as Endangered Ecological Communities under the *Threatened Species Conservation Act 1995* These include areas of Cumberland Plain Woodland and River Flat Eucalypt Forest on Coastal Floodplains.

The larger spanning areas of vegetation are found along the western half of the precinct: throughout the industrial and low density residential area to the west, and also along the largest eastern riparian corridor bordering the precinct.

Riparian corridors are identified in Figure 12 below, and these are largely colocated with significant areas of natural vegetation.



Bushfire Risk

Due to the small amount of existing vegetation in the precinct, there is relatively little land that is subject to bushfire risk. Much of the land in the north of the precinct is open and undeveloped vegetation and may pose potential bushfire risk.

Any redevelopment of land within these bushfire prone areas will need to provide the required asset protection zones in accordance with relevant bushfire protection guidelines.



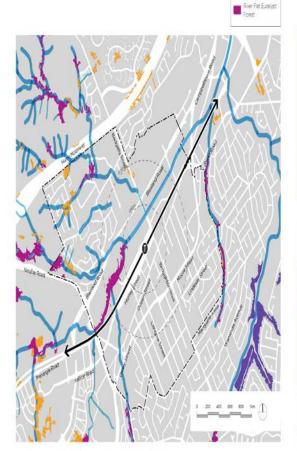


Figure 12 Vegetation and ecology within the Campbelltown precinct



Figure 13: Areas of bushfire risk within the Campbelltown precinct.

0-0

Heritage

The precinct contains many heritage items, both of local and state heritage significance, with most concentrated around the Campbelltown CBD. Some of these items include: the Queen Street Building Group, the Former Commercial Bank of Sydney building, Glenalvon building, St Peter's Anglican, Campbelltown Court House, St David's Presbyterian Church, Warby's Stables and Barn, and St John's Church.

Recent Residential Development

Recent development is considered a short to medium term constraint to development as the average life cycle of a building is generally 30 to 40 years.

Analysis of recent residential development over the last 15 years indicated that incremental low rise development has occurred throughout the precinct. There has also been increasing apartment development in recent years at the northern end of Queen Street in the eastern part of the precinct. Figure 15 below illustrates where this development has occurred.

Much of the recent development has occurred in the west of the precinct, generally in large residential developments. This provides limited opportunities for renewal over the next 20 years.





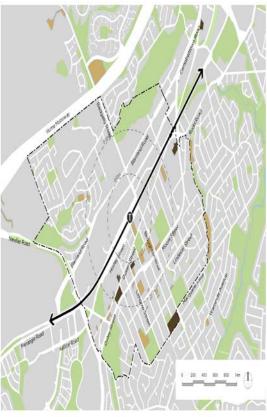
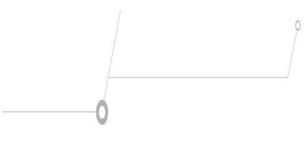


Figure 14 Heritage items within the Campbellown precinc



Figure 15. Recent residential development within the Campbeltown precino



Land Ownership

The following figure illustrates the different land ownership patterns in the precinct. Large tracts of land are owned by Campbelltown City Council including Kanbyugal Reserve, Campbelltown Showground, Bradbury Park, and Koshigaya Park, as well as a large area of vacant land to the north of the rail line in the west of the precinct. Campbelltown City Council also owns a number of significant sites in the CBD which provide opportunities for renewal and revitalisation.

The NSW Government also owns many sites in the precinct, including Campbelltown North Public School, Campbelltown Performing Arts Centre, Centenary Park and Hurely Park.

There is some strata titled land throughout the precinct, predominantly in the south.

Overhead transmission wires and corresponding easements traversethe boundary of the precinct in the north-west. This significant utility service and easement corridor represent a constraint to certain types of development within its vicinity.



Figure 16(a): Land ownership within the Campbelltown precinct, Campbelltown

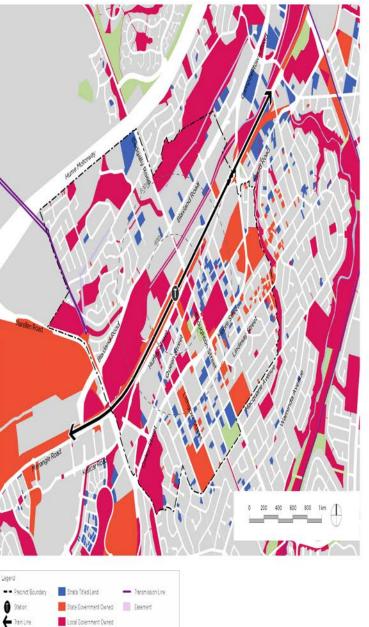


Figure 16(b). Land ownership within the Campbelltown precinct.

Social Infrastructure

19. Campbelltown Sexual Health Clinic

20. Macarthur Community Options and Campbelltown Chic Hall (Local Government)

21. Macarthur Infant, Child and Adolescent Mental Health Service

22 Traxside Youth Health Service

23 Family and Community Services

The precinct is well served by a range of community facilities and infrastructure as indicated in Figure 17. There are over six local open spaces, four schools, as well as many religious centres, childcare and early learning facilities, and various community services.

Many of these community facilities are located in the eastern half of the precinct within an 800m radius of the station. A large majority of

Campbelltown's residents live in this eastern half of the precinct. Local Government Social Infrastructure Blair Athol Community Hall and John Kidd Reserve 24. Anglicare 25. Blair Athol Child Care Centre 2 Bradbury Oval 3. Campbelltown Art Centre/Japanese 26. Broughton Street Child Care Tea House and Gallery 27. Burnside Family Centre and St Vincent de Paul 4 Campbelltown Showground, Campbelltown Community Preschool and Harlequin Rugby Club (private) 28. Campbelltown Catholic Club 29, Campbelltown Church of the Latter-day Saints 6 Gordon Fetterplace Aquatic Centre 30. Campbelltown Mall and Campbelltown Mall Medical Centre 7. HJ Daley Library 8. Hurley Park and Scout Hall 31. Campbelltown Presbyterian Church and Community Child Care 9. Kanbyugal Reserve 32. Campbelltown RSL and 10 Koshiyaga Park 33. Chamberlain Street Medical Practice II. Mawson Park 34 Church of God 12. Namut Early Learning Centre 35. Complete Medical Centre State Government Social Infrastructure 36. Evocca College Campbelltown 13. Beverly Park Special School and Lomandra School 37. Hillsong Church 14. Campbelltown Fire Station 38. Family Medical Centre 39. Kidz Ink Long Day Care 15. Campbelltown High School 16. Campbelltown North Public School 40. Land of Oz Kindergarten 17. Campbelltown Police Station and Campbelltown Community Services 41. Little Einsteins Child Care 42. Northside Macarthur Mental Health 18. Campbelltown Public School

43. Partners in Care Early Childhood Care

44. Pied Piper Kindergarten

45. Queen Street General Practice

46. St Peter's Anglican Church and Primary School

47. St John the Evangelist Primary

48. Widgets Child Care

50. Glichnst Oval

Nearby facilities servicing the precinct

49. Campbelltown East Public School

52. St Thomas More Catholic Primary

53. TAFE NSW South Western Sydney Institute

54. Fishers Ghost Reserve

State Government Social Infrastructure

Figure 17: Social Infrastructure within the Campbelltown precinct

Private and Non-Government Sector Social Infrastructure





Combined Constraints

The combined constraints mapping indicates that a number of sites contain some level of constraint for development.

A considerable amount of the northern half of the precinct is constrained by recent development, riparian corridors and significant vegetation.

The land to the south of the rail corridor has a considerable amount of heritage items, of both local and state significance, as well as some small pockets of recent residential development.

Some parts of the CBD contain flooding constraints. The extent of flooding impacts would be informed by Council's Floodplain Management Plan, and may require further flood anlaysis at the development application stage.

Unconstrained Land

Unconstrained land provides the most potential for renewal over the next 20 years, subject to further investigations.



Figure 18 Combined constraints within the Campbelltown precinct

Campbelltown Vision

falls.

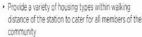
- A revitalised and activated Queen Street will deliver a significant amount of retail and commercial jobs with high levels of amenity and access to public transport
- A new prestige campus-style office park with access to the station, Hume Highway, TAFE and University of Western Sydney will facilitate business clustering and expansion of Campbelltown's knowledge economy in the medicine/health, education and administration sectors



Movement Network

- Promote cycling and walking by providing new shared pathways, separated cycleways, footpaths, pedestrian refuges, bicycle storage facilities and lighting
- Introduce new regional and local cycle routes and walking connections to improve links with Campbelltown station and the surrounding area
- Improve linkages to and through the City Centre through a high quality public domain connecting the revitalised commercial and retail core, Queen Street, Campbelltown Mall and Council chambers
- Improve east west connections by investigating a potential future pedestrian, cycle and public transport link between Badgally Road and Broughton Road

Hous



Housing



Open Space and Public Domain



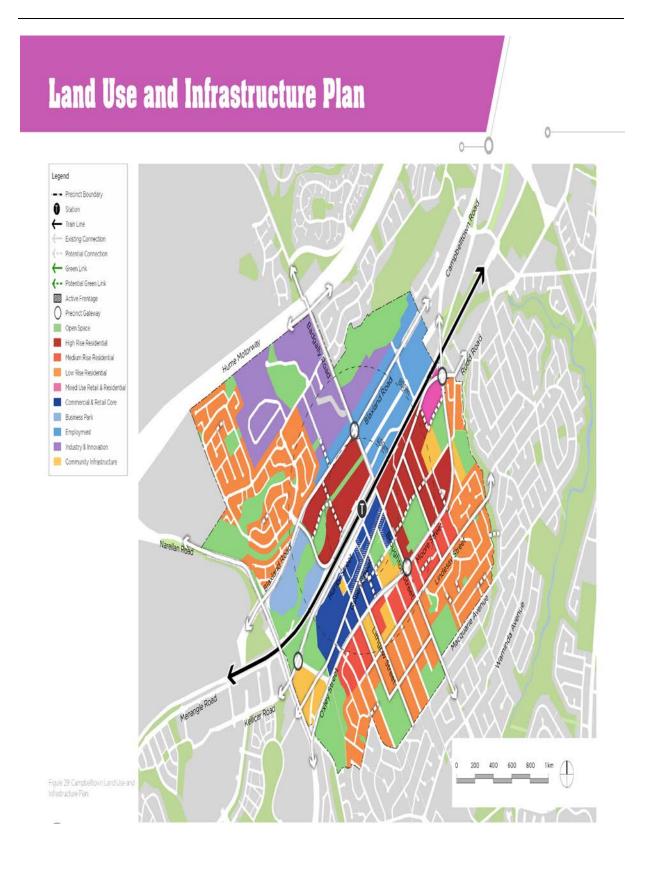
- Enhance the activity around Campbelltown station and Queen Street with pedestrian friendly streets, outdoor dining, street tree planting, inviting public gathering spaces and attractive street furniture
- Establish a quality open space and public domain network that provides better linkages to and upgrades of existing open spaces
- Promote connections to ecological corridors within the precinct and broader area, including through Bradbury Park and Fishers Ghost Reserve
- Investigate opportunities to review underutilised open space to contribute towards recreational outcomes
- Strengthen community and cultural facilities, including a new district level multi-purpose community facility and expanded central library servicing Campbelltown and Macarthur
- Longer term provision of a new primary school servicing the area

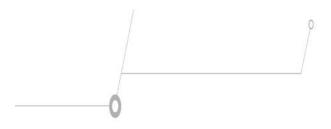
Built Form



- Provide a range of building heights, with buildings between 7 and 12 storeys close to the station to maximise pedestrian activity and access to rail and bus services and increase trade for local businesses
- Retain the existing character of areas east of Lindesay Street, with a mixture of detached dwellings, townhouses and terraces
- Large floor plate, campus style office park west of the station







A STATE OF THE PARTY OF THE PAR

Future Precinct Character

The following diagrams and images demonstrate the desired future character for each area in Campbelltown precinct.

Low Rise Residential

This area will largely retain its existing character and dwelling mix. Single-detached dwellings will remain the dominant housing type, however over time there is potential for renewal of building stock to provide a mixture of duplexes, townhouses and terraces.

Medium Rise Residential

This area could accommodate apartment housing to deliver a high level of amenity for existing and future residents. This could comprise 3-6 storey apartment buildings, with potential for communal open spaces and shared facilities. The new dwellings should be carefully designed to integrate with the existing streetscape.

High Rise Residential

This area could accommodate apartment housing to deliver a high level of amenity for the existing and future residents. This could comprise 7-12 storey apartment buildings, with potential for communal open spaces and shared facilities. The new dwellings should be carefully designed to integrate with the existing streetscape.

Mixed Use Retail & Residential

This area could accommodate a mix of retail and residential uses that would complement the character of the local area. Buildings would have ground floor retail that would provide local services for residents and commuters, with apartments above ranging from 7-12 storeys in height. These would be set back from the street to ensure the scale and feel of Queen Street is maintained.

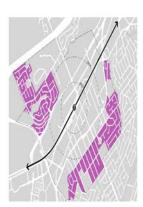










Figure 30 Proposed location of low rise residential and desired character and built form.



Figure 3t Proposed location of medium rise residential, an desired character and built form



Figure 32 Proposed location of high rise residential and desired character and built form



Figure 33 Proposed location of mixed use retail 8 residential and desired character and built form

Land Use and Infrastructure Plan

Commercial & Retail Core

This area could accommodate commercial offices on sites that are carefully designed to integrate into the surrounds. This area will accommodate intensification of employment and offices and more consolidated employment activities will occur, with premium office accommodation over time. Buildings should be setback from Queen Street to provide improved amenity and public domain outcomes.

Business Park

This area could accommodate a large floorplate, campus style office park to facilitate business clustering.

Employment

This area could accommodate a mix of commercial uses that would complement the character and function of Macarthur Square Shopping Centre. New public spaces will enhance the landscape character of the area. This area will provide for bulky goods retail and commercial development, but will not include retail uses.

Industry & Innovation

This area could accommodate large floorplate industrial offices and workshops on sites that are carefully designed to integrate with the existing streetscape.















Figure 35: Proposed location of business park, and desired character and built form



Figure 36 Proposed location of employment, and desired character and built form



Figure 37 Proposed location of industry & innovation, and desired character and built form

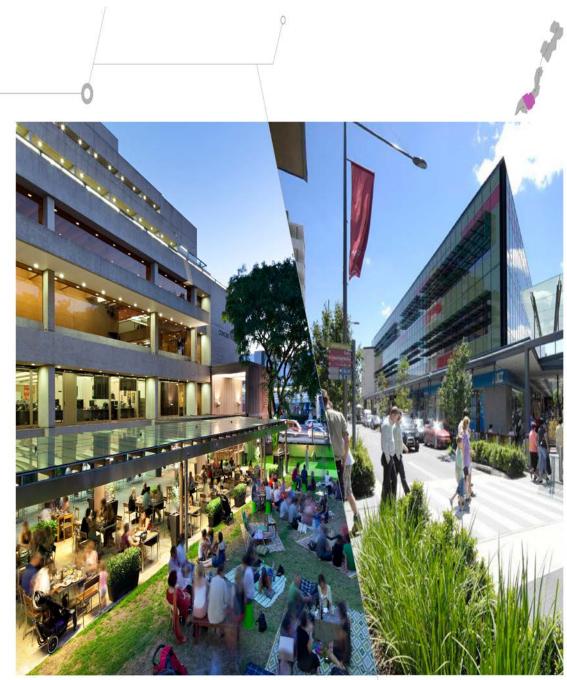


Figure 38 Desired future character for the Campbelltown precinct

Land Use and Infrastructure Plan

Transport and Movement

The proposed transport network aims to:

- Improve walking and cycling connections to Campbelltown Station and within Campbelltown CBD;
- Increase direct bus routes and improve suburban bus route travel times to centres; and
- ▶ Improve road and street legibility and permeability throughout the precinct.

Key network improvements are identified on Figure 39 and include:

Public Transport

- Investigate opportunities to improve direct connections and reduce travel times for the suburban bus network suburban bus network to create a more connected system that provides direct routes to, from and through the corridor
- Potential extension of Badgally Road as a pedestrian, cycle and public transport link to improve east-west connections and access to the Campbelltown CBD

Walking and Cycling

- New regional cycle route parallel and perpendicular to the railway line to provide better connections to the station and surrounding area
- ▶ Series of local cycle network improvements, including:
 - Heading east through Mawson Park, connecting to Condamine Street
 - Towards Blaxland Road to the west
- Streetscape works, such as shared pathways, footpath improvements, pedestrian crossings and refuges to improve station connections and pedestrian environments.

Parking

Undertake a parking study for the precinct to identify parking demand, develop appropriate parking management strategies and identify opporuntities for improved mode share to increase walking, cycling and public transport use.

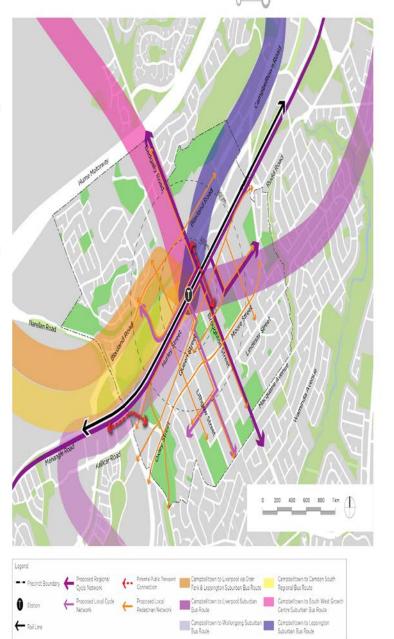
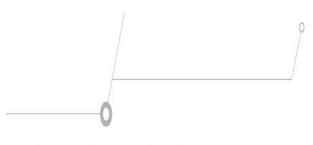


Figure 39 Proposed transport infrastructure improvements in Campbelltown



Environment and Open Space

The precinct contains a number of parks that perform both active and passive district level recreation functions. Enhancing existing open space and improving pedestrian and cycle links is a key priority for the precinct.

Bradbury Park and Sportsground, Hurley Park, Gordon Fetterplace Aquatic Centre and Campbelltown Showground provide a range of recreational functions, while Koshinyaga Park and Mawson Park support a range of civic functions.

Further embellishing existing open space and improving active transport connections would encourage more intensive use. Key recommendations for the precinct are proposed to:

- Enhance Bradbury Park as a major district recreation facility with improved links to surrounding ecological corridors
- Enhance Mawson Park and Koshigaya Parks to support more intensive use
- Enhance and improve connectivity to ecological corridors and green links, including to Fishers Ghost Reserve.
- ▶ Improve regional and local cycle and walking connections within the precinct
- Increase indigenous tree planting.

Community Facilities

Campbelltown precinct contains a number of community facilities that provide regional functions, including Campbelltown Arts Centre, Campbelltown Civic Hall and HJ Daley Library. However, there is currently no multi-purpose space within the precinct and community meeting and activity space is limited.

As Campbelltown and the adjoining Macarthur precinct develop as a regional city centre, a new district level multi-purpose community centre should be established. Council's existing HJ Daley Library should also be expanded to meet the combined needs of the regional city, which could be co-located with the new multi purpose community facility.

Education

There will be strong demand for additional classrooms and associated infrastructure in schools in the precinct. Advice from the NSW Department of Education indicates that a new primary school is likely to be required by 2036 to jointly serve the Macarthur and Campbelltown Precincts. Existing high school sites serving the precinct have large sites that may be able to accommodate requirements and no new schools are likely to be required by 2036.



Figure 40 Proposed open space, environment and community facility improvements in Campbelltown

Public Domain Options

·--O

Queen Street Public Domain Vision

Queen Street and Campbelltown Mall are proposed to be upgraded to become an inclusive, safe and attractive urban place with active ground floor retail and outdoor dining. The area's development would be informed by the following design principles:

Design Principle 1

Create a locally-responsive public space with active retail edges that facilitates the 'everyday experience' - places to sit, lawn, trees, existing shade structures and outdoor dining areas - and also functions as a canvas for community gatherings, events and civic meetings.

Design Principle 2

Provide streets and a space with a high quality pedestrian amenity, including comfortable microclimate conditions, wide and accessible footpaths, street trees, good lighting and safer road crossings.

Design Principle 3

Reveal the precinct's unique natural and cultural qualities through interpretation materials selection and artwork.

Design Principle 4

Establish a consistent materials palette that is attractive and robust and responds to local precinct character and the practical demands of everyday use.

Design Principle 5

Create safe, vibrant pedestrian friendly streets by narrowing Queen Street and introducing a shareway at the Anzac Lane interface. Use cobbles and other pedestrian pavements within the shareway and Queen Street.

Design Principle 6

Implement best practice environmental and social sustainability by first creating a quality design with longevity and physical robustness, through appropriate materials selection and maximising tree planting including local species.

Public Domain Character



Floure 41 Desired public domain outcomes for the precino

Materiality



Equie 42 Desired material finishes for the precin





Projected Growth



Projected Growth

Campbelltown precinct's projected growth is a calculation of the amount of residential and employment development that is expected to take place by 2036. The outcome of these projected growth calculations is provided below.

Residential

The Department applied the Urban Feasibility Model (UFM) to determine the precinct's development potential under existing market conditions. The analysis indicated the potential for 4,900 dwellings to be feasibly developed in the current market.

Additional market demand analysis indicated that around 4,000 additional dwellings could be delivered in the precinct by 2036. This equates to around 160 dwellings per year, which has been used to assess future infrastructure requirements in the precinct. While this growth projection is lower than the precinct's feasible development potential, it reflects the likely growth in the precinct to 2036, having regard to the broader projected growth throughout the Glenfield to Macarithur corridor and surrounding areas.

Over time, there is likely to be increasing demand for a greater diversity of housing, including medium and high rise residential housing, close to the station, which will facilitate more retail investment and employment opportunities. This is consistent with broader market trends. Further from the station, low rise housing will remain the predominant housing type.

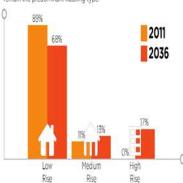


Figure 44 Existing and projected diveling growth by typology in Campbelltown

Dwelling Type	2021	2031	2036
Low Rise	1,000		2,100
Medium Rise		400	700
High Rise		900	1,200
Total Dwellings	1,500	3,000	4,000

Figure 45 Cumulative projected divelling growth in Campbelltown

Employment

An employment lands analysis projected demand for an additional 385,000m2 of employment lands within the precinct to 2036. This will deliver around 6,800 additional jobs, predominately in education and healthcare (252,000m2) and retail (82,000m2).

The Land Use and Infrastructure Strategy provides appropriate employment floorspace to ensure there is capacity to accommodate this employment growth.

The Land Use and Infrastructure Strategy identifies significant areas of land on both the eastern and western side of the railway line allocated to education, flealth, business and industrial uses to ensure there is adequate capacity for future jobs employment growth.

There is considerable capacity within existing commercial and retail areas, particularly along Queen Street to provide additional retail floorspace to meet demand.

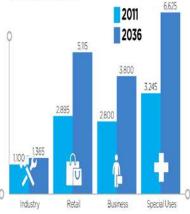


Figure 45 Existing and projected jobs growth by typology in Campbellown

Job Type	2021	2031	2036
industry		200	250
Retail		1,700	2,150
Business		800	1,000
Special Uses		2,650	3,450
Total Jobs	2,850	5,350	6,850

Figure 47. Cumulative projected jobs growth in Campbelltown

Calculating Growth Potential

Campbelltown precinct's projected growth is a calculation of the amount of residential and employment development that is expected to take place by 2036. The projected growth calculations take into consideration the following factors:

- Development on unconstrained sites. Development is projected to occur on the unconstrained sites identified on page 15 of this report.
- ➤ The Proposed Future Character and Bult From The Land Use and Infrastructure Strategy on page 18 identifies the desired future character and built form throughout the precinct. These building types have been applied to the precinct's unconstrained sites.
- Assumptions: A series of assumptions have been applied to calculate the land areas required for each development type, and the number of dwellings and jobs that could be provided. These assumptions are documented in Figure 5 of the Glenfield to Macarthur Urban Renewal Corridor Strategy.
- Economic Feasibility An analysis of the housing potential and development feasibility of the precinct's unconstrained sites was undertaken using the Department's Urban Feasibility Model (UFM). The UFM is a strategic planning tool used to determine the likelihood of the current market to deliver various types of dwellings.
- Market Demand. A high level demand analysis has been undertaken to determine the demand for different dwelling types on unconstrained sites within the precinct. The analysis:
 - Assessed the desired future character, built form and housing types proposed under the Land Use and Infrastructure Plan, against market conditions and demand; and
 - Identified take-up/realisation rates for each land use within the precinct, which informed the calculation of the projected growth.
- The 'take-up' or 'realisation' rates were informed by several factors, including broader population growth, property submarkets, historic dwelling activity, the development pipeline, the precinct's dwelling capacity and current market feasibility.





Infrastructure Analysis

Figure 48 provides a summary of the infrastructure items required to support the projected growth in the precinct. This includes public transport, walking and cycling upgrades, roads and community infrastructure. Services utilities such as water, sewage, electricity and gas will also be upgraded as the growth occurs.

The infrastructure items would be funded and delivered by a range of sources as identified in Figure 48, and would be subject to more detailed investigations to inform the delivery time frames, design and costings.

Item	Measure	Planning Responsibility	Timing	Funding Mechanism
	Public Transport			
	Increased rail services to meet the needs of the precinct's growth	TINSW	Train service levels are reviewed continually by TfINSW. The stopping patterns and level of service will be matched to the growth of the precinct.	TRVSW delisery responsibility
	Investigate opportunities to improve direct connections and reduce travel times for the suburban bus network suburban bus network to create a more connected system that provides direct routes to, from and through the corridor	TRYSW	Bus service levels are reviewed continually by TRNSW and RMS. Detailed planning for a new suburban bus multe to be investigated based on development in the area.	TRYSW delivery responsibility
	Additional 450 commuter car parking spaces near Campbelltown Station interchange	TENSW	To be determined as precinct develops	TRNSW funding responsibility
	Walking & Cycling			and the same of
	New regional cycle routes parallel and perpendicular to the railway line to provide better connections to the station and surrounding area	TRISW	To be determined as precinct develops	TRNSW funding responsibility
	Series of local cycle network improvements, including: Heading east through Mawson Park, connecting to Condamine Street Heading west towards Blaxland Road	Courcil	To be determined as precinct develops	Delivery as part of Council's Section 94 Plan/VPA
	Streetscape works such as footpath improvements, pedestrian crossings and refuges, street tree planting, bicycle storage facilities and lighting.	Council	To be determined as precinct develops	Deniery as part of Council's Section 94 PlanAPA
	Potential pedestrian, cycle and public transport extension of Badgally Road across the rail corridor to improve connectivity	TINSW/Council	Further transport investigations to be undertaken as the precinct develops	Subject to further funding and delivery mechanisms
	Education & Community Infrastructure			
	Potential longer term need for a new primary school to service the Campbelltown and Macarthur precincts	Department of Education and Communities	To be determined as precinct develops	Delivered as part of DEC's School Cluster Asset Plan
9	Potential development of a multipurpose community centre and expanded central library servicing the Campbelltown and Macarthur precincts.	Council/ developer	To be determined as precinct develops	Delivery as part of Council's Section 94 Plan/VPA

Figure 48 infrastructure servicing required in the Campbelltown precinct

2. OPERATIONAL SERVICES

No reports this round

3. ASSETS AND SUPPLY SERVICES

3.1 T15/24 Extension of Minto Indoor Sports Centre

Reporting Officer

Manager Healthy Life Styles and Acting Manager Assets and Supply Services

Attachments

Nil

Purpose

To advise Council of the tenders received for the extension of Minto Indoor Sports Centre and recommend that Council decline to accept any of the tenders received and enter into negotiations with all tenderers.

History

Council has received a grant for the extension of Minto Indoor Sports Centre. As the anticipated expenditure of the extension was to exceed the legislative threshold, Council invited tenders in September 2015.

Report

Legislation

This tender process was conducted in accordance with the *Local Government Act 1993*, the *Local Government (General) Regulation 2005* and Council's Procurement Policy and Procedures.

Advertising of Tenders

Tenders were advertised in The Sydney Morning Herald, The Macarthur Advertiser and The Macarthur Chronicle in the weeks commencing 27 July and 3 August 2015. Tenders were also advertised on Tenderlink and Council's website. The Ingleburn and Campbelltown Chambers of Commerce and Industry were notified.

Tender Document

Organisations were requested to submit the following information with their tender response:

- company details
- references
- company experience, particularly as they relate to these services
- details of any subcontractors and their experience, particularly as they relate to the Services
- resources, including plant and equipment to be used
- pricing
- program of works
- insurances
- environmental practices
- Work Health and Safety management systems
- conflict of interest declaration
- collusive submission declaration
- additional terms of contract, if proposed.

Tenders Received

Tenders closed on Tuesday 15 September 2015. Nine on-time responses were received from the following organisations:

- · Arnost Bohuslav Trejbal
- Axis Constructions Pty Ltd
- Builtform Constructions Pty Ltd
- Castlereagh Construction Group Pty Ltd
- Deltabuild Contractors Pty Ltd
- Imperium Projects Pty Ltd
- Lifese Pty Ltd
- Momentum Built Pty Ltd
- Progroup Management Pty Ltd

Evaluation Process

The Evaluation Panel, consisting of officers from Healthy Life Styles, Assets and Supply Services and Development Services evaluated the tenders against the following weighted assessment criteria:

- experience of the company and subcontractors
- resources
- program of works
- pricing
- Work Health and Safety documentation
- environmental commitment.

The Evaluation Panel used Council's standard 0-10 scoring system for all non-pricing criteria with 10 being the highest score.

The Work Health and Safety and Environmental Practices criteria were assessed on the basis of unsatisfactory, satisfactory or exceptional.

The scoring of tendered prices was determined on the total lump sum price.

The Evaluation Panel determined each organisation demonstrated their capability to provide the required services. As p[art of the Development Approval, notification is required to be sent to Sydney Trains and also Crown Lands. In obtaining the required consents, this has delayed the finalisation of the Development Approval. The Evaluation Panel considered it appropriate that Council decline to accept the tenders in accordance with Clause 178(1)(b) Local Government (General) Regulation 2005. As Council will continue to require the extension of Minto Indoor Sports Centre, the Evaluation Panel recommend entering into negotiations with all organisations that submitted a tender with a view to entering into a contract in relation to the subject matter of the tender in accordance with Clause 178(3)(e) Local Government (General) Regulation 2005, once the reasons for delay have resolved.

Assurance of the Process Undertaken

In accordance with Council's Procurement Procedures, a Tender Review Panel, consisting of members of Council's Executive reviewed the Tender to assure the process was undertaken in a manner that was fair, transparent and resulted in the best value outcome to Council.

Officer's Recommendation

- 1. That Council decline to accept any of the tenders.
- 2. That Council enter into negotiations with all organisations that submitted a tender with a view to entering into a contract in relation to the extension of Minto Indoor Sports Centre. As Council has recently invited tenders for the works, the Evaluation Panel deemed there to be no benefit in inviting fresh tenders. All tenders were evaluated as providing satisfactory capability of providing the required services.
- 3. That the Tenderers be notified of the results of tender process.

Committee's Recommendation: (Borg/Brticevic)

That the Officer's Recommendation be adopted.

CARRIED

Council Meeting 15 December 2015 (Hawker/Lake)

That the Officer's Recommendation be adopted.

Council Resolution Minute Number 233

That the Officer's Recommendation be adopted.

3.2 T15/21 Supply and Deliver Crane Truck

Reporting Officer

Manager Assets and Supply Services and Manager Operational Services

Attachments

Nil.

Purpose

To advise Council of the tenders received for the supply and delivery of a crane truck and recommend that Council not accept the tender.

History

Council has received a grant from the Environmental Protection Agency to engage a company to supply and deliver one Crane Truck to collect illegally dumped waste. As the anticipated expenditure of the purchase was to exceed the legislative threshold, Council invited tenders for the crane truck.

Report

One on-time response was received from the following organisation:

SWF Hoists and Industrial Equipment Pty Ltd

Upon review of the submission, it was determined that the price may be above market value, and as there was only one tenderer there is no comparison.

The Evaluation Panel considered it appropriate that Council decline to accept the tender in accordance with Clause 178(1)(b) Local Government (General) Regulation 2005 and enter into negotiations with any organisation that has purchased Council's Request for Tender for similar works in the past 12 months.

Officer's Recommendation

- 1. That Council decline to accept the tender received for the provision of the supply and deliver crane truck.
- 2. That Council advise the Tenderer that there will be no action taken on this tender.
- 3. That the Tenderer is refunded the tender fee.
- 4. That Council enter into negotiations with any organisations that has previously purchased Council's Request for Tender for similar works in the past 12 months as Council has called for tenders twice in the past 12 months with no suitable tenders submitted.

Committee's Recommendation: (Lake/Mead)

That the Officer's Recommendation be adopted.

CARRIED

Council Meeting 15 December 2015 (Hawker/Lake)

That the Officer's Recommendation be adopted.

Council Resolution Minute Number 233

That the Officer's Recommendation be adopted.

3.3 T15/18 Street Lighting on Eagle Vale Drive

Reporting Officer

Manager Assets and Supply Services and Manager Technical Services

Attachments

The following confidential attachment has been distributed to Councillors under separate cover as numerous tenderers have indicated that the contents of their tender are commercial-in-confidence:

Evaluation and Pricing Matrix

Purpose

To advise Council of the tenders received for the supply and installation of street lighting on Eagle Vale Drive and recommend that Council accept the tender submitted by Picton Power Lines Pty Ltd.

History

Due to rapid growth of residential and commercial developments in the South West Growth Area, traffic on Eagle Vale Drive will significantly increase following the connection of Gregory Hills to Badgally Road. To address the anticipated volume of traffic in the coming years it is necessary to widen Eagle Vale Drive between Raby Road and Badgally Road from the existing two lane rural road to four lanes. Road widening would provide a safer road link with improved capacity in response to anticipated traffic increase.

A partial upgrade of Eagle Vale Drive has been completed over the past two years.

The works under this contract include the supply and installation of street lighting at the following locations on Eagle Vale Drive, Eagle Vale:

- Near the intersection of Epping Forest Drive (street lighting network)
- Section between Badgally Road and Wynn Street (private network)

Report

Legislation

This tender process was conducted in accordance with the *Local Government Act 1993*, the *Local Government (General) Regulation 2005* and Council's Procurement Policy and Procedures.

Contract Expenditure

Council has received a \$17.5 million grant from the Federal Government to complete the entire upgrade of Eagle Vale Drive.

Contract Term

The term for this contract will be from the date of acceptance until completion of the works including any defects liability and/or warranty period.

Advertising of Tenders

Tenders were advertised in The Sydney Morning Herald, The Macarthur Advertiser and The Macarthur Chronicle in the weeks commencing 5 and 12 October 2015. Tenders were also advertised on Tenderlink and Council's website. The Ingleburn and Campbelltown Chambers of Commerce and Industry were notified.

Tender Document

Organisations were requested to submit the following information with their tender response:

- company details
- references
- company experience, particularly as they relate to these services
- details of any subcontractors and their experience, particularly as they relate to the Services
- details of their proposal including delivery and works program and products to be utilised
- warranty periods applicable
- pricing
- insurances
- environmental practices
- Work Health and Safe Management Systems
- Conflict of interest declaration
- Collusive submission declaration
- Additional terms of contract, if proposed.

Tenders Received

Tenders closed on Tuesday 27 October 2015. Three on-time responses were received from the following organisations:

- ARA Electrical High Voltage Services Pty Ltd t/as Transelect
- Elect Energy Pty Ltd
- Picton Power Lines Pty Ltd

Evaluation Process

The Evaluation Panel, consisting of officers from Technical Services, Operational Services and Information Management and Technology evaluated the tenders against the following weighted assessment criteria:

- experience of the company
- proposal
- financial stability
- pricing
- work health and safety
- environmental commitment.

The Evaluation Panel used Council's standard 0-10 scoring system for all non-pricing criteria with 10 being the highest score.

The Work Health and Safety and Environmental Practices criteria were assessed on the basis of unsatisfactory, satisfactory or exceptional.

The scoring of tendered prices was determined based on a lump sum price.

Recommendation of the Evaluation Panel

Picton Power Lines Pty Ltd provided the best response to Council and is recommended for the provision of street lighting on Eagle Vale Drive as they:

- provided satisfactory details of their company experience, particularly as they relate to the Services
- provided a detailed program of works
- tendered a competitive price to Council
- provided satisfactory work, health, safety and environmental documentation

Tenders Not Recommended

ARA Electrical High Voltage Services Pty Ltd t/as Transelect is not recommended as their scope of work did not reflect the specifications and drawings provided in the Request for Tender, therefore could not be evaluated appropriately.

Elect Energy Pty Ltd is not recommended as they:

- did not provide a satisfactory program of works
- tendered a more expensive price than the recommended tenderer

Assurance of the Process Undertaken

In accordance with Council's Procurement Procedures, a Tender Review Panel, consisting of members of Council's Executive reviewed the Tender to assure the process was undertaken in a manner that was fair, transparent and resulted in the best value outcome to Council.

Management of Proposed Contract

The Contractor will be subject to contract management and safety reviews throughout the duration of the contract in accordance with Council's contract management requirements.

Officer's Recommendation

- 1. That Council accept the offer of Picton Power Lines Pty Ltd for the provision of supply and install street lighting on Eagle Vale Drive.
- 2. That the Contract documents be executed under the Common Seal of Council.
- 3. That the unsuccessful Tenderers be notified of the results of tender process.

Committee's Recommendation: (Borg/Brticevic)

That the Officer's Recommendation be adopted.

CARRIED

Council Meeting 15 December 2015 (Hawker/Lake)

That the Officer's Recommendation be adopted.

Council Resolution Minute Number 233

That the Officer's Recommendation be adopted.

3.4 T15/14 Catering at Campbelltown Sports Stadium

Reporting Officer

Manager Assets and Supply Services and Manager Healthy Lifestyles

Attachments

The following confidential attachment has been distributed to Councillors under separate cover as numerous tenderers have indicated that the contents of their tender are commercial-in-confidence:

Evaluation and Pricing Matrix

Purpose

To advise Council of the tenders received for the catering at Campbelltown Sports Stadium and recommend that Council accept the tender submitted by Total Event and Management Services Pty Ltd.

History

Council currently has in place a contract for the catering at Campbelltown Sports Stadium (including the Responsible Service of Alcohol) which is due to expire on 29 February 2016. As Council continues to utilise the contract, a new contract will need to be in place prior to the expiration of the current contract.

Report

Legislation

This tender process was conducted in accordance with the *Local Government Act 1993*, the *Local Government (General) Regulation 2005* and Council's Procurement Policy and Procedures.

Contract Term

The term for this contract will be for a period of two years from 1 March 2016 with three options for extension of 12 months each.

Advertising of Tenders

Tenders were advertised in The Sydney Morning Herald, The Macarthur Advertiser and The Macarthur Chronicle in the weeks commencing 12 and 19 October 2015. Tenders were also advertised on Tenderlink and Council's website. The Ingleburn and Campbelltown Chambers of Commerce and Industry were notified.

Tender Document

Organisations were requested to submit the following information with their tender response:

- company details
- references
- company experience, particularly as they relate to these services
- details of any subcontractors and their experience, particularly as they relate to the services
- details of their proposal for the kiosk areas and corporate facilities, including listing of products and packages
- details of their quality assurance program
- confirming their ability of meet a response time to attend to an unforeseeable event
- liquor licencing information
- proposed access fee
- insurances
- environmental practices
- Work Health and Safety management systems
- conflict of interest declaration
- collusive submission declaration
- additional terms of contract, if proposed.

Tenders Received

Tenders closed on Tuesday 3 November 2015. Two on-time responses were received from the following organisations:

- Stadium Australia Operations Pty Ltd t/as Stadium Australia Group Catering Services
- Total Event and Management Services Pty Ltd

Evaluation Process

The Evaluation Panel, consisting of officers from Healthy Lifestyles and Emergency Management & Facility Services evaluated the tenders against the following weighted assessment criteria:

- experience of the company
- kiosk areas and corporate facilities proposal
- quality assurance program
- liquor licence
- access fee
- work health and safety
- environmental commitment.

The Evaluation Panel used Council's standard 0-10 scoring system for all non-pricing criteria with 10 being the highest score.

The Work Health and Safety and Environmental Practices criteria were assessed on the basis of unsatisfactory, satisfactory or exceptional.

The scoring of the access fee was determined using mock events incorporating:

- 1. the average catering sales of the last four NRL matches; and
- 2. the last financial year's average monthly catering sales for special events.

Recommendation of the Evaluation Panel

Total Event and Management Services Pty Ltd provided the best response to Council and is recommended for the catering at Campbelltown Sports Stadium as they:

- provided satisfactory details of their company experience, particularly as they relate to the Services
- provided satisfactory details of their kiosk areas and corporate facilities proposal
- provided a detailed quality assurance program
- proposed a higher percentage of remuneration to Council for the income received from the sale of all food and non-alcoholic beverages
- provided satisfactory work, health, safety and environmental documentation
- have provided a satisfactory service to Council in the past.

Tenders Not Recommended

Stadium Australia Operations Pty Ltd t/as Stadium Australia Group Catering Services is not recommended as the nominated access fee percentage was not as competitive as the recommended tenderer.

Assurance of the Process Undertaken

In accordance with Council's Procurement Procedures, a Tender Review Panel, consisting of members of Council's Executive reviewed the Tender to assure the process was undertaken in a manner that was fair, transparent and resulted in the best value outcome to Council.

Management of Proposed Contract

The Contractor will be subject to contract management and safety reviews throughout the duration of the contract in accordance with Council's contract management requirements.

Officer's Recommendation

- 1. That Council accept the offer of Total Event and Management Services Pty Ltd for the provision of catering at Campbelltown Sports Stadium for a period of two years with three options for extension of 12 months each.
- 2. That the Contract documents be executed under the Common Seal of Council.
- 3. That the unsuccessful Tenderers be notified of the results of tender process.

Committee's Recommendation: (Lake/Mead)

That the Officer's Recommendation be adopted.

CARRIED

Council Meeting 15 December 2015 (Hawker/Lake)

That the Officer's Recommendation be adopted.

Council Resolution Minute Number 233

That the Officer's Recommendation be adopted.

4. EMERGENCY SERVICES

No reports this round

5. GENERAL BUSINESS

Nil.

Confidentiality Motion: (Lake/Mead)

That the Committee in accordance with Section 10A of the *Local Government Act 1993*, move to exclude the public from the meeting during discussions on the items in the Confidential Agenda, due to the confidential nature of the business and the Committee's opinion that the public proceedings of the Committee would be prejudicial to the public interest.

CARRIED

21. CONFIDENTIAL ITEMS

21.1 Confidential Report Directors of Companies - City Works

Reason for Confidentiality

This report is **CONFIDENTIAL** in accordance with Section 10A(2)(c) of the *Local Government Act 1993*, which permits the meeting to be closed to the public for business relating to the following: -

(c) information that would, if disclosed, confer a commercial advantage on a person with whom the council is conducting (or proposes to conduct) business

Motion: (Brticevic/Borg)

That the Committee in accordance with Section 10 of the *Local Government Act 1993*, move to re-open the meeting to the public.

CARRIED

There being no further business the meeting closed at 8.01pm.

S Dobson CHAIRPERSON

Reports of the Community Services Committee Meeting held at 5.30pm on Tuesday, 8 December 2015.

ΔF	וחי	റദ	IFS

ACKNOWLEDGEMENT OF LAND

DECLARATIONS OF INTEREST

Pecuniary Interests

Non Pecuniary – Significant Interests

Non Pecuniary – Less than Significant Interests

ITEM	TITLE	PAGE
1.	COMMUNICATIONS AND MARKETING	3
1.1	Macarthur Destination Management Plan 2016-2020	3
2.	COMMUNITY RESOURCES AND DEVELOPMENT	112
2.1	Beach Safety Program	112
2.2	Fisher's Gig and Fisher's Extreme Showcase Evaluation 2015	114
3.	CULTURAL SERVICES	117
3.1	Australia Council for the Arts - Four Year Funding - Organisations	117
4.	CUSTOMER SERVICE	119
No rep	orts this round	119
5.	EDUCATION AND CARE SERVICES	119
No rep	orts this round	119
6.	HEALTHY LIFESTYLES	119
6.1	Feasibility to support sporting bodies to acquire defibrillators	119
6.2	Minutes of the Sports Liaison Sub Committee Meeting held 28 October 2015	122
6.3	Tonga V Cook Islands match	128
6.4	2015 Marsdens Law Group Fishers Ghost Fun Run	130
7.	LIBRARY SERVICES	132
7.1	Liveable Communities Grants Program	132
8.	GENERAL BUSINESS	134
22.	CONFIDENTIAL ITEMS	134
No rep	orts this round	134

Minutes of the Community Services Committee held on 8 December 2015

Present Councillor T Rowell (Chairperson)

Councillor G Brticevic Councillor M Oates Councillor R Thompson

General Manager - Mrs L Deitz

Acting Director Community Services - Mrs J Uluibau

Director Strategy - Mr J Lawrence

Manager Communications and Marketing - Mrs B Naylor

Acting Manager Customer Service - Ms M James

Acting Manager Education and Care Services - Ms G Vickers

Manager Healthy Lifestyles - Mr M Berriman Manager Library Services - Mr G White Manager Technical Services - Mr K Lynch Community Project Officer - Mrs L Grimson Curator Contemporary Art - Mrs M Monte

Policy and Governance Coordinator - Ms J Warner

Executive Assistant - Mrs D Taylor

Apologies (Rowell/Oates)

That the apologies from Councillors Lound, Matheson and Glynn be received and accepted.

CARRIED

Acknowledgement

The Chairperson, Councillor Rowell, acknowledged the efforts of Council's Strategic Youth Development Officer, Michele Mullineaux and Council's Youth Project Officer, Dave Ramas, at the TAFE NSW 'Envision Exhibition 2015' held on 26 November 2015. Both Mr Ramas and Ms Mullineaux represented Council at this event, delivering an informative speech and engaging with all attendees.

Acknowledgement of Land

An Acknowledgement of Land was presented by the Chairperson Councillor Rowell.

DECLARATIONS OF INTEREST

There were no Declarations of Interest at this meeting.

1. COMMUNICATIONS AND MARKETING

1.1 Macarthur Destination Management Plan 2016-2020

Reporting Officer

Manager Communications and Marketing

Attachments

Macarthur Destination Management Plan 2016-2020 (contained within this report)

Purpose

To present to Council the draft Macarthur Destination and Management Plan (DMP) 2016–2020, as prepared by consultancy group, The Stafford Group.

History

For a number of years, Campbelltown City Council has demonstrated a commitment to developing and supporting tourism within Campbelltown City, starting with the opening of the Campbelltown Visitor Information Centre in 1997.

Council began working proactively with Camden and Wollondilly Councils to promote the Macarthur region in 2006. This was initially completed on a project by project basis.

A more structured approach to tourism was committed to in 2008, with Campbelltown and Camden Councils equally funding the development of a Macarthur Regional Tourism Strategy. An external consultant was engaged to create a three year marketing strategy and action plan for the Macarthur region for the period up to 2012. This strategy was adopted by Council on 14 October 2008 (item 1.1, Corporate Governance – Macarthur Regional Tourism Strategy and Action Plan 2008–2011).

On completion of the first strategy, a second strategy was developed and adopted by Council on 13 March 2012 (item 1.4, Corporate Governance – Macarthur Regional Tourism Strategy and Action Plan 2012–2015) to build on the successful actions and projects from the previous strategy. Milestones from both previous strategies were reported to Council on an annual basis.

The draft Macarthur Destination Management Plan (DMP) was the subject of a Council briefing on Tuesday 1 December 2015.

Report

A number of key achievements have been realised through the progress of both strategies, such as:

- Hosting more than 80 travel journalists and editors from a range of newspapers and publications, on familiarisation tours of Macarthur since 2009
- Sydney Weekender filming nine individual segments, plus an entire episode on the Macarthur region. The episode, which aired in October 2013, was the highest rating episode for the year
- Development of the Visit Macarthur Facebook page through active engagement and the implementation of the Macarthur Social Media Marketing Strategy, interaction and page likes have increased to 10,580 (November 2015) since the page was developed in 2012
- Development of a new tourism website for Macarthur www.macarthur.com.au, which went live in February 2013. Between February 2013 and November 2015, the site had been visited by more than 342,776 users, viewing more than 806,125 pages
- Development of a What's On in Macarthur monthly e-newsletter in December 2012, with a current database of more than 1300 subscribers, in addition to the 1200 copies of the printed version also distributed each month
- Coordination of guided group tours to the region. On average, approximately 110 group tours per year are coordinated by the Visitor Centre staff who work with various groups and organisations to develop tailored tours, itineraries and a broad range of experiences to not only encourage new groups to visit, but also repeat visitation.

Council engaged the services of The Stafford Group to develop the draft DMP in collaboration with Camden Council. To prepare the DMP, The Stafford Group undertook an extensive literature review, liaised with a range of key stakeholders including local operators, Destination NSW, Infrastructure NSW, National Parks and Wildlife Services, Arts NSW, and consulted with key Council staff including the General Manager, the previous Mayor and various directors and managers.

The DMP has been developed addressing strategic themes and opportunities encompassing:

- Product development and partnerships
- Marketing and promotion
- Support for local and regional business development and expansion
- Visitor servicing.

The DMP stands to be an important element of Council's approach for economic development and job creation in Campbelltown and the Macarthur region more widely. While it has been developed to complement and add value to Council's existing strategies, the DMP recognises the potential significance of increased visitation to Campbelltown as a destination for recreation, art and culture, leisure, and a range of other tourism experiences.

The strategy embedded in the DMP outlines ways in which to build on the visitor opportunities that Campbelltown City currently has to offer, but also identifies opportunities for future growth and development. It leverages against the distinctive assets of Campbelltown – both natural and man-made – as opportunities to identify and develop as tangible visitor experiences, with an economic and community value.

While the DMP has been developed for the Macarthur region, the actions have been divided into specific actions for Campbelltown, Camden and the Macarthur region, allowing each Council to implement opportunities and actions according to their specific priorities.

Some of the potential key opportunities identified specifically for Campbelltown include development of a premium style holiday park and expansion of the existing accommodation offer; nature based leisure opportunities (e.g. boardwalks and trails to access the river, tree tops walk/zip lines/ropes course); a threatened species education and interpretation centre; music festivals and large scale events; and developing a medical tourism strategy which links to Western Sydney University's School of Medicine. Food based visitation is also an opportunity that is worthy of further examination.

A working group made up of staff from various sections across Council will assist in the implementation of the Campbelltown opportunities, with regular progress reports to Council.

Officer's Recommendation

That the Macarthur Destination Management Plan 2016-2020 be adopted.

Committee's Recommendation: (Oates/Thompson)

That the Officer's Recommendation be adopted.

CARRIED

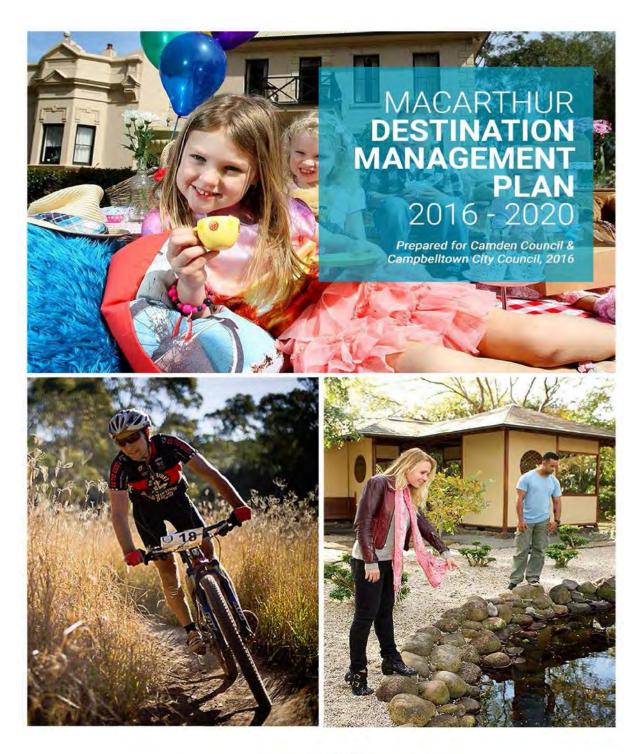
Council Meeting 15 December 2015 (Rowell/Oates)

That the Officer's Recommendation be adopted.

Council Resolution Minute Number 234

That the Officer's Recommendation be adopted.

ATTACHMENT 1











SYDNEY OFFICE

Suite 3.02, 46a Macleay Street Potts Point NSW 2011, Australia T+61 2 9331 6222 E admin@thestaffordgroup.com.au

ACN 079 055 100 ABN 34 565 120 454

BRISBANE OFFICE

PO Box 265 Sandgate QLD 4017, Australia **M** +61 (0) 417721342 **E** admin@thestaffordgroup.com.au

W www.thestaffordgroup.com.au

Copyright @ A. Stafford & Associates Pty Ltd

ABN 34 565 120 454

All Rights Reserved. No material may be reproduced without prior permission, While we have tried to ensure the accuracy of the information in this publication, The Stafford Group accepts no responsibility or liability for any errors, omissions or resultant consequences including any loss or damage arising from reliance in information in this publication.

THE STAFFORD GROUP

www.thestaffordgroup.com.au

Table of Contents

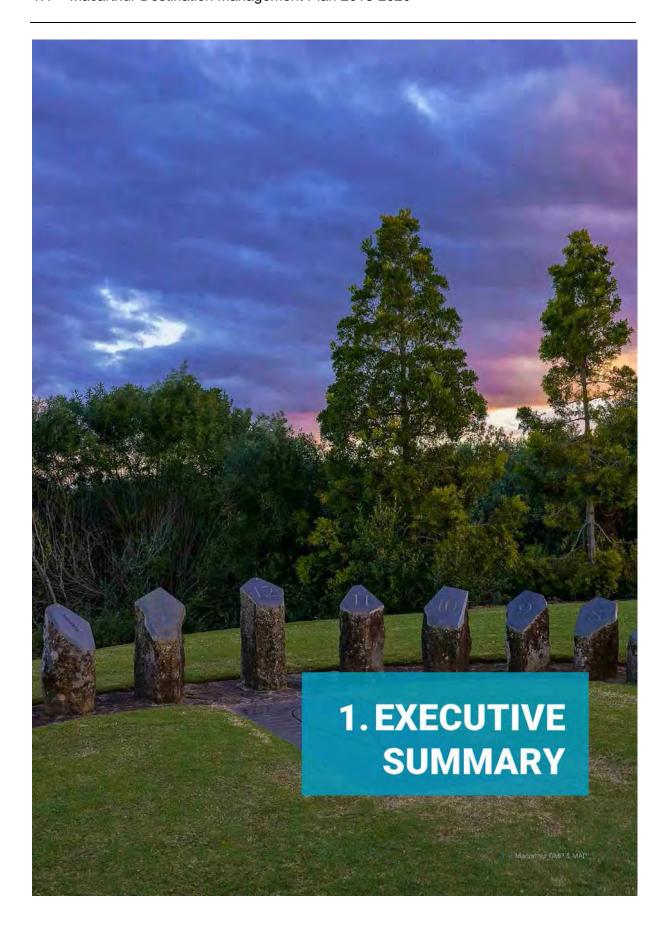
EXECUTIVE SUMMARY
OVERVIEW
PURPOSE
THE OPPORTUNITIES
AN LTO FOR THE MACARTHUR REGION
GOING FORWARD
INTRODUCTION
PURPOSE
METHODOLOGY
SITUATION ANALYSIS
PLAN CONTEXT
THE MACARTHUR REGION
POPULATION
REGIONAL, STATE AND NATIONAL TRENDS
SWOT ANALYSIS
PRODUCT & INFRASTRUCTURE AUDIT
ATTRACTION AUDIT
ACCOMMODATION AUDITFOOD & BEVERAGE AUDIT
PRODUCT GAP ANALYSIS
IDENTIFIED ISSUES
PRODUCT AND SUPPORTING INFRASTRUCTURE
MARKETING AND PROMOTION
OTHER ISSUES
THE OPPORTUNITIES
TOURISM PRODUCT DEVELOPMENT & PARTNERSHIPS
INDUSTRY SUPPORT
VISITOR SERVICING
OPPORTUNITIES MATRICES
TOURISM COORDINATION FOR MACARTHUR
THE CHALLENGE FOR MACARTHUR
REQUIREMENTS FOR AN INDUSTRY OPERATED LTO
THE SUGGESTED WAY FORWARD
ECONOMIC OUTCOMES
ASSESSMENT OF THE NET ECONOMIC BENEFIT
VISITOR SPEND.
GROWTH IN THE NET ECONOMIC BENEFIT
TOURISM MARKETING ACTION PLAN
SUPPORTING DOCUMENTATION
SUPPURTING DUCUMENTATION

List of Tables

TABLE 1: AVERAGE LENGTH OF STAY (4 YEAR AVERAGE YE SEPT 2014)
TABLE 2: SWOT ANALYSIS
TABLE 3: MACARTHUR TOURISM PRODUCT AUDIT SUMMARY
TABLE 4: MACARTHUR ACCOMMODATION AUDIT SUMMARY
TABLE 5: MACARTHUR FOOD AND BEVERAGE AUDIT SUMMARY
TABLE 6: EVENTS HELD IN MACARTHUR
TABLE 7: TOURISM PRODUCT DEVELOPMENT & PARTNERSHIPS
TABLE 8: MARKETING & PROMOTION
TABLE 9: INDUSTRY SUPPORT
TABLE 10: VISITOR SERVICING
TABLE 11: VISITOR SPEND BREAKDOWN
TABLE 12: KEY PERFORMANCE AREA 1
TABLE 13; KEY PERFORMANCE AREA 2.
TABLE 14: KEY PERFORMANCE AREA 3.
TABLE 15: KEY PERFORMANCE AREA 4
TABLE 16: ESTIMATED VISITOR FORECAST SCENARIOS
TABLE 17: ESTIMATED GROWTH IN VISITOR SPEND
TABLE 18. ESTIMATED TOURISM MULTIPLIERS

List of Figures

FIGURE 1: ISSUES AND GAPS
FIGURE 2. MAP OF THE MACARTHUR REGION
FIGURE 3: DISTANCE FROM SYDNEY CBD
FIGURE 4: HISTORIC POPULATION AND FORECASTED GROWTH
FIGURE 5, VISITORS TO THE MACARTHUR REGION (4 YEAR AVERAGE YE SEPT 2014)
FIGURE 6: MACARTHUR FORECASTED POPULATION GROWTH
FIGURE 7: MACARTHUR VIC LOCATIONS
FIGURE 8: LOCATION OF CAMPBELLTOWN STADIUM
FIGURE 9: GREATER SYDNEY STADIA
FIGURE 10: SPOOKERS HAUNTED ATTRACTION
FIGURE 11 HIGHLANDS MOTOR SPORT PRECINCT QUEENSTOWN
FIGURE 12: GLENFIELD TO MACARTHUR URBAN RENEWAL CORRIDOR
FIGURE 13: CENTRE OF SPORTS EXCELLENCE SITE PLAN
FIGURE 14: TRADITIONAL CARAVAN PARKS
FIGURE 15 MAJOR DESTINATION HOLIDAY PARKS
FIGURE 16: OUTDOOR AMPHITHEATRE EXAMPLES
FIGURE 17: LUGE EXAMPLES
FIGURE 18: SOUND AND LIGHT SHOW EXAMPLES.
FIGURE 19: GLAMPING EXAMPLES
FIGURE 20: CAMPBELLTOWN'S SCENIC HILLS AND EAST EDGE SCENIC PROTECTION LANDS
FIGURE 21: SOUTH WEST SUBREGION
FIGURE 22: EQUINE FACILITIES WITHIN THE BROADER SOUTH WEST REGION
FIGURE 23: MACARTHUR BRAND HIERARCHY
FIGURE 24: AUGMENTED REALITY APP EXAMPLES
FIGURE 25. THE IMPORTANCE OF TOURISM.
FIGURE 26: BEST PRACTICE EXAMPLE - HIGH TECH OUTDOOR INFORMATION TOUCH SCREENS





1. Executive Summary

1.1. Overview

The Stafford Group (The Group) was commissioned by Campbelltown City Council and Camden Council (the Councils) to undertake the development of a Destination Management Plan (DMP), including a Marketing Action Plan (MAP), for the Macarthur region.

This DMP has been developed as an update to the previous Macarthur Regional Tourism Strategy 2012 – 2015.

1.2. Purpose

The purpose of the DMP and MAP (here on referred to as the DMP) is to provide the Councils and all stakeholders with a clear understanding of:

- · Key visitor markets and segments;
- Major preferences for experiences;
- Forecasted visitor growth; and
- Existing and potential experiential strengths of the region.

When developing this DMP, The Group has focused on tangible outcomes which can be achieved within a realistic timeframe rather than offering a wish list.



1.3. Issues and Gaps

Throughout the course of developing this DMP, a number of issues and gaps in the Macarthur tourism sector have been identified (see Figure 1 below). Whilst both Councils will need to play a key role in supporting the tourism sector going forward, it is important to note that the responsibility for resolving these broad ranging issues does not fall entirely on each Council's shoulders. Rather, the opportunities listed in this DMP, require the active participation of each Council as well as the tourism industry throughout the Macarthur region working in unison.

However, in the absence of a large tourism sector, the Councils will need to take a more hands on role to guide tourism activity until the sector grows.

FIGURE 1: ISSUES AND GAPS

Product & Supporting Infrastructure Issues

- Lack of Commissionable Product
- Need for a Larger Entertainment Venue
- Growing Region Inadequate Infrastructure Support
- Narellan Road
- Location of the Camden VIC
- Lack of Accommodation in Camden
- Inadequate Signage (interpretation and directional)
- Need to Upgrade the Camden Civic Centre

Marketing & Promotional Issues

- Strong competition from destinations such as Sydney and Surrounding Areas
- Inclusion in the Sydney and Surrounds Region
- Brand
 Differentiation
- Lack of Cooperative Marketing
- Market Perception
 Lack of robust
- Lack of robust visitor statistics to determine visitation trends

Other Tourism Related Issues

- Tyranny of Distance
- Parramatta Centric Focus by State Government
- Balancing Housing and Tourism Needs
- Lifestyle Operators
 Lack of Industry
- Cohesion
 Lack of higher Quality Dining Options
- Lack of Tourism Investment
- Lack of Understanding of the Importance of the Tourism Industry
- Retail Trading



1.4. The Opportunities

The following table provides a summary of the various opportunities which Macarthur could focus on in order to activate and grow tourism on a sustainable basis. The opportunities have deliberately been kept succinct to ensure the focus is on those opportunities which are likely to generate the best possible returns in the shortest timeframe. They therefore represent the *lower hanging fruit* opportunities identified for Macarthur.

The opportunities are not in any priority order and have been segmented according to the following themes, which also align with the previous 2012 – 2015 Tourism Strategy:

- Tourism Product Development & Partnerships;
- Marketing & Promotion;
- · Industry Support; and
- Visitor Servicing.

The realisation of these opportunities will help stimulate stronger visitor growth, increased length of stay, higher visitor spend and better focused tourism profiling for the Macarthur region.

TOURISM PRODUCT DEVELOPMENT & PARTNERSHIPS

- Holiday Park Development: Development of a new (or upgrade of an existing) dedicated destination holiday park to support the growing family and caravan and camping market for the Greater Sydney region. Potential exists to make the region the hub for the caravan and camping sector for greater Sydney. Undertake a study to test the feasibility of location, size and financial viability.
- Haunted Attraction and Festival: Bring alive the heritage and living stories of Macarthur via a possible themed haunted attraction and/or a horror festival using resources, facilities and performing arts groups across the region. This should leverage off the marketing profile already

TOURISM PRODUCT DEVELOPMENT & PARTNERSHIPS

established via the Festival of Fisher's Ghost managed by Campbelltown City Council.

- Food Trails and Cooking Schools: Leveraging off the growing "foodie" movement within the region, assess potential for boutique food trails which could possibly incorporate art trails and link to those interested in developing cooking schools, spice markets etc.
- Heritage and nature-based stories through a sound and light show: Utilising the natural background of the Australian Botanic Garden, develop a sound and light show which showcases the history of the region as a summer time initiative.
- Link Mount Annan to Western Sydney Parklands: develop the potential for cycle ways, walk ways and other recreational activity experiences via the Scenic Hills through promoting a 400m wide corridor to benefit local communities as well as attracting visitors.
- Strengthen liveability of Glenfield to Macarthur Urban Renewal Corridor: introduce tourism and related leisure elements to strengthen regional identity and liveability via various food and related experiences and promote places of interest.
- Botanic Gardens Amphitheatre, Sculpture Garden, Horse Trails and Luge: Development of an all-weather amphitheatre within the Australian Botanic Garden. The facility could also include various sculpture trails art trails to offer a composite attraction linked to the Gardens botanic experiences to increase the visitor experience (the size of the amphitheatre would need to be investigated to achieve an optimum size, opening up remote areas for horse trails and investigate introducing a luge style attraction on the steeper terrain facing Campbelltown.
- Arts Trail Activation: There is a growing and strong arts community across a variety of arts form. Develop an art trail program to showcase artwork, which could potentially include an outdoor art sculpture trail, art festival and residential art programs and forums.
- National Equine Experience Centre: Development of a National Equine Experience Centre, showcasing the history of the equine industry, not only in the broader Macarthur region, but potentially nationally.
- Aviation Business Park: Investigate the potential to develop the current Camden Airport into an aviation business park to cater to the needs of a fly-in market needing places to land and store aircraft, for the maintenance of light aircraft and

TOURISM PRODUCT DEVELOPMENT & PARTNERSHIPS

long term hangars etc. (we note the issue of Camden Airport potentially closing when Badgerys Creek is fully operational but this may still be 10+ years out).

- Regional Sports Centre of Excellence: grow sports tourism visitation and related economic benefits through strategic links to regional sports facilities offering a South West regional hub.
- Aviation Museum: Creation of an interactive aviation museum to showcase the history of local aviation activity in the Sydney region and leveraging off the region's airport,
- Boutique Glamping: Development of a boutique, quality eco-tent cluster on Council or Reserve land to provide a unique experience and cater for higher spending leisure visitors and to encourage links to treks through surrounding national parks.
- Riverside Activation: Investigate riverside walks allowing access to the George's and Nepean Rivers. The walkways could also offer mountain biking trails potentially and also include interpretation which features Indigenous history.
- Music Festival: Development of a music festival which leverages off the growing population and significant creative community in the region.
- Investigate motor sport technology precinct: Undertake a study to test the viability of creating a motor sport precinct as part of a wider greater Sydney initiative. Link to WSU and TAFE for training and education options as well as offering a technology park for engineering excellence.
- Stimulate Investment into Macarthur: Development of an investment memorandum for Macarthur which shows the type of tourism development options available and that each Council is more likely to support. There is a need to be proactive to entice new investment rather than passively waiting for it to occur.
- Regional Sports Centre Precinct: Potential to develop a south west Sydney major sports precinct within the proposed Campbelltown Stadium precinct or nearby and with an attached conference/entertainment centre and supporting infrastructure and facilities.
- Regional Food Precincts and Hubs:
 Development of various food experience hubs including for a café/restaurant and bar entertainment zone within the proposed regional stadium accommodation precinct and others offering themed food markets, cultural cuisine and offering evening outdoor venue spaces.
- Strengthening the Regional Arts Hub: Recognising the strong performing and visual arts sectors within Campbelltown especially, and

TOURISM PRODUCT DEVELOPMENT & PARTNERSHIPS

developing a strategic alignment to support the expansion of facilities to grow the sector overall throughout the region.

MARKETING & PROMOTION

- Brand Identity: Definition and creation of (in consultation with the tourism industry) a tourism brand identity for the Macarthur region and linking to the sub-brands of Camden and Campbelltown. The brand needs to be appropriate not only for tourism and event promotion, but usable by other sectors of the economy. Currently the Macarthur brand name has a low profile and what it stands for is unknown which offers an opportunity.
- Redeveloped Website and Augmented Reality Mobile App: Once an identity has been established, develop a new or update the existing Macarthur regional tourism website and linked mobile app to promote the region and its offerings and to potentially offer augmented reality tours of the region.
- Event Calendar: Develop a regional events calendar which can be integrated into the destination website for Macarthur and can be referred to as the region's official event guide.
- Event Evaluation: Creation of an event evaluation criteria to be applied to existing and potential events. The purpose of this criteria is to assess their likely benefits and to ensure each Council's support is being applied to those events likely to generate the greatest economic and social benefits.
- Packaging of Product: Develop a range of bookable packages to showcase the unique tourism product within the Macarthur region, including accommodation, transport, food and beverage, attractions, and where possible tied to events etc.
- Tourism Awareness Campaign: Design a tourism awareness campaign to promote to residents of Macarthur. This is needed to highlight the importance of the tourism industry and how far the tourism dollar spreads throughout their economy. This should also be used to indicate each Council's enabling role and resource commitment to support and grow the tourism industry.
- Car Club Destination Promotion: Profile the region as a destination for car enthusiasts and car clubs requiring a mix of winding and straight

MARKETING & PROMOTION

roads, good food and beverage outlets and event venues to showcase the vehicles on display.

- Develop a Medical Tourism Strategy: Creation
 of a medical tourism strategy, leveraging off the
 growing Campbelltown Hospital and links to the
 WSU School of Medicine, to attract international
 patients wanting to come to Australia for elective
 surgery as well as medical conferences etc.
- Greater Profiling of Bird Watching: Greater profiling of birdwatching experiences throughout the region, particularly focused on the Australian Botanic Garden and the 160+ species of birds which reside within the Gardens but also covering bird watching on Council reserve land and waterways, and within National Parks.

INDUSTRY SUPPORT

- Industry Taskforce: Develop a Tourism Industry Taskforce as an informal committee of each Council (not a 355 Committee) which comprises two representatives from each Council as well as six tourism stakeholders in total to represent the tourism industry in each of the LGAs.
- Visitor Data Base: the lack of available and robust visitation data makes it challenging to determine market trends and to monitor opportunities. A strategy is required to gather visitor data from all accommodation establishments, attraction sites, theatres and other performance venues on a monthly basis.

VIETTOR SERVICING

- Visitor Information Services Review: To ensure that the VICs across both LGAs are operating to their most effective capacity, a visitor information services review should be undertaken.
- Feasibility to Assess Location of Camden VIC: Undertake a feasibility study to assess the current location of the VIC and the potential to relocate the VIC to Camden town centre to leverage off greater pedestrian numbers and exposure.
- Free Wi-Fi at the VICs: Consider offering free Wi-Fi at the region's two VICs to encourage use of the regional website and visitor dispersal throughout Macarthur.
- Gateway Landscaping: To create a stronger sense of arrival into the Macarthur region, commission a gateway landscaping strategy for streetscaping each of the primary arrival points

VISITON SERVICING

into the region and/or the primary tourism precincts, nodes and hubs identified including exit ramps off the Hume Highway.

- Signage Program: Develop a signage program to ensure there is a uniform approach to directional and interpretive signage throughout the Macarthur region. This should also highlight the approach which industry operators will need to follow to have quality signage installed.
- Roving Ambassador Program: Creation of a volunteer roving ambassador program. These roving ambassadors can provide directions, general information etc. to visitors to the Macarthur region and may be situated at main tourism hotspots, including the town centres, event locations etc. The program could capitalise on the excellent local knowledge of retirees keen to promote the area.

1.5. An LTO for the Macarthur Region

One of the challenges which the tourism sector in Macarthur faces is the ability to create a unified voice for addressing issues, raising awareness and lobbying government at all levels for various forms of support to grow tourism.

Whilst both Councils are keen to eventually see the establishment of an industry operated Local Tourism Organisation (LTO) to act as Macarthur's peak tourism body, the current operating environment in Macarthur makes this outcome slightly premature.

There are a number of criteria which need to be achieved before a viable LTO is able to be established, such as commonality and agreement amongst competing operators/areas and their recognition that their ability to lobby and leverage support is dependent on them playing effectively as a team. Usually, the establishment of an industry-operated LTO is part of an evolutionary process in the maturing of a tourism destination within a region.



Currently, this commonality and agreement does not adequately exist. To deliver a workable model for the interim, we would recommend the following approach.

- Both Councils to establish a Tourism Industry Taskforce Group to represent the tourism industry throughout both Campbelltown and Camden LGAs.
- Representatives should comprise members from each Council as well as selected individuals (chosen via a formal EOI process) from the tourism sector within Macarthur (however this may also include those who reside outside of the region but who may be passionate about Macarthur).

As each Council has agreed to continue to play a significant role as enablers of tourism throughout the Macarthur region, this offers an appropriate interim step until such time in the future that a strong and coordinated LTO is able to be created.

1.6. Going Forward

Macarthur offers many attractive areas and experiences as a visitor destination and has the potential to develop as a more highly recognised and diversified tourism region. This outcome is possible if a whole of industry approach is created, and if each Council and industry can work collaboratively to develop the structure, marketing and working environment required for this to occur.

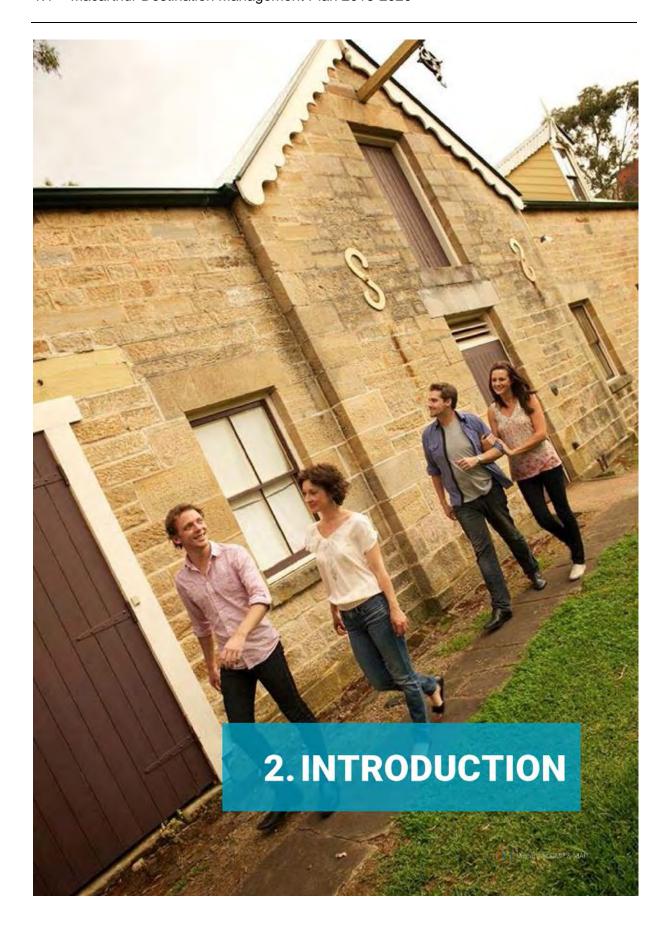
The recommendations provided in this DMP focus on options that are seen to identify product and tourism investment opportunities which can be used as stimulants to develop a more unified tourism direction forward for Macarthur and to

encourage additional investment into and stronger marketing of the region.

Industry feedback gathered through the consultation for this DMP indicated that focusing on marketing of existing product alone would not activate the opportunities identified and adequately address the challenges; there is a need for new product (either through enhancing existing product or actively facilitating new product. In tandem with this is the under investment in tourism which has occurred for quite some time and which needs to be addressed.

There also may be opportunities for the Macarthur region to offer Sydney-wide tourism experiences in the absence of these experiences and opportunities occurring elsewhere such as interactive haunted attractions, an equine visitor experience centre, a medical tourism hub (accommodation and hospital facilities linked, a luge ride attraction experience, a Sydney aviation museum, a series of boutique commercial glamping sites, a major caravan holiday park, etc.







2. Introduction



2.1. Overview

The Stafford Group (The Group) was commissioned by Campbelltown City Council and Camden Council (the Councils) to undertake the development of a Destination Management Plan (DMP), including a Marketing Action Plan (MAP) for the Macarthur region.

This DMP has been developed as an update to previous Macarthur Regional Tourism Strategy 2012 – 2015 and with a stronger emphasis on new product development and related investment requirements.

At a State Government level, the creation of DMPs for tourism destinations throughout NSW was listed as a recommendation in the Visitor Economy Taskforce Report. The purpose of the DMPs is to provide "clear frameworks to guide Government support at all levels and industry investment to deliver experiences that match and exceed visitor expectations and provide growth".1

2.2. Purpose

The purpose of the DMP and MAP (here on referred to as the DMP) is to provide the Councils and all stakeholders with a clear understanding of:

- · key visitor markets and segments;
- major preferences for experiences;
- · forecasted visitor growth; and
- existing and potential experiential strengths of the region.

2.3. Methodology

The process to complete this DMP involved the following:

- initial liaison with each Council to gather background information and to discuss the consultation program for the DMP;
- an ongoing literature review to build a quality context for the DMP and to fully understand projects and strategies as well as relevant government policies affecting the region;
- consultation with each Council as well as tourism industry stakeholders (as advised);
- desktop research, including a full audit of tourism product within the Macarthur region and collection of historic visitor data to each of the LGAs;
- multiple visits to the region to review product, meet with operators and assess new opportunities and development sites;

Final Report of the Visitor Economy Taskforce, A Plan to Double Overnight Visitor Expenditure to NSW by 2020, June 2012, NSW Government Trade & Investment

9

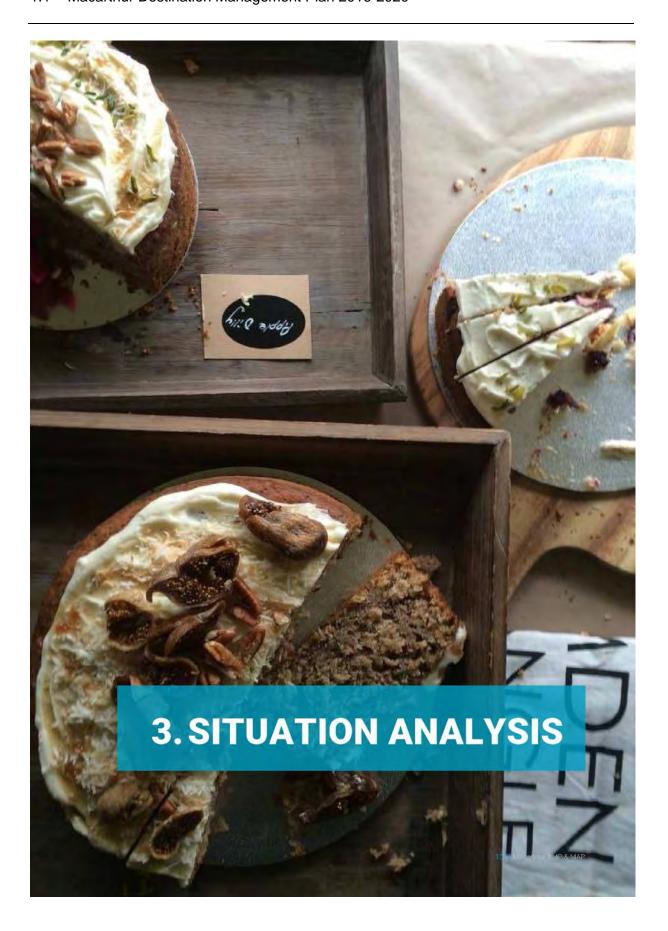
- liaison with industry operators (accommodation providers, food and beverage providers, farm operators, attraction operators, transport providers etc.);
- structured meetings with each Council to discuss the vision for tourism, infrastructure, development and discussion around related projects such as business parks, stadia, town centre revitalisation and education sector development;
- completion of the estimated net economic benefit tourism generates for the Macarthur region and, based on visitor forecasts, what its potential may be over the next 10 year period;
- prioritisation of the opportunities identified based on discussions with each Council, DNSW and tourism industry stakeholders etc;

- development of an Action Plan based on the opportunities identified;
- compilation of progress report findings into this DMP document to highlight issues and opportunities which have been considered by each Council; and
- presentation of the draft findings to key stakeholders in both Campbelltown and Camden.

This DMP has been finalised after final comment was received from both Councils.

The Group would like to take this opportunity to thank each Council and all stakeholders who have assisted in the ongoing development of the DMP for Macarthur.







3. Situation Analysis

3.1. Plan Context

This DMP is the result of continued collaboration between Campbelltown and Camden Councils. Both Councils have historically and continue to recognise the important role the tourism sector plays directly and indirectly in their economies and work well in unison.

Both Councils have been actively advocating for the tourism sector since the 1990s. The following provides a summary of key milestones in this journey.

3.1.1. Camden Council Milestones

- 1983: Participation in the Macarthur Country Tourism Association (MCTA).
- 1988: Camden Visitor Information Centre opened.
- 1991: Council took responsibility for tourism following the closure of MCTA.
- 2000: Camden Tourism Strategy 2000 2005 adopted.
- 2004: 70% of the strategy actions were fully or partially implemented.
- 2005: Camden Tourism Action Plan 2005 -2008 adopted.
- 2005: Camden Tourism Officer appointed.
- 2005: Partnership developed with Campbelltown City Council to develop a brand and image for the Macarthur region.
- 2007: www.visitcamden.com.au website developed.
- 2008: Consultant appointed to develop the Macarthur Tourism Strategy and Action Plan 2008 – 2011.

- 2008: Consultant appointed to develop the Camden Tourism Strategy and Action Plan 2008 – 2011.
- 2012: Consultant appointed to develop the Camden Tourism Strategy and Action Plan 2012-2015.
- 2015: Consultant appointed to develop this Macarthur DMP.

3.1.2. Campbelltown Council Milestones

- 1983: Participation in the Macarthur Country Tourism Association (MCTA).
- 1991: Council took responsibility for tourism following the closure of MCTA.
- 1997: Campbelltown Visitor Information Centre 'Quondong' opened.
- 1999: Campbelltown Tourism Action Strategy
 1999 2002 adopted.
- 2002: Actions within strategy had been implemented.
- 2002-2005: Campbelltown City Council undergoes a corporate restructure. Tourism moves from Community Services to Corporate Governance in the newly created Communications and Marketing section.
- 2005: Campbelltown Tourism Action Plan 2005 2008 developed.
- 2005: Partnership developed with Camden Council to develop a brand and image for the Macarthur region.
- 2006; www.visitmacarthur.com.au website developed.
- 2008: Consultant appointed to develop the Macarthur Tourism Strategy and Action Plan 2008 – 2011.



- 2012: Campbelltown City and Camden Council worked in partnership to develop the Macarthur Tourism Strategy and Action Plan 2012 - 2015.
- 2015: Consultant appointed to develop this Macarthur DMP. The development of this DMP is a result of the Campbelltown's Community Strategic Plan Delivery Program which seeks to "support regional tourism" via the development of a regional tourism strategy.2

3.2. The Macarthur Region

The Macarthur region (highlighted in yellow in the below figure) comprises the Campbelltown and Camden LGAs, which together, approximately 513 square kilometres. The region has a total population of over 202k residents3, with approximately 71% of these residents living in the Campbelltown LGA.

FIGURE 2: MAP OF THE MACARTHUR REGION

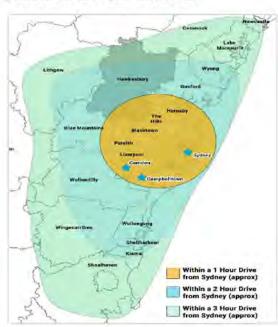


² Campbelltown Community Strategic Plan Delivery Program 2013

The Macarthur region is included within the Greater Sydney or Sydney and Surrounds region, as defined by Destination NSW. This Greater Sydney region includes major visitor destinations such as Circular Quay, Manly, Bondi Beach and Sydney Olympic Park etc. Whilst close proximity to these major visitor destinations can be advantageous for Macarthur, it can also be problematic in positioning the Macarthur region as a destination in its own right. Macarthur therefore operates in a highly competitive marketplace.

The proximity (1 hr drive to the Sydney CBD) is a real asset with such a large population catchment so close. However, being so accessible makes it far harder to be recognised as distinctly different from other parts of Greater Sydney without unique product to promote and rely on.

FIGURE 3: DISTANCE FROM SYDNEY CBD4



³ http://profile.id.com.au/macroc

^{- 2017,} page 27

⁴ Driving distances determined via Google Maps.

Furthermore, being relatively close to a number of popular destinations (such as the Southern Highlands and the Blue Mountains) which Sydney short break visitors can choose from, makes it more challenging to position and sell the Macarthur region as a short break overnight destination.

Figure 3 on the previous page reflects the distance from the Sydney CBD to the Macarthur region and other nearby tourism destinations on Sydney's doorstep, including the Blue Mountains, and marginally further out to the Southern Highlands, the Central Coast and the South Coast. This highlights the competitive environment the Macarthur region has to operate in and why finding a clear point of difference is so important.

Significant urban expansion out into parts of the Macarthur region (and broader Western and South Western Sydney) for residential development has also impacted on the way the region is perceived (possibly seen more as a major dormitory suburb now for greater Sydney and less as a possible tourist destination in its own right). This generates challenges in how it is perceived.

Nevertheless, being very close to such a large urban catchment area (Sydney), makes the region highly accessible not only to the local domestic market but also the inbound international market with the majority of international visitors flying into Sydney. A number of opportunities to capture these markets are included within this DMP. Importantly however, Macarthur needs to actively

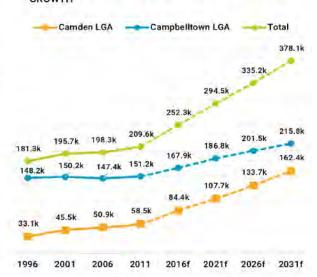
encourage more local domestic visitors from Greater Sydney as these are the easier visitor market to access.

In summary, a proactive and well-coordinated approach is needed, with each Council working closely together and with industry to raise the region's profile and overall awareness.

3.3. Population

The following figure provides a summary of the historic population growth of both the Camden and Campbelltown LGAs from 1996 - 2011, as well as forecasted population growth from 2016 - 2031.

FIGURE 4: HISTORIC POPULATION AND FORECASTED GROWTH⁵



Over the 15 year period from 1996 – 2011, Camden has experienced strong population growth, with its resident population increasing by 77% (or approximately 25,0006 residents). Campbelltown's

Environment - New South Wales State and Local Government Area Population Projections: 2014 Final

⁵ 1996 – 2006 figures are from NSW Department of Planning - New South Wales Statistical Local Area Population Projections, 2006-2036.

^{2011 - 2031} figures are from NSW Department of Planning and

⁶ Note, figures have been rounded.



population has also grown, albeit at a lower rate, growing by 2% (or just under 3,000 residents).

The NSW Government's A Plan for Growing Sydney (2014) expects this growth to continue, stating "the South West subregion is the fastest growing subregion in Sydney". 7

As of the latest Census in 2011, the Macarthur region had a total population of just under 210,000 residents. The majority of these residents (72%) reside in the Campbelltown LGA, although this split is changing as the Camden region continues to experience strong population growth tied to new urban release areas.

Importantly, these growing local communities support the need for a variety of new visitor experiences to encourage a local market to stay and experience the region, as opposed to travelling into the Sydney CBD, Southern Highlands or the Blue Mountains.

3.4. Visitation to the Macarthur Region

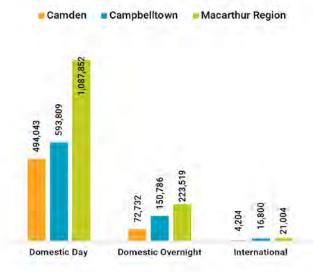
3.4.1. Visitor Numbers

Detailed visitation data down to the LGA level is not readily available and tends to often have significant margins of error. Consequently, Destination NSW (DNSW) produce LGA visitation data on request, in four year periods to obtain an average.

Over the last four year period (YE Sept 2014), visitation to the Macarthur region averaged 1.3m visitors per annum. Of these 1.3m visitors, 57% (or 761,000 visitors) visited Campbelltown LGA whilst

The following figure provides a breakdown of visitors to the region, based on visitor type and demonstrates the majority of visitors to the region are domestic day trippers, comprising 82% of visitors, followed by domestic overnight visitors (17%) and international visitors which comprises a small percentage of visitors to the region (1.5%).

FIGURE 5: VISITORS TO THE MACARTHUR REGION (4 YEAR AVERAGE YE SEPT 2014)⁸



3.4.2. Average Length of Stay

The table on the following page provides a breakdown of the estimated average length of visitors to Macarthur over the four year period 2011 – 2014.

International visitation has a far higher average length of stay as these would comprise those in the region for business and/or education purposes and who tend to skew the international

the remaining 43% (or 571,000 visitors) visited Camden LGA.

A Plan for Growing Sydney, page 128

Special data request to DNSW

holiday/leisure visitor average length of stay considerably.

TABLE 1: AVERAGE LENGTH OF STAY (4 YEAR AVERAGE YE SEPT 2014) $^{\circ}$

	Camden	Campbelltown	Macarthur Region
Domestic Day	+	-	+
Domestic Overnight	3.1	2.8	2.9
International	24.7	25.7	25.6

3.5. Regional, State and National Trends

The following provides an overview of regional, state and national trends which influence Macarthur's ability to successfully grow tourism. These trends are focused particularly on tourism, but also include economic development, environmental management, governance and social wellbeing. The trends illustrate areas where Macarthur could tap into and are generic.

3.5.1. Tourism continues to grow internationally

World Tourism Organisation (WTO) figures highlight continued growth in travel globally, with constant growth in all sectors: leisure, business, conferencing, visiting friends and relatives, MICE, education trips, food tourism, cruise, special interest markets etc.

Even with the global financial crisis, worldwide tourism figures overall have reflected growth. City-based market segments are looking for new day trip and overnight destinations. The development of new visitor experiences and activities in the

Macarthur can pick up on the major urban conurbation of Sydney's desire for new and easily accessible experiences (particularly because there has been a lack of new tourism product created in and around the Sydney region for some time).

Whilst tourism is not recession proof, it is far more resilient than previously, as visitor markets often view tourism and travel as a necessity rather than a luxury. This equates to more day trippers coming to regions such as Macarthur and to escape city-based areas as long as there is new or refreshed product promoted to them.

3.5.2. Developing countries are the standout for medium term growth

The rapid growth of visitor generating markets, such as many of those in South Asia, are already well targeted by DNSW and Tourism Australia. These visitors, coming in increasingly larger numbers, are not just after the city based experience which Sydney CBD can offer. These visitors are also keen to visit rural and regional areas where they can access suitable and appealing product.

Macarthur, surrounded by rural/natural environment, could start to develop packaged tours for these visitors. Even simple activities such as river-based kayaking, walking tours, fruit picking, horse riding etc. can have strong appeal to a number of these international visitor markets who may only visit as day visitors, preferring to stay in city based accommodation.

⁹ Special data request to DNSW

3.5.3. Growth in those coming from Asia

NSW is experiencing a significant increase in visitors coming from Asia (particularly China, India, Indonesia and Malaysia), but many regions are not yet ready with product or service standards to capitalise on the growth potential.

Macarthur has potential in developing inbound tours ex Sydney if it can link Sydney-based tour operators and deliver on the desire for day trips, adventure tourism, and passive tours to look at heritage buildings etc. This could include leveraging on the region's relationships with surrounding LGAs such as Wollondilly and the Southern Highlands to develop packaged tours as part of tour circuits around the South West.

3.5.4. A growing middle class

Greater prosperity, not only within Australia, but internationally, is rapidly growing the visitor markets with the disposable income required to go travelling.

After visitor markets tick off the major local destinations of interest (Sydney, Gold Coast and Melbourne), they tend to go looking for the next level of visitor experiences. As long as Macarthur has the products to entice the domestic market who are looking for new passive and active experiences and new events (and that these are well packaged), it can benefit from this growing cohort of mostly domestic visitors looking for new experiences within easy access of Sydney.

Importantly however, Macarthur needs to be mindful that competition is intense for capturing the domestic market, especially those interstate visitors basing themselves in Sydney and looking for surrounding regional day trips which offer unique experiences.

The declining Australian dollar is also creating more opportunities for the domestic market to holiday at home if the right product exists. The market is value driven rather than price led.

3.5.5. Changing cultural and entertainment tastes of Chinese tourists

Initially, visitation ex China was via highly structured tours. As this market has matured, so has the need for new experiences which they can undertake in smaller groups (mini bus sized special interest tours) and as family groups (using rental cars to explore). The desire now exists to travel as free independent travellers and without venturing too far from major gateway cities such as Sydney.

Macarthur is geographically well located to pick up on this changing market need. This market is keen to see more Chinese quality dining experiences, more late night (7pm - 10pm) shopping opportunities and tours to factory outlets. They may also be interested in horse breeding, horse racing and the equine sector generally which the Macarthur region is particularly strong in.





3.5.6. New Competition for NSW – developing countries are heavily investing in tourism

The challenge for NSW (and Macarthur specifically) is that the level of competition from developing countries to attract tourists is intense and the level of investment occurring is significant.

Without new investment occurring into new tourism product within Macarthur to attract local, intrastate, interstate and international visitors, visitor growth opportunities are likely to be slow to eventuate and potentially may not occur at all.

From work undertaken in the surrounding regions, we note that most councils are actively looking to encourage investment and development into new and improved facilities in order to grow their share of visitor numbers and more importantly visitor yield. In addition, tourism facilities often correlate with new recreational facilities for locals.

3.5.7. Rapid growth in youth travel

The youth market (under 25's) is growing significantly fast, often buoyed by school based excursions, school exchanges and younger people travelling with more confidence as they leave school or during their university holidays or work breaks.

Macarthur can capitalise on this youth market providing it can supply the pursuits this segment is looking for. For the short – medium term this may need to focus on packaging adventure experiences to encourage greater youth interest and awareness of the product Macarthur has to offer. Currently, we consider that many domestic markets are unaware of what Macarthur has to offer this niche market.

3.5.8. The youth traveller – more mobile, more wealthy

The youth market has often benefited from travel and holidays traditionally funded by parents. This has led to a generation (Gen Y and Gen Z) who do not wish to go without the experiences which their parents exposed them to. More disposal income is therefore applied by this sector of the market to travel including an appetite to undertake experiences, enjoy good food and wine and a preference for better quality accommodation.

Macarthur would need to create the product opportunities for this sector to produce sufficient brag value to attract it.

In essence, the youth market has shown to be very resilient and higher spending than many older market segments and needs to be promoted to.

3.5.9. An increasing desire for authentic experiences

The domestic and international market desire more genuine experiences that often may simply include good quality accommodation, horse riding and hiking etc., food experiences linked by effective transport services.

For Macarthur, this will equate to local food and beverage outlets (rather than major chain food outlets), unique events, community events and more unique product. Everyone has art trails, recreation product, food trails and various events so what are the unique elements which will make Macarthur's experiences stand out?



3.5.10. Increased urbanisation is likely to increase the desire for open space

The greater the urban density in the Sydney region, the greater the demand for day or short break excursions to Macarthur with open space qualities to escape the city/urban landscape.

There is significant competition to capture these markets from neighbouring regions, so Macarthur has to look at a marketing campaign which both raises awareness of the product offering and experiences within the LGA and which builds on elements of uniqueness.

3.5.11. Internet usage continues to grow

The increasing use of the internet for researching and buying tourism products means that building an online presence – through social media channels and other online tools (particularly for bookings) – has become important for tourism businesses.

Macarthur operators need to update and maintain their websites on a regular basis.

The product audit which was undertaken as desktop research revealed the challenge associated with websites which either have not been updated because the business is no longer operating or the business owners are lacking the expertise or time required. As a result, visitors are given a false impression of what is available within the Macarthur region.¹⁷

A far stronger and consolidated web based presence is required to promote Macarthur and to

encourage more visitor enquiries for bookings. Whilst the Macarthur tourism website managed by Councils is regularly updated and accurate, various individual operator websites are not being updated regularly and an annual audit of industry websites is required to monitor quality and accuracy.

3.5.12. Increased internet usage on smartphones

There is a growing expectation by visitors to be able access information, maps, brochures, booking facilities and self-guided tours via a smart phone app or smart phone accessible website.

The potential exists to develop a mobile app or mobile accessible website for the Macarthur region which also incorporates visitor interpretation material to provide visitors with an overview of the region and each of the suburbs/areas specifically.

3.5.13. Information technology will continue to change how tourists access and use information

Many regions throughout the country are now well advanced in offering visitor information through a digital platform (websites, mobile apps etc.). There is a steady move away from investment in traditional bricks and mortar style VICs as the cost to councils and industry operators to supply brochures and offer services seven days a week are often noted as prohibitively expensive.

Macarthur should consider whether the funds each Council invests into their VICs could possibly

Additionally, the Camden Acres Homestead B&B's website is no longer operational. This highlights the challenge of ensuring that websites are totally up to date.

¹⁰ By way of example, the Macarthur destination website indicates that the Camden Acres Homestead B&B and the Garden Cottage B&B are still operational. However, discussions with Council personnel indicated these two properties are no longer operational.



generate a better return through investing in online and interactive visitor information tools.

3.5.14. More bookings are made online

Increasingly, visitors expect to be able to book all or most of their travel (accommodation, activities, transport etc.) online, often prior to travelling.

As a result, it is important that Macarthur operators have an active and up-to-date website with booking capabilities (where required). Websites not well maintained will quickly turn off potential visitor interest.

3.5.15. The changing role of the travel agent

The travel agent role is gradually being replaced by direct online bookings for hotels, rental cars, flights and events.

Macarthur needs to investigate technology solutions which will help raise its profile in a cost effective manner and encourage industry to become stronger web-based marketers.

3.5.16. Greater information flows between travellers

Smart phones, iPads etc. enable the sharing of information far more readily. Negative feedback on TripAdvisor, Yelp, Facebook and other travel-related websites can quickly impact on businesses and even destinations.

Macarthur needs to take advantage of increased and improved information flows to use visitors as a marketing tool to encourage others to visit by effective word of mouth advertising.

This will also require ongoing improvements in service standards to better deliver to all visitor market segments.

3.5.17. Overseas holidays are getting cheaper

With low cost carrier flights ex Sydney, there is increasing competition from Asian and Pacific Island destinations to lure the domestic market offshore, even for short breaks (3-4 days). What many of these destinations are doing is offering holidays which are completely packaged (flights, accommodation, transfers, food and activities). This is seen as highly appealing for the short break visitor market which is often time poor.

Macarthur operators need to remain value driven and look for value added components to offer in order to be competitive. The potential exists to package and brand certain experiences as unique.

3.5.18. Cruise ships on the rise

As Macarthur is close to the Sydney CBD, it has the potential to link into land based day and half day tours offered by cruise companies. Offering day tour companies a cluster of Macarthur and surrounding experiences and packaging these up for promoting to these tour companies would be required. It is important to note however that there is intense competition for these cruise visitors as they are often very high spending but also demanding.

Destination NSW (DNSW) has been developing a 10 year Cruise Development Plan¹¹ for NSW. This Plan is being developed because of the record number of cruise ships arriving and the expectation

¹¹ Yet to be publicly released

that this will continue to grow – "in 2013-14 Sydney welcomed a record 261 cruise ships and in 2014-15 an additional 32 are booked to call into our Harbour City". 12

Potential also exists to link with cruise ships coming into Port Kembla (Wollongong) in 2016 providing that well packaged tours are able to be offered. Inbound tour operators are likely to be keen to receive tour itineraries which they can market to passengers in advance.

3.5.19. Tourism operators face high (and increasing) costs

Compliance costs, government imposts and approval delays are making it increasingly difficult for tourism companies to remain profitable. Each Council needs to consider ways to assist local operators and incoming tourism companies to help them remain competitive. For example, concerns over delays in getting council approvals need to be discussed and resolved. With more available land for development than many other LGAs in Greater Sydney, Macarthur has the potential to grow and develop as a tourism investment hub, as long as it is seen to be investor friendly, open for business and with planning policies and documents which actively encourage tourism investment.

3.5.20. Lack of investment in the domestic market holds back local potential

Too often, destinations focus on marketing and promotion rather than the improvement of existing product and the development of new product when attempting to grow visitation and visitor yield to a region.

Challenges in attracting new tourism attractions and facilities and the lack of capital often available to help drive this, need to be addressed. Each Council's leadership role in working with industry is vital in addressing these challenges. Whilst improving market awareness of Macarthur is a highly important outcome, expanding the product mix and creating more development opportunities is equally as important.

3.5.21. The increasing cost of visiting Australia

Consumers will continue to look for value adders being offered to make packages more attractive. The relative strength of the Australian dollar and the economic conditions in some source markets make it even more important for operators in Macarthur to be as value driven as possible.

3.5.22. Staffing challenges

Increasing challenges in attracting and keeping semi-skilled and skilled staff and the impact of penalty rates during weekends and in the evening on business viability are major challenges for hospitality sector operators especially.

Macarthur needs cafes and retailers open, especially during weekend periods when events are on and where more visitors are often about and looking to spend. Working with TAFE and other education providers to help provide tourism and hospitality trainees and apprentices needs to be considered by industry.

¹² 10 Year Cruise Development Plan for NSW Underway (Media Release), Thursday 19th June 2014, Andrew Stoner MP Deputy Premier of NSW

3.6. SWOT ANALYSIS

The following table provides a SWOT analysis for the Macarthur region, focusing on tourism related strengths, weaknesses, opportunities and threats.

It has been created after discussions with various industry and government stakeholders and from the review of research and its analysis.

There are some strengths and weaknesses which correlate back to the 2012 – 2015 Tourism Strategy, but overall a number of new opportunities and challenges have been identified.



TABLE 2: SWOT ANALYSIS

- Close proximity to key markets, especially Greater Sydney
- Both Councils are actively pro tourism
- Variety of experiences within a semi-rural setting
- Good access to major road and rail networks
- Availability of land for development
- A number of significant heritage sites
- A range of sporting and shopping facilities
- The Australian Botanic Garden and the new mountain biking trails
- Campbelltown Arts Centre major regional gallery with a significant exhibition and performance program
- Rydges and Quest hotels, Campbelltown
- The Cube continues to attract entertainment and major conferences
- Camden its historic village style and café culture
- Campbelltown cultural diversity and ethnic food stores
- Open space Campbelltown bordered by the Georges River Nature Reserve and Camden surrounded by a rural setting and the Nepean River and Dharawal National Park
- Major events such as the Tabcorp Miracle Mile and the Camden Show.

- Tyranny of distance from Sydney CBD (too close)
- Limited high quality dining options (though we note this is improving)
- Perceptions and image of the region as a dormitory residential area
- Inability to activate the major rivers for recreation or tourism due to environmental restrictions
- Limited accommodation mix
- Lack of interpretation and directional signage
- Existing performing arts venues too small and/or need upgrading
- Lack of marketing budget for tourism promotion
- Confusion over what tourism actually is
- Retailers closed on the weekend
- Location of Camden VIC
- Lack of tourism welcome signage on key highways
- Relatively small number of larger attractions
- Not currently perceived as a destination by visitors to Sydney
- Lack of operators following branding guidelines on promotional material and websites
- Some businesses looking tired and run down and limited funding to make improvements
- Consumer perception of Macarthur, and particularly Camden, as a major residential urban growth area in a rural setting
- No regional tourism entity to leverage off
- Lack of product packaging
- Limited accommodation availability in Camden LGA to cater for larger scale events
- Perception of limited things to do in the region and not seen to be a destination
- Small scale of performing arts venues (Campbelltown Arts Centre) and others needing upgrading
- No night time economy and limited family friendly evening entertainment
- Lack of robust accurate visitor data

TRENGTHS

- · Capitalise on the strength of the equine sector
- Introduction of new forms of accommodation (glamping, boutique hotel, rural retreats)
- Partnerships with surrounding LGAs and tourism regions where appropriate
- Introduction of evening experiences to encourage vibrancy throughout the region
- Development of cooking schools and enhancement of food trails to leverage off the emerging boutique food sector
- Capitalise on the air sports activity currently taking place at Camden Airport
- Development of a brand identity for the region which profiles Macarthur
- Leverage off the heritage and history of Camden in particular
- Development of a regional music festival to capitalise on the growing creative community within the region
- Greater promotion of the region as a destination for car enthusiasts and car clubs
- Identification of access points for river-based tourism experiences
- Greater promotion and profiling of Camden Town Farm possibly via events
- Improving transport connectivity (rail-bus links)
- Introduce new festivals and events

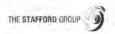
OPPORTUNITIES

- Assess boutique heritage hotel for Camden
- Reuse existing heritage buildings in Camden township for commercial accommodation, art gallery, expanded food experience, cooking school etc.
- Develop medical tourism in Campbelltown linked to paediatric focus of Campbelltown hospital and need for new hotel to expand the concept
- Campbelltown Arts Centre expansion to continue to grow the creative sector in Macarthur
- Development of accommodation and a national equine visitor centre at Tabcorp Park at Menangle Park
- Leveraging tourism and recreational options for Badgery Creek Airport visitors and passengers prior to its commencement
- Creating the walkways, cycleways and amenities to link Mt Annan Botanical Gardens with the Scenic Hills area of Western Sydney Parkland
- Assessment of aviation business park and maintenance hub at Wedderburn Airport
- Assessing and introducing visitor attractions such as a luge experience at Mt Annan Botanical Gardens
- Creating packages for the cruise ship market for ½ and full day tours
- Assessing and developing regional and state wide skateboard events and competitions leveraging off the various quality skateboard parks within the area
- Develop an annual visitor survey to create trend data and to monitor project and program outputs

- Local residents' attitude ambivalent to tourism
- Competition from other nearby destinations
- Nearby mature and rejuvenated destinations with greater marketing budgets
- Downturn in the economy reducing disposable income used for travelling and day trips
- Urbanisation compromising rural / scenic feel to the region
- Lack of support from State Government to be recognised as a region or as offering a clear tourism proposition

HREATS





4. Product and Infrastructure Audit

To assess current tourism services and product (attractions, accommodation, experiences etc.) provision throughout the region, The Group has completed a product and experience audit.

4.1. Attraction Audit

Based on desktop research, consultation and assessment, the following table provides a supply side audit of Macarthur's tourism product. The audit identified 140 tourism and recreation related experiences ranging from cultural experiences to adventure experiences to hire companies and tour operators.

It is important to note that this product audit captures only those operators who are listed on the Macarthur destination website, Council's tourism database and website and Destination NSW. It is important to understand that because there are a number of operators in the Macarthur region who do not have a web presence, they may not be captured in this audit.

The table demonstrates that Macarthur's tourism product is distributed amongst:

- recreation product and parks and reserves over one quarter of which is free product; and
- tours including a range of heritage, walking and heritage tours.

The full findings from the audit have been included in Supporting Documentation Section 1.

TABLE 3: MACARTHUR TOURISM PRODUCT AUDIT SUMMARY¹³

	Campbelltown	Camden	Total Macarthur	% Breakdown
Recreation	32	16	48	34%
Arts, Cultural, Heritage	8	6	14	10%
Active / Adventure	2	10	12	9%
Parks & Reserves	4	6	10	7%
Market	7	5	12	9%
Brewery/ Winery	3	4	7	5%
Natural Areas	5	0	5	4%
Food Experience	2	4	6	4%
Entertainment	4	1	5	4%
Tour Operator	11	10	21	15%
TOTAL	78	62	140	

What the product audit does not reflect is the quality of assets on offer and their competitiveness.

4.2. Accommodation Audit

Table 4 on the following page provides a summary list of commercial accommodation available throughout the Macarthur LGA. The larger scale hotel/motel properties are located within the Campbelltown LGA whilst Camden has smaller motel properties, one B&B and the Macarthur region's only caravan/destination park.

The full findings from the audit have been included in Supporting Documentation Section 2.

¹⁵ Note, the Food Experience category does not reflect all food and beverage operators, but rather, reflects food and beverage

experiences which can be undertaken such as high tea experiences etc.

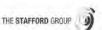


TABLE 4: MACARTHUR ACCOMMODATION AUDIT SUMMARY

	Campbelltown	Camden	Total Macerthur	% Breakdown
B&B/ Guesthouse/ Farmstay	ō	1	1	7%
Camping/ Caravan Park	0	1	1	7%
Hotel/Motel	5	3	8	53%
Serviced Apartments	1	0	-1	7%
Student Accomm.	3	1	4	27%
Total	9	6	15	

No assessment is provided on the quality of accommodation facilities, though we understand that with limited supply, many accommodation facilities are achieving strong occupancy rates (70% annual occupancy levels or higher).

4.3. Food & Beverage Audit

Table 5 provides a summary of food and beverage providers within the Macarthur region. Whilst the audit demonstrates that the region has a large selection of restaurants (54% of F&B product), anecdotal feedback from stakeholders indicates that many of these offer variable quality and there is a distinct lack of restaurants which one may classify as a "dining out" experiences. Many are noted as fast food style outlets.

As with the previous audits, it is important to note that this product audit captures only those operators who are listed on the Macarthur destination website and Council's tourism database. It is important to understand that because there are a number of food and beverage operators in the Macarthur region who do not have a web presence, they may not be captured in this audit.

The full findings from the audit have been included in Supporting Documentation Section 3.

TABLE 5: MACARTHUR FOOD AND BEVERAGE AUDIT SUMMARY

	Campbelltown	Camden	Total Macarthur	% Breakdown
Café	13	15	28	16%
Ice Creamery / Dessert	6	3	9	5%
Pub / Club	12:	12	24	14%
Restaurant	49	42	91	54%
Takeaway	11	7	18	11%
TOTAL	91	79	170	

4.4. Product gap analysis

As has been identified in the opportunities section of this report, there are a number of new initiatives which should be considered to help bolster the tourism product mix within the Macarthur region. In addition, a detailed assessment of the current product mix has identified a number of potential product gaps.

These gaps are noted as follows (and not in priority order).

- The limited number of 3-5 star branded hotel rooms available, noting that Rydges, Quest and lbis are the only branded properties currently in Macarthur and both of these are within the Campbelltown LGA.
- Limited activity capitalising on the strength of the equine sector within and surrounding the Macarthur region.
- The opportunity for expanding the existing, or developing a new, a high quality holiday park to pick up on the strong growth in the campervan and caravan market and the lack of holiday park sites in and around greater Sydney.

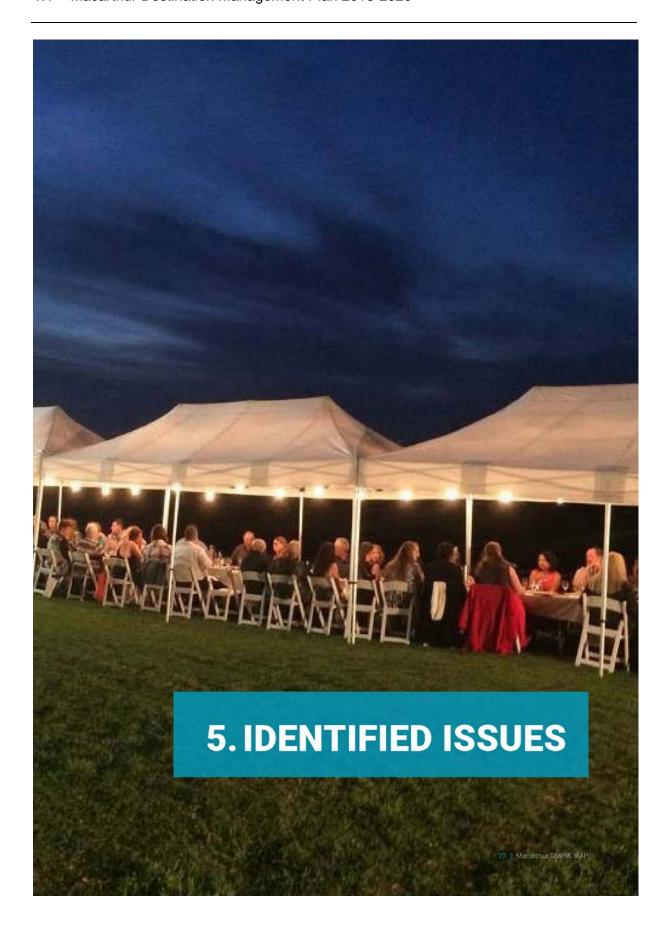
9

- The lack of packaging of product (accommodation, visitor attractions, food and beverage options etc.).
- The potential for high quality tent camps (termed glamping) within forest reserve and park areas.
- Other forms of arts and heritage tourism product to help grow the cultural tourism product base within the region overall and the lack of links between cultural product to offer various driving and walking cultural trails.
- Potential for sound and light shows particularly utilising old historic buildings and potentially the Australian Botanic Garden to offer evening based visitor experiences as there is limited evening product currently on offer¹⁴.
- Refreshing and packaging heritage based experiences (local community museums, historic sites and sites of significance) as part of guided walking tours including ghost tours etc.
- Enhancing the existing Macarthur mobile app with augmented reality to tell the history of the unique parts of Macarthur within greater Sydney and to profile the significance of the historic Macarthur towns.
- Looking beyond Macarthur's boundaries to create synergy with tourism product in neighbouring areas such as Wollondilly and the Southern Highlands or Wollongong and the Illawarra but using Macarthur as the base to experience these from.

- Developing a major visitor perception campaign to be promoted in Greater Sydney and focused on the wide product range available within Macarthur, which is required to help raise awareness of what the region is.
- Develop a visitor attraction, possibly based on a themed horror house experience (similar to Spookers – approximately 1 hour south of the Auckland CBD) utilising a vacant building in the region and leveraging off the history of Macarthur towns.
- Position Macarthur as the equine hub for the harness racing industry in NSW and nationally and market Tabcorp Park to interstate and New Zealand horse studs and breeders to base themselves in Macarthur. Potential exists to also consider accommodation development at Tabcorp Park along with creating a nationally significant equine visitor attraction centre.



¹⁴ We note the recent success of the sound and light show held in Picton (Wollandilly Shire) and the strong interest this generated.





5. Identified Issues

The following issues and gaps need to be addressed to facilitate the success of this DMP and ultimately, to promote the development of sustainable tourism for the region.

These issues have been identified through the discussions with Councils and stakeholders, as well as through desktop research and various site visits and assessments.

The issues have been segmented into the following categories:

- · product and supporting infrastructure issues;
- marketing and promotional issues; and
- other tourism related issues.

Recommendations regarding how many of these issues can be resolved or converted into opportunities for Macarthur are outlined in Section 6 of this DMP.

5.1. Product and Supporting Infrastructure

5.1.1. Lack of Commissionable Product

Part of the challenge for the Macarthur region in growing its visitor markets is the limited amount of commissionable tourism product available, packaged and actively promoted. Much of the region's tourism promotion focus is centred on free and natural experiences such as historic and nature-based experiences.

Furthermore, Macarthur has very few large scale operators and as a result, tourism is primarily centred on small businesses which are often harder to encourage to participate in cooperative marketing initiatives and are often undercapitalised.

The ability to grow visitation and increase visitor spend will be dependent on:

- the introduction of a wider product mix offering different and new experiences (both commissionable and free);
- the development of packaged experiences to help make it easier to promote the region;
- development of collective marketing initiatives which can actively promote the region for a variety of purposes,
- a far stronger online promotional presence acknowledging the need to encourage people to visit, live, work and play in Macarthur; and
- the ability to explain to the market what the point of difference is in the region.

5.1.2. Need for a Larger Entertainment Venue

Whilst we understand that the region has a strong arts, culture, music and entertainment scene, the region does not have a large enough venues to cater for existing demand.

The current Campbelltown Arts Centre, which we note is highly successful, is constrained by its size and only has a theatre space which can seat approximately 170.

In order to capitalise on the burgeoning arts, culture, music and entertainment scene, there is a need to consider potentially developing a multipurpose performing arts venue which can cater for

larger audiences but offer flexibility¹⁵ in spacesauditoriums in how it is designed.

5.1.3. Growing Region - Inadequate Infrastructure Support

The following figure demonstrates the population growth which is anticipated to occur in the region over the period 2011 – 2031. Over this period, the population is anticipated to growth by 80%, increasing from just under 210,000 to approximately 378,000. Over 20 years, this increases on average by 8,400 people per annum, or 2,800 households per year, which is significant.

FIGURE 6: MACARTHUR FORECASTED POPULATION GROWTH¹⁶



Importantly, whilst Campbelltown increases by 43% over this period, Camden increases (from a much smaller base) by 178%.

Whilst the region is recognised as a quickly growing residential area, the infrastructure support for roads, public transport services and community infrastructure (such as sporting and arts facilities)

is not keeping pace and as the region continues to grow, this issue will only further compound.

There is a need to explore opportunities for how the cost of these upgrades and facility expansions can be equitably met with support from different levels of Government.

There is also a need to explore the different ways of potentially generating a variety of income/revenue streams or other economic benefits associated with upgrading these forms of public infrastructure which are needed to support tourism.

5.1.4. Narellan Road

Narellan Road was highlighted by almost all stakeholders as being a major challenge for the region, with its congestion, particularly during peak hours, being a deterrent to expanding the visitor economy.

5.1.5. Location of the Camden VIC

The Macarthur region has two yellow i accredited VIC; one in each LGA. Whilst the location of the Campbelltown VIC is within a designated arts/cultural precinct, there was much stakeholder discussion over the location of the Camden VIC. The Camden VIC is currently located within the historic John Oxley Cottage in Elderslie on the Camden Valley Way, but as a standalone and quite isolated facility rather than being within a precinct.

¹⁶ We note that a current master plan for the facility indicates increasing capacity to offer a 300 seat venue though it is unclear whether this size is future proofed for longer term growth.

¹⁰ NSW Department of Planning and Environment - New South Wales State and Local Government Area Population Projections: 2014 Final



FIGURE 7: MACARTHUR VIC LOCATIONS



Stakeholder feedback indicated that the VIC may be better located within Camden township in order to increase its visibility and in turn, encourage greater visitor use, capitalising on the higher pedestrian traffic in the township area.

A separate assessment should be undertaken of the performance of the VIC and the possibility for introducing alternative information mechanisms. There is a need to ensure Camden Council is optimising its return on investment in visitor services. Many councils throughout Australia are performing similar assessments given the increasing reliance visitors have on technology prior to visiting and during their visit to a destination.

5.1.6. Lack of Accommodation in Camden

The Macarthur region's accommodation mix is primarily centred on Rydges, Quest and Ibis, located in Campbelltown. The remaining visitor accommodation is smaller scale and family run properties. Higher quality and larger hotels, particularly within Camden, are underrepresented.

Visitor statistics from DNSW indicate only 18% of visitors to the region stay overnight, and a significant proportion of these, we would assume, would stay with friends and relatives.¹⁷

This lack of commercial accommodation, particularly in Camden, has several implications, including (but not limited to) the inability to secure larger events and conferences as there is insufficient accommodation (and of a high enough quality) for conference/event attendees.

Domestic and international trends identified through the consultation process and via research indicates potential for a higher quality boutique heritage hotel leveraging off the heritage feel within Camden. The size and scale of this hotel should be the subject of a feasibility assessment.

5.1.7. Lack of Signage (interpretation and directional)

Analysis and stakeholder feedback indicates a lack of signage – including directional and interpretive. Directional signage, particularly within a CBD, is crucial to encourage visitation to places of interest, outline walks that can be completed through the CBD to attractions (such as heritage and cultural walks). It is important to consider that the better signposting of Macarthur's natural and built attractions, particularly the historic town of Camden and the national parks within the region, could also potentially encourage visitors and the community to make better use of these locations for walking, cycling and picnicking etc.

house/apartment/flat. Only 11% of international overnight and 25% of domestic overnight visitors stay in commercial hotels, resorts, motor inns etc.

¹⁷ Based on DNSW data (4 year LGA profiles to YE Sept 2014), 30% of international visitors and 39% of domestic overnight visitors to NSW stay with a family/friend and 42% of international overnight visitors and 10% of domestic overnight visitors stay in a rented



There is also a lack of interpretative signage when entering the region and at attractions. What should be considered are attractive gateway signs on all access roads into Campbelltown and Camden, highlighting the experiences and branding of the region.

Signage that could potentially be implemented includes attractive static displays (for both directional and interpretive means) as well as high-tech, innovative electronic information displays and touch screens located at attractions or in town centres.

5.1.8. Need to Upgrade the Camden Civic Centre

We understand that whilst the Camden Civic Centre has historically been an important venue for community and professional theatre, arts and concert performances, the facility is ageing and requires upgrading to bring it up to standard and to make it once again, a more marketable facility for larger-scale performances and productions on a regional basis.

5.2. Marketing and Promotion

5.2.1. Strong competition from destinations such as Sydney and surrounding areas

In some ways, Macarthur is fortunate to be surrounded by strong tourism destinations and brands such as Sydney and the Blue Mountains, as Macarthur can benefit from the tourism "trickle down" effect. However, being so close to these high profile and highly marketed destinations can result in Macarthur struggling to market and position itself as a distinct destination in its own right.

There is a need to ensure Macarthur has a very clear point of difference as a destination which it can easily market.

5.2.2. Inclusion in the Sydney and Surrounds Region

Within the DNSW boundaries, Macarthur falls within the "Sydney and Surrounds" marketing region. This provides opportunities for Macarthur to leverage off Sydney's significant marketing budget and brand. With the diversity and size of the Sydney region however, it is easy for smaller areas with limited product and an unclear brand to be overlooked.

Consultation with the Councils and stakeholders revealed that positioning Macarthur as part of the Sydney and Surrounds region has led to a distinct disadvantage, Many stakeholders commented that the focus of promotional efforts and activity within the Sydney region was strongly orientated towards the Sydney CBD and its plethora of facilities, attractions and related infrastructure to leverage off.

The current move to expand the second CBD hub of Parramatta also challenges Macarthur's ability to gain presence with the State Government push being west (rather than south west) to Parramatta.

5.2.3. Brand Differentiation

Macarthur, along with its individual LGAs and towns, lacks a clear identity and a discernible image. To help position Macarthur more appropriately within the Greater Sydney region, requires the development of a destination brand and identity. Importantly, this identity needs to be developed in consultation with the community to ensure the identity is accepted and utilised by not



only tourism operators and the industry generally, but other sectors of the economy and community.

5.2.4. Lack of Cooperative Marketing

Transport operators and tour operators based in the Sydney CBD generally have indicated a lack of interest in developing tours for the Macarthur region. Feedback which was provided on a confidential basis indicates the following reasons for this.

- There is insufficient commissionable product in the region to enable packages to be created for the domestic and international markets.
- Whilst the region does offer an attractive heritage/historic setting, the attractiveness, at times, is compromised by a limited tourism offering and shop trading hours.
- There is limited interest in some of the existing events which are seen to be more community based. The greatest impediment to encouraging and motivating inbound tour operators and wholesalers to recognise the value and importance of the Macarthur as a visitor destination, is the lack of all-weather visitor attractions or experiences. Stakeholder feedback indicates that if there was a cluster unique visitor experiences, this could act as a sufficient catalyst to encourage tours to be potentially trialled to scope interest.

5.2.5. Market Perception

With over 80% of visitors to the LGA being day trippers, there is a perception amongst tour operators, wholesalers and tourism intermediaries generally that the Macarthur region is primarily a day market only. That is, interstate and international visitors currently will stay in the Sydney CBD and travel out to the region for day

visitor experiences rather than consider the possibility for overnight stays. This view is reinforced by local markets from the greater Sydney region who do not yet see the need for overnight stays, possibly based on the products currently on offer, the excellent accessibility to the region and the perception that the region is not really a destination in its own right.

5.3. Other issues

5.3.1. Tyranny of Distance

Whilst the proximity to the Sydney CBD and Sydney Airport provide an important local market and important gateway for the Macarthur region, they also provide one of the greatest challenges.

The closeness of the region to Sydney is possibly seen by some markets (including locals) as merely an extension of Sydney rather than a destination in its own right. Campbelltown, for example gets a large number of travellers visiting on a daily basis but relatively few are thought to stay overnight and partake of the various recreational activities on offer.

Further research is warranted to see whether business travellers especially might consider overnight stays and what facilities will be needed to motivate them to do so. The same can be said for the meetings and small scale conference market who appear to be under represented in the visitor mix to the region. Proximity to the Sydney CBD could be a major determinant holding back growth in these sectors.

This places greater pressure on the need to develop tourism facilities which can be major stimulants to encourage people to visit and make the region a destination in its own right. By



comparison, the Blue Mountains and the Southern Highlands offer sufficient distance from Sydney to give the feeling that they are separate destinations and also benefit from different geographic landscapes and climate.

5.3.2. Parramatta Centric Focus by State Government

There is currently a strong focus by the NSW State government to develop and position Parramatta as Sydney's second CBD.¹⁸ As part of this development, major infrastructure is planned including extensive higher density residential housing, stronger transport connectivity, more community infrastructure (such as theatres and stadia), medical facilities and schools.

While the development of this infrastructure is beneficial for the Great Western Sydney region, many LGAs surrounding Parramatta such as Penrith, the Hawkesbury, Blue Mountains, Liverpool and including Camden and Campbelltown, have commented that this Parramatta centric focus has resulted, in some cases, in their own needs for facilities and infrastructure being de prioritised. This is seen to make it far harder to secure State Government funding support for important elements of infrastructure.

5.3.3. Balancing Housing and Tourism Needs

Tourism growth in the Macarthur region is challenged in trying to achieve a balance with State Government targets for new housing lands particularly in the South West Growth Centre of which Campbelltown and Camden are important LGAs. This also is factored in by State Government targets on employment growth. Whilst not contrary to the needs of the tourism sector, it is certainly actively encouraging other industry sectors where the employment ratios are thought to be higher.

What may need to be considered is creating dedicated tourism and associated retail precincts which can act as nodes for tourism activity and which could aim to protect the character of town centres so the recreational and heritage values are protected.

The introduction of more major housing estates without sufficient open space areas and wider vegetated buffer zones would limit tourism potential in a variety of locations within or near urban centres in the region. It is important that tourism development is not pushed out into peripheral areas, making it harder to access etc.

Tourism facilities often link to local recreational facilities and are vital to encourage more locals to stay and enjoy their own local amenities, rather than travelling to the Sydney CBD for example, to experience some tourism activities.

5.3.4. Lifestyle Operators

There is a proportion of the Macarthur tourism industry operators who are thought to be lifestyle rather than full commercial operators. This extends to the hospitality and retail sector where a number of cafés, restaurants and retailers are not open during the weekend periods (and on Sunday in particular). This creates the perception that the

¹⁸ The NSW State Government document "A Plan for Growing Sydney" lists number of directions to follow, the second of which is Direction 1.2 'Grow Greater Parramatta – Sydney's second CBD".



Macarthur is not open on the weekends and is closed in the evenings. This is a major limitation for the area going forward.

To encourage tourism operators, hospitality operators and retailers to extend their trading hours, and in particular, trade on Sundays, it is important that they (and the general community) are provided with insight as to the economic benefits of doing so, as well as information on the importance of the tourism industry for the Macarthur.

A major factor is also encouraging far more visitors to buy local product and enjoy local facilities. These in turn, help support the economic vitality of local retail and hospitality businesses.

5.3.5. Lack of Industry Cohesion

Macarthur is a diverse and rapidly changing region. As a consequence, there are differing opinions as to the direction which the region as a whole, and the LGAs individually, need to pursue.

Despite best efforts, tourism coordination and integration at a regional level has struggled.

Coordination is needed in order to drive and grow tourism and to assist in developing the future tourism identity. Tourism operators need to recognise that the strength of Macarthur is in the sum of its parts, rather than any one part of the region. And they need to take some ownership to achieve this.

In addition, the region's operators need to derive comfort from the diversity of the region. Campbelltown having a stronger city/urban feel whilst Camden is seen as more rural. The overlap are areas such as Narellan which are seen to offer a strong urban context within Camden, so the demarcation with Camden being rural and Campbelltown being city-urban is not always clearly delineated.

5.3.6. Higher Quality Dining Options

Whilst the Macarthur region does have a wide variety of cafes and ethnic cuisine to choose from, stakeholder feedback and analysis indicates a need to introduce higher quality restaurant and bar experiences. It is however also acknowledged that a higher quality food scene has been organically developing in line with the region's growing population and changing demographics. The need, however, exists to consider more "dining out" experiences rather than fast food outlets.

5.3.7. Lack of Tourism Investment

There has been a lack of investment in the tourism industry from commercial developers and operators for new accommodation as well as attraction/experience based product over some time. Operators also commented on the inability to upgrade existing tourism product because of lack of capital as well as zoning/planning restrictions at times.

There is benefit in each Council developing a tourism investment memorandum to indicate the type of tourism development to be supported in principle as well as the preferred locations for tourism development. Investors are looking for certainty in where they can develop and what is more likely to be supported by councils. As there are various forms of tourism investment which could be introduced into the region, a further step from this DMP could be the creation of an investment memorandum to highlight desired investment projects and the rationale why these

should succeed in the region. This is outside the scope of this DMP to provide this but needs to be contemplated by Councils to help get their investment opportunities understood and recognised.

5.3.8. Lack of Understanding of the Importance of the Tourism Industry

Whilst the region does have a number of very active tourism operators, there are also a number of lifestyle operators. Furthermore, while the community is generally supportive of tourism, they often fail to understand that councils are generally the largest financial supporters of tourism via visitor information services, tourism marketing and promotion, funding of local tourism organisations, maintenance of visitor infrastructure (such as signage, art galleries, museums etc.) and funding of events.

The growth of the tourism sector has potential to generate greater visitor expenditure, longer visitor length of stay and also the creation of a variety of direct and indirect jobs. Campbelltown's Community Strategic Plan lists as an objective, the development of "more jobs in the area" and the LGA's Youth Strategy also notes the need to "increase the number of local employment opportunities for young people". Tourism has the potential to help facilitate this and offer a wide range of jobs (semi-skilled and skilled) to locals.

A strategy which promotes more industry participation and broader community awareness is required.

This strategy could include a community awareness campaign which demonstrates the following:

- how the tourism dollar disperses through the local economy;
- what kind of businesses benefit from tourism;
- how extended trading hours could provide benefits to a wide cross spectrum of the community;
- the estimated value of tourism via direct, indirect and induced spending impacts; and
- to help support the economic benefits, social and infrastructure improvements and higher quality environmental outcomes.

5.3.9. Retail Trading Hours

Limited shop trading hours, particularly over the weekend and in the evening creates the perception that Macarthur is not open at night.

To encourage retailers, and particularly restaurant and café operators, to extend their trading hours, it is important that they (as well as the general community) are provided with insight as to the economic benefits of doing so.

It is important to recognise that greater community commitment to growing and promoting tourism will lead to greater word of mouth advertising for the region.

Every effort needs to be made by the Councils to encourage and support retailers and hospitality operators to open during weekend periods and at least 3 – 4 nights per week.

¹⁵ Campbelltown Community Strategic Plan, Campbelltown City Council, page 14.

5.3.10. Lack of a Visitor Data Base

Visitation data is provided via the DNSW State Government aggregated data and apportioned on an LGA basis. The challenge is that the sample sizes are often small and the margin of error high (often with a 40%+ margin of error).

Data is needed to allow for trend analysis and forecasting. Importantly, it is a mix of visitor numbers, length of visitor stay and visitor spend patterns which need to be gathered and segmented across markets. Currently, there is insufficient data to enable a robust assessment of:

- Visitation by main purpose of visit (leisureholiday, business, visiting friends and relatives, conferences, education etc.);
- Visitation by major market segments (locals residing within a 25km radius of the region, other visitors from greater Sydney, other NSW domestic visitors, inter-state visitors and inbound-international visitors);
- Visitation by major reasons for going such as nature based tourists, event attendees, arts and cultural visitors, food and related visitors, sports and fitness visitors etc.

Development of a robust data base will enable the collection of data on individual attractions and facilities which can help confirm seasonality impacts of visitation and related occupancy and use levels.











6. The Opportunities



The following section highlights the opportunities to focus on to activate and grow tourism. The opportunities have deliberately been kept succinct to focus on those opportunities which are likely to generate the best possible returns in the shortest timeframe. They therefore represent the *lower hanging fruit* tourism opportunities.

It is also important to note that whilst each Council has an important role to play as an "enabler" in facilitating and driving these projects, they also requires the active participation of a range of stakeholders.

The opportunities have been segmented according to the following themes, which align with the previous 2012 – 2015 Tourism Strategy:

- Tourism Product Development & Partnerships;
- Marketing & Promotion;
- Industry Support; and
- Visitor Servicing.

The opportunities are not listed in priority order.

6.1. Tourism Product Development & Partnerships

6.1.1. Campbelltown Opportunities

6.1.1.1. Sports and Leisure Precinct

Potential exists to create a major South West Sydney sporting hub and related entertainment precinct to strengthen the potential to attract major sporting and other events to the wider region and to grow the visitor economy.

Potential exists to create the hub around the Campbelltown Sports Stadium which is located adjacent to Leumeah Railway Station (see Figure 8 below) and is owned by Campbelltown City Council

FIGURE 8: LOCATION OF CAMPBELLTOWN STADIUM

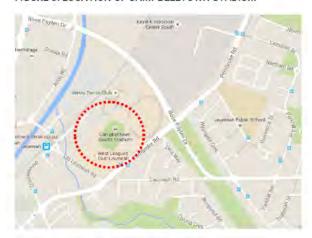


Figure 9 on the following page demonstrates the location of the Stadium compared to other stadia located within Greater Sydney (and including Wollongong). This indicates the significant population catchment it covers in South West Sydney and the importance of delivering services

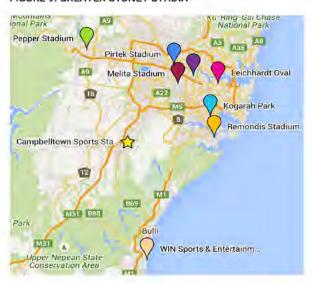


to better meet the needs of the local-regional South West Sydney resident and visitor market.

To help grow the regional visitor economy there is a need to cater to forecasted growth in current and future demand for a variety of sporting and other forms of events and festivals (musical, cultural, entertainment etc.).

A feasibility study should be undertaken to determine the types and scale of facilities required to meet resident and visitor future demand and to allow for future proofing (noting the extensive population growth forecasts for the Macarthur region for the next 20 years). This should also consider how a staged approach to delivering these facilities could best occur.

FIGURE 9: GREATER SYDNEY STADIA



6.1.1.2. Café/Restaurant and Entertainment Precinct

Potential also exists to consider the development of a café/restaurant and entertainment precinct next to or potentially integrated within the sports and leisure precinct.

The development of such a precinct will encourage vibrancy around the stadium and help increase the length of stay of visitors and locals, with those attending events coming in early/staying after their sporting match/event to dine etc. The walkability between stadia and food precincts is a very important factor in improving visitor demand and overall marketability. And provision for night food markets and seasonal pop up markets needs to also be considered.

6.1.1.3. Haunted Attraction and Festival

Potential exists to bring alive the heritage stories of the region through an attraction and events/festival program which could be centred on the concept of "Macarthur Horrors". The concept could involve:

- identifying companies interested in creating a themed haunted experience in similar fashion possibly to www.spookers.com and possibly using redundant older buildings or other facilities;
- creating a horror food festival;
- the creation of a horror film festival and through social media, encouraging people to nominate the best horror movies so interested parties can help select the program; and
- a 2 4 week series of horror based events and experiences, possibly tying in with the Festival of Fisher's Ghost, commencing with Halloween and concluding over the month of November each year.

The figure on the following page illustrates an example of a best practice themed haunted/horror house in Auckland which attracts approximately 1,500 visitors per day in peak season and provides employment for over 100 staff (full time and part



time). The attraction was developed on a derelict hospital site which no other use had been found for.

With its strong performing arts sector in Campbelltown, potential may exist to encourage those active in theatre productions etc. to consider partnering on the development of a themed horror experience.

FIGURE 10: SPOOKERS HAUNTED ATTRACTION







6.1.1.4. Expanding the Regional Arts Sector

The potential exists to build on the existing strong visual and performing arts sectors in the region and Campbelltown in particular to build a strong base of facilities. The Campbelltown Arts Centre (CAC) is noted as a highly successful regional arts centre model and could act as a base to help facilitate wider South West Sydney arts activation and overall growth of the sector. To build the visitor economy through arts based events there is a need to invest in and expand facilities to better support the arts community and offer more for local residents.

The Campbelltown Arts Centre (CAC) audience base for example, spans the Macarthur and South West region – an area with significant population growth, estimated to expand from approximately 461,000 to approximately 933,000 by 2036.²⁰

The development of proposed expanded facilities at CAC is seen as strategically important to help grow the regions visitor economy through offering facilities able to cater to larger audiences and more sophisticated shows and events.

6.1.1.5. Motor Sport Technology Precinct

Whilst we note the desire in some parts of the Macarthur region to avoid the reintroduction²¹ of any form of motor sport/endure-cross for eventing or training, compared to other major cities in Australia, Sydney has fewer facilities available. Whilst motor sport activity does come with a variety of challenges (most often seen as noise related), it also offers a number of wider economic and related benefits.

With a lack of facilities available in greater Sydney, consideration should be given to a feasibility study to determine if locations exist to introduce a new

²⁰ Campbelltown Arts Centre Expansion Proposal

²⁾ Noting there used to be a motor sport park at Oran Park



circuit and how these might be funded and developed.

Figure 11 below provides an example of a recent state of the art motorsport hub located in a pristine region (Queenstown).

FIGURE 11: HIGHLANDS MOTOR SPORT PRECINCT OUEENSTOWN.



A motor sport precinct is likely to offer benefits to support a number of local community interests as well as a wider visitor market including:

- car clubs and related niche markets for club days;
- · auction days and swap meets;
- motor vehicle manufacturers wanting to test vehicles and offer promotional days to media;
- · product promotions for parts and accessories;
- · corporates wanting to hold promotional days;
- different forms of motor sport activity (cars, bikes etc.) looking for new circuits; and
- a broad family market looking for new entertainment experiences.
- Potential benefits include:
- higher regional visitor expenditure levels via entry fees, food and beverage sales, retail and merchandising etc.;
- support for overnight accommodation operators especially for 2 day events;

- increased visitor expenditure in local food and beverage outlets;
- opportunities for sponsorship deals for local community events and activities;
- full and part time employment opportunities for locals;
- Links to training institutions (TAFE and WSU) for engineering, auto mechanics, electrical and other trades;
- ability to link with other experiences on offer to strengthen the tourism industry in the region and potential for joint marketing activities; and
- profile raising of the region overall.

6.1.1.6. Glenfield to Macarthur Urban Renewal Corridor Strategy

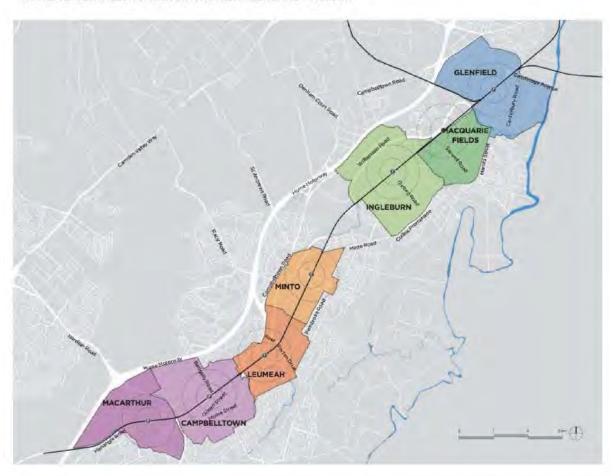
The Glenfield to Macarthur Urban Renewal Corridor Strategy is a joint initiative between the NSW Government and Campbelltown City Council to guide future development and infrastructure delivery over the next 20 years²².

The Strategy offers an evidence base to support future growth in south-west Sydney by identifying opportunities for additional homes and jobs close to existing public transport, employment areas and the regional city of Campbelltown. The Strategy is based around the Glenfield, Macquarie Fields, Ingleburn, Minto, Leumeah, Campbelltown and Macarthur station precincts and outlines the future vision and character of each area, the improvements to community facilities, public spaces, the transport network and other infrastructure needed to achieve sustainable growth.

^{22 2015-2035}







A key element which also needs to be included to strengthen the need for enhanced liveability, is the integration of tourism and leisure facilities and development to meet community needs and expectations along with the various visitor markets. Opportunities which need to be added to this Strategy and to integrate it with this DMP for Macarthur could include:

 recognising and promoting the unique community and ethnic mix which some of the areas along the corridor have with potential to promote fresh produce and spice markets,

- cultural diversity cuisine, and general food and dining experiences;
- walkways and cycle ways to encourage healthy living but also to better connect places of interest and to offer safe and enjoyable trails;;
- sign posting and interpretative sign boards (web based and actual markers) to highlight the various heritage sites which the area is rich in and different areas of habitat; and
- creating safe and family friendly night time experiences such as light shows, outdoor cinema and small scale events.

6.1.1.7. Regional Sports Facility

It is noted that a significant number of locals and visitors undertake organised sport activities within the Macarthur region every weekend. This reflects the current extensive sports grounds and facilities and strong local interest and demand.

It is also understood that the Western Sydney University (Campbelltown Campus) has a strong sports program including a variety of courses in this field. Potential exists to develop a regional sports hub not only focusing on the leisure needs of locals and visitors but also the potential to encourage elite sports training and eventing.

Campbelltown City Council funded research indicates that the National Rugby League have been investigating the establishment of elite training facilities throughout Sydney for their member clubs. In addition, the A League have apparently also been investigating potential to

develop similar facilities. A variety of partnership opportunities may be available through organisations such as the South West Sydney Academy of Sport, NSW Cricket and WSU just to name a few.

As understood from the research, there are four key components to a Sport Centre of Excellence being:

- community facilities and programs;
- elite sports training facilities (e.g. altitude training, research and development);
- · shared meeting and education facilities; and
- commercial opportunities (e.g. cafés, fitness centre) to help offset the cost of operating.

The objective is to ensure the facility is selfsustaining with limited or no subsidy requirement by Council.

From a tourism perspective, potential exists to build on the strength of the current sports activity

Miscathor Heights
Residential

Average of Trees and link across the
substitute

Miscathor Heights
Residential

Average of Trees and link across the
substitute
Residential

Miscathor Heights
Residential

Average of Trees and link across the
substitute
Residential

Miscathor Heights
Residential

Average of Trees and link across the
substitute
Residential

Miscathor Heights
Residential

Average of Trees and link across the
substitute
Residential

Miscathor Heights
Residential

Average of Trees and link across the
substitute
Residential

Miscathor Heights
Residential

Average of Trees and link across the
substitute
Residential

Average of Trees and link across the
substitute
Residential

Average of Trees and link across the
substitute
Residential

Average of Trees and link across the
substitute
Residential

Average of Trees and link across the
substitute
Residential

Average of Trees and link across the
substitute
Residential

Average of Trees and link across the
substitute
Residential

Average of Trees and link across the
substitute
Residential

Average of Trees and link across the
substitute
Residential

Average of Trees and link across the
substitute
Residential

Average of Trees and link across the
substitute
Residential

Average of Trees and link across the
substitute
Residential

Average of Trees and link across the
substitute
Residential

Average of Trees and link across the
substitute
Residential

Average of Trees and link across the
substitute
Residential
Residenti

in the Macarthur region and develop a South West Regional Sports Hub which could lead to:

- the relocation of various major sporting teams to the Macarthur region;
- the growth in leisure based community sporting activity;
- growth in elite sporting events;
- creation of new sporting based events and tournaments;
- încreased over night accommodation via visitor stays;
- higher visitor spend in the region; and
- increasing recognition and promotion of the region as a visitor destination, albeit with a strong sports tourism focus.

This initiative also supports the development of the WSU Macarthur Campus as an integrated health hub with links to the hospitals and medical research facilities.

Importantly, the development of this sports hub and its growth potential needs to be supported with additional commercial accommodation, food and beverage facilities and other recreational amenities.

6.1.2. Camden Opportunities

6.1.2.1. Holiday Park Development

The Macarthur region has one commercial tourist park, Poplar Caravan Park, located within Camden. The Caravan Park has undergone significant change over the past few years and has emerged as a model tourist park.



The occupancy at the park has increased by 350%, with the park achieving an average annual occupancy above 90% (and with very few permanents residing in the Park).

Whilst we understand the Poplar Caravan Park is keen to expand, in order to continue to grow the caravan and camping market to the region, there is a need to consider the development of an additional park, with the function primarily being a destination style holiday park.

Over the past 15 years, the caravan, motorhome and camping industry has been the fastest growing domestic tourism sector in Australia. In this period, caravan and RV registrations have increased by more than 250%. The industry is worth \$6.5 billion nationally and currently provides for 620,000 holidays per annum.²³ The industry is constantly evolving with successful parks responding to consumer demand for better standards and facilities by transforming from traditional transit parks into holiday/destination parks.²⁴

²⁶ Caravan and Camping Industry Profile, Caravan and Camping Industry Association NSW, pages 2-4.

⁴ More detailed trend data on caravan and destination parks can be found in Appendix 1

The development of a true destination style caravan park (i.e. following the Big 4 Model amongst others) may help the region attract a greater share of the growing interstate family visitor market. Should the owners of Poplar Tourist Park be keen, this could be undertaken as an expansion to their current park²⁵, or, this may need to be undertaken on a different site with greater capacity for growth.

The scale of expansion may or may not be able to be accommodated on the Poplar Caravan Park site, hence the need to consider longer term sector growth prospects and the potential for an additional destination park in the region (which may or may not be potentially run by the owner/operator of Poplar Tourist Park).

Holiday parks differ from traditional caravan parks as they offer a full holiday experience providing facilities such as swimming pools and aquatic parks, kids clubs, camp kitchens, mini-golf, group entertainment and shops etc. Consequently, these parks are attracting a growing number of families who utilise the park as their holiday destination rather than solely utilising them as a means of accommodation.

Feedback received from State tourism bodies in both NSW and Queensland emphasised the declining number of caravan parks across both States. This decline does not appear to be as a result of lack of demand, but rather as a result of the value of their land being used for other forms of development. There have been many existing caravan park sites redeveloped as residential and

mixed use commercial development, especially in coastal locations.

When developing a new park, the following should be considered.

- Capacity for approximately 80 120 caravan and camping sites and ideally 30+ cabins.
- The park should be focused on tourists as opposed to permanent stay residents.
- The park needs to be family friendly to encourage a greater number of families to stopover and visit the region.
- Development designed by a renowned designer who is considered to be an industry leader in holiday parks is important.
- Consideration should be given into the provision of amenities such as a heated pool, spa, BBQ facilities, camp kitchen, tennis court, bike hire/loan, kid's playground (including a giant jumping castle), daily children's activities and a café and convenience store,
- Marketing of the new park as a destination hub which encourages users to base themselves in the region. They can then undertake day tours to locations outside of the region, but their location in Macarthur allows for a more relaxed and easily accessible base.

The figure on the following page demonstrates three traditional caravan parks. Often these parks have basic facilities and are used as transit parks by travellers (i.e. overnight accommodation when travelling between two destinations, rather than being a destination in their own right).

²⁵ We understand that the Park has an additional 5 acres of paddock which is currently used for camping, but which provides suitable land for expansion.

FIGURE 14: TRADITIONAL CARAVAN PARKS



Canobolas Caravan Park, NSW



Burrum Heads Beachfront Tourist Park, QLD



Huntsville Caravan Park, QLD

Figure 15 demonstrates the modern form of caravan parks – often referred to as destination or holiday parks. These parks usually feature a combination of caravan/camping sites as well as units and chalets, waterparks, pools and waterslides, kid's playgrounds, game rooms, biking trails, cafes and shops.

This model is where the current and future market demand is focused and where Macarthur has a significant opportunity to become a hub for this important sector of the tourism industry in the absence of other holiday parks around greater Sydney.

FIGURE 15: MAJOR DESTINATION HOLIDAY PARKS



Adventure Whitsunday Resort, QLD



Deniliquin Holiday Park, NSW



Pambula Beach Discovery Holiday Park, NSW

With its close proximity to the M5 and M7 highways, and the region's available land, potential exists to position Macarthur as the Sydney regional hub for caravan/holiday parks. The facilities are also likely to be highly compatible with the needs of those in the equine sector requiring sites for caravan and camping.

In order to determine the most appropriate site for the destination holiday park and to assess the interest of the current tourist park owners, a feasibility and site assessment should be undertaken.



6.1.2.2. Aviation Museum

Potential exists to investigate the development of an interactive aviation museum which showcases the local history of aviation in Sydney and with a focus on light aircraft, gliding and recreational aviation as well as military history associated with Camden airport.

To support this, the potential exists to explore opportunities for the further promotion and packaging of recreational aviation activity (gliding, small aircraft training, micro lights etc.) which is undertaken at Camden Airport.

6.1.2.3. Aviation Business Park

Potential may exist for an aviation business park to support the growth in light aircraft flying and associated visitor growth. There is a growing demand for new business parks which can cater to the needs of a fly in market needing places to land and store aircraft, for maintenance of light aircraft and for long term hangars etc. Demand is seen for those wanting to fly into the Sydney region but with limitations on access into Bankstown and the need to avoid Kingsford Smith because of major commercial aircraft movements. Demand exists on the city fringe which avoids conflicts with air corridors required by these other major airports.

The creation of an aviation business park could lead to demand for more commercial accommodation nearby, shuttle buses-taxis and the various employment opportunities which could be generated to support growth in the light aircraft industry.

Whilst we note that Camden Airport may potentially close when Badgerys Creek Airport is fully operational, this may not be for some time (5 15 years). In the interim, the airport offers a variety of important uses.

6.1.3. Macarthur Regional Opportunities

As well as the various LGA specific tourism projects identified there are a number which offer greater potential across the Macarthur region and which may offer partnership potential for both Councils to activate. The location of these may also occur in either LGA.

6.1.3.1. Botanic Gardens Amphitheatre, Sculpture Garden, Horse Trails and Luge

Whilst the Botanic Gardens are technically located in Camden LGA they border Campbelltown LGA and offer a strong regional opportunity. The development of an amphitheatre within the Botanical Gardens is noted as a well needed all weather facility. The amphitheatre may need to include:

- an undercover sound shell to allow for performances in all weather;
- to ensure the supply of electricity and lighting and speakers is able to be provided in all weather; and
- to ensure the set up for performances can be undertaken in all weather conditions.

This presupposes that the audience would be seated outside without weather protection.

The facility could also include various sculpture trails – art trails to offer a composite attraction linked to the Garden's botanic experiences and encouraging a number of walking circuits.

The figure below provides some examples of outdoor amphitheatres. These facilities feature large outdoor sound stages set against natural backdrops.



FIGURE 16: OUTDOOR AMPHITHEATRE EXAMPLES







In addition to these product development opportunities it is noted that the topography on the Campbelltown side of the Gardens is steeper and may lend itself to various active attractions such as a luge track or expanded downhill mountain biking circuit. With a large parcel of fairly steep land and open space areas for development, the Gardens should investigate introducing family friendly (and environmentally sustainable) family based attractions and experiences which can maximise the value of this terrain and which may offer additional revenue streams.

FIGURE 17: LUGE EXAMPLES



Skyline Luge, Calgary



Ridge Runner Mountain Luge/Coaster, Canada



Skyline Luge, Queenstown

A feasibility study should be considered to test the viability of introducing various built forms of infrastructure which can integrate well into the Gardens along with areas to offer horse trails in more remote parts of the Gardens and which avoid conflict with other users.



6.1.3.2. Heritage and Nature-Based Stories through a Sound and Light Show at the Botanic Garden

Heritage tourism is seen to be a major potential component of Macarthur's product mix, strengthened by the extensive selection of historic buildings and the nationally important stories associated with the region in Australia's history.

Furthermore, having the Australian Botanic Garden within its boundaries, presents significant opportunities with respect to using the site as a highly attractive backdrop for telling stories.

Opportunities to create sound and light shows to showcase the region's unique history and interesting stories need to be investigated and could include developing a seasonal evening heritage experience at the Botanic Gardens.

FIGURE 18: SOUND AND LIGHT SHOW EXAMPLES



The Light Garden, Centennial Park Sydney



The Enchanted Forest, Scotland

The success of major light shows such as Vivid Sydney and the popularity of sound and light shows such as the Blood on the Southern Cross (Ballarat) illustrates that, with the right product and technology mix, heritage stories can be brought alive and made more interesting.

Furthermore, we understand that Picton recently had an IlluminARTe light festival in their main street which attracted over 15k visitors and was profiled by the Sydney Morning Herald and DNSW. The festival included the projection of art designs, relevant to Wollondilly's culture and history, on a variety of walls, public spaces and buildings along Picton's main street.

Whilst we would not advocate merely copying what Picton or any other destination might have done, the opportunity exists to offer a different form of sound and light show experience, noting the level of high market demand for these. The potential exists to hold this event at a different time of year, with a different theme and leveraging off different elements of the Australian Botanic Garden.

For Macarthur, the following experiences could be investigated.

- Light shows on historic buildings and within the Australian Botanic Garden (Figure 18 provides best practice examples of these).
- which links a number of heritage properties and a food experience together offering visitors a progressive dinner. Essentially, visitors could complete different meal courses at a range of eateries (including pop-up eateries) around a specific part of the region whilst also stopping at historic properties on their way to the next course. Each stop would



be clearly marked and could provide an interactive historic experience either via a guide or via a short audio visual experience (5-10 minutes).

Importantly, these types of experiences will help stimulate visitors to get out during the evening; to walk, dine and experience the unique and significant history of the region. Even if locals are reluctant at times to go out in the evenings, regional visitors may provide a stronger visitor market.

6.1.3.3. Food Trails and Cooking Schools

Macarthur is emerging as an eclectic food hub with a variety of food experiences that can be undertaken.

This, coupled with the farming background of the region, presents opportunity to introduce an integrated boutique gourmet cooking school program, helping to continue to grow the interest in Macarthur's food tourism product. Participants could learn how to cook with the local produce, enjoy their meal and purchase any of the local produce they used throughout their class.

The cooking schools could also act as a showcase for the unique products that are being produced in the region (this extends from raw produce to value add food products such as jams, chutneys, other condiments etc.).

There is also the opportunity to market specially designed classes to children visiting with families and run these classes at the same time as the adult classes. Children could participate in a range of specially designed cooking and gardening classes which both stimulates and educates children regarding the importance of healthy eating and

how fun cooking can be. Potential may also exist to extend into education programs and link to local and regional schools.

6.1.3.4. Boutique Glamping in Forest Parks/Reserves

Potential exists to investigate selective nodes within reserves or possibly forest park land for glamping. Locations which border on the national parks should be considered with potential to link into existing park trail networks but have the accommodation actually outside of the national park land.

FIGURE 19: GLAMPING EXAMPLES



South Coast, NSW



Florida, USA

These accommodation sites could be part of an existing trail network but provide for overnight accommodation so extending the length of visitor stay. They also could offer potential for concession operators to pay a license fee to Council (if on Council controlled reserve land).

6.1.3.5. Leisure Focused Open Space Corridor

Potential exists to strengthen the southern hub of Mount Annan via an approximately 400m wide open space corridor through the Scenic Hills area to link northward to the Western Sydney Parklands. The Scenic Hills area offers an interface between Camden and Campbelltown and offers important rural landscape areas which avoid the risk of over development. This corridor has benefit for:

- assisting threatened species;
- offering important vistas and view-shafts;
- helping to offer a contiguous open space corridor through the South West where there is ongoing and extensive pressure to allow more land to be rezoned for urban development;
- strengthening the connection to Mount Annan as a southern node of significance with the Botanical Gardens as the potential southern anchor point;
- improving liveability in the Macarthur region overall by highlighting the quality of green spaces which exist, and
- building a clear sense of identity to avoid a scenario where the only physical barrier to an LGA are highways and river boundaries.

The ability to create and retain a 400m wide open space corridor can help generate a variety of liveability benefits for the wider Macarthur regional community and can also stimulate tourism growth and development.

This can support opportunities including:

- creation of new walking trails linking from Mount Annan through the Scenic Hills to the Western Sydney Parklands;
- creation of cycle ways including for hybrid cycles as well as dedicated mountain biking

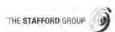
- trails so they offer potential to various markets (families especially) and not just the dedicated mountain biking sector;
- guided walks to highlight places of heritage and cultural significance as well as areas with interesting biodiversity;
- encouraging outdoor events within the corridor which have a healthy lifestyle theme (biathlons and triathlons, family and corporate fun days and events); and
- introducing refreshment hubs/nodes (pop ups rather than permanent structures) along the corridor where food and beverage providers can establish during events and during seasonal periods where sufficient numbers of users support operating.

These natural landscapes (though often abutted by urban development in various places) are important to preserve and promote and tourism activity has the ability to stimulate economic, social and environmental benefits to support this.

These are important natural assets which already exist; it just requires that these be turned from basic natural assets to natural attractions in order to generate a variety of benefits which could assist in helping to fund their ongoing maintenance and strengthen overall liveability and sense of place.

6.1.3.6. National Equine Centre

Potential exists to develop a national equine visitor centre at Tabcorp Park at Menangle Park and to also look to include onsite accommodation. The facility could develop as a hub to the strong equine activity across the region.



6.1.3.7. Leveraging off Badgerys Creek Airport

The airport is anticipated to be operational by 2025 and will provide various opportunities for tourism and recreational activity to meet the needs of passengers and visitors to the general area. Assuming there is good quality and fast transport connectivity to the airport precinct, potential exists to consider:

- an accommodation precinct;
- · various recreational pursuits; and
- various shows and performances using existing and future performing arts spaces.

6.1.3.8. Link between Western Sydney Parklands and Mount Annan Botanical Gardens

As the parklands effectively borders both Council areas it offers a regional opportunity to link (via cycle ways and walkways and possibly horse trails) to Mount Annan Botanical Gardens. This offers far better utilisation of the parklands within the scenic hills area and allows both Councils the opportunity to activate initiatives as they see fit.

6.1.3.9. Wedderburn Airport Business Park

Potential exists to expand the activity at the airport to include a business park and wider maintenance hub. Though space appears limited there is demand from the recreational aviation community to fly into areas around Sydney where they can safely store light aircraft and then use ground transport to visit various locations.

If there is onsite light aircraft maintenance facilities which can be accessed by fly in aviation visitors then the growth potential may be stronger.

6.1.3.10. Caravan and Holiday Park Expansion

As well as the potential to expand the Poplar Caravan Park in Camden, potential exists to expand the number of holiday parks throughout the Macarthur region.

Over the past 15 years, the caravan, motorhome and camping industry has been the fastest growing domestic tourism sector in Australia. In this period, caravan and RV registrations have increased by more than 250%. The industry is worth \$6.5 billion nationally.

Sydney suffers from a lack of quality holiday parks to meet the needs of the caravan and motor home visitor market. Many traditional caravan parks cater to low cost permanent stayers which often have conflict with the needs of short term visitors.

Assessment should be made of locations close to the Hume Highway and on sites with 6 acres or more which could be converted to quality holiday parks for caravaners, campers and motor home travellers. Menangle Park could be an area with potential as a location.

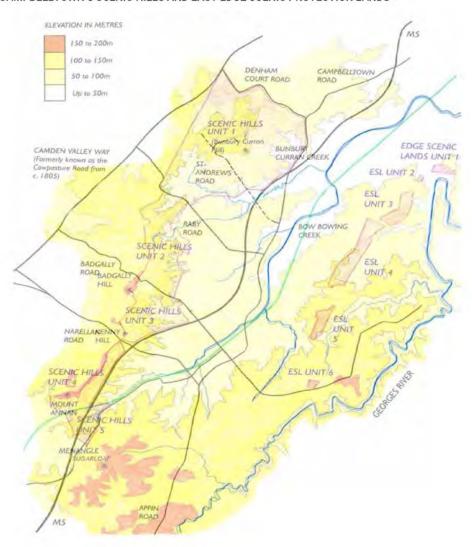
When developing a new park, the following should be considered.

- Accessibility to on and off ramps to the highway;
- Compatible neighbouring land users such as council reserve land, national parks and open space corridors,
- Capacity for approximately 80 120 caravan and camping sites and ideally 30+ cabins.
- The park should be focused on tourists as opposed to permanent stay residents.
- The park needs to be family friendly to encourage a greater number of families to stopover and visit the region.
- Development designed by a renowned designer who is considered to be an industry leader in holiday parks is important.



- Consideration should be given into the provision of amenities such as a heated pool, spa, BBQ facilities, camp kitchen, tennis court, bike hire/loan, kid's playground (including a giant jumping castle), daily children's activities and a café and convenience store.
- Marketing of the new park as a destination hub which encourages users to base themselves in the region. They can then undertake day tours to locations outside of the region, but their location in Macarthur allows for a more relaxed and easily accessible base.

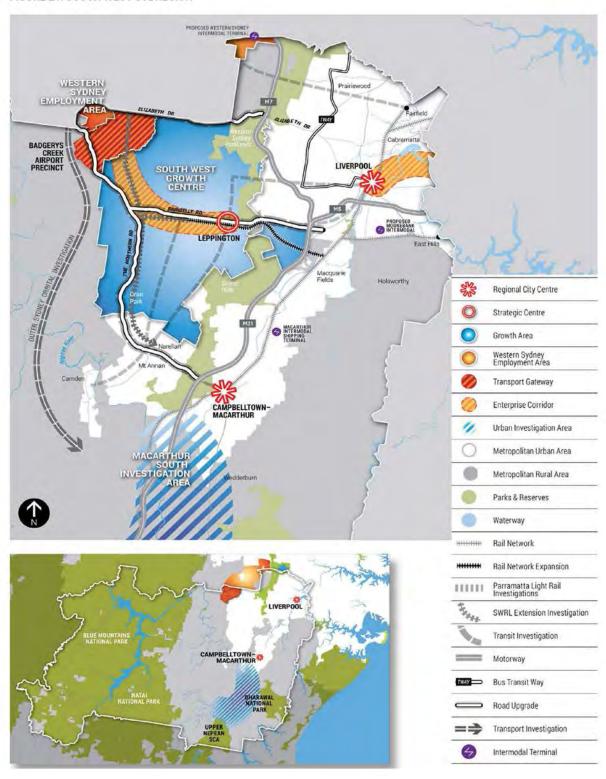
FIGURE 20: CAMPBELLTOWN'S SCENIC HILLS AND EAST EDGE SCENIC PROTECTION LANDS²⁶



²⁶ Visual Analysis of Campbelltown's Scenic Hills and East Edge Scenic Protection Lands. October 2011



FIGURE 21: SOUTH WEST SUBREGION





6.1.3.11. Bush Corridors for Leisure Tourism

As well as open space corridors which can link Mount Annan with the Western Sydney Parklands and walkways and cycle ways to link the various urban centres on the Glenfield to Macarthur Urban Renewal Corridor, potential exists to develop other bushland corridors, especially where these track the major river systems (Georges and Nepean Rivers) in the region.

The existing Georges River Corridor already exists and offers a variety of natural and environmental opportunities which could include orienteering, tree tops walks, zip lining experiences etc.

Some of these include:

- introduction of board walks to offer safe and environmentally sensitive areas to walk in:
- adventure parks offering a mix of free experiences such as exercise stations (to offer a circuit); and
- paid for experiences such as high ropes courses, flying fox experiences and possible on water rafting –kayaking guided options.

Linked to these important bush corridors is one of the largest colony of Koalas in NSW which reside in the Macarthur bushland and is thought to be the only chlamydia-free colony of koalas in New South Wales:²⁷ The bush corridors through the Macarthur region have important links down to the Dharawal National Park and offer important corridors for a number of threatened species.

These natural bushland assets already exist within the region and, subject to being sensitively planned and managed, offer an opportunity to help position the Macarthur region as having a number of natural attributes which are not well known to most visitor markets.

I is noted that as well as the visitor market potential the conservation of koalas and their habitat within parts of the Macarthur region has long been of interest to the broader community. While a detailed population estimate remains to be determined, available evidence indicates that the numbers of koalas have increased in recent decades.

It is understood that a Comprehensive Koala Plan of Management (CKPoM) is being prepared to enable a consistent, landscape-based approach to matters relating to how koalas and their habitat are best managed. The recent listing of koalas as a threatened species for purposes of the Federal Government's Environment Protection and Biodiversity Conservation Act 1999 is particularly relevant. Working out ways to create broader community engagement with the conservation of koala habitat in the region are important to also help grow and manage visitor interest in what is a significant natural attraction.

Consideration should be given to developing a "threatened species interpretation centre" which

²⁷ Dr Robert Close, from the School of Science and Health at WSU



could act as a hub for guided tours and various organized events and education based experiences. This could be focused on koalas (due to the local significance of the habitat as noted and/or the focus could be on a far wider range of fauna as well as flora. And it could have potential as a sanctuary, education and interpretation centre, with involvement not only from government, but also other organisations such as WIRES etc.

This should be subject to a feasibility study to test market demand and overall viability including the level of support from various Federal and State level organisations who may be potential stakeholders.

6.1.3.12. Arts Trail

We note there is a growing strong arts community within Macarthur. This arts community is not just solely focused on the delivery of arts and performances but is also successful in the creation of its own content.

The opportunity exists to leverage off this activity and create a series of different types of art trails. The art trials could be linked in with the other trails (such as the current food tour/trail which exists) to deliver a broader experience and could be a seasonal experience, especially if performance art is included rather than just visual arts.

6.1.3.13. Riverside Activation

Potential exists to investigate riverside activation for the Georges River and Nepean River. A conservation based approach is suggested where all opportunities are sensitively planned and managed. With this in mind, possible options for activation could include the following.

- A series of walks and cycling trails allowing passive access to the George's and Nepean Rivers. The walkways could also include mountain biking trails potentially and also include interpretation which features Indigenous history. Ideally, the walkways and trails can provide opportunities for a shuttle bus/minivan service to collect from one end of the trail and/or a seasonal coffee cart.
- Boardwalks and pontoon style small jetties to offer attractive and environmentally friendly ways to access the river's edge.
- A series of outdoor exercise stations which may also include access to the rivers for kayaking/canoeing, and link to mountain biking trails.
- Offering potential for off road Segway experiences as part of adventure experiences.

Initially, riverside activation should be investigated on Council controlled reserve land as this creates opportunities to link into tourism precincts and other attraction sites. These are also more likely to be accessible to town areas rather than more remote locations. It is also important to note that Council controlled – managed reserve areas are more likely to be easier to activate development in as State Government policy constraints prevent a number of activities occurring in National Parks and in water catchment areas controlled by Sydney Water.

Campbelltown's Community Strategic Plan notes, within its five key themes regarding community aspirations for Campbelltown:

 the need to manage healthy waterways leading to a healthy environment for the LGA's children (Objective 1);



- protection of natural resources, parks and reserves and supports the LGA's waterways (Objective 1); and
- improve the footpath and cycle way network to encourage more people to walk and cycle (Objective 3).

Each of these community aspirations could potentially be achieved through the development of riverside walkways and other activations.

The creation of riverside experiences should be subject to a feasibility study to test the level of market demand and viability of introducing the various activities and facilities as suggested. This is also important to determine how best to stage river side development to best meet community needs and to allow for revenue streams to be created where possible to help offset the ongoing cost of maintenance.

6.1.3.14. Regional Music Festival

We understand that in line with the region's growing population, the popularity and success of its arts and creativity sector is also increasing. This sector, and particularly the live music sector, is finding it difficult to showcase their talent because of limited venues within the region to perform.

The potential exists to investigate the development of a music festival, possibly focused on the rock music genre, which might not only feature major national/international acts, but could also feature a number of high quality regional acts.

There are a number of locations throughout the region which could be utilised for this festival,

including the Australian Botanic Garden in Mount Annan (as we understand there is an outdoor area which can cater for up to 10,000 attendees).

6.1.3.15. National Equine Experience Centre

Tabcorp Park offers the leading harness racing club in Australia which attracts both national and international interest. This provides a significant base to grow the visitor markets into the region for racing events along with various entertainment functions etc.

Macarthur, and some of the surrounding LGAs, have a strong equine focus; whether it be equine sports, equine health, equine agistment or equine breeding.

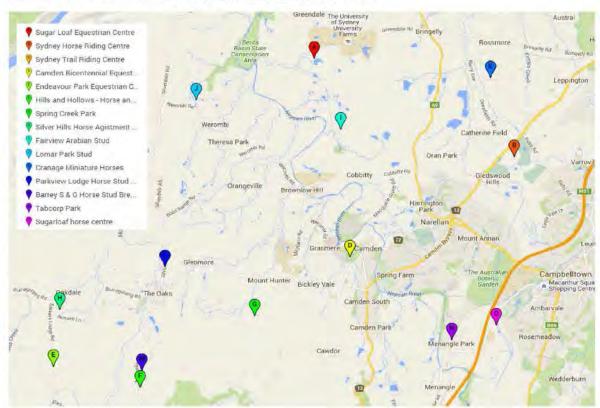
The figure on the following page provides an overview of equine-based sporting and other facilities within the Camden LGA and broader region. Green flags represents those facilities/businesses with a primary focus on breeding. Red flags represents those with a focus on horse riding and eventing.

The opportunity needs to be investigated for developing a National Equine Experience Centre, showcasing the history of the equine industry, not only in the broader Macarthur region, but potentially extending nationally.

Additionally, the potential exists to better partner with the equine industry to leverage opportunities from existing equine events to encourage greater profile and to grow length of visitor stay in the region.







6.1.3.16. Stimulate Investment into Macarthur

To encourage tourism investment in the region, there is a need for each Council to identify what tourism development and opportunities they wish to support, as identified in the DMP.

To encourage tourism investment into the region, there is a need for each Council to clearly indicate to industry and developers what tourism development is more likely to be supported and how this can grow the overall visitor economy.

This could be undertaken via the development of a regional tourism investment memorandum which indicates:

- the type of tourism development which each Council would like to see within their LGA;
- areas throughout the region which are suitable for the development of tourism facilities (accommodation, food and beverage, attractions, activities etc.);
- elements that, subject to planning regulations being satisfied, Council is supportive of in principle; and
- ensuring that Council planning documents (including LEPs and DCPs) and other strategic documentation illustrates that Councils are "open for business" and wishing to grow the visitor economy in specific ways.

The memorandum can be presented to the investment community to stimulate interest in the



region, including investment by developers outside of Macarthur and will help demonstrate that each Council is pro-tourism and "open for business". Investors and developers require certainty and by indicating areas where tourism development may be viewed more positively, sends a very positive signal.

6.2. Marketing & Promotion

6.2.1. Campbelltown Opportunities

6.2.1.1. Develop a Medical Tourism Strategy

We understand Campbelltown Hospital, with its links to the Western Sydney University's medical school and major redevelopment which is underway (valued at \$134m²⁸), is emerging as a specialist hospital.

The potential exists to leverage off this and develop a medical tourism strategy to:

- attract international people coming in for elective surgery where they can have the operation and recuperate in the Macarthur region; and
- investigate the potential to position Campbelltown, with its medical facilities and proximity to Sydney, as a medical conferencing destination.

The other areas which can be marketed already include:

- the equine experiences for shows, racing, events etc; and
- performing arts experiences utilising the current facilities at the Campbelltown Arts Centre as well as other venues.

Whilst there are many other opportunities to develop, great care is needed to avoid promoting these until such time as they are properly developed or enhanced. These include:

- future indigenous product which needs to be well packaged with other elements of interest to inbound visitors especially;
- nature based areas and experiences which need supporting infrastructure before they are expected to be sufficiently appealing;
- interactive displays and the use of clever technology enhancements to bring alive heritage sites; and
- expansion and upgrading of visual arts facilities to draw wider audiences.

6.2.2. Camden Opportunities

6.2.2.1. Greater Profiling of Bird Watching

We understand that the botanic gardens at Mount Annan is a very popular location for bird watchers, with over 160 species of birds residing in the Gardens.

In order to grow the high yield bird watching niche visitor market, there is a need to further develop facilities (such as bird hides) and package experiences with accommodation to attract the market. The market needs more regional accommodation options noting the need to visit at dawn and dusk especially.

We understand there also may be potential to investigate bird watching opportunities for Campbelltown, particularly within the Georges River and Dharawal National Park. This could allow

²⁵ http://www.swslhd.nsw.gov.au/ccq/redevelopment/

for the packaging of experiences with the Australian Botanic Garden.

6.2.3. Macarthur Regional Opportunities

6.2.3.1. Brand Identity

Currently, neither the Macarthur brand proposition, nor that of the two LGAs (Camden and Campbelltown) is clearly defined or well understood by locals or visitors.

To better promote Macarthur as a tourism destination in its own right, and to profile the region as having a clear point of difference within the greater Sydney region, there is a need to develop a clearer identity.

The identity hierarchy for the region and its LGAs should reflect the following:

FIGURE 23: MACARTHUR BRAND HIERARCHY



Importantly, the Macarthur region comprises a range of tourism operators with different objectives. It is important that the tourism industry is consulted to input and take "ownership" of the brand and to use it in their marketing.

Importantly, consultation indicated that, at times, Campbelltown in particular, is associated with negative brand perceptions. The majority of stakeholders consulted with agreed that Campbelltown may be better off leveraging off the Macarthur brand (in association with Camden), primarily because it is still relatively unknown as a destination brand and could be created into anything for the future without having to address outdated perceptions.

To help raise the profile of the Macarthur brand, a series of attractive street side banners should be designed to highlight the Macarthur name utilising the redesigned branding for the region. Banners could be used on access points from the Hume Highway, along Narellan Road and on entry into key retail precincts in Campbelltown and Camden.

In time there should be opportunities to package up various products which will appeal to inbound tour operators and cruise shop companies to link to this growth sector now looking to bring cruise ships into Port Kembla.

The ITOs and cruise ship companies will only be interested when well-structured 1, 2 and 3 hour tours are offered to them which can include:

- unique product (gastronomy, wellness and health focussed);
- visits to see nationally significant natural features (waterfalls etc), botanical displays) interactive heritage and historic sites of significance; and
- to partake in events, markets etc.

6.2.3.2. Redeveloped Website and Augmented Mobile App

While Macarthur does have its own dedicated destination website (www.macarthur.com.au), improvements could be made to further enhance the website. These could include the following.

- Investigate the inclusion of a comprehensive booking system which also integrates prepackaged deals, as well as allowing visitors to package up their own visit in the format of a shopping cart style system, allowing visitors to choose from a range of travel, accommodation, dining options, as well as experiences and events.
- Inclusion of a consistently updated and easy to read and navigate events calendar, with packages linked to specific events.
- Investigate the inclusion of augmented reality tours within the existing Macarthur mobile app (see Figure 24) which will enable the history of Macarthur to be brought alive in an interactive and flexible format. The app could also be extended to allow visitors to book accommodation, travel and activities, as well as offering a range of prebuilt packages that visitors can book via the app.

As is currently done, both Councils, should take responsibility for managing the website with the aim of handing this over to a suitable tourism industry organisation at a time in the future when a unified and well-structured LTO or similar is able to be created.

FIGURE 24: AUGMENTED REALITY APP EXAMPLES



Finding Sacred Ground Augmented Reality App



Nearest Tube Augmented Reality App



MyOrpheo Mobile Guide Apps



6.2.3.3. Event Calendar

Events and festivals provide numerous benefits by increasing visitation and expenditure, reducing low season impacts, encouraging repeat visitation as well as raising destination awareness.

The following table provides a breakdown of all events and festivals that are currently held in Macarthur. In total, there were 20 tourism based events²⁹ held in the 2014/15 calendar year.

TABLE 6: EVENTS HELD IN MACARTHUR

Name	Suburb	Month
Australia Day Event	Camden	January
Australia Day Event	Campbelltown	January
Camden Show	Camden	March
Paws in the Park	Camden	March
Catch a Carp Competition	Campbelltown	March
Campbelltown City Challenge Walk	Campbelltown	March
Doll, Bear and Creative Fair	Campbelltown	March
Miracle Mile	Menangle Park	March
Ingleburn Alive	Ingleburn	March
Pixel Sounds Music Festival	Campbelltown	April
AnnanROMA Food and Wine Festival	Mount Annan	April
Campbelltown Steam and Machinery Museum Field Day	Menangle Park	Мау
Riverfest	Campbelltown	August
Campbelltown Vintage Fifties and Collectables	Campbelltown	August
Macarthur Caravan and Camping Expo	Menangle Park	August
Camden Festival	Camden	September
Camden Park Open House	Camden	September
Gilbulla Open House	Menangle	September
Narellan Rhythms Festival	Narellan	October
Light Up Camden	Camden	November
Festival of Fisher's Ghost	Campbelltown	November
New Year's Eve	Campbelltown	December
Campbelltown Carols	Campbelltown	December

In order to better plan for events, as well as promote them, there is a need to develop an events calendar which should be available via the Macarthur tourism website. There are already a number of smaller event calendars developed by individuals and tourism/industry groups throughout Macarthur, however, there is a need for collaboration to create one unified events calendar which can be well promoted.



6.2.3.4. Event Evaluation

In addition to the events calendar recommendation, there is a need to create an events evaluation criteria which ascertains, based on a number of factors, how successful an event was and whether it should continue to be invested in. The criterion should focus on:

- likely cost of the event;
- level of industry support;
- level of community support;
- ability to leverage off funding sources to support event;
- timing of the event and whether it fits into the broader Sydney regional events calendar (so as to ensure it is not competing with other major events); and

included are those which would appear, from online research and consultation, to be events that would attract a tourism market.

²⁹ We note there are several more events held in the Macarthur region, particularly gallery exhibitions etc. The events we have

visitor markets the event is likely to attract.

6.2.3.5. Packaging of Product

There are a number of visitor experiences, attractions, transport options and accommodation etc. available throughout the Macarthur region, however, currently there is generally very limited synergy between these operators/providers.

Some operators indicated that whilst they may have historically tried to package their product, market take up was low. There is a need for a composite experience to be offered to the consumer, helping to extend visitor stay as well as greater regional dispersal.

Packages could include, by way of example, visits to the Australian Botanic Garden, indigenous and other guided tours throughout the region's national park, horse riding experiences, Campbelltown Arts Centre, dining at high quality restaurants throughout the region as well as accommodation etc.

This will help strengthen the product offering, allow for cross product selling, increase pre bookings and help with improved transport and related planning.

The opportunity may also exist to look at crossregional packaging, linking Macarthur's experiences with the unique experiences that exist in parts of Wollondilly, the Southern Highlands or the Illawarra. This may encourage visitors who would not have previously considered visiting Macarthur during their stay in Sydney and may potentially create new drive circuits and day tours.

6.2.3.6. Car Enthusiast Destination Promotion

Macarthur could become an easily accessible location for car enthusiasts, including car clubs looking at daily excursions out of the Sydney CBD and which require a mix of winding and straight roads, good food and beverage outlets and event venues to showcase the vehicles on display.

To market Macarthur as a car enthusiast destination for car clubs based in the greater Sydney region and potentially regional NSW and Canberra requires coordination, a role which could possibly be undertaken by the Tourism Industry Taskforce Group (see Section 6.3.1.1 for an overview of the Taskforce).

6.2.3.7. Tourism Awareness Campaign

As is common in many other regions and LGAs, there is a lack of community awareness on the importance of tourism within Macarthur, and how the tourism dollar spreads throughout the region's economy (see Figure 25). The Macarthur tourism industry³⁰ is valued at just under \$654m³¹ and accounts for over 4k jobs³² in the region.³³

The NSW Government's Visitor Economy Industry Action Plan recognises the importance of the visitor economy which "is worth more than agriculture, forestry and fishing and just below mining".³⁴

32 Direct and Indirect Employment

³⁰ Note this incorporates both tourism and hospitality

¹¹ Direct and Indirect Output

³⁸ http://economy.id.com/au/macroc/tourism-value?WebID=100 – Wollondilly has been excluded when calculating these values.

³⁴ Visitor Economy Industry Action Plan, The NSW Government Response to the Final Report of the Visitor Economy Taskforce, December 2012, page 2

The Councils should consider developing a tourism awareness campaign which demonstrates:

- how the tourism dollar disperses through the Macarthur economy to show that far more businesses benefit from tourism than just tourism businesses. This would include assessing the direct and indirect impact of visitor spend;
- · what kind of businesses benefit from tourism;
- how extended trading hours could provide benefits to a wide cross spectrum of the community and visitors;
- what the estimated value is of tourism via direct, indirect and induced spending impacts; and
- to explain why Council support is required to maximise the total returns to Macarthur as demonstrated via economic benefits, social and infrastructure improvements and higher quality environmental outcomes.

FIGURE 25: THE IMPORTANCE OF TOURISM



6.3. Industry Support

6.3.1. Macarthur Regional Opportunities

6.3.1.1. Industry Taskforce

An Industry Taskforce Group should be developed to work with each Council to activate opportunities. This group should comprise proactive tourism industry members from both Council areas.

The role of the Industry Taskforce Group should be to:

- gather and consolidate feedback from tourism operators and groups throughout their LGA (such as chambers of commerce etc.);
- provide guidance on tourism sector needs and provide assistance to Council personnel charged with implementing the DMP;
- advocate for stronger resources and focus being applied to tourism in their associated LGA;
- support each Council in lobbying DNSW and NSW State Government to strengthen the Macarthur brand and marketing opportunities;
- ensure that other areas of the local economy are aware of tourism opportunities (specific TAFE tourism training programs, events and festival benefits for retailers in general, community groups supporting heritage and culture);
- take responsibility for the creation of an enhanced brand identity for Macarthur to support tourism;
- act as a conduit to community interest groups and others with various ideas for tourism development and enhancement;
- ensure that tourism based projects are front of mind when economic development

opportunities and new investment is being considered for Macarthur, and

provide input into visitor service needs.

The role of this Industry Taskforce Group will be explained further in Section 7 this DMP. Importantly, it need not be a 355 Committee of either or both Councils.

6.4. Visitor Servicing

6.4.1. Camden Opportunities

6.4.1.1. Feasibility to Assess Location of Camden VIC

In addition to the need for a review of visitor information services throughout Macarthur, an additional assessment needs to be undertaken on the location of the Camden VIC. If Camden Council decides it wishes to continue to invest in its VIC, it is important that a site assessment is undertaken which takes into account visitor flows, and the potential increased visitation the VIC could achieve it if was located on the main street of Camden and as part of the unique heritage precinct.

6.4.2. Macarthur Regional Opportunities

6.4.2.1. Review of Visitor Information Services throughout Macarthur

Macarthur currently has two yellow I accredited VICs located in Camden (John Oxley Cottage) and Campbelltown (Quondong Cottage).

From work The Group has undertaken on visitor information centres in numerous locations (Bundaberg, Cradle Coast - Tasmania, Byron Bay, Cooma-Monaro, Sunshine Coast, and Launceston etc.), we understand that councils in particular, are looking for more cost effective and efficient ways to deliver information services to visitors. In most cases, VICs operate with high net cost deficits.

Utilisation of VICs by visitors nationally is trending downward whilst operating costs continue to increase.

To ensure the VICs across both LGAs are operating most effectively, the Councils need to investigate:

- identifying opportunities to increase efficiencies for the delivery of visitor information services;
- ways to increase the effectiveness of those visitor services delivered within the region;
- highlight technology solutions (increased web presence, mobile apps and websites etc.)
 which may provide alternative and broader access to information; and
- to identify opportunities for developing a greater shared approach to the delivery of visitor information services throughout the Macarthur region.

Changes need to capitalise on the trend toward more online information solutions and to look at possible 24 hour touch screen monitors for each town. These technology solutions can also create the opportunity to find local or state based sponsors for the ongoing maintenance of supporting infrastructure.

6.4.2.2. Roving Ambassador Program

The development of a roving volunteer ambassador program to promote the region could be particularly useful if, over time, the region decides that the need for VICs has diminished. Having this program already in place would mean that visitors are still able to get that face to face interaction which some visitor's desire and could be created in different parts of the region.

6.4.2.3. Free Wi-Fi at the VICs

Investigate the provision of free Wi-Fi for visitors at each of the VICs and in main streets to enable visitors to access the updated Macarthur website and to encourage greater visitor dispersal to seek out various tourist attractions and experiences.

6.4.2.4. Signage Program

There is a need to develop a signage program which includes an action plan for improving both directional (way finding) and interpretive signage throughout Macarthur, to ensure there is continuity for all signage (static and electronic).

Importantly, visitor services should include improved signage as well as an enhanced level of information available through a dynamic website, an augmented reality mobile app, touch screens and other technology solutions.

The region could consider the implementation of highly attractive and innovative (moveable) 24/7 digital touch screens (see Figure 26). These touch screens could be placed in high traffic areas and, during major events, could provide visitors with a range of information.

Touch screens can be designed to allow for the display of information as well as the booking of accommodation, transport and activities. Potential could exist to have the touch screens sponsored, as advertisements can be placed on the screen when they are not in use. They can also be used to provide community information updates.

FIGURE 26: BEST PRACTICE EXAMPLE - HIGH TECH OUTDOOR INFORMATION TOUCH SCREENS







6.4.2.5. Gateway Landscaping

To provide a welcoming entrance into the Macarthur region (from entry points around Camden and Campbelltown), there is a need to improve streetscaping at key entry points as well as along the Hume Highway, Narellan Road and into the Australian Botanic Garden at Mount Annan. This should also be considered for railway stations in the region.



Landscaping of main roads may include boulevarding or street planting and welcome signage where appropriate. Each Council would need to integrate a landscaping strategy for its gateway points. This also needs to include consider street improvements (seating, signage etc.), street planting, as well as pathway upgrades in areas such as heritage precincts and retail areas which cater to visitor needs.

6.4.2.6. Visitor Data Base

The creation of a robust visitor data base will significantly assist both Councils and industry to assess the success of the various marketing and development projects and strategies recommended in this DMP. The reasons for creating such a data base are outlined within the issues section of this report already.

From an opportunities perspective, the creation of a detailed and robust visitor data base will provide important strategic information for decision making including:

- Measuring the growth in targeted niche markets;
- Monitoring visitor spend patterns and the contribution tourists make to the visitor economy in each Council area and in the Macarthur Region overall;
- Developing trend data to help with forecasting of future growth;
- Assessing accommodation sector occupancy levels to help determine timing for encouraging of different forms of accommodation such as hotels, caravan parks, lodges and serviced apartments;

- Assessing utilisation rates for performance venues, event locations etc. so as to know when capacity levels may start to be reached; and
- For helping to spread the impact of seasonality so peak seasons are able to be better managed and shoulder seasons can be effectively grown.

6.5. Opportunities Matrices

The following matrices provide a top line summary of each of the opportunities, including their priority, the potential visitor markets which could be captured, possible location/sites to be considered, an estimation of the CAPEX required, the level of risk involved, potential time frames, the project type (commercial or public) as well as the lead stakeholder involved.

The projects have also been listed in priority order (high, medium and low) based on discussions with various stakeholders.



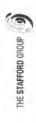


TABLE 7: TOURISM PRODUCT DEVELOPMENT & PARTNERSHIPS

Opportunity	Priority	Visitor Markets to Capture ³⁹	Possible Location/Site	Est, CAPEX Requirement for Total Project	Level of Risk	Commercial or Public Project	Lead Stakeholder
South West Sydney Sports Precinct	High	Local market, domestic sporting marketing	Campbelltown Stadium	\$250m+ ³⁶	Medium – High	Public	Campbelltown City Council
Café/Restaurant and Bar Precinct (contingent on Stadium Upgrades)	High	Local market, food and wine visitors, family market, short break visitors	Surrounding Campbelltown Stadium	\$20m	Medium High	Public/Private	Campbelltown City Council
Holiday Park Development	High	Caravan & camping, family market, backpackers and the local market, short break visitors, over 55s travellers	Various (determined as part of feasibility)	< \$12m	Low - Medium	Commercial	 Camden Council and Tourism Industry Taskforce for Feasibility Commercial developer experienced in holiday park. development
Haunted Attraction and Festival	Medium – High	International youth, international students, working holiday makers, backpackers, cruise ship visitors, the local market and the regional Sydney domestic market.	Various (determined as part of feasibility)	<\$600k	Medium	Commercial	 Tourism Industry Taskforce for Feasibility Commercial developer experienced in haunted attractions creation
South West Sydney Performing Arts Hub	High	Local market, cultural and heritage visitors, schools	Campbelltown Arts Centre	\$30m ²⁷	Medium	Public	Campbelltown City Council
Food Trails and Cooking Schools	Medium	Food and wine visitors, cruise ship visitors, short break visitors, over 55s travellers	Throughout the region	\$50k	Low - Medium	Commercial	 Tourism Industry Taskforce and Industry operators

as Visitor markets are based on Destination NSW's market segment definitions, including. NSW Family Market, Domestic Caravan and Camping, International Youth, International Students, Working Holiday Makers, International Backpackers, Over 55s Travellers, Culuse Ship Visitors, Cultural and Heritage Visitors, Nature Visitors, Short Break Visitors and Accessible Tourism (seniors, people with a disability, people from non-English speaking backgrounds and parents with children). We have also included various other local visitor markets such as the domestic sporting market, schools and the general local market. 26 This cost is purely indicative as feasibility and related analysis would be required to refine the scope and determine whether the existing stadium could be easily expanded or whether a new stadium would need to

be constructed. A new stadium would likely be significantly more expensive to develop. $^{\rm SF}$ Based on discussions with Campbelltown City Council



Opportunity	Priority	Visitor Markets to Capture ³⁵	Possible Location/Site	Est. CAPEX Requirement for Total Project	Level of Risk	Commercial or Public Project	Lead Stakeholder
Heritage and nature- based stories through a sound and light show	Medium	Cultural and heritage visitors, family market, nature visitors, international youth, local market, over 55s travellers, accessible tourism, short break visitors	Australian Botanic Garden at Mount Annan	\$400k	Medium	Public/Commercial JV	■ Tourism Industry Taskforce with assistance from the ABG ³⁸
Botanic Gardens Amphitheatre and Sculpture Garden, horse trails and Luge	Medium- high	Cultural and heritage visitors, family market, nature visitors, local market, over 55s travellers, accessible tourism, cruise ship visitors, short, break visitors	Australian Botanic Garden at Mount Annan	>\$1.5m	Medium	Public/Commercial JV	 Tourism Industry Taskforce with assistance from the ABG
Boutique Glamping in Reserves and on the fringe of National Parks	Medium	Nature visitors (including eco-tourists, bird watchers) and the family market	reserves within the Macarthur region and potentially on the fringe of National Parks	<\$300K	Medium	Commercial	Both Councils with NPWS for feasibility Commercial operator experienced in luxury glamping for development
Aviation Business Park	Medium	Fly-in visitors	Camden Airport	> \$2m	Medium – High	Commercial	 Camden Council and Airstrip operator/land owner for feasibility Commercial business park developer for development
Regional Music Festival	Medium	International youth, local market, short break visitors	Campbelltown, Australian Botanic Garden at Mount Annan	<90¢	Medium	Commercial	 Tourism Industry Taskforce to solicit interest from festival/event promoters
Stimulate Investment Medium into Macarthur	Medium	n/a	n/a	\$30k (to develop memorandum)	Low – Medium	Public	Both Councils

38 Australian Botanic Garden Mount Annan



Opportunity	Priority	Visitor Markets to Capture ³⁵	Possible Location/Site	Est. CAPEX Requirement for Total Project	Level of Risk	Commercial or Public Project	Lead Stakeholder
Arts Trail covering sculpture trails, artist studio tours, art displays inside facilities and externally	Low - Medium	Cultural and heritage visitors, family market, nature visitors, international youth, local market, over 55s travellers, short break visitors	Throughout the region but possibly hubbed from the Campbelltown Arts Centre	\$15k (marketing)	Low - Medium	Public	 Tourism Industry Taskforce, art community and industry operators
National Equine Experience Centre	Low - Medium	Domestic (and international) sporting market, local market	Various (determined as part of feasibility)	< \$12m	Medium - High	Commercial	 Tourism Industry Taskforce for feasibility Equine industry within the region to support the development
Riverside Activation	Low – Medium	Cultural and heritage visitors, family market, nature visitors, local market, accessible tourism, caravan and camping visitors	Throughout the region at points with river access	\$10k (marketing) \$90k (development)	Low	Public	 Tourism Industry Taskforce and NPWS
Aviation Museum	Low – Medium	Cultural and heritage visitors, local market, schools, caravan and camping visitors, short break visitors	Possibly at Camden Airport	< \$3.5m	Medium - Hīgh	Public	 Tourism Industry Taskforce for feasibility Camden Council for the development of the museum
Accessibility for river based tourism activities	Low - Medium	Cultural and heritage visitors, family market, nature visitors, international youth, local market, short break visitors	Various	n/a	Low	Public	 Tourism Industry Taskforce and both Councils
Glenfield to Macarthur Urban Renewal Corridor Strategy tourism infrastructure	Low - Medium	Cultural and heritage visitors, family market, nature visitors, international youth, local market, short break visitors	various	\$15k marketing	Low- medium	public	 Campbelltown City Council Tourism Industry Taskforce NSW State Government
Regional Sports Facility and elite sports centre	medium	Family market, domestic (and international) sporting market	Macarthur Heights	\$20m	Low- medium	Public	 Campbelltown Oity Council NSW State Government Regional sports organisations NRL, AFL and other teams



Opportunity	Priority	Visitor Markets to Capture ³⁵	Possible Location/Site	Est. CAPEX Requirement for Total Project	Level of Risk	Commercial or Public Project	Lead Stakeholder
Bush Corridors for Leisure Tourism	Medium- Iow	teisure Tourism low market, nature visitors, family market, nature visitors, international youth, local market, short break visitors	Various	\$15k marketing	medium	Public	Both Councils
Motor Sport Technology Precinct	medium	Family market, international youth, local market, short break visitors, backpackers, niche markets such as car and motorcycle clubs	To be determined	>\$15m	Medium	Commercial	 Commercial developer/operator Campbelltown City Council WSU and TAFE

TABLE 8: MARKETING & PROMOTION

Opportunity	Priority	Visitor Markets to Capture	Possible Location/Site	Est. CAPEX Requirement for Total Project	Level of Risk	Commercial or Public Project	Lead Stakeholder
Brand Identity	High	n/a	n/a	\$40K	Low	Public	 Each Council and the Tourism Industry Taskforce
Redeveloped Website and Augmented Reality Mobile App	High	ה/מ	n/a	\$70k	Low	Public	 Tourism Industry Taskforce and web/app developer
Event Calendar	Medium - High	r/a	n/a	n/a - integrate into new website	Low	Public	 Tourism Industry Taskforce and event coordinators
Event evaluation	Medium - High	n/a	n/a	n/a	Гом	Public	 Tourism Industry Taskforce and Council economic development personnel
Car Enthusiast Destination Promotion	Medium	Car enthusiasts and car clubs, short break visitors, family market	Throughout the region	\$20k for promotion	Low	Public	 Tourism Industry Taskforce



Opportunity	Priority	Visitor Markets to Capture	Possible Location/Site	Est. CAPEX Regulrement for Total Project	Level of Risk	Commercial or Public Project	Lead Stakeholder
Packaging of Product	Medium	Short break visitors, family market, cultural and heritage visitors, nature visitors, local market, accessible tourism, cruise ship visitors	Throughout the region	\$20k for promotion	Low	Industry	 Tourism Industry Taskforce and Macarthur tourism industry
Tourism Awareness Campaign	Medium	Local market	n/a	\$15k for promotion	Low	Public	 Tourism Industry Taskforce
Medical Tourism Strategy	Medium	Medical Tourism, Accessible Tourism, Campbelltown Conferencing Market	Campbelltown	\$20k (strategy development)	Low	Public	 Council and Industry Taskforce Group
Bird Watching Profiling	Medium	Nature visitors	Australian Botanic Garden and Riverside Reserves	\$15k (marketing) \$40k (hides)	Low	Public	 Tourism Industry Taskforce with assistance of the ABG

TABLE 9: INDUSTRY SUPPORT

Opportunity	Priority	Visitor Markets to Capture	Possible Location/Site	Est. CAPEX Requirement for Total Project	Level of Risk	Commercial or Public Project	Lead Stakeholder
ndustry Taskforce Sreation	High	ח/מ	n/a	< \$30k (marketing) < \$20k (development)	Low - Medium	Public	Each Council
Visitor Data Base	High	To monitor targeted niche markets and monitor success of all programs aimed at growing visitor markets, visitor spend levels and length of visitor stay.	Throughout the region	< \$5k for establishment and management	low	public	Each Council



TABLE 10: VISITOR SERVICING

		Visitor Markets to Capture	Possible Location/Site	Est, CAPEX Requirement for Total Project	Level of Risk	Commercial or Public Project	Lead Stakeholden
Review of Visitor Information Services	Medium - High	n/a	n/a	\$35K	Low	Public	 Each Council and the Tourism Industry Taskforce
Feasibility to Assess Location of Camden VIC	Medium - High	n/a	n/a	< \$5k (if bundled with above Review)	Low	Public	Camden Council
Free Wi-Fi at the VICs Medium - High	Medium - High	n/a	Camden and Campbelltown VICs	n/a	Low	Public	 Tourism Industry Taskforce and each Council
Gateway Landscaping Strategy	Low	n/a	Gateway locations to the region	\$40k (strategy)	мот	Public	 Each Council
Signage Program	Medium - High	n/a	n/a	\$20k for signage strategy and \$75k for new signs/skins	Low	Public	 Tourism Industry Taskforce with assistance from relevant personnel from each Council
Roving Ambassador Program	Low	Over 55s travellers, caravan and camping market, short break visitors, food and wine visitors, accessible tourism	Throughout the region	\$15k (training)	Low – Medium	Public	 Tourism Industry Taskforce





7. Tourism Coordination for Macarthur

7.1. The Challenge for Macarthur

One of the challenges which the tourism sector in Macarthur faces is the ability to create a unified voice for lobbying Government at all levels for various forms of support. Historically various formats of LTOs have been setup in an attempt to create a more unified tourism industry. Despite best efforts, these models have not produced a successful outcome.

An option discussed by several stakeholders was the renewed need for a local tourism organisation (LTO) for Macarthur. The purpose of the LTO would be to:

- act as the voice of the tourism industry operators within Macarthur;
- to provide a forum where the tourism industry can network and discuss any issues/opportunities;
- provide a forum for industry to discuss and debate issues and options;
- to meet regularly with DNSW to garner support for various marketing and promotional initiatives particularly; and
- to lobby both Councils for support for on various tourism related infrastructure and development support projects.

7.2. Requirements for an industry operated LTO

Prior to a viable LTO being established, however, there are a number of criteria which are required, including:

 the ability of tourism industry stakeholders and operators within Macarthur to form a peak

- body which is widely supported by industry (there is little point if many will not join an LTO);
- to ensure that the LTO is representative of industry and covers all aspects of tourism including retail;
- to ensure that it receives recognition and support by each council within the region;
- to ensure that it is able to operate as an independent body rather than as an arm of any council within the region;
- that it is able to raise membership fees or other income to pay for some of its operating costs, with the balance potentially funded by local chambers of commerce and/or council;
- that it is constituted as an incorporated society or other form of legal entity so that it is formally structured rather than ad hoc; and
- that it is truly representative of the various geographic areas within Macarthur and different types of operators.

Generally in destinations, the creation of a LTO is often part of an evolutionary process in the maturing of tourism. It requires commonality and agreement of purpose amongst competing operators and areas to recognise that their ability to lobby and leverage support from government at various levels is dependent on playing as a "team". It is also highly dependent on an agreed common purpose and outcome being achieved.



7.3. Forming an LTO in Macarthur

Currently within Macarthur, there are limited groups (aside from each Council) which would appear to be providing a voice for the tourism sector. It would appear that there are different and divergent views at times between tourism operators within each of the LGAs on what they perceive the future of tourism in the Macarthur may look like. Whilst there is likely to be agreement on some issues, it is considered too early to determine that a common single LTO could be formed to represent the views, aspirations and outcomes required by industry throughout Macarthur.

7.4. The Suggested Way Forward

As such, forming an industry operated LTO is currently considered slightly premature for Macarthur. To be representative of the various tourism stakeholder groups throughout Macarthur, it is therefore suggested that an interim solution be found. This could involve:

- an industry taskforce being established which comprises representatives from each Council as well as industry members which are representative of both the Camden and Campbelltown LGAs;
- the Taskforce is not a 355 committee but rather an "unofficial" committee of both Councils:
- the Taskforce acts as the voice of local tourism stakeholders and the conduit between each Council and the various stakeholder groups; and
- this process will strengthen communication and will support the creation of more unified

views and expectations by each of the local tourism stakeholder groups.

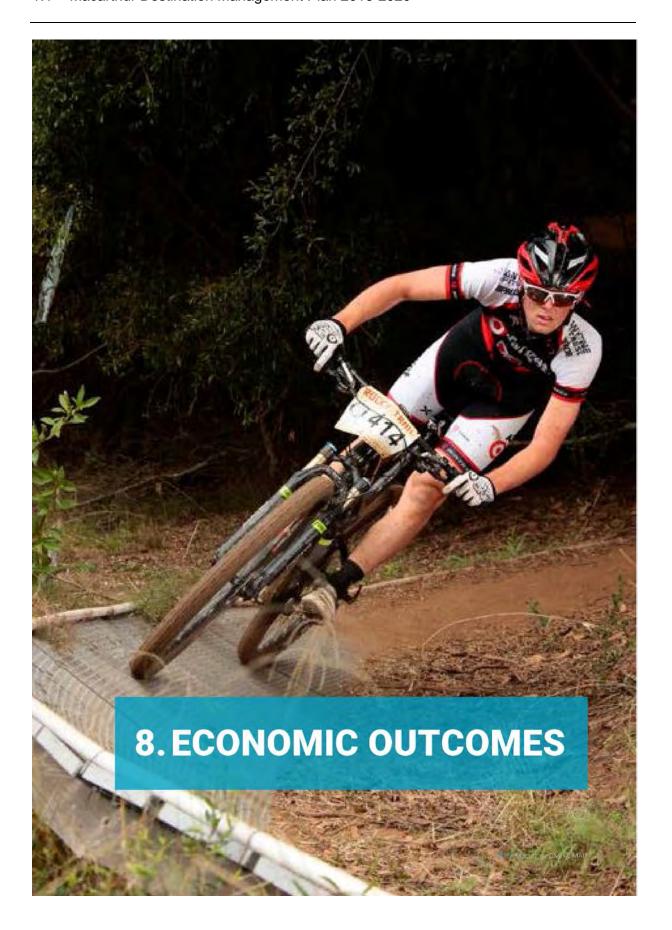
The Taskforce should also look to actively engage industry throughout the region, possibly including holding four – five networking nights per annum.

As each Council has demonstrated its commitment to continue to play a key role as an "enabler" of tourism for the region, this offers an appropriate interim step until such time in the future that a strong and vibrant LTO is able to be created.











8. Economic Outcomes



8.1. Assessment of the Net Economic Benefit

The following section provides an overview of the likely benefits that could be generated as a result of the implementation of this DMP and the opportunities identified within it.

8.1.1. Output/Sales

Total output/sales is the total gross value of sales generated by the tourism industry in the Macarthur region³⁹ and comprises the sum of local sales as well as international and domestic exports.

Over the six year period from 2009 - 2014, total tourism industry output in the Macarthur region grew by 15% (\$86mm), increasing from \$567.8m in 2009 to \$653.6m.⁴⁰ These figures reflect the contribution of gross sales to local GDP.

8.1.2. Employment

Tourism related employment accounts for 6% of total employment in Macarthur, generating just over 4k⁴¹ direct⁴² and indirect⁴³ jobs in the 2014 FY.

It is important to note that whilst this percentage would appear low (as a percentage of total employment by industry sector) it is the potential growth which should be focused on. For example introduction of a conference venue attached to the Campbelltown Stadium or other large facilities could significantly increase tourism-related employment.

Though the data indicates a decline of 15% over the 6 year period assessed (2009 – 2014), the potential exists to turn this around through stimulating a number of new visitor experiences and products, including in retail, food and beverage and new visitor experiences.

Tourism has the potential to significantly grow its importance to the employment base for Macarthur and most importantly, act as a catalyst to stimulate employment for both younger people (which will encourage more of them to stay in the region and others to relocate to the region) and mature aged people who will find casual, part time and potential full time employment options which the region will benefit from.

³⁹ Including only the LGAs of Camden and Campbelltown

⁴⁹ Value of Tourism and Hospitality, Economy ID (National Economics (NIEIR) - Modelled series)

Value of Tourism and Hospitality, Economy ID (National Economics (NIEIR) - Modelled series)

⁴² Direct employment is people who are directly employed in tourism and hospitality related jobs within the area.

⁴⁹ Indirect employment is people who are employed as a result of the flow-on effects of employment in tourism and hospitality to other related intermediate industries, as well as the increase in local consumption created by the wages and salaries of tourism and hospitality workers, which in turn creates additional employment

Tourism offers the potential to attract people across a very wide age range to work in the sector full-time, part-time and on a casual basis.

8.2. Visitor Spend

In the absence of visitor spend data44, The Group has averaged visitor spend in the LGAs of Penrith, Blue Mountains, Wingecarribee and Wollongong and applied this average to Macarthur's visitor numbers to obtain total visitor spend.

The following table provides an overview of estimated visitor spend by visitors to Macarthur.

TABLE 11: VISITOR SPEND BREAKDOWN45

Visitor Segment	Total	Per Visitor	Per night
Domestic Day Visitors	\$96.0m	\$88	n/a
Domestic Overnight Visitors	\$89.3m	\$400	\$161
International Visitors	\$28.5m	\$1,355	\$82

While international visitors are estimated to have the greatest spend per trip (\$1,355), domestic overnight visitor's yield the greatest spend on a per night basis (\$400 per night). Domestic day trippers contribute the smallest amount at just \$88 per trip. This demonstrates the importance of the domestic overnight visitor market to Macarthur and the need to focus on initiatives which may assist in converting domestic day trippers to domestic overnight visitors.

Development of new commercial accommodation facilities is therefore an important catalyst for increasing spending levels.



8.3. Growth in the Net Economic Benefit

Visitor Forecast Scenarios 8.3.1.

To estimate the growth in the net economic benefit of growing Macarthur's tourism sector, a series of visitor growth forecasts have been developed.46 These forecasts range from a low growth scenario to a high growth scenario. The table provided in Supporting Documentation 4 illustrates these growth scenarios over a 10 year period. Key points to note include the following.

- Under the low growth scenario, visitation, over the 10 year period, grows from 1.33m to 1.77m, a total growth of 436k visitors (or a 33% increase). This level of growth reflects natural growth in visitation to the Macarthur, with littleto-no new product development.
- Under the medium growth scenario, visitation grows by 61%, increasing from 1.33m to 2.14m visitors. The majority of growth under this scenario originates from domestic day trip visitors, growing from 1.1m to 1.8m. To achieve this level of growth, it is assumed that

⁴⁴ Discussions with DNSW revealed that this data is not available due to a small sample size and a large margin of error ⁴⁵ Based on data provided by DNSW as part of a special data

request.

⁴⁰ At the time of this writing, no existing visitor forecasts for the Macarthur region were available.



it would necessitate expansion by major existing tourism operators in the Macarthur region.

Under the high growth scenario, visitation more than doubles, increasing from 1.33m to 2.8m, a total growth of 1.47m visitors. This growth has been based on the introduction of approximately 8 – 12 new medium - larger tourism operators (attractors, experiences, accommodation facilities, tours, events etc.) in the region.

8.3.2. Growth in Visitor Spend

Based on the visitor forecasts developed, and using existing visitor spend figures for visitors to the Macarthur region, The Group has provided top line estimates of the growth in visitor spend under each forecast scenario. The table provided in Supporting Documentation 5 page provides the results of this assessment.

Points to note include the following.

- Under the low growth scenario, spend increases from an estimated \$214m in 2014 to just under \$262m by 2024, a total growth of 33%.
- Under the medium growth scenario, visitor spend increases by over 60%, growing from \$214m to just under \$345m.
- Under the high growth scenario, visitor spend increases by \$227m, growing from \$214m to just over \$441m.

Importantly, these forecasts in visitor spend should be considered conservative as they make no provision for increases in average visitor spend per person. The introduction of new overnight accommodation facilities would result in higher visitor expenditure associated with spend on consumables, accommodation, food and beverage and other goods and services.

8.4. Tourism Multipliers

In addition to the direct expenditure from visitors, there are associated visitor expenditure multiplier effects into the local economy. These flow-on effects have been expressed as a tourism output multiplier of 0.92⁴⁷, being that for every dollar spent by visitors in Macarthur, the broader local economy is estimated to benefit a further \$0.92. These flow-on benefits go beyond traditional sectors associated with the tourism industry, to include sectors such as administration and wholesale trade, thus demonstrating the interconnectedness of tourism to other parts of the economy.

The growth of the tourism sector in the Macarthur region (through new developments, upgrades of existing product, new events, marketing etc.) will support a range of other sectors in the region. The table in Supporting Documentation 6 provides an overview of the results achieved when applying the tourism multiplier of 0.92 to the current estimated value of tourism in Macarthur and the forecasted growth scenarios.

⁴⁷ Tourism's Contribution to the Australian Economy 1997-98 to 2009-10, Department of Resources, Energy and Tourism

Key points to note include the following.

- Applying the tourism multiplier to the total spend by visitors to Macarthur of \$214m (2013/14 estimate), produces an estimated \$197m as additional annual spend in the local economy.
- Under the low visitor forecast scenario it has been estimated that cumulative visitor spend will total \$2.51b over the 10 year period assessed (2015 – 2024). Applying the tourism multiplier to this visitor spend figure produces an estimated additional \$2.31b spend in the local economy.
- Visitor spend under the medium growth scenario totals \$2.8b over the 10 year period 2015 – 2024, with a multiplier effect of \$2.58b.
- Under the high visitor growth scenario, visitor spend is estimated to total \$3.25b. Applying the multiplier to this spend figure results in an estimated additional \$2.99b being spent in the local economy over the 10 year period assessed.

As can be seen in the above assessment, the contribution to the Macarthur regional economy from tourism can be significant.

Furthermore, the economic values are conservative as they do not reflect higher average visitor spend attributed to a broader range of products and amenities and invariable price increases which will occur.

The upside benefits to Macarthur, therefore, from supporting and growing the tourism sector, should be considered significant.













9. Tourism Marketing Action Plan

The following are the key result areas to be focused on to help facilitate the successful implementation of this DMP.

Please note that this action plan contains steps required to realise future opportunities and achieve the recommendations included in this DMP, as well as supplementary actions that can be undertaken to further the success of this DMP.

Short term strategies are those to be implemented within the next two years (2016-2018), medium term are those within the following three years (2019 - 2021) and long term includes those to be undertaken after five or more years (2022 onwards) but which may need to commence in the medium term.

TABLE 12: KEY PERFORMANCE AREA 1

Action	Tasks	Responsibility	Timeframe	KPIs
Holiday Park Development Feasibility Assessment	Council to investigate possible land sites it has which could be used and zoned for the development of the destination park Feasibility assessment undertaken to indicate viability of the destination park If viable, Council to put opportunity out to tender for reputable park operators (including current operators of Poplar Tourist Park)	Camden and Campbelltown City Council (for feasibility)	Short Term (feasibility) Medium - Long Term (project development)	Land assessment to be undertaken by February 2016 Make contact with destination park operators by July 2016 to determine potential costs associated and revenue generating opportunities Undertake feasibility by September 2016 If a positive outcome then solicit destination park investor interest in development at the site.
Haunted Attraction and Festival Feasibility Assessment	 Undertake a feasibility assessment to investigate the development of a haunted attraction. This should include a site assessment of old Council sites which could provide space for the attraction and should leverage off the marketing profile of the Fisher's Ghost Festival held in Campbelltown. Undertake discussions with similar attractor operators to gauge interest for developing/operating the attraction 	Tourism Industry Taskforce	Short – Medium Term (feasibility) Medium – Long Term (project development)	 Feasibility to be undertaken by December 2016 Discussions with similar attractor operators to be undertaken by March 2017
SW Sydney Integrated Sports Precinct (including integrated café/restaurant and entertainment precinct) Full Feasibility Assessment	Complete a full feasibility, including cost benefit assessment, on the potential for a major sports precinct Submit the feasibility to State Treasury for a Gateway Review on the basis that it will require State Government funding support Securing funding for the development and implementation	Campbelltown City Council	Short Term (feasibility and gateway review) Long Term (project development)	 Undertake full feasibility by July 2016 Initiate Gateway Review by November 2016 Assuming positive response submit to State Government on or before June 2017



	Tourism Product Develop	ment & Partnersh	ip Opportunities	
Action	Tasks	Responsibility	Timeframe	KPIs
SW Sydney Arts Hub Expansion	 Undertake full feasibility to support arts expansion Determine optimum regional initiatives Submit the feasibility to State Treasury for a Gateway Review on the basis that it will require State Government funding support Securing funding for development and implementation including expansion of existing facilities 	Campbelltown City Council, Arts NSW Regional arts bodies	Short Term (feasibility and gateway review) Medium – Long Term (project development)	 Undertake full feasibility by June 2016 Initiate Gateway Review by August 2016 Assuming positive response submit to State Government on or before June 2017
Food Trails and Cooking Schools Feasibility Assessment	 Undertake feasibility for the development of a cooking school which caters for both adults and children. This will involve investigating possible demand, the most suitable location, potential operators and grants which could be applied for Work with industry to develop and market a range of food trails (possibly tied in with art trails) throughout the Macarthur region 	Tourism Industry Taskforce	Medium Term (feasibility) Medium – Long Term (project development)	 Feasibility to be undertaken by January 2018 If positive outcome, then solicit operator interest by June 2018 Introduce by December 2019
Australian Botanic Garden Sound and Light Show Feasibility Assessment	 Undertake feasibility regarding the development of a sound and light show to showcase heritage stories of the region at the Australian Botanic Garden (ABG) in Mount Annan, using the natural environment as the backdrop for the show 	Tourism Industry Taskforce with assistance from the ABG	Short Term (feasibility) Medium Term (project development)	 Feasibility to be undertaken by January 2017 If positive outcome, then solicit operator interest by June 2017 Introduce by December 2018
Botanic Garden Amphitheatre and Sculpture Garden, Horse Trails and Luge Feasibility Assessment	 Undertake feasibility study and business case development to assess the development of an amphitheatre and possibly sculpture garden at the ABG. Also feasibility for horse trails and luge attraction. Determine priority project, partner potential 	Tourism Industry Taskforce with assistance from the ABG	Short Term (feasibility) Medium Term (project development)	 Feasibility to be undertaken on or before January 2017 If positive outcome, then solicit operator interest by June 2017 Introduce by December 2018
Boutique Glamping in Reserves Feasibility Assessment	 Council to investigate possible land sites it has which could be used and is suitably zoned for the development of glamping Feasibility assessment undertaken to indicate viability of the glamping operation, including number required to operate viably. If viable, Council to put opportunity out to tender for reputable glamping operators 	Both Councils	Short Term (feasibility) Medium Term (project development)	Land assessment to be undertaken by April 2017 Feasibility assessment to be undertaken by July 2017 Tender put out by October 2017
Development of Macarthur Arts Trails	 Work with industry to develop and market a range of art trails (possibly tied in with food trails) throughout the Macarthur region 	Tourism Industry Taskforce, art community and industry operators	Short Term	 2 trails developed and marketed by June 2017 A further 2 trails developed and marketed by December 2018



Action	Tasks	Responsibility	Timeframe	KPIs
National Equine Experience Centre Feasibility Assessment	 Undertake a feasibility (possibly go out to specialist firms to undertake feasibility) on the development of a national equine interactive centre. This should include a detailed site assessment as there are various sites throughout the region which could be suitable 	Tourism Industry Taskforce	Short Term (feasibility) Medium - Long Term (project development)	■ Feasibility to be undertaken by October 2016
Glenfield to Macarthur Urban Renewal Corridor Strategy tourism activations	 Identify walkways, cycle ways, information hubs and interpretation and directional information boards, heritage sites of significance Prioritise staging and integrate into renewal corridor Identify opportunities for commercial seasonal tourism activities, 	Campbelltown City Council	Short Term (feasibility) Medium - Long Term (project development)	■ Investigation by June 2016
Regional Sports Facility and Elite Sport Centre	 Assess viability – completed June 2015 Determine economic value and benefits to visitor economy Gain support from State Government Gather support from NRL, AFL, and other sports codes Assess and secure funding sources Develop facilities 	Campbelltown City Council State Sport Bodies WSU	Short Term (feasibility) Medium - Long Term (project development)	Complete follow up investigations by June 2016 Refinement and development subject to sporting codes support and State and Federal Governments matching support
Bush Corridors for Leisure Tourism	 Assess locations for activation Undertake feasibility for determining market demand for various tourism activities Assess and secure funding sources 	Both Councils NSW State Government	Short Term (feasibility) Medium - Long Term (project development)	Feasibility study by late 2016
Motor Sport and Technology Precinct	 Undertake site assessment study to identify possible sites which could cater for the precinct Complete feasibility to determine the viability of introducing a new motor sport precinct and how this might be funded 	Tourism Industry Taskforce	Short Term (investigation) Medium – Long Term (development – if proven viable)	Investigation to be undertaken by December 2016
Regional Music Festival Investigation	■ Undertake investigation for the introduction of a music festival in the region, possibly focused on the rock music genre. Investigation should including assessment of possible locations, including the 10k pax outdoor area within the Australian Botanic Garden as well as discussions with possible event promoters.	Tourism Industry Taskforce	Short Term (investigation) Medium – Long Term (festival introduction)	 Investigation to be undertaken by June 2016, including discussions with event promoters and location assessment
Creation and Marketing of Riverside Activity	Work with stakeholders to create a series of riverside walks, activity nodes and experiences. Some of the walks may already exist and may just require better profiling, signage and marketing.	Tourism Industry Taskforce, Councils, NPWS and other Government agencies	Short – Medium Term	Feasibility assessment by late 2016.



A comme	- Parker	B	- the state of the	1996
Action	Tasks	Responsibility	Timeframe	KPIs
Aviation Museum Feasibility Assessment	 Undertake a feasibility (possibly go out to specialist firms to undertake feasibility) on the development of an aviation museum. This should include a detailed site assessment as there are various sites (including the Camden Airport) throughout the Camden LGA which could be suitable 	Tourism Industry Taskforce	Medium Term (feasibility) Long Term (project development	Feasibility to be undertaken by January 2017
Aviation Business Park Feasibility	Feasibility study to assess potential to develop an aviation business park/precinct at Camden	Camden Council and Airstrip operator/land owner	Medium Term (feasibility) Long Term (project development)	Feasibility to be undertaken by June 2018
River Access Assessment	 Undertake assessment into possible points of river access throughout the region, where tourism-based activity could be undertaken 	Tourism Industry Taskforce	Medium – Long Term	 Assessment to be undertaken by July 2017
Creation of Macarthur Investment Memorandum	Create an investment memorandum to stimulate investment by developers into Macarthur Investment memorandum should indicate the types of development in tourism which each Council will actively support	Both Councils	Short term	 Memorandum drafted and approved by June 2016

TABLE 13: KEY PERFORMANCE AREA 2

Marketing & Promotion Opportunities					
Action	Tasks	Responsibility	Timeframe	KPIs	
Creation of a Brand Identity for the Macarthur tourism region	Development of regional destination identity, as well as potential subbrands for Campbelltown and Camden in consultation with the tourism industry Creation of an EOI for the development of a brand for the Macarthur region (and its two LGAs as sub-brands) Selection of a brand designer	Each Council, Tourism Industry Taskforce	Short term	Undertake workshops with tourism industry to discuss identity concepts by February 2016 Have identities drafted by March 2016 Have identities confirmed by April 2016	
Development of Updated Website and Integrated Augmented Reality Mobile App	 Once identity is developed for Macarthur, commission developer to design an updated website and integrated mobile app (or mobile accessible site) 	Tourism Industry Taskforce and web/app developer	Short Term	 Commission web developer by end of April 2016 Have draft website and app/mobile accessible site ready by end of August 2016 Launch website and app by September 2016 	
Packaging of Product	 Identify product which could be packaged and promoted including accommodation, transport, activities etc. This will involve a wide range of stakeholders but Council and the Tourism Subcommittee need to take a leadership role and undertake the facilitation for this 	Tourism Industry Taskforce and Macarthur tourism industry	Ongoing	 Tourism Industry Taskforce to work with Macarthur tourism industry to develop 3 packages by March 2016 Packages to be promoted from April 2016 A further 3 packages to be developed and promoted by January 2017 	



Marketing & Promotion Opportunities					
Action	Tasks	Responsibility	Timeframe	KPIs	
Development of an Events Calendar	 Development of events calendar, to be available via the destination website 	Tourism Industry Taskforce and event coordinators	Ongoing	 Collation of all future events (next 1 – 2 years) and roll out on new website (to be developed by September 2016) Ongoing updating of events calendar 	
Creation and Application of an Event Evaluation Criteria	 Tourism Industry Taskforce, working with economic development personnel at each Council, to develop a criterion to assess proposed events and their likely benefit. Criteria could include likely cost of event, level of industry and community support, ability to leverage off funding sources to support the event, timing of the event and visitor markets the event is likely to attract Application of event success criterion to existing council-run and supported events to ensure events list includes on those with the greatest economic and social benefit 	Tourism Industry Taskforce and Council economic development personnel	Short Term and Ongoing	 Event success criterion to be developed by June 2016 Criterion to be applied to all new events ongoing Events success criterion applied to current events by January 2017 	
Development of a Community Tourism Awareness Campaign	 Develop a community tourism awareness program which demonstrates the contribution of tourism to the Macarthur economy 	Tourism Industry Taskforce	Medium Term	 Community awareness program rolled out by Januar 2018 	
Creation of a Medical Tourism Strategy	 Create EOI for the development of a medical tourism strategy Selection of firm to develop strategy 	Tourism Industry Taskforce	Medium Term	 EOI to be released to selected firms by October 2017 Firm to be selected by December 2017 Strategy to be developed by June 2018 	
Car Enthusiast Destination Promotion	 Develop marketing programme to promote the Macarthur as a region for car touring by car clubs and car enthusiasts 	Tourism Industry Taskforce	Medium Term	 Marketing programme to be developed and introduced by January 2018 	
Greater Profiling of Bird Watching	 Greater profiling of bird watching experiences through promotion in bird watching/wildlife magazines, via social media, product packaging etc. 	Tourism Industry Taskforce with assistance of the ABG	Ongoing	 Start increased profiling of these experiences by January 2018 	



TABLE 14: KEY PERFORMANCE AREA 3

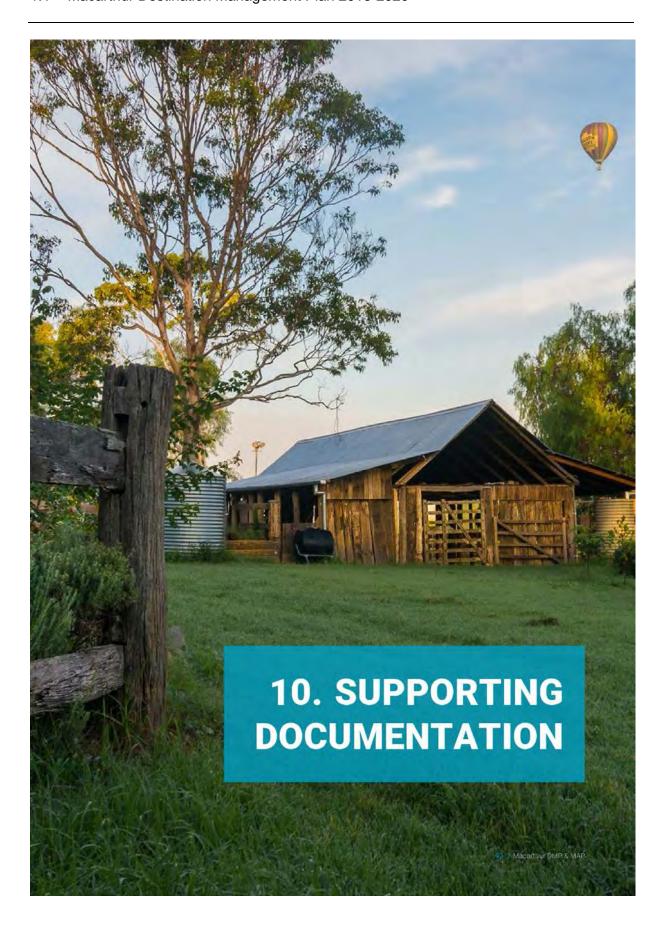
Industry Support Opportunities					
Action	Tasks	Responsibility	Timeframe	KPIs	
Creation of an EOI and Selection of Tourism Industry Taskforce	Develop Expression of Interest seeking strategically-minded local community members (and possibly embers outside the region who have a keen interest) to join the Tourism Industry Taskforce. The selection panel for the EOI should consist of internal Council personnel and an external stakeholder Skill base required includes, digital/technology skills, innovation/forward thinking skills and finance skills The taskforce should meet every 3 months to discuss progress	Council	Short term	Develop EOI by January 2016 Tourism Industry Taskforce to be selected by May 2016	
Development of the Terms of Reference for the Taskforce	 Develop the "Terms of Reference" for the Taskforce 	Council	Short term	 Terms of reference to be developed by March 2016 	
Review the Composition of the Taskforce	 The Taskforce will be a term commitment determined by both Councils including a timeframe for reviewing its composition. 	Council	Ongoing	 Review composition of the Taskforce according to timeframe determined by both Councils Resubmit the EOI if the composition of the Taskforce needs to change 	
Development of Visitor Data Base	 Establish survey for capturing all visitation Garner support from all accommodation operators, attractions, event coordinators, performance and related venues Capture and collate visitor trends on a monthly basis Record findings and release to industry every quarter 	Councils	Ongoing	85% or more of industry operators and venue operators send in visitor data sheets each month on line Quarterly report to industry well received Determination of industry enhancements and gaps needing to be filled via feedback	

TABLE 15: KEY PERFORMANCE AREA 4

Review of Visitor Information Services throughout Macarthur	 Develop a visitor information services strategy for Macarthur focusing on the current provision of visitor information and opportunities that exist to increase the ROI of visitor information services 	Each Council and the Tourism Industry Taskforce	Short – Medium Term	 Undertake investigation by June 2017 Implement changes by December 2018 	
Feasibility to Assess Location of Camden VIC	 Undertake a feasibility study to assess the location and possible other sites which the Camden VIC could be located to increase its exposure and access 	Camden Council	Short Term	 Undertake feasibility study concurrently with above review by June 2017 	



		ising Opportuniti		
Investigate Free Wi-Fi at the VICs	 Tourism Industry Taskforce to investigate the provision of free Wi-Fi in the two VICs as a method of encouraging vibrancy and use of the VICs 	Tourism Industry Taskforce and each Council	Medium Term	 Undertake investigation by January 2018
Development of a Regional Signage Program	 Development of a signage strategy which identifies ideal signage locations to promote Macarthur's attractions/experiences in a highly appealing way The signage strategy should also assess the need and appropriate location for directional signage across the region 	Each Council, DNSW	Short – Medium Term	 Signage strategy to be developed by December 2017 Designs for new signage completed and tested by June 2018 New signage submitted for State Govt. approval by August 2018 New signage is installed no later than 4 months post State Govt. approval
Development of a Roving Ambassador Program	 Development of volunteer-based, roving ambassador program, particularly during peak visitor periods. 	Tourism Industry Taskforce	Medium Term	 Establish and implement program by June 2018 Sign up 20 volunteers at program start date Increase volunteer base by 10% per annum from program start date
Gateway Landscaping	 Develop a landscape strategy for gateway points into the Macarthur region 	Each Council	Medium – Long Term	Develop landscape strategy by January 2018 Implement landscape strategy by January 2019





10. Supporting Documentation

Supporting Documentation 1: Tourism Product Audit

Name	LGA	Suburb	Туре	Free or Pay For
Balloon Aloft Sydney	Camden	Camden	Active / Adventure	Pay For
Curtis Aviation	Camden	Camden	Active / Adventure	Pay For
Dynamic Helicopters	Camden	Camden	Active / Adventure	Pay For
Gostner Aviation	Camden	Camden	Active / Adventure	Pay For
Southern Cross Gliding Club	Camden	Camden	Active / Adventure	Pay For
Ultimate Paintball	Camden	Camden Park	Active / Adventure	Pay For
Jump Zone Revolution	Camden	Gregory Hills	Active / Adventure	Pay For
Enduro Trail Mountain Biking	Camden	Mount Annan	Active / Adventure	Free
Playmaze for Kids	Camden	Narellan	Active / Adventure	Pay For
Ultimate Karting Sydney	Camden	Smeaton Grange	Active / Adventure	Pay For
Camden Museum & Historical Society	Camden	Camden	Arts, Cultural, Heritage	Free
Camden Park House (Only Open to Public Once Yearly)	Camden	Camden	Arts, Cultural, Heritage	Pay For
Camden Society of Artists	Camden	Camden	Arts, Cultural, Heritage	Free
Gledswood Homestead Historic Property & Tours	Camden	Catherine Field	Arts, Cultural, Heritage	Pay For
John Oxley Cottage Historic Property	Camden	Elderslie	Arts, Cultural, Heritage	Free
Wivenhoe House Historic Property	Camden	Kirkham	Arts, Cultural, Heritage	Free
Cobbitty Winery	Camden	Cobbitty	Brewery/Winery	Pay For
Camden Estate Wines	Camden	Elderslie	Brewery/Winery	Pay For
Gledswood Homestead Wines	Camden	Gledswood Hills	Brewery/Winery	Pay For
Fussy Grape Winery	Camden	Oran Park	Brewery/Winery	Pay For
United Cinemas	Camden	Narellan	Entertainment	Pay For
Back Galley Cafe High Tea	Camden	Camden	Food Experience	Pay For
Barenz High Tea	Camden	Camden	Food Experience	Pay For
Gledswood Country High Tea	Camden	Catherine Field	Food Experience	Pay For
Harrington Grove Country Club High Tea	Camden	Harrington Park	Food Experience	Pay For
Camden Fresh Produce Markets	Camden	Camden	Market	Free
Macarthur Community Indoor Markets	Camden	Camden	Market	Free
Pitter Patter Markets	Camden	Camden	Market	Free
Cobbitty Village Markets	Camden	Cobbitty	Market	Free
Macarthur Regional Farmers Market	Camden	Mount Annan	Market	Free
Camden Community Garden	Camden	Camden	Parks & Reserves	Pay For
Macarthur Park	Camden	Camden	Parks & Reserves	Free
Curry Reserve	Camden	Elderslie	Parks & Reserves	Free
Macarthur Centre for Sustainable Living	Camden	Mount Annan	Parks & Reserves	Free
The Australian Botanic Garden	Camden	Mount Annan	Parks & Reserves	Free
William Howe Reserve	Camden	Narellan Vale	Parks & Reserves	Free
Camden Bicentennial Equestrian Park	Camden	Camden	Recreation	Pay For
Camden Main Street	Camden	Camden	Recreation	Free
Camden RSL Club	Camden	Camden	Recreation	Pay For
Camden Sports Club	Camden	Camden	Recreation	Pay For
Camden Swimming Pool	Camden	Camden	Recreation	Pay For
Camden Town Farm	Camden	Camden	Recreation	Pay For
Nepean River Cycleway	Camden	Camden	Recreation	Free
Lakeside Country Club	Camden	Catherine Field	Recreation	Pay For
Cobbitty Village	Camden	Cobbitty	Recreation	Free
	Camden		Recreation	
Teen Ranch Camps	The state of the s	Cobbitty Elderslie	Recreation	Pay For
Camden Skate Facility Sydney Horse Riding Centre	Camden Camden	Gledswood Hills	Recreation	Free Pay For



Name	LGA	Suburb	Туре	Free or Pay For
Mount Annan Leisure Centre YMCA	Camden	Mount Annan	Recreation	Pay For
Camden Golf Club	Camden	Narellan	Recreation	Pay For
Narellan Town Centre	Camden	Narellan	Recreation	Free
Maximum Skating	Camden	Smeaton Grange	Recreation	Pay For
Aerowasp Helicopter Flights	Camden	Camden	Tour Operator	Pay For
Air Combat Australia	Camden	Camden	Tour Operator	Pay For
Belganny Farm (Organised Tours and Special Events Only)	Camden	Camden	Tour Operator	Pay For
Camden Aviation	Camden	Camden	Tour Operator	Pay For
Camden Heritage Walking Tour	Camden	Camden	Tour Operator	Free
Macarthur Food and Wine Tours	Camden	Camden	Tour Operator	Pay For
United Aero Helicopters	Camden	Camden	Tour Operator	Pay For
Vivenhoe House Tours	Camden	Kirkham	Tour Operator	Pay For
Narellan Heritage Walking Tour	Camden	Narellan	Tour Operator	Free
Macarthur Winter Warmer Tour	Camden	Oran Park	Tour Operator	Pay For
M9 Laser Skirmish	Campbelltown	Campbelltown	Active / Adventure	Pay For
astlane Go Karting	Campbelltown	Minto	Active / Adventure	Pay For
Campbelltown Arts Centre	Campbelltown	Campbelltown	Arts, Cultural, Heritage	Free
Campbelltown Craft Society	Campbelltown	Campbelltown	Arts, Cultural, Heritage	Free
Dredge's Cottage	Campbelltown	Campbelltown	Arts, Cultural, Heritage	Free
Glenalvon - Campbelltown and Airds				
Historical Society	Campbelltown	Campbelltown	Arts, Cultural, Heritage	Free
Japanese Gardens and Teahouse	Campbelltown	Campbelltown	Arts, Cultural, Heritage	Free
Quondong Cottage Historic Property	Campbelltown	Campbelltown	Arts, Cultural, Heritage	Free
Campbelltown Steam and Machinery Museum	Campbelltown	Menangle Park	Arts, Cultural, Heritage	Pay For
Menangle House Historic Property	Campbelltown	Menangle Park	Arts, Cultural, Heritage	Pay For
nfusion Bar & Microbrewery	Campbelltown	Campbelltown	Brewery/Winery	Pay For
The Beer Shed	Campbelltown	Leumeah	Brewery/Winery	Pay For
Razorback Ridge Wines	Campbelltown	Menangle Park	Brewery/Winery	Pay For
Campbelltown Town Hall Theatre	Campbelltown	Campbelltown	Entertainment	Pay For
Dumaresq Street Cinemas	Campbelltown	Campbelltown	Entertainment	Pay For
Event Cinemas	Campbelltown	Campbelltown	Entertainment	Pay For
The CUBE Entertainment Centre	Campbelltown	Campbelltown	Entertainment	Pay For
Arts Centre Cafe Sunday High Tea	Campbelltown	Campbelltown	Food Experience	Pay For
nfusion Restaurant High Tea	Campbelltown	Campbelltown	Food Experience	Pay For
Bradbury Market on the Parkway	Campbelltown	Bradbury	Market	Free
Eat, Shop, Love Macarthur Markets	Campbelltown	Campbelltown	Market	Free
First Friday Foodie Feast Market	Campbelltown	Campbelltown	Market	Free
Warninda Craft Markets	Campbelltown	Campbelltown	Market	Free
Markets Are Us	Campbelltown	Ingleburn	Market	Free
Tiny Tots Baby Market	Campbelltown	Ingleburn	Market	Free
Boot Hill Markets	Campbelltown	Minto	Market	Free
ngleburn Reserve	Campbelltown	Ingleburn	Natural Areas	Free
Frere's Crossing	Campbelltown	Kentlyn	Natural Areas	Free
Keith Longhurst Reserve	Campbelltown	Kentlyn	Natural Areas	Free
Simmo's Beach	Campbelltown	Macquarie Fields	Natural Areas	Free
Dharawal National Park	Campbelltown	Wedderburn	Natural Areas	Free
Koshigaya Park	Campbelltown	Campbelltown	Parks & Reserves	Free
Mawson Park	Campbelltown	Campbelltown	Parks & Reserves	Free
Sculpture Garden	Campbelltown	Campbelltown	Parks & Reserves	Free
Pembroke Park	Campbelltown	Minto	Parks & Reserves	Free
Apex park Cycleway	Campbelltown	Bradbury	Recreation	Free
Gordon Fetterplace Aquatic Centre	Campbelltown	Bradbury	Recreation	Pay For
Campbelltown Bicycle Education Centre	Campbelltown	Campbelltown	Recreation	Pay For
Campbelltown City Bowling Club	Campbelltown	Campbelltown	Recreation	Pay For
Campbelltown Main Street	Campbelltown	Campbelltown	Recreation	Free
Campbelltown Skate Park	Campbelltown	Campbelltown	Recreation	Free



Name	LGA	Suburb	Туре	Free or Pay Fo
Kids Kingdom (within the Catholic Club)	Campbelltown	Campbelltown	Recreation	Pay For
Kingpin Bowling Macarthur	Campbelltown	Campbelltown	Recreation	Pay For
Macquarie Fields Skate Park	Campbelltown	Campbelltown	Recreation	Free
Mega Mini Golf	Campbelltown	Campbelltown	Recreation	Pay For
Mountain Devils Bushwalking	Campbelltown	Campbelltown	Recreation	Pay For
Park Central Cycleway	Campbelltown	Campbelltown	Recreation	Free
Sydey Trail Riding Centre	Campbelltown	Denham Court	Recreation	Pay For
Eagle Vale Central	Campbelltown	Eagle Vale	Recreation	Pay For
Campbelltown Golf Club	Campbelltown	Glen Alpine	Recreation	Pay For
Eschol Park Cycleway	Campbelltown	Kearns	Recreation	Free
Campbelltown Athletics Centre	Campbelltown	Leumeah	Recreation	Pay For
Campbelltown City Bowling Centre	Campbelltown	Leumeah	Recreation	Pay For
Campbelltown Sports Stadium	Campbelltown	Leumeah	Recreation	Pay For
Lollipops Playland	Campbelltown	Leumeah	Recreation	Pay For
Monkey Mania	Campbelltown	Leumeah	Recreation	Pay For
Wizard of Oz Funland	Campbelltown	Leumeah	Recreation	Pay For
Macquarie Fields Indoor Sports Centre	Campbelltown	Macquarie Fields	Recreation	Pay For
Macquarie Fields Leisure Centre	Campbelltown	Macquarie Fields	Recreation	Pay For
Macquarie Road Reserve Bike and Triathlon Track	Campbelltown	Macquarie Fields	Recreation	Free
Macquarie Links International Golf Club	Campbelltown	Macquarie Links	Recreation	Pay For
Sugarloaf Horse Centre	Campbelltown	Menangle Park	Recreation	Pay For
Tabcorp Park	Campbelltown	Menangle Park	Recreation	Pay For
Campbelltown Indoor Sports Centre	Campbelltown	Minto	Recreation	Pay For
Coronation Park Cycleway	Campbelltown	Minto	Recreation	Free
Minto Indoor Sports Centre	Campbelltown	Minto	Recreation	Pay For
Macarthur Grange Country Club	Campbelltown	Varroville	Recreation	Pay For
Camden Country Tour	Campbelltown	Campbelltown	Tour Operator	Pay For
Campbelltown Heritage and Cultural Walk	Campbelltown	Campbelltown	Tour Operator	Free
Campbelltown Historical Ghost Tours	Campbelltown	Campbelltown	Tour Operator	Pay For
Design your own tour of Macarthur	Campbelltown	Campbelltown	Tour Operator	Pay For
Fisher's Ghost Explorer Tour	Campbelltown	Campbelltown	Tour Operator	Pay For
Ghost and Ghoul Tour	Campbelltown	Campbelltown	Tour Operator	Pay For
Glenalvon House Tours	Campbelltown	Campbelltown	Tour Operator	Pay For
Heritage and Bushranging Tour	Campbelltown	Campbelltown	Tour Operator	Pay For
Menangle Road Explorer Tour	Campbelltown	Campbelltown	Tour Operator	Pay For
Ingleburn Heritage Plaque Walking Tour	Campbelltown	Ingleburn	Tour Operator	Free
Dharawal National Park Indigenous Walking Tours	Campbelltown	Wedderburn	Tour Operator	Pay For



Supporting Documentation 2: Accommodation Audit

Name	LGA	Suburb	Туре	Rate \$ (Standard Room)	Rooms	Star Rating
Camden Hillview B&B	Camden	Camden	B&B/Guesthouse/ Farmstay	180.00	1	7
Poplar Tourist Park, Camden	Camden	Elderslie	Camping/Caravan Park	Cabin from \$100/Powered Site \$32/Unpowered Site \$25	6 Cabins + Powered Camping Sites	à
Teen Ranch	Camden	Cobbitty	Student Accommodation	Unknown	*	3.5
Camden Valley Inn	Camden	Camden Park	Hotel/Motel	135.00	40	-
Crown Hotel Motel	Camden	Camden	Hotel/Motel	+	18	-
Narellan Motor Inn	Camden	Narellan	Hotel/Motel	137.00	51	3
Wedderburn Christian Campsite	Campbelltown	Wedderburn	Student Accommodation	\$40	15 cabins	4
Campbelltown Colonial Motor Inn	Campbelltown	Campbelltown	Hotel/Motel	<u>.</u>		5
Hermitage Motel	Campbelltown	Leumeah	Hotel/Motel	139.00	35	3.5
Ibis Budget Campbelltown	Campbelltown	Campbelltown	Hotel/Motel	69.00	72	4
Maclin Lodge Motel	Campbelltown	Campbelltown	Hotel/Motel	95.00	65 rooms and 20 self- contained apartments	3.5
Rydges Campbelltown	Campbelltown	Campbelltown	Hotel/Motel	159.00	116	4.5
Quest Campbelltown	Campbelltown	Campbelltown	Serviced Apartments	154.00	81	4.5
Hurlstone Group Accommodation	Campbelltown	Glenfield	Student Accommodation	25.00	-	÷
WSU Village	Campbelltown	Campbelltown	Student Accommodation	See Note		21



Supporting Documentation 3: Food and Beverage Audit

Name	Туре	LGA
2 Entice U	Café	Campbelltown
The ARThouse Espresso Bar Restaurant	Café	Camden
Arts Centre Cafe	Café	Campbelltown
The Argyle Gourmet Cafe	Café	Camden
Back Galley Cafe	Café	Camden
Bar Centrale	Café	Campbelltown
Cafe Creme Della Crème Continental Patisserie	Café	Camden
Café La Escapada	Café	Campbelltown
Cafe on Cobbitty	Café	Camden
Cafe Kulcha	Café	Campbelltown
Cafe Tiahna	Café	Campbelltown
Cobbitty General Store, Cafe and Post Office	Café	Camden
Coco Cubano Cafe and Bar	Café	Campbelltown
The Coffee Club	Café	Campbelltown
Coffee Gossip	Café	Camden
Deli D'Lish	Café	Camden
Eats on Argyle	Café	Camden
Elm Tree Cafe	Café	Camden
Euro Expresso	Café	Campbelltown
Fairview Cafe and Bistro	Café	Campbelltown
FOOD.DRINK	Café	Camden
Jamaica Blue	Café	Campbelltown
Oran Park Town Cafe	Café	Camden
Primo Mondo	Café	Campbelltown
R Coffee Co	Café	Camden
Squeeze and Grind	Café	Camden
Village Coffee Shop	Café	Camden
What the Fudge	Café	Campbelltown
Cold Rock Campbelltown	Ice Creamery / Dessert	Campbelltown
Lickits Frozen Custard	Ice Creamery / Dessert	Camden
Michel's Patisserie Camden	Ice Creamery / Dessert	Camden
Michel's Patisserie Narellan	Ice Creamery / Dessert	Camden
Pancakes on the Rocks	Ice Creamery / Dessert	Campbelltown
Scoops Ice Cream and Lolly Bar	Ice Creamery / Dessert	Campbelltown
Sweet Tooth Gelato and Dessert Bar	Ice Creamery / Dessert	Campbelltown
Yogurtland	Ice Creamery / Dessert	Campbelltown
The Bradbury	Pub / Club	Campbelltown
The View at Camden Golf Club	Pub / Club	Camden
Camden Hotel	Pub / Club	Camden
Camden RSL Club Restaurant	Pub / Club	Camden
Camden Sports Club	Pub / Club	Camden
Camden Valley Inn	Pub / Club	Camden
Campbelltown Catholic Club	Pub / Club	Campbelltown
Baiez Hotel	Pub / Club	Campbelltown



Name	Туре	LGA
Campbelltown RSL	Pub / Club	Campbelltown
Club Hotel Campbelltown	Pub / Club	Campbelltown
Club Hotel Leumeah	Pub / Club	Campbelltown
Country Club Camden Valley	Pub / Club	Camden
Crown Hotel	Pub / Club	Camden
The Horse and Jockey Inn	Pub / Club	Campbelltown
Infusion Bar and Micro Brewery	Pub / Club	Campbelltown
Ingleburn Bowling and Recreation Club	Pub / Club	Campbelltown
Lakeside Golf Club Camden	Pub / Club	Camden
Macarthur Tavern	Pub / Club	Campbelltown
The Merino Tavern	Pub / Club	Camden
Mount Annan Hotel	Pub / Club	Camden
Narellan Hotel	Pub / Club	Camden
Plough and Harrow Hotel	Pub / Club	Camden
Raby Tavern	Pub / Club	Campbelltown
Wests Leagues Club Bistro	Pub / Club	Campbelltown
Aalishaan	Restaurant	Campbelltown
ANH's Oriental Noodle House	Restaurant	Campbelltown
Antico Bar and Grill	Restaurant	Camden
Antico's Garden Cafe Restaurant	Restaurant	Camden
Antico Woodfire Pizza	Restaurant	Camden
Baltoros Cafe & Restaurant	Restaurant	Campbelltown
Bangkok Nawamin	Restaurant	Campbelltown
Barenz	Restaurant	Camden
Bella's Pizza House	Restaurant	Camden
Bistro Calavia	Restaurant	Camden
Blissful Garden Malaysian Restaurant	Restaurant	Camden
Bohemian Euro German Restaurant	Restaurant	Camden
Camden King Chinese	Restaurant	Camden
Chan's Inn Chinese	Restaurant	Campbelltown
Chilli Joe	Restaurant	Campbelltown
Chocolateria San Churro	Ice Creamery / Dessert	Campbelltown
Chola Indian Restaurant	Restaurant	Camden
Chow's Pine Garden Chinese	Restaurant	Campbelltown
Crown Tandoori Restaurant	Restaurant	Campbelltown
Enzo's Italian Restaurant and Pizzeria	Restaurant	Camden
Enzo's Cucina	Restaurant	Campbelltown
Essen Cafe and Restaurant	Restaurant	Campbelltown
Fan Thai Restaurant	Restaurant	Camden
Fillippo's Restaurant	Restaurant	Campbelltown
Five O's	Restaurant	Campbelltown
Flowerdrum Palace	Restaurant	Campbelltown
Georges on Queen	Restaurant	Campbelltown
Gledswood Homestead Cellar Door Wine and Tapas	Restaurant	Camden
Gold Wheel Chinese	Restaurant	Campbelltown



Name	Туре	LGA
Grand Taco Mexican	Restaurant	Camden
The Grange Restaurant and Bar	Restaurant	Camden
Harrington's Bar and Grill	Restaurant	Camden
Haruki Japanese Fusion Restaurant	Restaurant	Camden
The Hermitage Restaurant	Restaurant	Campbelltown
Hog's Breath Cafe	Restaurant	Campbelltown
House of Bamboo Chinese	Restaurant	Campbelltown
nfusion Restaurant	Restaurant	Campbelltown
Isabelle's Woodfire Oven Pizzeria	Restaurant	Campbelltown
The Italian Food Project	Restaurant	Camden
Joy's Thai Restaurant	Restaurant	Camden
Kochukaru Japanese Restaurant	Restaurant	Camden
Kwality Curries	Restaurant	Camden
_ewis' Kitchen	Restaurant	Camden
Little India	Restaurant	Campbelltown
Luigi's Restaurant	Restaurant	Camden
Luxay Thai Restaurant	Restaurant	Camden
Mina's Thai Restaurant	Restaurant	Campbelltown
Mount Annan Chinese	Restaurant	Camden
Mr Ho Chinese Restaurant	Restaurant	Camden
Mustang Spur Steak Ranch	Restaurant	Campbelltown
Nailatí	Restaurant	Camden
Nam Oi Thai Kitchen	Restaurant	Campbelltown
Noodle Paradise Campbelltown	Restaurant	Campbelltown
Noodle Paradise Mount Annan	Restaurant	Camden
Noodle Republic	Restaurant	Campbelltown
Outback Steakhouse	Restaurant	Campbelltown
Panarotti's	Restaurant	Campbelltown
Peking Village Chinese	Restaurant	Campbelltown
Pho 76 Chinese and Vietnamese Cuisines	Restaurant	Campbelltown
Pho Real: Vietnamese Noodle House	Restaurant	Campbelltown
Phuong's Oriental Noodle House	Restaurant	Camden
Piccola Italia Pizzeria	Restaurant	Camden
Pink Diamond Restaurant	Restaurant	Campbelltown
Platinum Grill	Restaurant	Campbelltown
Rashays Cafe and Restaurant Campbelltown	Restaurant	Campbelltown
Rashays Cafe and Restaurant Narellan	Restaurant	Camden
Ribs and Rumps Grill and Seafood	Restaurant	Campbelltown
Royal Thailicious Restaurant	Restaurant	Camden
Saam Thai	Restaurant	Campbelltown
Salute Trattoria Pizza and Pasta	Restaurant	Camden
Samba Cafe and Grill	Restaurant	Campbelltown
Satay Hutt	Restaurant	Campbelltown
Silver Jade Chinese	Restaurant	Camden
Sizzler Campbelltown	Restaurant	Campbelltown
SIZZICI GALIDUCIILOWII	Restaurant	Campbellown



Name	Туре	LGA
Stone Grill	Restaurant	Campbelltown
Sushi Bay	Restaurant	Campbelltown
Tabers Restaurant	Restaurant	Campbelltown
Thai Centric	Restaurant	Campbelltown
Thai Chilli	Restaurant	Campbelltown
Thai Harrington	Restaurant	Camden
Thai Recipes	Restaurant	Campbelltown
Thai Splendid	Restaurant	Campbelltown
The Taste	Restaurant	Campbelltown
This is Thai	Restaurant	Camden
5 Star Thai tanic	Restaurant	Camden
Trattoria La Vigna	Restaurant	Camden
Turkoise	Restaurant	Campbelltown
Tuscany Italian Restaurant	Restaurant	Camden
Vienna on Argyle	Restaurant	Camden
Ziafat Indian Restaurant	Restaurant	Camden
Crust Gourmet Pizza Bar	Takeaway	Campbelltown
Melaleuca House	Restaurant	Camden
McDonalds Campbelltown	Takeaway	Campbelltown
McDonalds Campbelltown Mall	Takeaway	Campbelltown
McDonalds Woodbine	Takeaway	Campbelltown
McDonalds Camden	Takeaway	Camden
Subway Camden	Takeaway	Camden
Subway Campbelltown Queen St	Takeaway	Campbelltown
Subway Campbelltown Blaxland Serviceway	Takeaway	Campbelltown
KFC Macarthur Sq	Takeaway	Campbelltown
KFC Woodbine	Takeaway	Campbelltown
KFC Carlton	Takeaway	Campbelltown
KFC Narellan	Takeaway	Camden
KFC Narellan Town Centre	Takeaway	Camden
Pizza Hut Narellan	Takeaway	Camden
Pizza Hut Camden	Takeaway	Camden
Pizza Hut Campbelltown	Takeaway	Campbelltown
Dominos Pizza Campbelltown	Takeaway	Campbelltown
Dominos Pizza Camden	Takeaway	Camden



Supporting Documentation 4: Estimated Visitor Forecast Scenarios

TABLE 16: ESTIMATED VISITOR FORECAST SCENARIOS

													1 000 1	1 000 1
Low Growth	2014	AAGR	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2024	2024
International Visitors	21.0k	2%	22.1k	23.2k	24.3k	25.5k	26.8k	28.1k	29.6k	31.0k	32.6k	34.2k	13.2k	63%
Domestic Overnight Visitors	223.5k	2%	228.0k	232.5k	237.2k	241.9k	246.8K	251.7k	256.8k	261.9k	267.1k	272.5k	48.9k	22%
Domestic Daytrip Visitors	1.1m	3%	1.1m	1.2m	1.2m	1.2m	1.3m	1,3m	1.3m	1.4m	1.4m	1.5m	374.1k	34%
Total	1.33m	1	1.37m	1.41m	1.45m	1.49m	1.53m	1.58m	1.62m	1.67m	1.72m	1,77m	436.29k	33%
Medium Growth	2014	AAGR	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Growth 2014 -2024	% Growth 2014 - 2024
International Visitors	21.0k	%/	22.5k	24.0k	25.7k	27.5k	29.5k	31.5k	33.7k	36.1k	38.6K	41.3k	20.3k	%26
Domestic Overnight Visitors	223.5k	4%	232.5k	241.8K	251.4K	261.5k	271.9K	282.8k	294.1k	305.9K	318.1k	330.9k	107.3k	48%
Domestic Daytrip Visitors	1.1m	2%	1.1m	1.2m	1.3m	1.3m	1.4m	1.5m	1.5m	1.6m	1.7m	1.8m	684.1k	63%
Total	1.33m	3	1.40m	1.47m	1.54m	1.61m	1.69m	1.77m	1.86m	1.95m	2.04m	2.14m	811.80k	61%
High Growth	2014	AAGR	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Growth 2014 - 2024	% Growth 2014 - 2024
International Visitors	21.0k	10%	23.1k	25.4k	28.0k	30.8k	33.8K	37.2k	40.9k	45.0k	49.5k	54.5k	33.5k	159%
Domestic Overnight Visitors	223.5k	%9	236.9k	251.1k	266.2k	282.2k	299.1k	317.1k	336.1k	356.3k	377.6k	400.3k	176.8k	%62
Domestic Daytrip Visitors	1.1m	%	1.2m	1.3m	1.4m	1.5m	1.6m	1.7m	1.9m	2.0m	2.2m	2.3m	1.3m	116%
Total	1.33m	3)	1.43m	1.55m	1,66m	1.79m	1.93m	2.08m	2.24m	2.41m	2.60m	2.80m	1,47m	110%



Supporting Documentation 5: Estimated Growth in Visitor Spend

TABLE 17: ESTIMATED GROWTH IN VISITOR SPEND

% Growth 2014 - 2024	63%	22%	34%	33%	% Growth 2014 - 2024	%26	48%	63%	%19	% Growth 2014 - 2024	%26	48%	63%	61%
Growth 2014 - 2024	\$17.9m	\$19.6m	\$33.0m	\$70.5m	Growth 2014 - 2024	\$27.5m	\$42.9m	\$60.4m	\$130.8m	Growth 2014 - 2024	\$27.5m	\$42.9m	\$60.4m	\$130.8m
2024	\$46.4m	\$108.9m	\$129.0m	\$284.2m	2024	\$56.0m	\$132.2m	\$156.4m	\$344.5m	2024	\$56.0m	\$132.2m	\$156.4m	\$344.5m
2023	\$44.2m	\$106.7m	\$125.3m	\$276.1m	2023	\$52.3m	\$127.1m	\$148.9m	\$328.4m	2023	\$52.3m	\$127.1m	\$148.9m	\$312.9m \$328.4m
2022	\$42.0m	\$104.6m	\$121.6m	\$268.3m	2022	\$48.9m	\$122.2m	\$141.8m	\$312.9m	2022	\$48.9m	\$122.2m	\$141.8m	\$312.9m
2021	\$40.0m	\$102.6m	\$118.1m	\$260.7m	2021	\$45.7m	\$117.5m	\$135.1m	\$298.3m	2021	\$45.7m	\$117.5m	\$135.1m	\$298.3m
2020	\$38.1m	\$100.6m	\$114.6m	\$253.3m	2020	\$42.7m	\$113.0m	\$128.7m	\$284.4m	2020	\$42.7m	\$113.0m	\$128.7m	\$246.4m \$258.5m \$271.1m \$284.4m \$298.3m
2019	\$36.3m	\$98.6m	\$111.3m	\$239.3m \$246.2m	2019	\$39.9m	\$108.6m	\$122.5m	\$271.1m	2019	\$39.9m	\$108.6m	\$122.5m	\$271.1m
2018	\$34.6m	\$96.7m	\$108.1m	\$239.3m	2018	\$37.3m	\$104.5m	\$116.7m	\$258.5m	2018	\$37.3m	\$104.5m	\$116.7m	\$258.5m
2017	\$32.9m	\$94.8m	\$104.9m	\$232.6m	2017	\$34.9m	\$100.4m	\$111.1m	\$246.4m	2017	\$34.9m	\$100.4m	\$111.1m	
2016	\$31.4m	\$92.9m	\$101.8m	\$226.1m	2016	\$32.6m	\$96.6m	\$105.8m	\$235.0m	2016	\$32.6m	\$96.6m	\$105.8m	\$235.0m
2015	\$29.9m	\$91.1m	\$98.9m	\$219.8m	2015	\$30.5m	\$92.9m	\$100.8m	\$224.1m	2015	\$30.5m	\$92.9m	\$100.8m	\$224.1m
2013/14 Est. Total Visitor Spend	\$28.5m	\$89.3m	\$96.0m	\$213.8m	2013/14 Est. Total Visitor Spend	\$28.5m	\$89.3m	\$96.0m	\$213.8m	2013/14 Est. Total Visitor Spend	\$28.5m	\$89.3m	\$96.0m	\$213.8m
2013/14 Estimated Spend P/Trip	\$1,355	\$400	\$88	o l	2013/14 Estimated Spend P/Trip	\$1,355	\$400	\$88	y	2013/14 Estimated Spend P/Trip	\$1,355	\$400	\$88	æ
Low Growth	International Visitors	Domestic Overnight Visitors	Domestic Daytrip Visitors	Total Visitor Spend	Medium Growth	International Visitors	Domestic Overnight Visitors	Domestic Daytrip Visitors	Total Visitor Spend	High Growth	International Visitors	Domestic Overnight Visitors	Domestic Daytrip Visitors	Total Visitor Spend



Supporting Documentation 6: Estimated Tourism Multipliers

TABLE 18: ESTIMATED TOURISM MULTIPLIERS

Low Growth	2013/14 Estimated Spend P/Trip	2013/14 Est. Total Visitor Spend	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Growth 2014 - 2024	% Growth 2014 - 2024
Total Visitor Spend		\$213.8m	\$219.8m	\$226.1m	\$232.6m	\$239.3m	\$246.2m	\$253.3m	\$260.7m	\$268.3m	\$276.1m	\$284.2m	\$70.5m	33%
Multiplier	0.92	\$196.7m	\$202.3m	\$208.0m	\$214.0m	\$220.2m	\$226.5m	\$233.1m	\$239.8m	\$246.8m	\$254.0m	\$261.5m	\$2.31b	\$2.31b
Medium Growth	2013/14 Estimated Spend P/Trip	2013/14 Est. Total Visitor Spend	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Growth 2014- 2024	% Growth 2014- 2024
Total Visitor Spend		\$213.8m	\$224.1m	\$235.0m	\$246.4m		\$258.5m \$271.1m	\$284.4m	\$298.3m	\$312.9m	\$328.4m	\$344.5m	\$130.8m	%19
Multiplier	0.92	\$196.7m	\$206.2m	\$216.2m	\$226.7m	\$237.8m	\$249.4m	\$261.6m	\$274.4m	\$287.9m	\$302.1m	\$317.0m	\$2.58b	\$2.58b
High Growth	2013/14 Estimated Spend P/Trip	2013/14 Est. Total Visitor Spend	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Growth 2014 - 2024	% Growth 2014- 2024
Total Visitor Spend		\$213.8m	\$224.1m	\$235.0m	\$246.4m	\$258.5m	\$271.1m	\$284.4m	\$298.3m	\$312.9m	\$312.9m \$328.4m	\$344.5m	\$130.8m	61%
Multiplier	0.92	\$196.7m	\$211.3m	\$227.0m	\$244.0m	\$262.2m	\$227.0m \$244.0m \$262.2m \$281.9m \$303.1m	\$303.1m	\$325.9m \$350.5m \$377.1m \$405.7m	\$350.5m	\$377.1m		\$2.99b	\$2.99b

THE STAFFORD GROUP

SYDNEY OFFICE

Suite 3.02, 46a Macleay Street Potts Point NSW 2011, Australia T+61 2 9331 6222 E admin@thestaffordgroup.com.au

BRISBANE OFFICE

PO Box 265 Sandgate QLD 4017, Australia M+61 (0) 417721342 E admin@thestaffordgroup.com.au

W www.thestaffordgroup.com.au



2. COMMUNITY RESOURCES AND DEVELOPMENT

2.1 Beach Safety Program

Reporting Officer

Manager Community Resources and Development

Attachments

Nil

Purpose

To inform Council of the proposed Beach Safety Program initiative for the 2015-2016 summer school holidays.

History

Council at the meeting of 8 April 2014, Community Services Committee Item 2.1 – 2013-2014 Beach Bus Evaluation, considered a report evaluating the 2013-14 Beach Bus initiative.

Council has run the Beach Bus initiative to Wollongong Beach since 2003 during the summer school holidays. The program has been conducted in partnership with Busways utilising the Campbelltown to Wollongong 887 bus service.

Free MyZone travel vouchers were made available to young people aged 12 years to 18 years who lived, worked or studied in the Campbelltown Local Government Area. To collect these free travel vouchers, participants had to obtain a parent/carer release form, and deliver the signed release form to one of the program's distribution points including Campbelltown youth services sites, Campbelltown City Council Libraries and the Campbelltown Visitors Information Centre.

Alternatively, young people, who had not obtained the free tickets from Council, could also independently purchase a half price fare to Wollongong Beach from the bus at Campbelltown Railway Station.

Busways reported that the overall Beach Bus program was successful; however feedback received by young people was that they were more inclined to pay the 50 per cent fare than pick up the free travel vouchers from the designated outlets.

The pilot Beach Safety Program was held on 21 January 2015, in partnership with Busabout Bus Service, Surf Lifesaving NSW (SLSNSW), volunteer lifesavers from the North Wollongong Surf Life Saving Club and Wollongong Council. Seventeen young people participated in facilitated workshops and practical activities. The participants were aged from twelve to eighteen years from local population groups, with a focus on Culturally and Linguistically Diverse (CALD) and Aboriginal and Torres Strait Islander communities (ATSI).

Report

Council officers have used the statistical information received from the 2014-2015 program to determine the approach for the Beach Safety Program initiative in the 2015-2016 summer school holidays. Council officers in partnership with SLSNSW, Wollongong Council, Afghan Fajar Inc. and South West Multicultural and Community Centre will continue to run the beach safety program targeting young people from local population groups which are overrepresented in drownings including Western Sydney residents, CALD and (ATSI) communities.

The Beach Safety workshop is proposed to be held at Wollongong SLSNSW Club and Wollongong Beach in December 2015 with the cost and public liability insurance for the workshop met by SLSNSW. Participants will meet at South West Multicultural Community Centre in the morning for a healthy breakfast and then transported by bus to Wollongong beach to attend the workshop. The program will be promoted through Council's website, flyers and social media.

Discussions have been held with Surf Life Saving NSW and local youth services to offer a theory and practical program that focuses on learning and rehearsing water safety skills inclusive of basic survival skills in water, teaching basic emergency response and rescue techniques and providing information to develop an understanding of the dangers that lay within differing waterways.

Evaluation of the workshop by participants and partners will be used to identify future opportunities to extend this program to provide information and resources to these target groups for the future.

Officer's Recommendation

That the information be noted.

Committee's Recommendation: (Brticevic/Oates)

That the Officer's Recommendation be adopted.

CARRIED

Council Meeting 15 December 2015 (Rowell/Oates)

That the Officer's Recommendation be adopted.

Council Resolution Minute Number 234

2.2 Fisher's Gig and Fisher's Extreme Showcase Evaluation 2015

Reporting Officer

Manager Community Resources and Development

Attachments

Nil

Purpose

To provide Council with an evaluation report on Fisher's Gig 2015.

Report

Fisher's Gig, Council's annual youth music festival, was held on Saturday 7 November 2015 at Bradbury Oval between 2.00pm and 9.00pm as part of the annual Festival of Fisher's Ghost. The event was very successful with approximately 3000 young people attending the event throughout the day.

Fisher's Gig is recognised as a professional platform for aspiring musicians and provides a supportive environment for young people to develop skills in event management and performance. It also provides a large scale youth event where young people are free to engage with and celebrate youth culture in a safe, drug and alcohol free environment.

Performers

This year's headlining performers included Adelaide based comedy rock band 'The Beards' and Macarthur based rock Bands Handheld Human and Three Strikes.

The local performer line up was selected this year through a process of pre-selection heats. Six local acts had the opportunity to perform at Fisher's Gig 2015 including Corey Woods, Third Hour, Stooge, The Winter Effect, Snoteleks and Insanity Proof.

Youth Volunteering

Twenty five young people volunteered in the running of the event including members of Council's Youth Entertainment Reference Group, Campbelltown Youth Network and local young people interested in beginning careers in the music industry. Volunteers played a key role in the coordination of the event on the day, with four teams operating on site under the direction of experienced volunteer team leaders. The teams gained practical experience in staging/backstage coordination, sound/lighting technician work, photography, customer service and performer liaison duties.

Fisher's Gig, is not only a launch pad for local Macarthur talent, but with support from Campbelltown Youth Network, a catalyst for sustainability initiatives, the #sustainyourselfie project was launched at the event.

#sustainyourselfie is a project that encourages young people to think about simple things they can do on a daily basis to reduce their environmental impact. The initiative provides facts on environmentally damaging behaviours with the aim to inspire young people to refrain from those actions. Participants at Fisher's Gig documented their environmental promise by having their photo taken, or taking a selfie with their written pledge displayed for all to see.

Overall, 238 pledges were made, many of which were posted on the Campbelltown Youth Network Instagram Page and the Campbelltown Council Youth facebook page with posts reaching more than 7000 followers.

Education & Awareness Initiatives

Campbelltown City Council partnered with NSW Health to provide targeted engagement activities for young people and raise awareness of sexual health. A mobile Sexually Transmissible Infection (STI) testing unit called the 'Caddy Shack' was provided on site to collect samples for screening. 'The 'Caddy Shack' initiative which engaged over 100 young people also included increasing awareness of Chlamydia and knowledge of screening.

Council's Road Safety Officer and Community Safety Officer also attended the event with their 'crash vehicle'. This provided an opportunity to generate conversation, promote and educate young people about the impacts of driver fatigue and speeding.

Fisher's Gig 2015 attracted good support from the media with articles published in local newspapers showcasing the event and local performers and headline acts.

Fisher's Gig 2015 attracted in-kind sponsorship of over \$8,000 from a range of businesses including Indent NSW, Somerset Music and The Music Box Staging and Production Service.

The branding and poster artwork was developed through a TAFE SWSI student competition with 30 student entries. The successful student was provided with on the job experience in developing marketing material and enhancing their skills in graphic design software. Branding material included event t-shirts and posters.

Fisher's Extreme Showcase

As part of the Festival of Fisher's Ghost, the Fisher's Extreme Skate, Scooter and BMX Showcase was held on Saturday 21 November 2015 at Macquarie Fields Skate Park. The event was very successful with approximately 150 young people attending the event throughout the day.

Hosted by Totem Skate School, Fisher's Extreme Showcase included demonstrations by sponsored riders as well as an open jam session from the young people showcasing their talents in skate, scooter and BMX.

The day was also supported by services in the region and included a free BBQ, music and giveaways.

Future Planning

Feedback received from Fisher's Gig 2015 and Fisher's Extreme Showcase has been incorporated into planning for next year's event.

Certificates of appreciation have been forwarded to sponsors, volunteers and key stakeholders involved in the coordination of Fisher's Gig 2015 and Fisher's Extreme Showcase.

Officer's Recommendation

That the information be noted.

Committee's Recommendation: (Oates/Thompson)

That the Officer's Recommendation be adopted.

CARRIED

Council Meeting 15 December 2015 (Rowell/Oates)

That the Officer's Recommendation be adopted.

Council Resolution Minute Number 234

3. CULTURAL SERVICES

3.1 Australia Council for the Arts - Four Year Funding - Organisations

Reporting Officer

Manager Cultural Services

Attachments

Nil

Purpose

To seek Council's endorsement of a submission to the Australia Council for the Arts for funding up to \$300,000 per annum under the new grants model, Four Year Funding – Organisations, towards Campbelltown Arts Centre's Multi-disciplinary Artistic Program from 2017-2020.

Report

In 2014 Australia Council for the Arts announced a new grants model which is intended to make it simpler to apply for grants. Artistic merit and excellence remain central to grant decision making.

Four year funding is available for arts organisations of significant regional, national or international standing. Organisations must demonstrate artistic achievement and ambition with a compelling strategic plan. Funding for successful organisations will commence on 1 January 2017. Four year funding is intended to support vibrant artistic programs by contributing to organisational overhead costs and/or the direct costs of delivering successful programs.

Campbelltown Arts Centre proposes to submit a submission for up to \$300,000 per annum for multi-arts program funding which would support the Visual Arts, Music, Dance, Performance and Live Art programs from 2017-2020. If successful, this funding would create program certainty for Campbelltown Arts Centre into the future and ensure the continued high standard of work developed and presented by the Centre.

Officer's Recommendation

- 1. That Council endorse a submission to the Australia Council for the Arts under the Four Year Funding Organisations for up to \$300,000 per annum towards Campbelltown Arts Centre's 2017-2021 Multi-Disciplinary Artistic Program.
- 2. That subject to notification of success, the funding Agreement from the Australia Council for the Arts be accepted and signed by the General Manager on behalf of Council.

Committee's Recommendation: (Thompson/Oates)

That the Officer's Recommendation be adopted.

CARRIED

Council Meeting 15 December 2015 (Rowell/Oates)

That the Officer's Recommendation be adopted.

Council Resolution Minute Number 234

4. CUSTOMER SERVICE

No reports this round

5. EDUCATION AND CARE SERVICES

No reports this round

6. HEALTHY LIFESTYLES

6.1 Feasibility to support sporting bodies to acquire defibrillators

Reporting Officer

Manager Healthy Lifestyles

Attachments

Nil

Purpose

To provide Council with an update regarding the feasibility of supporting local sporting organisations to purchase defibrillators for use at sporting venues within the Campbelltown Local Government Area.

History

Council at its meeting on 21 July 2015, resolved that a report be presented outlining the feasibility of supporting major local sporting bodies that attempt to acquire defibrillators.

Report

The placement of defibrillators, more specifically Automatic External Defibrillators (AEDs) at significant community locations, such as airports, shopping centres, aquatic centres, and at major sporting venues is becoming common.

Each of Council's leisure centres are provided with AEDs to support the response of lifeguards in emergency situations. The Australian Red Cross conducted research which demonstrated that access to defibrillators can increase a person's chance of survival after a coronary incident, by 70 per cent.

There are a number of groups providing subsidised AEDs to "not for profit organisations" such as the Red Cross, through their "Project Defib" program. This program provides an AED as well as training for members of clubs who will use the device. The total cost of the program is \$4,200 (GST inc). There is a grant of \$1,600 that clubs can apply for which then brings the program cost down to \$2,600 (GST inc) for each participating organisation. This approach is favoured by clubs and some local government authorities as it ensures that the defibrillator can be operated by trained personnel at venues.

In considering the feasibility of the AEDs for sporting clubs it is important to understand the upfront and associated ongoing costs.

There are currently 42 sporting amenity and ancillary buildings provided at Council's sporting venues in the Campbelltown area. There are over 100 different sporting groups using these Council facilities.

A description and the cost of each component of the AED device is set out in the table below:

Component	Approximate cost per unit
The unit itself	\$2,400 (not including training)
Wall-mount brackets and signage	\$157
Battery (lifespan of 4 years)	included
Child key (8 years or under 25 kg)	\$174
Total approximate cost	\$2,731

The approximate ongoing costs associated with each AED are set out below:

Component	Approximate cost per unit
Replacement adult pads (2 year expiry or	\$108
after use)	
Replacement infant pads (2 year expiry or	\$174
after use)	
Replacement Battery (lifespan of 4 years)	\$250

AEDs are mechanically designed to cater for adults, with an additional key attachment provided for infants and children (under 25 kg).

The pads that are applied to the skin are recommended to be used only once, and they also have an expiry date (lifespan of two years). This is to provide some level of confidence that the adhesive can keep the pads attached to the patients' skin. No contact should ever be made by another person touching the patient or pads while the shock is being administered.

To be most effective, the AEDs need to be located in a secure and accessible location, to ensure they are not inappropriately tampered with or taken off site, particularly as Council facilities are often used by multiple hirers within and between sport seasons.

Council Officers have been in contact with clubs and have determined that Coronation Park and Lynwood Park already have AEDs. Macarthur Football Association has entered into an agreement where a manufacturing company is rebating \$500 of the purchase price to any of their affiliated clubs. There are a number of other large associations and clubs that would already have the capacity to purchase or assist in purchasing AEDs.

In discussing AEDs with sporting clubs, Council Officers received some feedback on the ownership, maintenance, access, funding assistance, availability for training, and legal ramifications if something goes wrong and the club does not own the device. Generally, most clubs contacted advised that they would not decline an offer of financial assistance from Council but would request it occur when they, as a club, have the capacity to train their volunteers to use and maintain the equipment and preferred to own the equipment themselves.

There are a range of funding opportunities that arise during the year as well as Sports Facility Grants where Council can partner with clubs to jointly fund AEDs. Council Officers will continue to investigate grant opportunities and make contact with each club and association to understand their capacity and priority to purchase an AED.

Council Officers are now in contact with Royal Life Saving Society Australia and NSW Office of Sport to investigate education and training opportunities to assist local clubs with a better understanding of AEDs within their sport. Once received, this information will be forwarded to the clubs and included in the yearly sport educational courses that Council's Healthy Lifestyles section coordinates throughout the year.

Officer's Recommendation

- 1. That Council write to clubs and inform them of any grant opportunities for AEDs and encourage them to apply.
- 2. That Council inform the clubs that their AEDs will remain their property and responsibility for the upkeep and maintenance of the defibrillators.

Committee's Recommendation: (Brticevic/Oates)

That the Officer's Recommendation be adopted.

CARRIED

Council Meeting 15 December 2015 (Rowell/Oates)

That the Officer's Recommendation be adopted.

Council Resolution Minute Number 234

6.2 Minutes of the Sports Liaison Sub Committee Meeting held 28 October 2015

Reporting Officer

Manager Healthy Lifestyles

Attachments

Minutes of the Sports Liaison Sub Committee Meeting held 28 October 2015 (contained within this report)

Purpose

To seek Council's endorsement of the minutes of the Sports Liaison Sub Committee Meeting held 28 October 2015.

Report

Detailed below are the recommendations of the Sports Liaison Sub Committee. Council officers have reviewed the recommendations and they are now presented for Council's consideration. There are no recommendations that require an individual resolution of Council.

Recommendations of the Sports Liaison Sub Committee

Reports listed for consideration

4. Minutes of the previous meeting held 11 March 2015

That the information be noted.

Presentations

This meeting of the Sports Liaison Sub Committee included a number of presentations to representatives from various sporting clubs and associations. Attendees were provided with an update in regard to:

- Strategic Sports and Recreation Strategy
- Play Space Strategy
- Sports Centre of Excellence
- Glenfield to Macarthur Urban Renewal Corridor Strategy
- Council's new online Sports Ground Booking System
- General Sport and Recreation update.

Officer's Recommendation

That the minutes be noted.

Committee's Recommendation: (Thompson/Brticevic)

That the Officer's Recommendation be adopted.

CARRIED

Council Meeting 15 December 2015 (Rowell/Oates)

That the Officer's Recommendation be adopted.

Council Resolution Minute Number 234

ATTACHMENT 1

Minutes of the Sports Liaison Sub Committee

Held Wednesday 28 October 2015 in the Civic Hall

Meeting commenced at: 6.11pm

1. Acknowledgement of Land

An Acknowledgement of Land was presented by the Chairperson, Councillor Thompson.

2. Welcome and Introduction

Councillor Thompson welcomed all members and invited guests to the Sports Liaison Sub Committee meeting.

3. Attendance and Apologies

Attendance: His Worship the Mayor, Councillor P Hawker

Councillor B Thompson (Chairperson)

Also in attendance: Manager Healthy Lifestyles - Mr M Berriman

Sports Liaison Officer - Mr T Collins

Recreation Booking and Administrative Officer - Ms J Robinson

Executive Support - Mrs D Taylor

Minto Cobras JRLFC - Carmen Jackson and Alison Paea Softball Campbelltown - Sue Bromley and Richard Bromley

Bradbury Cricket Club - Adrian Dowdell Eschol Park Little Athletics - Gordon Costello CDNA - Geoff Byrne and Shirley Connolly

Macarthur Saints JRLFC - Richard Jaschke and Kevin Ashcroft

Ingleburn Eagles Soccer Club - Linda Martin, Michael Winter, Andrew Miller

and Christopher Martin

Smash Tennis (Bow Bowing) - Ricky Neilsen Bradbury Ambarvale Football Club - Chris Webb

Eschol Park Soccer Club - Greg Brown

Campbelltown Uniting Church Soccer Club - Warren Donovan and Steven

Williams

Macarthur Baseball League - Shannon Bickel

Apologies: Councillor P Lake

Councillor G Greiss Councillor D Lound Councillor F Borg

Minto Cobras JRLFC - John Mundt Softball Campbelltown - Selwyn Williams

Ghosts Baseball - Greg Dewick

Macarthur Saints JRLFC - David Ashcroft and Scott Phillips

Sub Committee's Recommendation (Thompson/Hawker)

That the apologies be accepted.

CARRIED

4. Minutes of the previous meeting held 11 March 2015

Report

The minutes of the Sports Liaison Sub Committee meeting held 11 March 2015, copies of which have been circulated to each attendee and Sub Committee member were adopted by Council at its meeting held Tuesday 21 April 2015.

Officer's Recommendation

That the information be noted.

Sub Committee's Recommendation (Thompson/Hawker)

That the information be noted.

CARRIED

Strategic Sports and Recreation and Play Space Strategy

Council's Manager Healthy Lifestyles presented on Council's Sport and Recreation Strategy 2015-2035 and Council's Play Space Strategy 2015-2035. A copy of the presentation is attached.

P:\Presentations\Sub Committees\Sports 28.10.15\Stategic Plans Presentation 28 10 15.ppt

It was noted that consultation on these strategies will commence from late October 2015 with a view to producing the final strategies in February 2016.

Sports Centre of Excellence

Council's Manager Healthy Lifestyles presented regarding the proposed Sports Centre of Excellence. A copy of the presentation is attached.

P:\Presentations\Sub Committees\Sports 28.10.15\Sports Centre of Excellence.pptx

Council, at its meeting of 9 June 2015, adopted the following resolution:

- That Council commit to contributing up to \$5m towards the development of a Regional Sport Centre of Excellence in the Campbelltown Local Government Area conditional upon:
 - a successful application to the Federal Government for funds towards the development of a regional sport centre of excellence in the Campbelltown LGA; and
 - presentation to Council of funding options for Council's commitment of up to \$5m as part of the 2016-2017 budget process.
- That Council negotiate with other key partners including the State Government to contribute to the project.

Council is awaiting the outcome of the grant application however meetings have also been held with the NSW Minister for Sport to discuss alternative funding opportunities.

It is anticipated that the proposed facility would combine elite sports training facilities, administration and operational spaces with community spaces and programs.

A question was raised regarding recent media attention surrounding Campbelltown City Council being deemed not fit for the future and the possibility of Campbelltown merging with Liverpool Council.

His Worship the Mayor, Councillor Hawker, advised that he has released a response to the media advising that Campbelltown City Council will not be merging with Liverpool or any other council. He further advised that Campbelltown will be required to prepare a submission to the Department of Premier and Cabinet by 18 November 2015, outlining how Council is fit for the future.

7. Glenfield to Macarthur Urban Renewal Corridor Strategy

Council's Manager Healthy Lifestyles presented regarding the Glenfield to Macarthur Urban Renewal Corridor Strategy. A copy of the presentation is attached.

P:\Presentations\Sub Committees\Sports 28.10.15\Rail corridor.pptx

Council's Manager Healthy Lifestyles advised that the Department of Planning is investigating opportunities for increased employment, economic and residential development around the railway line. As the population increases this provides avenues for sport and recreation opportunities. An overview of the Department of Planning's draft Urban Renewal Corridor Strategy will be provided to sporting clubs and further updates on this matter will be provided.

Presentation by Recreation Booking and Administration Officer on Council's new online Sports Ground Booking System

Council's Recreation Booking and Administration Officer presented on Council's new online Sports Ground Booking System. A copy of the presentation is attached.

P:\Presentations\Sub Committees\Sports 28.10.15\Sports Ground Bookings.ppt

It was noted that this new system is moving online to ensure all applications include the necessary detail to finalise the booking. It is anticipated that the new online sports ground booking application system will go live from early 2016.

9. General Sport & Recreation Update

- (a) Cleaning
- (b) Capital Works Program
- (c) Grants

Council's Sports Liaison Officer presented on the following:

• Cleaning - a new tender for cleaning of the sports grounds was opened on 27 October 2015. It is anticipated that a large number of companies will express and interest in this tender and that all current issues with cleaning will be rectified as part of the tender renewal process. It was further noted that a waste review of all sports grounds is currently being undertaken with the possibility of some grounds moving to a skip bin option for waste management.

- Maintenance any maintenance issues at sports grounds are to be advised to Council with as much detail as possible and include photos if possible, this will assist in ensuring that the issue is rectified quickly.
- Grants there are currently no grants available however it was noted, that should there be interest to submit a grant in the near future, that work on the application should commence as soon as possible. The application process is quite lengthy with much work involved and it was noted that this process would benefit if preparations began early. It was also noted that the grant application process requires owner's consent and this can only be provided by contacting Council to discuss the application and assist in preparing it.
- Training Council has been working with the NSW Office of Sport to conduct several training courses. Currently the NSW Office of Sport conducts various training courses including, but not limited to, Running Your Club, Managing Team and Working With Children Checks. All attendees were advised to provide information to Council's Sports Liaison Officer regarding training courses they may be interested in attending.

10. General Business

10.1 Thank you

His Worship the Mayor, Councillor Hawker, thanked all for attending the Sports Liaison Sub Committee meeting and expressed the importance of such people within our community who continue to volunteer their time and support our children. Councillor Hawker noted the importance of ensuring that all grant applications are prepared on time and in conjunction with Council staff.

Next meeting of the Sports Liaison Sub Committee will be held in 2016 on a date to be determined.

Councillor Thompson Chairperson Meeting closed: 7.27pm

6.3 Tonga V Cook Islands match

Reporting Officer

Manager Healthy Lifestyles

Attachments

Nil

Purpose

To provide Council with the outcome of the Rugby League World Cup Qualifier match between Tonga and the Cook Islands held at Campbelltown Sports Stadium on Saturday 17 October 2015.

Report

Cook Islands and Tonga played in an international rugby league test match at Campbelltown Sports Stadium on 17 October 2015. The match was a World Cup Qualifier to secure the final Pacific Island place in the 2017 Rugby League World Cup which will be held in Australia and New Zealand in 2017. Tonga won 28 – 8 in a close match and has now qualified for the World Cup. The crowd attendance of 4613 significantly exceeded the International Rugby League Federation's anticipated crowd of 2000.

Council liaised with local and regional cultural groups such as the Tonga Community Development Australia who greatly supported this major community event. As part of the broader precinct entertainment there were cultural stalls, a DJ playing a variety of Pacific Islander music, a jumping castle as well as the National Rugby League hosting fun rugby league development activities.

There were junior games played as curtain raisers to the test match including an Indigenous representative game and also the Wests Tigers Cubs playing against a touring St Helens (UK) Development team. Prior to kick off, both national anthems were sung followed by a haka performed by each team. Traditional drummers from Tonga and the Cook Islands played throughout the game and at half time the crowd was entertained by performances from the Manea Pacifica Dance Group from the Cook Island community and by Miss Tonga Australia.

Post codes were recorded from people purchasing tickets on the day. A total of 675 people provided 158 different postcodes with spectators coming from as far away as Northern NSW, ACT, Queensland, Victoria, New Zealand and England. The majority of Sydney was represented with just over a third of the people surveyed living locally in the Campbelltown Local Government Area. Liverpool, Penrith, Sutherland, Wollongong and Parramatta were the other significant areas with each representing between 10 - 15 per cent. This data may provide some insights to the regional significance that Campbelltown Sports Stadium and the events held there, attracting people to Campbelltown Local Government Area, as well as providing sport and entertainment for the local community.

Council officers have been in contact with the International Rugby League Federation and 2017 Rugby League World Cup organisers present on the night to advocate for potential use of Campbelltown Sports Stadium as an elite training venue and potential match venue.

Officer's Recommendation

That the information be noted.

Committee's Recommendation: (Oates/Brticevic)

That the Officer's Recommendation be adopted.

CARRIED

Council Meeting 15 December 2015 (Rowell/Oates)

That the Officer's Recommendation be adopted.

Council Resolution Minute Number 234

6.4 2015 Marsdens Law Group Fishers Ghost Fun Run

Reporting Officer

Manager Healthy Lifestyles

Attachments

Nil

Purpose

To provide Council with the outcomes of the Marsdens Law Group Fisher's Ghost Fun Run, held on Sunday 15 November 2015.

History

The Fisher's Ghost Fun Run has been an integral part of Campbelltown City's Festival of Fisher's Ghost for 40 years. Since 2005, Council has assumed responsibility for managing the event and in 2010 Council secured a naming rights sponsor for three years with Marsdens Law Group responding to an expression of interest.

At the end of the agreement as naming rights sponsor, Marsdens Law Group, secured a further three year agreement in 2013. The event was promoted as "proudly presented by Campbelltown City Council", with four major sponsors and eleven minor sponsors.

Report

The annual Fisher's Ghost Fun Run was staged between the grounds of the Western Sydney University (WSU) Campbelltown Campus and TAFE NSW South Western Sydney Institute Campbelltown Campus on Sunday 15 November 2015.

The Fun Run caters for all fitness levels and ages. There are four team categories for the 5km course, including primary school, high school, corporate and open. Corporate and open teams can also compete over the 10km track. Walkers are welcome in all events. This health promoting event encourages an active lifestyle for the community to engage in and raises the profile of running as an enjoyable form of exercise for all age groups and abilities.

An extensive and sustained drive for sponsorship support began in November 2014 and resulted in Council being successful in attracting a number of sponsors and prize donors willing to support the event. There are four-levels of sponsorship providing a cash contribution or in-kind donation. This year the sponsorships included Platinum, Gold, Silver, Bronze and a Media Partner. The barrel draw after the race had 50 prizes with a total value of \$6,000, these were randomly drawn for the participants.

The success of the event is due largely to the contribution from the Campbelltown Joggers Club. The club's past experience in coordinating smaller scale running events is enhanced through their contribution for this event. The club provide almost 100 volunteers to run the event with Council, including processing entries, setting up the course, marshalling the race itself, collating results, and managing the electronic timing system.

There were 930 registered entrants along with Fred the Ghost who motivated participants with high-fives and a ready hug at the race start-finish line. Despite the wet weather earlier in the week, the weather conditions did not deter the 831 actual race attendees who finished their race on the event day. All finishers received a free event t-shirt, with line honour winners and place-getters receiving cash prizes and trophies; a finishers certificate recording their time and placing.

Rob Doorey from C91.3FM was the MC of the day and he entertained the crowd at the start of the race and also as the participants crossed the finish line. A presentation occurred where sponsors presented the winner and runner up prizes to all categories. The C91.3FM Road Crew provided giveaways and there were free recovery massages from Bounce Back Osteopathy along with a stretching tent coordinated by Council's Leisure Services team. A BBQ stall was run by Campbelltown Rotary Club and Councils Education Care Services staff provided child minding services to participants, contributing to the great success on the day.

Planning for the 2016 event will begin early in the new year to develop partnerships and sponsorships for the event.

Officer's Recommendation

That the information be noted.

Committee's Recommendation: (Thompson/Brticevic)

That the Officer's Recommendation be adopted.

CARRIED

Council Meeting 15 December 2015 (Rowell/Oates)

That the Officer's Recommendation be adopted.

Council Resolution Minute Number 234

7. LIBRARY SERVICES

7.1 Liveable Communities Grants Program

Reporting Officer

Manager Library Services

Attachments

Nil

Purpose

To seek Council's endorsement of an application for \$30,000 funding from the Department of Family and Community Services under the Liveable Communities Grants Program to assist delivery of capacity building projects to support older people in the Campbelltown Local Government Area.

History

The Liveable Communities Grants Program offers a total of \$1 million in funding per year for four years for projects that improve the lives of older people living in NSW. Grants of up to \$100,000 are available.

The program provides opportunities for individuals and organisations to explore new possibilities and approaches to creating more liveable communities. The grants program will fund a range of innovative ideas that drive real social impact for older people in NSW.

The grants program is open to a wide range of groups including non-government organisations, academics, entrepreneurs, small businesses and local councils.

Report

Creating more liveable communities has been identified as a policy priority in both NSW 2021 as well as more specifically in the NSW Ageing Strategy, the National Disability Strategy NSW Implementation Plan and in the soon to be finalised NSW Carers Strategy.

Liveable communities build independence, health and wellbeing through planning and designing accessible and inclusive social and physical environments that provide opportunities for active citizenship, regardless of age, ability or responsibilities. From the built environment to respectful engagement, to maximising employment and housing options, liveable communities are inclusive for all, including those with specific needs.

As a result of conversation workshops with over 90 older people, a continuing theme was heard for the need to participate in information and technology training to reduce social isolation and access services via the internet. Library Services, Community Resources and Development and community groups will partner in the development of this project.

It is proposed to make a submission to the Liveable Communities Grants Program to provide resources to develop a mobile 'Seniors Pop-up Computer Lab' capacity building project and transport these resources to various locations across Campbelltown.

This 'pop-up' online training resource would be equipped with laptop computers, ipads, wireless internet connections, data projector and screens that would be able to be set up in library and community meeting rooms and other venues throughout Campbelltown. It is envisioned that the resources in this 'pop-up' training package would be able to accommodate up to 10 seniors at a time.

Officer's Recommendation

- 1. That Council endorse the application of \$30,000 funding for Liveable Communities Grants Program from the Department of Family and Community Services for a mobile 'Seniors Pop-up Computer Lab' project.
- 2. That subject to notification of success, the Funding Agreement from the NSW Department of Family and Community Services be accepted and signed by the General Manager on behalf of Council.

Committee's Recommendation: (Oates/Thompson)

That the Officer's Recommendation be adopted.

CARRIED

Council Meeting 15 December 2015 (Rowell/Oates)

That the Officer's Recommendation be adopted.

Council Resolution Minute Number 234

8. GENERAL BUSINESS

Nil.

22. CONFIDENTIAL ITEMS

No reports this round

There being no further business the meeting closed at 5.54pm.

T Rowell CHAIRPERSON

Reports of the Corporate Governance Committee Meeting to be held at 5.30pm on Tuesday, 8 December 2015.

٨	PC	١ı	^	<u>a</u>	2
A	-c	ᄔ	u	u	3

ACKNOWLEDGEMENT OF LAND

DECLARATIONS OF INTEREST

Pecuniary Interests

Non Pecuniary – Significant Interests

Non Pecuniary – Less than Significant Interests

ITEM	TITLE	PAGE
1.	GOVERNANCE AND RISK	3
1.1	Southern Phone Company Dividend	3
1.2	Annual Code of Conduct Complaints report for the period 1 September 2014 to 31 August 2015	7
2.	PROPERTY SERVICES	11
2.1	Multi Deck Carpark - Carberry Lane, Campbelltown	11
3.	FINANCIAL SERVICES	15
3.1	Investment report - October 2015	15
3.2	Sundry Debtors Report - October 2015	19
3.3	Monthly Rates Summary	25
4.	HUMAN RESOURCES	30
No rep	orts this round	30
5.	INFORMATION MANAGEMENT AND TECHNOLOGY	30
5.1	Online Report - November 2015	30
6.	INTERNAL AUDIT	36
No rep	orts this round	36
7.	GENERAL BUSINESS	36
7.1	Hurlstone Agricultural High School	36
7.2	Parkside Drive - Park Central	37
23.	CONFIDENTIAL ITEMS	38
23.1	Multi Deck Car Park 24 Hour Feasibility Operation	38

Minutes of the Corporate Governance Committee held on 8 December 2015

Present Councillor C Mead (Chairperson)

Councillor F Borg

Councillor A Chanthivong Councillor G Greiss Councillor R Kolkman Councillor P Lake

Director Business Services - Mr M Sewell Director City Works - Mr W Rylands

Acting Manager Assets and Supply Services - Mr W Miller

Manager Emergency Management and Facility Services - Mr R Blair

Manager Executive Services - Mr N Smolonogov Manager Financial Services - Mrs C Mears Manager Human Resources - Mr B Clarence

Manager Information Management and Technology - Mrs S Peroumal

Manager Property Services - Mr J Milicic Executive Assistant - Mrs K Peters

Apology (Borg/Kolkman)

That the apology from Councillor Dobson be received and accepted.

CARRIED

Acknowledgement of Land

An Acknowledgement of Land was presented by the Chairperson Councillor Mead.

DECLARATIONS OF INTEREST

Declarations of Interest were made in respect of the following items:

Pecuniary Interests - nil

Non Pecuniary – Significant Interests - nil

Non Pecuniary – Less than Significant Interests - nil

Councillor Chanthivong advised that he is a member of the NSW State Parliament and he will seek advice regarding his need to declare an interest on any issues that may potentially involve the NSW State Government. Councillor Chanthivong noted that if issues arise where he considers there may be a perceived conflict necessitating him to declare an interest, he will do so and if appropriate, leave the Room.

Other Disclosures - nil

1. GOVERNANCE AND RISK

1.1 Southern Phone Company Dividend

Reporting Officer

Director Business Services

Attachments

Correspondence from the Southern Phone Company (contained within this report)

Purpose

To advise Council of the dividend from the Southern Phone Company for 2014-2015.

Report

Council is a shareholder of the Southern Phone Company and has been for some time. The Southern Phone Company is an organisation that provides telephony services to regional Australia. The Southern Phone Company is the third largest provider of fixed line services (after Telstra and Optus) and the fourth largest mobile phone provider (after Telstra, Optus and Vodafone) in regional Australia.

The Southern Phone Company states that any profit that is made from regional Australia should be distributed back to regional communities to provide greater community amenity. This year the dividend to Campbelltown City Council is \$26,620.04.

As in previous years it is recommended that these funds be allocated toward Christmas decorations and festivities.

The appropriate adjustment will be made in the December quarterly financial review.

Officer's Recommendation

- 1. That that Council note the dividend of \$26,620.04 from the Southern Phone Company.
- 2. That these funds be allocated toward Christmas decorations and festivities with the appropriate adjustment being made in the December quarterly financial review.

Committee's Recommendation: (Borg/Kolkman)

That the Officer's Recommendation be adopted.

CARRIED

Council Meeting 15 December 2015 (Mead/Lake)

That the Officer's Recommendation be adopted.

Council Resolution Minute Number 235

That the Officer's Recommendation be adopted.

ATTACHMENT 1



29 October 2015

Mr Paul Tosi General Manager Campbelltown City Council PO Box 57 **CAMPBELLTOWN NSW 2560**

Your 2014-15 Southern Phone dividend: \$26,620.04

Dear Mr Tosi

Despite increasingly difficult trading conditions 2014-15 was another successful year for your Southern Phone Company. Our revenues grew by more than 5% to \$89.6 million and our profit was \$5.5 million. As a consequence, we have been able to maintain this year's shareholder dividend at \$3,000,000. The dividend payable to your Council is \$26,620.04. The payment will be made next February.

Details on the amount paid to each shareholder are enclosed. The total dividend is determined by the proportion of revenues generated from each Council area. We will provide you with further information about how your dividend was calculated and how it can be increased in the near future.

Your Invitation to the Annual General Meeting

On behalf of the Board, I am also pleased to present the Annual Report for 2015 and invite you to the Annual General Meeting of Southern Phone Company Limited.

The meeting will commence at 10.30am (AEDT) on Monday 23 November and will be held at Moruya Golf Club, Evans Street, Moruya, NSW. A Notice of Meeting and Proxy Voting Form are enclosed with this invitation.

If you are unable to attend, you may appoint a proxy to vote for you at the meeting by completing the attached voting form. Please return the completed Proxy Voting Form in accordance with the directions on the form by 5.00pm on Friday, 20 November 2015.

The Board strongly encourages shareholders unable to attend to return a Proxy Voting Form to ensure their participation in the Annual General Meeting.

Yours faithfully

BILL HILZINGER CHAIRMAN

NOV02'15 08:19:01 Southern Phone Company Limited ABN 42 100 901 184 6 Page Street, Moruya NSW 2537 Phone 02 4474 7100 Fax 02 4474 4699 www.southemphone.com.au

Southern Phone 2015 Dividend Distribution

Shareholder	Revenue From Shareholder Area	Dividend Attributable to Revenues	Dividend Attributable to Shareholding	Total Share holder Divide nd
Shoalhaven City	\$883,192.25	\$451,397.28	\$14,634.15	\$466,031.28
Eurobodalla	\$776,212.87	\$396,720.41	\$14,634.15	\$411,354.56
Wollongong City	\$516,549.38	\$264,007.07	\$14,634.15	\$278,641.22
Bega Valley	\$351,165.70	\$179,479.89	\$14,634.15	\$194,114.04
Wingecarribee	\$313,734.20	\$160,348.75	\$14,634.15	\$174,982.90
Shellharbour City	\$230,834.72	\$117,979.04	\$14,634.15	\$132,613.19
Coffs Harbour City	\$161,660.16	\$82,624.10	\$14,634.15	\$97,258.25
Goulburn Mulwaree	\$139,458.11	\$71,276.68	\$14,634.15	\$85,910.83
Orange City	\$106,984.26	\$54,679.38	\$14,634.15	\$69,313.53
Kiama	\$105,639.34	\$53,992.00	\$14,634.15	\$68,626.15
Hawkesbury City	\$94,673.25	\$48,387.26	\$14,634.15	\$63,021.41
Palerang	\$74,565.49	\$38,110.23	\$14,634.15	\$52,744.38
Bellingen	\$71,561.63	\$36,574.97	\$14,634.15	\$51,209.12
Cabonne	\$71,404.95	\$36,494.89	\$14,634.15	\$51,129.04
Queanbeyan City	\$58,262.10	\$29,777.61	\$14,634.15	\$44,411.76
Young	\$57,458.81	\$29,367.05	\$14,634.15	\$44,001.20
Cooma-Monaro	\$56,181.51	\$28,714.23	\$14,634.15	\$43,348.38
Cootamundra	\$53,003.33	\$27,089.87	\$14,634.15	\$41,724.02
Corowa	\$50,518.36	\$25,819.81	\$14,634.15	\$40,453.96
Yass Valley	\$45,524.33	\$23,267.37	\$14,634.15	\$37,901.52
Tumut	\$41,938.97	\$21,434.90	\$14,634.15	\$36,069.05
Snowy River	\$36,446.43	\$18,627.68	\$14,634.15	\$33,261.83
Warrumbungle	\$35,690.23	\$18,241.18	\$14,634.15	\$32,875.33
Camden	\$35,011.04	\$17,894.06	\$14,634.15	\$32,528.21
Dungog	\$34,992.19	\$17,884.42	\$14,634.15	\$32,518.57
Gunnedah	\$30,900.44	\$15,793.14	\$14,634.15	\$30,427.29
Weddin	\$30,529.59	\$15,603.60	\$14,634.15	\$30,237.75
Upper Lachlan	\$30,090.61	\$15,379.23	\$14,634.15	\$30,013.38
Murray	\$27,727.50	\$14,171.45	\$14,634.15	\$28,805.60
Bland	\$26,767.27	\$13,680.68	\$14,634.15	\$28,314.83
Campbelltown City	\$23,451.28	\$11,985.89	\$14,634.15	\$26,620.04
Narrandera	\$19,801.24	\$10,120.36	\$14,634.15	\$24,754.51
Gilgandra	\$19,395.84	\$9,913.17	\$14,634.15	\$24,547.32
Narromine	\$18,333.00	\$9,369.95	\$14,634.15	\$24,004.10
Harden	\$15,711.06	\$8,029.88	\$14,634.15	\$22,664.03
Tumbarumba	\$14,555.42	\$7,439.24	\$14,634.15	\$22,073.39
Bombala	\$13,542.03	\$6,921.30	\$14,634.15	\$21,555.45
Randwick City	\$6,733.68	\$3,441.56	\$14,634.15	\$18,075.71
Boorowa	\$6,168.72	\$3,152.82	\$14,634.15	\$17,786.97
The Hills	\$4,908.35	\$2,508.65	\$14,634.15	\$17,142.80
Carrathool	\$4,498.06	\$2,298.95	\$14,634.15	\$16,933.10

\$2,400,000.00 \$600,000.00 \$3,000,000.00

1.2 Annual Code Of Conduct Complaints Report For The Period 1 September 2014 To 31 August 2015

1.2 Annual Code of Conduct Complaints report for the period 1 September 2014 to 31 August 2015

Reporting Officer

Manager Governance and Risk

Attachments

Code of Conduct Complaints Report for the Period 1 September 2014 to 31 August 2015 (contained within this report)

Purpose

This report provides annual Code of Conduct complaints statistics for the period 1 September 2014 to 31 August 2015, in accordance with reporting requirements within the Model Code of Conduct for Local Councils in NSW.

Report

In accordance with the Model Code of Conduct for Local Councils in NSW procedures, each Council's complaints coordinator must, within three months of the end of September each year, report complaints statistics to their Council and to the Office of Local Government.

The statistics that are to be reported are included in attachment 1.

Officer's Recommendation

That the information be noted.

Committee's Recommendation: (Lake/Mead)

That the Officer's Recommendation be adopted.

CARRIED

Council Meeting 15 December 2015 (Mead/Lake)

That the Officer's Recommendation be adopted.

Council Resolution Minute Number 235

That the Officer's Recommendation be adopted.

Corporate Governance Committee Meeting 08/12/15 Pa 1.2 Annual Code Of Conduct Complaints Report For The Period 1 September 2014 To 31 August 2015

ATTACHMENT 1

Model Code of Conduct Complaints Statistics

	Campbelltown City Council				
N	um	ber of Complaints			
1	а	The total number of complaints received in the period about councillors and the general manager under the code of conduct	0		
	b	The total number of complaints finalised in the period about councillors and the general manager under the code of conduct	0		
0	ver	view of Complaints and Cost			
2	а	The number of complaints finalised at the outset by alternative means by the general manager or Mayor	0		
	b	The number of complaints referred to the Office of Local Government under a special complaints management arrangement	0		
	С	The number of code of conduct complaints referred to a conduct reviewer	0		
	d	The number of code of conduct complaints finalised at preliminary assessment by conduct reviewer	0		
	е	The number of code of conduct complaints referred back to GM or Mayor for resolution after preliminary assessment by conduct reviewer	0		
	f	The number of finalised code of conduct complaints investigated by a conduct reviewer	0		
	g	The number of finalised code of conduct complaints investigated by a conduct review committee	0		
	h	Number of finalised complaints investigated where there was found to be no breach	0		
	i	Number of finalised complaints investigated where there was found to be a breach	0		
	j	Number of complaints referred by the GM or Mayor to another agency or body such as the ICAC, the NSW Ombudsman, the Office or the Police	0		
	k	Number of complaints being investigated that are not yet finalised	0		
	ı	The total cost of dealing with code of conduct complaints within the period made about	\$0		

Corporate Governance Committee Meeting 08/12/15 Pag
1.2 Annual Code Of Conduct Complaints Report For The Period 1 September 2014 To 31
August 2015

Pr	Preliminary Assessment Statistics					
3	The number of complaints determined by the conduct reviewer at the preliminary assessment stage by each of the following actions:					
	а	To take no action	0			
	b	To resolve the complaint by alternative and appropriate strategies	О			
	С	To refer the matter back to the general manager or the Mayor, for resolution by alternative and appropriate strategies	0			
	d	To refer the matter to another agency or body such as the ICAC, the NSW Ombudsman, the Office or the Police	0			
	e	To investigate the matter	О			
	f	To recommend that the complaints coordinator convene a conduct review committee to investigate the matter	0			
In	ves	tigation Statistics				
4		number of investigated complaints resulting in a determination that there was no breach , in ch the following recommendations were made:				
	а	That the council revise its policies or procedures	0			
	b	That a person or persons undertake training or other education	О			
5		number of investigated complaints resulting in a determination that there was a breach in which following recommendations were made:				
	а	That the council revise any of its policies or procedures	0			
	b	That the subject person undertake any training or other education relevant to the conduct giving rise to the breach	0			
	с	That the subject person be counselled for their conduct	0			
	d	That the subject person apologise to any person or organisation affected by the breach	0			
	e	That findings of inappropriate conduct be made public	0			
	f	In the case of a breach by the general manager, that action be taken under the general manager's contract for the breach	0			
	g	In the case of a breach by a councillor, that the councillor be formally censured for the breach under section 440G of the Local Government Act 1993	0			
	h	In the case of a breach by a councillor, that the matter be referred to the Office for further action	0			
6		Matter referred or resolved after commencement of an investigation under clause 8.20 of the Procedures	0			

Corporate Governance Committee Meeting 08/12/15 Page 10
1.2 Annual Code Of Conduct Complaints Report For The Period 1 September 2014 To 31
August 2015

Ca	Categories of misconduct				
7	The number of investigated complaints resulting in a determination that there was a breach with respect to each of the following categories of conduct:				
	a	General conduct (Part 3)	0		
	b	Conflict of interest (Part 4)	0		
	С	Personal benefit (Part 5)	0		
	d	Relationship between council officials (Part 6)	0		
	e	Access to information and resources (Part 7)	0		
Oı	utco	ome of determinations			
8		number of investigated complaints resulting in a determination that there was a breach in which council failed to adopt the conduct reviewers recommendation	0		
9		number of investigated complaints resulting in a determination that there was a breach in which council's decision was overturned following a review by the Office	0		

2. PROPERTY SERVICES

2.1 Multi Deck Carpark - Carberry Lane, Campbelltown

Reporting Officer

Manager Property Services

Attachments

Locality Plan (contained within this report)

Purpose

To seek Council approval to enter into a new three year Management Agreement with Cabra-Vale Ex-Active Servicemen's Club Limited (Cabra-Vale Diggers) for the management, maintenance and operation of the multi deck car park at Carberry Lane, Campbelltown.

History

Council at its meeting of 6 May 2014 agreed to enter into a new 18 month Management Agreement with Cabra-Vale Ex-Active Servicemen's Club Limited for the operation and maintenance of the multi deck carpark at Carberry Lane, Campbelltown.

The current Management Agreement is due to expire on 2 January 2016 however Cabra-Vale is seeking approval to enter into a new agreement for a further period of three years.

Report

The site of the multi deck carpark being part of Lot 3 DP 827691 is zoned 10(a) Regional Comprehensive Centre and is classified as 'operational' land. The carpark has provision for approximately 400 spaces.

Cabra-Vale Diggers have managed this facility successfully on Councils behalf for a number of years and has requested that a new management agreement be entered into for a period of three years.

In order that Cabra-Vale Diggers has certainty in meeting its obligations, it is recommended to Council that it enter into a new three year management agreement on the general terms and conditions as outlined below:

- that Cabra-Vale Diggers at all times operate the carpark as a public carpark accessible to all members of the community on an equal basis having regard to the adopted carparking rates
- the term is to be for a period of three years. Cabra-Vale Diggers are to provide formal advice to Council after two years of the agreement to determine if an ongoing arrangement is required after the expiration of the three years
- Cabra-Vale Diggers will be responsible for all costs associated with marketing and operation of the public carpark (this will include annual service and maintenance/costs/charges, administration overheads and also CCTV security costs if required). The maintenance and operation costs will include cleaning, sweeper machine, all building maintenance (including emergency lighting) and repairs as well as outgoings
- Cabra-Vale Diggers will be required to provide current relevant insurance policies which include public liability insurance, building insurance and equipment insurance to amounts as specified by Council from time to time
- all day carparking is to be restricted to the upper levels of the carpark. This is achieved by
 installing a chain wire across the entrance areas of the ground floor car parking area in
 order to direct all vehicles entering the carpark prior to 9.00am in the morning to the top
 decks
- each party is to pay its own legal costs in relation to the preparation of the new management agreement
- the existing operational times and carparking fees are to remain the same unless otherwise approved by Council.

Following are the benefits that Council would obtain under the new Management Agreement:

- that Cabra-Vale Diggers manages, operates and maintains the carpark as a public carpark at no cost to Council
- that Cabra-Vale Diggers has staff and security in the immediate proximity of the multi deck carpark to provide assistance as required
- Cabra-Vale Diggers will be responsible for all other costs associated with the marketing, operation and maintenance of the public carpark during the term of the agreement.

Accordingly it is recommended that as Cabra-Vale Ex-Active Servicemen's Club Limited have successfully managed, operated and maintained the multi deck carpark for a period of approximately 10 years that Council enter into a new three year Management Agreement based on the above terms and conditions.

Officer's Recommendation

- 1. That Council agree to enter into a new three year Management Agreement with Cabra-Vale Ex-Active Servicemen's Club Limited for the operation and maintenance of the multi deck carpark at Carberry Lane, Campbelltown on the terms outlined in this report.
- 2. That the Cabra-Vale Ex-Active Servicemen's Club Limited be required to operate the multi deck carpark as a public carpark accessible to all members of the community.
- 3. That all documentation associated with the Management Agreement be executed under the Common Seal of Council.

Committee's Recommendation: (Borg/Lake)

That the Officer's Recommendation be adopted.

CARRIED

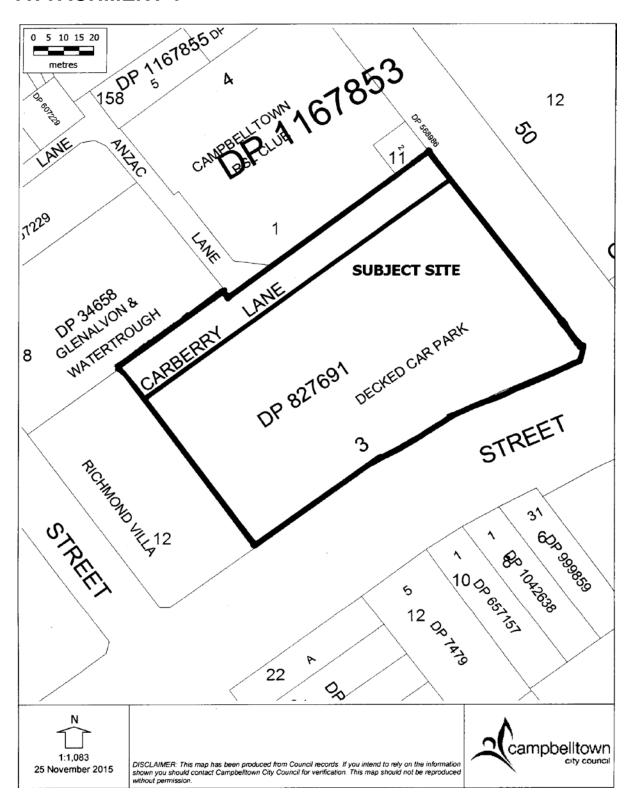
Council Meeting 15 December 2015 (Mead/Lake)

That the Officer's Recommendation be adopted.

Council Resolution Minute Number 235

That the Officer's Recommendation be adopted.

ATTACHMENT 1



3. FINANCIAL SERVICES

3.1 Investment report - October 2015

Reporting Officer

Manager Financial Services

Attachments

Investment portfolio performance for the month of October 2015 (contained within this report)

Purpose

To provide a report outlining Council's investment portfolio performance for October 2015

Report

Council holds a number of reserves in order to fund significant future liabilities or future objectives. These liabilities include insurance claims, employee leave entitlements and asset replacement. In addition, Council is also required to hold funds that under the *Local Government Act 1993*, are not permitted to be used for any other purposes than those originally collected for. These include developer contributions, specific purpose grants, domestic waste management, contributions and stormwater management funds.

Council invests funds through the financial instrument designated by the Ministerial Order from the Office of Local Government. The *Local Government Act 1993* and the *Local Government (General) Regulation 2005* require a monthly investment report be presented to Council.

Council's Investment Portfolio as at 31 October 2015 stood at approximately \$116m. Funds are currently being managed both by Council staff and Fund Managers and are in accordance with the *Local Government Act 1993*, *Local Government (General) Regulation 2005* and Council's Investment Policy.

Portfolio Performance

Directly managed investments have consistently outperformed the AusBond bank bill index benchmark.

Monthly annualised return	October
Council Managed Funds	3.09%
Benchmark: AusBond Bank Bill Index	2.34%

Investment returns can fluctuate during any one reporting period based on market perceptions, or as in the case of funds under management, changes in asset classes. As such, any measurement of performance is better reflected over a rolling 12 month period to average out any fluctuations in monthly performance. Council's total investment portfolio has outperformed the benchmark on average over the last 12 months.

Rolling year to date return	October
Council Managed Funds	3.45%
Benchmark: AusBond Bank Bill Index	2.41%

Council's portfolio as at 31 October 2015 is diversified with 74 per cent in term deposits of varying lengths of maturity which are managed in accordance with market expectations and Council's investment strategy, 21 per cent in floating rate deposits which gives Council a set margin above either 30 or 90 day bank bills, 4 per cent in fixed rate bonds, 1 per cent in funds in a short term at call account.

Maturity profile	31 October
Short term at call	\$1,015,326
0 – 3 months	\$31,100,521
3 – 6 months	\$46,081,818
6 – 12 months	\$31,551,973
12 months +	\$6,000,000

All investments are placed with approved deposit taking institutions. No funds are placed with any unrated institutions.

Credit exposure	31 October
AAA to AA-	61%
A+ to A-	35%
BBB+ to BBB-	4%
Other approved deposit taking institutions	0%

Economic outlook

The Board of the Reserve Bank of Australia (RBA) at its 3 November 2015 meeting left the cash rate unchanged for the sixth consecutive month at the present level of 2 per cent. Economists were split 50/50 on whether the official interest rate would fall further.

In the statement of monetary policy accompanying the decision, RBA Governor, Glenn Stevens said that despite recent changes to lending rates, overall conditions remained accommodative and prospects for improvement in the economy had strengthened in recent months. Despite this, the September quarter Consumer Price Index showed annual headline inflation was at 1.5 per cent, which was weaker than expected and below the RBA's forecasts, leaving room for a further rate cut if needed.

Summary

Council's investment portfolio continues to outperform the benchmark of the AusBond bank bill index. The Local Government Investment Guideline leaves little scope for the enhancement of Council's investment portfolio with the various investment products being offered. However to enhance the portfolio, advantage is taken on the length of maturity of the investment given the rating of the institution, as well as reviewing any new investment products offered in consultation with Council's financial advisor, Spectra Financial Services.

Regular liaison with Council's external financial advisor assists in monitoring all of the risk factors to maximise Council's return on the investment portfolio while minimising the risk associated with this strategy.

Officer's Recommendation

That the information be noted.

Committee's Recommendation: (Greiss/Lake)

That the Officer's Recommendation be adopted.

CARRIED

Council Meeting 15 December 2015 (Mead/Lake)

That the Officer's Recommendation be adopted.

Council Resolution Minute Number 235

That the Officer's Recommendation be adopted.

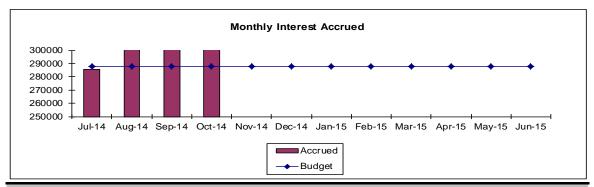
ATTACHMENT 1

CAMPBELLTOWN CITY COUNCIL INVESTMENT PORTFOLIO

Summary October 2015

Benchmark AusBond Bank Bill Index Portfolio Balance \$115,749,637.87

Monthly Performance		Retu	ırn (mth)	Ret	urn (pa)
AusBond Bank Bill Inde Total Portfolio	ex		0.20% 0.26%		2.34% 3.08%
	Performance to Benchmark	+	0.06%	+	0.74%
Portfolio - Direct Inves	tments		0.26%		3.09%
	Performance to Benchmark	+	0.06%	+	0.75%
Short Term Call Account			0.20%		2.40%



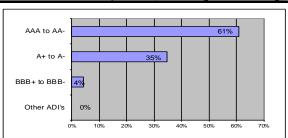
Year to Date Performance

Credit Exposure (S&P Long Term Rating)

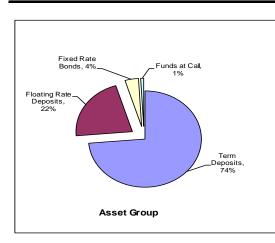
Rolling 12 Month Period 3.45% Council Managed Funds 2.41% Benchmark

Interest Budget to Actual

Average Budget to Period \$1,151,233 Actual Accrued to Period \$1,206,398



Portfolio Diversity



				%
NAB Funds at Call	\$	1,015,326.24	AA-	1%
NSW Treasury	\$	2,225,000.00	AA+	2%
National Australia Bank	\$	38,940,527.84	AA-	34%
ANZ Bank	\$	3,500,000.00	AA-	3%
Westpac Bank	\$	5,328,451.17	AA-	5%
Commonwealth Bank	\$	5,000,000.00	AA-	4%
Bank Western Australia	\$	14,490,914.73	AA-	13%
AMP Bank	\$	5,077,863.01	A +	4%
Suncorp Metway	\$	17,116,411.04	A +	15%
Macquarie Bank	\$	3,000,000.00	Α	3%
Rural Bank	\$	6,000,000.00	A-	5%
Bank of Queensland	\$	9,046,010.96	A-	8%
Peoples Choice CU	\$	-	BBB+	0%
Credit Union Aust	\$	3,000,000.00	BBB+	3%
ME Bank	\$	2,009,132.88	BBB+	2%
	\$ 1	115,749,637.87	· <u> </u>	100%

3.2 Sundry Debtors Report - October 2015

Reporting Officer

Manager Financial Services

Attachments

- 1. Debtors summary to 31 October 2015 (contained within this report)
- 2. Ageing of sundry debts to 31 October 2015 (contained within this report)

Purpose

To provide a report detailing the amount outstanding by type and age for sundry and miscellaneous debts for the period ending 31 October 2015.

Report

Debts outstanding to Council as at 31 October 2015 are \$1,501,854 reflecting a decrease of \$402,865 since September 2015. The ratio of outstanding debts to current invoices has decreased from 29.5 per cent in September to the current level of 29.3 per cent. This debtor management ratio is a measure of the effectiveness of recovery efforts, however is impacted by Council policies as well as economic and social conditions.

Invoices raised - October 2015

During the month, 591 invoices were raised totalling \$1,251,023. The majority of these are paid within a 30 day period. The most significant invoices raised during the month have been in the following areas:

Government and other Grant -\$401,274 – The main invoices relate to:

Office of Local Government - Road Infrastructure Backlog Renewal Program	\$168,274
and Building Infrastructure Backlog Renewal Program	
Department of Infrastructure and Regional Development - Lynwood Park Artificial Turf upgrade Project	\$200,000

Land and Building Rentals – \$139,543 – the main invoices relate to:

Aldi Foods Pty Ltd - monthly rental at Macquarie Fields	\$24,750
Nuvezo Pty Ltd - monthly rental Dumaresq Street Cinema	\$23,797
Glenquarie Hotel Pty Ltd - monthly rental Macquarie Fields	\$20,438
Caltex Oil Australia Pty Ltd - monthly rental Macquarie Fields	\$15,695
Mycorp Group Pty Ltd - monthly rental Macquarie Fields	\$13,878

Corporate Administration – \$369,640 – the main invoices relate to:

Roads and Maritime Services - purchase of Gross Pollutant Trap associated with temporary detention basin Glenfield Road, Glenfield associated with RMS road widening works	\$51,839
Western Sydney University - contribution - Tutoring Agreement for Tutoring Programme 2015-2016	\$31,350
Commonwealth Bank of Australia - PC Equipment Finance - Tranche 3 of 2014-2015	\$236,150
Private residential - valuation of walkway land adjacent to 14 Diamond Place, Eagle Vale	\$6,150
Refundable bonds – standing plant (ie cranes, concrete pumping and scaffolding) times three	\$30,000

Footpath and Road Restoration – \$75,258 – the main invoices relate to:

Sydney Water – scoping fees and various restorations within Campbelltown	\$6,329
LGA	
Datateks – footpath restorations, Lindesay Street, Dan Street and Macquarie	\$13,547
Street, Campbelltown	
Wavelength Pty Ltd - restoration - Moore Street and Allman Street,	\$13,600
Campbelltown - footpath concrete	
Networx Constructions Pty Ltd – road restoration - Hurley Street and Patrick	\$8,942
Street, Campbelltown - concrete footpath	
Endeavour Energy - road restoration - Blaxland Road, Campbelltown and	\$5,426
Rosewood Drive, Macquarie Fields	
Private residential - driveway construction and road restoration various	\$7,014
locations	

Sportsground and Field Hire - \$45,293 – the main invoices relate to:

Stadium Hire - finals round Junior Football various clubs and schools for	\$11,892
zone carnivals	

Receipts to the value of \$1,653,888 have been received during the period, the most notable in the following areas:

Corporate Admin	\$533,112
Road and Footpath Restoration	\$467,432
Land and Building Rentals	\$197,609
Waste Collection Services	\$186,348
Government and other Grants	\$68,000

Sundry debts outstanding – 31 October 2015

Debts exceeding 90 days of age totalled \$389,167 as at 31 October 2015. The major invoices relating to this balance include:

Description	Date Invoiced	Balance at 31 October
		2015
Debtor 68316.9 - retaining wall between Lot 1451 DP 703487, 2 and 4 Brownlow Place, Ambarvale. Debtor is maintaining arrangement to pay \$450 per month as approved by Council	09/06/10	\$6,100
Casper's Baseball Club - electricity charges. Club is experiencing financial difficulty, however have been making irregular payments to reduce the debt. Council continues to meet with club and Macarthur Baseball to resolve debt	17/12/12 to 17/06/15	\$6,878
Insight Mercantile Pty Ltd – abandoned motor vehicle, unable to locate owner of the vehicle. Vehicle held at auction house preparing for sale	18/07/14	\$2,799
GE Automotive – abandoned motor vehicle, unable to locate owner of the vehicle. Vehicle held at auction house preparing for sale	05/07/12	\$5,709
74366.6 - motor vehicle accident at the Animal Care Facility. Judgment has now been obtained to secure debt and recovery processes will continue	05/06/14	\$1,981
Master Woodturning - land value associated with walkway closure adjoining 37 Lancaster Street, Ingleburn. Payment is being held in trust by Council's solicitor and will be released to Council once plans have been registered with the Land Titles Office	20/11/14	\$54,129
Jemena Gas Networks - gas mains assessment for 2014-2015 (estimate) - contact made, payment is expected by end November 2015	30/06/15	\$61,000
Campbelltown Warriors Football Club - Community Building Partnership Program – power upgrade Worrell Oval. Payment delayed due to advice sought on GST applicability	24/06/15	\$143,000 (paid)

Debt recovery action is undertaken in accordance with Council's Sundry Debtor Recovery Procedures Policy and commences with the issue of a tax invoice. A person or entity may be issued any number of invoices during the calendar month for any business, services or activities provided by Council. At the conclusion of each calendar month, a statement of transactions is provided with details of all invoices due and how payments or credit notes have been apportioned. Once an invoice is paid, it no longer appears on any subsequent statement.

All debts that age by 90 days or more are charged a statement administration fee of \$5.50 per statement. Debtors are contacted by telephone, email or in writing to make suitable arrangements for payment of the overdue debt. Where a suitable arrangement is not achieved or not maintained as agreed, a seven day letter is issued referencing referral to Council's debt recovery agents.

Matters referred to Council's recovery agent are conducted in accordance with relevant legislation and the *Civil Procedures Act 2001*. Formal legal recovery commences with a letter of demand (or letter of intent) providing debtors with at least 14 days to respond. In the event that no response is received, instructions are given to proceed to Statement of Claim allowing a further 28 days to pay or defend the action. Failing this, the matter will automatically proceed to judgment and continue through the *Civil Procedures Act 2001* process.

All costs associated with formal legal recovery are payable by the debtor and staff continue to make every effort to assist debtors to resolve their outstanding debt before escalating it through the local court.

During the month 10 accounts were issued a letter of demand on Council's letterhead, advising that if the account was not settled or an appropriate arrangement was not made, the account will escalate to formal legal action through Council's agent.

Council's agents were instructed to proceed with Judgment on one account for reimbursement of costs for motor vehicle accident and recovery of legal costs associated with this matter.

Council officers continue to provide assistance to debtors experiencing difficulties in paying their accounts. Debtors are encouraged to clear their outstanding debts through regular payments where possible, to avoid any further recovery action.

Officer's Recommendation

That the information be noted.

Committee's Recommendation: (Greiss/Mead)

That the Officer's Recommendation be adopted.

CARRIED

Council Meeting 15 December 2015 (Mead/Lake)

That the Officer's Recommendation be adopted.

Council Resolution Minute Number 235

That the Officer's Recommendation be adopted.

ATTACHMENT 1

DEBTORS SUMMARY 1 October 2015 to 31 October 2015

DEBTOR TYPE/DESCRIPTION	ARREARS AT 30/09/2015	RAISED THIS PERIOD	RECEIVED THIS PERIOD	BALANCE AT 31/10/2015	% DEBT RATIO
corocato A charication	561 780	360 640	532 110	208 217	7007 00
	600,100	040,600	211,000	710,060	23.43 /0
Abandoned Items	6,662	0	0	6,662	0.35%
Education and Care Services	18,710	0	0	18,710	0.98%
Community Bus	103	140	140	103	0.01%
Sportsground and Field Hire	103,916	45,293	66,571	82,638	5.46%
Government and other Grants	245,228	401,274	000'89	578,502	12.87%
Public Hall Hire	26,493	21,169	27,575	20,087	1.39%
Health Services	350	0	0	350	0.02%
Land and Building Rentals	107,142	139,543	197,609	49,076	5.63%
Healthy Lifestyles	2,838	2,955	2,346	3,447	0.15%
Library Fines and Costs	0	0	0	0	0.00%
Licence Fees	35,194	15,055	4,846	45,403	1.85%
Pool Hire	7,431	11,302	13,707	5,025	0.39%
Private Works	9,884	0	0	9,884	0.52%
Road and Footpath Restoration	536,612	75,258	467,432	144,438	28.17%
Shop and Office Rentals	41,341	29,242	41,832	28,751	2.17%
Various Sundry Items	122,222	71,287	44,369	149,139	6.42%
Waste Collection Services	117,482	68,865	186,348	0	6.17%
	1,904,719	1,251,023	1,653,888	1,501,854	100%

ATTACHMENT 2

AGEING OF SUNDRY DEBTOR ACCOUNTS - 31 October 2015

Previous Month 90+ days	159,258	6,662	0	14,496	178,468	4,219	350	4,605	298	22,820	640	8,695	4,589	467	72,272	0	477,838
----------------------------	---------	-------	---	--------	---------	-------	-----	-------	-----	--------	-----	-------	-------	-----	--------	---	---------

Description	Current Charges	Total 30 Days	Total 60 Days	Total 90+ Days	Balance Due
Corporate Administration	300.05	15.539	12.116	70.604	398.317
Abandoned Items	0	0	0		6,662
Education and Care Services	18,710	0	0	0	18,710
Community Bus	103	0	0	0	103
Sportsground and Field Hire	40,803	20,679	099'9	14,496	82,638
Government and other Grants	368,274	31,760	0	178,468	578,502
Public Hall Hire	9,112	1,352	5,404	4,219	20,087
Health Services	0	0	0	320	320
Land and Building Rentals	43,323	933	215	4,605	49,076
Healthy Lifestyles	1,937	866	234	278	3,447
Licence Fees	15,862	3,670	2,937	22,935	45,403
Pool Hire	3,810	332	244	640	5,025
Private Works	1,189	0	0	8,695	9,884
Road and Footpath Restoration	61,767	60,064	18,017	4,589	144,438
Shop and Office Rentals	20,901	6,641	743	467	28,751
Various Sundry Items	54,718	18,195	4,065	72,160	149,139
Waste Collection Services	0	0	0	0	0
	901,889	160,163	50,635	389,167	1,501,854

3.3 Monthly Rates Summary

Reporting Officer

Manager Financial Services

Attachments

- 1. Monthly rates summary (contained within this report)
- 2. Actual to budget result (contained within this report)
- 3. Rates statistics (contained within this report)

Purpose

To provide details of the 2015-2016 rates and charges levy and cash collections for the period ending 31 October 2015.

Report

Rates and Charges levied for the month ending 31 October 2015 totalled \$96,984,571, representing 99.8 per cent of the estimated budget for the year.

Rates and Charges collected to the end of October totalled \$35,641,753. In percentage terms this amount represents 36 per cent of all rates and charges due to be paid. In comparison, the amount collected in the same period last year was 36.8 per cent.

The November quarterly instalment notices were issued during the month to 49,130 ratepayers, an increase of 536 over the 48,594 last year. Information on the Festival of Fisher's Ghost was included on the instalment notices.

Debt recovery action during the month involved the issue of 220 Statements of Claim to ratepayers who had either failed to maintain arrangements or had not responded to previous correspondence. In addition, nine Writs were served on those previously served with a Statement of Claim that had not paid their account, made suitable payment arrangements or defended the matter.

Ratepayers who have purchased property since the annual notices were issued are sent a 'Notice to New Owner' letter. This letter advises ratepayers the annual amount levied and any balance unpaid since settlement occurred. During October, 21 of these notices were sent to ratepayers.

Officer's Recommendation

That the information be noted.

Committee's Recommendation: (Lake/Mead)

That the Officer's Recommendation be adopted.

CARRIED

Council Meeting 15 December 2015 (Mead/Lake)

That the Officer's Recommendation be adopted.

Council Resolution Minute Number 235

That the Officer's Recommendation be adopted.

RATES SUMMARY

STATEMENT OF ALL OUTSTANDING RATES AND EXTRA CHARGES

ATTACHMENT 1

RATE - CHARGE	NET ARREARS 1/7/2015	NET LEVY FOR YEAR	PENSION REBATES	EXTRA CHARGES	TOTAL RECEIVABLE	COLLECTED	NET AMOUNT DUE	POSTPONED RATES & INTEREST	GROSS AMOUNT DUE
	17 100 011 0		7	70 001 100	77 707 70	20 110 /81 01	0,000 150 70	000	10 / 10 / 10
KESIDENIIAL	2,443,224.65	54,448,281.14	1,394,819.13	325,499.06	77.681,778,66	19,746,977.03	36,075,208.69	319,328.02	36,394,536.34
BUSINESS	436,057.49	17,730,403.36		31,069.31	18,197,530.16	6,863,417.88	11,334,112.28		11,334,112.28
BUSINESS - IND	100.30	00.00		0.00	100.30	0.00	100.30		100.30
FARMLAND	00.00	593,837.36	884.79	788.89	593,741.46	152,547.77	441,193.69	144,924.13	586,117.82
MINING	00.00	23,937.48		0.00	23,937.48	23,937.48	00.00		00.00
LOAN	75,640.51	2,659.96		1,206.69	79,507.16	7,303.52	72,203.64	27,414.59	99,618.23
INFRASTRUCTURE	206,769.81	5,682,173.98		3,767.32	5,892,711.11	2,089,247.46	3,803,463.65	17,340.90	3,820,804.55
F5 ACCESS RAMPS	379.22	0.00		00.00	379.22	0.00	379.22		379.22
TOTAL	\$3,142,670.23	23 \$78,481,293.28	\$1,395,703.92	\$362,331.27	\$362,331.27 \$80,610,092.61 \$28,883,431.14	\$28,883,431.14	\$51,726,661.47	\$509,007.64	\$52,235,668.74
		0 0 0	200	, , , , , , , , , , , , , , , , , , ,	7 7 7 7	, , , , , , , , , , , , , , , , , , ,	, , , , , , , , , , , , , , , , , , ,		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
GARBAGE		18,2/2,807.48	826,010.97	13,602.50	13,602.50 18,135,173.35	6,362,315.22	11,//2,858.13		11, / /2, 858.13
STORMWATER	49,776.92	1,040,751.02		219.35	1,090,747.29	396,006.20	694,741.09		694,741.09
LA FOT GIVE		\$07 704 0E1 70	\$ 22.774.00	4277 152 12	\$00 037 043 JE				
GRAIND TOTAL	\$3,807,221.49	\$41,194,831.78	\$2,221,714.89	\$3/0,133.12	\$3/0,133.12 \$99,830,013.23	\$35,041,722.50	\$64, 194, 260.69	\$309,001.64	\$64,703,267.90

-	2	7	•
-	7	-	
	١,	-	,
i	Ĺ		
	,		
	١,	-	J
	d		כ
		7	7
٠	•		
	2	5	_
- 1		1	_
1	L	ī	
			Ξ
	•	2	•
	C)
	Ċ		5
1	Ĺ	ı	
i	Ċ	١	4
	L	ı	5
1	٢		٦
	1		_
(٤	1	7
•	÷		Ė
1	C	•	7
•	2	>	
			ı
•			
	<		ι
•		=	,
•			=
	e	۰	г

644,435.44	66,742.65	13,847.20	\$725,025.29
Rate accounts greater than 6 months less than 12 months in arrears	Rate accounts greater than 12 months less than 18 months in arrears	Rate accounts greater than 18 months in arrears	TOTAL rates and charges under instruction with Council's agents

36.81%

36.06%

TOTAL RATES & CHARGES

36.80%

35.83%

ATTACHMENT 2

COMPARISON OF BUDGET TO ACTUAL

		KEVISED	ACTORE	BALANCE	% RAISED
•	BUDGET	BUDGET		STILL REOD.	
RESIDENTIAL	53,878,600	54,278,600	54,448,281	(189'691)	100.31%
BUSINESS	17,935,000	17,585,000	17,730,403	(145,403)	100.83%
FARMLAND	429,900	006'609	613,339	(3,439)	100.56%
MINING	23,900	23,900	23,937	(37)	100.16%
INFRASTRUCTURE	5,631,700	5,631,700	5,682,174	(50,474)	100.90%
TOTALS	77,929,100	78,129,100	78,498,135	(369,035)	100.47%
INTEREST CHARGES	238,000	238,000	89,962	148,038	37.80%
LEGAL COSTS RECOVERED	840,000	840,000	286,191	553,809	34.07%
PENSIONERS - Sec 575	(1,837,700)	(1,837,700)	(1,851,708)	14,008	100.76%
PENSIONERS - Sec 582	(389,800)	(389,800)	(370,007)	(19,793)	0.00%
PENSIONERS SUBSIDY	1,010,735	1,010,735	1,018,439	(7,704)	100.76%
SUB TOTAL	77,790,335	77,990,335	77,671,012	319,323	%65'66
DOMESTIC WASTE CHARGES	17,621,100	17,621,100	17,750,132	(129,032)	100.73%
COMMERCIAL WASTE CHARGES	444,600	444,600	522,676	(940'84)	117.56%
STORMWATER MNGMNT	1,138,000	1,138,000	1,040,751	97,249	91.45%
GRAND TOTALS	96,994,035	97,194,035	96,984,571	209, 464	99.78%
COLLECTIONS AS A % OF:	TOTAL	TOTAL		TOTAL	TOTAL
•	RECEIVABLE	LEVIED		RECEIVABLE	LEVIED
RESIDENTIAL	35.37%	36.27%			
BUSINESS	37.72%	38.71%	RATES	35.83%	36.80%
FARMLAND	25.69%	25.69%	WASTE	35.08%	34.82%
INFRASTRUCTURE	35.45%	36.77%	STORMWATER	36.31%	38.05%

ATTACHMENT 3

ATES STATISTICS

No. of documents Issued	July	August	September	October	August September October November December January	cember	January	February	March	April	May	June	0ct-14
Rate Notices	50,454	26		121									279
Electronic - DoH	5,427												
Instalment Notices				43,741									43,095
Electronic - DoH				5,389									5,499
Missed Instalment Notices			8,315										
- Pensioners > \$15.00			286										
Notice to new owner	105	51	41	21									8
7-day Letters - Council issued			2,073										
- Pensioners > \$500.00			170										
7-day Letters - Agent Issued			581										
Statement of Claim	209	29	13	220									231
Judgments	16	40	19	12									14
Writs	11	29	11	6									വ
eRates	1,543	1,601	1,611	1,640									1,364
Arrangements	351	298	373	396									406

4. HUMAN RESOURCES

No reports this round

5. INFORMATION MANAGEMENT AND TECHNOLOGY

5.1 Online Report - November 2015

Reporting Officer

Manager Information Management and Technology

Attachments

Online Report – January to September 2015 (contained within this report)

Purpose

To advise Council on a change to the format of the report on the visitation patterns for Council's website.

Report

The Manager of Communications and Marketing has previously supplied quarterly reports to Council on the visitation patterns for Council's, Fishers Ghost and Visit Macarthur websites as well as our eNewsletter statistics. This information was supplied in a text format and included a table.

The Online Strategy Working Group have recommended a change to the reporting format in order to bring the statistics to life, and to provide Council with a snapshot of Council's overall online presence.

An example of the new format is attached.

Future report inclusions

To provide Council with information on Council's overall online presence, the report will include:

- Council website
- Fisher's Ghost website
- Visit Macarthur website
- Campbelltown Arts Centre website

- eServices
- eNewsletters
- Facebook and social media.

As well as providing regular information (site visits, popular pages etc) the report will share highlights on a particular focus (for example, eServices, which is the focus of the attached report).

Future reporting periods

Suggested future reporting periods are:

- February 2016 Report for the period July December 2015
- August 2016 Report for the period January June 2016
- February 2017 Report for the period July December 2016.

Officer's Recommendation

That the information be noted.

Committee's Recommendation: (Lake/Greiss)

That the Officer's Recommendation be adopted.

CARRIED

Council Meeting 15 December 2015 (Mead/Lake)

That the Officer's Recommendation be adopted.

Council Resolution Minute Number 235

That the Officer's Recommendation be adopted.

ATTACHMENT 1



Online Reporting with eServices focus: Jan – Sep 2015

What eServices are available?

Pay it

- My rates notice
- · My child care fees
- My tax invoice

Report it

- Bushfire hazards enquiry
- Graffiti
- · Missing or damaged sign
- Potholes
- · Missed bin collection
- Damaged / Stolen bin
- · Illegally dumped rubbish
- Loose litter
- Anti-social driver behavior
- Damage to private property caused by a Council tree

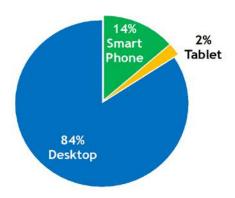
Book it

- · Kerbside clean up
- Sports Ground bookings enquiries
- Facility hire booking enquiries
- Annual Event: Mayor's Charity Race Night

Apply for it

- Residential Vehicle Crossing
- Council tree pruning
- Council tree branch(es) collection
- Council tree infestation
- Council tree inspection/removal enquiry
- Council tree damage to private property
- Job Applications
- Register for eRates
- Change my contact details
- Conference: EACS Biennial Conference
- Annual Awards: Australian Day Award Nominations

eService lodged on a device



Desktop is still the preferred device to lodge requests but mobile device lodgments continue to grow

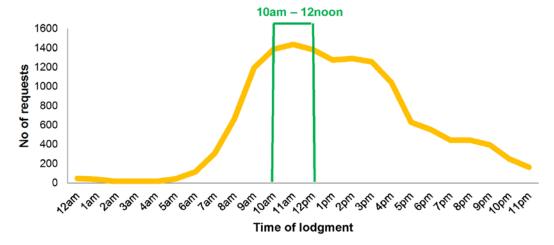
Top 4 eService lodgments by our Community & breakdown*

	lodgment	lodgment
Kerbside cleanup	28, 236	5,916
Illegally dumped rubbish	771	1,748
Damaged bins	325	2,409
Missed service(bins)	267	5,451
Vehicle crossing application	137	395

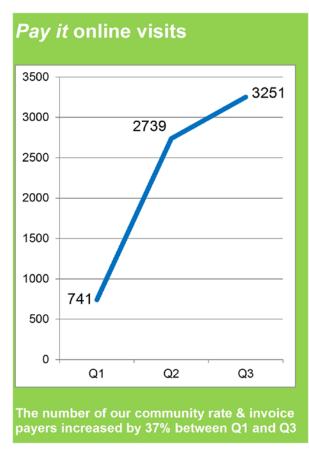
Recent Competition entry breakdown

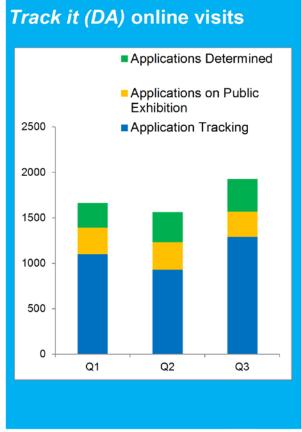
	Online entries	Paper entries
Fishers Ghost Art Award	316	115
Macarthur Nature Photography Competition	142	158
Parliament of NSW Aboriginal Art prize	55	16

Time of eService lodgment

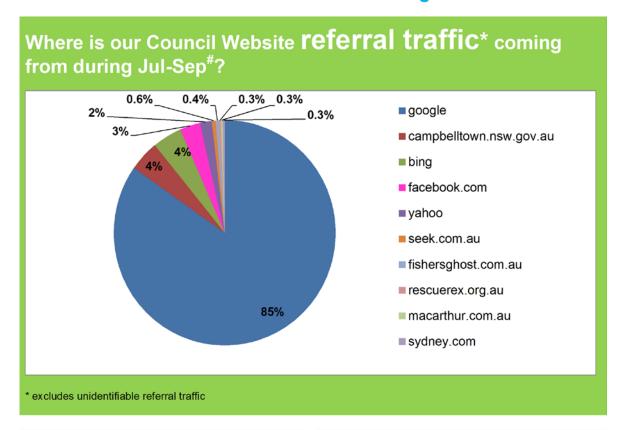


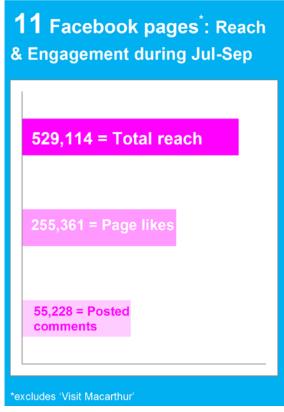
The peak time of eService lodgment by our community is between 10am and 12 noon

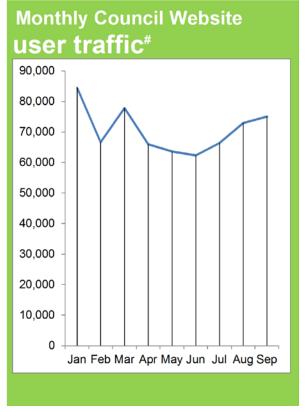




Council Website and Social media traffic insights...







Top 10 document downloads during Jul-Sept#

- Campbelltown Urban Area Local Environmental Plan 2002 Zoning Maps: 3,069
- Campbelltown Sustainable City Development Control Plan 2014: Part 3 -Dwelling houses Narrow lots Multi Dwellings and Residential Subdivision: 1,017
- Fishers Ghost Art Award :: FULL LIST OF 2015 FINALISTS: 980
- 4. Financial information :: Schedule of Fees and Charges: 789
- 5. When do my bins get emptied :: Zone Map: 779
- 6. Development Forms and Checklists:: 149 Certificate Application Form: 614
- Campbelltown Sustainable City Development Control Plan 2014 _ Part 2 -Requirements Applying to all Types of Development: 598
- Improvement works parks: 559
- 9. When do my bins get emptied Zone A: 478
- 10. Bushfire Prone Lands Map: 473

Top 10 viewed pages during Jul-Sept#

- 1. Home page: 65,507
- 2. Library: 32,497
- Current positions vacant: 20,419
- Dogs and cats for sale:19,967
- 5. Positions vacant: 19,310
- 6. Search: 18,850
- 7. Small dogs and puppies for sale: 12.683
- 8. Need a kerbside clean up? 10,767
- 9. Medium dogs for sale: 10,639
- 10. Animal Care facility: 9792

All Council Website stats exclude internal traffic.

Top 10 keywords during Jul-Sept#

- 1. history: 107
- 2. forms: 79
- 3. 149: 78
- 4. Jobs: 75
- 5. Zoning: 62
- 6. Google: 51
- 7. Flood: 49
- 8. Rates: 49
- 9. Dcp: 48
- 10. Maps: 48

6. INTERNAL AUDIT

No reports this round

7. GENERAL BUSINESS

7.1 Hurlstone Agricultural High School

Committee's Recommendation: (Chanthivong/Kolkman)

That this Council:

- (i) Recognise the value of green open space at Hurlstone Agricultural High School (AHS) and its farm to the people of Campbelltown and South West Sydney.
- (ii) Recognises and reaffirms the value and prestige of Hurlstone AHS at Glenfield as one of NSW's finest schools and its educational value to South West Sydney.
- (iii) Remind the Baird Liberal Government and Minister Piccoli in particular of their previous opposition to any sale of Hurlstone AHS and its farm.
- (iv) Remind the Baird Liberal Government and Minister Piccoli in particular of their previous opposition to any sale of Hurlstone AHS and its farm.
- (v) Condemns the Baird Liberal Government and Minister Piccoli for their hypocrisy in the proposed total sell off of Hurlstone AHS and its farm to property developers.
- (vi) Calls on the Baird Liberal Government to abandon the proposed sell off of Hurlstone AHS and its farm.
- (vii) Re-endorse the Councils original motion as moved by Hawker/Rule in December 2008 calling for Hurlstone AHS and its farm to be heritage listed and Councils subsequent submission to the independent Peters inquiry.
- (viii) Calls on the Baird Liberal Government to implement the recommendations in the 2009 Peters Inquiry and make further investment in education into Hurlstone AHS and its farm at Glenfield from the proceeds of its recent \$10.3b sale publicly owned electricity asset.
- (ix) Reaffirm its support for Councils motion as moved by Oates/Rowell in December 2009 opposing the sale of Hurlstone AHS and its farm.
- (x) Requests that the Mayor and General Manager seek an urgent meeting with the Premier and Minister for Education outlining Council's total opposition to the sale of Hurlstone AHS and its farm and the relocation of Hurlstone AHS to Hawkesbury.

(xi) Organise a community rally and information forum in early 2016 to voice our community's opposition to the proposed sell off of Hurlstone AHS and its farm to developers.

CARRIED

Council Meeting 15 December 2015

Item 7.1 - Hurlstone Agriculture High School was moved forward and dealt with in conjunction with Planning and Environment Committee Item 5.1 - Hurlstone Agriculture High School.

7.2 Parkside Drive - Park Central

Councillor Borg referred to recent incidents in Parkside Drive, Park Central which have caused some concern for our local community.

Councillor Borg noted that at night the area is isolated and very dark and is a known area for drugs, vandalism and crime.

Councillor Borg asked the Director City Works for this matter to be listed on the 2016 Inspection listing for February and that feasibility be given to closing off the laneway between Park Central and the Ambarvale Sporting Fields.

Committee's Recommendation: (Borg/Kolkman)

That the Parkside Drive, Park Central be listed for an inspection in February 2016.

CARRIED

Council Meeting 15 December 2015 (Mead/Lake)

That the Committee's Recommendation be adopted.

Council Resolution Minute Number 235

That the Committee's Recommendation be adopted.

Confidentiality Motion: (Greiss/Kolkman)

That the Committee in accordance with Section 10A of the *Local Government Act 1993*, move to exclude the public from the meeting during discussions on the items in the Confidential Agenda, due to the confidential nature of the business and the Committee's opinion that the public proceedings of the Committee would be prejudicial to the public interest.

CARRIED

23. CONFIDENTIAL ITEMS

23.1 Multi Deck Car Park 24 Hour Feasibility Operation

Reason for Confidentiality

This report is **CONFIDENTIAL** in accordance with Section 10A(2)(c) of the *Local Government Act 1993*, which permits the meeting to be closed to the public for business relating to the following: -

(c) information that would, if disclosed, confer a commercial advantage on a person with whom the council is conducting (or proposes to conduct) business.

Motion: (Kolkman/Mead)

That the Committee in accordance with Section 10 of the *Local Government Act 1993*, move to re-open the meeting to the public.

CARRIED

There being no further business the meeting closed at 6.10pm.

C Mead CHAIRPERSON

REPORTS FROM OFFICERS

8. REPORT OF GENERAL MANAGER

No reports this round

9. REPORT OF DIRECTOR BUSINESS SERVICES

9.1 Reports Requested

Attachments

Status list of reports requested (contained within this report)

Report

Attached for the information of Councillors is a status list of reports requested of Council as at 17 November 2015.

Officer's Recommendation

That the information be noted.

Council Meeting 15 December 2015 (Matheson/Thompson)

That the Officer's Recommendation be adopted.

Council Resolution Minute Number 236

That the Officer's Recommendation be adopted.

ATTACHMENT 1

Reports Requested as at 17 November 2015

*Date of Decision *Mover *DocSet	Item/Comments	Div.Resp	Comp Date
11.02.14 MO 3714105	CCS20.1 - That a report be presented at the end of the 2014 season comparing the financial returns with the previous returns from 2013 regarding the Wests Tigers proposed hire fee. Comment: on hold.	CS	March 2016
03.06.14 BT 3859092	CS3.5 - That a report be provided examining the feasibility of establishing an 'artist walk' as part of the new street scape in Queen Street, Campbelltown. Comment: proposal cannot be undertaken until City Works report on footpath upgrades is completed.	CS	March 2016
29.7.14 PL 3934158	CG3.3 - Report identifying alternative methods for managing the hire of Council's sporting fields. Comment: Sport and Recreation plan currently being commissioned.	CS	February 2016
24.04.15 MO 4275729	CS2.1 - That a further report be provided to Council: outlining the National Disability Insurance Scheme transition process once this information becomes available. on the Regional Assessment Service once details on the funding and service requirements are available. Comment: Information not available at this time to report NDIS transition.	CS	February 2016
21.07.15 WG 4388307	CS8.1 - That a report be presented outlining the feasibility of supporting major local sporting bodies that attempt to acquire defibrillators. Comment: Report provided to Community Services meeting held 8 December 2015 - Item 6.1.	CS	

*Date of Decision *Mover *DocSet	Item/Comments	Div.Resp	Comp Date
12.11.13 WG 3563387	CW1.2 - Further report on the findings of the Expressions of Interest for footpath reconstruction in Queen St Campbelltown. Comment: Report provided to City Works Committee meeting held 8 December 2015 - Item 1.3.	CW	
06.05.14 PL 3815091	CW5.2 - That a report be presented outlining the feasibility and cost of purchasing and erecting electronic signs in the Campbelltown Local Government Area along major transport corridors, to promote Council and other community events. Comment: Report provided to City Works Committee meeting held 8 December 2015 - Item 1.2.	CW	
18.08.15 PH 4439247	CW1.4 - That a further report be tabled for Council consideration upon completion of the specialist consultant's investigations on possible large scale reforms to the street lighting network and on the option of converting the complete network to an LED solution and possible Council ownership of the network. Comment: Report drafted, awaiting briefing date.	cw	April 2016

*Date of Decision *Mover *DocSet	Item/Comments	Div.Resp	Comp Date
18.6.13 PL 3450946	CG3.1 - Further report following expressions of interest on the ground lease in Blaxland road. Comment: Subject to marketing timeframe.	BS	February 2016
29.7.14 PL 3934173	CG2.2 - Further report prior to entering into a licence agreement for the provision of a coffee cart operation within the Campbelltown Civic Centre building. Comment: Undertaking an amended marketing campaign through an agent for a café opportunities on Council land.	BS	February 2016
16.09.14 GG 3998030	 DR9.4 - That Council provide support for the Werriwa ACLGP Committee to submit an application for funding to install a 9 metre tapered white powder coated flagpole, plaque and Lone Pine seedling at the Soldiers Memorial Park, Ingleburn. That in recognition of Council's belief in the principle of transparency and prudent decision making, a report be presented to this Council highlighting how this rose garden came about and detailing the events associated with the construction of the rose garden. Comment: Part 1 complete. Still awaiting the outcome of the investigation. 	BS	February 2016
14.10.14 RK 4033794	CG2.3 - 4. That a further report will be submitted to Council once a draft VPA/Infrastructure Services Delivery Plan (ISDP) have been finalised which will deal with the compulsory acquisition/land transfer issues concerning the whole of the Claymore Urban Renewal Project. Comment: Still in the process of finalising the VPA/ISDP with Urban Growth. Currently awaiting response from Urban Growth.	BS	March 2016
17.02.15 PH 4188336	CG2.1 - That Council note the information contained in this report and that a further report be submitted to Council once the Roads and Maritime Services has made an offer for the compulsory acquisition of the land. Comment: RMS has indicated it will compulsorily acquire the land. This is a 6-9month process.	BS	June 2016

*Date of Decision *Mover *DocSet	Item/Comments	Div.Resp	Comp Date
13.12.11 BT 3421776	2.4PE - Further Report detailing the outcome of all submissions received as a result of the public exhibition of all Menangle Park documentation. Comment: discussions between the General Manager and State Government regarding infrastructure are yet to occur.	PE (EP)	March 2016
13.12.11 RK 3421767	2.5PE - Report following the exhibition period detailing all submissions and the outcomes of the exhibition - Draft Macarthur Precinct DCP. Comment: Placed on hold pending the outcome of Glenfield-Macarthur Urban Renewal Corridor.	PE (EP)	April 2016
5.6.12 RK 3068270	PE5.2 - Report outlining the role, procedures and limits of authority of the Land and Environment Court in so far as they affect amendments to development applications made as part of the Court proceedings. Comment: further information is being investigated and considered.	PE (DS)	February 2016
18.6.13 RK 3451045	PE2.4 - Report identifying what impact the creation of the Local Land Services will have on the Campbelltown LGA. Comment: Rating structure report not yet released by Government.	PE (EP)	April 2016
16.7.13 RK 3483315	PE4.1 - Further report to review implementation of the draft Swimming Pool Barrier Inspection Program including the cost and resourcing implications after 12 months of the programs implementation. Comment: Trial completed mid December 2014, information being collated. Additional time required to assess impact of the implementation of the provisions of the Swimming Pools Act 1992 requiring pool owners to obtain a Certificate of Compliance before selling or leasing their property commencing on 29 April 2016	PE (CS)	August 2016
14.10.14 CM 4033787	CG6.1 - 1. That a report be presented on the development application process, particularly as it relates to residential and small business, regarding: (i) DA approval times — including a comparison to Camden and the councils that fall within the Group 7 Metropolitan Fringe category of the Office of Local Government's Comparative Data publication. (ii) The types of developments which require approval in Campbelltown but do not require approval in other similar councils (e.g. Group 7 councils and Camden). 2. That Council contact the NSW Business Chamber and the local Chambers of Commerce and report on their suggestions regarding: (i) How Council could streamline the DA process for small business. (ii) Any developments currently requiring approval which they believe would be appropriate to be made exempt. Comment: Investigating further exempt opportunities. Letters sent to NSW Business Chamber and local Chambers of Commerce on 22 July providing 28 days for response - still waiting for responses.	PE (DS)	February 2016

*Date of Decision *Mover *DocSet	Item/Comments	Div.Resp	Comp Date
21.07.15 MO 4388310	PE5.1 - That a report be presented outlining how Council monitors and controls Affordable Housing properties in terms of occupancy and rental pricing. Comment: Report provided to the Planning and Environment Committee meeting held 8 December 2015 - Item 3.2.	PE (DS)	
18.08.15 MO 4439120	PE4.2 - That a further report be provided to Council on the reestablishment and amendment of the Alcohol Free Zones at the completion of the period for comment by the organisations/groups. Comment: Report provided to the Planning and Environment Committee Meeting held 8 December 2015 - Item 4.2.	PE (CS)	
27.10.15 GG 4526199	PE5.2 - That Council's Public Notification Policy, in respect to Development Applications, be reviewed and a report provided back to Council recommending options for a more comprehensive community notification process.	PE (EP)	February 2016

*Date of Decision *Mover *DocSet	Item/Comments	Div.Resp	Comp Date
29.7.14 PL 3934241	CW5.1 - detailed report on the Leumeah Sports Precinct by the Strategic Planner for a new 40,000 seat sporting/entertainment complex with parking facilities to include both the eastern and western side of the railway line. Comment: scoping investigations proceeding.	Strategy (DSt)	March 2016
29.7.14 GG 3939939	PE5.3 - Report investigating possible further partnerships with University Western Sydney, Campbelltown and Campbelltown TAFE. Comment: Awaiting outcome of further discussions with TAFE and UWS concerning potential economic development initiatives. UWS Vice Chancellor Professor Glover presented a briefing to the Councillors in May on initiatives by UWS. Continues to be under investigation. Strategic partnerships involving WSU's Innovation Corridor Strategy and Campbelltown/Macarthur Integrated Health Hub under active examination.	Strategy (DSt)	March 2016
17.02.15 GG 4189107	PE3.3 - 3. That a future report be presented to the Council which investigates options and identifies practical limits for a core Campbelltown CBD precinct, for the purposes of permanently varying the commercial parking rates within that precinct. Comment: Investigation to be undertaken in conjunction with review of Parking and Traffic Study for CBD. Parking strategy project brief has been distributed, awaiting EOI - scheduled for completion in January 2016.	Strategy (DSt)	February 2016
24.04.15 GG 4275787	PE2.6 - The Council receive a further report on a proposal to establish a Business Advisory Board following further consultation with the Campbelltown and Ingleburn Chambers of Commerce. Comment: Continues to be under investigation.	Strategy (DSt)	March 2016

9.2 Progress Report: Amounts Expended on Providing Facilities and Payment of Expenses - Mayor, Deputy Mayor and Councillors November 2015

Attachments

Nil

Report

On 15 September 2015, Council reviewed its policy concerning payment of expenses and provision of facilities to the Mayor, Deputy Mayor and Councillors.

Section 217 (a1) of the *Local Government (General) Regulation 2005* requires councils to include additional information for inclusion in annual report:

- (a1) details of the total cost during the year of the payment of the expenses of, and the provision of facilities to, councillors in relation to their civic functions (as paid by the council, reimbursed to the councillor or reconciled with the councillor), including separate details on the total cost of each of the following:
 - the provision during the year of dedicated office equipment allocated to councillors on a personal basis, such as laptop computers, mobile telephones and landline telephones and facsimile machines installed in councillors' homes (including equipment and line rental costs and internet access costs but not including call costs)
 - (ii) telephone calls made by councillors, including calls made from mobile telephones provided by the council and from landline telephones and facsimile services installed in councillors' homes
 - (iii) the attendance of councillors at conferences and seminars
 - (iv) the training of councillors and the provision of skill development for councillors
 - interstate visits undertaken during the year by councillors while representing the council, including the cost of transport, the cost of accommodation and other out-of-pocket travelling expenses
 - (vi) overseas visits undertaken during the year by councillors while representing the council, including the cost of transport, the cost of accommodation and other out-of-pocket travelling expenses

- (vii) the expenses of any spouse, partner (whether of the same or the opposite sex) or other person who accompanied a councillor in the performance of his or her civic functions, being expenses payable in accordance with the *Guidelines for the payment of expenses and the provision of facilities for Mayors and Councillors for Local Councils in NSW* prepared by the Director-General from time to time
- (viii) expenses involved in the provision of care for a child of, or an immediate family member of, a councillor, to allow the councillor to undertake his or her civic functions.

These expenses are calculated on a monthly basis and reported to Council. Expenses for the month of November 2015 were as follows:

Expenses

Training Seminars and Conferences 1. \$6,186 Cost for November 2015. 2. Staff Personal Secretary for the Mayor on a shared basis with the General \$5,046 Manager, together with Receptionist shared with Corporate Services. Apportioned cost for November 2015. 3. Stationery and Postage \$7 Cost of Mayoral and Councillors' stationery, business cards and postage expenses. Approximate cost for November 2015. 4. **Periodicals** Cost of annual subscriptions. Cost for November 2015. \$178 5. Meals Provision of meals in conjunction with Council and Committee Meetings \$2,420 and Inspections. Cost for November 2015. 6. Refreshments Provision of refreshments in the Mayor's Suite and Councillors' Lounge \$750 and Civic Receptions. Cost for November 2015. 7. Insignia of Office Replacement costs Mayoral robes, chain, badge and name plates. \$127 Cost for November 2015. 8. Travelling Expenses for Use of Private Vehicle Reimbursement of travelling expenses on authorised Council business. \$350 Claims submitted for November 2015.

Provision of Facilities

1. Accommodation

Office located on the Third Floor of the Administration Building - costs are included in total maintenance and operating expenses of the Administration Building and apportioned on an area basis (3.5%). Cost for November 2015.

\$5,145

2. Communication System

Mobile telephone, personal computer or a laptop, personal digital assistant and combined printer, copier, scanner, facsimile machine and telephone answering machine provided for the Mayor and Councillors.

Cost of equipment for November 2015 in accordance with Councillors Policy.

\$1,522

3. Office Equipment

Facsimile machines, photocopier and telephone facilities for the Mayor and Councillors at the Civic Centre. Cost for November 2015.

\$463

4. Council Vehicle

Costs associated with the use of Council vehicles by the Mayor and Councillors on authorised Council business. All usage is subject to the prior approval of the Mayor. Cost for November 2015.

Nil

5. Internet Facilities

Costs associated with the provision of internet facilities in accordance with Council's Policy. Cost for November 2015.

\$1,021

6. Care Expenses

Costs associated with care arrangements including childcare expenses and the care of elderly, disabled and/or sick immediate family members.

Cost for November 2015.

Nil

The total cost for the payment of expenses and provision of facilities to the Mayor, Deputy Mayor and Councillors for November 2015 amounted to \$23,215.

Officer's Recommendation

That the information be noted.

Council Meeting 15 December 2015 (Borg/Lound)

That the Officer's Recommendation be adopted.

Council Resolution Minute Number 237

That the Officer's Recommendation be adopted.

10. REPORT OF DIRECTOR CITY WORKS

10.1 City Works Activity Report

Attachments

Activity Report (contained within this report)

Report

Works activities are proceeding to program and on demand and are outlined in the Activity Report. Statistics on graffiti are also presented in the Activity Report. It should be noted that the Activity Report continues to be reviewed to better reflect the areas and program/projects being undertaken by Council.

Officer's Recommendation

That the information be noted.

Council Meeting 15 December 2015 (Brticevic/Kolkman)

That the Officer's Recommendation be adopted.

Council Resolution Minute Number 238

That the Officer's Recommendation be adopted.

ATTACHMENT 1

OPERATIONAL SERVICES SECTION (Reporting period 26 October 2015 to 22 November 2015)

GRAFFITI

The Graffiti Action Team has for the period undertaken the following graffiti tasks to various Council assets. Downtime due to inclement weather conditions.

Area	Jan to March 2014	Apr to June 2014	July to Sept 2014	Oct to Dec 2014	Jan to March 2015	Apr to June 2015	July to Sept 2015	Oct 2015	Nov 2015
Area 1	1573	2343	3301	2706	2959	2212	2770	777	1087
Area 2	1169	1946	2228	2309	3285	1534	3260	311	974
Area 3	435	492	848	570	1384	1122	1453	300	463
Area 4	887	2102	2368	1852	2730	1888	2429	404	1195
Total	4044	6883	8745	7437	10358	6756	9912	1792	3719

Council's contractor has removed 7sqm of graffiti from Council's public facilities throughout the local government area.

During the reporting period 2 Graffiti Removal Kits have been requested by the Community.

	Apr to June 2014	July to Sept 2014	Oct to Dec 2014	l	Apr to June 2015	July to Sept 2015	Oct 2015	Nov 2015
13	18	16	12	32	4	22	1	2

OPEN SPACE

Activity	Area 1	Area 2	Area 3	Area 4	Total
Servicing of Parks and Reserves (Sites)	90	41	41	32	204
Road Verges (Sites)	43	19	19	31	112
Community/Childcare Centre's (Sites)	2	2	5	1	10
Servicing Laneways (Sites)	103	108	43	0	254
Litter/Rubbish Pickup	68	68	26	18	180
Herbicide Spraying (hrs)	34	25.5	8.5	8.5	76.5
Mulching (m ³)	0	0	0	0	0
Garden Maintenance	0	0	0	0	0
Garden Refurbishment	0	0	0	0	0
Top Dressing (hrs)	0	0	0	0	0
Aeration of Fields	0	0	0	0	0
Sharps Pickup	0	0	0	0	0
Pathway Requests	13	8	4	8	33
Tractor Road Verge (Sites)	22	8	1	10	41
Tractor Servicing Parks and Reserves (Sites)	28	31	37	18	114
Cemetery	0	0	0	0	0
Fire Hazard Reduction	0	4	1	0	5
Road Crews Servicing Parks	0	0	0	0	0
Refilling of Sandpits	0	0	0	0	0

HORTICULTURE

Activity	Area 1	Area 2	Area 3	Area 4	Total
Servicing of Parks and Reserves (Sites)	29	25	23	17	94
Road Verges (Sites)	22	15	21	21	79
Community/Childcare Centre's (Sites)	9	12	11	7	39
Cemetery	0	0	0	0	0
Tractors Servicing Sporting Fields	32	26	36	28	122
Litter/Rubbish Pickups (hrs)	25	37	24	19	105
Herbicide Spraying (hrs)	20	25	35	25	105
Mulching (m³)	0	0	0	0	0
Garden Maintenance (Sites)	52	27	31	32	142
Garden Refurbishment (Sites)	3	2	0	0	5
Top Dressing (tonne)	2	4	16	11	33
Aeration of Fields (Sites)	0	3	10	9	22
Sharps Pickups	0	0	0	0	0
Miscellaneous Requests	4	5	3	1	13
Refilling of Sandpits	0	3	0	0	3
Plumbing	18	10	19	11	58
Placing of goal posts (Sites)	0	0	0	0	0
Cricket Wicket Maintenance	25	26	44	27	122

HORTICULTURE ACTIVITIES

Koshigaya Park - The landscaping and electrical work for the Christmas tree has now been carried out.

HMAS Sydney - Planting and mulching of the site has been completed.

Apex Park - Preparation for stage one is complete. Landscaping and mulching for stage one will be undertaken within the next two weeks.

Mulching - Mulching activities in various locations within Glen Alpine have been conducted.

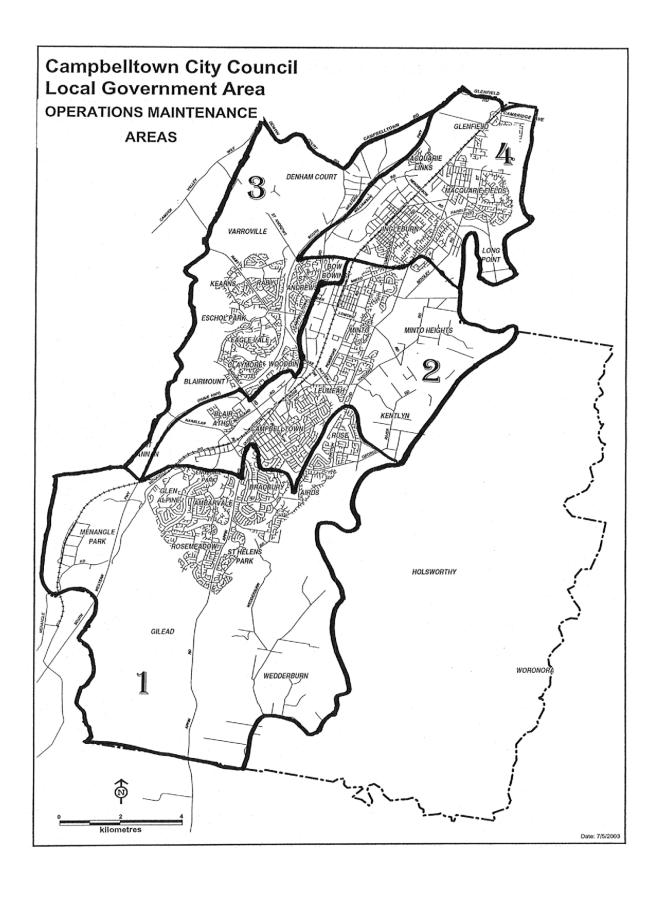
Mawson Park - The refurbishment and additional planting of existing gardens within Mawson Park has commenced.

COUNCIL TREE INSPECTIONS

Activity	Area 1	Area 2	Area 3	Area 4	Total
Contract	13	17	30	15	75
Council	81	44	60	33	218
Termites	0	1	0	1	2
Plumber - Sewer Chokes	0	0	0	0	0
N/A	6	5	9	8	28
HOLD	0	0	1	1	2
Total	100	67	100	58	325

PRIVATE PROPERTY TREE INSPECTIONS

Activity	Area 1	Area 2	Area 3	Area 4	Total
Private Trees	15	9	6	25	55



ROADS AND DRAINAGE

A. HEAVY PATCHING - Roads And Footpaths

Activity	Area 1	Area 2	Area 3	Area 4	Total
Road repairs heavy patching (sqm)	24	86	146	76	332
Road restorations (sqm)	14	14	6	0	34
AC Base Course Total (T)	9	23	26	12	70

B. MINOR PATCHING - Roads And Footpaths

Activity	Area 1	Area 2	Area 3	Area 4	Total
Pot holes (no.)	110	83	370	166	729
Edge breaks (LM)	54	21	44	39	158
Restorations (sqm)	40	61	27	5	133
Car parks pot holes (no.)	81	259	0	9	349
Trip Hazard Footpaths (no.)	0	8	0	0	8

C. ROADS RESERVE OPENING & RESTORATIONS

Activity	Area 1	Area 2	Area 3	Area 4	Total
Vehicle crossings constructed	14	17	22	15	68
Telstra Inspections	1	0	4	2	7
Sydney Water inspections	0	1	2	1	4
Endeavour Energy Inspections	0	2	1	0	3
Jemena Gas Inspections	2	1	3	0	6
NBN	0	0	10	0	10
Customer & Road Opening requests	2	4	8	3	17

D. MULTI FUNCTIONAL VERGE

Activity	Area 1	Area 2	Area 3	Area 4	Total
Cleaning of gross pollutant trash	2	1	0	0	3
Pits cleaned by hand or suction	61	27	187	17	292
Tail out drains/headwalls	3	12	0	5	20
Removal of waste matter (m ³)	3	26	11	25	65
Flushing of stormwater lines (LM)	2070	500	350	950	3870
Underpass (drainage) cleaning	0	2	0	2	4
Trip hazards/footpath hazards	8	23	4	9	44
Dead animals removed	4	2	0	3	9
Parra webbing drainage	1	4	0	11	16
Sign retrievals and straightening	3	0	4	0	7
Syringes	5	164	5	0	174
Deliver and set up at venues	5	4	0	2	11
Paver repairs (sqm)	0	0	5	0	5
Oil/ paint spill/debris on road	2	6	5	2	15
Median cleaning/poisoning (LM)	392	5	224	327	948
Guide Posts	1	2	0	1	4

E. STREET ACCESSORIES - Sign Manufacturer

Activity	Area 1	Area 2	Area 3	Area 4	Total
Regulatory signs	2	14	18	4	38
Street signs	11	6	0	3	20
Ordinance signs	0	4	0	0	4
Directional signs	0	0	0	0	0
Warning signs	2	5	0	0	7
Community signs	0	4	0	0	4
Various council signs	6	6	6	6	24
Council special events	0	48	0	0	48
Banners/ Posters	0	0	0	0	0
Various Stickers / Labels	0	0	0	0	0
Total	21	87	24	13	145

Sign Erection

Activity	Area 1	Area 2	Area 3	Area 4	Total
Regulatory signs	73	77	0	57	207
Street signs	17	9	9	14	49
Ordinance signs	32	25	12	4	73
Directional signs	13	7	7	9	36
Warning signs	15	16	8	6	45
Community signs	56	30	4	10	100
Various council signs	0	0	0	0	0
Banner / Bin Installation	6	6	0	0	12
Graffiti Removal (sqm)	30	31	0	0	61
Works orders (traffic)	0	0	0	4	4
Bollard replacement/ repair	26	23	12	12	73
Line Marking/Car Park (sqm)	5	6	0	0	11

F. FOOTPATH RECONSTRUCTION PROGRAM 2015 - 2016

Stage 1A - 95% complete.

Stage 1B - 50% complete.

Stage 2 - 56% complete.

G. NEW FOOTPATH CONTRUCTION PROGRAM 2015 - 2016

Stage 1A - 60% complete.

Stage 1B - 0% complete.

H. KERB AND GUTTER RECONSTRUCTION 2015 - 2016

Stage 1 - 66% complete.

Stage 2 - 96% complete.

ROADS PROGRAM 2015 – 2016

70% complete.

J. OPERATIONS MINOR WORKS

HMAS Sydney Memorial - 100% complete.

Ingleburn CCTV Cameras - 60% complete.

Campbelltown CCTV Cameras - 35% complete.

Pedestrian Refuge Islands Evelyn Street, Macquarie Fields - 100% complete.

Solar Lighting Therry Road, Campbelltown – 100% complete.

K. CAPITAL WORKS

Eagle Vale Drive Road Stage 3 (Widening and Roundabout) - 82% complete.

Eagle Vale Drive Road (Wynn Street to Badgally Road) - 30% complete.

John Kidd Reserve Recreational Play Area – 99% complete, pending final turf installation.

Beverley Road Extension between Chamberlain and Warby Streets - 100% complete.

Noorumba Fire Trail Drainage Works and Embankment Stabilisation Works - 0% complete. Pending environmental assessment.

Lynwood Park Soccer Synthetic Turf Installation – 72% complete.

PLUMBERS ACTIVITIES REPORT

Irrigation Works - Council's irrigation team has been involved in maintenance activities and system checks across the LGA, works have involved changing sprinkler heads, repairing leaks, pump systems, damaged pipes, wiring problems and testing of systems.

WORKSHOP ACTIVITIES REPORT

Vehicles/Plant and Equipment, reported here, are items that have accrued abnormal downtime due to awaiting parts/service from suppliers or priorities.

Plant No	Item	Reason - Area of Repair	Repairer	Down Time Hrs
9203.02	Reach Mower	Excessive boom movement	CCC Workshops and Supplier	390 hrs

The following is a breakdown of the work performed since the last report **26 October – 22 November 2015.**

9203.02	The reach mower had worn out the bushes and pins in the main boom. Repairs are
	complete. Currently awaiting solenoid, which activates the front PTO (flail operation).
	Estimated delivery early December.

All previous reported repairs have been completed and vehicles/plant are back in service.

Tyre Repairs	42
Services carried out	46
Repairs to trucks	39
Repairs to heavy plant	22
Repairs to trailers	12
Tractors/implements	21
SES repairs	0
RFS repairs	3
Small plant repairs	64
Repair to cars	9
Repairs to mowers	38
Repairs to sweepers	4
Pathway requests (completed)	7

Of the reported repairs above 12 were out in the field.

The Workshops Solar panel main power switch was turned off. As a result the total amount remains the same as the previous month at **57,987 kWh** back to the grid.

The Workshop has also carried out the following duties:

- Manufacture and repair of various gates, locks, lock boxes and grates.
- · Trailer repairs and modifications.
- Manufacture and repairs of truck bodies.

HAZARD REDUCTION PROGRAM

Hazard Reduction Burning - No hazard reduction burning has been conducted in the reporting period.

Asset Protection Zones Maintenance - 17 hazard reduction treatments were completed in the reporting period, totalling an area of 9.9 hectares with 428 assets protected.

Fire Trails No fire trail maintenance has been undertaken in the reporting period.

Fire Trail Gates - 1 new gate has been installed on St Helens 1.8 fire trail.

Facilities Support Services

Customer Requests	
Sporting Clubs with overdue keys	42 Clubs with 432 keys outstanding
Key access renewals, issues, alarm codes and access	620
Request for access to Council Reserves	5

ASSETS AND SUPPLY SERVICES

Procurement and Contract Management Services

Tenders/Quotes/Expressions of Interest and Agreements:

Tenders/Quotes currently being prepared:

- Q15/30 Visual Defects Assessment for Road Pavements and Surfacing
- T15/16 Irrigation Services
- T15/17 Traffic Signals on Eagle Vale Drive
- T15/19 Supply and Construct Recycling Shed at SITA site
- T15/20 Design and Construct Workshop at SITA site
- T15/31 Plumbing Services
- T15/32 Building Demolition Services
- T16/01 Roofing Services

Tenders/Quotes currently advertised:

Q15/28 Removal and Relocation of Tennis Court Surface

Tenders/Quotes currently under evaluation:

- Q15/13 Pre-Employment Medical
- Q15/27 Kerb and Gutter Reconstruction Program
- T15/14 Catering at Campbelltown Sports Stadium
- T15/18 Street Lighting on Eagle Vale Drive Between Badgally Road and Wynn Street
- T15/21 Crane Truck
- T15/22 WHS Auditing and Consulting Services
- T15/24 Minto Indoor Sports Upgrade
- T15/28 Grounds Maintenance at Airds, Claymore and Macquarie Fields
- T15/30 Cleaning of Public Toilets and Sporting Grounds Amenities

ASSET MANAGEMENT

Roads

- Annual Road Inspection 2015-2016 by Council Staff is 58% completed.
- Visual and Laser Survey on Campbelltown City Council's Road Network by Consultant is 90% completed.
- Overall Road Renewal Program 2015-2016 is 81% completed.

Car Parks

Car Park Inspection 2015-2016 is 5% completed.

Bridge and Culvert

- The Specification for Safety Barrier Fencing Repair at Stennett Road Bridge and Minto Road Major Culvert is completed and ready to send to contractors for pricing.
- The Level 3 Inspection at Mandurama, Reserve Pedestrian Bridges have been sent to contractors for pricing.

Kerb and Gutter

The Kerb and Gutter Inspection Program for 2015-2016 is 100% completed.

Footpath

- Footpath grinding program have been awarded.
- The footpath marking for Stage 3 program is in progress.
- The footpath condition inspection to start after the completion of Stage 3 footpath program marking.

Stormwater

Stormwater pits inspection for 2015-2016 is 68% completed.

Parks and Public Spaces

- 553 assets have been inspected at Sports Grounds in the Local Government Area. This is a total of 100% of Sports Ground assets inspected to new inspection parameters.
- 72 assets have been inspected at Parks and Reserves in the Local Government Area. This is a total of 3% of Parks and Reserve assets inspected to new inspection parameters.
- Condition inspections for 100% of Miscellaneous Assets have been completed and details updated in Council's Asset Management System.
- All reactive issues discovered have been reported and all conditions and actions have been
 updated in Council's Asset Management System.
- Rejuvenation of timber furniture and decking at Robinson Reserve, Macarthur Gardens has been completed. The gazebo structure has also been repainted and roof installed.
- Simmos Beach Steps (South) construction. Work to commence February 2016.

Building Inspections

- Building inspections are 100% up to date.
- 46 "Other structure" assets have been inspected.
- · Total of 97% inspected.
- All reactive issues discovered have been reported and all conditions and actions have been
 updated in Council's Asset Management System.

Playground Equipment

- Reactive Repairs Reactive repairs have been issued for one location.
- Operational playground inspections have been completed.
- Playground Program Maintenance has been completed at the following locations:

Alabaster Park, Eagle Vale Cronulla Reserve, Woodbine Ashfield Reserve, Glen Alpine

- · Replenishment of softfall mulch is being carried out at 17 sites.
- Playground equipment has been removed from Rosemeadow Neighbourhood Centre and Dimeny Reserve, Claymore due to condition of equipment.

2015-2016 Innovative Play Spaces Program

- Designs and Quotations for the refurbishment of Macquarie Fields Indoor Sports Centre Playground have been obtained and are awaiting feedback from Healthy Lifestyles.
- Atlantic Boulevarde, Glenfield Playground Equipment Construction likely to begin March 2016.
- Construction is due to begin on new playgrounds in early 2016. Below are the indicative starts/ finish dates.
- Moncrieff Reserve 11 January, 2016 to 22 January, 2016.
- Merino Park 1 February, 2016 to 12 February, 2016.
- Gargery Reserve 15 February, 2016 to 26 February, 2016.
- Salter Reserve 19 February, 2016 to 2 March, 2016.

Internal Assets- Electrical Testing and Tagging

 19 items of electrical equipment have been tested at locations throughout Local Government Area.

Asset Management System, Grants and Reports

Roads and Maritime Services monthly report for November have been sent.

BUILDING MAINTENANCE/CONSTRUCTION PROGRAM

Reactive Maintenance 414

- St Helens Park Reserve Skate Park Works are continuing and are on track. Structural
 concrete in the bowl area completed 11 December. Erection of a pedestrian fence along
 Appin Road will commence on 9 December 2015.
- Fullwood Rugby League New Amenities Building Stage 2 works are on schedule and is expected to be completed late December 2015. Plumbing and drainage works are continuing.
- Animal Care Facility Cat accommodation has been installed along with stainless steel benches in the Vet room. This project is on hold until Animal Care Facility staff can be acquired to maintain this facility. Works to convert the old cattery will continue in the New Year.
- Greg Percival Library Installation of an 85 kwt photovoltaic system is now complete. This
 project went according to schedule despite some inclement weather.
- **Blinman Oval** At this stage of the project all steel work and roof has been erected, bricklaying will commence mid December.
- Civic Centre Stormwater rectification works will commence Saturday 19 December.
- The Gordon Fetterplace Aquatic Centre Splash Park A new textured surface and aquatic toys have been installed. The splash park is now operational.
- Eschol Park 3 Plans have been approved by the club to construct an internal storeroom and BBQ area. Works are due to commence late December 2015.
- Worrell Park Amenities The building has been demolished and all materials removed from the site and recycled. Setting out of the new building has commenced along with excavation and drainage.
- Ruse Hall Replacement of all timber doors is now complete.
- Glenquarie Community Centre Replacement of vinyl flooring throughout the main hall is now complete.
- Simmo's Beach Amenities All three amenities blocks polycarbonate roofing has been replaced and is operational.
- Hurley Park Storage Shed The storage shed has now been demolished and the surrounds made safe.

11. REPORT OF DIRECTOR COMMUNITY SERVICES

11.1 Multicultural NSW Grant Program Funding

Attachments

Nil

Purpose

To seek Council's endorsement of three funding submissions totalling \$35,000 to the New South Wales Government's, Multicultural NSW Grant Program funding round for the Campbelltown Twilight Tournaments, Council's Orientation to Campbelltown Tours and Council's Riverfest Festival.

Report

Twilight Tournaments - \$25,000 Funding Application

Twilight Tournaments will provide an opportunity to promote social cohesion between cultural groups and address anti-social behaviour amongst groups of young people. The inclusion of young refugees in broader community activities will be focus of this project. This will help develop a greater understanding of different cultures in the broader community.

If the application for funding is successful these tournaments will be run on Friday evenings during school terms one and four of 2016. Healthy physical activities such as futsal, volleyball and basketball will be used as a means of developing greater understanding and increasing social cohesion.

Activities would be held at Council outdoor facilities across the Local Government Area. Leading up to the tournaments there will be opportunities for participants to develop coaching and refereeing/umpiring skills. A range of local organisations from within the community will help the participants to gain knowledge and access to services.

As part of this \$25,000 funding application it is proposed to employ a temporary Tournament Project Officer for up to 10 hours per week for 12 months to develop and implement the project. The position will work in partnership with the Macarthur Multicultural Services Network, Macarthur Youth Services Network and other key community services and community leaders and will therefore be at no additional cost to Council.

Orientation to Campbelltown Tours - \$5,000 Funding Application

It is proposed to enhance Council's Orientation to Campbelltown tours by providing newly arrived culturally and linguistically diverse residents with access to, and understanding of the service system. Currently Council's tours include visits to Council facilities only, however if successful, this funding would allow Council to expand the tours for participants to include visits to health services, multicultural services, recreational facilities, parks and bushland.

It is proposed that these tours for newly arrived residents will provide an increased knowledge of and connection to facilities and services in the local area. This has previously been identified as an important aspect of the settlement process leading to opportunities to build relationships, understanding and community cohesion.

Riverfest Festival - \$5,000 Celebration Funding Application

Council's Riverfest Festival aims to highlight our culturally and linguistically diverse communities and engage the broader community into cultural activities to build community cohesions whilst recognising the ways different groups value and care for the natural environment.

The project to enhance the festival aims to support local groups from our culturally diverse communities to develop activities that will engage and promote understanding within the broader community of the various cultures represented in the local government area. The funding will provide the opportunity for community groups to undertake training on project planning and management as well as presentation and training skills. Groups will be offered the opportunity to apply for small amounts of funding to purchase resources to support their activities.

The expected outcomes of this project are linking existing and new cultural groups into the wider community; raising awareness of the value of diversity. It will also provide an opportunity to build upon existing resources and strengths across the community to better engage with culturally diverse residents.

The funding is a time limited grant up until the completion of Riverfest in 2016. The aims of the program are to enhance the outcomes of Riverfest that promote respect, fairness, and a sense of belonging for Australians from all backgrounds and focuses on inter-community harmony. The program also aims to develop community capacity building skills of diverse community residents with the purpose of building social cohesion and promote their positive contribution to the local community.

Officer's Recommendation

- 1. That Council endorse the three funding submissions totalling \$35,000 under the New South Wales Government's Multicultural NSW Grant funding for the Twilight Tournaments, Council's Orientation to Campbelltown Tours and Council's Riverfest Festival.
- 2. That subject to notification of success, Council delegates authority to the General Manager to accept and sign the Funding Agreements from the New South Wales Government Multicultural NSW Grant.

Council Meeting 15 December 2015 (Greiss/Lake)

That the Officer's Recommendation be adopted.

Council Resolution Minute Number 239

That the Officer's Recommendation be adopted.

12. REPORT OF DIRECTOR PLANNING AND ENVIRONMENT

12.1 Western Sydney Airport EIS - Peer Review and Submission

Attachments

- 1. Summary of Main Issues Arising in the Draft Western Sydney EIS Technical Reports (contained within this report)
- 2. Western Sydney Airport Environmental Impact Statement Peer Review Report (distributed under separate cover due to size of document)

Report

Introduction

On 15 April 2014, the Commonwealth Government confirmed Badgery's Creek as the site for the Western Sydney Airport (WSA). On 9 December 2014, Campbelltown City Council made the following resolution in relation to the WSA:

- That Council call upon the Federal Government to ensure that planning for the new Badgerys Creek Airport proceeds on the basis that it will maintain, as a minimum, a quality of life enjoyed by those who live and work near, or under the flight paths to, Sydney Kingsford Smith Airport – notably in respect to hours of operation.
- 2. That Council place the above motion on the agenda for the next meeting of MACROC seeking support from our MACROC partners to protect the quality of life of the residents of Macarthur.
- 3. That Council write to all Federal Members of Parliament in electorates potentially impacted upon by the Badgerys Creek Airport urging them to support Council's aim of preserving the quality of life of their constituents.

The WSA Draft Environmental Impact Statement (EIS) was released for public exhibition on Monday 19 October 2015 along with the Draft Airport Plan and submissions have been invited. The closing date for the public exhibition and the lodgement of submissions is 18 December 2015.

Due to the size and complex nature of the Draft EIS and the associated technical reports and other supporting information, an alliance of many WSROC and all MACROC councils commissioned WSP Parsons Brinckerhoff (the multi-national planning, engineering and design consultants) to conduct a peer review of the Draft EIS and Draft Airport Plan. The Consultants also engaged a range of specialist subconsultants to review specific technical reports. It was agreed that all participating councils could then use the findings of the peer review to inform their own submissions. At its meeting on 19 May 2015, Council considered a report on the proposed independent review of the Draft EIS and resolved:

- That if sufficient Councils participate to make this viable, Council
 participate in Blacktown City Council's proposal for a collaboration of
 south western and western Sydney councils to undertake an expert peer
 review of the Environmental Impact Statement for the proposed Western
 Sydney Airport.
- 2. That Council make a financial contribution towards the cost of the expert peer review at recommendation one above, equivalent to 7.4 per cent of the total cost (based on a pa pro-rata per cent of Campbelltown City's population compared to the total population for western and south western Sydney) up to a maximum of \$30,000.
- 3. That the funding of the financial contribution raised in recommendation two above, be considered as part of Council's September 2015 Quarterly Budget Review.
- 4. That Campbelltown City Council make a detailed submission against the proposed 24 hour operation of the Western Sydney Airport.

The expert peer review has now been completed.

This report provides a brief overview of the EIS and the findings of the expert peer review, and discusses the main issues of relevance for Campbelltown which can be considered by Council for inclusion in Council's submission.

The Proposed Western Sydney Airport

The Draft EIS describes the proposed WSA as a staged development. The Draft EIS and Airport Plan (which defines the proposed layout and land uses for Stage 1) consider an airport with an initial single runway with a maximum capacity of 185,000 aircraft movements (37 million passengers) per year by approximately 2050. Thereafter, a dual runway configuration is proposed with a maximum capacity of 370,000 aircraft movements per year (82 million passengers) by approximately 2063. The package also includes a document that addresses "Airspace and Architecture Operation" which nominates operation and flight paths associated with the airport.

The Draft EIS focuses on the Stage 1 works, which include construction of a single 3.7km runway on the northern part of the site able to cater for a full range of international and domestic passenger and freight aircraft, as well as a business park, parking and cargo facilities, and areas set aside for environmental conservation. The Draft EIS estimates that by 2030, approximately 10 million passengers and 63,000 aircraft would use the airport each year. This is equivalent to approximately 34 per cent of the total Stage 1 capacity of aircraft movements and 27 per cent of the total Stage 1 capacity of passenger movements. At this stage, site preparation works are proposed to commence in mid-2016.

The Draft EIS also provides a broad assessment of the fully established dual runway airport (post 2050). However, it acknowledges that due to the time frame for full development of the airport, a more detailed assessment will be required to fully understand the impacts of the project at that point in time.

The Draft EIS also notes that no operator has been nominated as yet for the construction and operation of the airport which means that the Draft Airport Plan will be subject to future detailed master planning and project development processes. This means that there is some degree of uncertainty about the proposed WSA, and in therefore in effect, key aspects of the Draft EIS can be argued to be indicative only.

Brief Overview of the EIS

The Draft EIS was prepared in what appears to be generally recognised in the expert consultant industry, as a compressed timeframe (i.e. eight months).

The Draft EIS is divided into four volumes:

- Volume 1 Project Background, provides an overview of the project
- Volume 2 Stage 1 Development, contains an EIS for the Stage 1 development (a single runway facility in 2030)
- Volume 3 Long Term Development, provides a strategic assessment of the long-term development (dual runway facility by 2063)
- Volume 4 EIS Technical Reports.

The Draft EIS, as required under the provisions of the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), seeks approval for Stage 1 (2030) and provides an indicative outline of the eventual proposed development (2063). It also includes a Draft Airport Plan, which is a transitional plan describing Stage 1 of the development. The Minister for Infrastructure is the proponent and the Minister for the Environment is the approval authority and can impose conditions on any consent issued under the *Airports Act 1996*. There is no role for NSW agencies in approving airport development.

The Expert Peer Review

The aims of the expert peer review were to determine the following:

- the efficacy of the draft EIS assessment and reporting processes
- the extent, scale and nature of likely economic and social benefits that stand to flow from the proposed airport
- the degree of significance and nature of likely environmental impacts, including any geographically localised impacts
- the identification of any constraints to the achievement of the benefits that could potentially accrue from the proposed airport, such as infrastructure 'gaps'.

The expert peer review was largely a desktop assessment undertaken over a three week period, given the allocated exhibition time of 60 days. There was no contact with the authors of the draft EIS and detailed reviews of the models used to underpin the draft EIS could not be undertaken as they were not made available. It should be noted that no additional modelling was undertaken as part of the expert peer review.

The expert peer review included an overall review of the Draft EIS and also focussed on the following key issues:

- aviation planning
- noise overflight noise and ground based noise and vibration

- traffic and transport
- air quality and greenhouse gas
- human health impacts
- social and economic
- biodiversity
- surface water and Groundwater
- impact on the Blue Mountains.

Key Findings of the Expert Peer Review

The expert peer review found that:

- the draft EIS was produced within an accelerated and compressed timeframe, leading to numerous issues relating to "adequacy" with a number of omissions and limitations being identified
- the Airport Planning is preliminary only (based on an indicative preferred airport layout) and therefore there are significant uncertainties
- there has been no consideration of alternative airport layouts or runway orientations, (which are a key determining factor of flight paths), and there is little indication of whether the indicative layout and runway alignments achieve the best environmental outcome i.e. there is no evaluation of different options
- there is limited justification and visibility/rigour/transparency behind the airport layout and flight paths
- it is unclear if the preferred flight path is the best option and there appears to be little rigour behind the identified flight path and alignment
- the Stage 1 assessment was based on airport throughput of 63,000 annual traffic movements (5 years after opening) but the maximum capacity of Stage 1 is 185,000 annual traffic movements (20 years after opening)
- there are a lack of mechanisms for delivering essential enabling infrastructure (such as the extension of the South West Rail Link)
- the general management and mitigation measures are not qualified and residual impacts are not discussed
- investigation of long term and cumulative impacts on long-term future urban growth and land use impacts is limited
- the proposed WSA has no curfew, and its impacts will therefore be felt 24 hours a day
- there is uncertainty over environmental impacts largely due to the indicative nature of the airport layout and flight paths
- the Draft EIS does not place explicit limits on key environmental impacts including airport noise – in many areas it does not provide assurances that acceptable environmental thresholds will not be breached
- proposed mitigation measures to deal with environmental impacts are generally not prescriptive and caps are not determined, largely due to the fact that no Airport Lessee Company (ALC) has been appointed and the Department of Infrastructure and Regional Development wishes to maintain flexibility over management and mitigation – this creates uncertainty over likely future impacts
- no detailed description of the expected or predicted effectiveness of proposed mitigation measures is provided
- a biodiversity offset package to compensate for the anticipated loss of habitat on the airport site has not been formalised
- the WSA will impact on the Blue Mountains World Heritage Area but further work is required to investigate the significance of the impact/s.

The expert peer review also raises a number of concerns regarding the approvals process:

- the Airport is subject to an untested approval process as the *Airports Act 1996* has not been used for a greenfield airport development in the past this creates uncertainty about how the approvals process will operate, however, it is implied that once the airport has been leased, all future approvals would be under the *Airports Act 1996*.
- a number of matters relating to approvals were found to be unclear:
 - the potential triggers for further referrals and (potentially) approvals under the EPBC Act
 - any further assessment and approval required for the construction and operation of Stage 1 (beyond the current EIS and associated Airport Plan approval) once an ALC is appointed and the actual airport layout and operations are more certain
 - the limitations that any EPBC Act approval may place on the airport
 - the level of community and stakeholder engagement that will be undertaken in future.

The expert peer review identified a number of concerns regarding the flight paths as presented in the Draft EIS:

- the Draft EIS makes clear that the flight paths have not been designed to minimise environmental (and in particular noise) impacts on communities
- no account has been taken of the existing smaller airports (Camden, Richmond and Bankstown), other than to note that these airports would be impacted in the long term
- there is no visibility/clarity in the Draft EIS about how the contours were determined or of how they compare to any alternatives
- the contours are indicative only and could be revised by a future Airport Lessee Company (ALC) without recourse to the EPBC Act, which creates significant uncertainty about what the actual impacts of the airport may be
- the merge point over Blaxland (the point at which all incoming flights converge) is noted.

The expert peer review also makes a number of recommendations regarding flight paths:

- greater consideration of alternative options is required, particularly with regard to minimising environmental impacts
- it is not clear whether or not the nominated flight paths represent the best option there is a lack of transparency regarding how and why these flight paths were chosen
- a holistic review of flight paths should be considered, taking account of all airports in metropolitan Sydney, and including options that allow for flight paths at Kingsford Smith to be modified
- as a future ALC may modify the flight paths from those used in the EIS, sensitivity testing should have been undertaken and included in the EIS to demonstrate the changes of noise impacts that would result if modifications are made
- the proposed use of a merge point (at Blaxland), and consideration of alternative merge points, should be further explored.

A summary of the main issues arising with the Draft EIS technical reports (as identified by the peer review) are summarised in Attachment 1.

Matters of relevance to the Campbelltown Local Government Area

1. Degree of Uncertainty

One of the issues to arise from the expert peer review, is that there is some lack of certainty associated with the draft EIS, relating to the future impacts of the WSA. This uncertainty stems largely from the fact that the Draft EIS was prepared on the basis of a concept airport with no identified operator nor confirmed details of operation (i.e. its purpose). Additionally, the airport layout and flight paths used as the basis of the Draft EIS appear to be indicative only, and therefore the full potential impacts could not be determined with any significant certainty.

It is a welcome fact that the flight paths nominated in the draft EIS present very little if any impact on the Campbelltown LGA in terms of over-flight noise disturbance.

Other parts of Western Sydney are likely to experience more significant over-flight activity at varying heights and with varying levels of impact. E.g. Lower Blue Mountains, Penrith LGA, Blacktown LGA, and parts of the Wollondilly LGA.

However, the flight paths nominated in the draft EIS for Stage 1 appear to have the potential to be changed and depending upon the location, nature and scale of any changes that do occur, the Campbelltown LGA could potentially be subject to different impacts.

As part of a recommended submission by Council to the draft EIS, it is considered important for Council to seek confirmation from the Federal Government that the flight paths presented in the draft EIS will be those that are actually implemented, and any approval conditioned accordingly.

2. No Curfew

As mentioned above, Council has previously raised its objections to any proposed 24-hour operation of the WSA. Disappointingly, the EIS does not impose a curfew on the proposed airport's operations.

Coupled with a level of uncertainty regarding the detailed design of the airport, its flight paths and operations, (both in the short and especially in the longer term) and the fact that airspace within the Sydney Basin will need to be completely reconfigured when the second runway eventually becomes operational, Council cannot be assured that the environmental and consequential amenity impacts of the airport will not be detrimental to the lifestyles of residents within the Campbelltown LGA. The recommended submission by Council to the exhibition of the draft EIS must incorporate Council's objection to "the no curfew" operation of the WSA, and seek confirmation of the Stage 1 flight paths as presented in the draft EIS documentation.

3. Noise Generation

The proposed WSA is located in Badgerys Creek, approximately 21kms from the Campbelltown CBD, and the Campbelltown LGA and Macarthur Region are well outside the noise contours for the proposed flight paths for Stage 1. There is, however, and as could be expected, less certainty concerning over-flight noise impacts associated with the longer term operation of the airport.

Given the location of the proposed WSA, it is highly unlikely that there will be any impacts of the Campbelltown LGA from on-site ground-based noise and vibration from both the construction and operational stages of the proposed WSA. Potential impacts associated with the development of other enabling and supporting infrastructure (such as road and rail) could impact, depending on their location.

4. Traffic and Transport – Road and Rail

The Draft EIS traffic analysis is considered to be limited. The expert peer review also found that the Draft EIS lacks mechanisms for delivering essential enabling infrastructure such as the South West Rail Link extension, and particularly its extension to the south towards Narellan and Campbelltown/Macarthur Regional City Centre. It is considered inappropriate and short-sighted to deliver the WSA without direct rail access that directly links back to the Sydney rail network, including the T2 Southern line which traverses the Campbelltown LGA. Reduced connectivity has the potential to severely compromise access to both the airport and to the benefits of economic growth and employment opportunities stemming from the airport.

The regional traffic impacts of the WSA are of concern to the Campbelltown LGA because the proposed airport and the economic development that it is likely to generate will also give rise to additional traffic on local and regional roads. If a connected rail link to the WSA is not established, then the long term implications for this regional and local network are questionable.

It is also noted that the supply of aviation fuel to the WSA is proposed to be via road transport rather than the establishment of a dedicated pipeline. This will significantly increase the presence of heavy vehicles carrying dangerous materials on local and regional roads, and will impact on traffic.

These "connectivity" concerns are fundamentally important to the Campbelltown LGA in two respects and are recommended to be raised in Council's submission on the draft EIS:

- Campbelltown City residents and those within the Macarthur Region (both today and in the future) deserve fair and efficient access to the airport facilities and associated employment opportunities associated with the airport precinct
- Campbelltown's local road network needs to be future proofed against a failure
 of the capacity limits of the regional road network to accommodate traffic and
 transport movements to and from the WSA precinct and attendant enterprise
 and employment precincts.

5. Air Quality and Greenhouse Gases

In terms of air quality, the effectiveness of the proposed mitigation measures to achieve compliance with relevant standards is not quantified. Importantly, the analysis of air quality did not include an assessment of the cumulative impact of the WSA, other major developments and current and future planned urban growth within the Sydney Basin and notably, within western and south western Sydney. A critical question that has not been clearly addressed is the quality of the air shed in the longer term (2063).

From a local perspective, it is imperative that the additional growth identified in the Glenfield to Macarthur Urban Corridor Strategy and in the Greater Macarthur Urban Investigation Area be factored into any air quality assessments related to the proposed WSA. This is an important issue for consideration for inclusion in the recommended submission to the draft EIS.

6. Environmental Impacts

The lack of understanding and certainty associated with the extent and nature of a range of likely environmental impacts of the WSA across western Sydney generally, is of some concern. It is difficult for Council to plan for the future and to inform the community and potential business investors about the impacts of the proposed airport on the Campbelltown LGA if the Draft EIS does not clearly describe what these impacts will be. It is therefore considered imperative that a further environmental assessment of the airport be undertaken once the ALC has been determined and there is greater clarity regarding the airport's purpose, layout and flight paths.

7. Economic Impacts

The development of the WSA has the potential to drive significant and enhanced economic and social outcomes for the future of Western and South Western Sydney, including the Macarthur Region and the Campbelltown Local Government Area (LGA). These would be welcomed benefits that communities could potentially draw upon to help sustain their future prosperity, but only if direct connectivity to the proposed airport via both road and rail is put into place.

However, the draft EIS does not specify how the potential for economic growth can be captured and developed or illustrate how the Campbelltown LGA can be connected into the potential economic growth opportunity, particularly via transport infrastructure. It is important for any EIS to clearly articulate such social benefits (and costs) and identify any requirements or conditions that would need to be met in order to maximise their positive impact. This is an important issue and considered worthy of inclusion in Council's submission to the draft EIS.

8. Cumulative Impacts and Flow-On Effects

There is limited assessment of the cumulative impact of the airport on long term future urban growth and land use on the immediate area surrounding the WSA and the broader western and south western Sydney context.

Given the significant nature and scale of this infrastructure project, it is considered imperative that an assessment of cumulative impacts be undertaken before the Draft EIS is finalised, and that future strategic and structure planning for the South West Region in particular take appropriate account of the WSA and its cumulative associative implications, in terms of:

- flight paths and noise
- traffic and transport accessibility
- air quality.

Conclusion

The Western Sydney Airport (WSA) is a substantial infrastructure investment that has the potential to drive the economic and social development of western and south western Sydney for decades to come, and can be considered a 'game changer' in a structural planning and regional development context.

The WSA will impact on Western and South Western Sydney and the Campbelltown LGA. Those impacts stand to be both positive and potentially less attractive, depending upon future choices that need to be made around the confirmation of flight paths and the means of mitigation of noise and other environmental impacts.

It can be anticipated with some reasonableness that other local government authorities and communities in other parts of Western Sydney may express an objection to the EIS and seek the Federal Government's review of matters associated with flight paths, noise impacts, implications for biodiversity and wilderness areas, and transport and traffic access.

It is considered essential that Council express its support to the Federal Government for a restriction of actual the flight paths to those which are presented in the draft EIS, and seek its confirmation that these flight paths are those that will be approved and enforced (as conditions of any approval) as the flight paths followed for Stage One of the Airport operation.

At the same time, and noting that Council has previously decided to make a submission to the Federal Government against the proposed 24 hour (no curfew) operation of the WSA, it is recommended that such submission express Council's disappointment that the draft EIS does not adequately address impact mitigation measures including the imposition of a curfew. It is further recommended that Council's submission make specific mention of the range of items raised in the above report.

Officer's Recommendation

- 1. That Council express its appreciation to WSROC and MACROC for coordinating the expert peer review process.
- 2. That Council forward a submission on the Western Sydney Airport draft EIS (and its supporting documents) to the Department of Infrastructure and Regional Development consistent with the matters raised in the above report.

- 3. That Council's submission reiterate its opposition to the proposed 24 hour operation of the WSA, and call for the *Sydney Airports Curfew Act 1995* to apply to the proposed Western Sydney Airport.
- 4. That Council seek an urgent meeting with the Federal Minister for the Environment, and the Federal Minister for Infrastructure and Regional Development:
 - seeking confirmation that any approval for the Western Sydney Airport will be conditioned such that the flight paths associated with Stage One of the airport operation are restricted to those which are presented in the draft EIS
 - to discuss the range of concerns relating to "uncertainty, adequacy, impact and mitigation" associated with the draft EIS as discussed in this report and the expert peer review, and how the Government intends to deal with such
 - to seek the Government's preparedness to commit to the construction of the extension of the South West Rail Link from Leppington to the Western Sydney Airport and connecting southwards to the Campbelltown/Macarthur Regional City Centre via Narellan.

Council Meeting 15 December 2015 (Brticevic/Greiss)

That the Officer's Recommendation be adopted.

Council Resolution Minute Number 240

That the Officer's Recommendation be adopted.

A **Division** was called in regard to the Resolution for Item 12.1 - Western Sydney Airport EIS - Peer Review and Submission with those voting for the Motion being Councillors Borg, Brticevic, Chanthivong, Glynn, Greiss, Hawker, Kolkman, Lake, Lound, Matheson, Oates, Rowell and Thompson.

Voting against the Resolution was Councillor Mead.

ATTACHMENT 1

Main Issues Arising with the Draft EIS

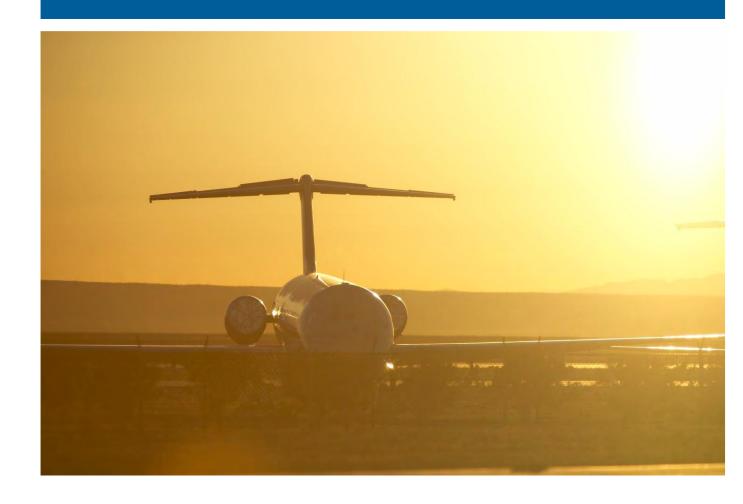
Environmental Issue	Key Issues Raised
Noise (aircraft overflight)	 Assessment is based on 2030 scenario which reflects the early stage of airport operation only Uncertainty around actual flight paths Proposed mitigation measures are generic due to uncertainty of flight paths Outline of mitigation process is not performance driven
Noise (airport ground-based noise and vibration)	 Type and magnitude of impact, pre and post mitigation has not been included A single rating background level has been assumed for all receptors, and this generalisation has underestimated the magnitude of noise impacts at receptors close to the airport Luddenham sensitive receptors were not included in background noise monitoring No cumulative noise impact assessment has been considered The M12 motorway and the realignment of the Northern Road have been excluded from the assessment regarding operational road traffic noise in Stage 1
Local air quality and greenhouse gas (GHG)	 Local air quality assessment has several long term exceedances – NO₂, formaldehyde, PM_{2.5}, PM₁₀ Effectiveness of proposed mitigation measures to achieve compliance was not quantified GHG emissions are relatively small
Regional air quality	Stage 1 assessment is acceptable Ozone concentration is significantly above the allowable increment for longer term development
Aviation planning	No real visibility in the Draft EIS of how flight paths were determined No presentation of alternatives No certainty over final outcome No consideration of point merge – impacts on Blaxland
Surface transport and access	STM3 model has not been effectively calibrated and validated as the model is still in development with TfNSW No traffic intersection modelling was undertaken Did not consider assessment of rail Traffic estimate is based on 2011 which may be an underestimate as it does not include recent land use development Traffic generation (outside of air cargo) is unknown and no consideration is made for passengers transferring within the airport
Human health	 Reviewed air quality, noise and water impacts, however no discussion on implications of the distribution of effects for inequality and equality have been discussed No rationale or justification given on why a Health Risk

	Assessment (HRA) has been undertaken rather than a Health Impact Assessment (HIA) Perceived health issues not considered Social determinants of health have not been considered Long term cumulative impacts were not considered
Biodiversity and offset strategy	 Offset package has not been prepared and residual ecological risks have not been discussed Mitigation measures are limited Difficult to assess the biodiversity value of the site for the long term development
Surface water and groundwater	 Duncan Creek and its tributaries have not been modelled to allow definition of baseline and hydraulic impacts Draft EIS appears to dismiss any relevance of increased pollutant loads on the receiving environment Groundwater assessment lacks qualification of data, no baseline time-series data collected Two residual risks for groundwater were identified; soil and subsurface contamination from spill/release of chemical or contaminants and impact on groundwater dependent ecosystems from reduced water supply.
Social impact	 Balance of discussion on impacts – strong focus on economic benefits rather than a balanced discussion Strong focus on regional benefits not local impacts Many potential issues are stated with little assessment of their implications or level of significance or duration No discussion on how mitigation measures will be coordinated or resourced or who the key accountability falls with Claims being made by the Commonwealth about economic generation and job creation have not been explicitly tested in the Draft EIS The Draft EIS does not describe the economic or social impacts of any transfer of activity from other areas in Sydney or Australia
Greater Blue Mountains	 A detailed assessment of significance under the Biodiversity Assessment for the Blue Mountains World Heritage Area has been deferred until a 'multidisciplinary workshop' is held to identify and assess potential impacts Limited assessment of wilderness value and high sensitivity Noise levels predicted to be relatively low (below 50-55de LAmax) however for a natural landscape this prediction is no justified and may impact the amenity values



Review of Western Sydney Airport Draft Environmental Impact Statement

26 November 2015





Document information

Client:

Title: Review of Western Sydney Airport Draft Environmental Impact Statement

Document No: 2269591A-ENV-REP-001 RevFINAL

Date: 25 November 2015

Rev	Date	Details
DRAFT	20/11/2015	First draft
FINAL	25/11/2015	Final to WSROC

Author, Reviewer and Approver details					
Prepared by:	Emma Dean	Date: 25/11/2015	Signature:	Common Line	
Reviewed by:	Paul Greenhalgh	Date: 25/11/2015	Signature:	And ,	
Approved by:	Paul Greenhalgh	Date: 25/11/2015	Signature:	MA,	

Distribution

Parsons Brinckerhoff file, Parsons Brinckerhoff Library, WSROC

©Parsons Brinckerhoff Australia Pty Limited 2015

Copyright in the drawings, information and data recorded in this document (the information) is the property of Parsons Brinckerhoff. This document and the information are solely for the use of the authorised recipient and this document may not be used, copied or reproduced in whole or part for any purpose other than that for which it was supplied by Parsons Brinckerhoff. Parsons Brinckerhoff makes no representation, undertakes no duty and accepts no responsibility to any third party who may use or rely upon this document or the information.

Document owner

Parsons Brinckerhoff Australia Pty Limited

ABN 80 078 004 798

Level 5 503 Murray Street

Perth WA 6000

PO Box 7181

Cloisters Square WA 6850

Australia

Tel: +61 8 9489 9700 Fax: +61 8 9489 9777 www.pbworld.com

Certified to ISO 9001, ISO 14001, OHSAS 18001

Contents

			Page	number
Glo	ssary			iv
Exe	cutive	summa	ry	V
1.	Intro	duction		1
	1.1	Backgr	ound	1
2.	Appı	roach to	peer review	3
	2.1	Govern	nance arrangements	3
		2.1.1 2.1.2	Role of WSROC Role of the Steering Committee	3 4
	2.2	Method	dology	4
		2.2.1 2.2.2 2.2.3 2.2.4 2.2.5	Project inception and early tasks Preparation of the consultant briefs and nomination of potential specialists Evaluation and engagement of specialist proposals Scope of the specialist peer reviews Preparation of overarching review report	4 4 5 5 5
	2.3	Draft E	IS review team	6
	2.4	Limitati	ons	6
		2.4.1	Technical reports excluded from review	7
3.	Revi	ew of th	e overall draft EIS	9
	3.1	Plannir	ng and land use statutory approvals context	10
		3.1.1	Draft Airport Plan	11
	3.2	Genera	al observations	12
		3.2.1 3.2.2 3.2.3 3.2.4 3.2.5	Airspace planning (Airspace architecture) Short term assessment within the draft Airport Plan High level traffic and transport assessment Uncertainty over longer term development and cumulative impact Lack of State integration	12 13 13 14 14
	3.3	Manag	ement and mitigation measures	15
	3.4	Consul	tation activities	15
4.	Revi	ew of te	chnical reports	17
	4.1	Noise		17
		4.1.1 4.1.2	Aircraft overflight noise Ground based noise and vibration	17 22
	4.2	Air qua	ality and greenhouse gas	24

	4.2.1 4.2.2 4.2.3	Overall comments on air quality study Stage 1 development Longer term development	24 25 26
4.3	Traffic,	transport and access	27
	4.3.1 4.3.2 4.3.3 4.3.4	Approach Stage 1 development Long term Airport development Key impacts and opportunities	27 27 28 29
4.4	Human	health	29
	4.4.1 4.4.2 4.4.3 4.4.4 4.4.5 4.4.6	Approach Limitations Components of draft EIS Reviewed 1st Stage Airport findings Long term development findings Key impacts and opportunities	29 30 30 31 34 34
4.5	Aviation	n planning	35
	4.5.1 4.5.2 4.5.3 4.5.4	Approach Stage 1 development Long term development Key impacts and opportunities	35 35 36 36
4.6	Social a	and Economic	37
	4.6.1 4.6.2 4.6.3 4.6.4 4.6.5	Approach Components of the draft EIS reviewed Stage 1 development Long term development Key impacts and opportunities	37 38 38 39 40
4.7	Surface	e water and groundwater	41
	4.7.1 4.7.2 4.7.3 4.7.4 4.7.5 4.7.6	Approach Limitations Components of the EIS reviewed Stage 1 airport Long term development Key impacts and opportunities	41 42 43 45 46
4.8	Greater	r Blue Mountains	47
	4.8.1 4.8.2 4.8.3 4.8.4	Approach Components of draft EIS reviewed Findings Long term development	47 47 48 52
4.9	Biodive	rsity	53
	4.9.1 4.9.2 4.9.3	Stage 1 development review findings Long-term development review findings Key impacts and opportunities	54 54 54
Conc	lusions		55
5.1	Key find	dings	55
Refe	rences		57

5.

6.

List of tables

		Page number
Table 2.1 Table 3.1 Table 3.2 Table 4.1 Table 4.2	EIS review team Summary of compliance with EIS guidelines Summary of activity forecasts Summary of impacts and opportunities Compliance of draft Western Sydney Airport EIS with EPBC Act Guidelines	6 9 12 40 48
List of figu	ures	
		Page number
Figure 1.1 Figure 3.1	Program of assessment Approval process	2 11
List of app	pendices	
Appendix A Appendix B Appendix C Appendix D Appendix E Appendix F Appendix G Appendix H Appendix I	Aircraft overflight noise (Marshall Day Acoustics) Ground-based noise and vibration (WSP Parsons Brinckerhoff) Air quality and greenhouse gas (Katestone Environmental) Traffic and Transport (ARUP) Human Health (Centre for Health Equity Training Research and Evaluation) Aviation planning (ARUP and The Airport Group) Social and economic (Hill PDA Consulting) Surface water and groundwater (Cardno) Biodiversity (EMM)	

Glossary

ALC Airport Lessee Company

ANECs Australian Noise Exposure Concept

ANEF Australian Noise Exposure Forecast

APU **Auxiliary Power Units**

ATM Annual Traffic Movements

DoE Department of Environment (Commonwealth)

EIS **Environmental Impact Statement**

EPA NSW Environment Protection Authority

EPBC Act Environment Protection and Biodiversity Act 1999 (Commonwealth)

GBMA Greater Blue Mountains Area

GBMWHA Greater Blue Mountains World Heritage Area

GHG Greenhouse Gas

HIA Health Impact Assessment

HRA Health Risk Assessment

INM Integrated Noise Model

KSA Kingsford Smith Airport

LGA Local Government Area

MACROC Macarthur Regional Organisation of Councils

MAP Million Annual Passengers

MDP Major Development Plan

PPB Parts Per Billion

SWRLe South West Rail Link extension

TSC Act Threatened Species Conservation Act 1995 (NSW)

WSROC Western Sydney Regional Organisations of Councils

Western Sydney Airport Western Sydney Airport

Executive summary

The Western Sydney Airport Project

The proposed Western Sydney Airport project will be one of the largest and most complex infrastructure projects in Australia. The project is proposed on Commonwealth land known as Badgerys Creek in the Liverpool Local Government Area.

The project as proposed in the draft Environmental Impact Statement (EIS) is intended as a staged development. The draft EIS and its associated 'Airport Plan' considers an initial single-runway development capable of handling up to 185,000 aircraft movements (37 million passengers per annum) nominally by around 2050, following which a dual runway is proposed with a total theoretical maximum capacity of 370,000 aircraft movements per year (82 million passengers) assumed to be reached in 2063.

Stage 1 works include a single 3.7 kilometre runway in the north of the site, capable of handling a full range of international and domestic passenger and freight aircraft, a business park, parking and cargo facilities in addition to areas of environmental conservation. The stage 1 draft EIS includes operation of the airport until 2030 when it is anticipated that approximately 10 million passengers and 63,00 aircraft would use the airport annually.

The draft EIS provides a broad assessment of the eventual two-runway development, but acknowledges that given the long time horizon to full development, more detailed assessment will be required to fully understand the impacts of the project at that time. Instead the draft EIS focuses on the assessment of Stage 1.

The draft EIS also recognises that there is currently no operator (or Airport Lessee Company – ALC) nominated for the construction and operation of the airport, and as such the Airport Plan is considered to be a transitional document until an operator is on board and a detailed masterplanning and project development process can commence. Sydney Airports currently has a first right of refusal to be the operator of the airport under an agreement reached as part of the privatisation of Kingsford Smith Airport. This creates significant uncertainties for the draft EIS, which acknowledges that key aspects of the draft EIS are effectively indicative only.

Statutory approvals context

Stage 1 of the Western Sydney Airport project is being assessed under the Environment Protection and Biodiversity Act 1999 (EPBC Act) through an Environmental Impact Statement, as all works are proposed on Commonwealth land (EPBC 2014/7391). The draft EIS was released on public exhibition on Monday 19 October and exhibition will close on Friday 18 December 2015.

The draft EIS contains an 'Airport Plan' which defines the proposed layout and land uses for Stage 1 and an associated 'Airspace Architecture and Operation', which defines operation and flight paths associated with the airport. The Airport Plan must be approved by the Infrastructure Minister under the Commonwealth Airports Act 1996 (Airports Act) prior to the commencement of development. The approval of the Minister for the Environment is a prerequisite of any consent under the Airports Act, and the Minister for the Environment in deciding to approve the EIS would issue conditions of consent to be imposed through the Airports Act consent on the project. Further detail is provided in Section 1.6.1 of the EIS.

This process is untested in Australia, as to date the Airports Act has only ever been used to manage assessment and approvals relating to the expansion of existing federally leased airports. New legislation has been granted (the *Airports Amendment Act 2015*) specifically to deal with the Western Sydney Airport, to accommodate the special circumstances of a greenfield airport with no lease in place.

Future expansion and approval of the airport beyond 2030 would be subject to further planning and assessment under the Airports Act.

The draft EIS peer review

WSP | Parsons Brinckerhoff were engaged by Western Sydney Regional Organisation of Councils (WSROC) and Macarthur Regional Organisation of Councils (MACROC) to project manage the Peer Review of the Western Sydney Airport draft EIS.

In this capacity WSP | Parsons Brinckerhoff was required to run a competitive tendering process to engage specialists in key areas of interest to the councils. WSP | Parsons Brinckerhoff reported to WSROC under the direction of a Steering Committee (of officers of the participating councils) to confirm which specialists should be engaged, the Steering Committee provided direction throughout the review process and reviewed draft inputs.

The key issues nominated for peer review (and the specialists engaged) were:

- Aviation planning (Arup)
- Overflight noise (Marshall Day)
- Ground based noise and vibration (WSP | Parsons Brinckerhoff)
- Traffic and transport (Arup)
- Air quality and greenhouse gas (Katestone)
- Human health impacts (CHETRE)
- Social and economic (Hill PDA)
- Biodiversity (EMM)
- Surface water and Groundwater (Cardno)
- Impact on Blue Mountains (WSP | Parsons Brinckerhoff)

In its role of project manager, WSP | Parsons Brinckerhoff undertook an overall review of the draft EIS to cover off issues not addressed by the specialists and developed the overarching findings of the peer review.

Key findings

General adequacy

The draft EIS was prepared on a very accelerated program, and it is apparent from media coverage to date that there has been significant Federal political pressure to progress the project rapidly. The draft EIS was prepared over a period of approximately 8 months from engagement of EIS consultants to provision of an initial draft for Commonwealth Department of Environment review. By way of comparison the previous EIS for the project prepared in the late 1990s was undertaken over well over two years. We are aware that the period whereby the Department of Environment reviews the adequacy of the draft EIS prior to approving it for public exhibition was similarly compressed. From our review it is apparent that this has resulted in a number of omissions and limitations, which are discussed throughout this report.

Airport Layout

The draft EIS nominates a preferred airport layout for both the Stage 1 and long term developments, noting that the layouts are indicative only and would be confirmed once an ALC has been appointed. Alternative layouts are presented for both the Stage 1 and long term layouts, however these are all based on a 50/230 degree runway orientation, in other words there has been no consideration of alternative runway orientations - a key determining factor of flight paths. This contrasts with the EIS undertaken in the late 1990s which examines multiple layouts and runway alignments, and gives little visibility of whether the chosen layout, and in particular the runway alignments, achieve the best environmental outcome. Given the time that has lapsed since the previous EIS we would have expected to see a thorough current option-evaluation process to explore alternatives.

Airspace architecture (flight paths)

Chapter 7 of the draft EIS describes the 'Airspace Architecture and Operation' of the proposed airport which includes the flight paths for the Stage 1 Scenario (2030), prepared by Air Services Australia on behalf of the Department of Infrastructure. Only one set of flight paths is provided for 2030 in the draft EIS, featuring a 'merge point' (a point at which all incoming flights converge) over Blaxland. The concept of merge points is relatively new, and is considered good practice as it allows for incoming flights to minimise thrust and so reduce noise.

The brief of Air Services Australia as outlined in the draft EIS was to develop a set of flight paths that avoids impacts on existing operations at Kingsford Smith at 2030 (although it was acknowledged that this would be impossible in the long term) and to ensure safety of operations. We have a number of concerns in regard to the flight paths presented in the draft EIS:

- The draft EIS makes clear that they have not been designed to minimise environmental (and in particular noise) impacts on communities.
- They have taken no account of the smaller airports (Camden, Richmond, Bankstown), other than to note that these would be impacted in the long term.
- There is no visibility in the draft EIS of how these contours were arrived at, and how they compare to alternatives considered.
- The contours are 'proof of concept' in other words they are indicative only, and could be revised by a future ALC without recourse to the EPBC Act. As such there is considerable uncertainty over what actual impacts may eventuate.

We have the following recommendations in this regard:

- Greater consideration of alternative options is required, with an additional objective of minimising environmental impacts.
- A holistic review of flight paths taking account of all airports in the Sydney metropolitan area should be undertaken. As part of this, options that allow for flight paths at Kingsford Smith to be modified should be considered.
- In recognition that a future ALC may modify the flight paths from those presented in the EIS, sensitivity testing should have been presented to demonstrate the changes of noise impacts that would result if flight paths are modified.
- The case for a merge point should be further explored, and consideration of alternative merge points should be examined.

Our peer review was limited to an evaluation of the information presented, and did not extend to development of alternative flight paths by our peer review team. As such we cannot comment on whether the flight paths nominated may in fact be the best outcome. In other words the key issue is lack of transparency around the nominated flight paths.

Draft EIS places no explicit limits on key impacts

In a number of areas the EIS does not provide assurances that acceptable environmental thresholds will not be breached, and does not set hard limits on environmental impacts. In the case of aircraft noise this is a reflection of the nature in which aircraft noise is managed in Australia, and this is explored further in Section 4.1.1. However the same is also largely true of other aspects of the draft EIS – the mitigation measures are generally not prescriptive, and there is little in the way of hard limits on impacts. This is no doubt in part due to the fact that the ALC has not yet been appointed, and that the Department of Infrastructure is seeking flexibility over management and mitigation. However this creates uncertainty over the likely future impacts.

Uncertainties over the way the approvals process will operate

As noted above, the project is subject to assessment under the EPBC Act, and the Environment Minister's agreement (and conditions) are a prerequisite of any subsequent approval under the Airports Act. The draft EIS notes that the future development and expansion of the airport will be subject to further assessment and approval under the Airports Act, and that the preparation of a masterplan will be required within five years of the commencement of the project. This would superseded the current Airport Plan, which is described in the draft EIS as a transitional document. In effect it is implied that once the airport is leased, all future approvals would be under the Airports Act.

What is less clear is:

- What the potential triggers would be for further referrals and potentially approvals under the EPBC Act.
- What further assessment and approval would be required for the construction and operation of Stage 1 (beyond the current EIS and associated Airport Plan approval) once an ALC is appointed and more is known about the actual airport layout and operations.
- What limitations any EPBC Act approval will place on the airport
- What level of community and stakeholder engagement will be accommodated in the process going forward.

We would like to have seen greater clarity in this regard.

Key issues raised by specialists

Table ES.1 identified the key issues raised by the specialists for each environmental issue reviewed.

Table ES.1 Summary of key issues raised

Environmental issue	Key issues raised
Noise (aircraft overflight)	 Assessment based on 2030 scenario which reflects early stage of airport operation only
	 Uncertainty around actual flight paths
	 Proposed mitigation measures are generic due to uncertainty of flight paths
	 Outline of mitigation process is not performance driven.
Noise (airport ground-based noise and vibration)	Type and magnitude of impact, pre and post mitigation has not been included
	 A single rating background level has been assumed for all receptors, this generalisation has

Environmental issue	Key issues raised
	underestimated the magnitude of noise impacts at receptors close to the airport.
	 Luddenham sensitive receptors were not included in background noise monitoring.
	 No cumulative noise impact assessment has been considered
	 The M12 motorway and the realignment of the Northern Rd has been excluded from the assessment regarding operational road traffic noise in Stage 1.
Local air quality and greenhouse gas (GHG)	 Local air quality assessment has several long term exceedances NO₂, formaldehyde, PM_{2.5} and PM₁₀
	 Effectiveness of proposed mitigation measures to achieve compliance was not quantified.
	 GHG emissions relatively small
Regional air quality	Stage 1 assessment is acceptable
	 Ozone concentration significantly above allowable increment for longer term development
Community Health	
Aviation planning	 No real visibility in draft EIS of how flight paths were determined
	 No presentation of alternatives
	 No certainty over final outcome
	■ No consideration of point merge – impacts on Blaxland
Surface transport and access	 STM3 model has not been effectively calibrated and validated as the model is still in development with TfNSW
	 No traffic intersection modelling undertaken
	■ Did not consider assessment of rail
	 Traffic estimate is based on 2011 which may be an underestimate as it does not include recent land use developments
	 Traffic generation (outside of air cargo) is unknown and no consideration made for passengers transferring within the airport.
Human health	 Reviewed air quality, noise and water impacts however no discussion on implications of the distribution of effects for inequality and equality have been discussed.
	 No rational or justification given on why a Health Risk Assessment (HRA) has been undertaken rather than a Health Impact Assessment (HIA)
	■ Perceived health issues not considered
	 Social determinants of health have not been considered
	consideredLong term cumulative impacts were not considered.
Biodiversity and offset strategy	Offset package has not been prepared and residual ecological risks have not been discussed
	Mitigation measures are limited
	Difficult to assess the biodiversity value of the site for
	the long term development.

Environmental issue	Key issues raised
Surface water and groundwater	 Duncan Creek and its tributaries have not been modelled to allow definition of baseline and hydraulic impacts
	 Draft EIS appears to dismiss any relevance of increased pollutant loads on the receiving environment
	 Groundwater assessment lacks qualification of data, no baseline time-series data collected
	 Two residual risks for groundwater were identified; soil and subsurface contamination from spill/release of chemical or contaminants and impact on groundwater dependant ecosystems from reduced water supply.
Social impact	 Balance of discussion on impacts – strong focus on economic benefits rather than a balanced discussion
	 Strong focus on regional benefits not local impacts
	 Many potential issues are stated with little assessment of their implications or level of significance or duration
	 No discussion on how mitigation measures will be co- ordinated or resourced or who the key accountability falls with
	 Claims being made by Commonwealth about economic generation and job creation have not been explicitly tested in the draft EIS
	 The draft EIS does not describe the economic or social impacts of any transfer of activity from other areas in Sydney or Australia.
Greater Blue Mountains	 A detailed assessment of significance under the Biodiversity Assessment for the Blue Mountains World Heritage Area has been deferred until a 'multidisciplinary workshop' is held to identify and assess potential impacts.
	 Limited assessment of wilderness value and high sensitivity
	 Noise levels predicted to be relatively low (below 50- 55dB LAmax) however for a natural landscape is prediction is not justified and many impact the amenity values.

Introduction

WSP | Parsons Brinckerhoff were engaged by Western Sydney Regional Organisation of Councils (WSROC) and Macarthur Regional Organisation of Councils (MACROC and to project manage the Peer Review of the Western Sydney Airport draft Environmental Impact Statement (EIS) (Commonwealth of Australia, 2015a). A list of councils forming this engagement is provided in section 2.1.1.

This report provides:

- an overview of the draft EIS
- a summary of the peer review results against each of the key technical areas included in the draft EIS
- an overview of the key issues of overall concern in relation to the draft EIS.

Detailed peer reviews of each of the assessed key technical areas have been appended to this report.

1.1 Background

The proposed Western Sydney Airport project will be one of the largest and most complex infrastructure projects in Australia. The EIS prepared in 1997–1999 for the project by WSP | Parsons Brinckerhoff faced substantial community opposition associated primarily with aircraft noise, and the EIS was subject to intensive scrutiny. The Government at that time decided in 1999 not to pursue the project any further.

The political landscape has changed in the intervening years, and media coverage since the remobilisation of the project in 2014 suggests there is growing support mainly as a result of the project's potential for local job creation. However, the project has some significant environmental and social impacts, with aircraft noise still being potentially the single biggest issue from the community's perspective.

This review of the draft EIS has focused on a number of key issues, including aircraft and ground noise, airspace planning, air quality, social, traffic and transport and human health.

The Western Sydney Airport project is being assessed under the Environment Protection and Biodiversity Act 1999 (EPBC Act) as the proposal is being constructed solely on Commonwealth land (EPBC 2014/7391). The Commonwealth Department of Environment (DoE) issued guidelines for the content of a draft environmental impact statement for the Western Sydney Airport (EIS Guidelines) on the 22 of January 2015.

The draft EIS was released on public exhibition on Monday 19 October and will close on Friday 18 December 2015. Figure 1.1 illustrates the current status of the project in relation to the overall approval process.

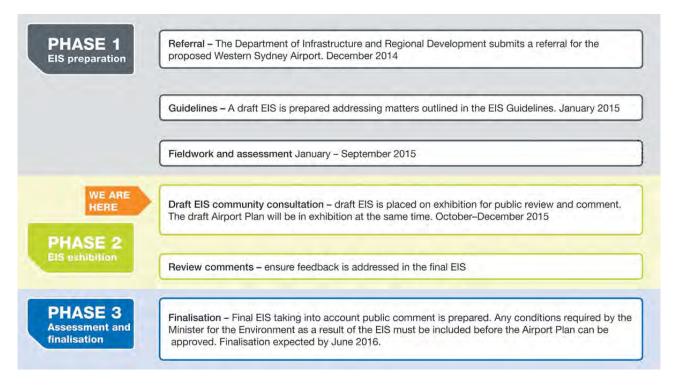


Figure 1.1 Program of assessment

Approach to peer review

2.1 Governance arrangements

WSP | Parsons Brinckerhoff was engaged by WSROC and MACROC to undertake the peer review, and worked throughout the duration of the peer review process under the direction of a Steering Committee. A brief summary of the roles and arrangements for the governance of the peer review project is provided below.

2.1.1 Role of WSROC

The peer review has been managed by WSROC, acting on behalf of 11 councils from the WSROC and MACROC region. The participating councils, who have provided funding and guidance throughout the peer review, are as follows:

WSROC

- Auburn City Council
- Blacktown City Council
- Blue Mountains City Council
- Fairfield City Council
- Holroyd City Council
- Liverpool City Council
- Parramatta City Council
- Penrith City Council

MACROC:

- Camden Council
- Campbelltown City Council
- Wollondilly Shire Council.

WSROC's primary role is the overall management of the peer review on behalf of the councils, including managing the financial contributions from the participating councils, and the engagement and management of the peer review consultant (WSP | Parsons Brinckerhoff).

A dedicated WSROC project manager was engaged to undertake the following functions in relation to the project:

- To manage the procurement process leading to the engagement of WSP | Parsons Brinckerhoff as the EIS Peer Review project managers.
- To manage the financial contributions of the participating authorities in order to fund the consultant's fees associated with the peer review.
- To manage all ongoing contractual matters between WSP | Parsons Brinckerhoff and WSROC (including invoicing, scope management and project program).

 To manage and facilitate the Steering Committee established for the EIS peer review (refer section 2.1.2 below) including convening Steering Committee meetings, and communication with the Steering Committee on relevant issues.

2.1.2 Role of the Steering Committee

The project has been managed under the direction of a Steering Committee comprising officer representation from each of the participating councils within WSROC/MACROC. The functions of the Steering Committee have been to:

- Review and endorse the proposed scopes for technical specialists as part of a tendering process run by Parsons Brinckerhoff for the engagement of technical specialists.
- Review and endorse the recommendations of WSP | Parsons Brinckerhoff in the selection of technical specialists (following receipt of submissions).
- Discuss and agree any scope changes to the peer review following the appointment of WSP | Parsons
 Brinckerhoff
- Review and provide feedback on the draft peer review report.

The Steering Committee met regularly during the peer review process.

2.2 Methodology

The methodology adopted for this peer review of the draft EIS has been determined through a collaborative process between WSROC/MACROC and WSP | Parsons Brinckerhoff, under the general direction of the Steering Committee.

2.2.1 Project inception and early tasks

At the inception of the peer review, WSP | Parsons Brinckerhoff undertook a review the EPBC Referral, EIS Guidelines and previous EIS to identify topics for peer review (incorporating those topics identified by the brief).

These findings were presented to the WSROC Steering Committee in July 2015, which outlined the proposed program, proposed approach to scoping of peer reviews, proposed studies to be undertaken and appreciation of issues.

2.2.2 Preparation of the consultant briefs and nomination of potential specialists

WSP | Parsons Brinckerhoff prepared consultant briefs for a number of technical issues which were reviewed by the by the Steering Committee. These documents were written to ensure that submitted tenders were comparable with each other and are consistent in terms of general approach, terminology and language within the provided documentation.

Evaluation criteria were developed to allow a robust and transparent evaluation to occur.

In parallel with this, three suitable consultants for each topic were identified where possible by WSP | Parsons Brinckerhoff to bid for the review role. Consultants were identified based on their track record of similar projects with a particular focus on local experience where possible), their ability to deliver to challenging timeframes and their experience in peer review roles.

2.2.3 Evaluation and engagement of specialist proposals

Following Steering Committee endorsement of proposed scopes and shortlisted consultants, briefs were finalised and issued. The draft recommendations report was issued to the Steering Committee in August 2015 for review and the specialists listed in Table 2.1 were engaged to undertake their review:

Scope of the specialist peer reviews 2.2.4

The peer reviews were desk-based with no fieldwork, and no direct communication between the study authors and peer reviewers to ensure independence. The peer reviews for each technical issue evaluated whether the:

- study meet the requirements of the EIS Guidelines and relevant other guidelines and methodologies;
- conclusions reached in the studies are valid in accordance with published standards and guidelines, and whether the conclusions of the assessment are a realistic reflection of the actual impacts;
- underlying assumptions are plausible;
- mitigation and management measures proposed are adequate or have limitations in mitigating the impact:
- level of uncertainty over impacts and the environmental risks; and
- approach to the assessment of the long term development was appropriate.

The peer reviews provided a 'plain English' summary of the key impacts and opportunities associated with the project in relation to each specialist topic, so that the key findings could be readily understood by a broad audience.

Each of the draft peer reviews were reviewed by WSP | Parsons Brinckerhoff, before issuing these to the Steering Committee for review and discussion. Following the Steering Committee meeting to review the peer reviews, the draft peer reviews were finalised by the specialists.

2.2.5 Preparation of overarching review report

The focus of this review is on key environmental issues supported by specialist peer review reports which are included in Volume 4 of the draft EIS. To supplement and draw together the findings of the specialist peer reviews, his overarching review report has been prepared to:

- Review the broader draft EIS including undertaking a gap analysis to identify aspects of the EIS that were not addressed by the specialist peer reviews - generally this includes the early chapters of the EIS that describe matters such as the project background, need and objectives, options considered, stakeholder consultation and project description and management frameworks.
- To prepare an overarching review report that draws together the findings of the individual specialist reviews (including a summary of the most significant issues identified), incorporates the findings of the review of other aspects of the EIS (as described above) and provides an overview commentary on the results of the process.

2.3 Draft EIS review team

Table 2.1 below identifies the peer review team chosen to review the draft EIS for the Western Sydney Airport.

Table 2.1 EIS review team

Environmental issue	Peer reviewer	Primary EIS Section for Review	
Noise (aircraft overflight)	Marshall Day	Volume 4 – E1	
Noise (airport ground-based noise and vibration)	WSP Parsons Brinckerhoff	Volume 4 – E2	
Local air quality and greenhouse gas	Katestone	Volume 4 – F1	
Regional air quality	Katestone	Volume 4 – F2	
Community Health	CHETRE	Volume 4 - G	
Aviation planning	Arup, supported by The Airport Planning Group	Volume 4 – H Volume 4 – I	
Surface transport and access	Arup	Volume 4 – J	
Biodiversity	EMM	Volume 4 – K1	
Offset strategy	EMM	Volume 4 – K2	
Surface water hydrology and geomorphology	Cardno	Volume 4 – L1	
Surface water quality	Cardno	Volume 4 – L2	
Groundwater	Cardno	Volume 4 – L3	
Social impact	Hill PDA	Volume 4 – P1	
Property values	Hill PDA	Volume 4 – P2	
Greater Blue Mountains	WSP Parsons Brinckerhoff	Volume 2, Chapter 26	

The qualifications of each reviewer is provided in the relevant peer review provided in Appendix A–I of this report.

2.4 Limitations

Due to the limited exhibition period of the draft EIS (which required specialists to prepare their draft peer review reports within three weeks of the start of exhibition), and the agreed approach to the peer review (Chapter 2 – Approach to peer review) several limitations were identified in undertaking the review including:

- The peer review included a desktop assessment only. No site inspections were undertaken as part of the review by WSP | Parsons Brinckerhoff or the peer reviewers.
- No consultation has been undertaken between the peer reviewers and the project team involved in preparing the draft EIS.
- The results of several of the specialist reports (noise, air quality, transport) relied on results generated from a project specific model. These models where not made publically available, despite a direct request from WSROC to the Department of Infrastructure and Regional Development, and therefore a detailed review was not possible.
- No additional modelling was undertaken to verify the results of any of the technical reports.

A detailed review of the draft airport plan was not undertaken, however, it was referred to ensure consistency with the draft EIS.

2.4.1 Technical reports excluded from review

Not all of the technical reports presented in the draft EIS were reviewed. This was generally because certain issues, while locally important, were not considered to be key issues for the broader region covered by the WSROC and MACROC LGAs, and so did not represent value for money for the project. It was also understood that individual member authorities could choose to undertake additional review work outside the scope of this project. As a result the following technical reports have been excluded from this peer review:

- Aboriginal cultural heritage
- European and other heritage
- Landscape character and visual
- Other 'non-key' issues such as contamination, resources and waste and topography, geology and soils (Separate review on waste will be prepared by WSROC and MACROC).

Review of the overall draft EIS

WSP | Parsons Brinckerhoff undertook at preliminary review of the broader EIS and its compliance with the Guidelines for the content of a draft environmental impact assessment, Western Sydney Airport. Table 3.1 below provides a summary of the compliance of the draft EIS.

Summary of compliance with EIS guidelines Table 3.1

	Comments		
General content	Volume 1, Section 8 described an EIS summary report which was to have been prepared to assist the general public to understand the key issues of the draft EIS without having to read.		
	The draft EIS seeks approval only for the construction and operation of the Western Sydney Airport until 2030. The draft EIS doesn't fully consider all the impacts on the environment during this period as it uses indicative flight paths. The long term environmental impacts (beyond 2030) are also unclear.		
Format and style	The draft EIS is generally compliant with the format and style required.		
	It would be useful to have an overall table of contents at the start of each volume. The draft EIS only has a table of contents for each Volume which makes it difficult to find specific information across the four volumes.		
General information	This section is generally compliant however, more discussion could be made around how the action relates to other actions in the region, including significant state road and rail projects and urban development projects and their associated impacts.		
Description of the action	This section is generally compliant. The inclusion and description of development beyond 2030 is at times confusing for the reader as not all impacts are known and it does not form part of the works to be assessed under Stage 1 of the draft EIS or the draft airport plan.		
Feasible alternatives	More details could be provided about the feasible alternatives, especially in relation to airspace planning and the short, medium and long term advantages and disadvantages of the options.		
Description of the environment	The description of the environment is generally compliant however, it is noted that not all sensitive receivers have been considered.		
Relevant impacts	A key concern of the draft EIS is the description of impacts and residual impacts. As the airspace planning is based on indicative flight paths a detailed assessment of the nature and extent of likely short-term and long-term relevant impacts is not able to be undertaken with any certainty.		
	It is recommended that prior to the determination of the EIS and airport plan more certainty is provided around airspace planning so a more robust assessment of impacts such as noise, air quality and health can be undertaken.		
Avoidance and mitigation measures	A consolidated list of mitigation measures has been provided in section 28.4 of the draft EIS however a detailed description of the expected or predicted effectiveness has not been included. Refer to section 3.3 of this report for more detail.		
Residual impacts and offsets	The residual impacts and offsets are not clearly defined or summarised in the draft EIS and are scattered throughout Volume 2. This does not give the community any certainty as to the predicted short and long term impacts.		

	Comments		
	As described in section 4.9 and Appendix I of this report, a Biodiversity Offset package has not been formalised.		
Environmental record of person(s) proposing to take the action	The draft EIS has adequately addressed this component.		
Other approvals and conditions	The draft EIS has adequately addressed this component.		
Economic and social matters	Refer to Section 4.6 below		
Information sources provided in the EIS	The draft EIS has adequately addressed this component.		
Conclusion	This section of the draft EIS generally complies however given the uncertainty surrounding the airspace planning and indicative flight paths a more precautionary approach is recommended in section 29.5 – Consideration of the principles of ecologically sustainable development.		

Planning and land use statutory approvals context 3.1

The Western Sydney Airport will be subject to Commonwealth environment and development approvals framework as the project occurs solely within Commonwealth land.

Development at existing federally leased airports require approval under the Airports Act 1996 (Airports Act). As the Western Sydney Airport site is a greenfields site and there is no current airport lease, the Airports Act was amended in June 2015 to allow planning, environment and development approval for the Stage 1 development of the proposed airport. The Airports Amendment Act (July 2015) allowed for the preparation of an Airport Plan as a transitional planning instrument to describe the initial development of the site and be supported by an EIS to assess the first stage of the airport development. Prior to the determination of the final Airport Plan the Minister for the Environment is required to give notice stating if the draft Airport Plan should be determined or not and under what conditions, considering the outcomes of the final EIS.

A draft EIS has now been prepared to support the draft Airport Plan which is also currently on exhibition as part of the overall EIS package of documents (http://westernsydneyairport.gov.au/airport_plan/index.aspx). Following the exhibition period both these documents will be finalised and considered by the Minister for Environment and the Minister for Infrastructure and Regional Development for determination (refer to Figure 3.1).

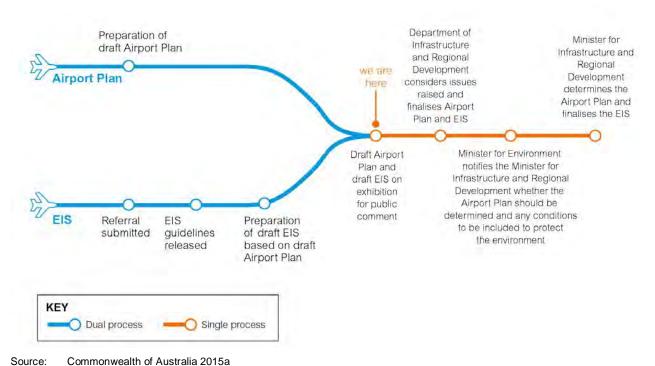


Figure 3.1 **Approval process**

As the proposed Western Sydney Airport is to be located solely on Commonwealth land, the Airports Act and the EPBC Act authorises development and excludes the operation of any New South Wales (NSW) state law. A range of NSW and local government planning documents have been considered in the preparation of the draft EIS and draft Airport Plan.

3.1.1 **Draft Airport Plan**

The draft Airport Plan primarily describes the proposed Stage 1 works for the construction and initial operations of a single 3,700 metre runway located in the north-western portion of the site and a range of aviation support facilities including passenger terminals, cargo and maintenance areas, car parks and navigational aids is the subject of this draft EIS. Part 3 of the draft Airport Plan describes the construction works and operational needs to cater for the predicted demand for the first five years of operation to around 2030 of approximately 10 million passengers per year as well as freight traffic. Site preparation activities are proposed to commence in mid-2016.

Development beyond Stage 1, will be undertaken under the existing planning framework in Part 5 of the Airports Act, including the preparation of a major development plan for any significant development at the airport. Significant future works, such as a second runway, which may have an impact on matters of National Environmental Significance may require a Referral under the EPBC Act. Table 3.2 provides a summary of the activity forecast for Stage 1 and beyond.

Section 3.2.3 of this report provides further detail on the approval process for the longer term development of the airport.

Table 3.2 Summary of activity forecasts

	Stage 1 (c. 2030)	First runway at capacity (c.2050)	Long-term (c.2063)
Annual passengers (arrivals and departures)	10 Million Annual Passengers (MAP)	37 MAP	82 MAP
Busy hour passengers (international and domestic)	3,300	9,500,	18,700
Total annual aircraft traffic movements (ATM) (passenger and freight)	63,000	185,000	370,000
Total busy hour ATM	21	49	85

Source: Commonwealth of Australia (2015) Draft Airport Plan

3.2 General observations

WSP | Parsons Brinckerhoff broad review of the draft EIS, in consultation with the WSROC and MADROC Steering Committee has identified several key areas of concern, the most significant being the lack of detail and certainty around airspace planning (or 'airspace architecture'). Other key concerns relate to the decision to define Phase 1 (i.e. the scenario for which the EIS seeks approval) as the level of operational activity at 2030. This results in an assessment of a level of airport activity well below the theoretical maximum that the initial single runway development could accommodate (63,000 air movements annually, compared to an theoretical maximum of 185,000) Other concerns relate to the high level traffic assessment, adequacy of the health impact assessment and the uncertainty over the longer term development of the airport.

3.2.1 Airspace planning (Airspace architecture)

A key concern of the draft EIS relates to the approach to determining the flight paths (or airspace architecture) and the indicative nature of the flight paths. This section provides a brief overview of the key issues relating to airspace planning, a detailed review is provided in section 4.5 and Appendix C of this report.

Key technical reports which support the draft EIS including aircraft noise and air quality assess impacts of the project over a wide area have undertaken their assessment based on indicative flight paths. The draft EIS notes that it is expected that these flight paths would be 'progressively refined during a detailed design process which would provide the opportunity to optimise safety, efficiency, noise and environmental impacts before operations begin at the proposed airport. The draft EIS is not clear on the process for these reviews and assessments to occur except to say that they 'may require further environmental assessment processes to assist decision making and may be the subject of a future referral under the EPBC Act following detailed design'. It is not clear if a future EPBC referral would be required for a change in flight paths, the Airports Act notes that this can be assessed under a major development plan (MDP) which would not need approval from the Minister for the Environment, only that the Minister for Infrastructure needs to obtain and consider advice from the Minister for the Environment.

The EIS additionally makes clear that the flight paths presented in the EIS were determined based solely on operational and aviation safety considerations, and that minimising noise impacts was not a consideration in establishing the flight paths presented (other than the fact that the proposed flight paths were then subject to noise impact assessment).

As the flight paths relate directly to the Stage 1 assessment, the uncertainty associated with the flight paths that might ultimately eventuate would ideally need to occur prior to determination of this current assessment to ensure the environmental impacts and risks are properly assessed and the local community informed. We are well aware that in the absence of a future airport operator, the Commonwealth will be reluctant to give more certainty in relation to flight paths.

Specific issues associated with the uncertainties around flight paths, and which are considered further in section 4.5, include:

- Location of the merge point at Blaxland is also indicative until the flight paths are finalised. Currently Blue Mountains City Council and Penrith City Council are very affected by aircraft noise associated with this merge point, however, this is also only indicative.
- Lack of consideration of alternative flight paths including greater consideration of Kingsford Smith, Camden, Richmond and Bankstown airports. In particular it is thought that the impacts on Bankstown airport have not been fully addressed.
- The draft EIS lacks sufficient detail in airspace architecture including a detailed description as what the underlying principles were, how was it developed and any alternatives which were considered.
- The draft EIS did not look at any scenarios beyond the normal/scheduled operation of the airport such as queuing in the event of unscheduled interruption.
- Further analysis of the proposed fleet mix is required. It is not considered suitable to adopt the fleet mix used from Kingsford Smith Airport (KSA) and that further analysis of the preferred fleet mix at the Western Sydney Airport should be undertaken.
- A detailed discussion to determine whether a curfew is required. We recognise that this is a substantial political issue, we sought to investigate the level of night time impacts that might provide a clear basis for the need or otherwise for a curfew. Based on current information, there is not enough information to determine if a curfew is required (from the perspective of compliance with noise standards for sleep disturbance) or not.

3.2.2 Short term assessment within the draft Airport Plan

Whist the draft EIS and associated technical reports provide some detail and assessment on the longer term development of the Western Sydney Airport, the draft EIS is seeking approval only for the construction and operation of Stage 1 until approximately 2030.

The draft EIS notes that by 2050 the single runway will have reached capacity (refer to Figure 3.2 of this report) and a second runway will be required. A general recommendation is that the draft EIS should consider the operation of the airport at 2045 (approaching full capacity of the single runway infrastructure) so the community and stakeholders have a greater understanding of the impacts of a single runway airport.

High level traffic and transport assessment 3.2.3

The traffic and transport assessment assessed in the EIS for Stage 1 works provides a high level assessment of traffic directly relating to the construction and operation of the Stage 1 works until 2030. Whilst it appears that by using the data discussed, the assessment undertaken is largely correct however it is considered that all the impacts are not able to be validated as the following information is not provided or considered:

- freight traffic generation within the Airport precinct (outside of air cargo)
- private vehicle traffic generation from land uses within the Airport precinct (outside of air passengers)
- vehicle travel time comparison (as predicted by strategic modelling)
- intersection performance (as predicted by intersection modelling)
- intersection layout requirements (as predicted by intersection modelling).

It is noted that the proposed Western Sydney Airport is supported by the Western Sydney Infrastructure Plan (WSIP) which is a 10 year project investing in major road infrastructure upgrades in Western Sydney. As the Western Sydney Airport is not going through the NSW state approvals there are no mechanisms to ensure the upgrades proposed in the WSIP occur, or occur in the timeframe required for the Western Sydney Airport project. Also, as described about and in section 4.3 of this report, the draft EIS did not undertake any assessments of intersections to determine if the proposed upgrades are adequate (refer to section 4.3 for more detail).

3.2.4 Uncertainty over longer term development and cumulative impact

The draft EIS provides a discussion on the long term development of the airport. This discussion generally focuses on the development of a second runway and the associated impacts, however at this stage all the impacts are indicative and will not form part of the Stage 1 approval process.

The long term development discussion presented in the draft EIS does not provide a comprehensive evaluation of impacts. We consider that it is reasonable not to attempt a full and detailed assessment of the airport at 2030, as there will be too many variables that are not known at that stage (such as aircraft types, the conditions of the receiving environment, and the pattern of urban development in Western Sydney).

However, we consider that the draft EIS could have been bolder in its assumptions about the long term development of Sydney. The draft EIS is largely limited to identifying known development plans, such as the urban development associated with the growth centres and Western Sydney Employment Area. More discussion on the long term strategic planning initiatives within the region and the impact these future land uses may have on the airport would be beneficial.

3.2.5 Lack of State integration

The proposed Western Sydney Airport occurs solely within Commonwealth land and therefore does not require approval from the New South Wales (NSW) government (i.e. it is exempt from state planning laws). Despite this, there are several significant infrastructure projects such as the WSIP and South West Rail Link Extension which the Western Sydney Airport rely on to be able to operate effectively and reduce the impact on the local community and stakeholders. In addition to these infrastructure projects, the long term strategic planning and future land uses of the greater South Western Sydney region needs to be considered.

Ordinarily, for a major project being assessed under the NSW planning approvals regime, the various other state agencies, including the infrastructure delivery agencies (such as Councils, Roads and Maritime Services and Transport for NSW) would be an integral part of the assessment process (generally led by the NSW Department of Planning and Environment and Minister for Planning). In this capacity they would be actively involved in the development of planning conditions governing a range of matters including, for example, the management of road capacity for major traffic generating developments. Planning contribution mechanisms (requiring financial contributions to upgrade infrastructure associated with the project) would also be established through state legislation.

We are aware that Federal funding has been agreed for a substantial package of road upgrades in the vicinity of the project (the Western Sydney Infrastructure Plan - WSIP). However, as discussed above and in more detail in Chapter 4 of this report, there is no mechanism discussed to ensure that these projects are approved and completed in a timeframe complimentary to the development of the Western Sydney Airport. There is also no certainty around the mechanisms for infrastructure funding beyond the provisions of the WSIP.

Management and mitigation measures 3.3

Once an airport lease has been granted, the Airports Act and the Airports (Environment Protection Regulations 1997) determine the management of activities at airports that have the potential to cause environmental harm. As no airport lease has been granted, the management and mitigation measures for Stage 1 of the proposed Western Sydney Airport have been described in the draft EIS and it is assumed that they would be implemented as proposed.

The draft EIS provides a range of management and mitigation measures for Stage 1 of the Western Sydney Airport for each of the key impacts. A general concern amongst all specialist reviews was that the mitigation measures are generic in nature, primarily due to the uncertainty of the impacts assessed. The effectiveness of achieving compliance through the mitigation measures is also generally not quantified. The type and magnitude pre and post mitigation is often not described.

No specific social management and mitigation measures have been adopted, rather referencing any measures referred to in the technical reports were relevant. A key management and mitigation approach for aircraft noise includes insulation of existing dwellings however there are no details on what this would entail.

Generally, the management and mitigation measures beyond 2030 are not known. The management of the airport beyond 2030 will be described in the Environment Strategy prepared by the lessee in accordance with the Airports Act and the Airports Regulations. The Environment Strategy is not likely to require the same level of scrutiny or approval by Minister for the Environment as does the works described under Stage 1 of the draft EIS. It is again recommended that the works proposed under Stage 1 EIS is extended to include works to allow the full capacity of the single runway so management and mitigation measures can be developed more long term and greater certainty given to the community and key stakeholders.

Consultation activities 3.4

DoE's guidelines for the draft EIS do not specially state any requirements for consultation except that the proponent is required to make the draft EIS available for public exhibition. Community and stakeholder engagement undertaken during the preparation of the draft EIS is discussed in Part C, Volume 1 of the draft EIS and generally appears to be adequate for the level of consultation expected for a major project.

The following items have been raised in regards to the consultation section:

- The Community and Engagement Strategy for the Project addressed the needs of the target audience based on initial community research and stakeholder consultation which included 11 focus groups and an online survey. The online survey was undertaken for residents within a 20 kilometre radius around Badgerys Creek, which excludes most of the Lower Blue Mountains which may be impacted by aircraft noise and amenity of low flying planes. There is also some confusion in the number of residents which were surveyed, Section 8.2.2 - Community and Engagement Strategy refers to 2,041 however Table 8-1 in Section 8.3 – Phase 1 – draft EIS and draft Airport Plan preparation mention 3,041.
- Table 8-7 of Section 8.4.1 Stakeholder and community engagement programme refers to a plain English EIS summary being developed for the stakeholders and community which would be available at community events, online and at static display locations. The Western Sydney Airport website does not contain this summary paper so it is unclear whether it has been prepared.
- Section 8.5 assessment and determination refers to an online mapping tool which is not discussed anywhere else in the document. Further discussion on what this tool does would be beneficial.

Review of technical reports

Noise 4 1

4.1.1 Aircraft overflight noise

4.1.1.1 **Approach**

The peer review has been primarily based on information presented in the noise chapters for the Stage 1 proposal and long term developments, in conjunction with the technical noise report presented in Appendix E1 of the draft EIS.

Consideration has also been given to other related sections of the draft EIS to review the broader assessment of noise impacts. The review of these additional sections has been concerned solely with matters related to the aircraft noise assessment. Reference should be made to the separate peer reviews commissioned by WSP Parsons Brinckerhoff for the review of specialist matters directly concerning aviation, fauna, health, planning and social issues.

This peer review addresses the following key elements of the aircraft noise assessment:

- The noise prediction methodology and the associated inputs and assumptions;
- The type of noise level information that has been produced;
- The operational scenarios that have been considered in the noise predictions;
- The noise sensitive receptors that have been identified and considered in the assessment;
- The methods used to assess the impact of the predicted noise levels;
- The proposed noise mitigation and management measures; and
- The level of uncertainty concerning the predicted noise impacts and environmental risks.

In reviewing these aspects of the draft EIS, consideration has been given to the document Guidelines for the content of a draft Environmental Impact Statement - Western Sydney Airport (Reference: EPBC 2014/7391 and subsequently referred to as the EIS guidelines).

4.1.1.2 Review findings – Stage 1 Development

The noise modelling is considered to generally provide a reasonable representation of the extent of noise impacts for the specific flight tracks and operating scenarios that have been proposed. Specifically, predicted noise levels have been determined for a range of operating scenarios. Aircraft noise information has also been produced in a range of formats that are generally consistent with current federal government guidelines for identifying areas potentially affected by aircraft noise.

All noise predictions have been determined using the latest version of the US Federal Aviation Authority's Integrated Noise Model (INM). This software is used widely in Australia and internationally for aircraft noise predictions and is the appropriate choice for this application. However, the use of this software to calculate short noise levels, which is the main form of noise data used in the draft EIS to identify the extent of affected areas, requires careful consideration. Specifically, the INM supporting documentation notes:

INM is not designed for single-event noise prediction, but rather for estimating long-term average noise levels using average input data. Comparisons between measured data and INM calculations must be considered in this context.

Accordingly, while the use of the INM is reasonable, information has not been provided as part the draft EIS to verify the reliability of the short term noise level data (presented as maximum noise levels and Number Above ratings). This is particularly important for this proposed airport, because of the increased uncertainty associated with the predictions at the lower noise thresholds used in the draft EIS for the assessment of night-time operations and impacts in quiet areas such as the Greater Blue Mountains World Heritage Area.

Notwithstanding the general suitability of the noise modelling data, there are however a number of limitations to the assessment. These relate to the uncertainty surrounding the airspace management design, and the limited assessment of the noise modelling outcomes. These matters are summarised as follows:

Low Stage 1 movement numbers

The total aircraft movement numbers for the Stage 1 development are relatively low when compared to other international airports in Australia. The low movement numbers cast doubt over the suitability of the 5 year time horizon as the primary assessment scenario for the purpose of obtaining approval for a major international airport. In this context, it is unclear how the incremental and periodic approvals that would need to occur as part of the ongoing expansion of the airport provide a sufficient basis for considering the initial 5 years of operation as the primary period for the assessment of noise impacts.

These comments are provided primarily in relation to the plausibility of the movement numbers represented in the noise modelling, based on comparisons with movement numbers documented in the noise modelling for other Australian international airports and similar time horizons. Aircraft traffic forecasts are however outside of our area of expertise and therefore the suitability of the specific movement numbers provided for the noise assessment are considered in further detail in separate aviation peer review commissioned by WSP | Parsons Brinckerhoff.

Airspace management strategy uncertainties

The draft EIS states that the airspace management strategy used as the basis for noise modelling is a proofof concept design, and that further work is required to determine the actual flight paths which would be flown in practice. Information about the extent of potential change in flight paths is limited. The uncertainty surrounding the final airspace management design that would be implemented represents a significant source of uncertainty in the noise assessment. The potential significance of this source of uncertainty has not been quantified and, with exception of alternative merge points for Stage 1, there has not been any sensitivity analysis carried out to assess the implications of potential flight path changes.

Assessment of community annoyance

The draft EIS includes exposed population statistics which provide a useful indication of the potential scale of the community who may be affected by aircraft noise to varying degrees. However, in isolation, this data does not provide an indication of the scale or significance of potential community reaction to aircraft noise levels as a result of annoyance. The Health Risk Assessment in the draft EIS provides the most discussion of community annoyance, including references to research concerning the relationship between noise exposure and community annoyance. However, the Health Risk Assessment ultimately states that no quantitative assessment of annoyance was conducted as part of the study.

Dose-response relationships of the types referenced in the Health Risk Assessment can be used with noise levels and population data to provide a quantitative measure of the potential reaction. The use of these established relationships to represent the reaction of a separate community exposed to aircraft noise must be used with caution. In particular, due consideration must be given to the increased reaction that may be expected from a newly exposed community. However, this type of analysis provides an objective basis for

comparing the impacts of alternative operating strategies and, more broadly, establishing the risk of community noise impacts relative to other established international airports in Australia.

While the assessment of the risk of community annoyance is complex, the scale of the proposed airport and the number of people potentially affected warrant further evaluation of the subject. The introduction of a new 24-hour international airport at a greenfield development site introduces a risk of widespread and prolonged community annoyance. A quantitative analysis of this potential risk would be prudent to inform the environmental impact assessment process and the extent to which operational noise mitigation should be prioritised relative to other non-safety related airspace management considerations. Updated social surveys of the type originally carried out as part of the development of the Australian Noise Exposure metric used in Australia also warrant some consideration, given the significant nature of the proposed development and the availability of detailed aircraft noise information for other existing Australian airports.

Land use impacts

The draft EIS includes calculated Australian Noise Exposure Concept (ANEC) contours for the Stage 1 operating scenarios. ANECs are often presented as an indication of the extent of a potential future Australian Noise Exposure Forecast (ANEF) contour which would be used to guide land use planning for noisesensitive developments in the vicinity of airports.

However, the ANEC contours presented for the Stage 1 proposal provide limited guidance for the purpose of land use planning. The reason for this is that the ANEF is normally derived from ANECs calculated for long term operations or ultimate capacity scenarios, rather than short term ANECs related to an initial phase of operation. Evaluation of land use planning impacts must therefore be primarily based on the ANEC contours presented for the long term development of the airport, rather than initial Stage 1 development contours.

Greater Blue Mountains World Heritage Area

The draft EIS presents information to evaluate the potential impacts of aircraft operations on the acoustic amenity of the Greater Blue Mountains World Heritage Area (GBMWHA). The assessment indicates the potential for a large number of audible aircraft events within the GBMWHA.

The preservation of quiet areas and tranquil landscapes has been a topical subject of research and policy consideration in Europe and the US. For example, US publication (Transportation Research Board, Airport Cooperative Research Program, Mestre 2008) on the effects of aircraft noise includes a chapter which discusses research and US legislation (National Parks Overflight Act of 1987) concerning the effects of aviation noise on parks, open space and wilderness areas. These publications do not provide definitive guidance on assessment techniques, but highlight the complexity and importance of assessing aircraft overflight noise in sensitive wilderness areas.

While the noise levels in the draft EIS are predicted to be relatively low (below 50-55 dB L_{Amax}), aircraft over flights would be expected to be audible and represent a significant and widespread impact for a World Heritage Area where natural soundscapes are likely to be a valued feature of the areas amenity. The complexities and sensitivities of this area warrant further consideration in the draft EIS. Specifically, the assertion within the draft EIS chapter concerning the GBMWHA that noise levels below 50 and 55 dB L_{Amax} are 'not significant' is not considered to have been sufficiently justified, and the assessment may therefore not adequately reflect the potential impact to the values of tranquillity within the World Heritage Area.

Mitigation measures and residual noise impacts

The draft EIS noise modelling is based on an indicative proof-of concept air traffic management design which does not present a comprehensive airspace and final air route design. Given the uncertainties concerning the final form of the airspace design, the final form of noise mitigation measures to be implemented is not yet known. Accordingly, the mitigation measures that have been referred to in the aircraft noise assessment are generic in nature.

This is a particularly important point for an airport development as, unlike other forms of infrastructure development, the policies used to manage aircraft overflight noise do not generally stipulate noise limits that airport operations must adhere to at surrounding noise-sensitive locations.

Accordingly, without a defined airspace design, a defined noise mitigation strategy or defined noise criteria to adhere to in practice, the residual impacts and the location of these impacts is subject to considerable uncertainty. Further, without defined noise criteria, it is unclear how noise considerations would be prioritised among other non-safety related airspace management and operational considerations associated with the proposed airport site. These uncertainties may therefore warrant consideration of performance criteria as part of the approval process for the proposed airport.

In addition to the generic operational measures for the mitigation of noise, the draft EIS also refers to mitigation related to dwelling acquisition or dwelling insulation upgrades. There is however no detail provided in terms of the circumstances in which these measures would be implemented, other than a general reference to the guidance of AS 2021. It is unclear if this is intended to infer that such measures would only be considered within certain Australian Noise Exposure areas, or if such measures would be considered at all locations where internal levels may be expected to exceed AS 2021 internal design criteria as a result of the proposed aircraft operations.

4.1.1.3 Review Findings – Long Term Development

A number of the considerations identified from the peer review of the Stage 1 development are directly relevant to the assessment of the long term development scenarios. For example, matters related to the noise prediction methodology are identical for the Stage 1 and long term development scenarios.

In terms of assumptions about operational capacity, the movement numbers for the 2050 single runway scenario and 2063 dual runway scenario are comparable to the range of movement numbers documented for other similar Australian international airports. On this basis, the values appear to be plausible for noise assessment purposes. Aircraft traffic forecasts are however outside of our area of expertise and therefore the suitability of the specific movement numbers provided for the noise assessment are considered in further detail in separate aviation peer review commissioned by WSP | Parsons Brinckerhoff.

The following limitations are however noted for the long term assessment scenarios.

Land Use Impacts

The draft EIS presents ANECs for a range of operating scenarios in 2050 and 2063 as part of a discussion of the potential land use impacts which may result from a future ANEF for the proposed airport.

However, the latest Australian Standard (AS 2021) which defines how Australian Noise Exposure data should be used to inform land use planning, includes guidance on how ANECs for multiple operating scenarios may be combined to define an overall area where planning controls should apply. The draft EIS does not refer to this guidance and it is therefore unclear how the various ANECs should be interpreted when assessing land use impacts.

Further, while the draft EIS provides population counts for the various ANEC bands, no assessment is provided of the extent to which land use controls may change as a result of a future ANEF prepared as part of the detailed airspace design for the project. Specifically, the draft EIS does not quantify the potential extent of changes to land use controls relative to the measures which have been in place since the original EIS was undertaken in 1985. Furthermore, the discussion of land use planning impacts in the draft EIS notes that the National Airports Safeguarding Framework would 'be instrumental in managing potential future operational noise impacts for future land use planning and development around the airport'. The Framework could potentially translate to the creation of land use planning controls which extend over significantly greater areas than either the current land use planning controls (based on the 1985 EIS) or the 2063 ANEC contours provided in the draft EIS. This has however not been discussed or assessed in the draft EIS.

Cumulative Impacts

The draft EIS notes that the parallel runway scenario (2063) would introduce a number of issues which would need to be addressed in the final airspace design. In particular, the chapter concerning airspace architecture notes the following issues that would need to be addressed:

- Changes to Sydney Airport flight paths;
- Changes to flight paths serving Bankstown Airport; and
- Resolution of a potential constraint associated with the restricted airspace over Defence Establishment Orchard Hills.

The EIS guidelines establish a requirement to 'identify and address cumulative impacts, where potential project impacts are in addition to existing impacts of other activities'.

The above issues concerning the airspace architecture are considered to represent potential cumulative impacts which have not been quantified in the draft EIS. Further information concerning this issue is therefore considered necessary to address the requirements of the EIS guidelines.

Key Impacts and Opportunities 4.1.1.4

The findings of the peer review indicate that noise level information of the form required by the EIS guidelines has generally been provided in the draft EIS. However, the peer review has also identified a number of limitations concerning the content of the draft EIS, and therefore further information and assessments are considered necessary to address the general and noise-specific requirements of the EIS guidelines.

Based on the review of the draft EIS, the key noise impacts associated with the proposed airport are:

- Community annoyance, and related impacts such as speech interference and changes to the way individuals use outdoor spaces.
- Sleep disturbance associated with night-time operations, and related impacts such as the potential need for some residents to sleep with windows closed to achieve a suitable internal amenity.
- Degradation of the acoustic amenity of the World Heritage Area within the Greater Blue Mountains area.

In terms of land use impacts, the existing planning instruments that have been used to control development around the proposed airport site would generally be expected to limit the extent of the potential impacts. However, the draft EIS reference to the National Airports Safeguarding Framework as an instrumental tool for guiding future land planning around the proposed airport site introduces the potential for significantly enlarged development controls. This could translate to land use impacts also being a key impact associated with the proposed development.

Other noise related impacts cornering matters such as health, property values and social impacts are addressed in separate peer reviews commissioned by WSP | Parsons Brinckerhoff.

Aircraft noise impacts are ultimately an unavoidable consequence of aircraft operations in urban environments. The creation of a new international airport therefore requires a balance to be achieved between the protection of amenity for neighbouring sensitive land uses and the development of infrastructure to respond to the growing demands of a major city.

Determining whether this balance has been achieved is ultimately a matter for regulatory authorities. While this peer review has identified a number of limitations to the present assessment, this is not intended to infer that the proposed development and development site are unsuitable. Rather, in light of the residual uncertainties in the assessment, further information and assessments are considered necessary before stakeholders can reach an informed view on the potential scale and significance of aircraft overflight noise impacts associated with the proposed airport site.

Conducting these further assessments as part of the environmental impact assessment process represents an opportunity to:

- provide clarity to affected communities and stakeholders about the nature of the noise impacts;
- provide clarity to regulators about the form of noise controls which will be needed in the project approval to ensure that noise is appropriately managed; and
- reduce the potential for unforeseen impacts and the associated risk of reactionary noise management procedures which could subsequently jeopardise the operational flexibility of the proposed airport.

4.1.2 Ground based noise and vibration

4.1.2.1 Approach

This review identified uncertainties and unknowns within the ground noise assessment, provided in the EIS and identified what further assessment would be required to provide an indication of impacts. The limitations of this review are as follows:

- Noise modelling or review of noise modelling files has not been completed as part of this review. Therefore, it was not possible to verify the noise contour plots from ground-based activities presented in the draft EIS. However, comment has been included based on a visual inspection of the plots.
- The review relies on the source noise data that has been included in the ground noise assessment. The review is a desktop exercise and therefore, independent source noise measurements have not been conducted to confirm the noise levels used for taxiing and engine ground running as presented in the EIS.

The components of the review are follows:

- The review comments on the draft EIS chapters relevant to ground noise in addition to Appendix E2 Airport ground-based noise and vibration. This appendix is the technical basis for all other ground noise related documents, including the relevant draft EIS chapters.
- A document review is contained within Appendix A of Appendix B this report, and provides references and comment on specific sections of the draft EIS.

4.1.2.2 1st stage airport

A summary of the findings for the 1st stage airport is as follows:

- The assessment does not fulfil the requirements of the Guidelines for the Content of a Draft Environmental Impact Statement – Western Sydney Airport 2015 (EIS Guidelines). These guidelines state that the type and magnitude of impact, both pre-mitigation and post-mitigation should be presented. The ground noise assessment should be updated to include this assessment.
- There is insufficient detail to satisfy the EIS Guidelines on the source of the noise data and assumptions used in noise predictions. As these assumptions form the basis for the noise assessment, changes to the source noise data could potentially lead to a significantly different outcome.

- The assessment does not provide sufficient justification to support the assessment being performed based on the year 2030 (5 years after opening) and not 2050 when the airport is expected to be approaching capacity for the single runway configuration with potentially increased noise impacts.
- The report does not provide sufficient detail in the assessment of the ground-based power supply to aircraft when they are parked. The assessment excludes the use of Auxiliary Power Units (APU), however it does not provide sufficient detail of alternative ground-based power supplies. As an alternative power supply method is not presented, there is potential for additional noise sources being introduced that have not been considered.
- Background noise monitoring was conducted at 10 locations in the region, however a single background level has been assumed for all receptors, rather than several location-specific values. This generalisation has underestimated the assessment noise criteria and therefore the magnitude of noise impacts at receptors close to the airport that are currently exposed to low levels of environmental noise.
- The nearest noise sensitive receptors in Luddenham were not included in the background noise monitoring and therefore, there is uncertainty if noise impacts have been adequately assessed at this location.
- No consideration has been given to the cumulative noise impact from all ground noise sources at the nearest noise sensitive receptors both with and without mitigation measures as required by the EIS Guidelines. Additional assessment should also be undertaken for other ground noise sources, such as the compass calibration pad.
- It is recommended that the mitigation measures identified in the assessment, including the restriction of APUs and the limitation of engine ground run-ups during the night, are formalised as part of the project
- The assessment does not provide sufficient evidence that all reasonable and feasible mitigation measures have been considered to reduce noise impacts from taxiing and ground run-ups.
- Semi-enclosed pens and bunded areas to reduce noise impacts from engine ground run-up noise are considered in the assessment. It is recommended that these measures are considered further as part of the approvals and subsequent design stages.
- No comment has been made on the potential cumulative noise impact from the new M12 Motorway and realignment of The Northern Road that are being developed to accommodate the airport.
- The EIS contains misleading statements relating to operational road traffic noise which do not acknowledge the limitations of the assessment. The development of the M12 Motorway and realignment of The Northern Road have been excluded from the assessment and statements regarding operational road traffic noise should include these limitations.

4.1.2.3 Long term development review findings

- The assessment is considered to contain an appropriate level of detail for the long term development as the potential noise impacts are predicted for a considerable time in the future (into 2063). It is acknowledged that the noise environment may change over time.
- The comments raised in this review for the 1st stage airport assessment should be addressed and applied to the long term development assessment. Where this occurs, the current framework for further assessment of the long term development is considered appropriate.
- The EIS does not include ground-based noise in the summary or conclusion for the long term development. It is recommended that the outcomes of the revised long-term development ground-based noise assessment are included in these sections so that all impacts are clearly presented.

4.1.2.4 Key impacts and opportunities

It is considered that the ground-based noise assessment does not provide an appropriate level of detail on a number of key aspects including:

- the derivation and allocation of assessment criteria
- noise impacts at the nearest sensitive receptors in Luddenham
- noise source levels and modelling assumptions
- the type and magnitude of impacts with and without mitigation
- evidence that all reasonable and feasible mitigation has been considered
- cumulative noise impacts from operational activities and road traffic projects.

As a result, without further clarification or justification, it is uncertain that the draft EIS has adequately presented and addressed the noise impacts associated with the proposed development.

It is recommended that these items are addressed to reduce the level of uncertainty, increase the accuracy of the assessment and to satisfy the requirements of the EIS Guidelines.

4.2 Air quality and greenhouse gas

Katestone Environmental Pty Ltd (Katestone) was commissioned to undertake a peer review on the air quality and greenhouse gas assessment of the Western Sydney Airport draft EIS. This section provides a summary of their review whilst Appendix C of this report Their review did not include a health risk assessment which was undertaken separately and presented in section 4.4 Human Health.

To assist with its review, access to all relevant input and output files that were integral to the air quality assessment studies was requested as this information was not contained in the EIS. The provision of such information is a routine expectation and is a minimum requirement of the NSW Environment Protection Authority (EPA) for such studies. For a peer review the data is integral to demonstrating the integrity of the assessment. However, this information was not made available and consequently, Katestone has relied only upon the information contained in the relevant chapters of the EIS to complete its review.

Where apparent errors and inconsistencies were found within and between documents, Katestone has noted these, but in most cases has not been able to discern the full significance of these on the assessment outcomes.

4.2.1 Overall comments on air quality study

The air quality study is contained in Volume 2 Chapter 12, Volume 3 Chapter 32 and Volume 4 Appendix F1 of the Western Sydney Airport EIS. It is noted that these documents contain many typographical errors and inconsistencies that undermine the credibility of the air quality assessment. These sections require a thorough technical and editorial review by its authors to address the issues outlined in this review to improve transparency and credibility of the air quality assessment. To enable confidence in the assessment, all information and data used in the emission estimation, model inputs and outputs should be made available to any interested party.

The air quality study did not adequately address the sensitive receptors as it:

- Failed to identify all sensitive receptors:
- Failed to identify a representative subset of sensitive receptors whilst a small subset of sensitive receptors was identified, the subset does not appear to be representative of potential air quality impacts at all existing locations of sensitive receptors;
- Did not identify future sensitive receptors; and
- Incorrectly classified community receptors separately and as having a lesser importance than residential receptors. Community receptors included various land-uses such as schools, parks, childcare facilities, churches and shopping centres.

4.2.2 Stage 1 development

4.2.2.1 **Local Air Quality**

The assessment results are taken as presented in Tables F1 to F8 and Table G1 to G5 (Volume 4, Appendix F1) of the draft EIS, they indicate the following:

- The maximum 1-hour average concentration of NO2 was predicted to exceed the EPA's impact assessment criterion of 246 µg/m³ at one receptor. Three other receptors have maximum 1-hour average concentrations of NO₂ that are 92% to 98% of the EPA's impact assessment criterion.
- The annual average concentrations of PM2.5 were rounded to one significant figure. A number of receptors were predicted to have an annual concentration of PM2.5 of 8 µg/m3 – equal to the Air NEPM Advisory Reporting Standard. These results are potentially indicative of minor exceedances (<0.4 μg/m³) of the Advisory Reporting Standard.
- The 99.9th percentile 1-hour average concentration of formaldehyde was predicted to exceed the EPA's impact assessment criterion at two receptors.
- The predicted concentrations of all other air pollutants were below their respective assessment criteria.
- The major contributor to elevated levels of air pollutants is aircraft emissions. However, for receptors close to existing or new roads, the major contributor is external roadways.
- Mitigation measures were recommended. However, the effectiveness of the measures in achieving compliance was not quantified.

4.2.2.2 Regional air quality

The methods used to assess the regional air quality are acceptable. The assessment of regional air quality showed that only marginal increases in ozone concentrations would result from Stage 1 Development.

4.2.2.3 Greenhouse gases

The methods used to estimate greenhouse gas (GHG) emissions are acceptable. The estimates of greenhouse gas emissions are reliable and the contribution of greenhouse gas emissions from the project will be relatively small with Stage 1 Development emissions approximately 0.11% of Australia's projected 2030 transport-related GHG inventory.

4.2.2.4 Overall comments

The Stage 1 Development assessment was based on the annual throughput of the airport would be 63,302 ATM in 2030. The stated maximum capacity of the airport following completion of Stage 1 is three times higher at 185,000 ATM in 2050. The local air quality assessment, regional air quality and greenhouse gas assessment all use this assumption in the generation of the emissions and resultant impacts. Consequently, the assessment has underestimated the potential impact of the Stage 1 Development by a considerable margin.

4.2.3 Longer term development

4.2.3.1 Local Air Quality

The assessment results are taken as presented in Tables F9 to F11 (Volume 4, Appendix F1) of the EIS, they indicate the air quality assessment of the Longer Term Development shows:

- The maximum 1-hour average concentration of NO₂ was predicted to exceed the EPA's impact assessment criterion of 246 μg/m³ at 41 of the 96 receptors.
- The maximum 24-hour average PM₁₀ concentrations was predicted to exceed the EPA's impact assessment criterion at three receptors.
- The maximum 24-hour average concentrations of PM_{2.5} were predicted to exceed the NEPM Advisory Reporting Standard at three receptors.
- The annual average concentrations of PM_{2.5} were rounded to one significant figure. The annual average concentrations of PM_{2.5} were predicted to exceed the Air NEPM Advisory Reporting Standard at 13 receptors (concentrations are reported as 9 μg/m³ or higher). A number of receptors were predicted to have an annual concentration of PM_{2.5} of 8 μg/m³ equal to the Air NEPM Advisory Reporting Standard.
- These results are potentially indicative of minor exceedances (<0.4 μg/m³) of the Advisory Reporting Standard.
- Whilst a number of mitigation and management measures were listed within the Western Sydney Airport EIS, the effectiveness of the measures was not quantified and therefore the air quality assessment failed to demonstrate that compliance with the relevant air quality criteria could be achieved.

4.2.3.2 Regional air quality

The assessment of regional air quality showed:

- The change in daily maximum 1-hour ozone concentration from the addition of the airport was 4.5 ppb which is significantly above the maximum allowable increment of 1 ppb defined in the NSW EPA's tiered approach.
- The change in daily 4-hour average ozone concentration from the addition of the airport was 3.7 ppb which is significantly above the maximum allowable increment of 1 ppb defined in the NSW EPA's tiered approach.

However, the regional air quality assessment for the Longer Term Development is hypothetical as:

- the impacts had to be assessed in context of the 2030 base case emissions as a base case inventory has not been projected for 2063;
- changes in emissions to other existing sources had not been accounted for; and
- assumes that the rail network exists.

4.2.3.3 Greenhouse gases

The methods used to estimate greenhouse gas emissions are acceptable.

4.2.3.4 Overall comments

The Longer Term Development contained in the Western Sydney Airport draft EIS includes a second runway, which relies upon the existence of rail services to be feasible. The Western Sydney Airport draft EIS states 'As it is not possible for the longer term development to achieve the project passenger numbers without the rail network the traffic scenario that does not include the rail network was disregarded'.

Air quality associated with Stage 1 is critically dependent on the traffic volumes generated by the airport. Consequently, the impact on air quality due to the Longer Term Development is critically dependent on the existence of the assumed rail services to the airport. The Western Sydney Airport EIS is not seeking approval for the rail infrastructure that is necessary for its feasibility and the EIS does not contain a detailed proposal for the rail infrastructure. As a consequence, the air quality assessment of the Longer Term Development is speculative at best and does not provide a sufficiently robust basis to support approval of the Longer Term Development at this stage.

Traffic, transport and access 4.3

4.3.1 **Approach**

Arup has undertaken the peer review of the Traffic and Transport sections within the draft EIS. The peer review has been intended to assess the merits of the proposal as presented in the draft EIS - it has not been intended that the peer review will develop recommendations for alternative designs for the project.

In relation to Arup's comments regarding any short comings of this assessment, it should be noted that Arup has not been privy to any specific requirements above and beyond those described in the Guidelines for the Content of a Draft Environmental Impact Assessment Statement, Western Sydney Airport, Environment Protection and Biodiversity Conservation Act, 1999. It is understood traffic and transport is likely one of the key environmental issues associated with the Airport. Arup has provided independent traffic and transport reviews relating to the adequacy of the documentation provided and the appropriateness of the mitigation measures proposed in:

- 'Western Sydney Airport draft EIS 19 Volume 2 Chapter 15'
- 'Western Sydney Airport draft EIS 39 Volume 3 Chapter 33'
- 'Western Sydney Airport draft EIS Volume 4 Appendix J Surface transport and access'.

4.3.2 Stage 1 development

Issues identified in terms of predicted traffic impacts as a result of the Stage 1 airport include:

- limitation of the strategic traffic model's (STM3) ability to capture traffic impacts at a detailed level
- detailed intersection traffic modelling not undertaken
- intersection operations and performance not assessed
- future land take impacts as a result of intersection operations
- freight traffic generation and associated impacts (outside of specific air cargo) not assessed

- traffic generation and associated impacts caused by the zoned lands within the Airport precinct not assessed
- impact to public transportation operations (bus network) not assessed.

The above issues and limitations are considered significant. Further information would need to be provided to enable Arup to reach a firm opinion as to whether the conclusions reached in the study are valid. Until these comments are addressed or further information supplied, Arup is unable to comment on the validity of the traffic impact conclusions reached in this draft EIS.

4.3.3 Long term Airport development

The predicted traffic impacts of the long term development of the Western Sydney Airport largely followed the Stage 1 assessment. A number of the issues identified for Stage 1 are also apparent in the longer term development including:

- limitation of the strategic traffic model's (STM3) ability to capture traffic impacts at a detailed level
- detailed intersection traffic modelling not undertaken
- intersection operations and performance not assessed
- future land take impacts as a result of intersection operations
- freight traffic generation and associated impacts (outside of specific air cargo) not assessed
- traffic generation and associated impacts caused by the zoned lands within the Airport precinct not assessed
- impact to public transportation operations (bus network) not assessed.

Additionally, a number of issues identified in the longer term development (above and beyond Stage 1) include:

- The local road network adjacent to the Airport reaches capacity by 2063. No road planning mitigation measures were provided.
- Airport Access Drive (from M12) reaches capacity by 2050, 13 years before long term development year of 2063. Capacity is predicted to be reached for approximately 15 hours a day.
- Insufficient information was provided to determine how air passenger demands would access and egress the Airport beyond 2050 (when the Airport Access Road reaches capacity).
- No assessment was included to understand what impact the air passenger demands using the South West Rail Link extension (SWRLe) would have on the wider Sydney Rail Network.

Prior to the long term development of the airport being constructed, a major development plan (managed in accordance with the Commonwealth Airports Act 1996) will be required with final approval provided by the Minister for Infrastructure and Regional Development.

As such, Arup believes the above issues and limitations should be viewed in conjunction with this additional assessment being undertaken.

4.3.4 Key impacts and opportunities

The traffic impacts caused by Stage 1 of the Airport is predicted to be relatively low. With consideration to the methodology used, the draft EIS states the future road network is able to accommodate the predicted Airport traffic demand.

Nonetheless, it was difficult for Arup to confirm the validity of these impacts with confidence. Arup has identified further information that could be provided to quantify the potential impacts, including:

- freight traffic generation within the Airport precinct (outside of air cargo)
- private vehicle traffic generation from land uses within the Airport precinct (outside of air passengers)
- vehicle travel time comparison (as predicted by strategic modelling)
- intersection performance (as predicted by intersection modelling)
- intersection layout requirements (as predicted by intersection modelling).

The following describes the predicted traffic impacts caused by the long term development of the Airport as described in the draft EIS:

- The traffic impacts caused by the Airport is predicted to be significant. The airport Access Drive from the M12 is predicted to fail in 2050. This is approximately 13 years before the ultimate long term airport development year (2063).
- The traffic impacts also affect the wider road network with significant congestion predicted on key road links in 2063. The assessment acknowledges this is a result of significant background growth in conjunction with unknown road infrastructure commitments past 2041.
- The Airport also impacts wider transport modes. The assessment suggests additional rail link capacity (above and beyond the SWRLe) would be required to accommodate both the Airport trips and background growth trips by 2063.

With consideration to the above potential impacts, it is recommended that detailed transport network planning including road and rail network planning be undertaken.

4.4 Human health

A peer review of the human health sections of the Western Sydney Airport draft Environmental Impact Statement (EIS) was undertaken by a team of international reviewers, led by the Centre for Health Equity Training, Research and Evaluation (CHETRE) at the University of New South Wales (UNSW).

4.4.1 Approach

The review team developed a peer review framework based upon existing best practice review guidelines for evaluating health impact assessment (HIA). The framework incorporated key elements, processes, and requirements that should be included in the health assessment of an EIS. Additionally, the review team reviewed existing HIAs of airport developments to establish the range of health effects that are relevant to airport health assessments. This framework allowed the review team to assess the quality of the health assessment that was included in the draft EIS, and also determine important health effects that were not included.

4.4.2 Limitations

The review team were only able to conduct a review of the health impacts included in the health chapters (Human Health Chapter and Community Health Appendix). These were limited to noise, air quality, and water impacts, therefore the review team were not able to further review the assessment of other potential significant health impacts associated with airport development, such as changes to employment, transportation, amenity, and housing.

Although the review team assessed the methods used we were not able to assess the validity of the calculations used in predicting health outcomes. Validity of the findings in the health risk assessment (HRA) were based upon what was included in the health appendix, which did not include all necessary methods and formulas to test the findings. It is assumed that the calculations were carried out correctly.

As there was not a comprehensive HIA included in the draft EIS, the review team were limited in the range of recommendations we could make.

4.4.3 Components of draft EIS Reviewed

- Primary:
 - Part D Human Health Chapter
 - Appendix G Community Health
- Secondary:
 - Volume 1:
 - **Executive Summary**
 - Part A Project Background
 - Part B Airport Plan
 - Volume 2
 - Chapter 9 Approach to Impact Assessment
 - Chapter 27 Cumulative Impact Assessment
 - Part E Environmental Management
 - Part F Conclusions
 - Volume 3
 - Chapter 39, Section 8 Human Health
 - Part H Conclusion and recommendations
 - Volume 4
 - Appendix E Noise
 - Appendix F Air quality
 - Appendix P1 Social impact
 - Appendix P3 Economic analysis.

4.4.4 1st Stage Airport findings

Compliance with EIS Guidance:

- Overall, the Health Chapters of the draft EIS comply with most of the EPBC Guidelines.
- The impacts that are considered in the Health Chapters are those associated with changes in air quality, water quality and noise. Generally, these are assessed in detail in terms of nature and extent of short and long-term impacts.
- Some of the information is presented in a way that makes it difficult for interested stakeholders to fully understand the scope and scale of the potential health impacts. The information provided is not always, clear, succinct and supported by maps or other accessible materials. Technical jargon is generally avoided without losing technical precision or the validity of the statements made. Cross-referencing is used however summaries of the findings of other chapters often do not fully explain key issues. Not all sensitive population sub-groups or receptors have been considered in the areas assessed.
- The rational and justification for why a HRA has been undertaken rather than an HIA are not discussed. There is national and state level guidance on HIA that should have been consulted in the development of the scope and methodology of the health assessment of the draft EIS. Key guidance documents include Health Impact Assessment Guidelines (enHealth, 2001), and Health Impact Assessment: A practical guide (UNSW and NSWHealth, 2007). Ideally the health assessment would have used an HIA framework incorporating an HRA approach.
- Ecologically sustainable development in relation to health is not considered. EPBC guidance states that ecologically sustainable development should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.
- Considering the most significant health impacts/effects/risks considered in the draft EIS are those related to changes in air quality, noise and water quality, the level of analysis and detail presented in the Health Chapters is reflective of the potential significance of these descriptors. However, the potential inequality/inequity impacts have not been sufficiently assessed or discussed. This is a significant gap.

Recommendations for the Health Chapters of the draft EIS to better comply with EPBC guidelines are provided:

- The Health Chapters of the draft EIS should assess the health impacts/effects of changes in the full range of environmental and social determinants of health and the potential inequalities/equity issues due to the proposed development. The level of analysis and detail should be reflective of their likely significance. Examples are changes to road traffic movements and their potential health consequences (community severance, risk of road traffic accident and injury), changes in qualities and characteristics of the surrounding areas (including land values and other economic impacts) and changes in recreational use, amenity of natural areas and access to greenspace and nature and their associated health and wellbeing impacts through, for example, changes to levels of physical activity; effects on services and amenities.
- Findings should be presented in a way that helps to communicate the scale of the population affected, by determinant of health, and also what the synergistic (combined) impacts are likely to be to various communities from exposure to the combined hazards.
- Not all unknown variables, assumptions, and limitations are included in the assessment. A specific comment relates to certain health impacts (e.g. air quality-related health impacts on children, other chronic effects such as incidence of chronic bronchitis in adults) known to occur from exposure to air pollution but for which the level (extent/magnitude) of the health impact associated with a certain level of pollution exposure is uncertain or unknown. These additional health impacts, for which quantification is uncertain or unknown, are not discussed. The Health Chapters should consider and discuss health impacts where quantification is not currently recommended by national guidance (e.g. Australian Government Guidelines for Health Risk Assessment) such as air quality impacts on children, other

chronic effects, and other additional morbidity effects of short-term exposure but for which there is a widely acceptable evidence base supporting their likely occurrence.

Assessment of Air Quality:

- The assessment of air quality-related health impacts follows a health risk assessment approach, focussing on quantification of health endpoints from exposure to a range of air pollutants. The methodology used is adequate. The range of air pollutants addressed is adequate. The range of health endpoints considered is also adequate and follows Australian evidence and guidance.
- However, the range of health endpoints addressed could be expanded to include others for which solid exposure-response coefficients exist, for example, group A coefficients provided in the WHO HRAPIE Project report¹.
- It is also not clear what baseline incidence rates were used (Sydney average or Liverpool/suburb rates).
 If Sydney rates are used, this may have resulted in a small underestimation of risks.
- Risks are estimated for 2030 and 2063 snapshots and separately for each pollutant. An overview of the
 expected scale of impacts resulting from the combined effect of all pollutants should be provided to
 provide a picture of the total risk to the exposed communities. It would also have been useful to include
 stage 1 predictions at full capacity (2050).
- Risks could also have been provided for the entire assessment period e.g. 30 years and not just for the snapshots. Discussion of the uncertainty around estimates could be enhanced, for example through the use of the upper and lower 95% confidence interval values of the exposure-response coefficients used. This would provide a better understanding of the likely range of actual impacts (for the worst-case unmitigated scenario).
- A general level of acceptability for estimated risks is used, stated to be accepted by regulatory agencies. This is for a risk between 1 x 10⁻⁶ (1 in a million) and 1x10⁻⁵ (1 in 100,000). The regulatory agencies should be named and references for this statement should be provided. Consideration should also be given to stakeholder perceptions of acceptability of risk.
- There is no discussion of the implication of the distribution of effects for inequality and equity although baseline information on sensitive/vulnerable groups is provided.
- Community feedback and any potential perceptions or concerns of local residents are not discussed. Community feedback on health concerns should be described and how this feedback was considered and addressed in the assessment should be discussed. Where community comments have not been incorporated or addressed an explanation justifying this should be presented. If there were no specific comments or concerns about health impacts/effects or some determinants of health then this should also be stated explicitly. There should also be a discussion of how communities were consulted.
- Perception effects are different from biological or epidemiological risks, can cause stress and anxiety, and should be considered separately from mortality and morbidity effects.
- Mitigation measures are not discussed, readers are cross-referred to the air quality chapter. An outline of proposed measures (i.e. an air quality management framework or plan) should be provided in the health chapter and an explanation provided for how and to what extent these measures will mitigate the identified health impacts.

Table 1. CRFs recommended by the HRAPIE project, p5-11

Assessment of Noise:

- The assessment of noise-related health impacts follows a health risk assessment approach, focussing on quantification of health endpoints from exposure to a range of noise. The quantitative methodology used is adequate. The range of noise metrics used is adequate. The range of health endpoints considered is also adequate and follows Australian and international evidence and guidance, namely the enHealth Guidance Health Effects of Environmental Noise other than Hearing Loss (enHealth, 2004). Risks are estimated for 2030, 2050 and 2063 periods for three different operation phase scenarios.
- A qualitative analysis and discussion of impacts/risks/effects on vulnerable/sensitive groups and on health inequality/equity issues has not been undertaken.
- There is no discussion of the implication of the distribution of effects for inequality and equity.
- Community feedback and any potential perceptions or concerns of local residents are not discussed. Community feedback on health concerns should be described and how this feedback was considered and addressed in the assessment should be discussed. Where community comments have not been incorporated or addressed an explanation justifying this should be presented. If there were no specific comments or concerns about health impacts/effects or some determinants of health then this should also be stated explicitly. There should also be a discussion of how communities were consulted.
- Perception effects are different from biological or epidemiological risks, can cause stress and anxiety and should be considered separately from mortality and morbidity effects.
- Mitigation measures are only discussed in passing and readers are cross-referred to the noise chapter. An outline of proposed measures (i.e. a noise management framework or plan) should be presented in the Health Chapters and an explanation provided for how and to what extent these measures will mitigate the identified health impacts.

Assessment of Water Quality:

A complete health risk assessment is not provided for water quality due to the limitations in water quality sampling (i.e. only 1997 data was available; no new data was collected for this EIS). A more complete assessment is required that includes a clear list of assumptions, a description of population affected, and an assessment of impacts on vulnerable receptor population groups.

Review of Overall Report:

The description of the context and requirements for the HRA are generally sufficient. It would have been advantageous to understand why only an HRA was undertaken and not a full HIA, considering that the Health Chapters recognize the significance of the social determinants of health. The population health profile was very limited in scope and is missing clarification for why only certain information is provided. Consideration of vulnerable populations is based around SEIFA scores only and again, it should be explained why only these scores, and not additional indicators of disadvantage are included. Any further information that is included in other chapters in the draft EIS should be referenced within the Health chapters.

Coverage of Health Topics:

The health risks described in the Health Chapter (air quality, noise and water) shows that some key determinants of health have been considered in reasonable detail. However, the potential inequality/inequity impacts have not been sufficiently assessed or discussed. This is a significant gap.

Some key determinants either do not seem to have been considered anywhere in the draft EIS or have not been considered and discussed in relation to health impacts in the Human Health Chapter and appendix. The approach taken to considering health impacts in the Health Chapters is narrow and does not take into account the findings of other health-relevant assessments, such as in the social impact assessment (SIA).

This has resulted in key environmental and social determinants of health not being considered. The scoping process whereby the decision to focus on air quality, noise and water is unclear so it is not possible to assess whether the narrow focus is justified. However given the current level of evidence on the effects of airports on health as well as the more general evidence base around the social determinants of health, it is likely that relevant health impacts are missing from the Health Chapters. The 'non health' sections of the draft EIS do however contain information about a number of significant impacts on the determinants of health (e.g. housing affordability, visual amenity). The majority of these relevant health determinants are covered within the SIA. These have not been identified as health impacts and the range and magnitude of potential health outcomes resulting from these impacts have not been assessed.

4.4.5 Long term development findings

The long-term development section (Chapter 39, Section 8) provides a summary of the long term health impacts that are discussed in more detail in the appendix. While the report does, at times, make reference back to the appendix, there is a lot of pertinent detail that is missing that should be referenced to the appendix. This section also lacks core components for clarity – such as discussing the methods used or mitigation measures - that would make this section acceptable as a standalone piece of work without having first read the appendix. This section also misses any discussion of long term cumulative impacts. Cumulative impacts are considered elsewhere in the report however this report does not make clear if the cumulative impact assessments were used in this assessment. It would be particularly relevant to include discussion of cumulative impacts here as there is no mention of health impacts in the cumulative impacts chapter. This section should also provide better characterisation of health impacts or otherwise provide a reference to where it is located in the appendix.

Key impacts and opportunities 4.4.6

The Health Chapter contains predictions of the attributable health outcomes from air and noise exposures in communities near the airport. The majority of outcomes for air quality were below accepted thresholds, however there were some exceedances for Particulate Matter 10, Particulate Matter 2.5, and Nitrogen Dioxide. Impacts from noise were also mostly below standards, however, impacts varied widely for different communities, with Luddenham likely to experience the most impacts associated with noise. Sufficient data was not available to conduct a complete HRA for ground water and surface water, therefore there are no predicted health impacts.

The Health Chapter and appendix utilises a Health Risk Assessment approach. This is a quantitative methodology that takes changes to these environmental determinants and estimates their risk to health (i.e. the chances or risk of a disease or fatality occurring). This narrow approach does not address the full range of determinants of health and makes no use of the large evidence base on the association between health determinants, particularly social, and health outcomes.

There are two major weaknesses in relation to the assessment of health impacts that the review team strongly recommend be addressed in order to ensure that health effects are not overlooked or not taken into account when mitigation/enhancement is being considered. These are: the reporting of the identified health impacts; and the scope of the impacts included in the health chapter.

4.5 Aviation planning

4.5.1 Approach

The approach to aviation planning has been to review the four volumes of the draft EIS as well as the draft Airport Plan provided on the Western Sydney Airport website (www.westernsydneyairport.gov.au).

This review is based on a desktop study and a literature review of the four volumes of the draft EIS and the draft Airport Plan, comparison of these against the EIS guidelines, identification of potential opportunities or inconsistencies and a comparison against available benchmarks.

4.5.2 Stage 1 development

Issues identified in terms of aviation planning for the Stage 1 airport include:

Airport planning

- No vocation or aviation purpose is described for Western Sydney Airport.
- There is a degree of variability in the forecasts and demand information used in the draft EIS and draft Airport Plan. In addition, the forecast passenger loads per aircraft for Western Sydney Airport as presented in the draft EIS appear to be high.
- It is unclear what benchmarks or planning decisions sit behind the 1900m runway separation shown for Western Sydney and it is noted that other airports in Australasia are proposing wider runway separation.
- Benchmarking indicates that passenger throughput per aircraft stand is potentially high for Western Sydney Airport. This would imply that the number of aircraft stands shown is less than one might typically expect.

Airspace and flight tracks

- The proposed airspace model is noted as a "proof of concept" and not the subject of exhaustive analysis. This indicative airspace design was not developed with consideration to potential noise or other environmental impacts.
- A single airspace model is presented for Stage 1 development. The basis of the model is that operations at Sydney Kingsford Smith Airport are unaffected. Other than minor flight path displacement, feasible alternatives are not presented or evaluated. However, presenting alternatives is a requirement of the EIS guidelines provided by the Department of Infrastructure and Regional Development.
- Departures track to 'exit gates', concentrating aircraft on several defined routes. This is a common tool used to improve air traffic flow. The impact of concentration and location of turn points has not been tested for environmental impact.
- Modes of operation (flight paths based on runways in use) are mentioned, but not how they affect surrounding areas.
- Noise abatement procedures, commonly implemented at other major airports, have not been developed.

Bird and bat strike

The bird and bat strike assessment concludes that the overall risk for the airport is low. However the assessment is preliminary.

Fuel dumping

Fuel dumping is concluded to be low risk and it is considered that the information presented in the draft EIS is appropriate.

4.5.3 Long term development

A number of the issues identified for Stage 1 are also apparent in the longer term planning of Western Sydney Airport.

- The lack of vocation or purpose for Western Sydney Airport and its relationship to the ongoing operation at Sydney Kingsford Smith Airport and, in particular, that potential long-term growth forecasts are very high.
- The variability in the number of stands and the apparent lack of consistency in terms of a base set of planning parameters used in developing the airport.
- Narrow runway separation to achieve all the proposed aviation uses.
- Lack of a full and thorough assessment of the interaction of aircraft traffic in the Sydney Basin which requires an airspace and flight path review not considered as part of Stage 1. The Stage 1 flight paths proposed in the draft EIS are not considered appropriate for the long term plan.

4.5.4 Key impacts and opportunities

Key impacts and opportunities from an airport planning perspective for the above issues are as follows:

- Vocation or purpose of Western Sydney Airport One might expect that, certainly in its early stages of development, the Western Sydney Airport would potentially be a predominantly domestic, low-cost carrier airport with a significant cargo operation, reflecting lower charges and the lack of noise curfew. Premium international flights would continue to use Sydney Kingsford Smith as the primary airport in New South Wales and the one which provides proximity to the tourist and business centre of Sydney CBD. This vocational aspect is important in influencing how the future airport will operate, peak periods of activity and the type of traffic that will use the airport.
- Forecasts There is potential that the forecasts understate the number of aircraft movements required, which has knock-on impacts on dependent analysis such as noise modelling. This is a potential area for further assessment or clarification to confirm that findings in the draft EIS and draft Airport Plan based on these forecasts are robust.
- Runway separation Any wider runway spacing would increase land take, with downstream environmental impacts on biodiversity, surface water and groundwater, landscape and visual amenity. In addition, wider spacing for the future two runway airport will impact on flight tracks and noise given changes to runway thresholds.
- Aircraft stand provision The number of aircraft stands shown is potentially less than one might typically expect, which has implications for land take and therefore related environmental impacts, though it is noted that the Land Use plan for Stage 1 shows a large area available for development.
- Airspace, OLS and PANS-OPS In terms of requirements, the evaluation of protection volumes for flight paths and airspace containment is in accordance with normal methods mentioned in the Airports (Protection of Airspace) Regulations and under the Airports Act 1996. Whilst analysis of Obstacle Limitation Surfaces (OLS) and Instrument Flight Procedure protection volumes (known as PANS-OPS surfaces) indicates that, operationally, the Western Sydney airport can operate unrestricted from terrain and artificial obstacles.

However, the following impacts are identified which are either unresolved or which require further clarification:

- 1. The proposed airspace architecture is 'indicative' and has not been rigorously tested. The draft EIS proposes that another airspace model is tested closer to commencement of operations.
- Flight paths appear to fly over water storages such as Warragamba Dam and Prospect Reservoir. The environmental impact is unclear.
- The requirement under the Guidelines, produced by the Department of Infrastructure and Regional Development (DIRD), for feasible alternatives to be included has not been met. This is particularly important in consideration of concentration of approaching traffic over the township of Blaxland for the Stage 1 development and departure tracks.
- There is no consideration of community sentiment regarding changes to flight paths, proposed in the draft EIS, when the Airport operates with two runways.
- An alternative Stage 1 airspace model, based on the long term proposal but operating with a single runway, is not tested.
- 6. Except for Sydney Kingsford Smith, flight paths for aerodromes, affected by the Western Sydney Airport are not evaluated.
- The draft EIS suggests that Western Sydney Airport will detrimentally affect the operations at Bankstown and Camden, and affect Richmond (military). The environmental impact is not quantified.
- 8. Relocation of light aircraft traffic to other airports, the definition of new training airspace and consequent environmental impact, is not assessed.

Given the above, it is considered that the information on airspace presented in the draft EIS does not meet requirements.

- Bird and bat strike the bird and bat strike assessment is preliminary and therefore further works in the airport site and study area are required to confirm the level of bird and bat strike risk and to refine the mitigation strategies, in parallel with design development.
- Fuel dumping It is considered that the information presented in the draft EIS is appropriate.

Social and Economic 4.6

4.6.1 **Approach**

In undertaking this review we have had particular regard to the requirements established by Section 10 of the Guidelines for the Content of the Draft EIS – Western Sydney Airport issued in January 2015 by the DoE.

We have also considered the implications of both the Stage 1 Airport and longer term development with regards to:

- Potential gaps in the preparation of the Social and Economic Specialist Studies;
- Any concerns regarding the validity of assumptions and conclusions; and
- Suggestions to improve the effectiveness of the proposed mitigation measures.

4.6.2 Components of the draft EIS reviewed

The following components of the draft EIS have been reviewed in relation to Social and Economic impacts:

- Relevant sections of the Executive Summary
- Volume 2—Stage 1 development Chapters 23 and 24 Social and economic
- Volume 3—Long term development Chapter 37
- Volume 4—Specialist studies in appendix P1, P2 and P3.

The social and economic review support the draft EIS's summation that the main benefits of the Western Sydney Airport relate to the generation of jobs in Western Sydney and associated economic activity. The importance of this contribution to Sydney represents an important policy shift since the preparation of the earlier EIS's for a second airport on the site as Western Sydney has become a greater focus for economic growth and activity.

In drawing this conclusion however we maintain the need for a balanced assessment across positive and negative social and economic impacts, both at a local and regional level, over the short and longer term. To this effect six overarching issues have been identified in relation to the current draft EIS and its assessment of impacts during Stage 1 of the Airport and a further four regarding its assessment over the longer term as discussed on the following pages of this Executive Summary.

4.6.3 Stage 1 development

4.6.3.1 Balance of discussion – Impacts

We identify a strong focus in the EIS on the economic benefits of Stage 1 of the Western Sydney Airport as distinct from a balanced discussion of economic and social costs and benefits. For example the economic Chapter (24) in Vol. 2 focuses entirely on the regional (Western Sydney) and broader (Sydney, NSW and Australian) employment and economic benefits of the Western Sydney Airport with only one general reference to potential adverse economic impacts as follows.

'However there would be some negative impacts in the immediate vicinity of the airport site due to combination of the airport development and the changing land uses' Vol. 2, Chapter 23, Pg. 504

A more balanced discussion of costs and benefits is therefore encouraged. For example in relation to matters such as impacts to local business activity during construction or the potential impacts of a new business park (with retail as a permissible use) to existing and proposed centres in the South West (i.e. Leppington, Edmondson Park and Liverpool).

4.6.3.2 Balance of discussion – Geography

Our comments regarding the balance of discussion also relate to the EIS's strong focus on the regional and Australian economic benefits of the Western Sydney Airport as distinct from any prospective local impacts. For example the economic benefits and costs to centres within close proximity to the Western Sydney Airport (i.e. Luddenham or within the South West Growth Centre) are little, if at all discussed. Whilst the impacts may be positive or minimal, it is appropriate that they are considered and where possible quantified.

4.6.3.3 Translation of issues within the EIS

The Specialist Social Impact Study in Appendix P identifies a number of likely adverse impacts to the local communities. Despite the significance of these impacts and their potential to raise notable social concerns,

many are given relatively minor reference in the relevant Chapter (23) with no reference in the Executive Summary.

This results in an ill-informed view of social issues for readers of the EIS who may not progress to read Chapter 23 or Appendix P in detail.

4.6.3.4 Statements without assessment

In the Stage 1 social and economic chapters (23 and 24) many of the potential issues are stated with little assessment of their implications to communities, their degree of significance or duration and alternative approaches that may be applied to alleviate them. For example the provision of alternative open spaces to communities during the construction process, the severity of noise impacts to recreational areas, the degree of noise disturbance for different locations over the short and longer terms.

This approach weakens the appreciation of the issues and the means to mitigate them. It could also result in greater angst by the community as to the likely degree, duration and severity of impacts.

4.6.3.5 Direct response to Stakeholder Engagement

The initial stakeholder engagement programme for the Western Sydney Airport identified a range of social and economic concerns (Vol.1, Chapter 8). A number of these concerns are listed by the specialist studies yet are not specifically addressed by Vol. 2 or 3 of the EIS. Furthermore the consultation chapter (Vol 1, Chapter 8) refers to an EIS summary paper being prepared however it is understood that this paper was not made available.

It is recommended that a summary consultation paper is prepared and made publically available and that each issue raised by stakeholders is considered and responded to by the specialist studies. In turn the body of the EIS should identify the most appropriate mitigation measures and minimise community concerns.

4.6.3.6 Transfer and redistribution effects

Much of the draf EIS's discussion regarding the economic value add as a consequence of the Western Sydney Airport recognises its '....role in attracting economic activity to the Region' at the expense of others i.e. 'There is a reduction in value-add in the Rest of Australia' (Pg. 139) and 'The model assumed the future regional employment growth would be redistributed across Sydney...' (Pg. 141).

Whilst the generation of jobs in Western Sydney is a strong positive of the Western Sydney Airport, the draft EIS does not discuss the economic or social implications of this transfer of activity from the other areas in Sydney or 'the rest of Australia'. Whilst any such impact might be negligible or acceptable, the potential impact should be recognised and considered in the assessment.

4.6.4 Long term development

The longer term assessment of impacts by the EIS is generally an extension of those identified upon operation for Stage 1. Our review finds that if left unmitigated, these impacts would generally be exacerbated on account of the significant increase in flights and passengers owing to the introduction of the second runway.

Key issues relate to:

How potential social and economic impacts could be managed and mitigated with such a significant and relatively quick increase in the number of passengers and associated on site employment (+120%) over the 13 year period between 2050 and 2063;

- 10. The potential impact of additional flight paths and operations to regional amenity and the impacts to the longer term development potential of affected areas in Western Sydney and more specifically in the South West Growth Centre i.e. height and noise restrictions to increasing residential density;
- 11. The degree to which the Western Sydney Airport could '...lead to the reduction in social amenity and impacts on the existing lifestyle of people living and working....' (Pg. 138) identified by the EIS; and
- 12. The economic costs or implications of the Western Sydney Airport's '....role in attracting economic activity to the Region' at the expense of others i.e. 'There is a reduction in value-add in the Rest of Australia' (Pg. 139).

4.6.4.1 Mitigation of Longer Term impacts

A review of the discussion concerning mitigation measures over the longer term focuses heavily on planning mechanisms (i.e. zoning of land to exclude residential uses) together with local and State Government investment to address broader traffic, transport and infrastructure issues.

There is no discussion, however, of how this would be co-ordinated or resourced to address specific impacts resonating from the Western Sydney Airport. Further there is no discussion as to who the key accountability would fall with.

This results in a potential risk that some mitigation measures and impacts would be missed or forgotten over time.

4.6.4.2 Setting a framework for further assessment

To improve the longer term assessment and give some comfort to its approach, we suggest:

- Further assessment of the potential social and business impacts and the information gaps with some parameters or ranges of assessment; and
- The identification of the main body responsible for managing and mitigating these impacts and risks over time or how the mitigation framework will be managed.

4.6.5 Key impacts and opportunities

A review of the EIS has identified the following potential impacts and opportunities during Stage 1 and over the long term development.

Table 4.1 Summary of impacts and opportunities

	Stage 1	Longer term	
Impacts	Social	Social	
	 Improved employment opportunities 	■ Improved employment opportunities	
	 Reduced travel time to work opportunities 	■ Reduced travel time to work opportunities	
	 Increases in average wages 	 Increases in average wages 	
	 Improved retail and business service choice and price competition 	 Improved retail and business service choice and price competition 	
	 Changes to semi-rural lifestyle 	 Impacts to social service provision 	
	 Changed access to spaces and community facilities on the Western Sydney Airport site 	 Amenity and health impacts (noise, visual and air quality) owing to airport operation 	
	 Impacts to community cohesion 		
	 Impacts to social service provision 		

	Stage 1	Longer term		
	 Perceived impacts and associated social anxiety 			
	 Amenity impacts during construction (dust, noise, road closures) 			
	 Amenity and health impacts (noise, visual and air quality) upon operation 			
	Housing affordability			
	Economic	Economic		
	■ Construction jobs	 Multiplier benefits of job generation 		
	 Multiplier benefits of operational job generation 	 Agglomeration benefits for Western Sydney businesses 		
	■ Economic value add for the economy	■ Economic value add for the Western		
	 Increased customer base and business activity 	Sydney economy Redistribution of jobs to Western Sydney		
	 Redistribution of jobs to Western Sydney 	 Improved appeal of investing and operating 		
	 Local business impacts during construction and operation Land value changes 	airport related businesses in Western Sydney		
		Land value changes		
	 Impact to retail and center viability 	 Impact to retail viability and opportunities 		
	 Changes in traffic congestion 			
	 Congestion impacts to WSEA and local and regional roads 			
	 Decline in agriculture industries 			
Opportunities	Greater population growth and diversity (age and socio-economic) owing to	 Continued population growth and improvements in social diversity 		
	employment opportunities	 Improved balance of economic outcomes across Sydney 		
	■ Improved live/work connections			
	 Potential increase in tourism in the Blue Mountains 	 Improved balance of social and community outcomes 		
	 Greater appeal of Western Sydney to business and investment 	 Enhanced local, Sydney and Australian economies 		

Key: Positive impacts, negative impacts/opportunities, neutral or positive impacts/opportunities dependant on stakeholder

4.7 Surface water and groundwater

Approach 4.7.1

Cardno have undertaken a desktop review of the draft EIS documents and have assessed the draft EIS with respect to the following items:

- An evaluation of whether the ground and surface water studies meets the requirements of the EIS Guidelines and relevant other guidelines and methodologies;
- An evaluation of whether the conclusions reached in the studies are valid;
- An evaluation of whether the underlying assumptions used to inform the assessment are plausible and credible;
- A review of the mitigation and management measures proposed and advice provided on their likely adequacy in mitigating impacts;

- An evaluation of the level of uncertainty over impacts and the environmental risks that will arise as a result of the project; and
- A summary of the key impacts and opportunities associated with the project in relation to the Surface water and groundwater studies.

Descriptions of methodologies and impacts have been cross-referenced across chapters and the technical reports and figures checked for whether they aid understanding. Limited spot checks on values presented in tables have been undertaken together with applying sanity checks to data and model results with expected outcomes.

Surface water and groundwater have been reviewed by separate specialists, except where there is an interconnection between the two, such as with water quality.

Prior to release of the draft EIS, Cardno initially reviewed available background documents to gain an understanding of site settings and project history including EPBC documentation and the 1997–1999 draft EIS by PPK.

4.7.2 Limitations

The following limitations apply to the review of the surface water and groundwater:

- No site visit has been undertaken;
- No numerical models were available and hence no review of models or inputs has been undertaken other than what has been reported, nor have any models been run as part of the review;
- No data is available for review and assessment is limited to commentary on the data provided, however, data gaps have been identified;
- Cardno assumed the data used for the impact assessment had gone through a quality control process before use and therefore can be relied upon; and
- Similarly Cardno did not review the interpretation of the data, for example the attribution of a bore to a specific aquifer.

4.7.3 Components of the EIS reviewed

The following components of the draft EIS have been reviewed in relation to surface water and groundwater:

- Volume 1—Project Background:
 - Executive Summary
 - Part A— Project background
 - Part B— Airport Plan
- Volume 2—Stage 1 Development:
 - ▶ Part D Environmental Impact Assessment:
 - Chapter 9: Approach to impact assessment
 - Chapter 17: Topography, geology and soils
 - Chapter 18: Surface water and groundwater
 - Chapter 27: Cumulative impact assessment
 - Part E— Environmental Management

- Part F —Conclusions
- Volume 3—Long Term Development:
 - Part G Assessment of Long Term Development
 - Chapter 30: Approach to impact assessment
 - Chapter 34: Surface water and groundwater
 - Chapter 39: Other environmental matters
 - Part H Conclusion and recommendations
- Volume 4—EIS Technical Reports
 - Appendix C: Western Sydney Airport EIS Guidelines
 - Appendix L:
 - L1 Surface water hydrology and geomorphology
 - L2 Surface water quality
 - L3 Groundwater.

4.7.4 Stage 1 airport

A summary of the assessment of compliance of the draft EIS with the EIS guidelines is provided in Table 2-1. In general the elements of the EIS Guidelines have been addressed, however, some gaps have been identified in the assessments.

Primarily, comment on how the reliability of the information was tested and what uncertainties (if any) are in the information is not presented. Further, figures and maps are provided, however, many figures and maps are not clear and could be improved to aid understanding. Mitigation and management measures are identified, however, are generally broad and do not necessarily target specific residual impacts or propose specific measures or targets.

The review has also identified some technically incorrect statements made in the EIS, however, Cardno has assessed that consequences for the outcomes of the impact assessment are limited.

4.7.4.1 Surface water

The overall outcome of the impact assessment is that there are minimal impacts to surface water, geomorphology and water quality as a result of the Stage 1 development including appropriate mitigation measures. Some specific residual impacts are noted in relation to changes to water level and geomorphology at Oaky Creek and on a tributary of Badgerys Creek.

The identified gaps in the assessment relate to:

- Flooding Residual impacts in Cosgroves, Oaky and Badgerys Creek are identified. Cardno agree that the impacts may be relatively minor if the results as presented are correct. However, it is difficult to confirm whether the statements and conclusions are valid as there is a lack of supporting information and presentation of inputs and results are not clear and concise. Further, these impacts still require management to mitigate them to negligible levels.
- Duncans Creek and its tributaries have not been modelled to allow definition of baseline and relative hydraulic impacts in these locations. Such impacts have been assessed by the changes in the hydrology for these catchments. As such, all summary impacts do not fully consider impacts to the Duncans Creek downstream areas. Investigation of a basin at this location is proposed as a mitigation/management measure.

- Many of the figures/maps provided in both the main chapters of the EIS and in the technical reports are either not easy to understand or omit relevant information to aid ease of understanding.
- Cumulative impacts have been discussed, however, no assessment has been undertaken to quantify
 the potential impacts other than for climate change scenarios.
- Water quality has not been presented in terms of achieved pollutant load reduction or assessment against guideline pollutant reduction targets. The EIS seems to dismiss any relevance of increased pollutant loads on the receiving environment and instead determines that impacts are acceptable because there are general improvements in pollutant concentrations due to increased flow volumes.
- The EIS discusses the tributary of Badgerys Creek that joins Badgerys Creek approximately 300 metres downstream of Elizabeth Drive under existing conditions. It acknowledges that threatened ecological communities have not been mapped outside the site as part of the biodiversity assessment, but there is evidence of some remnant native vegetation along this reach of creek, which would be reliant on occasional flooding and would be impacted under the current proposals. Such impacts need to be assessed to ensure there are no impacts and any mitigation and management measures identified.

Surface water impact management is required to address the following residual risks to surface water:

- Outstanding localised increases to flood depths in Cosgroves, Oaky and Badgerys Creeks.
- Risks to erosion and geomorphological changes to the downstream creeks due to increases in bed shear stress at various locations.
- Undefined impacts and mitigation for runoff to Duncans Creek.
- Implications of increases in pollutant loads, particularly for cumulative impacts are not addressed.
- Ecological impacts in receiving waters are not clearly addressed.
- Impacts of potential use of stormwater to provide water supply for site preparation works has not been considered.

4.7.4.2 Groundwater

The overall outcome of the impact assessment is that there would be no impact to groundwater systems and associated values due to the presence of tight clay soils and limited groundwater presence directly below the site. Cardno does not concur fully with the assessment, this difference results from a key assumption made in the EIS by characterising the uppermost aquifer.

The identified gaps in the assessment relate to:

- Groundwater values are identified, however the groundwater dependent ecosystem lacks characterisation and conceptualisation with respect to water source.
- Sufficiently complete characterisation of the weathered rock (regolith) aquifer is not provided. For example, the aquifer composition, nature and thickness distribution is unknown (this could have been collated through a review of all drilling logs performed on site overtime), and the level of saturation of the aquifer is also unknown. This is a limitation in understanding the connectivity of the weathered rock (regolith) aquifer to the alluvium aquifer supporting groundwater dependent ecosystem.
- Similarly, no baseline time-series data has been collected. This is especially a limitation when it comes to characterisation of the weathered rock (regolith) aquifer and the contribution of this aquifer to the alluvium formations along the creek lines where groundwater dependent ecosystems are primarily located.
- The impacts are reasonably well identified, however some of the impact assessment is missing a clear outcome statement.

- Impact management and mitigation measures are only discussed generally with potential mitigation measures to be considered and monitoring to be implemented. Groundwater impact arising from contamination is suitably addressed. Groundwater impact arising from the development of the site is, in view of the lack of information on the uppermost aquifer, inappropriate especially when addressing impacts on groundwater dependent ecosystems.
- Consideration of groundwater recharge is discussed at length for the Bringelly Shale and overlying aguifer, however, the discussion does not extend to the alluvium aguifer.

Groundwater management is required to address the two residual risks to groundwater values:

- Risk of soil and subsurface contamination from spill/release of chemicals or contaminants. A discussion is suitably provided to this effect in the EIS documents. Cardno agrees that the details of the management program cannot be defined at this stage and should be incorporated in a site environmental management plan.
- Risk of impact on groundwater dependent ecosystems from reduced water supply to the creek alluvium system. In Cardno's view, the EIS documents do not provide a robust impact assessment of the risk to the Cumberland Plain Woodland along Badgerys Creek. Cardno suggest that the following management and mitigation approach could be considered to address the EIS guidelines requirements:
 - implementation of baseline data acquisition with an aim to document the contribution of recharge to the creek alluvial system from the weathered rock (regolith) aquifer, the Bringelly Shale and streamflow:
 - a review of the risk to the ground water dependent ecosystem; and
 - based on the outcome of the previous item, the management and mitigation will vary with the level of risk. A risk propagation based monitoring strategy and response plan may be suitable. In this case, a response plan would propose a suitable early warning indication of impact propagation and provide the management and mitigation measures if necessary to prevent adverse impact. If the risk is identified to be more significant, engineered solutions may need to be considered in the site design. Another management and mitigation solution could involve inputs into site design to prevent impact on streamflow and indirectly aquifer recharge or mitigate the loss of recharge.

4.7.5 Long term development

4.7.5.1 Surface water

For the long term development, the impact assessment builds on the assessment for Stage 1. The hydrologic, hydraulic and water quality models used in the assessment include representations of the drainage system incorporated into the concept design of the indicative long term development.

The concept design of the long term development includes expanding the drainage system to control the flow of surface water. An extension of the Stage 1 detention basins is proposed together with provision of an additional detention basin in the longer term.

The following risks to surface water for the long term development and their implications have been identified:

- Outstanding localised increases to flood depths in Cosgroves, Oaky and Badgerys Creeks.
- Risks to erosion and geomorphological changes to the downstream creeks due to increases in bed shear stress at various locations.
- Undefined impacts and mitigation for runoff to Duncans Creek.
- Implications of increases in pollutant loads, particularly for cumulative impacts are not addressed.

- Ecological impacts in receiving waters are not clearly addressed.
- Impacts of potential use of stormwater to provide water supply for site preparation works has not been considered.

It is believed that most of the above issues can be addressed through refinement of the drainage strategy to manage flows, velocities and water quality. There are some outstanding impact assessments which have not been considered and should be addressed such as ecological impacts, use of stormwater for construction and impacts on Duncans Creek.

A reasonably robust assessment of the long term development has been undertaken. There is no formal framework for further assessment established as part of the EIS. The EIS for the Long Term Development simply lists considerations for future development as part of future design stages to address the impacts to be minimised. While this list identifies some of the key items to be addressed, in does not recommend any specific measures or processes that must be adhered to so as to tie those activities back to this EIS and associated approvals.

4.7.5.2 Groundwater

The following risks to groundwater for the long term development and their implications have been identified:

- Risk associated with change of land use and decrease of groundwater recharge. The implication is possibly, a lack of groundwater supply to the groundwater dependent ecosystems (EPBC listed). If the studies highlighted in the data gap analysis confirm that there is a risk, an artificial groundwater supply scheme to the alluvial aquifer or designed streamflow release upstream of the ecosystem will possibly be required to support aquifer recharge. If the studies identify that there is no risk of impact to the groundwater dependent ecosystem water supply, then no further work will be required.
- Risk associated with the possible use of chemicals over irrigated areas. The level of risk will depend largely on locations and practices. The implication is possibly an impact to the health of groundwater dependent ecosystem through runoff and infiltration in the alluvial aquifer. Management of this risk implies best practices be followed for the use of fertilizer and pesticides, additionally, targeted analytes could be included in groundwater monitoring.
- Risk associated with the use of groundwater as a supply. A groundwater assessment will be required to establish whether the extraction of the required volume is feasible and the impact on nearby groundwater users. It should be noted that the target aquifer will be the deeper Hawkesbury Sandstone. The implications in terms of work required will depend on the volume required. At most, the studies for a groundwater assessment are likely to require the drilling of a few wells (at least one observation and one pumping well), pump testing and analysis and some groundwater modelling.

The EIS identifies some of the required assessments and activities especially in relation to water quality management. The EIS also identifies that additional assessments will be required would the project require to use groundwater as a water supply. However, the EIS did not identify the state and federal regulatory processes likely to be required for the management of the site groundwater values (liaison, review and approvals, licences for example), nor did it clearly identify the management plans and response plans required to be in place. The EIS did not identify assessment remaining to be performed to collect baseline data and confirm the hydrogeological conceptual model.

4.7.6 Key impacts and opportunities

Key project impacts and opportunities are as follows:

Localised increases in flood depths are indicated at a number of locations.

- Impacts in Duncans Creek are not fully considered and additional modelling would be required to determine residual impacts and any proposed management measures.
- Potential erosion and geomorphology changes with increased flow volumes and isolated increases in be shear stress.
- Increased pollutant loads for total suspended solids and nutrients, although pollutant concentration are equal or reduced compared to existing.
- Impacts on the groundwater dependent ecosystem associated with Badgerys Creek are not fully identified due to a lack of characterisation of the alluvium aguifer and in particular of:
 - The relationship between the alluvial aquifer and the weathered rock (regolith) aquifer; and
 - The characterisation of the recharge of the alluvium aquifer.
- These groundwater dependent ecosystems are declared a Matter of National and Environmental Significance under the EPBC Act. A review of the groundwater conceptual model would be required to enable characterisation of impacts on the Badgerys Creek groundwater dependent ecosystem.

There is an opportunity to improve the outcomes of the EIS to manage the residual impacts through refinement of the drainage strategy and management plans during future detailed design stages. It is recommended that the residual impacts are clearly defined in the EIS and appropriate specific management measures and targets be proposed or specified to ensure that these issues are addressed.

Given the complete redevelopment and earthworks taking place on site, there is opportunity to introduce even higher levels of stormwater management and water quality treatment to further minimise the impacts of the project and potentially improve the outcomes. This would assist in minimising cumulative impacts on the environment that may occur in combination with the surrounding South West Growth Centre and Western Sydney Employment Area development impacts.

With respect to groundwater impacts, there is an opportunity before site activities to acquire suitable baseline data and review the level of risk to the groundwater dependent ecosystem along the creeks. There is also an opportunity to define site design requirements to ensure recharge of the alluvium aguifer and, consequently, preservation of Badgerys Creek groundwater dependent ecosystem.

Greater Blue Mountains 4.8

4.8.1 Approach

This section of the draft EIS review focuses on the potential impacts of the proposed airport on the Greater Blue Mountains Area (GBMA). The Greater Blue Mountains are listed as a National Heritage place and as a declared World Heritage property. As such, this review takes into account the following matters of national environmental significance outlined in the EIS guidelines:

- the heritage values of a National Heritage place
- the world heritage values of a declared World Heritage property.

4.8.2 Components of draft EIS reviewed

The potential impacts of the proposed airport on the Greater Blue Mountains are addressed in Chapters 26 and 38 of the draft EIS. Technical reports for noise, social, biodiversity and air quality consider the Greater Blue Mountains as a sensitive receiver in the detailed assessments.

4.8.3 Findings

4.8.3.1 First stage airport

Chapter 26 of the Western Sydney Airport EIS draws on information from the environmental and social assessments undertaken for the first stage airport on the World Heritage and National Heritage values and other values of the Greater Blue Mountains World Heritage Area (GBMWHA).

The methodology applied to the assessment World Heritage, National Heritage values and other values included:

- identification of the property's World Heritage and National Heritage values, including attributes recognised in the Statement of Outstanding Universal Value;
- identification of key examples or attributes of other values that complement the property's World Heritage and National Heritage values;
- collation of relevant baseline information on environmental factors and existing impacts including baseline noise levels and flight paths associated with Sydney Airport;
- assessment of significance of impacts on World Heritage values and the integrity of the world heritage property and the National Heritage values based on the Significant Impact Guidelines 1.1 (DoE 2013a) and the property's Statement of Outstanding Universal Value; and
- assessment of the National Heritage area having regard to all environmental matters.

The draft EIS assessment of the potential impacts was limited to noise, air emissions and amenity impacts from overflight of aircraft, lighting and traffic.

The GBMA comprises eight protected areas. The GBMWHA Strategic Plan (DECC, 2009) provides a framework for the integrated management, protection, interpretation and monitoring of these areas. Each park has a Plan of Management prepared by the NSW National Parks and Wildlife Services which provides the detailed management prescriptions for each reserve which have not been included in the draft EIS.

4.8.3.2 Compliance of the report with the (EPBC Act) EIS Guidelines

As the GBMA is listed as a National Heritage place and a declared World Heritage property, this review assesses compliance with the sections of the EIS Guidelines that relate to the requirements of controlling provisions (5(a), (d), 6(a), 6(b), 6(c)(ii), 7(a)) or MNES (5(c)) or make specific reference to the GBMWHA (4(b), 5(g) and 6(b)(e)).

Table 4.2 Compliance of draft EIS with EPBC Act Guidelines

EIS Guideline		EIS Section	Comment
4	Description of the environment		
	 Description of the GBMWHA world heritage values. 	26.3.2	Description of the world heritage values adequately reflect the UNESCO 2015 information.
	 Description of the GBMWHA national values. 	26.3.3	The area and values of the GBMA are the same as the World Heritage Area so the EIS uses one assessment to address both sets of values. Peer review of the EIS confirms the Greater Blue Mountains Area meets the official values of criterion a, b, c and d due to meeting world heritage criterion ix and x and therefore one assessment is considered adequate.

EIS Guideline		EIS Section	Comment	
	 Reference to World Heritage criterion. 	26.3.2.1	Reference to World Heritage criterion ix and x in Chapter 26.	
	Reference to the integrity of the property.	26.3.2.2	Reference to the integrity of the GBMA discussed in Chapter 26 and reflects the world heritage listing.	
5	Relevant impacts: construction, operation and decommissioning phases facilitated impacts on MNES	26.4	Construction impacts mentioned but none identified that would affect the values of the GBMA due to distance and lack of direct connectivity this is a valid justification.	
	facilitated impacts on MNESjustification for no impact.	26.5 & 38.3	Direct and indirect operational impacts discussed. Indirect impacts associated with noise, air quality and amenity.	
			Facilitated impacts from increased tourism and associated economic development.	
			Decommissioning impacts have not been discussed assessed, given that the likelihood of the airport being decommissioned is low this project phase is not considered relevant.	
6	Avoidance and mitigation measures	26.6 & 38.4	Influence on existing threats (26.5.5 & 38.3.5).	
	Take into account relevant agreements and plans that cover impacts or known threats.		GBMWHA Strategic Plan forms the basis of the other values and existing threats. It is noted that there are other management plans that cover the individual parks in the GMBA that have not been included in this assessment.	
7	Residual impacts and offsets	-	Residual impacts have not been discussed for impacts on the GBMWHA.	

Noise

The technical noise report provides an assessment of noise levels in the Greater Blue Mountains World Heritage Area (GBMWHA). To provide a basis for assessing impacts to the GBMWHA, the technical noise report presents information in the form of track density plots. While this form of data provides a useful and established form of information, the reason for reverting to overflight numbers in lieu of predicted noise levels is not stated. As per the discussion in section 2.3.2, this may be related to increased uncertainty in the predictions when considering low predicted noise levels. However, flight track density plots in isolation do not illustrate the full extent of potentially intrusive noise levels at locations to the side of the flight track.

The report notes aircraft are typically at an altitude of approximately 5000 ft, which corresponds to a noise level on the ground of approximately 55 dB L_{Amax}, consistent with INM predictions for the Airbus A320 or Boeing 737-800. Measurements at other airports have however demonstrated that aircraft at that altitude are generally higher than those predicted using the INM, and accordingly noise levels in practise could be higher.

The assessment of noise impacts in tranquil areas is complex and guidance on the subject is limited. As per the technical noise report, levels below 55 dB L_{Amax} could be considered intrusive by recreational visitors and other users. The natural soundscape in terms of sound press levels and sound characteristics are important attributes of high value wilderness areas. While levels below 55 dB L_{Amax} are likely to be comparable to typical levels associated with ambient noise sources in the GBMWHA, it is not considered appropriate to assess aircraft noise intrusion by comparing sound pressure levels; the characteristics of aircraft noise and natural sound sources is very different, and are interpreted in very different ways.

The potential for a large number of audible events below 50-55 dB L_{Amax} is therefore considered to potentially represent a significant and widespread impact within the GBMWHA. On this point, we note that the separate assessment of impacts to the GBMWHA presented in Volume 2 of the draft EIS indicates noise levels below 50 and 55 dB L_{Amax} are 'not significant'. Given the above, the assertion within draft EIS chapter that noise levels below 50 and 55 dB L_{Amax} are 'not significant' is not considered to have been sufficiently justified, and the assessment may therefore not adequately reflect the potential impact to the values of tranquillity within the World Heritage Area.

Given the status of the Blue Mountains as a World Heritage Area, and the potential for intrusive impacts, further assessment of this sensitive receiver location is considered to be warranted. In particular, further information should be provided to demonstrate the relative merits of alternative aircraft arrival management procedures which do not involve a concentration of aircraft movements over the GBMWHA. This should include a discussion of the trade-offs between protection of amenity in residential areas and the protection of the GBMWHA. Consideration should also be given to different areas within the GBMWHA noting any areas of increased recreational use or areas where tranquillity and natural soundscapes may be more valuable.

In addition, the technical noise report considers the number of people potentially affected for alternative merge points in general terms. For the two alternative merge points considered, the technical noise reports notes that the flight densities over Blaxland are reduced, and the people affected are aligned to less populated rural residential areas outside the GBMWHA. Track densities and number of aircraft overflights over Blue Mountains' communities are still predicted to be high, while impacts on some areas within the GBMWHA are increased for the two alternative merge points.

It is therefore unclear why preference has been given to the merge point that affects a greater population, i.e. over Blaxland, in lieu of reducing number of potential affected residences. This is perhaps due to conservation of the world heritage area, though should be confirmed.

Air quality

The air quality impacts relevant to the GBMA have been divided into three elements; regional air quality, climate change and emissions from fuel dumping.

A review of the regional air quality assessment found that the assessment adopted the NSW EPA's tiered assessment approach which was considered appropriate for this project. All the relevant information regarding how the regional air quality assessment was undertaken, with the exception of detailing how the airport sources were parameterised within the model.

Whilst the change in the daily maximum 1-hour ozone concentration was marginally higher that the 1 ppb defined in the EPA's tiered approach, the base concentration at the location of the incremental change was approximately 50 ppb (well below the EPA's impact assessment criterion of 100 ppb). The maximum 1-hour concentrations within the region were not predicted to increase as a result of the Stage 1 Development. Mitigation measures that had a focus on reducing NOx emissions were also recommended for consideration.

The EIS recognises that a challenge identified in world heritage listing (UNESCO, 2015) is the impact of human-enhanced climate change on the GBMA due to the potential for increased temperatures and alteration to the frequency and intensity of fires. A review of the GHG assessment by Katestone Environmental found that despite not specifying the emission factors used to quantify emissions, the greenhouse gas assessment appears to provide reliable estimates of greenhouse gas emissions with the proposed airport representing approximately 0.10% of Australia's project 2030 transport related GHG emissions inventory.

A review by Katestone Environmental identified that the potential impacts from fuel dumping have not been quantified.

Biodiversity

A review of the biodiversity assessment undertaken for the project found that it generally complied with the EIS guidelines. A partial compliance was identified in relation to a detailed assessment of significance on the Greater Blue Mountains Heritage Area which notes that it will be included in the final draft of the report following a multidisciplinary workshop to assess potential impacts.

Social

The GBMWHA has been included in the social impact assessment as an area that provides a range of recreational pursuits that may be impacted by the proposed airport increasing the number of audible overflights to over 70/day in 2030. A review of this technical report has identified that there is a strong focus on the economic benefits at the regional and national levels however lacks the assessment of economic and social impacts at the local level.

4.8.3.3 Commentary on validity of assumptions

Identification of the sensitive receivers

Sensitive tourism and recreation areas used in the assessment were based on the identification of key attractions and associated viewing locations within the GBMA. The assessment considered the remoteness, accessibility and accommodation options as an indication of the type of tourism and recreational experiences available at each location.

Sensitive areas identified for amenity assessment in the EIS stage 1 were:

- Jamison Valley south of Echo Point lookout and the Scenic Cableway at Katoomba and Wentworth Falls lookout;
- Grose Valley east of Evans lookout and Govetts Leap lookout;
- Wilderness area between Deanes lookout and Crawfords lookout within Wollemi National Park:
- Nattai wilderness area;
- Kanangra Walls and wilderness area east of Kanagra-Boyd lookout; and
- Baal Bone Gap within Gardens of Stone National Park.

Other sensitive receivers not included in the assessment that add to the value of the area include towns located in the lower Blue Mountains e.g. Springwood and Leura, walking tours (Aboriginal Blue Mountains Walkabout tour near Faulcon Bridge), sporting events (six foot track marathon, ultra-trail) canoe/kayak trails along Nepean River, Grose River and further north along the Colo River. Viewing locations that are outside the GBMA, but provide views of the area, for example Burragonang lookout near Oakdale could be impacted by the proposed airport. These areas should have been included in the assessments. It is suggested that further consultation with the Blue Mountains City Council or Tourism Board to understand the full range of users of the area.

World Heritage and National Heritage values

The EIS states that the values identified for the Greater Blue Mountains National Heritage Area and World Heritage Area are the same. A review of the National Heritage criteria for the purposes of this item and the Environment Protection and Biodiversity Conservation Act 1999, found that each world heritage value that the World Heritage Committee has identified for the property triggers the place to meet a National Heritage criterion.

In this regard the EIS has taken the heritage assessment to cover both the national and world heritage values of GBMA, which is considered a suitable approach.

4.8.3.4 Whether the conclusions reached in the studies are valid

The draft EIS concludes:

- No direct impacts are expected World Heritage or National Heritage values from the construction or operation of the proposed Western Sydney Airport;
- Potential indirect impacts of airport operation would not result in an attribute of the property being lost, degraded or damaged, or notably altered, modified, obscured or diminished.

It is noted that the detailed assessment of significance on the GBMHA has not been completed and will be included in the biodiversity technical report following a multidisciplinary workshop to assess the potential impacts.

4.8.3.5 Review the mitigation and management measures proposed

Mitigation measures referred to in the aircraft noise assessment are generic in nature due to the airspace design not being finalised. Design of airspace arrangements and flight paths for the proposed airport would take into account the potential impact on sensitive areas including GBMA.

The development of a detailed Environmental Management Plan for the project would take into consideration management plans already in place for GBMA; including the Strategic Plan.

4.8.3.6 The level of uncertainty over impacts and the environmental risks

Given the uncertainties concerning the final form of the airspace design, the final form of noise mitigation measures to be implemented is not yet known. Consequently, the mitigation measures that have been referred to in the aircraft noise assessment are generic in nature.

4.8.4 Long term development

4.8.4.1 Overview of approach to assessment to long term development taken by the EIS

Chapter 38 of the Western Sydney Airport EIS builds on the potential impacts considered for the proposed Stage 1 development (Chapter 26) and takes information from the environmental and social assessments completed for the proposal.

Seven sensitive tourism and recreation areas were identified in relation to the potential impacts from long term development of the airport in relation to noise, air quality and amenity.

- Jamison Valley south of Echo Point lookout and the Scenic Cableway at Katoomba and Wentworth Falls lookout;
- Grose Valley east of Evans lookout and Govetts Leap lookout;
- The wilderness area between Deanes lookout and Crawfords lookout within Wollemi National Park;
- The wilderness area between Mt Yengo lookout and Finchley lookout within Wollemi National Park;
- Nattai wilderness area:
- Kanagra Walls and wilderness area east of Kanangra-Boyd lookout; and
- Baal Bone Gap within Gardens of Stone National Park.

The Strategic Plan was used as the basis to form the additional values and existing threats on the GBMA national heritage listing and the outstanding universal value criterion used as to identify the values of the GBMWHA world heritage listing which is considered valid approach for this project.

Assessment of significance for the potential impact on the world heritage values of the GBMWHA was based on the requirements of the EPBC Act Significant Impact Guidelines 1.1. As noted in above in section 3.1.1, this assessment will be finalised following a multidisciplinary workshop.

Mitigation and management of potential noise impacts will be achieved through planning and implementation of flight paths, airspace design and airport operating procedures to support long term airport operations. The uncertainty of the final airspace design means that mitigation and management measures are generic and not accurately reflect the true noise impacts on the area.

4.8.4.2 Commentary on 'gaps' relative to a comprehensive/conventional assessment

Any decommissioning impacts have not been discussed assessed however given that the likelihood of the airport being decommissioned is low this project phase is not considered relevant.

Residual impacts have not identified in the EIS and therefore the effectiveness of the proposed management measures will be difficult to monitor.

4.8.4.3 Key impacts and opportunities

The key impacts on the GBMWHA considered during the review relate to the potential indirect impacts from noise and air quality.

The social impact assessment identifies an opportunity for increased tourism to the GBMWHA due to the closer proximity to an airport and the associated transport network. This opportunity has been assigned a high significance rating.

Biodiversity 4.9

The adequacy of the above documents was reviewed against the Western Sydney Airport EIS guidelines (the EIS guidelines), biodiversity survey and assessment guidelines and background data, where appropriate. The review criteria comprised:

- evaluate if the biodiversity study meets the requirements of the EIS guidelines and other relevant guidelines and methods;
- evaluate the validity of the data relied upon to inform the Biodiversity Assessment (draft EIS Appendix K1);
- evaluate the validity of the underlying assumptions of the Biodiversity Assessment (draft EIS Appendix K1);
- evaluate the validity of the conclusions reached in the Biodiversity Assessment (draft EIS Appendix K1);
- review the mitigation and management measures proposed and advise of the adequacy in mitigating impacts; and
- evaluate the level of uncertainty of biodiversity impacts and provide advice on the resulting environmental risks.

A summary of the key impacts and opportunities associated with the project has also been provided.

4.9.1 Stage 1 development review findings

The reports were found to be generally compliant with the EIS guidelines. However, a number of partial and non-compliances were identified. The assumptions and conclusions of the assessment were considered valid, with the exception of three criteria which were deemed 'partially compliant'. The proposed mitigation and management measures were deemed suitable for this stage of the project, with further information required prior to construction with respect to biodiversity and environmental management.

Data gaps were identified with respect to land access restrictions, threatened species locations, the assessment of threatened species, and a large deficit in the proposed offsets. The Biodiversity Assessment (draft EIS Appendix K1) does not clearly define the extent of land access restrictions. A key risk associated with insufficient access (if this is the case) is that biodiversity values and offsetting requirements may have been underestimated.

Assessments of significance were not completed for the Green and Golden Bell Frog, Australasian Bittern, Australian Painted Snipe and a number of migratory species listed under the EPBC Act. Key risks associated with the omission of these assessments are that the level of impact and the offsets required may have been underestimated. The large credit deficit, particularly for Cumberland Plain Woodland in the Sydney Basin Bioregion, listed as a critically endangered ecological community under the *Threatened Species* Conservation Act 1995 (TSC Act) and Environment Protection and Biodiversity Conservation Act 1999 is a key risk as it is not currently known if the quantum of offsets required is available.

4.9.2 Long-term development review findings

The Biodiversity Assessment (draft EIS Appendix K1) provides a general assessment of adverse the longterm development impacts of the project. However, it does not consider the potential impact of successful implementation of biodiversity management measures from the Stage 1 development, which may result in increased biodiversity values and therefore underestimate the longer-term development impacts. In addition, the Offsets Strategy (draft EIS Appendix K2) does not state how offsets will be identified and secured for the long-term development.

4.9.3 Key impacts and opportunities

Key impacts of the project comprise:

- the loss of 90 ha of Cumberland Plain Shale Woodlands and Shale Gravel Transition Forest critically endangered ecological community; and
- the loss of 120 ha of habitat critical to the survival of the Grey-headed Flying-fox, a vulnerable species.

Key opportunities of the project comprise:

- location of the airport site on predominantly cleared land;
- identification of potentially suitable offset sites on private property that may have otherwise degraded, and been subject to key threatening processes; and
- in addition to the offsets, the creation of an on-site environmental conservation zone, containing native vegetation representative of the vegetation types to be cleared.

Conclusions

WSP | Parsons Brinckerhoff were engaged by WSROC and MACROC to project manage the peer review of the Western Sydney Airport draft EIS.

In this capacity WSP | Parsons Brinckerhoff ran a competitive tendering process to engage specialists in key areas of interest to the councils. WSP | Parsons Brinckerhoff reported to WSROC under the direction of a Steering Committee (of officers of the participating councils) to confirm which specialists should be engaged, the Steering Committee provided direction throughout the review process and reviewed draft inputs.

Key findings 5.1

The peer review of the draft EIS outlined five key findings as discussed below. A summary of each specialist reviews is provided in Chapter 4 whilst the detailed specialist peer reviews have been included as Appendix A - I and of this report.

General adequacy

The draft EIS was prepared over a period of approximately 8 months from engagement of draft EIS consultants to provision of an initial draft for Commonwealth Department of Environment review. By way of contrast the previous EIS for the project prepared in the late 1990s was undertaken over well over two years. From our review it is apparent that this has resulted in a number of omissions and limitations, which are discussed through Chapter 3 – Review of the overall draft EIS and Chapter 4 – Review of technical report of this report.

Airport Layout

The draft EIS nominates a preferred airport layout for both the Stage 1 and long term developments, noting that the layouts are indicative only and would be confirmed once an Airport Lease Company (ALC) has been appointed. Alternative layouts are presented for both the Stage 1 and the long term development however no consideration of alternative runway orientations has been undertaken. This contrasts with the EIS undertaken in the late 1990s which examines multiple layouts and runway alignments, and gives little visibility of whether the chosen layout, and in particular the runway alignments, achieve the best environmental outcome. Given the time that has lapsed since the previous EIS it would have been expected to see a thorough current option-evaluation process to explore alternatives.

Airspace architecture (flight paths)

Chapter 7 of the draft EIS describes the 'Airspace Architecture and Operation' of the proposed airport which includes the flight paths for the Stage 1 Scenario (2030), prepared by Air Services Australia on behalf of the Department of Infrastructure. Only one set of flight paths are provided in the draft EIS, featuring a 'merge point' (a point at which all incoming flights converge) over Blaxland. The concept of merge points is relatively new, and is considered good practice as it allows for incoming flights to minimise thrust and so reduce noise.

The brief of Air Services Australia as outlined in the draft EIS was to develop a set of flight paths that avoids impacts on existing operations at Kingsford Smith at 2030 (although it was acknowledged that this would be impossible in the long term) and to ensure safety of operations. We have a number of concerns in regard to the flight paths presented in the draft EIS specifically around the uncertainty of those described.

To reduce some of this uncertainty, we recommend the following:

- Greater consideration of alternative options is required, with an additional objective of minimising environmental impacts.
- A holistic review of flight paths taking account of all airports should be undertaken. As a minimum an option that allows for flight paths at Kingsford Smith to be modified should be considered.
- In recognition that a future ALC may modify the flight paths, sensitivity testing should have been presented to demonstrate the changes of noise impacts that would result if flight paths are modified.
- The case for a merge point should be further explored, and consideration of alternative merge points should be examined.

Draft EIS places no explicit limits on key impacts

In a number of areas the draft EIS does not provide assurances that acceptable environmental thresholds will not be breached, and does not set hard limits on environmental impacts. In the case of aircraft noise this is a reflection of the nature in which aircraft noise is managed in Australia. However the same is also largely true of other aspects of the draft EIS – the mitigation measures are generally not prescriptive, and there is little in the way of hard limits on impacts. This is largely a reflection of the fact that the ALC has not yet been appointed, and that the Department of Infrastructure is seeking flexibility over management and mitigation. However this creates uncertainty over the likely future impacts.

Uncertainties over the way the approvals process will operate

The project is subject to assessment under the EPBC Act, and that the Minister for the Environment's consent (and conditions) are a prerequisite of any subsequent approval under the Airports Act. The draft EIS notes that the future development and expansion of the airport will be subject to further assessment and approval under the Airports Act, and that the preparation of a masterplan will be required within five years of the commencement of the project. This would superseded the current Airport Plan, which is described in the draft EIS as a transitional document, in effect it is implied that once the airport is leased, all future approvals would be under the Airports Act.

What is less clear is:

- What the potential triggers would be for the need for further referrals and potentially approvals under the EPBC Act.
- What further assessment and approval would be required (beyond the current EIS and associated Airport Plan approval) once an ALC is appointed and more is known about the actual airport layout and operations.
- What limitations any EPBC Act approval will place on the airport.
- What level of community engagement will be provided in the process going forward.

References

Commonwealth of Australia (2015a) draft Environmental Impact Statement. Australian Government, Department of Infrastructure and Regional Development.

Commonwealth of Australia (2015b) DRAFT Airport Plan, Western Sydney Airport. Australian Government, Department of Infrastructure and Regional Development. October 2015

DECC (2009) Greater Blue Mountains World Heritage Area Strategic Plan. Department of Environment and Climate Change (NSW)

Department of Environment (2013) Matters of National Environmental Significance Significant impact quidelines 1.1.

enHealth (2001) Health Impact Assessment Guidelines. enHealth Council

enHealth (2004) The Health Effects of Environmental Noise other than Hearing Loss. enHealth Council May 2004.

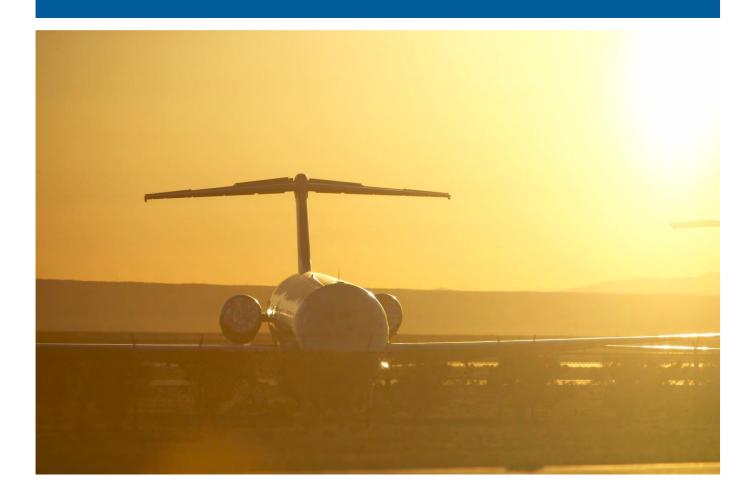
Mestre, V (2008) Synthesis 9 - Effects of Aircraft Noise: Research on Selected Topics. Washington, D.C: Airport Cooperative Research Program by the US Transportation Research Board

Standards Australia (2015) Acoustics-Aircraft noise intrusion-Building siting and construction, AS 2021-2015, Standards Australia, Sydney

UNSW and NSWHealth, 2007 Health Impact Assessment: A practical guide. Centre for Health Equity Training, Research and Evaluation (CHETRE). August 2007



Aircraft overflight noise (Marshall Day Acoustics)







6 Gipps Street
Collingwood VIC 3066
Australia
T: +613 9416 1855
ABN: 53 470 077 191
www.marshallday.com

Project: WESTERN SYDNEY SECOND AIRPORT DRAFT EIS PEER REVIEW

Prepared for: WSP / Parsons Brinckerhoff Australia Pty Ltd

Level 27, Ernst & Young Centre 680 George Street

Sydney NSW 2000

AUSTRALIA

Attention: Mr Paul Greenhalgh

Report No.: Rp 001 R01 2015417ML

Disclaimer

Reports produced by Marshall Day Acoustics Pty Ltd are prepared based on on a specific scope, conditions and limitations, as agreed between Marshall Day Acoustics and the Client. Information and/or report(s) prepared by Marshall Day Acoustics may not be suitable for uses other than the original intended objective. No parties other than the Client should use any information and/or report(s) without first conferring with Marshall Day Acoustics.

We stress that the advice given herein is for acoustic purposes only, and that the relevant authorities and experts should be consulted with regard to compliance with regulations or requirements governing areas other than acoustics.

Copyright

The concepts and information contained in this document are the property of Marshall Day Acoustics Pty Ltd.

Use or copying of this document in whole or in part without the written permission of Marshall Day Acoustics constitutes an infringement of copyright. Information shall not be assigned to a third party without prior consent.

Document Control

Status:	Rev:	Comments	Date:	Author:	Reviewer:
Draft	-	For WSP / PB review	10/11/2015	J. Adcock &	J. Adcock &
				A. Morabito	A. Morabito
Final	-	For external distribution	20/11/2015	J. Adcock &	J. Adcock
				A. Morabito	A. Morabito &
					S. Peakall
Final	01	Amended council references	27/11/2015	J. Adcock	-





EXECUTIVE SUMMARY

Introduction

Marshall Day Acoustics Pty Ltd (MDA) has carried out a peer review of the aircraft overflight noise assessment presented in the draft Environmental Impact Statement (draft EIS) for the proposed Western Sydney Airport (the proposed airport).

The peer review specifically relates to the draft EIS noise assessment of airborne aircraft operations associated with the proposed airport, and the associated ground movements for takeoff and landing. A separate report by WSP Parsons Brinckerhoff documents a peer review of noise impacts associated with construction and aircraft ground operations (including taxiing and engine run-up testing) for the proposed airport.

The objective of this peer review was to assess the reliability and technical accuracy of the aircraft overflight noise assessment.

The peer review considers the following proposed stages of development:

- Stage 1 development comprising a single 3,700 m runway with 63,000 aircraft movements per year which are projected to occur by 2030;
- Longer term development of the single runway to facilitate 164,000 aircraft movements per year which are projected to occur by 2050; and
- Longer term development with an additional parallel runway to enable additional capacity increases to 370,000 aircraft movements per year which are projected to occur by 2063.

Approach

The peer review has been primarily based on information presented in the noise chapters for the Stage 1 proposal and long term developments, in conjunction with the technical noise report presented in Appendix E1 of the draft EIS.

Consideration has also been given to other related sections of the draft EIS to review the broader assessment of noise impacts. The review of these additional sections has been concerned solely with matters related to the aircraft noise assessment. Reference should be made to the separate peer reviews commissioned by WSP Parsons Brinckerhoff for the review of specialist matters directly concerning aviation, fauna, health, planning and social issues.

This peer review addresses the following key elements of the aircraft noise assessment:

- The noise prediction methodology and the associated inputs and assumptions;
- The type of noise level information that has been produced;
- The operational scenarios that have been considered in the noise predictions;
- The noise sensitive receptors that have been identified and considered in the assessment;
- The methods used to assess the impact of the predicted noise levels;
- The proposed noise mitigation and management measures; and
- The level of uncertainty concerning the predicted noise impacts and environmental risks.

In reviewing these aspects of the draft EIS, consideration has been given to the document *Guidelines for the content of a draft Environmental Impact Statement – Western Sydney Airport* (Reference: EPBC 2014/7391 and subsequently referred to as the *EIS guidelines*).



Tasks not conducted as part of this peer review include:

- Consultations with any members of the project team involved in preparing the draft EIS;
- Site studies;
- Review of noise modelling files; or
- Noise modelling for the purpose of validating any of the results presented in the draft EIS

Review Findings - Stage 1 Development

The noise modelling is considered to generally provide a reasonable representation of the extent of noise impacts for the specific flight tracks and operating scenarios that have been proposed. Specifically, predicted noise levels have been determined for a range of operating scenarios. Aircraft noise information has also been produced in a range of formats that are generally consistent with current federal government guidelines for identifying areas potentially affected by aircraft noise.

All noise predictions have been determined using the latest version of the US Federal Aviation Authority's Integrated Noise Model (INM). This software is used widely in Australia and internationally for aircraft noise predictions and is the appropriate choice for this application. However, the use of this software to calculate short term noise levels, which is the main form of noise data used in the draft EIS to identify the extent of affected areas, requires careful consideration. Specifically, the INM supporting documentation notes:

INM is not designed for single-event noise prediction, but rather for estimating long-term average noise levels using average input data. Comparisons between measured data and INM calculations must be considered in this context.

Accordingly, while the use of the INM is reasonable, information has not been provided as part the draft EIS to verify the reliability of the short term noise level data (presented as maximum noise levels and Number Above ratings). This is particularly important for this proposed airport, because of the increased uncertainty associated with the predictions at the lower noise thresholds used in the draft EIS for the assessment of night-time operations and impacts in quiet areas such as the Greater Blue Mountains World Heritage Area.

Notwithstanding the general suitability of the noise modelling data, there are however a number of limitations to the assessment. These relate to the uncertainty surrounding the airspace management design, and the limited assessment of the noise modelling outcomes. These matters are summarised as follows.

Low Stage 1 movement numbers

The total aircraft movement numbers for the Stage 1 development are relatively low when compared to other international airports in Australia. The low movement numbers cast doubt over the suitability of the 5 year time horizon as the primary assessment scenario for the purpose of obtaining approval for a major international airport. In this context, it is unclear how the incremental and periodic approvals that would need to occur as part of the ongoing expansion of the airport provide a sufficient basis for considering the initial 5 years of operation as the primary period for the assessment of noise impacts.

These comments are provided primarily in relation to the plausibility of the movement numbers represented in the noise modelling, based on comparisons with movement numbers documented in the noise modelling for other Australian international airports and similar time horizons. Aircraft traffic forecasts are however outside of our area of expertise and therefore the suitability of the specific movement numbers provided for the noise assessment are considered in further detail in a separate aviation peer review commissioned by WSP Parsons Brinckerhoff.



Airspace management strategy uncertainties

The draft EIS states that the airspace management strategy used as the basis for noise modelling is a proof-of concept design, and that further work is required to determine the actual flight paths which would be flown in practice. Information about the extent of potential flight path changes is limited. The uncertainty surrounding the final airspace management design that would be implemented represents a significant source of uncertainty in the noise assessment. The potential significance of this source of uncertainty has not been quantified and, with exception of alternative merge points for Stage 1, there has not been any sensitivity analysis carried out to assess the implications of potential flight path changes.

Assessment of community annoyance

The draft EIS includes exposed population statistics which provide a useful indication of the number of people who may be affected by aircraft noise to varying degrees. However, in isolation, this data does not provide an indication of the scale or significance of potential community reaction to aircraft noise levels as a result of annoyance. The Health Risk Assessment in the draft EIS provides the most discussion of community annoyance, including references to research concerning the relationship between noise exposure and community annoyance. However, the Health Risk Assessment ultimately states that no quantitative assessment of annoyance was conducted as part of the study.

Dose-response relationships of the types referenced in the Health Risk Assessment can be used with noise levels and population data to provide a quantitative measure of the potential reaction. The use of these established relationships to represent the reaction of a separate community exposed to aircraft noise must be used with caution. In particular, due consideration must be given to the increased reaction that may be expected from a newly exposed community. However, this type of analysis provides an objective basis for comparing the impacts of alternative operating strategies and, more broadly, establishing the risk of community noise impacts relative to other established international airports in Australia.

While the assessment of the risk of community annoyance is complex, the scale of the proposed airport, and the number of people potentially affected, are sufficiently large to warrant further evaluation of the subject. The introduction of a new 24-hour international airport at a greenfield development site introduces a risk of widespread and prolonged community annoyance. A quantitative analysis of this potential risk would be prudent to inform the environmental impact assessment process and the extent to which operational noise mitigation should be prioritised relative to other non-safety related airspace management considerations. Updated social surveys of the type originally carried out as part of the development of the Australian Noise Exposure metric used in Australia also warrant some consideration, given the significant nature of the proposed development and the availability of detailed aircraft noise information for other existing Australian airports.

Land use impacts

The draft EIS includes calculated Australian Noise Exposure Concept (ANEC) contours for the Stage 1 operating scenarios. ANECs are often presented as an indication of the extent of a potential future Australian Noise Exposure Forecast (ANEF) contour which would be used to guide land use planning for noise-sensitive developments in the vicinity of airports.

However, as acknowledged in the draft EIS, the ANEC contours presented for the Stage 1 proposal provide limited guidance for the purpose of land use planning. The reason for this is that the ANEF is normally derived from ANECs calculated for long term operations or ultimate capacity scenarios, rather than short term ANECs related to an initial phase of operation. Evaluation of land use planning impacts must therefore be primarily based on the ANEC contours presented for the long term development of the airport, rather than initial Stage 1 development contours.



Greater Blue Mountains World Heritage Area

The draft EIS presents information to evaluate the potential impacts of aircraft operations on the acoustic amenity of the Greater Blue Mountains World Heritage Area (GBMWHA). The assessment indicates the potential for a large number of audible aircraft events within the GBMWHA.

The preservation of quiet areas and tranquil landscapes has been a topical subject of research and policy consideration in Europe and the US. For example, the US Transportation Research Board publication on the effects of aircraft noise (Mestre, 2008) includes a chapter which discusses research and US legislation (National Parks Overflight Act of 1987) concerning the effects of aviation noise on parks, open space and wilderness areas. These publications do not provide definitive guidance on assessment techniques, but highlight the complexity and importance of assessing aircraft overflight noise in sensitive wilderness areas.

While the noise levels in the draft EIS are predicted to be relatively low (below 50-55 dB L_{Amax}), aircraft over flights would be expected to be audible and represent a significant and widespread impact for a World Heritage Area where natural soundscapes are likely to be a valued feature of the areas amenity. The complexities and sensitivities of this area warrant further consideration in the draft EIS. Specifically, the assertion within the draft EIS chapter concerning the GBMWHA that noise levels below 50 and 55 dB L_{Amax} are 'not significant' is not considered to have been sufficiently justified, and the assessment may therefore not adequately reflect the potential impact to the values of tranquillity within the World Heritage Area.

Mitigation measures and residual noise impacts

The draft EIS noise modelling is based on an indicative proof-of concept air traffic management design which does not present a comprehensive airspace and final air route design. Given the uncertainties concerning the final form of the airspace design, the final form of noise mitigation measures to be implemented is not yet known. Accordingly, the mitigation measures that have been referred to in the aircraft noise assessment are generic in nature.

This is a particularly important point for an airport development as, unlike other forms of infrastructure development, the policies used to manage aircraft overflight noise do not generally stipulate noise limits that airport operations must adhere to at surrounding noise-sensitive locations.

Accordingly, without a defined airspace design, a defined noise mitigation strategy or defined noise criteria to adhere to in practice, the residual impacts and the location of these impacts is subject to considerable uncertainty. Further, without defined noise criteria, it is unclear how noise considerations would be prioritised among other non-safety related airspace management and operational considerations associated with the proposed airport site. These uncertainties may therefore warrant consideration of performance criteria as part of the approval process for the proposed airport.

In addition to the generic operational measures for the mitigation of noise, the draft EIS also refers to mitigation related to dwelling acquisition or dwelling insulation upgrades. There is however no detail provided in terms of the circumstances in which these measures would be implemented, other than a general reference to the guidance of AS 2021. It is unclear if this is intended to infer that such measures would only be considered within certain Australian Noise Exposure areas, or if such measures would be considered at all locations where internal levels may be expected to exceed AS 2021 internal design criteria as a result of the proposed aircraft operations.



Review Findings – Long Term Development

A number of the considerations identified from the peer review of the Stage 1 development are directly relevant to the assessment of the long term development scenarios. For example, matters related to the noise prediction methodology are identical for the Stage 1 and long term development scenarios.

In terms of assumptions about operational capacity, the movement numbers for the 2050 single runway scenario and 2063 dual runway scenario are comparable to the range of movement numbers documented for other similar Australian international airports. On this basis, the values appear to be plausible for noise assessment purposes. Aircraft traffic forecasts are however outside of our area of expertise and therefore the suitability of the specific movement numbers provided for the noise assessment are considered in further detail in separate aviation peer review commissioned by WSP Parsons Brinckerhoff.

The following limitations are however noted for the long term assessment scenarios.

Land Use Impacts

The draft EIS presents ANECs for a range of operating scenarios in 2050 and 2063 as part of the discussion of potential land use impacts which may result from a future ANEF for the proposed airport.

However, the latest Australian Standard (AS 2021) which defines how Australian Noise Exposure data should be used to inform land use planning includes guidance on how ANECs for multiple operating scenarios may be combined to define an overall area where planning controls should apply. The draft EIS does not refer to this guidance and it is therefore unclear how the various ANECs should be interpreted when assessing land use impacts.

Further, while the draft EIS provides population counts for the various ANEC bands, no assessment is provided of the extent to which land use controls may change as a result of a future ANEF prepared as part of the detailed airspace design for the project. Specifically, the draft EIS does not quantify the potential extent of changes to land use controls relative to the measures which have been in place since the original EIS was undertaken in 1985.

Furthermore, the discussion of land use planning impacts in the draft EIS notes that the National Airports Safeguarding Framework would 'be instrumental in managing potential future operational noise impacts for future land use planning and development around the airport'. The Framework could potentially translate to the creation of land use planning controls which extend over significantly greater areas than either the current land use planning controls (based on the 1985 EIS) or the 2063 ANEC contours provided in the draft EIS. This has however not been discussed or assessed in the draft EIS.

Cumulative Impacts

The draft EIS notes that the parallel runway scenario (2063) would introduce a number of issues which would need to be addressed in the final airspace design. In particular, the chapter concerning airspace architecture notes the following issues that would need to be addressed:

- Changes to Sydney Airport flight paths;
- Changes to flight paths serving Bankstown Airport; and
- Resolution of a potential constraint associated with the restricted airspace over Defence Establishment Orchard Hills.

The EIS guidelines establish a requirement to 'identify and address cumulative impacts, where potential project impacts are in addition to existing impacts of other activities'.

The above issues concerning the airspace architecture are considered to represent potential cumulative impacts which have not been quantified in the draft EIS. Further information concerning this issue is therefore considered necessary to address the requirements of the EIS guidelines.



Key Impacts and Opportunities

The findings of the peer review indicate that noise level information of the form required by the EIS guidelines has generally been provided in the draft EIS. However, the peer review has also identified a number of limitations concerning the content of the draft EIS, and therefore further information and assessments are considered necessary to address the general and noise-specific requirements of the EIS guidelines.

Based on the review of the draft EIS, the key noise impacts associated with the proposed airport are:

- Community annoyance, and related impacts such as speech interference and changes to the way individuals use outdoor spaces;
- Sleep disturbance associated with night-time operations, and related impacts such as the potential need for some residents to sleep with windows closed to achieve a suitable internal amenity; and
- Degradation of the acoustic amenity of the World Heritage Area within the Greater Blue Mountains area

In terms of land use impacts, the existing planning instruments that have been used to control development around the proposed airport site would generally be expected to limit the extent of the potential impacts. However, the draft EIS reference to the National Airports Safeguarding Framework as an instrumental tool for guiding future land planning around the proposed airport site introduces the potential for significantly enlarged development controls. This could translate to land use impacts also being a key impact associated with the proposed development.

Other noise related impacts cornering matters such as health, property values and social impacts are addressed in separate peer reviews commissioned by WSP Parsons Brinckerhoff.

Aircraft noise impacts are an unavoidable consequence of aircraft operations in urban environments. The creation of a new international airport therefore requires a balance to be achieved between the protection of amenity for neighbouring sensitive land uses and the development of infrastructure to respond to the growing demands of a major city.

Determining whether this balance has been achieved is ultimately a matter for regulatory authorities. While this peer review has identified a number of limitations to the present assessment, this is not intended to infer that the proposed development and development site are unsuitable. Rather, in light of the residual uncertainties in the assessment, further information and assessments are considered necessary before stakeholders can reach an informed view on the potential scale and significance of aircraft overflight noise impacts associated with the proposed airport site.

Conducting these further assessments as part of the environmental impact assessment process represents an opportunity to:

- Provide clarity to affected communities and stakeholders about the nature of the noise impacts;
- Provide clarity to regulators about the form of noise controls which will be needed in the project approval to ensure that noise is appropriately managed; and
- Reduce the potential for unforeseen impacts and the associated risk of reactionary noise management procedures which could subsequently jeopardise the operational flexibility of the proposed airport.



TABLE OF CONTENTS

1.0	INTRODUCTION	1
2.0	REVIEW FINDINGS – STAGE 1 DEVELOPMENT	3
2.1	EPBC Act and EIS Guidelines	3
2.2	Noise Prediction Methodology	4
2.2.1	Runway	4
2.2.2	Terrain Data	4
2.2.3	Flight Paths	5
2.2.4	Flight Profiles	6
2.2.5	Movement Numbers	7
2.2.6	Aircraft Fleet Mix	8
2.2.7	Calculation Procedure	8
2.2.8	Meteorological Conditions	9
2.2.9	Uncertainties	10
2.3	Noise Prediction Data	10
2.3.1	Airport operating modes	10
2.3.2	Calculation Metrics and Scenarios	11
2.4	Impact Assessment Methodology	12
2.4.1	Methodology Overview	12
2.4.2	Sensitive Receivers and Noise Exposure Data	14
2.4.3	Community Annoyance Assessment	15
2.4.4	Sleep Disturbance Assessment	16
2.4.5	Land Use Impacts	17
2.4.6	Dwelling Insulation	18
2.4.7	General Recreation Areas	18
2.4.8	Greater Blue Mountains World Heritage Area	18
2.5	Alternatives	19
2.6	Proposed Mitigation Measures	20
3.0	REVIEW FINDINGS – LONG TERM DEVELOPMENT	22
3.1	2050 – Additional capacity single runway	22
3.1.1	Flight paths	22
3.1.2	Movement numbers	22
3.1.3	Land use impacts	23
3.2	2063 – Parallel runway	23
3.2.1	Runway position	23



3.2.2	Departure tracks	23
3.2.3	Cumulative impacts	23
3.2.4	Operating modes	24
3.2.5	Land use impacts and dwelling insulation	24
4.0	SUMMARY	26
5.0	MDA PEER REVIEW PERSONNEL	29

APPENDIX A GLOSSARY OF TERMINOLOGY

APPENDIX B REFERENCES



1.0 INTRODUCTION

This document presents the findings of Marshall Day Acoustics' peer review of the aircraft overflight noise assessment presented in the draft Environmental Impact Statement (*draft EIS*) for the proposed Western Sydney Airport (the *proposed airport*), released on 19 October 2015.

The peer review specifically relates to the draft EIS noise assessment of airborne aircraft operations associated with the proposed airport, and the associated ground movements for takeoff and landing (subsequently referred to as the *aircraft noise assessment* within this document). A separate report by WSP Parsons Brinckerhoff documents a peer review of noise impacts associated with construction and aircraft ground operations (including taxiing and engine run-up testing) for the proposed airport.

The peer review considers the following proposed stages of development:

- Stage 1: development of a single 3,700 m runway at the northern end of the candidate site referred to as Badgerys Creek, with 63,000 aircraft movements per year projected to occur by 2030;
- Longer term development of single runway capacity: incremental development of aviation infrastructure and support services to facilitate 164,000 aircraft movements per year which are projected to occur by 2050; and
- Longer term development with an additional parallel runway to the south: an additional runway
 is proposed for long term operations, enabling additional capacity increases to 370,000 aircraft
 movements per year which are projected to occur by 2063.

The peer review was commissioned by WSP Parsons Brinckerhoff on behalf of the following organisations:

- Western Sydney Regional Organisation of Councils (WSROC); and
- Macarthur Regional Organisation of Councils (MACROC).

The above organisations are collectively referred to as the Councils within this document.

The objective of the peer review was to assess the reliability and technical accuracy of the aircraft noise assessment in the draft EIS, in turn assisting the Councils to reach an informed view on potential aircraft noise impacts within their respective shires.

The scope of the peer review was defined by the following requested tasks:

- Evaluate whether the noise and vibration study meet the requirements of the EIS Guidelines and relevant other guidelines and methodologies with respect to aircraft noise;
- Evaluate whether the underlying assumptions used to inform the assessment (including any construction or operational assumptions, and modelling assumptions where appropriate) are plausible;
- Evaluate whether the conclusions reached in the studies are valid i.e. an independent evaluation
 of whether the predicted impacts are in accordance with published standards and guidelines, and
 whether the conclusions of the assessment are a realistic reflection of the actual impacts;
- Review the mitigation and management measures proposed and advise on their adequacy in mitigating impacts;
- Evaluate the level of uncertainty over impacts and the environmental risks that will arise as a result; and
- Provide a summary of the key impacts and opportunities associated with the project in relation to aircraft noise as part of the noise and vibration study.

The primary documents that have been reviewed in detail are set out in Table 1.



Table 1: Primary draft EIS sections considered in peer reviewing the aircraft noise assessment

Draft EIS Section	Title
Volume 2 – Stage 1 Development	Chapter 10 – Noise (aircraft) referred to herein as the <i>Stage 1 noise chapter</i>
Volume 3 – Long Term Development	Chapter 31 – Noise (aircraft) referred to herein as the <i>long term development noise chapter</i>
Volume 4 – EIS Technical Reports	Appendix E1 – Aircraft overflight noise referred to herein as the <i>technical noise report</i>

The peer review has also considered additional sections of the draft EIS for contextual information, and to provide informative commentary of the broader assessment of noise impacts which has been presented in other related sections of the draft EIS. The review of these additional sections has been concerned solely with matters related to the aircraft noise assessment. In particular, the review of specialist sections such as airspace architecture, human health and social impacts was limited to technical matters concerning noise modelling scenarios, noise level information and noise mitigation measures. Reference should be made to the separate peer reviews commissioned by WSP Parsons Brinckerhoff for the review of specialist matters directly concerning aviation, fauna, health, planning and social issues. All instances in which the commentary within this peer review relates to a section of the draft EIS other than the primary reference documents listed in Table 1 are identified by a reference to the section of the draft EIS in question.

This peer review has been conducted solely on the basis of the published documentation in the draft EIS. Tasks not conducted as part of this peer review include:

- Consultations with any members of the project team involved in preparing the draft EIS;
- Review of noise modelling files; or
- Noise modelling for the purpose of validating any of the results presented in the draft EIS.

A glossary of terminology used in this report is provided in Appendix A.



2.0 REVIEW FINDINGS – STAGE 1 DEVELOPMENT

This section presents a review of the aircraft noise assessment for the Stage 1 Development, having regard to:

- The noise prediction methodology and the associated inputs and assumptions;
- The type of noise level information that has been produced;
- The operational scenarios that have been considered in the noise predictions;
- The noise sensitive receptors that have been identified and considered in the assessment;
- The methods used to assess the impact of the predicted noise levels;
- The proposed noise mitigation and management measures; and
- The level of uncertainty concerning the predicted noise impacts and environmental risks.

2.1 EPBC Act and EIS Guidelines

In conducting this peer review, reference has been made to the document *Guidelines for the content* of a draft Environmental Impact Statement – Western Sydney Airport (Reference: EPBC 2014/7391 and subsequently referred to as the *EIS guidelines*).

The EIS guidelines establish general content requirements relating to matters including:

- Detailed descriptions of the proposed actions;
- Description of baseline conditions;
- Description of mitigation measures; and
- Description of residual impacts following the implementation of mitigation measures.

In addition, the EIS guidelines note the following requirements directly related to noise:

Impacts to the environment (as defined in section 528) should include but not be limited to the following:

...

 aircraft noise and vibration impacts on everyday activities and on sensitive environmental receptors (all sensitive receptors within the community and natural environment). Discussion and quantification/modelling of aircraft noise impacts should include consideration of all potential flight paths, height of flights, noise exposure patterns, noise contours, the range of frequencies of the noise, cumulative exposure, peak noise, frequency of overflights and temporal variability of this (including long term trends), varying aircraft types, varying aircraft operating procedures, and variations in noise patterns due to seasonal and meteorological factors

The subsequent sections of this document review the draft EIS against the general and noise-specific requirements of the EIS guidelines.

The findings of the peer review indicate that information of the form required by the EIS guidelines has generally been provided in the draft EIS. However, the peer review has also identified a number of limitations concerning the content of the draft EIS, and therefore further information and assessments are considered necessary to address the general and noise-specific requirements of the EIS guidelines.



In particular, these matters relate to:

- The uncertainty surrounding the airspace management design for the proposed airport, and the corresponding uncertainty this introduces into the noise modelling;
- As a result of the further work required to develop the airspace management design, the
 proposed mitigation measures have not been developed in detail. As a result, the residual
 impacts of the proposed airport are not defined; and
- The absence of assessments to evaluate the significance of the predicted noise impacts in terms of community annoyance and land use impacts.

Further discussion of each of these points is provided in the following sections.

2.2 Noise Prediction Methodology

This section provides a review of the input data, assumptions, calculation procedures and calculation settings associated with the noise predictions.

2.2.1 Runway

The technical noise report documents a runway position and configuration which appears to be consistent with the description provided in Volume 1 Chapter 1 *Introduction*. However, the following specific observations are noted:

- The project description in the Stage 1 noise chapter, the technical noise report and Volume 1 Chapter 7 *Airspace architecture and operation* do not define specific location details in terms of an aerodrome reference point, runway end coordinates or elevation details.
- The runway orientation adopted in the noise assessment is consistent with the general description of the Stage 1 proposal and assumes a single southwest / northeast runway designated as runway 23 and 05 respectively. However, the precise orientation of the runway does not appear to have been defined in the project description in the technical noise report or the discussion of airspace architecture presented in Volume 1 Chapter 7, nor is it clear whether the proposed orientation of the runway has been finalised. It is noted that the discussion in Volume 1 Chapter 7 documents the review work conducted by the Australian Bureau of Meteorology to verify the proposed runways 05 and 23. However, the convention of defining runway directions in 10 degree increments means that runways 05 and 23 may relate to direction ranges of 45 to 54 degrees and 225 to 234 degrees respectively. If the runway orientation has not been finalised, this could translate to a significant source of uncertainty in the final location of noise contours.

2.2.2 Terrain Data

The technical noise report specifies the use of terrain data in 10 m height intervals.

The origin of this data has not been specified, however the stated resolution of the terrain data that has been used is considered appropriate for noise modelling purposes.



2.2.3 Flight Paths

The technical noise report specifies that the noise modelling has been prepared on the basis of indicative flight paths prepared by Airservices Australia, noting the following:

Airservices Australia has assessed the airspace implications and air traffic management approaches for Sydney basin airspace arising from the potential introduction of operations at the proposed Western Sydney Airport. The principal objective was to establish whether safe and efficient operations could be introduced at the airport by developing indicative proof-of concept air traffic management designs. Importantly, this work does not present a comprehensive airspace and air route design, nor does it consider all of the essential components that would be necessary to implement an air traffic management plan for the Sydney basin.

Section 7.6 also notes

The conceptual airspace design presented in this draft EIS has not been developed to a level of detail necessary for implementation...

The indicative flight paths therefore do not represent the final flight paths which would be flown if the project proceeds; this is to be expected given the current stage of the proposal. However, the description of airspace architecture in Volume 1 Chapter 7 does not provide any indication of the manner or extent to which the final airspace design may vary from the proof-of concept design, nor is this matter addressed in the technical noise report. This represents a significant source of uncertainty in the predicted noise levels.

The following additional items are noted:

- The flight tracks depicted in Figure A1 of Appendix A of the technical noise report indicate that all departures from runway 05 turn left approximately 3 km from the runway end and head due north for 25 km before branching out in a number of directions. This route still passes over populated areas but avoids direct overflight of the relatively densely populated areas to the northeast, such as Blacktown, thus potentially offering benefits in relation to noise. However, while the discussion in Section 7.6.1 of Volume 1 Chapter 7 (airspace architecture) outlines the considerations (including noise) that were factored into the indicative arrival procedures, there is no specific mention of the basis for this departure route. Given that subsequent sections of the technical noise report identify movements on runway 05 result in the greatest total population numbers within the forecast noise contours, it would be prudent to establish the role of noise considerations in the development of this departure track, and the potential extent to which this track may vary in the development of a final airspace management plan.
- The proposed airspace configuration includes a single nominated merge point system applicable for arrivals on each runway. From the description provided in Volume 1 Chapter 7 (airspace architecture), it is understood this system is not presently in use in Australia, and is noted to have been selected for a range of operational reasons. One of these reasons is noted to be noise benefits, presumably on the basis of the reduced noise of continuous descent arrival procedures. However, the noise assessment subsequently identifies that the merge point introduces a number of noise considerations related to the areas beneath the merge point and beneath the arrival paths from the merge point. Accordingly, further discussion of the reasons and justification for proposing a merge point system, with reference to the noise impacts of alternative arrival management options, would be prudent.



• The discussions of airspace architecture in Volume 1 Chapter 7 and in the technical noise report note that the arrival flight paths do not include any dispersion, other than the inclusion of visual approach paths to the merge point which introduce a form of dispersion. The reason is noted to be the tight control available with instrument/satellite assisted arrival procedures. The absence of dispersion has the effect of concentrating noise levels under the flight path, while conversely limiting the spread of noise into other surrounding areas. This is quite an important consideration for the areas located beneath the arrival paths. Further information to support that arrival movements in practice would not significantly deviate from the designated flight paths would be helpful.

2.2.4 Flight Profiles

Arrivals

The technical noise report notes at Section 2.6.1 that the noise modelling assumes that all arrival profiles will be flown using a procedure known as continuous descent approach (CDA).

CDA involves the aircraft approaching the airport at a nominated location (referred to as the merge point), before descending at a constant angle prior to landing. In contrast, standard arrival procedures involve the aircraft stepping down and flying at constant altitude prior to the final descent and landing. As such, the CDA offers potential benefits for reducing ground noise levels as well as allowing aircraft to save significant fuel amounts and hence reduce other emissions, such as carbon dioxide.

It is however noted that around busy airports, or locations where airspace is congested, as is anticipated to be the case with the proposed airport and the existing Sydney Airport and other smaller airports, that CDA can be difficult to achieve for all arrival operations (Airservices Australia, 2012). Airspace management and other factors, including bad weather, could prohibit the use of CDA for all arrival operations. Furthermore, information provided in Volume 1 Chapter 7 *Airspace architecture* notes the following in Section 7.6:

If the point merge system is adopted for the proposed airport, the location of the merge point would be a key component of this further development.

As the assessment assumes 100 % of arrivals adopt CDA, hence reducing the extent of predicted noise contours, it would be prudent for the assessment consider a percentage of arrival operations that would adopt a standard approach flight profile. Conversely, consideration of a conservative situation whereby standard approach flight profiles are assumed to account for expected variation in airspace management requirements for a new airport, with progressively increased CDA usage when feasible.

Departures

The technical noise report notes at Section 2.9 that the noise modelling assumes standard aircraft departure profiles for all aircraft operations. However, the International Civil Aviation Organization (ICAO) defines noise abatement departure procedures (NADP) which can be used by civilian jet operations to reduce noise levels at varying distances from an airport. Data for NADP movements is contained in the Integrated Noise Model (INM) software and can be used to calculate the potential effectiveness of NADP operations for a given airport.

The technical report notes that final design of airspace management arrangements for the airport, including flight paths and procedures, would need to be optimised for noise management purposes as part of the work that Airservices Australia would undertake before the proposed airport becomes operational.



However, in contrast to arrival procedures, there is no mention of the potential use of NADP in the Stage 1 noise chapter or technical noise report. It is unclear if these types of procedures would be considered as part of the final design of airspace management arrangements, and if so, under what circumstances they would be proposed.

2.2.5 Movement Numbers

A general review of the movement numbers associated with Stage 1 development has been carried out by comparing the values with current and future movements at other Australian international airports. Figure 1 shows the proposed daily movement numbers for the Stage 1 development appear relatively low compared with other Australian international airports. This may be reasonable given the relatively short time period of 5 years between the commencement of operations and the assessment year. However, this directly translates to a relatively low numbers of aircraft events exceeding relevant noise thresholds when compared to the longer term development plans for the site. Given the objective of the proposal is to develop a major international airport, the relatively low movement numbers raises the question of the suitability of the 5 year time horizon as the appropriate primary assessment scenario for the purpose of obtaining approval for the development, irrespective of the incremental and periodic approvals (under the Airports Act) that would need to occur as part of the ongoing expansion of the airport.

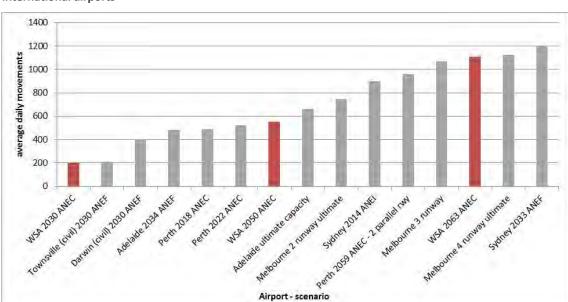


Figure 1: Comparison of average daily airport movement numbers with other existing Australian International airports

It is noted that the draft EIS refers to ongoing development of airside infrastructure to facilitate the continued growth of the airport. However, it is unclear whether the initial primary infrastructure is to be developed to accommodate a greater number of movements than is projected to occur in Stage 1. Further, it is unclear whether an approval for Stage 1 would specifically restrict the movements to the forecast values presented in the draft EIS. Given these considerations, further information concerning the implications of greater than expected demand under Stage 1 would assist in understanding whether the movement numbers, and therefore the predicted noise levels, could be higher than the forecasts presented in the draft EIS.



These comments are provided primarily in relation to the plausibility of the movement numbers represented in the noise modelling, based on comparisons with the movement numbers documented in the noise modelling for other Australian international airports and similar time horizons. Aircraft traffic forecasts are however outside of our area of expertise and therefore the suitability of the specific movement numbers adopted for the stage 1 noise assessment are considered in further detail in a separate aviation peer review commissioned by WSP Parsons Brinckerhoff.

2.2.6 Aircraft Fleet Mix

The aircraft noise modelling has been based on a range of different aircraft types to represent the overall mix of aircraft that is expected to operate from the proposed Stage 1 development.

The selected aircraft types that have been included in the modelling are considered appropriate. Further, the noise modelling has opted for a conservative approach by assuming that all future aircraft operations are characterised by the noise emissions of existing aircraft. Given that aircraft are generally expected to produce lower noise emissions in future, this choice is considered to be reasonable and conservative.

Further, the choice for particular aircraft types and single event noise contours is considered conservative. For example, the freight Boeing 747-400 which is being phased out and replaced by the newer Boeing 747-800.

These comments are provided solely on the basis of the mix of INM aircraft assignments that have been adopted to represent the proposed fleet mix. Forecast aircraft fleet mix are outside of our area of expertise and are considered in further detail in the separate aviation peer review commissioned by WSP Parsons Brinckerhoff.

2.2.7 Calculation Procedure

The Integrated Noise Model (INM) version 7.0d developed by the United States Federal Aviation Authority (FAA) has been used to calculate noise levels associated with the proposed airport operations.

The technical noise report acknowledges that INM has been superseded by the Aviation Environmental Design Tool (AEDT) Version 2b, released in May 2015. The technical report then goes on to note that the core procedures for calculating of noise levels are equivalent between the INM and AEDT programs. This is reasonable and it is not expected that the calculation outputs of the two programs would differ significantly. The use of the latest version of INM is therefore considered appropriate. However, its use for the calculation of a range of different noise exposure metrics warrants further consideration.

The INM was primarily designed for the calculation of long term energy-based exposure metrics such as the Australian Noise Exposure (ANE), equivalent noise level (L_{Aeq}), and day night noise level (L_{dn}). In this respect, the user guide for the software notes:

INM is designed to estimate long-term average effects using average annual input conditions. Because INM is not a detailed acoustics model, differences between predicted and measured values can and do sometimes occur because important local acoustical variables are not averaged, or because complicated physical phenomena are not explicitly modelled.

The program also enables the calculation of short term event levels such as the maximum level, and it is widely used for this purpose. However, in relation to the use of INM for short term maximum noise levels, the user guide notes:

INM is not designed for single-event noise prediction, but rather for estimating long-term average noise levels using average input data. Comparisons between measured data and INM calculations must be considered in this context.



This is an important point as the Number Above contours which are used in the draft EIS to demonstrate the potential extent of noise impacts associated with the proposed airport are based on maximum noise levels calculated using the INM. Accordingly, while the use of the INM for calculating the maximum (L_{Amax}) noise levels is considered reasonable, consideration should be given to factors that can affect the INM's calculation of maximum noise levels. This is discussed in the next section and the subsequent discussion of overall prediction uncertainties.

2.2.8 Meteorological Conditions

The meteorological conditions used in the assessment were sourced from the Bureau of Meteorology (BoM) website, based on the previous 5 years. The data has been used largely for determining the airport operational modes and the number of aircraft movements on each runway and flight path.

In addition to the above, local atmospheric conditions can also affect the calculated noise levels in two ways:

- by varying the aircraft position (altitude influenced by air density); and
- by varying the rate of absorption as sound propagates through the atmosphere.

Of these two, the change in the rate of atmospheric absorption generally has the largest effect on the noise levels, particularly when considering the calculation of short term noise metrics such as maximum noise levels. In this respect, it is important to note that seemingly minor changes in calculated noise levels can translate to relatively large changes in the size of noise contours, owing to the distances associated with aircraft noise contours.

The INM enables atmospheric absorption to be factored in one of the two following ways:

- adopting default atmospheric absorption values: these default values do not correspond to any
 specific temperature or humidity. Instead, the default values are an average of varied absorption
 conditions relating to noise certification testing throughout Europe and the US; or
- adopting user defined atmospheric values: a single set of average temperature and humidity
 values are entered by the user for each modelled scenario and INM applies the corresponding
 atmospheric absorption values.

The noise modelling description in the technical noise report does not explicitly comment on whether default or user defined atmospheric conditions have been accounted for in this aspect of the calculation. However, the stated meteorological conditions do not reference the humidity values that are needed to set user defined atmospheric absorption values. Accordingly, it appears that the default INM atmospheric absorption values have been used which result in lower predicted noise levels.

Previous discussions with Airservices Australia have suggested it is appropriate to adopt user defined atmospheric values where the appropriate environmental parameters are available. They did however note that this was as a conservative approach, which they considered appropriate. Furthermore, the FAA note that the user defined atmospheric values should be used to account for study specific weather conditions, especially when considering specific time periods as opposed to the annual average day.

Accordingly, to account for the variability of short term noise events, and the fact INM is not specifically intended for predicting short term noise events, the adoption of user defined site-specific atmospheric absorption values is generally preferable to default conditions.



2.2.9 Uncertainties

The combined uncertainty of the noise modelling data relates to the net effect of the various calculation settings and choices adopted for the study. Specific values of calculated uncertainty are not provided in the technical noise report. Instead, uncertainty has been addressed through the selection of conservative model input choices in most instances. This is considered a reasonable approach.

However, the following points are noted:

- Information should be provided to support the reliability of the overall prediction methodology
 and choices for predicting maximum noise levels. This should ideally include details of
 measurement and prediction comparisons that have been used to validate the INM for
 predicting maximum noise levels. For example, comparison of available noise information from
 the Sydney Airport Noise Flight Path and Monitoring System or bespoke surveys. Further detail
 should also be provided concerning the manner in which atmospheric conditions have been
 accounted for in the noise predictions.
- The largest source of uncertainty is the indicative flight paths which do not represent the final flight paths which would be flown if the project proceeds. A more detailed analysis on the extent of uncertainty in predicted noise levels due to flight path variation should be provided, either by way of a sensitivity analysis or predicted noise levels for a selection of key flight paths that could change as part of the detailed airspace design.

2.3 Noise Prediction Data

2.3.1 Airport operating modes

Noise prediction information for the Stage 1 development has been provided for a number of operating modes, primarily driven by the prevailing wind direction at the time.

Matters relating to the suitability of the operating modes are considered in a separate peer review of the airport operations described in Volume 1 Chapter 7 airspace architecture.

The operating strategies that have been modelled are generally considered appropriate. However, the following observations are noted:

- Each of the preferred operating strategies includes the use of both runway modes i.e. mode 05 and mode 23. It is expected that the component of movements associated with each mode has been determined on the basis of a statistical analysis of 5 year Bureau of Meteorology data that is referred to in the technical noise report. However, the technical noise report does not specify the component of movements associated with mode of each preferred operating strategy, nor does the report specify how the components were derived.
- The technical report does not present information about how frequently each of the operating strategies would be used, nor is there any information presented to demonstrate whether or not certain times of day would be more or less likely to favour particular operating strategies.
- The modelling assumes the use of a head to head operating strategy comprising arrivals on runway 05 and departures on runway 23 would be viable. However, Volume 1 Chapter 7

 Airspace architecture indicates the viability of head to head operations is yet to be confirmed, noting the following at Section 7.5:

A third operating mode, 'head to head' may be feasible following further detailed assessment prior to the commencement of operations. This would involve all landings and take off movements occurring in opposing directions, either to or from the south west; or to or from the north east.



2.3.2 Calculation Metrics and Scenarios

The Stage 1 noise chapter and technical noise report present aircraft noise information in a range of alternative formats, consistent with established government guidance.

The choice of metrics and scenarios are generally appropriate for defining the extent of areas which would potentially be affected by the noise of the assumed Stage 1 operating scenario. In all cases, noise contours do not represent the absolute extent of audible noise which an individual may find unsatisfactory, however this is not a practical objective for a noise assessment.

The following provides a discussion of the key forms of information that have been provided in the technical noise report for the assessment of noise impacts. Further information on the applicability of these metrics is provided in Section 2.4.1 of this review.

Number Above (NA) Ratings

NA ratings represent the number of times that aircraft events are predicted to exceed specified noise levels in a specified time period. The specified noise levels used in the technical noise report are 70 dB L_{Amax} , and 60 dB L_{Amax} , resulting in calculated N70 and N60 values for different time periods on a typical busy day.

These values are generally appropriate. The draft EIS also usefully introduces the 90th percentile Number Above ratings as a way of representing the upper N60s and N70s that would be expected to occur in practice.

However, the following observations are noted:

- The 60 dB L_{Amax} lower threshold is generally suitable for assessing noise in urban areas. However, for the assessment of amenity impacts in quiet locations where natural soundscapes are valued, such as the Blue Mountains, lower predicted noise levels would be informative. It is acknowledged that the uncertainties associated with the prediction method increase with distance, meaning the lower values of predicted noise levels are subject to a greater degree of uncertainty. However, the alternative form of information relating to track density plots is not without compromises and is potentially more difficult to properly interpret particularly given that the noise contours at the low levels extend considerably further than the width of the flight paths used to portray flight density tracks.
- The information concerning the number of events exceeding key thresholds of 60 dB L_{Amax} and 70 dB L_{Amax} is generally only provided as 24-hour average or night-time values, with additional periods selected for assessing recreation areas. While this information is useful, further data to address the number of events expected to occur during specific time periods could provide a useful indication of impacts during sensitive times.

Single event combined maximum noise level contours

Single event maximum noise levels are provided for the loudest and most common aircraft, being the Boeing 747-400 and Airbus A320 aircraft, respectively.

It is noted that the 'combined' contour refers to the worst case scenario of a single noise event occurring on each of the tracks used by the aircraft i.e. where a departure track splits into 2, the maximum noise level considers noise on both tracks, thus providing an overestimate of the maximum level from a true single event. This generally provides a conservative representation of the extent of areas that could experience maximum noise levels of a given value, however the approach also introduces artefacts into the contours which are evident as a 'comb' effect on the contour lobes, artificially suggesting lower noise levels at some positions at the extent of the contours.



Australian Noise Exposure Concept (ANEC)

An ANEC is provided for each operating mode. The ANE metric is an exposure based noise metric, used solely for land use planning in Australia. The ANEC contours presented for Stage 1 provide limited information in regards to land use planning, as these would typically consider longer term, ultimate capacity scenarios. However, the ANEC can be useful in understanding noise exposure around an airport. A number of studies, including the study upon which the ANE was based, have determined a relationship between noise exposure around an airport and community annoyance. This type of information is not provided in the technical noise report, and further discussion is provided in Section 2.4.3 of this review.

Summer/winter variations

The potential changes in noise contour extents between summer and winter are considered in the appendices of the technical noise report. The analysis generally shows minor change in predicted noise levels. However, as per the discussion in Section 2.2.8, it is unclear if the predictions include an account of varied atmospheric conditions for different times of year.

2.4 Impact Assessment Methodology

Environmental noise may result in a number of different direct and indirect impacts. The draft EIS addresses the range of impacts as follows:

- Assessment of the extent of the potential aircraft noise impacts within the Stage 1 noise chapter and technical noise report on the basis of a range of modelling scenarios and metrics used to present aircraft noise information; and
- Assessment of the effect and significance of these impacts in other sections of the draft EIS related to:
 - Health
 - Land use
 - Social
 - Property values

The separation of assessments in this way is not an uncommon approach, particularly given the assessment of the effect and significance of noise impacts often requires specialist knowledge beyond the areas of expertise of acoustic consultants. However, a complete appreciation of noise related impacts therefore requires reference to a range of distributed sections throughout the draft FIS

Accordingly, while the noise chapters (Stage 1 and long term development) and technical noise report provide the primary basis for the comments in this section of the peer review, additional comment is provided in the following sections in relation to technical noise matters as they are presented in the assessment of noise effects in other chapters and specialist reports.

2.4.1 Methodology Overview

The Stage 1 noise chapter and technical report present predicted noise levels in the form of noise contours and population counts to demonstrate the potential extent of areas that may be affected around the proposed airport. The noise contours are supplemented by additional information such as flight track density maps which illustrate the patterns of overflights beyond the extent of the predicted noise contours.



The predicted noise level information presented in the draft EIS is consistent with the types of aircraft noise information recommended in a number of Federal government publications. Further, the contours generally extend down to relatively low noise levels and event numbers to demonstrate the extent of potential effects well beyond ANEC contours. This approach is considered appropriate.

However, the following key observations are noted:

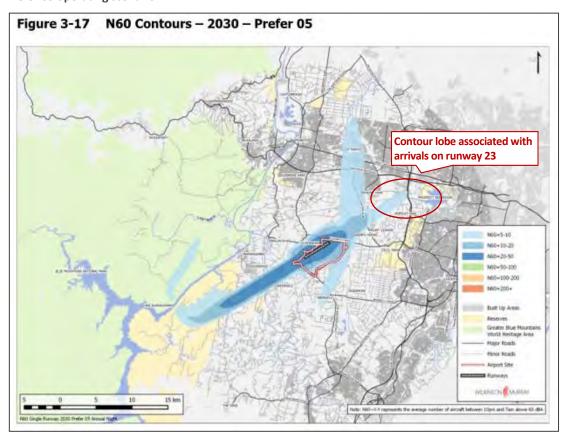
- The illustrated extent of the noise contours is generally considered to be an accurate representation for the assumed Stage 1 operations. However, the uncertainties relating to these assumed Stage 1 operations appear to be significant. The extent to which the Stage 1 airspace design may change is not prescriptively defined in the draft EIS; accordingly, the potential change to the extent of the predicted noise contours has not been defined. An indication of the potential changes to the extent of the contours is partly evident from the various operating modes that have been included in the prediction scenarios. It is however unclear if these represent the maximum extent of the noise contours which could be expected for the final airspace design. The example noted earlier in Section 2.2.3 regarding the departure track from runway 05 illustrates how the final airspace design may significantly alter the areas affected.
- The aircraft movement numbers in the assumed Stage 1 operating conditions are linked to a specific point in time related to the definition of the initial stage of development. The duration of this initial stage of development is linked to one of the incremental milestones in the longer term periodic approval and management framework for the proposed airport. In this respect, the movement numbers do not relate to a specific point in time at which movement numbers are stable or do not change significantly. Accordingly, the contours represent a snapshot of the extent of affected areas at that particular point in time, while the actual extent of areas affected will continually change and expand over time.
- The predicted N60 and N70 noise data are important metrics used to demonstrate a broader extent of impact than exposure metrics such as the ANEC. These values are specifically referenced for:
 - Indoor noise assessment: quantifying the number of external events which would give rise to
 internal noise levels inside a home with partially open windows which could potentially
 interfere with conversation or exceed thresholds commonly used for the assessment of sleep
 disturbance; and
 - Outdoor noise assessment: quantifying the number of events which could interfere with conversational voice levels or require a raised voice for conversation to be understood. This is however specifically only noted in relation to recreation areas (see section 3.7 of the technical noise report), rather than as a general consideration for the external amenity of residential settings.

The above considerations mean that the extent of impacts illustrated by the N60 and N70 contours is primarily focussed on matters of indoor amenity or external speech interference. As per the discussion of the Greater Blue Mountains area in Section 7 of the technical noise report, noise impacts in quiet outdoor areas where natural soundscapes are valued (whether these are public or private outdoor areas) will occur at levels below 60 dB L_{Amax} . The impacts to these types of locations therefore extend beyond the N60 and N70 contours and reference must be made to alternative forms of supplementary information such as the track density maps presented for the Greater Blue Mountains.



• Noise contour information is presented in terms of ANEC data and NA values for alternative operating configurations including preferred operating strategies such as Prefer 05 (runway strategy favouring movements directed from the southwest and toward the northeast) and Prefer 23 (runway strategy favouring movements directed from the northeast and toward the southwest). It is evident from the noise contours that the Prefer 05 and Prefer 23 scenarios include movements occurring in both directions. For example, this is most evident on figures for scenario Prefer 05. These figures illustrate contour lobes extending to the northeast along the runway centre line, beyond the extent of the departure track, thus indicating the influence of an arrival movement on runway 23 (see example extract in Figure 2 below). Technically this is consistent with the definitions provided for Prefer 05 and Prefer 23. However, these contours may be prone to misinterpretation as single mode contours which illustrate the noise associated with movements occurring in single directions (and would extend further than the illustrated Prefer 05 and Prefer 23 strategy noise contours).

Figure 2: Extract from section 3 of the technical report illustrating the influence of mode 23 movements in the Prefer 05 operating scenario



2.4.2 Sensitive Receivers and Noise Exposure Data

Section 2.10 of the technical noise report notes that the noise sensitive receptors around the proposed airport site include residences, education facilities and health facilities.

The technical noise report subsequently provides noise data and assessments relating to residential receptors, in addition to data concerning sensitive uses in recreation areas and the Greater Blue Mountains World Heritage Area.



However, education facilities and health facilities are not directly referenced or assessed in the Stage 1 noise chapter or technical noise report. Instead, reference is made to alternative noise metrics which were calculated and subsequently assessed in the health report contained in the draft EIS. The predicted noise levels for these locations should be available in the Stage 1 noise chapter and technical noise report, in the same way that they have been provided for other types of noise-sensitive receiver locations such as recreational areas (i.e. including the predicted N60 and N70 values).

Section 2.10 of the technical noise report also describes information sources and methodologies which were used to calculate the number of residential receiver locations experiencing a given level of noise exposure. The data sources and methods used to develop these population statistics are considered appropriate for the application, and include an appropriate account of projected population increases in the areas surrounding the proposed airport. As noted previously however, these are based on a snapshot at the particular assessment point in time, while the actual extent of impacts and people affected will continually change and expand over time.

2.4.3 Community Annoyance Assessment

The Stage 1 noise chapter and technical noise report primarily quantify the extent of areas which may be affected by aircraft noise. The subject of potential community annoyance is separately discussed in the draft EIS chapters and technical reports concerning potential social impacts and health risk assessments.

The population statistics discussed in the preceding section provide a useful indication of the number of people who may be affected by aircraft noise to varying degrees. However, in isolation, this data does not provide an indication of the likelihood or significance of potential community reaction to aircraft noise levels as a result of annoyance.

The Health Risk Assessment presented in Volume 4 Appendix G provides the most discussion of potential annoyance, noting that annoyance is most prevalent community response in a population exposed to environmental noise. The Health Risk Assessment includes a discussion of a range of research studies concerning dose-response relationships between total noise exposure levels and the percentage of a community likely to be annoyed or highly annoyed. However, the Health Risk Assessment concludes the discussion of annoyance by stating that no quantitative assessment of annoyance was conducted as part of the study.

The assessment of potential community annoyance is ultimately a complex task for a development of this scale. Dose-response relationships of the types referenced in the Health Risk Assessment can be used with noise levels and population data to provide a quantitative measure of the potential reaction. The use of these established relationships to represent the reaction of a separate community exposed to aircraft noise must be used with caution. In particular, consideration must be given to the uncertainties associated with using community reactions observed at other airports to predict the reaction of a separate community, exposed to a new source of aircraft noise. This type of analysis does however provides an objective basis for comparing the impacts of alternative operating strategies and, more broadly, establishing the risk of community noise annoyance relative to other established international airports in Australia.

Accordingly, while the assessment of the risk of community annoyance is complex, the scale of the proposed airport, and the number of people potentially affected, are considered sufficiently large to warrant further evaluation of the subject. In particular, the introduction of a new 24-hour international airport at a greenfield development site ultimately represents a significant risk of wide spread and prolonged community annoyance.



A quantitative analysis of community annoyance is therefore considered appropriate to assess the significance of the impact. This analysis would also assist with determining the extent to which operational noise mitigation should be prioritised relative to other non-safety related airspace management considerations. Further consideration should therefore be given to quantitative analysis based on established response relationships. The scale of the project may also warrant consideration of further social surveys which could be used to establish a new dose response relationship which may be more relevant to the long term impacts on potentially affected communities around the proposed airport site. Other types of quantitative analysis could comprise population statistics and complaint trends for existing Australian airports which could provide contextual information about the sensitivity, or otherwise, of the proposed airport site relative to other established international airports in Australia.

Importantly, without a meaningful appraisal of the risks of significant community disturbance, there is the potential for unforeseen impacts and the associated risk of a requirement for reactionary noise management procedures. As well as the impacts to neighbouring communities, this could subsequently jeopardise the operational flexibility of the proposed airport.

2.4.4 Sleep Disturbance Assessment

The technical noise report provides information concerning sleep disturbance in terms of the number of events exceeding 60 dB L_{Amax} for each operating mode during the night-time period 10 pm to 7 am. A level of 60 dB L_{Amax} is cited as the external level which would approximately correspond to an internal level of 50 dB L_{Amax} ; an internal level that is commonly used as a design criterion for protection against sleep disturbance.

The selected assessment thresholds in the technical noise report are consistent with common industry practice for assessing sleep disturbance. In particular, the values are generally consistent with the advice contained in the World Health Organisation guidelines (Bergland et al, 2009) which also refers to an external level of 60 dB L_{Amax} for the avoidance of sleep disturbance. The values are also similar to values referenced in NSW policies concerning road traffic. While the technical report does not specifically state the number of events exceeding 60 dB L_{Amax} which are sufficient to represent an increased risk of sleep disturbance, the information is provided for a relatively low number of events (i.e. down to 5-10 events). For context, the WHO guidelines suggest that external noise levels exceeding these values should ideally not occur more than 10 to 15 times per night when assessing dwellings with partially open windows.

The technical noise report provides future population counts for this data indicating that between approximately 4,000 and 48,000 people could experience more than 5 events per night exceeding 60 dB L_{Amax} , depending on operating strategy. In terms of areas experiencing a greater number of events, the technical noise report identifies between approximately 600 to 1,200 people experiencing 20 to 15 events per night above 60 dB L_{Amax} , depending on operating strategy.

The key points from these figures are that:

 A large number of people are predicted to experience external maximum noise levels which are sufficient to result in internal noise levels corresponding to sleep disturbance thresholds. In turn, this indicates a large number of people may need to sleep with windows closed to maintain an acceptable internal amenity. The extent of this potential impact would depend on the prevalence of existing ambient noise sources which could prompt an individual to sleep with closed windows, irrespective of the proposed airport.



- As referred to in the technical noise report, the Prefer 05 strategy results in the greatest number of people experiencing more than 5 events per night over 60 dB LAmax, but the least number of people experiencing more than 20 events per night over. In the absence of established guidelines, or proposals in the draft EIS, to indicate whether priority should be given to reducing the number of people to a small number of events or reducing the number of people exposed to the highest number of events, it is unclear how these findings would inform the selection of noise mitigation measures or a preferred operating strategy.
- The information is primarily directed at understanding noise impacts experienced by people in dwellings with partially open windows. The information does not indicate if there are dwellings which would experience night-time events that are sufficiently high in level to result in noise levels above the 50 dB L_{Amax} internal criterion, even if the windows are closed. This type of information would provide an indication of the number of dwelling locations which could potentially require upgraded insulation to maintain an acceptable internal amenity.

In addition to the technical noise report, it is noted that Section 6.3.1 of Volume 4 Appendix G *Community Health* provides an assessment of sleep disturbance. The peer review of this document is being separately carried out be specialists in the field of health assessment and is therefore not reviewed in detail in this peer review document. It is however noted that while the Community Health report makes reference to the maximum noise level data contained in the technical noise report, the Community Health report primarily assesses impact on the basis of equivalent noise levels. Given that the 2030 assessment year involves a relatively low number of movements from the proposed airport (refer to earlier discussion of movement numbers in Section 2.2.5), some discussion of the rationale for focussing on equivalent noise levels instead of maximum noise levels would be prudent; particularly given that the Health Report acknowledges that the dose-response curves have been derived from European studies and may underestimate the impact in the area surrounding the Western Sydney airport site.

2.4.5 Land Use Impacts

The technical noise report presents Australian Noise Exposure Concept (ANEC) contours in section 3.6 titled *Land Use Planning Impacts*.

ANEC contours are not used for land use planning, but are normally presented as an indication of the potential extent of Australian Noise Exposure Forecast (ANEF) contours which are used for land use planning; the ANEF being an endorsed ANEC or combination of ANECs.

However, as acknowledged in the draft EIS, the ANEC contours presented for the Stage 1 proposal provides limited guidance in this instance, as the ANEF is normally derived from ANECs calculated for long term operations or ultimate capacity scenarios, rather than short term ANECs related to the initial phase of operation. Evaluation of land use planning impacts must therefore be based on the long term ANEC contours presented in subsequent sections of the technical noise report. These long term ANEC contours are discussed subsequently in Section 3.1.3 and Section 3.2.5 of this peer review report.



2.4.6 Dwelling Insulation

The Stage 1 noise chapter and technical noise report do not refer to requirements for, or proposals for, insulation of dwellings for the protection of internal amenity.

The potential for dwelling insulation is however mentioned in Volume 2 Chapter 28 *Environmental Framework* which notes the following:

the possible insulation or acquisition of buildings exposed to the highest noise levels having regard to Australian Standard 2021, including mechanisms for funding potential noise amelioration works and property acquisitions;

There is however no detail provided in the draft EIS in terms of quantifying the extent to which such measures would be implemented, or how the process of insulating or acquiring dwellings would occur 'with regard to Australian Standard 2021'. The reference to AS 2021 for this application requires further clarification to understand the extent of areas that may be insulated or acquired. For example, it is unclear if dwelling insulation would only be considered within certain Australian Noise Exposure areas, or if such measures would be considered at all locations where internal levels may be expected to exceed AS 2021 internal design criteria as a result of the proposed airport operations.

2.4.7 General Recreation Areas

Section 3.7 of the technical noise report provides information relating to recreation areas. Separate information concerning the Blue Mountains is provided in section 7 of the technical noise report.

The assessment for these locations is primarily based on the number of events predicted to exceed 60 dB L_{Amax} and 70 dB L_{Amax} . The information and assessment procedures for these locations is considered appropriate, subject to the points noted in the technical noise report concerning the impact on acoustic amenity. Specifically, that the noise would be noticeable in areas used for passive recreation and the noise could be considered intrusive on the acoustic amenity.

2.4.8 Greater Blue Mountains World Heritage Area

The technical noise report provides an assessment of noise levels in the Greater Blue Mountains World Heritage Area (GBMWHA).

To provide a basis for assessing impacts to the GBMWHA, the technical noise report presents information in the form of track density plots. While this form of data provides a useful and established form of information, the reason for reverting to overflight numbers in lieu of predicted noise levels is not stated. As per the discussion in Section 2.3.2 of this peer review, this may be related to increased uncertainty in the predictions when considering low predicted noise levels. However, flight track density plots in isolation do not illustrate the full extent of potentially intrusive noise levels at locations to the side of the flight track.

The report notes that aircraft are typically at an altitude of approximately 5000 ft, which corresponds to a noise level on the ground of approximately 55 dB L_{Amax} , consistent with INM predictions for the Airbus A320 or Boeing 737-800. Measurements at other airports have however demonstrated that aircraft at that altitude are generally higher than those predicted using the INM, and accordingly noise levels in practise could be higher.

As per the technical noise report, levels below 55 dB L_{Amax} could be considered intrusive by recreational visitors and other users, as the natural soundscape is an important attribute of high value wilderness areas. While levels below 55 dB L_{Amax} are likely to be comparable to typical levels associated with ambient noise sources in the GBMWHA, it is generally not considered appropriate to assess aircraft noise intrusion by comparing sound pressure levels; the characteristics of aircraft noise and natural sounds and very different, and are interpreted in very different ways.



The preservation of quiet areas and tranquil landscapes has been a topical subject of research and policy consideration in Europe and the US. For example, the US Transportation Research Board publication on the effects of aircraft noise (Mestre, 2008) includes a chapter which discusses research and US legislation (National Parks Overflight Act of 1987) concerning the effects of aviation noise on parks, open space and wilderness areas. These publications do not provide definitive guidance on assessment techniques, but highlight the complexity and importance of assessing aircraft overflight noise in sensitive wilderness areas.

The potential for a large number of audible events below 50-55 dB L_{Amax} is therefore considered to represent a potentially significant and widespread impact within the GBMWHA. On this point, we note that the separate assessment of impacts to the GBMWHA presented in Volume 2 of the draft EIS indicates noise levels below 50 and 55 dB L_{Amax} are 'not significant'. Given the above, the assertion within draft EIS GBMWHA chapter that noise levels below 50 and 55 dB L_{Amax} are 'not significant' is not considered to have been sufficiently justified, and the assessment may therefore not adequately reflect the potential impact to the values of tranquillity within the World Heritage Area.

Given the status of the Blue Mountains as a World Heritage Area, and the potential for intrusive impacts, further assessment of this sensitive receiver location is considered to be warranted. In particular, further information should be provided to demonstrate the relative merits of alternative aircraft arrival management procedures which do not involve a concentration of aircraft movements over the GBMWHA. This should include a discussion of the tradeoffs between protection of amenity in residential areas and the protection of the GBMWHA. Consideration should also be given to different areas within the GBMWHA noting any areas of increased recreational use or areas where tranquillity and natural soundscapes may be more valuable.

2.5 Alternatives

The EIS guidelines establish a requirement to investigate feasible alternatives for the proposal, including:

- a) If relevant, the alternative of taking no action;
- b) A comparative description of the impacts of each alternative on the matters of national environmental significance and other matters protected by controlling provisions of Part 3 of the EPBC Act for the action; and
- c) Sufficient detail to make clear why any alternative is preferred to another.

The technical noise report considers the number of people potentially affected for alternative merge points in general terms. For the two alternative merge points considered, the technical noise reports notes that the flight densities over Blaxland are reduced, and the people affected are aligned to less populated rural residential areas outside the GBMWHA. Track densities and number of aircraft overflights over Blue Mountains' communities are still predicted to be high, while impacts on some areas within the GBMWHA are increased for the two alternative merge points.

It is therefore unclear why preference has been given to the merge point that affects a greater population, i.e. over Blaxland, in lieu of reducing the number of potential affected residences. This is perhaps due to conservation of the world heritage area, however this should be confirmed.

Further, while the merge point system appears to offer some noise benefits related to the use of constant descent approaches, the merge point conversely results in concentrated impacts directly beneath the merge point. The considerations warrant an assessment of the noise of additional alternatives, in terms of alterative merge point configurations (e.g. multiple merge points as per the 2063 airpsace design in lieu of a single merge point), and in terms of alternatives arrival management procedures to the merge point system.



In broader terms, with the exception of the merge points noted above, no assessment of alternative flight tracks or noise mitigation procedures has been presented in the noise chapter or technical noise report. This is presumably related to the limited extent to which the airspace management design has been progressed, however this source of uncertainty is a key reason to consider the impacts of potential alternative procedures.

2.6 Proposed Mitigation Measures

The noise modelling presented in the Stage 1 noise chapter and technical noise report provides information concerning the following mitigation measures:

- The use of continuous descent approaches for all arrival procedures; and
- Relocation of the merge point associated with the Stage 1 proof of concept airspace design.

As discussed in Section 2.2.3 of this peer review report, the noise modelling is based on an indicative proof-of concept air traffic management design which does not present a comprehensive airspace and air route design, nor does it consider all of the essential components that would be necessary to implement an air traffic management plan for the Sydney basin.

Given the uncertainties concerning the final form of the airspace design, the final form of noise mitigation measures to be implemented is not yet known. Accordingly, the mitigation measures that have been referred to in the aircraft noise assessment are generic in nature. The residual noise impacts associated with the proposed airport's operations following the implementation of such mitigation measures is therefore presently unknown.

To provide context, feasibility noise assessments and generic mitigation measures are not uncommon for other forms of infrastructure project for which there are well defined policies that limit the allowable noise that may occur in practice. In contrast, aircraft noise policies and regulations in Australia do not specify limits which apply to aircraft over overflight noise at surrounding sensitive receptor locations. Accordingly, without a defined airspace design or defined noise criteria to adhere to in practice, a defined noise mitigation strategy and the residual impacts and the location of these impacts is subject to considerable uncertainty. Further, without a defined noise limit, it is unclear how noise considerations would be prioritised among other non-safety related airspace management and operational considerations associated with the proposed airport site.

Based on the above considerations, further information about the likely airspace management plan, mitigation strategies or proposed control mechanisms (with reference to performance criteria) is considered essential. The discussion of mitigation measures should include:

- Clarification of preferred operating strategies to manage environmental noise impacts, including
 reference to mitigation priorities and the manner in which alternative mitigation measures would
 be evaluated, e.g. is priority given to limiting the number of people experiencing the greatest
 noise effects or limiting the total number of people within the overall extent of the contours, and
 how will considerations related to residential and non-residential noise-sensitive receiver
 locations be balanced:
- Clarification of how the flight paths and hence predicted noise levels may vary during the detailed design of the airspace management procedures;
- Clarification of whether Noise Abatement Departure Procedures (NADP) as defined by ICAO
 would be considered in the noise management plan, and if so, under what circumstances or
 operating scenario. For example, would NADP be considered for all operations, operations on a
 given runway, or operations occurring at night;
- Clarification of the proposal to implement a merge point arrival system;
- Clarification of the proposal to implement head to head operations during night-time hours;



- Clarification of the extent to which dwelling insulation or property acquisition measures would be implemented, or how the process of insulating or acquiring dwellings would occur 'with regard to Australian Standard 2021'. For example, would such measures be limited to locations within the ANEC/ANEF 20 contour, or would dwelling insulation potentially extend to locations outside of the ANEC/ANEF contours to address internal noise levels at locations where noise levels above the design criteria in AS 2021 are not expected to be achieved. Consideration should be given to circumstances where a resident must close windows to protect internal amenity, or in instances where the noise levels are above the design criteria even with windows closed; and
- Consideration of the potential merits of mitigation strategies tailored to the initial phase of
 operations when communities may be particularly sensitive to the presence of a new major noise
 source in the area. For example, this could include deliberate and staged incremental movement
 number increases to avoid 'sudden' noise exposure which has led to significant community
 reaction at some new airports, particularly in terms of night operations.



3.0 REVIEW FINDINGS – LONG TERM DEVELOPMENT

The following section discusses the noise impacts associated with the longer term development of the proposed airport, accounting for:

- Longer term development of single runway capacity: incremental development of aviation infrastructure and support services to facilitate 164,000 aircraft movements per year which are projected to occur by 2050; and
- Longer term development with an additional parallel runway to the south: an additional runway
 is proposed for long term operations, enabling additional capacity increases to 370,000 aircraft
 movements per year which are projected to occur by 2063.

A number of the considerations identified from the peer review of the Stage 1 development are directly relevant to the assessment of the long term development scenarios. For example, matters related to the noise prediction methodology are identical for the Stage 1 and long term development scenarios. Accordingly, this section details any variation to those assessed in the long term development scenarios.

3.1 2050 – Additional capacity single runway

3.1.1 Flight paths

The flight paths are as per the stage 1 development and accordingly the same findings apply. Specifically, they do not represent the final flight paths which would be flown if the project proceeds and the reports do not provide any indication of the manner or extent to which the final airspace design may vary from the proof-of concept design. This represents a significant source of uncertainty in the predicted noise levels.

The 2050 scenario also includes Boeing 747-400 stage 9 departures (i.e. a higher takeoff weight due to longer trip length). However, the proposed runway length of 3,700 m is noted to be less than the required runway length specified in Volume 1 Chapter 5 Airside Precinct (see Table 5-4) for a maximum weight Boeing 747-400 take off. This may be plausible if weight restrictions are applied to Boeing 747-400 departure operations. Irrespective, from a noise perspective, this suggests that the Boeing 747-400's inclusion in the noise modelling may be conservative.

3.1.2 Movement numbers

The movement numbers for the 2050 scenario are consistent with forecasts for similar single runway Australian International airports (Perth, Adelaide), refer Figure 1. Accordingly, the predicted noise levels for this scenario would appear more suitable as the appropriate primary assessment scenario for the purpose of obtaining approval for the development.

These comments are provided primarily in relation to the plausibility of the movement numbers represented in the noise modelling, based on comparisons with the movement numbers documented in the noise modelling for other Australian international airports and similar time horizons. Aircraft traffic forecasts are however outside of our area of expertise and therefore the suitability of the specific movement numbers adopted for the 2050 noise assessment are considered in further detail in a separate aviation peer review commissioned by WSP Parsons Brinckerhoff.



3.1.3 Land use impacts

We note a difference in the population counts within ANEC bands for the 2050 scenario between the technical noise report and the long term development noise chapter. The source of this discrepancy is unclear. For reference, a sample of the differing values is presented in Table 2.

Table 2: Estimated population within ANEC contours (2050) for Prefer 23 with head-to-head

ANEC	Data from Table 31-2 of Volume 3	Data from Table 4-3 of the technical noise report
20-25	1,293	1,672
25-30	302	379
30-35	72	77
>35	4	4
Total	1,672	2,132

3.2 2063 – Parallel runway

3.2.1 Runway position

The proposed second parallel runway would be located to the south of the proposed stage 1 development runway, with a separation distance of approximately 1,900 m according to Volume 2 (Section 30.2).

The specific location is not defined with reference to an aerodrome reference point, runway end coordinates or elevation details. The parallel runway orientation is assumed to be consistent with the Stage 1 proposal runway, i.e. a single southwest / northeast runway designated as runway 05R and 23L respectively. However, as per the discussion earlier in this peer review report in Section 2.2.1, it is unclear if the exact orientation of the runway has been finalised.

3.2.2 Departure tracks

The flight tracks depicted in Figure B1 of Appendix B of the technical noise report show that departures on runway 05R (parallel) turn left approximately 3 km from the runway end and head due north for 25 km before branching out to a number of directions. This flight path is similar to the track depicted for the initial runway of the Stage 1 development.

However, an additional departure track to the northeast is included in this scenario, and involves direct overflight of the relatively densely populated areas to the northeast, such as Blacktown. Further discussion of noise mitigation measures relating to this flight path would be prudent.

3.2.3 Cumulative impacts

Airspace architecture chapter of Volume 1 (Section 7.4.1) notes that under a parallel runway scenario at the proposed airport, a number of issues would need to be addressed as part of the future airspace design process, including:

- changes to Sydney Airport flight paths to maintain independent operations at the proposed airport and Sydney Airport and to achieve expected demand capacity;
- changes to flight paths serving Bankstown Airport, in particular for instrument flight rule operations, in order to maintain independent operations at the proposed airport and Bankstown Airport and achieve the expected demand capacity; and
- resolution of a potential constraint associated with the restricted airspace over Defence Establishment Orchard Hills.



Section 5B of the EIS Guidelines requires the EIS to:

identify and address cumulative impacts, where potential project impacts are in addition to existing impacts of other activities (including known potential future expansions or developments by the proponent and other proponents in the region and vicinity)

The draft EIS has not considered implications on flight paths at other airports and the associated noise impacts on other communities closer to Sydney, Bankstown and Defence establishments having regard to the potential variation in the final flight paths. The issues concerning the airspace architecture are considered to represent potential cumulative impacts which have not been quantified in the draft EIS.

Further information concerning this issue is therefore considered necessary to address the requirements of the EIS guidelines.

3.2.4 Operating modes

The assessment considers two operating modes only, 'prefer 05' and 'prefer 23'. The technical noise report notes that the use of alternative night time operating modes, such as 'head to head' as per the Stage 1 development could likely reduce night time impacts. This is not quantified and conclusions on the potential reduction in noise levels can therefore not be established.

Further, the discussions presented in Volume 1 Chapter 7 *Airspace architecture* indicate that the feasibility of head to head operations is yet to be confirmed.

3.2.5 Land use impacts and dwelling insulation

As per the assessment of the stage 1 development, the land use planning impacts in the technical noise report considers only the number of potential people within each ANEC band for each of the operating modes.

The ANECs prepared in the technical noise report for the long term development may be considered indicative of the extent of an ANEF for the proposed airport. The technical noise report does however note that an ANEF chart based on further formal flight path design would need to be produced and endorsed by Airservices Australia prior to the commencement of airport operations and to inform land use planning around the proposed airport.

The 1985 EIS prepared an indicative ANEC for the Western Sydney Airport. It is understood this ANEC formed the basis for zoning land uses around a future airport, as detailed in local environmental plans having regard to future aircraft noise. As such, there are current planning mechanisms in place to ensure future dwellings incorporate appropriate treatment in anticipation of the proposed airport.

The draft EIS has not fully undertaken an assessment of land use impacts. Specifically, an assessment of the location of current dwellings within 'zones affected by aircraft noise' documented in the local environmental plans (based on 1985 EIS ANEC contours) and their relative location based on the ANECs prepared as part of this EIS. Details on the change in the ANEC rating for individual dwellings would ideally be undertaken to determine the extent of further mitigation measures. Such measures may include potential dwelling insulation to dwellings where a significant change in ANEC has occurred.

Noting the ANECs prepared for this EIS are not final, consideration should still be given to the potential extent of a single ANEF to be adopted for future land use planning. Australian Standard *AS2021:2015 Acoustics - Aircraft Noise Intrusion — Building Siting and Construction*, details procedures for the preparation of an ANEF. Specifically, where future runways are proposed, a composite chart of a number of ANECs should be produced to cover areas the single runway at ultimate capacity ANEC are not covered by adopting the ANEC incorporating the 2 runways.



A complete assessment should therefore be undertaken with the above considerations, to enable a complete understanding of the potential land use impacts associated with the airport operations.

In addition to the above, the technical noise report does not discuss the potential land use planning impacts related to the National Airports Safeguarding Framework (the *Framework*) which was developed by the National Airports Safeguarding Advisory Group in 2012. This Framework is however noted in the noise chapter, which subsequently refers readers to Chapter 21 *Planning and land use* for further information.

The Framework provides guidance on planning requirements for development that affects aviation operations. As part of the guidance, the Framework proposes the use of new noise metrics for land use planning, subject to the outcomes of a review of Australian Standard AS 2021. The review of AS 2021 was completed and the revised version of AS 2021 published in May 2015. While the revised standard did not include the additional land use buffers that were requested by the National Airports Safeguarding Advisory Group (i.e. the updated version of AS 2021 continues to refer to solely to the ANEF parameter rather than Number Above metrics), it is noted that an amendment to Victorian Planning Provisions (see VC128) was scheduled by the Victorian government on 8 October 2015 to include the National Airports Safeguarding Framework as a policy guideline. This policy only applies in Victoria and it is unclear how this new guidance will affect land use planning around Victorian airports. However, the introduction of the Framework into a state policy provides a precedent for the potential use of noise contours extending well beyond ANEC contours to inform land use planning.

Further, while the Framework is not directly referenced in the noise chapter or technical noise report, the Framework is introduced in Volume 2 Chapter 21 *Planning and land use*. The peer review of this document is being separately carried out by specialists in land use planning and is therefore not reviewed in detail in this peer review document. It is however noted that 21.7.2.2 focuses on the implications of a future ANEF for land use planning, but concludes with the following statement:

The implementation of Guideline A: Measures for Managing Impacts of Aircraft Noise under the NASF would be instrumental in managing potential future operational noise impacts for future land use planning and development around the airport.

This would appear to imply the potential for land use planning instruments extending well outside of the future ANEF contours, despite land use impacts outside of the ANEC/ANEF contours not being specifically cited in the discussion. This is reinforced by content in Volume 2 Chapter 27 *Cumulative Impact Assessment* which states:

The draft EIS provides ANEC contours and identified other potential noise impact areas which can be used to guide appropriate future land use planning and compatible development.

The imposition of the Framework for land use planning around the proposed airport could therefore result in land use impacts extending well beyond the existing land use controls or a future ANEF developed during the detailed design phase of the airport. The potential for these extended impacts should be clarified and clearly disclosed.



4.0 SUMMARY

A peer review of the aircraft overflight noise assessment contained within the draft Environmental Impact Statement (draft EIS) for the proposed Western Sydney Airport has been carried out.

The noise modelling is considered to generally provide an accurate representation of the extent of noise impacts for the development description and operating scenarios that have been proposed. However, the peer review has identified a number of limitations which relate to both the extent to which the airspace management's design has been progressed, and the assessment of the noise modelling outcomes. These matters are summarised as follows:

Low Stage 1 movement numbers

The total aircraft movement numbers for the Stage 1 development are relatively low when compared to other international airports in Australia. Given the objective of the proposal is to develop a major international airport, the low movement numbers raises the question of the suitability of the 5 year time horizon as the appropriate primary assessment scenario for the purpose of obtaining approval for the development. Further, it is unclear how the incremental and periodic approvals that would need to occur as part of the ongoing expansion of the airport provides a sufficient basis for considering the initial 5 years of operation as the primary period for the assessment of noise impacts.

These comments are provided primarily in relation to the plausibility of the movement numbers represented in the noise modelling, based on comparisons with movement numbers documented in the noise modelling for other Australian international airports and similar time horizons. Aircraft traffic forecasts are however outside of our area of expertise and therefore the suitability of the specific movement numbers provided for the noise assessment are considered in further detail in separate aviation peer review commissioned by WSP Parsons Brinckerhoff.

Airspace management strategy uncertainties

the draft EIS clearly indicates that the airspace management strategy used as the basis for noise modelling is a proof-of concept design, and further work is required to determine the actual flight paths which would be flown in practice. Information about the extent of potential changes is limited. The uncertainty surrounding the final airspace management design that would be implemented represents a potentially significant source of uncertainty in the noise assessment. The potential significance of this source of uncertainty has not been quantified and, with exception of alternative merge point points for Stage 1, there has not been any sensitivity analysis carried out to assess the implications of potential flight path changes.

Assessment of community annoyance

The draft EIS includes exposed population statistics which provide a useful indication of the number of people who may be affected by aircraft noise to varying degrees. However, in isolation, this data does not provide an indication of the scale or severity of potential community reaction to aircraft noise levels as a result of annoyance.

The Health Risk Assessment provides the most discussion of community annoyance, including references to research concerning the relationship between noise exposure and community annoyance, but ultimately states that no quantitative assessment of annoyance was conducted as part of the study.



Dose-response relationships of the types referenced in the Health Risk Assessment can be used with noise levels and population data to provide a quantitative measure of the potential reaction. The use of these established relationships to represent the reaction of a separate community exposed to aircraft noise must be used with caution. In particular, consideration must be given to the uncertainties associated with using community reactions observed at other airports to predict the reaction of a separate community to a new source of aircraft noise. However, this type of analysis provides an objective basis for comparing the impacts of alternative operating strategies and, more broadly, establishing the risk of community noise impacts relative to other established international airports in Australia.

Accordingly, while the assessment of the risk of community annoyance is complex, the scale of the proposed airport, and the number of people potentially affected, are considered sufficiently large to warrant further evaluation of the subject. In particular, the introduction of a new 24-hour international airport at a greenfield development site ultimately represents a significant risk of wide spread and prolonged community annoyance.

A quantitative analysis of community annoyance is therefore considered appropriate to assess the significance of the impact. This analysis would also assist with determining the extent to which operational noise mitigation should be prioritised relative to other non-safety related airspace management considerations. Further consideration should therefore be given to quantitative analysis based on established response relationships. The scale of the project may also warrant consideration of further social surveys which could be used to establish a new dose response relationship and may be more relevant to the long term impacts to potentially affected communities around the proposed airport site.

Land use impacts

The draft EIS includes calculated Australian Noise Exposure Concept (ANEC) contours for the Stage 1 and long term development operating scenarios. ANECs are often presented as an indication of the extent of a potential future Australian Noise Exposure Forecast (ANEF) contour which would be used to guide land use planning for noise-sensitive developments in the vicinity of airports.

However, while the draft EIS provides population counts for the various ANEC bands, no assessment is provided of the extent to which land use controls may change as a result of a future ANEF prepared as part of the detailed airspace design for the project. Specifically, the draft EIS does not quantify the potential extent of changes to land use controls relative to the measures which have been in place since the original EIS was undertaken in 1985.

Furthermore, the discussion of land use planning impacts in the draft EIS notes that the National Airports Safeguarding Framework (the Framework) would 'be instrumental in managing potential future operational noise impacts for future land use planning and development around the airport'. The Framework could potentially translate to the creation of land use planning controls which extend over significantly greater areas than either the current land use planning controls (based on the 1985 EIS) or the 2063 ANEC contours provided in the draft EIS. This has however has not been discussed or assessed in the draft EIS.



Greater Blue Mountains World Heritage Area (GBMWHA)

The draft EIS presents information to evaluate the potential impacts of aircraft operations on the acoustic amenity of the GBMWHA. The assessment indicates the potential for a large number of audible aircraft events within the GMWHA. While the levels are predicted to be relatively low (below 50-55 dB L_{Amax}), aircraft over flights would be expected to be audible and represent a significant and widespread impact for a World Heritage Area where natural soundscapes are a likely to be a valued feature of the areas amenity. Accordingly, the assertion within draft EIS chapter that noise levels below 50 and 55 dB L_{Amax} are 'not significant' is not considered to have been sufficiently justified, and the assessment may therefore not adequately reflect the potential impact to the values of tranquillity within the World Heritage Area.

Mitigation measures and residual noise impacts

The draft EIS noise modelling is based on an indicative proof-of concept air traffic management design which does not present a comprehensive airspace and air route design. Given the uncertainties concerning the final form of the airspace design, the final form of noise mitigation measures to be implemented is not yet known. Accordingly, the mitigation measures that have been referred to in the aircraft noise assessment are generic in nature. This is a particularly important point for an airport development as, unlike other forms of infrastructure development, the policies used to manage aircraft overflight noise do not generally stipulate noise limits that airport operations must adhere to at surrounding noise-sensitive locations. Accordingly, without a defined airspace design, a defined noise mitigation strategy or defined noise criteria to adhere to in practice, the residual impacts and the location of these impacts is subject to considerable uncertainty. Further, it is unclear how noise considerations would be prioritised among other non-safety related airspace management and operational considerations associated with the proposed airport site.

Based on the above considerations, further information and assessment are considered necessary before stakeholders can reach an informed view on the potential scale and significance of aircraft overflight noise impacts associated with the proposed airport site.

Conclusion

Aircraft noise impacts are an unavoidable consequence of aircraft operations in urban environments. The creation of a new international airport therefore requires a balance to be achieved between the protection of amenity for neighbouring sensitive land uses and the development of infrastructure to respond to the growing demands of a major city.

Determining whether this balance has been achieved is ultimately a matter for regulatory authorities. While this peer review has identified a number of limitations to the present assessment, this is not intended to infer that the proposed development and development site are unsuitable. Rather, in light of the residual uncertainties in the assessment, further information and assessments are considered necessary before stakeholders can reach an informed view on the potential scale and significance of aircraft overflight noise impacts associated with the proposed airport site.

Conducting these further assessments as part of the environmental impact assessment process represents an opportunity to:

- Provide clarity to affected communities and stakeholders about the nature of the noise impacts;
- Provide clarity to regulators about the form of noise controls which will be needed in the project approval to ensure that noise is appropriately managed; and
- Reduce the potential for unforeseen impacts and the associated risk of reactionary noise management procedures which could subsequently jeopardise the operational flexibility of the proposed airport.



5.0 MDA PEER REVIEW PERSONNEL

The following personnel from Marshall Day Acoustics have conducted this peer review on behalf of WSP Parsons Brinckerhoff.

Engineer and role	Qualifications and key relevant experience
Justin Adcock,	Bachelor of Engineering (Mech), University of Adelaide, South Australia
Lead Peer Reviewer	Department of Defence, New Air Combat Capability: Contract and technical manager for the environmental noise modelling and impact assessment of Joint Strike Fighter operations - lead author of the noise impact assessment.
	Dubai International Airport and Jebel Ali International airport: Noise modelling, model validation works and impact assessment—lead report
Alex Morabito,	Bachelor of Engineering (Mech), University of Adelaide, South Australia
Peer Reviewer	Bachelor of Finance, University of Adelaide, South Australia
	Department of Defence, New Air Combat Capability: environmental noise modelling and impact assessment of Joint Strike Fighter operations
	Adelaide Airport Noise Insulation Program: Compliance testing to verify acoustic design of churches eligible for program
Steve Peakall	Bachelor of Science (Environmental Engineering), University of the West of
Peer Reviewer	England, Bristol, UK
	Institute of Acoustics, Diploma in Acoustics and Noise Control
	Sydney Airport, Peer review of the INM inputs for ANEF contours presented in the 2009 and 2013 Sydney Airport Master Plans.

In addition to the above main peer review personnel, review of key issues has also been provided by the following Marshall Day Acoustics.

Engineer and role	Qualifications and key relevant experience
Christopher Day	Bachelor of Engineering (Mech), Monash University, Melbourne
	Christchurch International Airport: Ongoing involvement since 1992 including, initial modelling and update of noise contours, presentation of expert evidence, member of the International Expert Panel, review of noise monitoring strategy and engine testing noise assessments.
	Auckland International Airport: Extensive involvement for more than 23 years involving the preparation of noise contours, assessment of aircraft noise effects, noise management and land use planning and development of a sound insulation programme.



APPENDIX A GLOSSARY OF TERMINOLOGY

Ambient The ambient noise level is the noise level measured in the absence of the intrusive

noise or the noise requiring control. Ambient noise levels are frequently measured

to determine the situation prior to the addition of a new noise source.

ANEC A contour map showing forecast of aircraft noise exposure around an aerodrome for

a future year. It is based on a forecast of aircraft movement numbers, operating

times, types, destinations and flight paths

ANEF A reviewed and endorsed ANEC by Airservices Australia or Department of Defence.

It is the only contour map with status in land use planning decisions for aircraft noise

exposure

ANEI A contour map based on historical data from a previous year, where the numbers

and types of aircraft which used the aerodrome are known. The map provides the average daily aircraft noise exposure around the aerodrome for that year. ANEI are typically used as benchmarks or an indicator of change in aircraft noise exposure

A-weighting The process by which noise levels are corrected to account for the non-linear

frequency response of the human ear.

dB Decibel. The unit of sound level.

Feet (ft) Unit length 0.3048 m

Frequency The number of pressure fluctuation cycles per second of a sound wave. Measured in

units of Hertz (Hz).

Integrated Noise

Model (INM)

A computer program used to model the impact of aircraft noise developed by the US

Federal Aviation Administration

 $\mathbf{L}_{\mathsf{Ae}\alpha}$ The A-weighted equivalent continuous sound level. This is commonly referred to as

the average noise level and is measured in dB.

L_{Amax} The A-weighted maximum noise level. The highest noise level which occurs during

the measurement period.



APPENDIX B REFERENCES

Airservices Australia, 2012. Continuous Descent Approaches. [ONLINE] Available at: http://www.airservicesaustralia.com/environment/continuous-descent-approaches/

Society of Automotive Engineers, 1986, Committee A-21, *Procedure for the Computation of Airplane Noise in the Vicinity of Airports*, SAE-AIR-1845

Society of Automotive Engineers, 1991, Standard Values of Atmospheric Absorption as a Function of Temperature and Humidity, SAE-ARP-866A

Standards Australia 2015, *Acoustics-Aircraft noise intrusion-Building siting and construction*, AS 2021-2015, Standards Australia, Sydney

Mestre, V, 2008, Synthesis 9 - Effects of Aircraft Noise: Research on Selected Topics, Washington, D.C: Airport Cooperative Research Program by the US Transportation Research Board

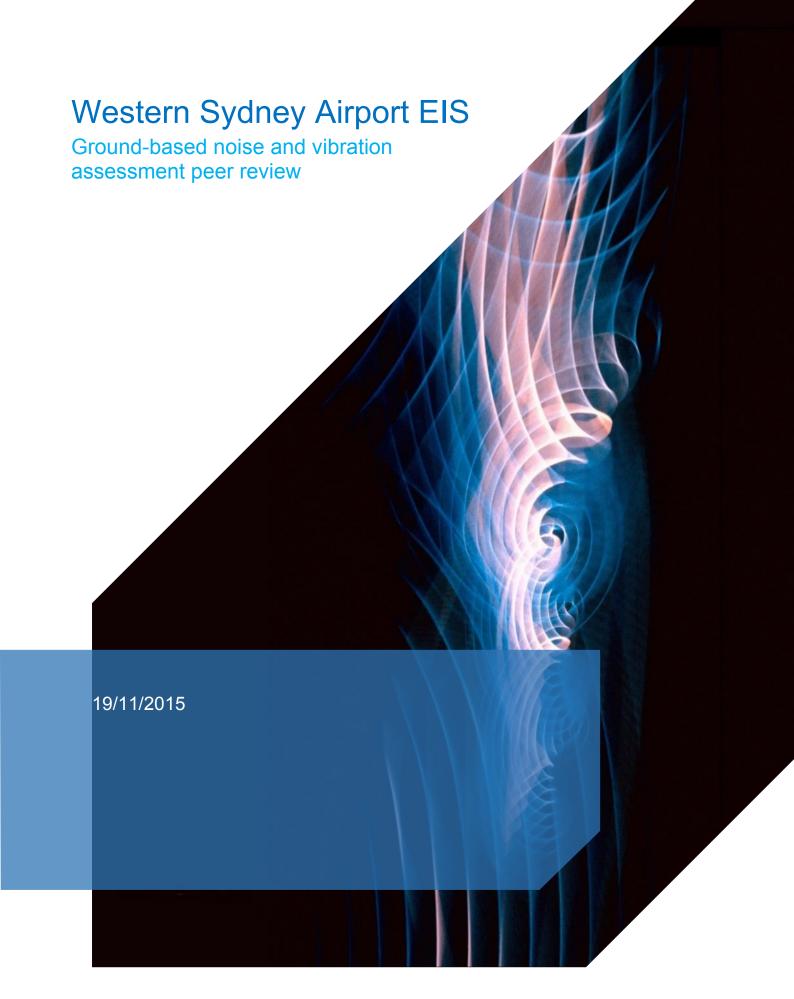
Berglund B, Lindvall T and Schwela DH, 1999, World Health Organization Guidelines for Community Noise

European Civil Aviation Conference, December 2005, ECAC-CEAC Doc 29 3rd Edition, *Report on Standard Method of Computing Noise Contours around Civil Airports Volume 2: Technical Guide*



Ground-based noise and vibration (WSP | Parsons Brinckerhoff)







Western Sydney Airport EIS

Ground-based noise and vibration assessment peer review

Project no: ACG1517900

Date: 19/11/2015

Prepared for: WSROC

_

WSP | Parsons Brinckerhoff

Level 1, 41 McLaren Street

North Sydney

New South Wales 2060

Australia

Tel: +61 (02) 8907 0900 Fax: +61 (02) 9957 4127

acoustics@WSPgroup.com

WSP | Parsons Brinckerhoff Contacts:

Alex Campbell Mike Barrett





Quality Management

Issue/revision	Issue 1	Issue 1	Revision 1	Revision 2
Remarks	Draft	Final		
Date	6/11/2015	19/11/2015		
Prepared by	M. Barrett/C. Marsh	M. Barrett/C. Marsh		
Signature				
Checked by	A. White	A. White		
Signature				
Authorised by	A. Campbell	A. Campbell		
Signature				
Project number	ACG1517900	ACG1517900		
Report number	1	1		_
File reference	Draft	Final		

Table of Contents

Executive summary	5
1 Scope	7 8 8
2 Detailed findings - 1st stage airport. 2.1 Summary	10 10 10 10 11 11 11 15 17 19 21
3 Detailed findings - long term development 3.1 Summary 3.2 Detailed findings 3.2.1 Modelling 3.2.2 Assessment 3.2.3 Conclusions	23 23 23 26
4 Key impacts and opportunities	27
5 Qualifications of the study team 5.1 Project manager 5.2 Supporting technical team	28 28
Appendix A Document review	29

Executive summary

Introduction

The Western Sydney Airport draft Environmental Impact Statement (EIS) was prepared to provide an assessment of environmental impacts associated with the development of a new international airport near Badgerys Creek in Western Sydney, NSW. The draft EIS contains an assessment of noise impacts in two components; noise impacts from air-based activities such as aircraft in flight, landing and take-off; and from ground-based activities such as aircraft taxiing and ground based engine run-up. This review is concerned with ground-based activities only.

Scope of review

This scope of this report is to provide an unbiased peer review of all work presented as part of the Western Sydney Airport draft EIS in relation to ground-based noise.

Approach

This review identified uncertainties and unknowns within the ground noise the assessment, provided in the EIS and identified what further assessment would be required to provide an indication of impacts. The limitations of this review are as follows:

- Noise modelling or review of noise modelling files has not been completed as part of this review. Therefore it was not possible to verify the noise contour plots from ground-based activities presented in the EIS. However, comment has been included based on a visual inspection of the plots.
- The review relies on the source noise data that has been included in the ground noise assessment. The review is a desktop exercise and therefore independent source noise measurements have not been conducted to confirm the noise levels used for taxiing and engine ground running as presented in the EIS.

The components of the review are follows:

- The review comments on the EIS chapters relevant to ground noise in addition to Appendix E2 Airport ground-based noise and vibration. This appendix is the technical basis for all other ground noise related documents, including the relevant EIS chapters.
- A document review is contained within Appendix A of this report, and provides references and comment on specific sections of the EIS. The documents reviewed are identified in Section 1.3 of this report.

1st stage airport review findings

A summary of the findings for the 1st stage airport is as follows:

- The assessment does not fulfil the requirements of the Guidelines for the Content of a Draft Environmental Impact Statement Western Sydney Airport 2015 (EIS Guidelines). These guidelines state that the type and magnitude of impact, both pre-mitigation and post-mitigation should be presented. The ground noise assessment should be updated to include this assessment.
- There is insufficient detail to satisfy the EIS Guidelines on the source of the noise data and assumptions used in noise predictions. As these assumptions form the basis for the noise assessment, changes to the source noise data could potentially lead to a significantly different outcome.
- The assessment does not provide sufficient justification to support the assessment being performed based on the year 2030 (five years after opening) and not 2050 when the airport is expected to be approaching capacity for the single runway configuration with potentially increased noise impacts.
- The report does not provide sufficient detail in the assessment of the ground-based power supply to aircraft when they are parked. The assessment excludes the use of Auxiliary Power Units (APU), however it does not provide sufficient detail of alternative ground-based power supplies. As an alternative power supply method is not presented, there is potential for additional noise sources being introduced that have not been considered.
- Background noise monitoring was conducted at 10 locations in the region, however a single background level has been assumed for all receptors, rather than several location-specific values. This generalisation



has underestimated the assessment noise criteria and therefore the magnitude of noise impacts at receptors close to the airport that are currently exposed to low levels of environmental noise.

- The nearest noise sensitive receptors in Luddenham were not included in the background noise monitoring and therefore there it is uncertain if noise impacts have been adequately assessed at this location.
- No consideration has been given to the cumulative noise impact from all ground noise sources at the nearest noise sensitive receptors both with and without mitigation measures as required by the EIS Guidelines. Additional assessment should also be undertaken for other ground noise sources, such as the compass calibration pad.
- It is recommended that the mitigation measures identified in the assessment, including the restriction of APUs and the limitation of engine ground run-ups during the night, are formalised as part of the project approval.
- The assessment does not provide sufficient evidence that all reasonable and feasible mitigation measures have been considered to reduce noise impacts from taxiing and ground run-ups.
- Semi-enclosed pens and bunded areas to reduce noise impacts from engine ground run-up noise are considered in the assessment. It is recommended that these measures are considered further as part of the approvals and subsequent design stages.
- No comment has been made on the potential cumulative noise impact from the new M12 motorway and realignment of The Northern Road that are being developed to accommodate the airport.
- The EIS contains misleading statements relating to operational road traffic noise which do not acknowledge the limitations of the assessment. The development of the M12 motorway and realignment of The Northern Road have been excluded from the assessment and statements regarding operational road traffic noise should include these limitations.

Long term development review findings

- The assessment is considered to contain an appropriate level of detail for the long term development as the potential noise impacts are predicted for a considerable time in the future (into 2063). It is acknowledged that the noise environment may change over time.
- The comments raised in this review for the 1st stage airport assessment should be addressed and applied to the long term development assessment. Where this occurs, the current framework for further assessment of the long term development is considered appropriate.
- The EIS does not include ground-based noise in the summary or conclusion for the long term development. It is recommended that the outcomes of the revised long-term development ground-based noise assessment are included in these sections so that all impacts are clearly presented.

Key impacts and opportunities

It is considered that the ground-based noise assessment does not provide an appropriate level of detail on a number of key aspects including:

- The derivation and allocation of assessment criteria
- Noise impacts at the nearest sensitive receptors in Luddenham
- Noise source levels and modelling assumptions
- The type and magnitude of impacts with and without mitigation
- Evidence that all reasonable and feasible mitigation has been considered
- Cumulative noise impacts from operational activities and road traffic projects.

As a result, without further clarification or justification, it is uncertain that the draft EIS has adequately presented and addressed the noise impacts associated with the proposed development.

It is recommended that these items are addressed to reduce the level of uncertainty, increase the accuracy of the assessment and to satisfy the requirements of the EIS Guidelines.

Project number: ACG1517900

Dated: 2015-11-06

1 Scope

1.1 Summary of approach

This scope of this report is to provide an unbiased peer review of all work presented as part of the draft Western Sydney Airport Environmental Impact Statement (EIS) in relation to ground-based noise.

The draft Western Sydney Airport EIS was prepared to provide an assessment of environmental impacts associated with the development of an international airport near Badgerys Creek in Western Sydney, NSW. The EIS contains an assessment of noise impacts in two components; noise impacts from air-based activities such as aircraft in flight, landing and take-off; and from ground-based activities such as aircraft taxiing and ground based engine run-up. This review is concerned with ground-based activities only.

The Guidelines for the Content of a Draft Environmental Impact Statement – Western Sydney Airport (EIS Guidelines) (Commonwealth Government, 2015) were released to provide a framework for the preparation of the EIS.

The current status of the approvals process for the airport is presented in Figure 1-1. It is recommended that the findings of this review are considered and incorporated into the final EIS prepared in the next phase of the approvals process.

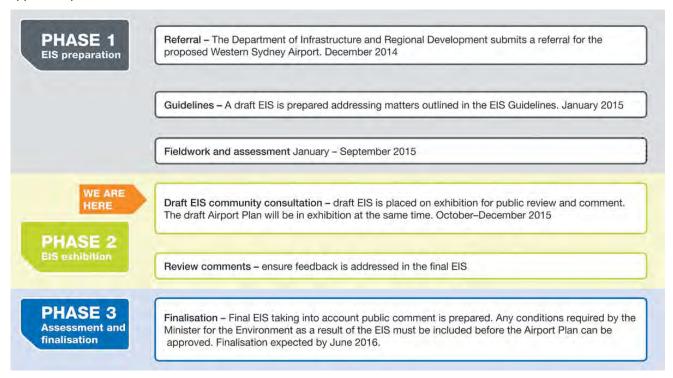


Figure 1-1 - Development approval process

This review has identified areas of uncertainty in the assessment provided in the EIS and has identified what further assessments or detail is reasonably considered to be required to reduce these uncertainties and satisfy the requirements of the EIS Guidelines.

Specifically this review:

- Evaluates whether the study meet the requirements of the EIS Guidelines
- Evaluates whether the conclusions reached in the studies are valid



- Evaluates whether the underlying assumptions are plausible
- Reviews the mitigation and management measures proposed
- Evaluates the level of uncertainty over impacts and the environmental risks
- Provides a summary of the key impacts and opportunities associated with the project in relation to aircraft noise as part of the noise and vibration study
- Discusses the approach to assessment of long term development.

A document review is provided in Appendix A of this report which provides comment and recommendations for specific areas items in the EIS.

In order to identify the scale of significance for items identified as part of the review, the significance ratings in Table 1-1 have been adopted.

Table 1-1 - Significance scale

Significance	Consequence
High	Likely to result in significantly different outcomes
Medium	Potential to change outcomes significantly
Low	Unlikely to result in significantly different outcomes
Noted for information	Unlikely to change outcomes, noted for information

1.2 Limitations

Noise modelling has not been conducted as part of this review as modelling files were not available for review. Therefore it is not possible to verify the validity of noise contour plots presented in the EIS. However, the review was conducted based on a visual inspection of the plots.

The review also relies on the source noise data included in the EIS. As the review is a desktop exercise it was not possible to undertake independent source noise measurements to verify the noise levels stated in the EIS for taxiing and engine ground running.

1.3 Components of the EIS reviewed

The EIS is divided into four volumes. For each volume the sections relevant to this review have been identified in Table 1-2.

Table 1-2 - EIS sections relevant to ground-based noise

EIS PART	Section Title	Page reference		
	Volume 1 — Project Background			
N/A	Executive Summary	p30 – 33, p49 - 52		
Part B	Airport Plan	p125 - 256		
Volume 2 — Stage 1 Development — EIS for Stage 1 development (single runway facility in 2030)				
Part D	9. Approach to impact assessment	p3 - 18		
Part D	11. Noise (ground operations, construction, road and rail)	p75 - 100		

Project number: ACG1517900

EIS PART	Section Title	Page reference
	27. Cumulative impact assessment	p561 - 574
Part E	28. Environmental management framework	p577 - 620
Part F	29. Conclusion	p623 – 634
Volume 3 — Long Term Development		elopment (dual runway facility by 2063)
	Approach to impact assessment	p3 - 10
Part G	Assessment of Long Term Impact - Noise	p11 - 72
Part H	Conclusion and recommendations	p193 – 200
	Volume 4 — EIS Technical Reports	
Appendix E	E2 Airport ground-based noise and vibration	Separate report

1.4 Policy and guidance

The following documents, standards and guidance have been used to inform the EIS review process:

- Airports (Environment Protection) Regulations 1997 (to be ceased by 1 April 2019)
- Airports Act 1996
- AS 2021: 2015 Acoustics Aircraft Noise Intrusion Building Siting and Construction
- Assessing vibration: a technical guideline (Department of Environment and Conservation, 2006)
- Australian Government Department of Sustainability, Environment, Water, Population and Communities –
 Actions on, or impacting upon, Commonwealth land, and actions by Commonwealth agencies Significant impact guidelines 1.2 Environment Protection and Biodiversity Conservation Act 1999
- EIS Guidelines Australian Government Department of the Environment (Commonwealth Government, 2015)
- German Standard DIN 4150-3 Structural Vibration: Effects of Vibration on Structures.
- NSW Industrial Noise Policy (Environmental Protection Authority, 2000)
- NSW Interim Construction Noise Guideline (Department of Environment and Climate Change, 2009)
- NSW Road Noise Policy (Department of Environment, Climate Change and Water, 2013)



Detailed findings - 1st stage airport 2

2.1 Summary

2.1.1 EIS Guidelines

A number of aspects were identified that did not satisfy the requirements of the EIS Guidelines.

- The assessment did not present sufficient evidence to support the noise levels used in the predictions. Changes to the noise source levels could potentially lead to significantly different outcomes.
- The identification of the type and magnitude of impact, both pre-mitigation and post-mitigation was not presented in the assessment.
- The effectiveness of identified noise mitigation measures is not able to be identified.
- The cumulative assessment does not consider the potential for noise impacts from the simultaneous operation of activities on the ground at the airport including ground based run ups and taxiing.
- The cumulative assessment does not include consideration of the operation of the M12 motorway and The Northern Road realignment which provide access to the airport and are likely to introduce an additional significant noise sources into the area.

2.1.2 Assumptions

- It has been assumed that Auxiliary Power Units (APU) would not be used at the airport. However, the type of ground power to be employed instead is not clearly defined. Ground power units (GPU) have the potential to cause additional noise impacts and the inclusion of either APU or GPU usage at the airport could adversely affect the outcome of the assessment.
- There is insufficient information regarding assumed noise source levels used in the assessment, particularly in relation to noise from taxiing aircraft.
- A single rating background level has been assumed for all receptors, rather than several location-specific values. This generalisation has underestimated the magnitude of noise impacts at receptors close to the airport that are currently exposed to low levels of environmental noise.
- The assumption that construction traffic will primarily travel on Elizabeth Drive does not include an assessment of roads that connect to Elizabeth Drive being used by construction vehicles.

2.1.3 Conclusions

- No consideration has been given to the cumulative noise impact from all ground noise sources at the nearest noise sensitive receptors both with and without mitigation measures. Additional assessment should also be undertaken for other ground noise sources, such as the compass calibration pad.
- The conclusions reported in the body of the EIS regarding operational traffic noise are misleading as they do not state that development of a new motorway or substantial realignment of an arterial road to accommodate the airport were excluded from the assessment.

2.1.4 Mitigation and management measures proposed

- It is recommended that the mitigation measures identified in the assessment, including the restriction of APUs and the limitation of engine ground run-ups during the night, should be formalised as part of the project approval.
- The assessment does not provide sufficient evidence that all reasonable and feasible mitigation measures have been considered to reduce noise impacts from taxiing and ground run-ups.

Project number: ACG1517900

Dated: 2015-11-06

Semi-enclosed pens and bunded areas to reduce noise impacts from engine ground run-up noise are considered in the assessment. It is recommended that these measures are considered further as part of the approvals and subsequent design stages.

2.1.5 Uncertainty of impacts and environmental risks

- There are noise sensitive receptors closer to the airport than those selected for noise monitoring, leaving uncertainty over the current noise environment for the potentially most affected noise sensitive receptors.
- The level of impact at the nearest sensitive receivers in Luddenham is not appropriately defined in the EIS and represents a potential risk to the validity of the assessments.

2.2 Detailed findings

2.2.1 Introduction

Appendix E2 – Airport ground-based noise and vibration is the primary document under review, as this appendix forms the technical basis for all other ground noise related documents, including the EIS chapters.

2.2.2 Scope

The scope of the ground noise assessment is limited to aircraft taxiing noise, engine ground run-ups, development generated road traffic noise and construction phase noise and vibration.

The noise impact of auxiliary power units (APUs) has been excluded, on the assumption that ground power and preconditioned air will be provided at all gates, negating the need to use APUs. The use of APUs is not discussed in the Airport Plan. Therefore there is a potential risk that APUs could be used in future, which could change the result of the noise assessment.

An assessment of the noise impact of APU usage should be undertaken, if they could potentially be routinely used.

There is a reference within the ground noise assessment to the use of reverse thrust at night-time, however it is assumed that reverse thrust has been included in the aircraft noise assessment.

2.2.3 Baseline noise survey

From a review of available aerial mapping, there are closer noise sensitive receptors in the area than those selected for noise monitoring, leaving uncertainty over the noise impacts on the most affected noise sensitive receptors, particularly for properties in Luddenham to the north west of the Site. Figure 2-1 shows the adopted noise monitoring locations that are closest to the Site boundary. Figure 2-2 shows that there are many noise sensitive receptors much nearer to the Site boundary (marked in grey). Further consideration should therefore be given to quantifying the existing noise environment for properties closest to the airport.



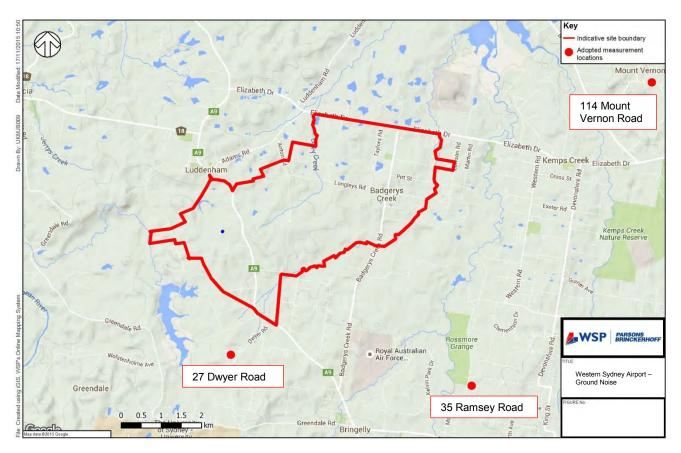


Figure 2-1 - Noise monitoring locations which are closest to the Site boundary

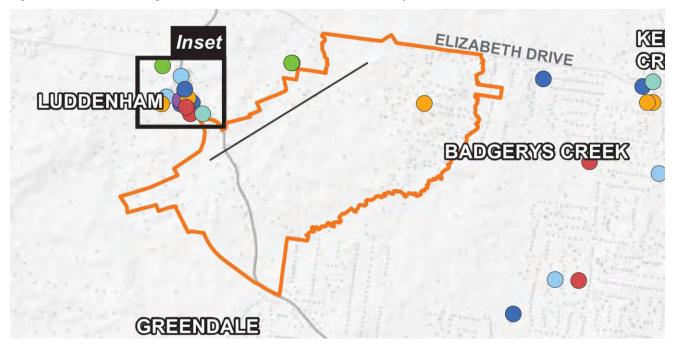


Figure 2-2 – Nearest noise sensitive residential receptors to the Site boundary (marked as light grey points)

There is insufficient detail provided to accurately determine the specific noise monitoring locations, whether noise measurements were taken in free-field conditions, or at what height above ground microphones were positioned at. It is not possible to determine whether microphones had direct line of sight to dominant noise

sources such as main roads, or whether they were placed in backyards. There is a risk that existing noise levels have been overestimated if they have not been placed on quietest facades of residential receptors. The existing noise levels have been used to determine assessment criteria, so this information could potentially affect the conclusions of the assessment. Therefore the precise measurement locations should be defined.

Figure 11-2 (reproduced below in Figure 2-3) depicts the noise sensitive receptors surrounding the airport site. It identifies the location of nearby non-residential noise sensitive receptors in the area clearly, however the location of residential receptors is indicated by very small points in light grey, which are difficult to observe and could be considered misleading. It is recommended that Figure 11-2 is updated to show more clearly the location of residential receptors.



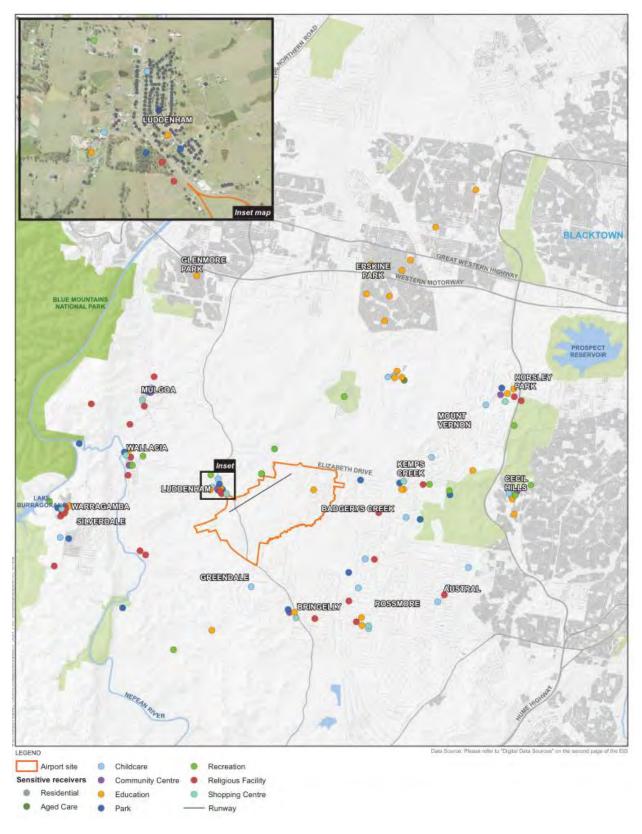


Figure 2-3 - Sensitive receivers surrounding the airport site (reproduced from Western Sydney Airport draft EIS)

2.2.4 Criteria

Ground based operations noise

There is insufficient evidence that the intrusiveness criterion is more stringent than the amenity criterion for all assessed locations. Based on the rural nature of the surrounding area, Table 2.1 of the NSW Industrial Noise Policy 2000 (INP) (presented in Table 2-1 of this report) recommends a noise level of 40 dB L_{Aeq} at night as "acceptable". This is lower than some tabulated night-time values in Table 3-1 of Appendix E2 (albeit they are L_{Aeq,15min}, corrected). The incorrect criterion selection could potentially underestimate the extent of the noise impacts, therefore further evidence should be provided to demonstrate that the intrusiveness criterion is the more stringent at all locations.

Furthermore, the contribution from existing industrial noise sources was not quantified in the assessment, therefore there is insufficient evidence presented in the report

The approach of selecting one noise criterion undermines the results of the noise monitoring at multiple locations. Noise criteria at five of the ten locations are lower than 40 dBA, and as low as 35 dBA, which is 5 dB lower than the adopted criterion. As a result, noise impacts at some locations are considered to have been incorrectly identified, and should be reassessed for each measurement location using the criterion specific to that assessment location.

Table 3-2 of Appendix E2 sets out noise criteria for non-residential receivers based on recommended maximum L_{Aeq} levels. However Section 2.2 of the INP states that, in all cases, it is expected that all feasible and reasonable mitigation measures would be applied before the recommended maximum noise levels are referenced. Therefore the "acceptable" noise levels stated in Table 2.1 of the INP should be used in the first instance, rather than "Recommended Maximum". The criteria adopted would therefore be 5 dB lower than that used in the assessment, which could potentially alter the assessment outcome.

No assessment of low frequency noise or other modifying factors as defined in Section 4 of the INP has been conducted. The assessment should be revised to include consideration of these aspects.



Table 2-1 - INP Amenity criteria (reproduced from Table 2.1 of the INP)

Recommended L... noise levels from industrial noise sources

Recommended L _{Aeq} noise levels from industrial noise sources				
Type of Receiver	Indicative Time of Day Recommended L _{Acq.} Noise Le dB(A) Area (see Note 8 in Section 2.2.1			B(A)
(see No	otes in Section 2.2.1))	Acceptable	Recommended Maximum
			(See Note 11)	(See Note 11)
Residence	Rural	Day	50	55
		Evening	45	50
		Night	40	45
	Suburban	Day	55	60
		Evening	45	50
		Night	40	45
	Urban	Day	60	65
		Evening	50	55
		Night	45	50
	Urban/Industrial	Day	65	70
	Interface – for existing	Evening	55	60
	situations only	Night	50	55
School classroom—internal	All	Noisiest 1-hour period when in use	35 (See Note 10)	40
Hospital ward —internal —external	All All	Noisiest 1-hour period Noisiest 1-hour period	35 50	40 55
Place of worship—internal	All	When in use	40	45
Area specifically reserved for passive recreation (e.g. National Park)	All	When in use	50	55
Active recreation area (e.g. school playground, golf course)	All	When in use	55	60
Commercial premises	All	When in use	65	70
Industrial premises	All	When in use	70	75

Construction noise and vibration

It is unclear whether the adopted construction noise criteria are based on the NSW Interim Construction Noise Guideline (ICNG) or the Airports (Environment Protection) Regulations 1997. Usual hours of construction are proposed from 6.00 am, which is classed as night-time. Therefore, it is important that the appropriate criterion is used for night-time work, which will be included in standard hours of construction. It is recommended that

Project number: ACG1517900

Dated: 2015-11-06

clarification is provided for the appropriate criteria set to be used for the assessment during daytime and night-time periods.

Table 2 of the ICNG states that strong justification would typically be required for works outside of the recommended standard hours. No justification has been provided in the assessment.

The construction noise assessment identifies that, for some receptors, the noise management level (NML) should be 39 dBA, however 45 dBA (weekday) and 40 dBA (weekend and early morning works) have been adopted as the criteria set. This potentially underestimates the noise impacts from construction by up to 6 dB. Construction noise should be reassessed based on the different measurement locations adopted in the assessment, in order to more accurately quantify the potential noise impacts.

Road traffic noise

The Road Noise Policy (RNP) and RNP application notes provide specific criteria for the assessment of land uses affected by traffic generating developments on existing roads. Whilst the report does provide an assessment of impacts consistent with the RNP, the appropriate section of the RNP and RNP application notes should be referenced in the report.

2.2.5 Noise modelling

Assumptions

It has been assumed that there will only be one high power run up, which would occur for less than 5 minutes in any night. INP Section 4.2 states that the acceptable noise level may be increased by 5 dB to account for unusual and one-off events, but does not apply to regular high-noise levels that occur more frequently than once per day. Should there be more than one high power run-up in one night, it would be inappropriate to apply this correction. Clarification is required to determine the likelihood of high power ground run-ups in a given night-time period.

The assumed location for ground run-ups is defined in Figure 3-1 of Appendix E2 (presented in Figure 2-4 below), however the indicative building location near the location is not finalised nor is fixed within the application. Figure 3-2 of Appendix E2 (presented in Figure 2-5 below) shows that communities to the west and north west of the Site benefit from the screening afforded by this building. Noise impacts could significantly change if the buildings or run-up area change location. It is therefore considered appropriate to assess a scenario where the building does not provide any acoustic benefit, to take into account that final locations are not fixed and may change.



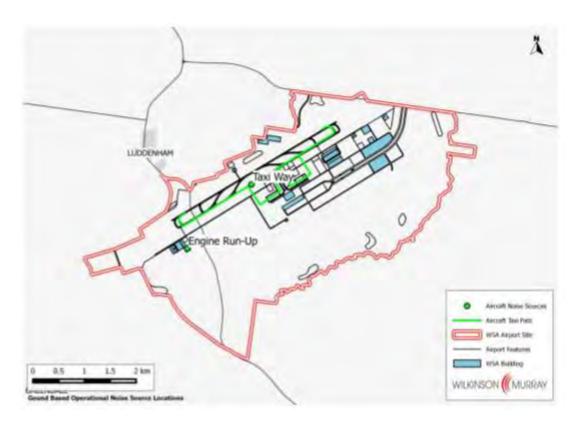
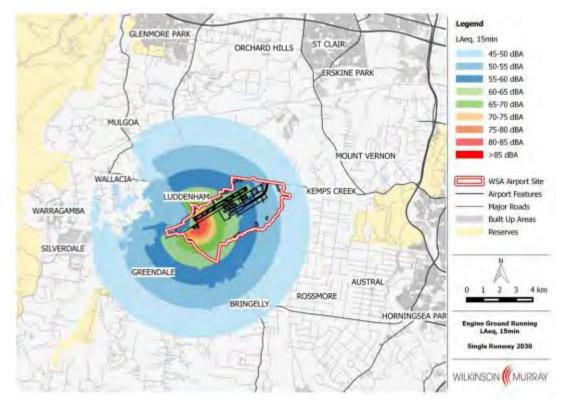


Figure 2-4 - Ground based operational noise source locations, 2030 (reproduced from EIS Appendix E2 Figure 3-1)



 $\textbf{Figure 2-5 - Worst case L}_{\texttt{Aeq,15min}} \ \textbf{engine ground running noise contours, 2030 (reproduced from EIS Appendix E2 Figure 3-2) } \\$

Dated: 2015-11-06

Source noise data

Chapter 9 Table 9-2 of the EIS presents EIS Guideline requirements and indicates where in the EIS they are addressed. In Table 9-2 Section 11 – Information sources it states that for information given in the EIS, the EIS must state (amongst other points) the source of the information, how recent the information is, and how reliable the information is. This requirement has not be fulfilled in the EIS as this information is not presented for the noise source levels in the ground based noise assessment.

A sound power level of 151 dBA has been assumed for aircraft engine ground running, based on measurements of aircraft taking off. There is no indication of which aircraft this refers to, or the range of typical levels that might be expected. It is assumed that this level is an A weighted Sound Power Level (LwA), however it is not explicitly stated. More information should be provided regarding the adopted source noise level and the range of values expected from engine run-ups, given the anticipated fleet of aircraft for the airport.

A sound power level of 138 dBA has been assumed for taxiing aircraft. This is stated as the highest level measured, based on measurements of a B777, B747, B737, B717 and A330 aircraft. It is assumed that the 747 taxi noise has been used for the purposes of the noise modelling exercise. In addition, the directionality of the source has not been stated. As aircraft engines are directional sources, there is potential for an underestimation of impacts from a directional source with the same sound power level as an omni-directional source. As a result, it is unclear how this sound power level has been calculated.

Taxiing aircraft is in essence a moving point source. Depending on how the source has been modelled, this may not be the appropriate sound power level to use (e.g. series of point sources, line source with a total sound power, line source with a sound power per unit length). It is unclear whether taxiing was under two engine conditions, one engine conditions or engine off taxiing (EOT). Clarification is required on the method used to determine the sound power level for the line source, and the measurements that were undertaken in support of this.

2.2.6 Assessment

General

The requirements of Section 5 "Relevant Impacts" and Section 7 "Residual impacts and offsets" in Table 9-2 have not been met within Chapter 11, and this chapter should be updated to include clear statements on whether impacts are short term, long term, direct, indirect, unknown, predictable or irreversible, and a clear indication of the significance of the impacts, pre and post mitigation. This should include the reasons why avoidance or mitigation of impacts may not reasonably be achieved, where necessary.

A magnitude scale for impact significance should be set out at the beginning of the chapter and used for premitigation and post mitigation assessments so that it can be seen what the residual noise impacts are predicted to be.

Ground based operations noise

The assessment year for Stage 1 is 2030, which is only five years after anticipated opening. Given that passengers and air movements are expected to steadily increase to 2050, when the single runway will be at full capacity, it could be considered more appropriate to take 2050 (i.e. 25 years after opening) as the assessment year so that realistic longer term impacts can be taken into account. Given that there is more certainty over this than a two runway scenario, it is important that the single runway noise impacts are fully explored.

Table 3-4 of Appendix E2 (reproduced in Table 2-2) shows the population affected above the adopted criteria for engine ground running and taxiing. The table may be subject to change when the issues identified in this review are addressed. It is recommended that it is stated how many receptors will be exposed to 5 dB above



criterion, 10 dB above criterion etc. as there is currently no indication of the magnitude of exceedance that will be experienced by individual receptors. At this stage, it is likely that the population numbers will increase.

Table 2-2 - Predicted residential noise impact of ground-based operational noise under worst-case conditions (reproduced from appendix E2 Table 3-4)

Noise Type	Noise Criterion	Population Affected above Criterion
Engine Ground Running	45 dBA	7,258
Taxiing	40 dBA	3,117

Note: Population exposures are esitmates only

Similarly, Table 3-5 of Appendix E2 (shown in Table 2-3) shows other receivers and land uses affected above the adopted criteria for engine ground noise and taxiing. There may also be implications to this table as a result of the above issues. It is recommended that the actual noise levels anticipated at these buildings/areas are presented so that the magnitude of the exceedance can be understood.

Table 2-3 - Predicted noise impact of ground-based operational noise on other receiver types under worst-case conditions (reproduced from Appendix E2 Table 3-5)

Washington .	Other Buildings and La	Other Buildings and Land Uses Affected Above Criterion			
Noise Type	Building or Land Use Type	Criterion	Number		
Engine Ground Running	Educational Institutions	55 dBA	5		
	Hospitals	60 dBA	0		
	Place of Worship	60 dBA	2		
	Passive Recreation	60 dBA	2		
	Active Recreation	65 dBA	0		
Taxiing	Educational Institutions	50 dBA	1		
	Hospitals	55 dBA	0		
	Place of Worship	55 dBA	0		
	Passive Recreation	55 dBA	0		
	Active Recreation	60 dBA	0		

Note: Building numbers are based on information obtained in 2015, however datasets may be older. No verficiation of building types or uses has been undetaken.

Road traffic noise

The construction road traffic noise assessment only includes an assessment of impacts from vehicles accessing the site on Elizabeth Drive. No assessment or comment is provided for other stages of construction where there are additional entrances to the site, nor for roads which connect to Elizabeth Drive, which may carry construction traffic.

The road traffic noise assessment for the operational airport does not include the assessment of the planned M12 motorway or The Northern Road realignment which are being developed to accommodate the airport. The impacts of these projects has been excluded from the assessment as these are to be developed and approved by other authorities and proponents. However, the EIS does not state the limitations of the assessment, which does not include these major road projects, as presented in Appendix E2.

The assessment of road traffic noise only includes assessment of one year (2030). It does not provide sufficient justification for the omission of other operating years for example up to 2050. It is considered likely that traffic

Dated: 2015-11-06

on the assessed roads would increase as a result of the second stage of development and no comment has been made on this.

2.2.7 Mitigation

General

Section 6 of the EIS Guidelines, "Avoidance and mitigation measures", states that the EIS must include an assessment of the expected or predicted effectiveness of mitigation measures. The draft EIS does present analysis to satisfy this requirement and it is recommended that an assessment of the expected or predicted effectiveness of each mitigation measure identified is provided.

Ground based operations noise

The restriction on the amount of high power running at night time is stated to substantially reduce the impact of ground running noise. As this assumption has been included the noise predictions, night-time engine ground run-up should be conditioned appropriately as part of the project approval.

Engine run-up noise mitigation measures are identified, including the construction of buildings, mounds or barriers near the run-up area to provide greater acoustic screening, and the possibility of relocating the run up area further to the south-east to reduce the noise impact on Luddenham. The quantifiable benefits to the closest noise sensitive receptors from the adoption of such measures should be defined, in terms of resultant noise levels and the residual exceedance of the criteria. The use of such measures should be included in the project approval for appropriate periods.

The assessment states that there is "little that could be done to reduce noise levels emanating from the airport as a result of taxiing". However, there are a number of potential mitigation measures that could be considered, including single engine taxiing, engine off taxiing (EOT) and the installation of acoustic barriers at effective locations. It is therefore recommended that consideration should be given to these mitigation measures in a revised assessment. In addition, the unmitigated noise impact from taxiing and the residual noise impact following potential mitigation measures should be presented. The measures identified to be reasonable and feasible should be included in the project approval.

The assessment has assumed that APUs will not be used, and that instead ground power and pre-conditioned air will be available at all gates. However, ground power could be supplied either by fixed electrical ground power (FEGP), or by Ground Power Units (GPUs). GPUs could have the potential to cause noise impacts and should be assessed accordingly. An approval condition should be included that restricts the use of APUs, and the type of ground power to be employed on site.

The use of ground power and pre-conditioned air are not included in Table 11-13 of Chapter 11, which sets out the mitigation and management measures, nor is any mention of the restriction over APU usage.

Construction noise and vibration

The report identifies the need for a Construction Noise & Vibration Management Plan. This should be conditioned appropriately as part of a project approval.

2.2.8 Cumulative assessment

Cumulative noise impact from engine run-ups and taxiing have not been considered, and no assessment has been included for airside service vehicles, sirens, noise from fixed plant associated with the airport buildings or use of the compass calibration pad. As a minimum, consideration should be given to the cumulative noise impact from all ground noise sources at nearest noise sensitive receptors with and without mitigation measures.

The cumulative noise assessment is not consistent with the requirements of the EIS Guidelines as it does not include an assessment of cumulative noise impacts associated with the operation of the M12 motorway or



realignment of The Northern Road, which are being developed to accommodate the airport. These planned road projects have the potential to significantly increase noise levels in the area surrounding the airport and should therefore be considered as part of a cumulative assessment.

2.2.9 Conclusions

Chapter 21 Table 29-1 provides a summary of the key environmental impacts. The "Noise – ground operations, construction and road traffic" section of the table does not provide an indication of the magnitude of significance of the noise sources stated, and whether mitigation measures are included. There is also no evaluation of the acceptability of the noise impacts. The table should be updated to include this detail.

The conclusions of the draft EIS that there are no significant operational traffic noise impacts is misleading, as it does not acknowledge the limitations of the assessment, which excludes the development of the M12 motorway and substantial realignment of The Northern Road to accommodate the airport. The statements relating to operational traffic noise should be updated to acknowledge the limitations of the road traffic noise assessment.

Project number: ACG1517900

3 Detailed findings - long term development

3.1 Summary

The assessment is considered to contain an appropriate level of detail for the long term development as the potential noise impacts are predicted for a considerable time in the future (into 2063). It is acknowledged that the noise environment may change over time. The identified issues are summarised as follows:

- The comments raised in this review for the 1st stage airport assessment should be addressed and applied to the long term development assessment. Where this occurs, the current framework for further assessment of the long term development is considered appropriate.
- The draft EIS does not include ground-based noise in the summary or conclusion for the long term development. It is recommended that the outcomes of the revised long-term development ground-based noise assessment are included in these sections so that all impacts are clearly presented.
- The assessment does provide comment on the potential noise impacts from the long-term development of the airport. The trip generation of the fully developed airport is predicted to be over 300,000 vehicles per day and no comment has been made on potential noise impacts on the surrounding existing road network, including the M7 and The Northern Road.

3.2 Detailed findings

3.2.1 Modelling

Engine ground run-up noise in 2063 has been modelled at the location indicated in Figure 3-4 of Appendix E2, shown below in Figure 3-1. Figure 3-5 of Appendix E2 shows the noise propagation from this source but does not have the same level of acoustic screening afforded by nearby buildings as that shown in Figure 3-2 of Appendix E2, which is the corresponding noise contour plot for the single runway scenario. These two figures are compared in Figure 3-2 below). There is therefore uncertainty regarding the level of screening from buildings.

Clarification is also required regarding the assumption that, in the event of a two runway airport, there would continue to only be one ground run-up area.



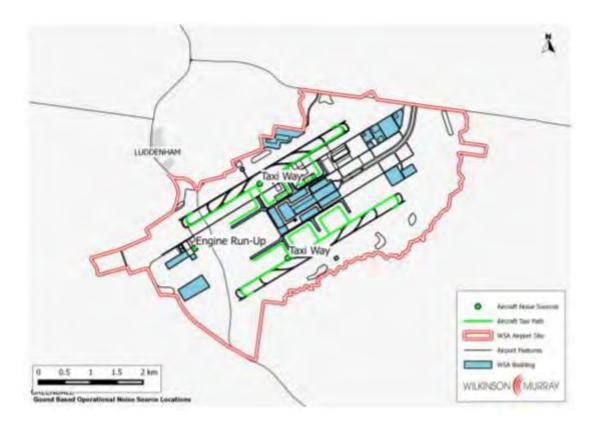


Figure 3-1 - Ground-based operational noise source locations, 2063 (reproduced from Appendix E2 Figure 3-4)

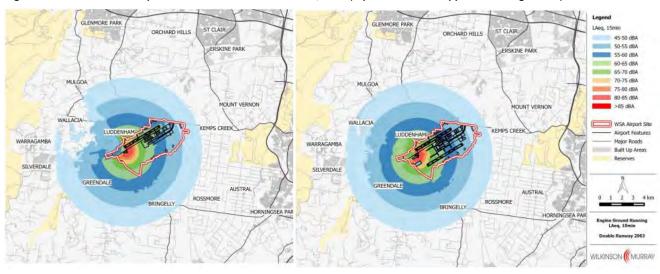


Figure 3-2 - Comparison between worst-case L_{Aeq,15min} engine ground running noise contours for 2030 (single runway, left) and 2063 (two runway, right)

Figure 3-4 of Appendix E2 does not accurately represent Figure 5-3 of the draft EIS Volume 1 (p143) document which shows the indicative airport site layout – long term development. The two figures are compared in Figure 3-3 below. In particular, there are additional areas within that layout where aircraft would be taxiing that have not been included in the noise model. The model only accounts for the usage of 63 out of 95 aircraft gates. It is recommended that the model is updated to include the additional areas where aircraft will be taxiing. It is anticipated that there will be an increase of approximately 1 dB in including these additional areas.

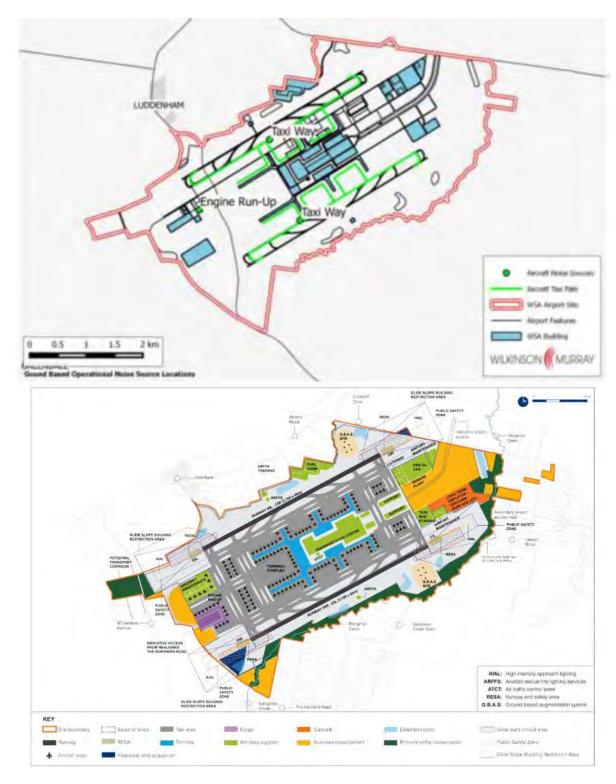


Figure 3-3 - Comparison between modelled noise sources in 2063 (Appendix E2 Figure 3-4, top image) and indicative airport site layout in 2063 (Volume 1 Chapter 5 Figure 5-3, bottom image)

3.2.2 Assessment

The 2063 aircraft taxiing noise contours shown in Volume 3 Chapter 31 Figure 31-39 show the increased number of aircraft movements and extend further south as a result of the commissioning of the second runway. The aircraft noise section (Volume 3 Chapter 31, Sections 31.2 to 31.4, Tables 31-7 to 31-9) has identified the population numbers affected by aircraft noise, however this information is not presented for ground noise.

There is no indication of the level of exceedance for nearest noise sensitive receptors in order to determine the magnitude of the impact. It is recommended that population number affected by ground noise is included, in 5 dB bands, in order to determine the magnitude of the potential noise impact.

The assessment does not comment on the potential road traffic noise impacts as a result of the long term development. The traffic and transport assessment (draft EIS Appendix J) includes predictions that indicate more than 300,000 additional trips would be generated by the development of the airport by 2063. This volume of traffic is more than the typical volumes currently carried by some motorways in Sydney. As a result it is recommended that comment is made to identify the potentially affected roads and noise impacts as a result of such traffic generation.

3.2.3 Conclusions

There is no reference to ground noise in the summary of findings or the Conclusion and Recommendation chapter (Chapter 40) of Volume 3. Ground noise impacts may therefore not be considered by decision makers. A summary of the ground noise impact assessment should be included in this chapter.

Project number: ACG1517900

4 Key impacts and opportunities

Below is a summary of the key impacts and opportunities that have been identified as a result of the review.

- There is insufficient detail surrounding the selection of source noise data. Changes to the source noise data could potentially lead to a significantly different outcome.
- The draft EIS does not satisfy the EIS Guideline requirements to identify the type and magnitude of impact, both pre-mitigation and post-mitigation.
- The exclusion of Auxiliary Power Unit (APU) usage at the airport and uncertainty surrounding the method of alternative ground power could potentially adversely affect the outcome of the assessment.
- A single noise level has been used for existing noise levels at all receptors, rather than several location-specific values. This generalisation has underestimated the magnitude of noise impacts at receptors close to the airport that are currently exposed to low levels of environmental noise.
- No consideration has been given to the cumulative noise impact from all ground noise sources at nearest noise sensitive receptors with and without mitigation measures. Further consideration should also be given to noise from other ground noise sources, such as the compass calibration pad.
- Several mitigation measures have been put forward, including the restriction of APUs and the limitation of engine ground run-ups during the night. These measures should be included as part of any approval conditions.
- Sufficient analysis of feasible and reasonable mitigation measures to reduce taxiing noise has not been included. Several mitigation options exists which are not discussed in the assessment. It is recommended that further analysis is conducted for these measures.
- Semi-enclosed pens and bunded areas to reduce noise impacts from engine ground run-up noise are considered in the assessment. It is recommended that these measures are considered further as part of the approvals and subsequent design stages.
- Nearest noise sensitive receptors such as residences in Luddenham have not been included in the baseline noise monitoring. It is recommended further noise monitoring is undertaken in this area.
- The findings of the long term development ground noise impact assessment are not included in the draft EIS chapter summary or the conclusion chapter. A summary of the ground noise impact assessment should be included in these areas.
- The potential cumulative impact of the M12 motorway and realignment of the Northern Road which are being developed to accommodate the airport should be considered in the assessment.
- No comment is made on the long term developments potential noise impacts from significant traffic generation from the airport. It is recommended that this is included in the assessment.

The above issues currently indicate a high level of uncertainty over the accuracy and extent of the noise impact from ground noise currently. In particular, from ground noise related operations at the airport. It is recommended that each point above be considered and addressed in subsequent assessment of ground noise for the airport.



5 Qualifications of the study team

5.1 Project manager

Alex Campbell, Asia-Pacific Acoustics Manager

MEng, MAAS, MIOA, C.Eng

12 Years' Experience

Alex leads the WSP | Parsons Brinckerhoff acoustics team in the Asia-Pacific region. He has over 12 years industry experience, the last 9 years of which have been with WSP Acoustics - who are one of the world's largest globally connected acoustic specialist teams employing 150 engineers worldwide.

He has seen the successful completion of projects in a wide range of sectors, and has managed and been technically involved with projects including Review of Environmental Factors (REF) and Environmental Impact Statement (EIS) Noise & Vibration assessments throughout Australia. In addition to this, Alex has significant experience in delivering major international projects on-time and on-budget for both government and private sector clients.

5.2 Supporting technical team

Mike Barrett, Principal Acoustic Consultant

BSc(hons), MIOA

10 Years' Experience

Mike has worked on projects associated with many of the UK's largest airports, including Heathrow, Gatwick, Stansted, Manchester, London City and Luton Airports – many of which have been in the capacity of peer reviewer.

Mike is a Principal Acoustic Consultant for WSP | Parsons Brinckerhoff, and has 10 years' experience in the modelling, monitoring and assessment of noise and vibration. He has been involved with a wide range of environmental, architectural and building services projects, and regularly provides specialist advice to developers, architects, industry and local authorities.

During his time in consultancy experience has been gained across a number of different sectors including aviation, surface transport, residential, industrial, commercial, leisure and retail, and he presently sits on the Institute of Acoustics UK North West Branch Committee.

Adrian White, Associate Acoustic Consultant

BSc. MAAS

8 Years' Experience

Adrian has worked on major EIS projects throughout Australia. He has over eight years of experience working as a professional and acoustic consultant in Australia with internationally recognised noise and vibration consultancies. Adrian specialises in acoustics with niche expertise in a variety of areas such as environmental and industrial acoustics, architectural acoustics and transportation noise and vibration.

Chris Marsh, Senior Acoustic Consultant

MEng, MAAS, AMIMechE

5 Years' Experience

Chris is a senior acoustics engineer at WSP | Parsons Brinckerhoff experienced in environmental acoustics and monitoring projects. He has over five years' experience in the assessment, monitoring and management of environmental noise and has been involved in a number of major projects across transportation, industrial and resource sectors.

Project number: ACG1517900

Dated: 2015-11-06

Appendix A Document review

Section / Paragraph Reference	Text Reference / Figure Description	Comment	Recommendation	Significance of Issue
Appendix E2	- Airport ground-based noise and vibrat	ion		
1.3 / p5 para 1	"The use of auxiliary power units (APUs) on aircraft has not been assessed because it is assumed that power and pre-conditioned air would generally be supplied to aircraft at the terminal gates."	There is no mention of the use of APUs in the Airport Plan. The potential effect of using APUs has not been covered, nor has it been expressly stated that they would not be used.	Clarification should be sought as to whether APUs will be used. Assessment of the noise impact of APU usage, should such usage be an option.	Medium
2 / p6	A description of the baseline noise survey that has informed the setting of noise limits	There is insufficient detail contained within the section to determine the specific noise monitoring locations. For example, it is unclear as to whether noise measurements were taken in free-field conditions, and what height above ground the microphone was positioned at. Crucially, it does not include a description of the exact measurement location to be able to determine whether microphones had direct line of sight to dominant noise sources such as main roads, or whether they were placed in rear gardens. There is a risk that existing noise levels have been overestimated if they have not been placed on quietest facades of residential receptors.	Clarification on exact noise measurement locations.	Low
2 / p6 para 2	"The locations were also chosen to represent potentially-affected development in the surrounding area."	From a review of available aerial mapping, it is evident that there are closer noise sensitive receptors in the area than those selected for noise monitoring. There is a concern that the potential impacts on the most affected noise sensitive receptors have not been accurately quantified. Properties in Luddenham to the north west of the Site are particularly close yet there has been no noise monitoring undertaken in this area	Further consideration should be given to quantifying the existing noise environment for properties closest to the airport, particularly Luddenham.	Low

Section / Paragraph Reference	Text Reference / Figure Description	Comment	Recommendation	Significance of Issue
3.1 / p9, para 5, Table 3-1	"In the area surrounding the airport, the intrusiveness criterion is the more stringent at all locations."	There is no evidence base for the conclusion that is drawn regarding the appropriate criteria set to be used. This could potentially underplay the extent of the noise impacts. Based on the rural nature of the surrounding area, Table 2.1 of the INP recommends a noise level of 40 dB L_{Aeq} at night as "acceptable". It is clear that this is lower than some tabulated night-time values in Table 3-1, albeit they are $L_{\text{Aeq},15\text{min}}$ (corrected).	Evidence to demonstrate that the intrusiveness criterion is the more stringent at all locations.	Low
3.1 / p10, para 2, Table 3-1	"So that the noise contours included below in this report can be readily interpreted, it is preferable to adopt one criterion for all residences an overall noise criterion of 40 dBA can be taken as generally appropriate for residential locations at night."	The approach of selecting one criterion undermines the results of the noise monitoring at multiple locations. It is clear that noise criteria at five of the ten locations are lower than 40 dBA, and are as low as 35 dBA, which is 5 dB lower than the adopted criterion. Noise impacts at certain locations have been incorrectly identified.	Request reassessment for each measurement location using the appropriate criterion for that receptor, as set out in Table 3-1	Medium
3.1 / p10, para 2	"By the time the proposed airport becomes operational, background noise levels in the general area are expected to have increased as a result of increased road traffic and associated development in the surrounding area. This would particularly be so for the lower background noise levels and would in turn raise the value of the appropriate noise criteria for the assessment of airport operational noise."	The argument made in the paragraph is in reference to selecting an overall noise criterion of 40 dBA, which would be up to 5 dB higher than the locations-specific criteria set out in Table 3-1. However, an increase of 5 dB would be, in simple terms, equivalent to more than three times the amount of sound energy incident at the measurement location. Therefore, for road traffic to have this impact, there would need to be more than three times the amount of traffic that is currently on the road network, assuming no changes to the current road network.	None, comment for information only.	Noted for information

Section / Paragraph Reference	Text Reference / Figure Description	Comment	Recommendation	Significance of Issue
3.1 / p11, Table 3-2	Table setting out "noise criteria for other receiver types", referring to those other than residential receivers. Values contained within the table are recommended maximum L _{Aeq} Noise Criteria.	"To limit continuing increases in noise levels, the maximum ambient noise level within an area from industrial noise sources should not normally exceed the acceptable noise levels specified in Table 2.1. Meeting the acceptable noise levels in Table 2.1 wheeting the acceptable noise impacts such as speech interference, community annoyance and, to some extent, sleep disturbance. These levels represent current best practice for assessing industrial noise sources, based on research and a review of assessment practices used overseas and within Australia. Table 2.1 also includes recommended maximum noise levels for different land uses. These recommended maximum values provide guidance on an upper limit to the level of noise from industry. In all cases it is expected that all feasible and reasonable mitigation measures would be applied before the recommended maximum noise levels are referenced."	The "Acceptable" noise levels stated in Table 2.1 of the INP should be used in the first instance, rather than "Recommended Maximum", which would in turn mean the criteria adopted would be 5 dB lower than used in the assessment.	Medium
3.2 / p11, para 3	"For modelling purposes it has been assumed that high power run up would occur for less than 5 minutes in any night. Therefore, the night time residential criterion for this activity has been set using the industrial noise criterion as 5 dB over the general INP night time criterion for residential receivers; that is 45 dBA, in accordance with the INP duration adjustment."	INP Section 4.2 states that the acceptable noise level may be increased by the adjustment shown in Table 4.2 of the INP, and that the adjustment is designed to account for unusual and one-off events, and does not apply to regular high-noise levels that occur more frequently than once per day. Should there be more than one high power run-up in one night, it would be inappropriate to apply this correction, and given that this is a realistic scenario, there is a concern that the criterion set is inappropriate.	Evidence to show the likelihood of high power ground run-ups in a given night-time period. Reassessment, where appropriate, of impact of high power ground running.	High
3.2 / p11, para 4	"Like other major airports in Australia, the proposed airport is expected to have restrictions in place on engine ground runs, including limitations on night time run up activity."	Assumption on future controls.	None, comment for information only. Consideration to condition.	Noted for information

Section / Paragraph Reference	Text Reference / Figure Description	Comment	Recommendation	Significance of Issue
3.5.1 / p13, para 2, Figure 3-1, Figure 3-2	"It has been assumed that aircraft ground runs would occur at the location shown in Figure 3-1."	It is acknowledged that the assumed location for run-ups is defined in Figure 3-1, however there is a concern that, at this stage, the indicative building location near the position is not finalised nor is fixed within the planning application. It is evident from Figure 3-2 that communities to the west and north west of the Site benefit from the screening afforded by this building. Should the building or run-up area move, it is likely that it could significantly affect the resulting noise impact from the Site.	Given the indicative layout, and the level of assumed acoustic benefit provided, it is considered appropriate to assess a scenario where the building does not provide any acoustic benefit, to take into account that final locations are not fixed and may change.	High
3.5.1 / p13, para 2,	On the subject of source noise levels for aircraft engine ground running " a level of 151 dBA has been assumed, based on measurements of aircraft taking off."	There is no indication of which aircraft this refers to, or the range of typical levels that might be expected. It is assumed that this level is an effective A weighted Sound Power Level (L _{WA}), however it is not explicitly stated. It would be expected that, given the potentially critical nature of the noise impact in the progression of the scheme, it would be appropriate to provide more information regarding the adopted source noise level.	More information is required regarding the range of values expected from engine run-ups given the anticipated fleet of aircraft for the airport, and more information regarding which aircraft the 151 dBA refers to.	Medium
3.5.2 / p13, para 5	"A sound power level (noise level at source) for each aircraft of 138 dBA has been assumed. This is the highest level measured for aircraft taxiing, based on measurements of a B777, B747, B737, B717 and A330 aircraft."	Typically, turboprops emit higher noise levels than jet aircraft whilst taxiing. It is anticipated that there will be a very low number of turboprops in service at the airport. It is unclear how this sound power level has been calculated. Taxiing is in essence a moving point source. Depending on how the source has been modelled, this may not be the appropriate sound power level to use. It is also unclear whether measured taxiing was under two engine conditions, one engine conditions or engine off taxiing (EOT).	Confirmation of the method used to determine the sound power level for the line source that has been used, and confirmation that measurements were undertaken to determine this. It would be useful to have the data presented in a table within the report.	Medium

Section / Paragraph Reference	Text Reference / Figure Description	Comment	Recommendation	Significance of Issue
3.6 / p15, Table 3-4	Table 3-4 shows population affected above criterion.	There may be implications to this table as a result of the above issues. It would also be helpful to understand how many receptors will be exposed to 5 dB above criterion, 10 dB above criterion etc.	Update table based on the outcome of the above recommendations. It is likely that the population numbers will increase. Provide number of people exposed to 5 dB above criterion, 10 dB above criterion etc.	Noted for information
3.6 / p16, Table 3-5	Table 3-5 shows other buildings and land uses affected above criterion.	There may be implications to this table as a result of the above issues. It would be helpful if the actual noise levels anticipated at these buildings/areas are presented, given the small number of them, so that the magnitude of the exceedance can be understood.	Update table based on the outcome of the above recommendations. It is likely that the population numbers will increase. Provide noise levels anticipated at each receptor.	Noted for information
3.6 / p16, para 2	The text refers to the use of reverse thrust at night.	It is assumed that reverse thrust at night has been included in the aircraft noise assessment.	Consider removing reference	Noted for information
3.7 / p17, para 2, Figure 3-4, Figure 3-5	"Ground-based noise levels have been predicted for the longer term airport development using the same methods as for the initial airport development. The noise source locations are shown in Figure 3-4 and the resulting contours are shown in Figure 3-5 and Figure 3-6."	The text infers that, even with two runways and a significant increase in aircraft movements as a result, there would still be only one engine run-up for less than 5 minutes in any 15 minute period. This single point source of noise has been modelled as indicated in Figure 3-4, however Figure 3-5 (which shows the noise propagation) does not appear to have the same level of acoustic screening from nearby buildings as the similar situation in Figure 3-2, which suggests that either Figure 3-2 overestimates the level of acoustic screened afforded by buildings, or Figure 3-5 underestimates this.	Clarification that, in the event of a two runway airport, there would continue to only be one ground run-up area. Confirmation that the acoustic screening from buildings has been correctly accounted for in both Figure 3-2 and Figure 3-5	Medium
3.7 / Figure 3-4	The figure shows ground-based operational noise source locations in 2063	The figure does not accurately represent Figure 5-3 of the EIS Volume 1 (p143) document which shows the indicative airport site layout – long term development. In particular, there are additional areas within that layout where aircraft would be taxiing that have not been included in the noise model. The model roughly only accounts for the usage of 63 out of 95 aircraft gates.	It is recommended that the model be updated to include the additional areas where aircraft will be taxiing.	Low

Section / Paragraph Reference	Text Reference / Figure Description	Comment	Recommendation	Significance of Issue
3.8 / p19, para 3	"High power running at night time should be restricted to special circumstances where high power testing is required after maintenance activity prior to an aircraft taking off [] Restricting the amount of high power running at night time would substantially reduce the impact of ground running noise."	The paragraph refers to mitigation measures, however this has already been factored in to the original noise assessment. It is therefore important that this mitigation measure is carried through to operation.	Condition night-time engine ground run- up appropriately.	Noted for information
3.8 / p19, para 3	"It may also be practical to construct buildings, mounds or barriers near the run-up area to provide greater noise shielding, particularly on the northern side to shield the closest area of Luddenham. It is possible that reductions of around 10 dBA could be achieved with mounds or buildings at least 10 m high, but moderate residual impacts would still occur under worst-case meteorological conditions. There may also be a benefit in relocating the run up area further to the southeast to reduce the noise impact on Luddenham, but practical operational issues would need to be considered for this."	It is unclear within the report what the quantifiable benefits to the closest noise sensitive receptors would be from moving the run-up area and installing run-up pens or barriers, in terms of resultant noise levels and the residual exceedance of the established criteria. It is unclear as to whether the impact during the day would be acceptable.	Given that moderate residual impacts are predicted with run-up pens, it is recommended that consideration be given to a more thorough assessment of the acoustic benefits of including such an area, and that its use should be conditioned during appropriate periods. Confirmation of the level of impact during the day.	Noted for information
3.8 / p19, para 4	"Aircraft taxiing noise would be relatively low in comparison to other noise associated with operation of the airport. There would be little that could be done to reduce noise levels emanating from the airport as a result of taxiing."	The statements made do not appear to be accurate. On inspection of the noise contours, particularly for the long term scenario, noise from taxiing is on a similar scale to noise from engine run-ups. There are a number of potential mitigation measures that could be considered, including single engine taxiing, engine off taxiing (EOT), the installation of acoustic barriers at effective locations	Consideration to the unmitigated noise impact from taxiing and the residual noise impact following possible mitigation measures, which could be conditioned.	High
3.8 / p20, para 2	"The proposed use of ground power and pre- conditioned air for aircraft at the gates avoids the use of aircraft auxiliary power units and the associated noise."	The assessment has assumed no use of auxiliary power units (APUs). The report assumes that ground power and pre-conditioned air will be available at all gates. However, ground power could be supplied either by fixed electrical ground power (FEGP), or by Ground Power Units (GPUs). Should the latter be used, it would be expected that they could have the potential to cause a noise impact and should be assessed accordingly.	Recommend that a condition is included that restricts the use of APUs. Clarify the type of ground power to be used. If GPUs are to be used, assess their noise impact.	Medium

Section / Paragraph Reference	Text Reference / Figure Description	Comment	Recommendation	Significance of Issue
3 / General	There is no consideration given to the cumulative noise impact from engine run-ups and taxiing, and no assessment has been included for airside service vehicles, sirens, noise from fixed plant associated with the airport buildings or use of the compass calibration pad.	As a minimum, it would be expected that some consideration would be given to the cumulative noise impact from all ground noise sources at nearest noise sensitive receptors with and without mitigation measures.	Recommend a cumulative ground noise assessment is included, and further consideration be given to noise from other ground noise sources.	Medium
4.1.1 / P21, para 4	Various construction noise criteria are discussed.	It is unclear as to whether the criteria is based on the NSW Interim Construction Noise Guideline (ICNG) or the Airports (Environment Protection) Regulations 1997. Usual hours of construction are proposed from 6.00 am, which is classed as night-time. Therefore, it is particularly important that the appropriate criterion is used for night-time work as this will be the norm. In addition where the ICNG is used, the guidelines states that strong justification should be provided for works that occur outside of standard hours.	Clarification of the appropriate criteria set to be used for this assessment for daytime and night-time.	Medium
4.1.1 / P21, para 5	"Based on the daytime background noise levels shown in Table 2-1, the daytime residential NML would be between 39 dBA and 49 dBA for standard hours. For assessment of construction noise, a NML of 45 dBA may reasonably be adopted for all residential receivers, for week-day construction. Equally, for weekend works and early morning works, an NML of 40 dBA may be adopted."	The report identifies that, for some receptors, the NML should be 39 dBA, however 45 dBA (weekday) and 40 dBA (weekend and early morning works) have been adopted as the criteria set. This potentially underplays the noise impacts from construction by up to 6 dB.	Reassess based on the different measurement locations adopted in the assessment in order to more accurately quantify the potential noise impacts.	Low
4.4 / P29, para 4	"It is proposed that these strategies be applied to areas of exceedance identified in the preceding section. The contractors responsible for the construction works should implement a Construction Noise & Vibration Management Plan. The Plan should provide for ongoing communication with potentially-affected residents and establish a complaint management and response system."	The report identifies the need for a Construction Noise & Vibration Management Plan.	Recommend that this be included as a planning condition.	Noted for information

Section / Paragraph Reference	Text Reference / Figure Description	Comment	Recommendation	Significance of Issue
4.6 / P31, para 1	"All construction traffic is expected to travel to the site via Elizabeth Drive."	No assessment has been made for construction vehicles on roads accessing Elizabeth Drive for example The Northern Road, Luddenham Road, Mamre Road etc. No justification for excluding these roads is provided. In addition, Section 6.2.4 of the EIS indicates that for site establishment works, additional site accesses would be utilised on roads other than Elizabeth Drive.	Additional assessment of construction vehicles accessing Elizabeth Drive and other site accesses should be included.	Medium
4.6 / Table 4-7	Results table presents predicted increases in noise level for three sections of Elizabeth Drive.	The construction traffic assessment only considers three sections of Elizabeth Drive, whereas the Operational traffic assessment considers five sections which include additional sections: West of Badgerys Creek and West of Luddenham Road. No assessment has been provided for these sections in the construction traffic assessment	Justification should be provided for why there are inconsistencies between the operational and construction traffic assessment.	Medium
4.6 / p31, para 3	Using the traffic noise criterion discussed in Section 5.2 below, it is concluded that this level of noise change resulting from the proposed construction works would not represent a perceptible noise increase.	As calculation details are not available for review, the results are not able to be verified. However, for the results presented in the report, this conclusion is considered acceptable.	None	For information only
5 / P32	-	The assessment acknowledges the future development of the M12 motorway, however does not specifically mention the planned realignment of The Northern Road to accommodate the airport.	The Northern Road realignment is acknowledged and considered in the report.	For information only
5 / P32	"Future road works would be the subject of separate approval processes by the relevant authorities undertaking these actions and the assessment of these is not covered in this document. However, a preliminary assessment of the general impact of the expected change in road traffic associated with operation of the proposed airport has been undertaken."	Whilst it is understood that details may not be available for the M12 or Northern Road realignment projects and they are subject to a separate approvals process, the report does not provide "a preliminary assessment of the general impact" as it subsequently excludes the potential impacts from these roads.	A statement in the report should be included to acknowledge the limitations of the assessment that only considers existing roads and acknowledges that whilst it does not consider impacts from new motorways or realigned arterial roads, additional impacts as a result of the airport may occur from these roads.	Major

Section / Paragraph Reference	Text Reference / Figure Description	Comment	Recommendation	Significance of Issue
5.1 / p32, para 1 and 2	Reference has been made to the NSW Road Noise Policy (RNP) to assess the effect of the proposed airport on road traffic noise in the area. The RNP recommends noise assessment criteria for residential and non-residential land uses affected by traffic generating developments. These criteria are more relevant to the assessment of new road infrastructure works, and they do not assist greatly in determining the impact of road traffic noise increases on existing roads due to the proposed airport and associated development. In Section 3.4, the RNP document indicates that "an increase of up to 2 dB represents a minor impact that is considered barely perceptible to the average person". It is this statement which is useful in assessing the significance of traffic noise level increases due to the proposed airport development.	The RNP provides specific guidance for land uses affected by additional traffic on existing roads generated by land use developments in Step 4 of Section 3.4.1. The guidance was clarified in the RNP Application Notes (EPA, 2013) as follows: "The second paragraph in Step 4 should therefore be read to mean: 'After taking Steps 1 to 3, for existing residences and other sensitive land uses affected by additional traffic on existing roads generated by land use developments, any increase in the total traffic noise level as a result of the development should be limited to 2 dB above that of the noise level without the development. This limit applies wherever the noise level without the development is within 2 dB of, or exceeds, the relevant day or night noise assessment criterion."	The report should be amended to include the appropriate RNP assessment criteria.	For information only
5.2 / p32, para 1	"Road traffic projections for major roads in the vicinity of the airport have been provided by traffic planners for the year 2030 (GHD 2015a (R9)) with and without the airport."	The suggested approach in Section 2.5.3 of the RNP is to assess a project at the year of opening and a design year, typically ten years after opening. The intention of the design year is provide an indication of road traffic noise impacts in the longer term when the project is established. The project opening year for the airport is stated to be around 2025 in the EIS.	The road traffic assessment should consider the project's impacts at the opening year and at a design to assess potential long term impacts, or else provide justification for an alternative approach.	Medium
5.2 / p32, para 1	Noise levels at typical distances from these roads have been calculated using the CoRTN (R7) procedure which has allowed the increase in road traffic noise due to the proposed airport development to be forecast.	The typical offset distance is not stated.	The typical offset distances for each road should be stated	For information only
5.2 / P 33 Table 5-1	"The highest noise level increase expected is less than 2 dB and accordingly, it is concluded that there would not likely be a perceptible noise increase resulting from road traffic as a result of the proposed airport development."	The traffic volumes used to generate these results are not presented in the report and therefore the results are not able to be verified. However, for the results presented in the report, this conclusion is considered acceptable.	None	For information only

Section / Paragraph Reference	Text Reference / Figure Description	Comment	Recommendation	Significance of Issue
6 / P34	Conclusions section	This section may require updating based on the resolution of the previously stated issues.	Update where appropriate based on the outcome of the considerations above	Noted for information
6 / p35, para 9	"Although heavy and light vehicles would need to access the proposed airport during the construction stage, the resulting increase in traffic noise would not be significant."	Insufficient evidence presented in the assessment to support this conclusion, as vehicles accessing Elizabeth Drive on surrounding roads were not included in the assessment.	Additional assessment of roads that link to Elizabeth Drive	Medium
6 / p35, para 10	"During operation of the proposed airport, road traffic noise level increases in the surrounding area are predicted to be insignificant. This is without considering the impact of the newly proposed M12 motorway and any road realignments which would be subject to separate applications and approvals by the relevant authorities."	This statement acknowledges the limitations of the assessment. The main body of the EIS does not includes the same statement of limitations.	The limitations of the assessment should be reflected in statements throughout the EIS.	High
6 / p35, para 10	"During operation of the proposed airport, road traffic noise level increases in the surrounding area are predicted to be insignificant. This is without considering the impact of the newly proposed M12 motorway and any road realignments which would be subject to separate applications and approvals by the relevant authorities."	Section 5(b) of the EIS Guidelines state: "The EIS should identify and address cumulative impacts, where potential project impacts are in addition to existing impacts of other activities (including known potential future expansions or developments by the proponent and other proponents in the region and vicinity)."	Impacts of the associated new motorway and road redevelopments/realignments should be considered as part of a cumulative impact assessment in accordance with 5(b) of the EIS Guidelines.	High

Volume 2 – Chapter 9. Approach to impact assessment

Section / Paragraph Reference	Text Reference / Figure Description	Comment	Recommendation	Significance of Issue
9.3.2, p6, Table 9-2	Table presents EIS Guideline requirements and indicates where in the EIS they are addressed. Under "Section 5 – Relevant Impacts" it states the following requirements:- "a detailed assessment of the nature and extent of the likely short-term and long-term relevant impacts (detailing direct and indirect impacts); a statement whether any relevant impacts are likely to be unknown, unpredictable or irreversible; analysis of the significance of the relevant impacts; and any technical data and other information used or needed to make a detailed assessment of the relevant impacts."	These guidelines have not been followed adequately within Chapter 11.	Update Chapter 11 to include clear statements on whether impacts are short term, long term, direct, indirect, unknown, predictable or irreversible, and the significance of the impacts.	Noted for information
9.3.2, p11, Table 9-2	Table presents EIS Guideline requirements and indicates where in the EIS they are addressed. Under "Section 6 – Avoidance and mitigation measures" it states that the EIS must include an assessment of the expected or predicted effectiveness of mitigation measures.	These guidelines have not been followed clearly within Chapter 11.	Update Chapter 11 to provide a clearer assessment of the expected / predicted effectiveness of mitigation measures.	Noted for information
9.3.2, p11, Table 9-2	Table presents EIS Guideline requirements and indicates where in the EIS they are addressed. Under "Section 7 – Residual impacts and offsets" it states that the EIS must include the reasons why avoidance or mitigation of impacts may not reasonably be achieved, and quantification of the extent and scope of significant residual impacts.	These guidelines have not been followed adequately within Chapter 11.	Update Chapter 11 to include clear statements on whether residual impacts are short term, long term, direct, indirect, unknown, predictable or irreversible, and the significance of the residual impacts. Include the reasons why avoidance or mitigation of impacts may not reasonably be achieved, where necessary.	Noted for information

Section / Paragraph Reference	Text Reference / Figure Description	Comment	Recommendation	Significance of Issue
9.3.2, p13, Table 9-2	Table presents EIS Guideline requirements and indicates where in the EIS they are addressed. Under "Section 11 – Information sources" it states that, for information given in the EIS, the EIS must state (amongst other points) the source of the information, how recent the information is, and how reliable the information is.	These guidelines have not been followed adequately within Chapter 11.	Update Chapter 11 to include this information – specifically regarding the source noise data used as a basis for the engine ground running noise assessment and the aircraft taxiing noise assessment.	Noted for information
Volume 2 – C	chapter 11. Noise (ground operations, co	nstruction, road and rail)		
Summary, p75	"Under worst case meteorological conditions, noise associated with engine run-up has the potential to affect Luddenham, Badgerys Creek, Bringelly and Greendale."	Appendix E2 states that this noise also has the potential to affect Wallacia. This location has not been brought through from the technical appendix.	Update summary to include Wallacia	Noted for information
Summary, p75	"During operation of the proposed airport, increased noise levels due to airport generated road traffic in the surrounding area are not expected to be significant."	This statement is misleading as it implies that development of the airport will not result in increases in road traffic noise in the project area. However, a new motorway (M12) is being built to service the airport. Whilst the assessment of the new road would be assessed and approved under a different approvals process, the impact of a new motorway would likely increase noise levels in the surrounding area as a direct result of airport generated traffic. The summary also does not include the limitations stated in Appendix E2 which acknowledges that the M12 and other road realignments have not been considered in the assessment.	Revision of statements for operational road traffic noise to include limitations and acknowledging that operation of the M12 and realignment of The Northern Road are not included in the impact assessment.	High
11.2.2, p76- 77	"A sound power level for each aircraft of 138 dBA has been assumed, being the highest level measured for aircraft taxiing (B777, B747, B737, B717 and A330) [] [] the Boeing 747 is the loudest aircraft anticipated to operate at the proposed airport"	It is assumed that the 747 taxi noise has been used for the purposes of the noise modelling exercise.	Clarify that the source noise level for the 747 aircraft has been used as a basis for the taxi noise assessment	Noted for information
11.2.3 P 78, para 1	"The traffic projections were used to calculate noise levels at typical distances from roads near the airport site using the 'Calculation of road traffic noise' procedure (CoRTN)"	No predicted traffic noise levels are presented in the EIS or Appendix E2. Noise levels presented are the change in noise level.	Amend statement to reflect that traffic noise levels are not presented in the report, only predicted increase.	For information only

Project number: ACG1517900 Dated: 2015-11-06

Section / Paragraph Reference	Text Reference / Figure Description	Comment	Recommendation	Significance of Issue
11.3, Figure 11-2, p79	A figure depicting noise sensitive receptors surrounding the airport site	It is difficult to see the location of nearest residential receptors, as their location appears to be indicated by very small points in light grey – whereas the other types of receptor are more clearly marked. It is also difficult to see this in the inset image displaying Luddenham. The initial impression that the figure currently gives is that there are little, if any.	Recommend that the figure is updated to show more clearly the location of residential receptors, particularly in Luddenham.	Noted for information.
11.7, p97, Table 11-13	The table details the mitigation/management measures to be put forward.	It is important that these proposals are brought forward and conditioned appropriately. The use of ground power and pre-conditioned air are not included in the table, nor is any mention of the restriction over APU usage.	Given the anticipated impact of noise from engine ground running, consideration should be given to the inclusion of a condition relating to the installation and use of a ground run-up pen or other such structure to provide effective acoustic screening. Given that the assessment has been based on no APU usage, a condition should be imposed on APU usage. Recommend that the mitigation measures be conditioned and adopted.	Noted for information
11	General	A number of points/issues from Appendix E2 have been carried through to this document.	Update based on the outcome of the Appendix E2 updates.	High
11	General	Magnitude of significance of ground noise impacts, the extent of their impacts, and whether they are temporary or permanent have not been identified. This is a fundamental flaw in the EIS chapter.	Recommend that a magnitude scale for impact significance is used for premitigation and post mitigation assessments so that it can clearly be seen what the residual noise impact is predicted to be.	Noted for information

Section / Paragraph Reference	Text Reference / Figure Description	Comment	Recommendation	Significance of Issue
27.3.1	"There is also anticipated to be a general increase in background noise levels associated with the ongoing urbanisation and development of Western Sydney. For example, certain proposed road projects, such as the proposed relocation and upgrade of The Northern Road, would contribute to changed background noise levels in the vicinity of the airport site. An increase in background noise would effectively limit the incremental increase associated with noise generated by the airport operations."	There are two major road projects being developed due to the airport is being built: the M12 motorway and The Northern Road realignment. The cumulative assessment does not mention the operation of the M12 motorway and does not indicate the degree of impact from The Northern Road realignment. The omission of these items is not consistent with Section 5(b) of the EIS Guidelines. Whilst it is recognised that the mitigation and management of these road projects may not be the responsibility of the proponent, the EIS guidelines require that cumulative impacts from known potential future projects are considered.	Further cumulative assessment should be provided to indicate the potential impact of the operation of the M12 and The Northern Road realignment.	High
Volume 2 Ch	apter 28. Environmental Management Fra	ımework		
28.4.2, Table 28-5	The table provides a list of mitigation and management measures applicable to Stage 1 operation	It is important that these proposals are brought forward and conditioned appropriately. The use of ground power and pre-conditioned air are not included in the table, nor is any mention of the restriction over APU usage.	Given the anticipated impact of noise from engine ground running, consideration should be given to specific item relating to the installation and use of a ground run-up pen or other such structure to provide effective acoustic screening. Given that the assessment has been based on no APU usage, a specific item should be imposed on APU usage. Recommend that the mitigation measures be conditioned.	Noted for information
Volume 2 Ch	apter 29. Conclusion			
		The "Noise – ground operations, construction and road traffic" section of the table does not provide an	Recommend that the magnitude of the	Noted for

Project number: ACG1517900 Dated: 2015-11-06

Section / Paragraph Reference	Text Reference / Figure Description	Comment	Recommendation	Significance of Issue	
31.5.1, p66, para 2	"It is not anticipated that taxiing and engine run-up noise levels would increase, but these types of noise may become more frequent in the 2050 scenario."	It is assumed that the text refers to the effective source noise associated with a single taxiing movement or engine run-up would not increase, rather than the resultant noise impact associated with the number and intensity of operational noise.	None. For information only.	Noted for information	
31.5.2, p67, para 4	"The 2063 aircraft taxiing noise contours reflect the increased number of aircraft movements and would extend further south as a result of the commissioning of the second runway."	The increased impact is not adequately quantified. The aircraft noise section has identified the population numbers affected, however this information in absent for ground noise. There is no indication of the level of exceedance for nearest noise sensitive receptors in order to determine the magnitude of the impact.	Recommend that population number affected by ground noise is included. Recommend that population number affected is in 5 dB bands in order to understand the magnitude of the potential noise impact.	Noted for information	
31.5.2, p67, para 4	"Ground run-up noise would also likely occur more frequently in the long term, although the noise contours are not predicted to change based on the modelling assumptions adopted for this assessment."	On comparison of the ground run-up noise contours for 2030 and 2063, the shape of the contour changes, therefore the statement is incorrect.	Revise the statement	Noted for information	
31.5.2, p68 - 69, Figure 31-38, Figure 31- 39	Figure 31-38 and Figure 31-39 show predicted noise levels for engine ground running and taxiing, respectively.	The figures are incorrectly labelled "maximum noise levels". They should be labelled "L _{Aeq,15min} noise levels".	Correct the labelling of the figures	Noted for information	
31.7, p70- 72	These pages contain a summary of the findings from the chapter.	The summary of findings does not make any reference to ground noise.	Include a summary of the ground noise impact assessment	Noted for information	
Volume 3 Ch	Volume 3 Chapter 40. Conclusion and recommendations				
40	The Chapter provides a summary of the key environmental impacts	The summary of findings does not make any reference to ground noise.	Include a summary of the ground noise impact assessment	Noted for information	

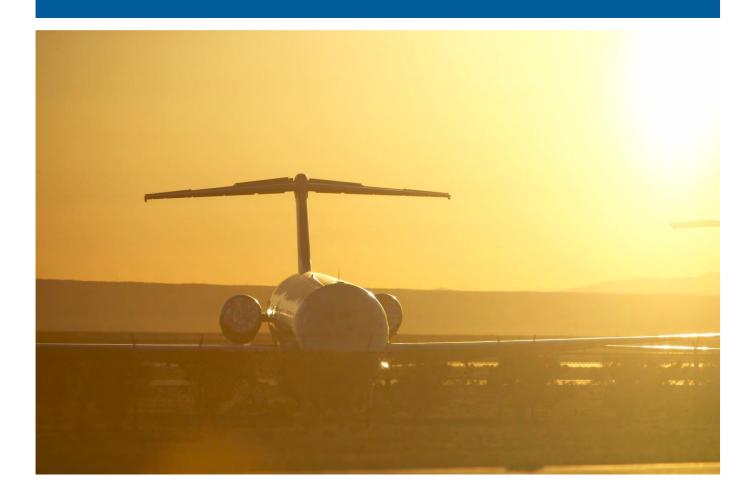


Acoustics@WSPGroup.com





Air quality and greenhouse gas (Katestone Environmental)





Western Sydney Airport: Peer Review of Air Quality and Greenhouse Gas Assessment

Prepared for:

WSP | Parsons Brinckerhoff

November 2015

Final

Prepared by:

Katestone Environmental Pty Ltd

ABN 92 097 270 276

Ground Floor, 16 Marie Street | PO Box 2217

Milton, Brisbane, Queensland, 4064, Australia

www.katestone.com.au us@katestone.com.au

Ph +61 7 3369 3699 Fax +61 7 3369 1966



Document Control

Deliverable #: D15019-3

Title: Western Sydney Airport: Peer Review of Air Quality and Greenhouse Gas

Assessment

Version: 1.1 (Final)

Client: WSP | Parsons Brinckerhoff

Document reference: D15019-3_Peer_Review_Airquality_v1.1.docx

Prepared by: Michael Burchill, Natalie Shaw, Simon Welchman

Reviewed by: Simon Welchman

Approved by:

Simon Welchman

26/11/2015

Disclaimer

http://katestone.com.au/disclaimer/

Copyright

This document, electronic files or software are the copyright property of Katestone Environmental Pty. Ltd. and the information contained therein is solely for the use of the authorised recipient and may not be used, copied or reproduced in whole or part for any purpose without the prior written authority of Katestone Environmental Pty. Ltd. Katestone Environmental Pty. Ltd. makes no representation, undertakes no duty and accepts no responsibility to any third party who may use or rely upon this document, electronic files or software or the information contained therein.

© Copyright Katestone Environmental Pty. Ltd.

Contents

Exec	utive Su	mmary		ii
1.	Intro	duction		1
	1.1	Appro	ach	1
	1.2	Limitat	ions	1
	1.3	Comp	onents of the EIS Considered in Peer Review	2
2.	EIS C	Suidelines.		4
3.			gs –Stage 1 Development	
	3.1		air quality	
		3.1.1	Methodology	
		3.1.2	Key assumptions	
		3.1.3	Construction	
		3.1.4	Operations	8
		3.1.5	Fuel dumping	10
		3.1.6	Mitigation and management measures	
	3.2	Region	nal air quality	
	3.3	_	house gas	
	3.4		v of the conclusions of the Western Sydney Airport EIS	
	3.5		Il comments	
4.	Revi	ew Finding	gs – Longer term development	13
	4.1		air quality	
		4.1.1	Methodology	13
		4.1.2	Key assumptions	13
		4.1.3	Construction	13
		4.1.4	Operations	14
		4.1.5	Mitigation and management measures	14
	4.2	Region	nal air quality	15
	4.3	Review	v of the conclusions of the Western Sydney Airport EIS	15
	4.4	Overal	Il comments	16
5.	Qua	lifications.		17
App	endix A	– Detailed	I Review	18
Tab	les			
Table	: 1		ology overview	
Table	2	Key perso	onnel and project team	17
Table			of air quality assessment against Approved Methods	
Table	2 A2		comments relating to air quality sections of EIS	
Table	: A3	Review o	of regional air guality assessment against NSW EPA's tiered assessment approach	32

Glossary

Term	Definition	
μg/m³	micrograms per cubic metre	
Nomenclature		
CO	carbon monoxide	
CO ₂	carbon dioxide	
CO ₂ -e	carbon dioxide equivalents	
NO	nitric oxide	
NO_2	nitrogen dioxide	
NO_x	oxides of nitrogen	
PM ₁₀	particulate matter with a diameter less than 10 micrometres	
PM _{2.5}	particulate matter with a diameter less than 2.5 micrometres	
SO_2	sulfur dioxide	
TSP	total suspended particulates	
VOC	volatile organic compounds	
Abbreviations		
AEPR	Airport Environment Protection Regulation 1997	
AERMOD	US EPA approved dispersion model	
Air NEPM	M National Environment Protection (Ambient Air Quality) Measure	
Approved Methods		
DEC	Department of Environment and Conservation (NSW)	
EDMS	Emissions and Dispersion Modelling System	
EIS	Environmental Impact Statement	
EPA	Environmental Protection Authority	
GHG	Greenhouse gases	
NPI	National Pollutant Inventory database	
MACROC	Macarthur Regional Organisation of Councils	
OEH	New South Wales Office of Environment and Heritage	
US EPA	United States Environmental Protection Agency	
WSROC	Western Sydney Regional Organisation of Councils	

EXECUTIVE SUMMARY

Katestone Environmental Pty Ltd (Katestone) was commissioned by WSP | Parsons Brinckerhoff on behalf of the Western Sydney Regional Organisation of Councils (WSROC) and Macarthur Regional Organisation of Councils (MACROC) to complete a peer review of the local and regional air quality studies completed as part of the Environmental Impact Statement (EIS) for the Western Sydney Airport.

Limitations of peer review

Katestone's peer review has considered the air quality and greenhouse gas assessments presented in the EIS. A separate health risk assessment was also conducted and presented in the EIS. Katestone's peer review has not considered the separate health risk assessment. The separate health risk assessment has been the subject of a separate peer review by another party.

To assist with its review, Katestone requested access to all relevant input and output files that were integral to the air quality assessment studies as this information was not contained in the EIS. The provision of such information is a routine expectation and is a minimum requirement of the EPA for such studies. For a peer review the data is integral to demonstrating the integrity of the assessment. However, this information was not made available to Katestone for its review. Consequently, Katestone has relied only upon the information contained in the relevant chapters of the EIS to complete its review. Where apparent errors and inconsistencies were found within and between documents, Katestone has noted these, but in most cases has not been able to discern the full significance of these on the assessment outcomes.

Overall Comments on air quality study

The air quality study is contained in Volume 2 Chapter 12, Volume 3 Chapter 32 and Volume 4 Appendix F1 of the Western Sydney Airport EIS. Katestone has noted that these documents contain many typographical errors and inconsistencies that undermine the credibility of the air quality assessment. These sections require a thorough technical and editorial review by its authors to address the issues outlined in this review to improve transparency and credibility of the air quality assessment. To enable confidence in the assessment, all information and data used in the emission estimation, model inputs and outputs should be made available to any interested party.

The air quality study did not adequately address the sensitive receptors as it:

- Failed to identify all sensitive receptors
- Failed to identify a representative subset of sensitive receptors whilst a small subset of sensitive receptors was identified, the subset does not appear to be representative of potential air quality impacts at all existing locations of sensitive receptors
- Did not identify future sensitive receptors
- Incorrectly classified community receptors separately and as having a lesser importance than
 residential receptors. Community receptors included various land-uses such as schools, parks,
 childcare facilities, churches and shopping centres.

Stage 1 Development

Local Air Quality

Setting aside the issues identified above, if the assessment results are taken as presented in Tables F1 to F8 and Table G1 to G5 (Volume 4, Appendix F1) of the EIS, they indicate the following:

• The maximum 1-hour average concentration of NO2 was predicted to exceed the EPA's impact

- assessment criterion of 246 μ g/m³ at one receptor. Three other receptors have maximum 1-hour average concentrations of NO₂ that are 92% to 98% of the EPA's impact assessment criterion.
- The annual average concentrations of PM_{2.5} were rounded to one significant figure. A number of receptors were predicted to have an annual concentration of PM_{2.5} of 8 µg/m³ equal to the Air NEPM Advisory Reporting Standard. These results are potentially indicative of minor exceedances (<0.4 µg/m³) of the Advisory Reporting Standard.
- The 99.9th percentile 1-hour average concentration of formaldehyde was predicted to **exceed** the EPA's impact assessment criterion at two receptors.
- The predicted concentrations of all other air pollutants were below their respective assessment criteria.
- The major contributor to elevated levels of air pollutants is aircraft emissions. However, for receptors close to existing or new roads, the major contributor is external roadways.
- Mitigation measures were recommended. However, the effectiveness of the measures in achieving compliance was not quantified.

Regional air quality

The methods used to assess the regional air quality are acceptable. The assessment of regional air quality showed that only marginal increases in ozone concentrations would result from Stage 1 Development.

Greenhouse gases

The methods used to estimate greenhouse gas emissions are acceptable. The estimates of greenhouse gas emissions are reliable and the contribution of greenhouse gas emissions from the project will be relatively small with Stage 1 Development emissions approximately 0.11% of Australia's projected 2030 transport-related GHG inventory.

Overall comments

The Stage 1 Development assessment was based on the annual throughput of the airport would be 63,302 ATM in 2030. The stated maximum capacity of the airport following completion of Stage 1 is three times higher at 185,000 ATM in 2050. The local air quality assessment, regional air quality and greenhouse gas assessment all use this assumption in the generation of the emissions and resultant impacts. Consequently, the assessment has underestimated the potential impact of the Stage 1 Development by a considerable margin.

Longer Term Development

Local Air Quality

The assessment results are taken as presented in Tables F9 to F11 (Volume 4, Appendix F1) of the EIS, they indicate the air quality assessment of the Longer Term Development shows:

- The maximum 1-hour average concentration of NO_2 was predicted to exceed the EPA's impact assessment criterion of 246 μ g/m³ at 41 of the 96 receptors.
- \bullet The maximum 24-hour average PM₁₀ concentrations was predicted to exceed the EPA's impact assessment criterion at three receptors.
- The maximum 24-hour average concentrations of PM_{2.5} were predicted to exceed the NEPM Advisory Reporting Standard at three receptors.
- The annual average concentrations of PM_{2.5} were rounded to one significant figure. The annual average concentrations of PM_{2.5} were predicted to exceed the Air NEPM Advisory Reporting Standard at 13 receptors (concentrations are reported as 9 μg/m³ or higher). A number of receptors were predicted to

have an annual concentration of PM $_{2.5}$ of 8 μ g/m 3 – equal to the Air NEPM Advisory Reporting Standard. These results are potentially indicative of minor exceedances (<0.4 μ g/m 3) of the Advisory Reporting Standard

 Whilst a number of mitigation and management measures were listed within the Western Sydney Airport EIS, the effectiveness of the measures was not quantified and therefore the air quality assessment failed to demonstrate that compliance with the relevant air quality criteria could be achieved.

Regional air quality

The assessment of regional air quality showed:

- The change in daily maximum 1-hour ozone concentration from the addition of the airport was 4.5 ppb which is significantly above the maximum allowable increment of 1 ppb defined in the NSW EPA's tiered approach
- The change in daily 4-hour average ozone concentration from the addition of the airport was 3.7 ppb which is significantly above the maximum allowable increment of 1 ppb defined in the NSW EPA's tiered approach.

However, the regional air quality assessment for the Longer Term Development is hypothetical as:

- The impacts had to be assessed in context of the 2030 base case emissions as a base case inventory has not been projected for 2063
- Changes in emissions to other existing sources had not been accounted for
- Assumes that the rail network exists

Greenhouse gases

The methods used to estimate greenhouse gas emissions are acceptable.

Overall comments

The Longer Term Development contained in the Western Sydney Airport EIS includes a second runway, which relies upon the existence of rail services to be feasible. The Western Sydney Airport EIS states "As it is not possible for the longer term development to achieve the project passenger numbers without the rail network the traffic scenario that does not include the rail network was disregarded."

Air quality associated with Stage 1 is critically dependent on the traffic volumes generated by the airport. Consequently, the impact on air quality due to the Longer Term Development is critically dependent on the existence of the assumed rail services to the airport. The Western Sydney Airport EIS is not seeking approval for the rail infrastructure that is necessary for its feasibility and the EIS does not contain a detailed proposal for the rail infrastructure. As a consequence, the air quality assessment of the Longer Term Development is speculative at best and does not provide a sufficiently robust basis to support approval of the Longer Term Development at this stage.

1. INTRODUCTION

Katestone Environmental Pty Ltd (Katestone) was commissioned by WSP | Parsons Brinckerhoff acting on behalf of the Western Sydney Regional Organisation of Councils (WSROC) and Macarthur Regional Organisation of Councils (MACROC) to complete a peer review of the local and regional air quality studies completed as part of the Environmental Impact Statement (EIS) for the Western Sydney Airport.

1.1 Approach

WSP | Parsons Brinckerhoff requested a peer review that:

- Evaluates whether the local and regional air quality studies meet the requirements of the EIS Guidelines and relevant other guidelines and methodologies.
- Evaluates whether the conclusions reached in the studies are valid i.e. an independent evaluation of whether the predicted impacts are in accordance with published standards and guidelines, and whether the conclusions of the assessment are a realistic reflection of the actual impacts.
- Evaluates whether the underlying assumptions used to inform the assessment (including any construction or operational assumptions, and modelling assumptions where appropriate) are plausible.
- Review the mitigation and management measures proposed and advises on their adequacy in mitigating impacts.
- Evaluates the level of uncertainty over impacts and the environmental risks that will arise as a result.
- Provides a summary of the key impacts and opportunities associated with the project in relation to the local and regional air quality studies.

WSP | Parsons Brinckerhoff also requested that the following be considered:

- ...a key part of the peer review role to identify any gaps in information, errors or shortcomings.
- The purpose of this review is to present factual unbiased information about the technical rigour of the studies and both the positive and negative aspects of the proposal. All views expressed within the peer review should be substantiated with reference to information in the EIS or published elsewhere.
- The peer review is intended to assess the merits of the proposal as presented in the EIS it is not at this stage intended that the peer review will develop recommendations for alternative designs for the project.

1.2 Limitations

Katestone's peer review has considered the air quality and greenhouse gas assessments presented in the EIS. A separate health risk assessment was also conducted and presented in the EIS. Katestone's peer review has not considered the separate health risk assessment. The separate health risk assessment has been the subject of a separate peer review by another party.

To assist with its review, Katestone requested access to all relevant input and output files that were integral to the air quality assessment studies as this information was not contained in the EIS. The provision of such information is a routine expectation, is a minimum requirement of the EPA for such studies and is integral to demonstrating the integrity of the assessment.

The EPA's requirements an air quality assessments are detailed in its *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (DEC, 2005) (Approved Methods). The Approved Methods specifies the minimum requirements for the information to be contained within impact assessment reports. In relation to air pollutant emissions, the following is expected to be included in the report:

Detailed calculations of pollutant emission rates for each source

In relation to dispersion modelling, the following is expected to be included in the report:

All input, output and meteorological files used in the dispersion modelling supplied in a Microsoft Windows-compatible format

However, this information was not made available to Katestone for its review. Consequently, Katestone has relied only upon the information contained in the relevant chapters of the EIS to complete its review. Where apparent errors and inconsistencies were found within and between documents, Katestone has noted these, but in most cases has not been able to discern the full significance of these on the assessment outcomes.

As a minimum, the following information should be provided within the technical air quality reports for review:

- Local air quality
 - Construction
 - Assumptions used in the emission estimation such as tonnages of material moved, equipment numbers and control measures
 - Spreadsheet of emissions information for input into AERMOD model
 - AERMOD input files and output files, including post processing information.
 - Operation
 - Assumptions used in the emission estimation such as engine type assumed for each aircraft, taxiing length
 - Spreadsheet for emissions information from EDMS
 - AERMOD input and output files, including post processing information.

1.3 Components of the EIS Considered in Peer Review

This report presents the outcomes of Katestone's independent peer review of the following components of the EIS:

- Local air quality
- Regional air quality
- Greenhouse gases.

In conducting its peer review of the Western Sydney Airport EIS, Katestone has had specific regard to the following information and relevant documents:

- Western Sydney Airport EIS Volume 2 Chapter 12 Air Quality and Greenhouse Gases
- Western Sydney Airport EIS Volume 3 Chapter 32 Air Quality
- Western Sydney Airport EIS Volume 4 Appendix C Airport EIS Guidelines
- Western Sydney Airport EIS Volume 4 Appendix F1 Local Air Quality and Greenhouse Gas Assessment
- Western Sydney Airport EIS Volume 4 Appendix F2 Regional Air Quality

- Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (DEC, 2005) (Approved Methods).
- National Environment Protection (Ambient Air Quality) Measure 1998.

2. EIS GUIDELINES

The EIS Guidelines that relate to air quality and greenhouse gas emissions are as follows:

"2 DESCRIPTION OF THE ACTION

All construction, operational and (if relevant) decommissioning components of the action should be described in detail. This should include the precise location (including coordinates) of all works to be undertaken, structures to be built or elements of the action that may have impacts on matters of National Environmental Significance. The description of the action must also include details on how the works are to be undertaken (including stages of development and their timing) and design parameters for those aspects of the structures or elements of the action that may have relevant impacts.

5 RELEVENT IMPACTS

. . .

(g) Impacts to the environment (as defined in section 528) should include but not be limited to the following:

...

- Changes to air quality during construction and operation (associated with both passenger movements and workers)
- Potential fuel dump impacts
- ...

Quantification and assessment of impacts should:

- Be against appropriate background/baseline levels
- Be prepared according to best practice guidelines and compared to best practice standards
- Consider seasonal and temporal variations where appropriate (including temporal changes in the sensitivity of the receptor)
- Be supported by maps, graphs and diagrams as appropriate to ensure information is readily understandable

Guidelines and standards used to quantify baselines and impacts should be explained and justified.

6 AVOIDANCE AND MITIGATION MEASUES

- (a) The EIS must provide information on proposed avoidance and mitigation measures to manage the relevant impact of the action on a matter protected by a controlling provision (as listed in the preamble of this document).
- (c) The EIS must include specific and detailed descriptions of the proposed avoidance and mitigation measures based on best available practices..."

Katestone Environmental Pty Ltd

26 November 2015

The air quality and greenhouse gas assessments appear to satisfy the EIS guidelines because they refer to the correct legislation and technical guidance. However, it has been very difficult to verify this independently via an analysis of the EIS due to the many typographical errors and inconsistencies (refer to Section 3, Section 4 and Appendix A) and because critical information was not made available (Section 1.2).

3. REVIEW FINDINGS -STAGE 1 DEVELOPMENT

3.1 Local air quality

3.1.1 Methodology

The EIS Guidelines require the assessment of impacts to be prepared according to best practice guidelines and compared to best practice standards. The key documents that contain best practice assessment guidelines and standards are:

- The Environment Protection Authority's Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales (DEC, 2005) (Approved Methods)
- National Environment Protection (Ambient Air Quality) Measure 1998.

The air quality assessment of the Western Sydney Airport is stated to have been conducted in accordance with the Approved Methods. There is insufficient information contained within the EIS documentation to allow our review to determine if this is a true statement. As detailed in Section 1.2, critical information was not made available to Katestone for its review, which makes it very difficult to verify independently whether the assessment has been conducted in accordance with the Approved Methods.

The table below summarises the elements of the assessment and whether the method used was acceptable. Sections 3.1.2, 3.1.3 and 3.1.4 elaborate further on these issues. A detailed description of each element is provided in Appendix A.

Table 1 Methodology overview

Chapter of Approved Methods	Section of Approved Methods	Comments
3. Emissions inventory	3.1 Identify all sources of air pollution and potential emissions	Construction - acceptable.
		Operations - acceptable.
	3.2 Determine source release	Construction - cannot verify - No details provided.
	parameters	Operation – cannot verify - some parameters acceptable but not all parameters were provided.
	3.3 Estimate emission rates	Construction – cannot verify - Insufficient information to fully verify.
		Operations – cannot verify - EDMS used, which is acceptable. However, insufficient information to fully verify.
	3.6 Presentation of emissions inventory	Construction – cannot verify - errors in presentation of emissions inventory.
		Operations – cannot verify - inconsistencies and errors in presentation of emissions inventory.
4. Meteorological data	4.1 Minimum data requirements	Acceptable.
	4.2 Siting and operating meteorological monitoring equipment	Acceptable.
	4.4 Preparation of Level 2 meteorological data	Acceptable.

Chapter of Approved Methods	Section of Approved Methods	Comments
5. Background air quality, terrain, sensitive receptors	5.1 Background air quality data	Acceptable.
and building wake effects	5.2 Terrain and sensitive receptors	Terrain – cannot verify - no information on terrain provided. Sensitive receptors – not acceptable – all sensitive receptors have not been identified. A small subset of sensitive receptors was included; however, the reason for selecting certain sensitive receptors and not others is unclear. Justification and appropriateness needs to be provided. As a minimum, the subset of sensitive receptors should be representative of potential air quality impacts at all existing and possible future locations of sensitive receptors.
6. Dispersion modelling	6.1 Dispersion models	Acceptable. Has used AERMOD.
7. Interpretation of dispersion modelling results	7.1.1 Impact assessment criteria	All acceptable except for NO_2 . The EIS refers to an NO_2 criterion of 320 μ g/m³, which is incorrect. The correct criterion for 1-hour average concentrations of NO_2 is 246 μ g/m³ as specified in the Approved Methods.
	7.1.2 Application of impact assessment criteria	Construction – cannot verify odour – insufficient information has been provided to determine whether odour assessment criteria have been applied correctly. Other air pollutants - acceptable. Operations – cannot verify odour – insufficient information has been provided to determine whether odour assessment criteria have been applied correctly. Incorrect 1-hour average NO ₂ criterion applied in places. Other air pollutants – acceptable.
	Summary of impacts	Construction – cannot verify - Inconsistencies with presentation of results and reporting of results. Operations – cannot verify - Inconsistencies with presentation of results and reporting of results.
8. Modelling pollutant	8.1 NO ₂ assessment	Acceptable.
transformations	8.2 Detailed assessment of ozone and NO ₂	Approach based on tiered assessment approach. Acceptable.
9. Impact assessment report	9.1 - 9.6	Not acceptable – the report includes many typographical errors and inconsistencies. The report requires a thorough editorial and technical review. Dispersion modelling inputs and outputs were not supplied.

3.1.2 Key assumptions

The air quality and greenhouse gas assessment for the Stage 1 Development was based on the key assumption that Stage 1 Development represented 10 million passengers and 63,302 Aircraft transport movements (ATM) for 2030. The Western Sydney EIS states that the capacity of the single runway is 37 million passengers and 185,000 ATM. Whilst it is stated that the capacity of the Stage 1 Development won't be reached until 2050, the ATMs are three times higher than those assessed for the Stage 1 Development. Therefore, the ATM assumption for Stage 1 is critical to the outcome of the assessments for local air quality, regional air quality and greenhouse gas.

 Other assumptions that will affect the emission rates of air pollutants are: specific aircraft fleet breakdown as detailed in Appendix C of Volume 4, Appendix F1, engine type and taxiing time. Details were not provided regarding the engine type(s) and taxiing time assumed in the assessment, therefore, the appropriateness of the assumptions could not be verified.

3.1.3 Construction

The review of the local air quality assessment for construction found the following:

- The emission rates associated with bulk earthworks, concrete batching and asphalt batching appeared reasonable; however, the emission rates were not able to be verified due to insufficient information provided in Volume 4 Appendix F1 of the EIS regarding construction activities and mitigation measures assumed.
- The emission rates associated with aviation infrastructure (Table 3-6 (Volume 4, Appendix F1) have been reported incorrectly as the total PM_{2.5} emissions associated with aviation infrastructure are higher than those reported for PM₁₀. PM_{2.5} is a subset of PM₁₀ and therefore it is not possible for PM_{2.5} emission rates to be higher than PM₁₀ emission rates. It was not possible to verify whether the correct emission rates were used in the modelling as the modelling files were not available for review.
- The dispersion modelling results (shown in Tables 12-19 to 12-22 (Volume 2, Chapter 12) and Tables 7-1 to 7-4 and G1 to G4 (Volume 4, Appendix F1)) showed that construction of the aviation infrastructure will result in higher concentrations of PM₁₀ and PM_{2.5} than the bulk earthworks. This is inconsistent with the emissions inventories (shown in Table 3-6 (Volume 4, Appendix F1), that indicates that emissions of TSP and PM₁₀ for the bulk earthworks are at least twice those for construction of the aviation infrastructure.
- The dust deposition results appear to be very low when compared to PM_{10} concentrations. The dust deposition rates appear to be 1000 times lower than what would be expected considering the PM_{10} concentrations.
- Inconsistencies in the air pollutant concentrations at sensitive receptors that are presented in tables (Table G1 to Table G5 (Volume 4, Appendix F1)) compared with the concentration that may be inferred by considering the relevant contour plots (Figure G1 to Figure G5 (Volume 4, Appendix F1)).
- The odour concentration is described in Table 12-23 (Volume 2 Chapter 12) and Table 7-5 and G5 (Volume 4, Appendix F1) as a 1-hour average concentration. The Approved Methods specifies impact assessment criteria for odour as "nose-response time" averages not 1-hour averages. Consequently, it is possible that odour levels have not been correctly assessed and may be much higher than presented.

3.1.4 Operations

The review of the local air quality for operations found:

- The emission rates due to operations were not able to be verified due to insufficient information provided in Volume 4 Appendix F1 of the EIS regarding assumptions relating to taxiing time, aircraft type and engines.
- The air quality assessment defined three types of receptors: residential receptors, on-site receptors and community receptors. Community receptors included various land-uses such as schools, parks, childcare facilities, churches and shopping centres. Whilst the technical air quality report (Volume 4 Appendix F1) presented air pollutant concentrations at each of the three receptor types, the Volume 2 air quality chapter focused on residential receptors and on-site receptors. The delineation between residential and community receptors is not supported by the Approved Methods, which defines a sensitive receptor as:

A location where people are likely to work or reside; this may include a dwelling, school, hospital, office or public recreational area. An air quality impact assessment should also consider the location of known or likely future sensitive receptors.

Community receptors are therefore sensitive receptors, and as such should be assessed on the same basis as residential receptors. Therefore the Volume 2 air quality chapters should also present predicted concentrations at these community receptors. Concentrations at some of these community receptors were predicted to be higher than concentrations at residential receptors.

- The EIS refers variously to two impact assessment criteria for 1-hour concentrations of NO₂, namely: the *Airport Environment Protection Regulation 1997* criterion of 320 μg/m³; and the Approved Methods' impact assessment criterion of 246 μg/m³. Volume 2 Chapter 12 states that where there are multiple criteria the most stringent criterion has been used. However, it appears that the less stringent criterion of 320 μg/m³ has been used. If the stricter impact assessment criterion were used, there would have been one exceedance of the impact assessment criterion instead of none.
- The odour concentration relating to aircraft exhaust is described in Table 12-35 (Volume 2, Chapter 12) and Tables 5-13 and F-8 (Volume 4, Appendix F1) as a 1-hour average concentration. The Approved Methods specifies impact assessment criteria for odour as "nose-response time" averages not 1-hour averages. Consequently, it is possible that odour levels have not been correctly assessed and may be much higher than presented.
- A number of errors within the report were identified. Examples of errors are provided in Table A1 and Table A2. A summary of errors are as follows:
 - Inconsistencies in emissions inventories presented in Volume 2 Chapter 12 and Volume 4 Appendix F1.
 - Inconsistencies in the air pollutant concentrations at sensitive receptors that are presented in tables compared with the concentration that may be inferred by considering the relevant contour plots (Volume 4, Appendix F1 (refer to Appendix A of this review report for details)).
 - Errors in the total emission rates due to airport and roadways presented in all tables.
 - A number of typographical errors in relation to presentation of results where incorrect pollutants or averaging periods were reported.
 - Incorrect units stated for result tables, resulting in concentrations being reported as 1000 times lower than actual.
 - Contour lines on the figures do not cover all identified receptors, indicating that some receptors may not have been included in the modelling.

Whilst many of these "errors" may be typographical, insufficient information was provided in the reports and, consequently, Katestone could not conduct cross-checking to determine their importance. For example, the

dispersion model input files were not available for review and therefore it was not possible to verify the emissions, modelling or results.

3.1.5 Fuel dumping

The potential impacts due to fuel dumping were not quantified. The EIS stated "fuel dumping is not considered likely to have a significant immediate or future impact on air quality" due to "the inability of many aircraft to perform dumps, the rapid vaporistation and wind dispersion of jettisoned fuel, the strict guidelines on fuel dumping altitudes and locations, and the anticipated reduction in fuel dumping events and volumes in the future."

3.1.6 Mitigation and management measures

Recommended mitigation and management measures in the Western Sydney EIS included, but were not limited to:

- Construction
 - o Development and implementation of stakeholder communications plan
 - o Development and implementation of a dust management plan
 - Specific dust management, demolition, earthworks, construction and track out mitigation measures
- Operation
 - Development and implementation of an operational air quality and odour management plan as part of the operational plan for the proposed airport
 - Installation of an air quality monitoring station at the airport site to monitor NOx, NO, NO₂, CO,
 O₃, PM₁₀, PM_{2.5} and VOCs
 - o Consider best available techniques to reduce emissions of ozone precursors.

Whilst these mitigation and management measures should be part of conditions of approval for the project, the effectiveness of these measures to mitigate exceedances was not quantified.

3.2 Regional air quality

The regional air quality assessment (Volume 4, Appendix F2) methodology was based on the NSW EPA's Tiered Procedure for Estimating Ground-level Ozone Impacts from Stationary Sources (Environ, 2011). The EIS acknowledges that "Stationary sources are defined as scheduled activities listed in Schedule 1 of the Protection of the Environment Operations (POEO) Act (1997) (NSW). The most significant sources at the proposed airport (e.g. aircraft in flight) would not be designated as scheduled activity under the POEO Act and, as such, the tiered procedure for ozone assessment is only applicable for minor emission sources such as boilers. Notwithstanding, the tiered procedure provides guidance on how ozone assessment should be conducted in NSW and there are aspects of the guidance that are relevant and applicable."

Details of the method for the regional air quality assessment are summarised in Appendix A. Adoption of the NSW EPA's tiered assessment approach is appropriate for this project. The regional air quality technical report (Volume 4, Appendix F2) was well written and edited. It provided all the relevant information regarding how the regional air quality assessment was undertaken, with the exception of detailing how the airport sources were parameterised within the model.

The assessment showed:

- The change in daily maximum 1-hour ozone concentration from the addition of the airport was 1.1 ppb, which is marginally above the maximum allowable increment of 1 ppb defined in the NSW EPA's tiered approach
- The change in daily 4-hour average ozone concentration from the addition of the airport was 0.9 ppb, which is below the maximum allowable increment of 1 ppb defined in the NSW EPA's tiered approach.

Mitigation measures that had a focus on reducing NOx emissions were also recommended for consideration.

Whilst the change in the daily maximum 1-hour ozone concentration was marginally higher that the 1 ppb defined in the EPA's tiered approach, the base concentration at the location of the incremental change was approximately 50 ppb (well below the EPA's impact assessment criterion of 100 ppb). The maximum 1-hour concentrations within the region were not predicted to increase as a result of the Stage 1 Development.

3.3 Greenhouse gas

Greenhouse gas emissions were quantified due to construction and operations. The report did not specify the emission factors that were used to quantify emissions; however, Katestone was able to produce similar emission estimates using the emission factors in the National Greenhouse and Energy Reporting Determinations with the exception of emissions associated with waste water treatment. It is possible that assumptions not documented have been included in the calculations emissions associated with waste water treatment. Overall, waste water treatment emissions were found to be a relatively small proportion of total greenhouse gas emissions.

Notwithstanding the above, the greenhouse gas assessment appears to have provided reliable estimates of greenhouse gas emissions from the Stage 1 development, as follows:

• Direct (scope 1) and indirect (scope 2) GHG emissions from Stage 1 Development of the airport have been estimated to comprise 0.13 Mt CO2-e/annum, with the majority of emissions associated with purchased electricity. The Stage 1 Development Scope 1 and Scope 2 emission estimates represent approximately 0.11% of Australia's projected 2030 transport related GHG emission inventory. From this it can be concluded the GHG emission from the airport will not be material in terms of a national inventory, however a number of mitigation measures have been suggested.

Measures to reduce or offset direct and indirect GHG emission from airport and aviation activities were listed. It is recommended that these be included in the conditions of approval.

3.4 Review of the conclusions of the Western Sydney Airport EIS

In relation to air quality and greenhouse gases the Western Sydney Airport EIS concluded:

- Air quality local
 - "Predicted dust impacts during construction would be below the air quality assessment criteria at all sensitive residential receptors. Odour from the asphalt plant is also predicted to be below the relevant criteria at all sensitive residential receptors
 - Operation of the proposed Stage 1 Development would result in an increase in emissions of NO₂, particulate matter (PM₁₀ and PM_{2.5}), CO, SO₂ and air toxics. There would also be odour emissions from exhaust and from the on-site waste water treatment plant.
 - There were almost no predicted exceedances of the air quality assessment criteria at any of the sensitive residential receptors investigated as part of the assessment of the Stage 1 Development. The exception was the maximum (99.9th percentile) 1-hour concentration of formaldehyde with an exceedance shown at on-site receptor.

- Predicted off-site odour concentrations were expected to be below odour detection limits for both aircraft exhaust emissions and odour from the on-site waste water treatment plant."
- Air quality regional
 - o "Only marginal ozone impacts would result from the operation of the Stage 1 development. These emissions would be managed using best available techniques and/or offsets."
- · Greenhouse gas
 - "It can be concluded that the greenhouse gas emissions from the proposed airport would not be material in terms of a national inventory."

3.5 Overall comments

The EIS conclusions presented for the greenhouse gas and regional air quality assessments are acceptable assuming that the emissions scenario of 63,302 ATM is appropriate.

The air quality study is contained in Volume 2 Chapter 12, Volume 3 Chapter 32 and Volume 4 Appendix F1 of the Western Sydney Airport EIS. Katestone has noted that these documents contain many typographical errors and inconsistencies that undermine the credibility of the air quality assessment. These sections require a thorough technical and editorial review by its authors to address the issues outlined in this review to improve transparency and credibility of the air quality assessment. To enable confidence in the assessment, all information and data used in the emission estimation, model inputs and outputs should be made available to any interested party. Based on these issues and those identified in Section 3.1 it is not possible to verify the conclusions of the EIS in relation to local air quality.

Setting aside the issues identified above, if the assessment results are taken as presented in Tables F1 to F8 and Table G1 to G5 (Volume 4, Appendix F1), they indicate the:

- Maximum 1-hour average concentration of NO₂ is predicted to exceed the EPA's impact assessment criterion of 246 µg/m³ criterion at one sensitive receptor (Table F1, Volume 4 Appendix F1, Appendix F)
- Three other sensitive receptors have maximum 1-hour average concentrations of NO₂ that are predicted to be 92% to 98% of the EPA's impact assessment criterion.
- The annual average concentrations of PM_{2.5} were rounded to one significant figure. A number of receptors were predicted to have an annual concentration of PM_{2.5} of 8 μg/m³ equal to the Air NEPM Advisory Reporting Standard. These results are potentially indicative of minor exceedances (<0.4 μg/m³) of the Advisory Reporting Standard.
- The 99.9th percentile 1-hour average concentration of formaldehyde was predicted to **exceed** the EPA's impact assessment criterion at two receptors.
- The predicted concentrations of all other air pollutants were below their respective assessment criteria.
- The major contributor to elevated levels of air pollutants is aircraft emissions. However, for receptors close to existing or new roads, the major contributor is external roadways.
- Mitigation measures were recommended. However, the effectiveness of the measures in achieving compliance was not quantified.
 - With regards to the key assumption of the Stage 1 Development assessment, if the ATMs for Stage 1 Development are higher than 63,302 ATM there is a high probability that the assessment will result in additional exceedances of the EPA's impact assessment criterion for NO₂.

4. REVIEW FINDINGS - LONGER TERM DEVELOPMENT

4.1 Local air quality

4.1.1 Methodology

The methodology used for the Longer Term Development was the same as used for the Stage 1 assessment. It is relatively unusual for an air quality assessment to project potential impacts almost 50 years into the future. The assessment of major road projects is an area where similar projections are attempted, albeit over shorter time horizons of 20 or 30 years. In such instances, future projections are normally conducted by quantifying the change induced by the project over time and assuming the status quo or a reasonable foreseeable change for other key features. For example, it might be assumed that background air quality and impact assessment criteria would remain unchanged but that improvements in motor vehicle emissions would occur. There is no strict framework or guideline for assessing future impacts decades into the future.

The Longer Term Development has adopted an equivalent assessment framework to the Stage 1 assessment. No attempt has been made to project key variables except the increase in flights.

The comments presented in Section 3.1.1 regarding methodology are also relevant to peer review of the Longer Term Development.

4.1.2 Key assumptions

The air quality and greenhouse gas assessment for the Longer Term Development was based on the following key assumptions:

- Longer Term Development is based on 82 million passengers and 365,000 ATM
- There is no improvement in aircraft emissions
- A specific aircraft fleet breakdown as detailed in Appendix C of Volume 4, Appendix F1
- The air quality assessment criteria is unchanged
- Background air quality is unchanged from that derived from recent measurements; hence, there would be no change in the sources of air pollutants in the broader region nor their spatial distribution
- Projected increases in flights at the airport and traffic volumes on external major roads associated with the airport contribute to increased emissions
- No account was taken of the locations of possible future sensitive receptors
- A rail network that is yet to be planned or approved would be implemented to transport a significant proportion of airport passengers.

4.1.3 Construction

Construction emissions were not quantified for the Longer Term Development. The EIS stated that the activities will need to be well managed to satisfy airport safety requirements; however, the EIS did not demonstrate that impacts would be below the relevant air quality criteria.

4.1.4 Operations

The review of the local air quality for Longer Term Development operations found:

- The emission rates due to operations were not able to be verified due to insufficient information provided in Volume 4 Appendix F1 of the EIS regarding assumptions relating to taxiing time and aircraft type and engines.
- As with the Stage 1 Development, the air quality assessment defined three types of receptors: residential receptors, on-site receptors and community receptors. Community receptors included various land-uses such as schools, parks, childcare facilities, churches and shopping centres. Whilst the technical air quality report (Volume 4 Appendix F1) presented air pollutant concentrations at each of the three receptor types, the Volume 3 air quality chapter focused on residential receptors and on-site receptors. The delineation between residential and community receptors is not supported by the Approved Methods, as detailed above. Community receptors are also sensitive receptors under the Approved Methods and, as such, should be assessed on the same basis as residential receptors. Therefore the 3 air quality chapters should also present predicted concentrations at these community receptors. Concentrations at some of these community receptors were predicted to be higher than concentrations at residential receptors.
- The air pollutant levels predicted for the Longer Term Development are fundamentally reliant upon the development of a rail network to transport airport passengers to and from the airport. The rail network is not yet at the planning stage and there is no guarantee that the rail network will go ahead and, as a consequence, there is no guarantee that the predicted levels of air pollutants that are associated with traffic will be achieved in practice..
- A number of errors within the report were identified. Examples of errors are provided in Table A1 and Table A2. A summary of errors are as follows:
 - Inconsistencies in emissions inventories presented in Volume 3 Chapter 32 and Volume 4
 Appendix F1. Inconsistencies in concentrations presented in tables compared with figures for various receptors.
 - o Errors in the total emissions due to airport and roadways presented in all tables.
 - Contour lines on the figures illustrating predicted concentrations did not cover all receptors assessed, indicating that all receptors may not have been modelled.

Whilst many of these "errors" may be typographical, insufficient information was provided in the reports and, consequently, Katestone could not conduct cross-checking to determine their importance. For example, the dispersion model input files were not available for review and therefore it was not possible to verify the emissions, modelling or results.

4.1.5 Mitigation and management measures

A number of mitigation and management measures that could be considered in the future as the number of passengers using the airport increases were listed within the Western Sydney Airport EIS based on a literature review of emission mitigation measures adopted at various international airports. It was also acknowledged that some of the measures listed were up to the individual airline and out of control of the airport operator.

Notwithstanding the list of mitigation and management measures, the effectiveness of the measures was not quantified and therefore the air quality assessment failed to demonstrate that compliance with the relevant air quality criteria could be achieved.

4.2 Regional air quality

The regional air quality assessment for the Longer Term Development used the same methodology as for the Stage 1 Development.

The assessment showed:

- The change in daily maximum 1-hour ozone concentration from the addition of the airport was 4.5 ppb, which is significantly above the maximum allowable increment of 1 ppb defined in the EPA's Tiered approach
- The change in daily 4-hour average ozone concentration from the addition of the airport was 3.7 ppb, which is significantly above the maximum allowable increment of 1 ppb defined in the EPA's Tiered approach.

Mitigation measures that had a focus on reducing NOx emissions were recommended for consideration.

However, the regional air quality assessment for the Longer Term Development is hypothetical as:

- The potential impacts had to be assessed in context of the 2030 base case emissions as a base case inventory has not been projected for 2063
- · Changes in emissions to other existing sources had not been accounted for
- Assumes that the rail network exists.

4.3 Review of the conclusions of the Western Sydney Airport EIS

In relation to air quality, the Western Sydney Airport EIS concluded:

- Air quality local
 - The results indicate that exceedances of the 1-hour average NO₂ criterion of 246 μg/m³ maybe experienced at 11 residential receptors. These exceedances are predicted to occur for between one and four hours per year.
 - Under conservative assumptions there may be exceedances of the 1-hour AEPR objective of 320 μg/m³ at up to seven residential receptors. These exceedances are predicted to occur for between one and two hours per year.
 - o Predicted (cumulative) PM_{10} concentrations are anticipated to be above the NSW EPA impact assessment criterion of 50 μ g/m³ on occasion at one on-site receptor.
 - o Predicted (cumulative) PM_{2.5} concentrations are anticipated to be above NEPM advisory reporting goals at a number of receptors.
- Air quality regional
 - The change in daily maximum 1-hour ozone concentration from the addition of the airport was
 4.5 ppb which is significantly above the maximum allowable increment of 1 ppb defined in the
 NSW EPA's tiered approach
 - The change in daily 4-hour average ozone concentration from the addition of the airport was
 3.7 ppb which is significantly above the maximum allowable increment of 1 ppb defined in the NSW EPA's tiered approach.

4.4 Overall comments

If the assessment results are taken as presented in Tables F9 to F11 (Volume 4, Appendix F1), the air quality assessment of the Longer Term Development shows:

- The maximum 1-hour average concentration of NO₂ was predicted to exceed the EPA's impact assessment criterion of 246 μg/m³ at 41 of the 96 receptors (Table F9, Volume 4 Appendix F1, Appendix F)
- The maximum 24-hour average PM₁₀ concentration was predicted to exceed the EPA's impact assessment criterion at three receptors.
- The maximum 24-hour average concentrations of PM_{2.5} were predicted to exceed the NEPM Advisory Reporting Standard at three receptors (Table F11, Volume 4 Appendix F1, Appendix F).
- The annual average concentrations of PM_{2.5} were rounded to one significant figure. The annual average concentrations of PM_{2.5} are exceeded at 13 receptors (concentrations are reported as 9 μg/m³ or higher). A number of receptors were predicted to have an annual concentration of PM_{2.5} of 8 μg/m³ equal to the Air NEPM Advisory Reporting Standard. These results are potentially indicative of minor exceedances (<0.4 μg/m³) of the Advisory Reporting Standard.

The Longer Term Development adopted the same air quality assessment framework as the Stage 1 Development. In particular, the assessment considered the existing air quality assessment criteria, background air quality derived from recent measurements and with no account taken of possible changes in the sources of air pollutants nor their spatial distribution over time. The assessment of the Longer Term Development indicates that concentrations will exceed the current air quality assessment criteria at existing sensitive receptors.

The most important issue with regards to the Longer Term Development is the assumption regarding the development of a new rail network. The Western Sydney Airport EIS states "As it is not possible for the longer term development to achieve the project passenger numbers without the rail network the traffic scenario that does not include the rail network was disregarded."

Air quality associated with Stage 1 is critically dependent on the traffic volumes generated by the airport. Consequently, the impact on air quality due to the Longer Term Development is critically dependent on the existence of the assumed rail services to the airport. The Western Sydney Airport EIS is not seeking approval for the rail infrastructure that is necessary for its feasibility and the EIS does not contain a detailed proposal for the rail infrastructure. As a consequence, the air quality assessment of the Longer Term Development is speculative at best and does not provide a sufficiently robust basis to support approval of the Longer Term Development at this stage.

5. QUALIFICATIONS

This review has been undertaken by Simon Welchman, Natalie Shaw and Michael Burchill.

Simon is a Director at Katestone has a background of proven success over 20 years working as an environmental engineer in the private sector and for the environmental regulator. His expertise includes: air quality impact assessment of major industrial, infrastructure and mining projects; licensing, approvals and regulations; peer review and advice on air quality planning matters; odour impact assessment; greenhouse and air pollution control and management. Simon also provides expert witness services for matters relating to air quality and odour assessment in the Planning and Environment Court in Queensland and the Land and Environment Court in New South Wales. Most recently Katestone completed the air quality and greenhouse gas impact assessment for the Sunshine Coast Airport Expansion Project, for which Simon was the project director.

A summary of qualifications and role of each team member in project is provided in Table 2.

Table 2 Key personnel and project team

Name	Qualifications	Role on Project	Skills
Simon Welchman <i>Director</i>	BEng (Environmental) (Hons) 20+ years experience	Project Director	 Project direction and management Expert advice on emissions regulation Emissions benchmarking and assessment of best available control technologies Air quality impact assessment studies of major industrial and infrastructure projects Developing government policy for air quality and odour impact assessment Developing environmental regulation Air pollution emissions monitoring and ambient air quality monitoring
Natalie Shaw Principal Air Quality Consultant	BAppSc (Chemistry), MAppSc 15 years experience	Project Team	 Project management Air quality modelling including TAPM, CALMET, CALPUFF, Ausplume, ISC3, CAL3QHCR, AERMOD Photochemical modelling using TAPM-CTM Air quality impact assessments for major industrial and infrastructure projects Air pollution emission estimation Assessment of site meteorology for industries including site specific meteorological data for inclusion in dispersion modelling Air pollution emissions monitoring and ambient air quality monitoring
Dr Michael Burchill Air Quality Consultant	BAppSc (Physics)(Hons), PhD 4 years experience	Project Team	 Air quality modelling including TAPM, CALMET, CALPUFF, Ausplume, CAL3QHCR, AERMOD Air quality impact assessments for major industrial and infrastructure projects Air pollution emission estimation Assessment of site meteorology for industries including site specific meteorological data for inclusion in dispersion modelling

APPENDIX A – DETAILED REVIEW

Table A1 Review of air quality assessment against Approved Methods

Approved Methods		Section of EIS	
Chapter of Approved Methods	Section of Approved Methods	Addressed	Comment
3. Emissions inventory	3.1 Identify all sources of air pollution and potential emissions	Volume 2, Chapter 12 - Section 12.3.2 Volume 4, Appendix F1 - Section 3.6 Volume 2, Chapter 12 - Section 12.6.1 Volume 4, Appendix F1 - Section 3.1.2.3 - Appendix C	Construction - acceptable Construction impacts were quantified for Stage 1 Development. Construction impacts were not quantified for the Longer Term Development. The following sources were included: Bulk earthworks including dozers, scrapers, loading and unloading material, hauling on paved and unpaved roads, wind erosion and grading Aviation infrastructure including working crew, asphalt plant and concrete batching plant Potential emissions identified as TSP, PM ₁₀ , PM _{2.5} and odour Operation – Stage 1 Development - acceptable The following sources were included: Aircraft main engines, including approach mode, taxi/idle, take-off and climb-out mode Auxiliary power units (APUs) Ground support equipment (GSE) including but not limited to aircraft push back, mobile generators, tractors, powered passenger stairs, tractors, catering trucks, etc Parking facilities Stationary sources including boilers, engine tests, fuel tanks, generators, paints and solvents Training fires Terminal traffic Road traffic Waste water treatment plant
		Volume 4, Appendix F1 - Section 3.1.2.3 - Appendix C	 Potential emissions identified as NOx, SO₂, CO, VOCs, lead, PM₁₀, PM_{2.5} and odour Operation – Longer Term Development - acceptable The following sources were included: Aircraft main engines, including approach mode, taxi/idle, take-off and climb-out mode Auxiliary power units (APUs)

Approved Methods		Section of EIS	
Chapter of Approved Methods	Section of Approved Methods	Addressed	Comment
			generators, tractors, powered passenger stairs, tractors, catering trucks, etc Parking facilities Stationary sources including boilers, engine tests, fuel tanks, generators Training fires Terminal traffic Road traffic Potential emissions identified as NOx, SO ₂ , CO, VOCs, lead, PM ₁₀ , PM _{2.5} and odour
	3.2 Determine source release parameters	Not provided.	Construction – cannot verify No detail was provided in the report Modelling files were not available for review
		Volume 4, Appendix F1 - Appendix C	Operation – Stage 1 Development – cannot fully verify – some parameters acceptable but not all parameters provided • Source characteristics were provided for parking facilities, boilers, generators, fuel tanks, surface coating/painting and training fires
			There was no information on source release parameters for the aircraft main engines, auxiliary power units, terminal traffic or road traffic in the report
			 Emission concentrations limits for the boilers and generators were not specified. Modelling files were not available for review
		Not provided.	Operation – Longer Term Development – cannot verify No specific information was provided for the Longer Term Development scenario
	3.3 Estimate emission rates	Volume 4, Appendix F1 - Section 3.6	Construction – cannot fully verify due to insufficient information Emission factors were stated to be based on local and US EPA factors which is acceptable, if the correct factors are used. However the specific references were not provided. Emissions were estimated for construction in relation to the Stage 1 Development only. There was no information on construction information used to calculate emission rates. For example quantity of material moved, stockpile areas, number of trucks etc.
			 There was no information on control measures incorporated in the emission rate calculation. The correct pollutants were included in the assessment (TSP, PM₁₀, PM_{2.5} and odour)

Аррг	oved Methods	Section of EIS	
Chapter of Approved Methods	Section of Approved Methods	Addressed	Comment
		Volume 4, Appendix F1	Operation – Stage 1 Development – cannot fully verify due to insufficient information
		- Appendix C	 Emissions were estimated using the Emissions and Dispersion modelling system (EDMS (v5.1.4)) for the airport related activities. EDMS is appropriate for this use.
			Emissions were based on 10 million passengers and 63,302 aircraft movements
			• The correct pollutants were assessed (NOx, CO, PM ₁₀ , PM _{2.5} , SO ₂ , VOCs and odour)
			 Lead was deemed to not require assessment due to only 5% of planes having a pistol engine. However, it is recommended that the emission rates of lead be quantified and compared to the emissions for other pollutants.
			There were a number of assumptions made regarding:
			 Taxiing (a 50 / 50 split was assumed in each direction) The report states "It is acknowledged that in reality the runway combinations are a function of the prevailing weather conditions" and therefore operations may occur in a single combination for an extended period of time. Averaging operations may underestimate impacts under these circumstances, in particular for the shorter term averaging periods.
			 Duration of taxiing was estimated; however, assumption was not specified
			 Engine type; however, assumption was not specified
			There was no detail provided as to the sensitivity to emissions based on the above assumptions
		Volume 4, Appendix F1 - Appendix C	 Operation – Longer Term Development – cannot fully verify due to insufficient information Emissions were estimated using the Emissions and Dispersion modelling system (EDMS) for the airport related activities. EDMS is appropriate for this use.
			Emissions were based on 82 million passengers and 369,952 aircraft movements
			NOx, CO, PM ₁₀ , PM _{2.5} , SO ₂ and, VOCs were correctly included in the assessment, as above lead should also have been considered.
			• .
			There were a number of assumptions made regarding:
			Taxiing (a 50 / 50 split was assumed in each direction) The report states "It is acknowledged that in reality the runway combinations are a function of the prevailing weather conditions" and therefore operations may occur in a single combination for an extended period of time. Averaging operations may underestimate impacts under these circumstances, in particular for the shorter term averaging periods.
			 Duration of taxiing was estimated; however, assumption was not specified
			 Engine type; however, assumption was not specified

App	roved Methods	Section of EIS	
Chapter of Approved Methods	Section of Approved Methods	Addressed	Comment
			There was no detail provided as to the sensitivity to emissions based on the above assumptions
	3.6 Presentation of emissions inventory	Volume 4, Appendix F1 - Section 3.6.2 - Section 3.6.3 - Section 3.6.4	 Construction – cannot fully verify – errors in presentation of emissions inventory Emission inventories for TSP, PM₁₀ and PM_{2.5} have been presented for: Bulk earthworks (Table 3-6) Aviation infrastructure works (Table 3-7) Asphalt batching plant (Table 3-8) As there was insufficient information provided in the Volume 4, Appendix F1 the emissions were for bulk earthworks, aviation infrastructure works, concrete batching and asphalt batching were not able to be reproduced. Notwithstanding this: The emission inventory for bulk earthworks appears reasonable The emissions inventory for concrete batching plant appears reasonable As presented in Volume 4, Appendix F1, the emissions due to the construction of aviation infrastructure does not appear to be correct as the total emissions of PM_{2.5} are higher than that for PM₁₀. As PM_{2.5} is a subset of PM₁₀ this is not correct. As the emissions spreadsheets and model inputs were not available for review it was not possible to determine whether this was a typographical error or an error in the assessment.
	- Sec Volu	Volume 2, Chapter 12 - Section 12.6.1 Volume 4, Appendix F1 - Section 5.1.1	 Operation – Stage 1 Development – cannot verify – inconsistencies and errors in presentation of inventory Emissions inventories for NOx, CO, PM₁₀, PM_{2.5}, SO₂ and VOCs are presented in both Volume 2, Chapter 12 and Volume 4, Appendix F1 The emission inventory (Table 12-24 in Volume 2 Chapter 12 and Table 5-1 in Volume 4 Appendix F1) appears to include typographical errors. The total including external roadways is different in the two tables; however, the tables are supposed to represent the same emissions Emissions from stationary sources should consist of the individual emissions from boilers, engine tests, fuel tanks, generators and paint solvents. However, in providing the total emissions from the airport, these stationary sources have been double counted in both tables. The percentage contribution of all of the individual sources is therefore also incorrect. The total (tonnes per year) for the airport is incorrect for all pollutants in both tables Figures 12-6 and 12-7 (Volume 2 Chapter 12) and Figures 5-1 and Figure 5-2 (Volume 4 Appendix

Chapter of Approved Methods	Section of Approved Methods	Addressed	Comment
			E4) which reflect the conjection and convertence approached in the conjection of the conjection of
		Volume 3, Chapter 32 - Section 32.4.1 Volume 4, Appendix F1 - Section 5.1.2	 F1) which reflect the emissions and percentages presented in the emission inventories are incorrect and should be updated. The inventory (Table 5-1 Volume 4, Appendix F1) has a PM_{2.5}/PM₁₀ ratio of 0.43 for external roads. From the NSW Greater Metropolitan Region Inventory the PM_{2.5}/PM₁₀ ratio was 0.74. As there was insufficient information provided in the Volume 4, Appendix F1 the emissions for Stage 1 Development were unable to be reproduced exactly. Whilst some pollutants for some sources were able to be replicated this could not be done for all pollutants and all sources. Operation – Longer Term Development – cannot verify – inconsistencies and errors in presentation of emissions inventory Emissions inventories for NOx, CO, PM₁₀, PM_{2.5}, SO₂ and VOCs are presented in Table 32-1 in Volume 3 Chapter 32 and Table 5-3 in Volume 4 Appendix F) These tables appear to include typographical errors. Emissions from stationary sources should consist of the individual emissions from boilers, engine tests, fuel tanks, generators and paint solvents. However, in providing the total emissions from the airport, these stationary sources have been double counted in both tables. The percentage contribution of all of the individual sources is therefore also incorrect. The total (tonnes per year) for the airport is incorrect for all pollutants in both tables Figures 32-1 and 32-2 (Volume 3 Chapter 32) and Figures 5-4 and Figure 5-5 (Volume 4 Appendix F1) which reflect the emissions and percentages presented in the emission inventories do not match the data in the tables As there was insufficient information provided in the Volume 4, Appendix F1 the emissions for Longer Term Development were unable to be reproduced exactly. Whilst some pollutants for some sources were able to be replicated this could not be done for all pollutants and all sources.
	4.1 Minimum data requirements	Volume 4, Appendix F1 - Section 4.1	Acceptable Data from Bureau of Meteorology (BoM) Badgerys Creek site and Camden Airport site was used. At least one year of data – this has been addressed adequately At least 90% complete – this has been addressed adequately Correlated against a longer-duration site-representative meteorological database of at least five years – this has been addressed adequately
	4.2 Siting and	Volume 4, Appendix F1	Acceptable

Chapter of Approved Methods	
meteorological monitoring equipment 4.4 Preparation of Level 2 meteorological data 5. Background air quality, terrain, sensitive receptors and building wake effects 5. Compare the feets 5. Background air quality data 5. Compare the feets 5. Compare the feets 5. Description of Level 2 meteorological data 5. Description of Measurement of Horizontal Wind for Air Quality Applications. 6. Acceptable 6. A meteorological file suitable for use in the dispersion model AERMOD was generated of USEPA approved meteorological pre-processor AIRMET to process the Badgerys Cree Camden Airport data into suitable format for AERMOD. 7. Acceptable 8. Acceptable 8. Acceptable 9. Ambient monitoring data from the NSW Office of Environment (OEH) sites at Bringelly, and Richmond has been used in the assessment. Data was used from the year 2014 to with the meteorological year used in the assessments. It is noted that based on the amonitoring summary pollutant concentrations in particular NO ₂ , appear to be lower than provided to provide some comfort that selection of another year would not result in exceptor the 1-hour NO ₂ concentrations. 8. Specific requirements of the Approved Methods are: 9. Obtain ambient monitoring data that includes at least one year of continuous measured background concentration (e.g. add the first hourly average dispersion measured background concentration (e.g. add the first hourly average dispersion measured background concentration (e.g. add the first hourly average dispersion measured background concentration (e.g. add the first hourly average dispersion measured background concentration (e.g. add the first hourly averag	
Level 2 meteorological data 2 - Appendix D Section D.1 2 - Appendix D Section D	tandards
meteorological data 2 USEPA approved meteorological pre-processor AIRMET to process the Badgerys Cree Camden Airport data into suitable format for AERMOD. 5. Background air quality, terrain, sensitive receptors and building wake effects 5. 1 Background air quality data 5. 1 Background air quality data 5. 2 Column 4. Appendix F1 - Section 4.2 Column 4. Appendix F1 - Section 4.2 Acceptable • Ambient monitoring data from the NSW Office of Environment (OEH) sites at Bringelly, and Richmond has been used in the assessments. It is noted that based on the am monitoring summary pollutant concentrations in particular NO2, appear to be lower than years. No commentary was provided for the decrease in NO2 concentrations. This shot provided to provide some comfort that selection of another year would not result in exce for the 1-hour NO2 concentrations. • Specific requirements of the Approved Methods are: • Obtain ambient monitoring data that includes at least one year of continuous measu and is contemporaneous with the meteorological data used in the dispersion model has been adequately addressed. • At each receptor, add each individual dispersion model prediction to the correspondence measured background concentration (e.g. add the first hourly average dispersion measured background concentration (e.g. add the first hourly average dispersion measured background concentration (e.g. add the first hourly average dispersion measured background concentration (e.g. add the first hourly average dispersion measured background concentration (e.g. add the first hourly average dispersion measured background concentration (e.g. add the first hourly average dispersion measured background concentration (e.g. add the first hourly average dispersion measured background concentration (e.g. add the first hourly average dispersion measured background concentration (e.g. add the first hourly average dispersion measured background concentration (e.g. add the first hourly average dispersion measured background concentration (e.g	
air quality, terrain, sensitive receptors and building wake effects - Section 4.2 - Ambient monitoring data from the NSW Office of Environment (OEH) sites at Bringelly, and Richmond has been used in the assessment. Data was used from the year 2014 to with the meteorological year used in the assessments. It is noted that based on the ammonitoring summary pollutant concentrations in particular NO ₂ , appear to be lower than years. No commentary was provided for the decrease in NO ₂ concentrations. - Specific requirements of the Approved Methods are: - Obtain ambient monitoring data that includes at least one year of continuous measured in the dispersion model has been adequately addressed. - At each receptor, add each individual dispersion model prediction to the correspond measured background concentration (e.g. add the first hourly average dispersion measured background concentration (e.g. add the first hourly average dispersion measured background concentration (e.g. add the first hourly average dispersion measured background concentration (e.g. add the first hourly average dispersion measured background concentration (e.g. add the first hourly average dispersion measured background concentration (e.g. add the first hourly average dispersion measured background concentration (e.g. add the first hourly average dispersion measured background concentration (e.g. add the first hourly average dispersion measured background concentration (e.g. add the first hourly average dispersion measured background concentration (e.g. add the first hourly average dispersion measured background co	
terrain, sensitive receptors and building wake effects and Richmond has been used in the assessment. Data was used from the year 2014 to with the meteorological year used in the assessments. It is noted that based on the am monitoring summary pollutant concentrations in particular NO ₂ , appear to be lower than years. No commentary was provided for the decrease in NO ₂ concentrations. This show provided to provide some comfort that selection of another year would not result in excent for the 1-hour NO ₂ concentrations. Specific requirements of the Approved Methods are: Obtain ambient monitoring data that includes at least one year of continuous measured and is contemporaneous with the meteorological data used in the dispersion model has been adequately addressed. At each receptor, add each individual dispersion model prediction to the correspond measured background concentration (e.g. add the first hourly average dispersion measured background concentration (e.g. add the first hourly average dispersion measured background concentration (e.g. add the first hourly average dispersion measured background concentration (e.g. add the first hourly average dispersion measured background concentration (e.g. add the first hourly average dispersion measured background concentration (e.g. add the first hourly average dispersion measured background concentration (e.g. add the first hourly average dispersion measured background concentration (e.g. add the first hourly average dispersion measured background concentration (e.g. add the first hourly average dispersion measured background concentration (e.g. add the first hourly average dispersion measured background concentration (e.g. add the first hourly average dispersion measured background concentration (e.g. add the first hourly average dispersion measured background concentration (e.g. add the first hourly average dispersion measured background concentration (e.g. add the first hourly average dispersion measured background concentration (e.g. add the first hourly a	
 Obtain ambient monitoring data that includes at least one year of continuous measured and is contemporaneous with the meteorological data used in the dispersion model has been adequately addressed. At each receptor, add each individual dispersion model prediction to the correspondence measured background concentration (e.g. add the first hourly average dispersion measured) 	coincide bient other uld be
and is contemporaneous with the meteorological data used in the dispersion model has been adequately addressed. At each receptor, add each individual dispersion model prediction to the correspond measured background concentration (e.g. add the first hourly average dispersion model)	
measured background concentration (e.g. add the first hourly average dispersion m	
total impact - this has been adequately addressed.	iodel
 At each receptor, determine the 100th percentile total impact for the relevant average has been adequately addressed. 	jing - this
5.2 Terrain and Volume 4, Appendix F1 Terrain – cannot verify - no information on terrain provided.	
sensitive receptors - Appendix E - Sensitive receptors – not acceptable – all sensitive receptors have not been identified. A subset of sensitive receptors was included; however, the reason for selecting certain se receptors and not others is unclear. Justification and appropriateness needs to be provious minimum, the subset of sensitive receptors should be representative of potential air quartational air quartations.	ensitive ded. As a
Building wakes Building wakes have been stated to be included in the modelling. However, as no model	lling files

Approved Methods		Section of EIS	
Chapter of Approved Methods	Section of Approved Methods	Addressed	Comment
			were available for review these could not be verified.
6. Dispersion modelling	6.1 Dispersion models	Volume 2 Chapter 12 -Section 12.3	The US EPA approved dispersion model AERMOD was used. Whilst the model is not specified within the Approved Methods, it is been accepted for use in Australia.
		Volume 4 Appendix F1 - Appendix D	
7. Interpretation of dispersion modelling results	7.1.1 Impact assessment criteria	Volume 2 Chapter 12 Volume 4 Appendix F1 - Section 2.2 - Section 2.3	 The following impact assessment criteria were used: Approved Methods Airports (Environment Protection) Regulations 1997 National Environment Protection (Air Toxics) Measure It is relevant to note that, in places, the EIS refers to an NO₂ criterion of 320 μg/m³, which is incorrect. The correct criterion for 1-hour average concentrations of NO₂ is 246 μg/m³ as specified in the Approved Methods.
	7.1.2 Application of impact assessment criteria	Volume 2 Chapter 12 - Section 12.5 -Section 12.6 Volume 3 Chapter 32 - Section 32.4.2 Volume 4 Appendix F1 - Section 5 - Section 7 - Appendix F - Appendix G	 Construction – cannot verify for odour – insufficient information has been provided to determine whether odour assessment criteria have been applied correctly. Other air pollutants - acceptable. Operations – cannot verify for odour – insufficient information has been provided to determine whether odour assessment criteria have been applied correctly. Incorrect 1-hour average NO₂ criterion applied in places. Other air pollutants – acceptable.
	Summary of impacts	See below	See results for Construction, Stage 1 Development and Longer Term Development below.
	Construction results	Volume 2 Chapter 12 - Section 12. 5 Volume 4 Appendix F1 - Section 7	For bulk earthworks (as reported in EIS) Maximum 24-hour and annual concentrations of PM ₁₀ and PM _{2.5} are well below the relevant air quality criteria Annual dust deposition rates are well below the criterion For aviation infrastructure (as reported in EIS)

26 November 2015 Page 25

Appr	oved Methods	Section of EIS	
Chapter of Approved Methods	Section of Approved Methods	Addressed	Comment
		- Appendix G	 Maximum 24-hour and annual concentrations of PM₁₀ and PM_{2.5} are well below the relevant air quality criteria Annual dust deposition rates are well below the criterion The results indicate that construction of the aviation infrastructure is likely to result in higher concentrations of particulate than the bulk earthworks associated with construction. This does not agree with the emissions inventory presented for both which indicates that emissions of TSP and PM₁₀ for the bulk earthworks are at least twice those for aviation infrastructure. The dust deposition results appear to be very low when compared to PM₁₀ concentrations. The dust deposition rates appear to be 1000 times lower than what would be expected. For asphalt batching plant (as reported in the EIS) The odour concentration is below relevant odour criterion. The odour concentration is presented as 99th 1-hour concentration. The Approved Methods specifies impact assessment criteria for odour as "nose-response time" averages not 1-hour averages. Both the concrete batching plant and asphalt plant emit dust. It is not clear whether the emissions of dust from these facilities are included in the bulk earthworks or aviation infrastructure results.
	Stage 1 Development	Volume 2 Chapter 12 - Section 12. 6 Volume 4 Appendix F1 - Section 5 - Appendix F	 For the Stage 1 development (as reported in the EIS) local air quality is as follows: Maximum 1-hour and annual average concentrations of NO₂ are below the air quality assessment criteria at all residential receptors, with maximum 1-hour NO₂ predicted to be 60% and 70% of the AEPR criterion of 320 µg/m³. (The EIS did not compare against the EPA criterion of 246 µg/m³.) Maximum 24-hour average and annual average concentrations of PM₁₀ and PM_{2.5} are below the assessment criteria at all residential receptors Maximum 10-minute, 1-hour, 24-hour and annual average concentrations of SO₂ are well below the assessment criteria at all residential receptors Concentrations of air toxics at residential receptors are well below the air quality assessment criteria for the 99.9th percentile The 99.9th percentile 1-hour average concentration of formaldehyde is predicted to exceed the on-site receptor R24. The predicted 99th percentile odour concentration for aircraft exhaust is well below the criterion at all residential receptors. The predicted 99th percentile odour concentration for waste water treatment is well below the criterion at all residential receptors. The summary of local air quality in Volume 2 Chapter 12 focused on the residential receptors.

Appr	oved Methods	Section of EIS	
Chapter of Approved Methods	Section of Approved Methods	Addressed	Comment
			However, there are 75 community receptors identified in Volume 4 Appendix F1. Taking into consideration these receptors and the most stringent air quality criteria, the review found the following:
			 Maximum 1-hour average concentration of NO₂ is above the EPA criterion of 246 μg/m³ at one receptor (Table F1, Volume 4 Appendix F1, Appendix F)
			 Three other receptors have maximum 1-hour average concentrations of NO₂ that are 92% to 98% of the EPA criterion.
			The annual average concentrations of PM _{2.5} were rounded to one significant figure. A number of receptors were predicted to have an annual concentration of PM _{2.5} of 8 μg/m³ – equal to the Air NEPM Advisory Reporting Standard. These results are potentially indicative of minor exceedances (<0.4 μg/m³) of the Advisory Reporting Standard.
			 The 99.9th percentile 1-hour average concentration of formaldehyde is predicted to exceed at two receptors
			 The predicted concentrations of all other air pollutants were below their respective assessment criteria.

Approved Methods		Section of EIS	
Chapter of Approved Methods	Section of Approved Methods	Addressed	Comment
	Longer Term Development	Volume 3 Chapter 32 - Section 32.4 Volume 4 Appendix F1 - Section 5 - Appendix F	 For the Longer term development (as reported in the EIS) Annual average concentrations of NO₂ are below the air quality assessment criteria at all residential receptors Maximum 1-hour concentrations of NO₂ are predicted to exceed the AEPR criterion of 320 µg/m³ at seven of the 20 receptors. (The EIS did not compare against the EPA criterion of 246 µg/m³.) Annual average concentrations of PM₁₀ are below the assessment criteria at all residential receptors Maximum 24-hour average concentrations of PM₁₀ are below the criterion at all receptors with the exception of R24 (on-site receptor) Maximum 24-hour and annual average concentrations of PM_{2.5} will be above the relevant criteria for a number of receptors (one receptor for 24-hour average and four receptors for annual average). The summary of local air quality in Volume 3 Chapter 32 focused on the residential receptors. However, there are over 100 community receptors identified in Volume 4 Appendix F1. Taking intonsideration these receptors and the most stringent air quality criteria, the review found the following: Maximum 1-hour average concentration of NO₂ is above the EPA criterion of 246 µg/m³ at 41 of the 96 receptors (Table F9, Volume 4 Appendix F1, Appendix F) The NO₂ criterion contour has not been added to Figure F55. This should be added to demonstrate the extent of the exceedance. The maximum 24-hour average PM₁₀ concentrations exceed the criterion at three receptors. The PM₁₀ criterion contour has not been added to Figure F61. This should be added to demonstrate the extent of the exceedance. The maximum 24-hour average concentrations of PM_{2.5} are exceeded at 3 receptors (Table F11, Volume 4 Appendix F). <

Appro	oved Methods	Section of EIS	
Chapter of Approved Methods	Section of Approved Methods	Addressed	Comment
8. Modelling pollutant transformations	8.1 NO ₂ assessment	Volume 4 Appendix F1	Acceptable.
	8.2 Detailed assessment of ozone and NO ₂	Volume 4 Appendix F2	Approach based on tiered assessment approach. Acceptable.
9. Impact Assessment Report	9.1 – 9.6	Volume 4 Appendix F1	Not acceptable - the report includes many typographical errors and inconsistencies. The report requires a thorough editorial and technical review. Dispersion modelling inputs and outputs were not supplied.

Table A2 General comments relating to air quality sections of EIS

Section of EIS	Comment
Volume 2 Chapter 12	 Table 12-29 – Incorrect units presented for CO concentrations. Concentrations should read "mg/m³" not "µg/m³" Table 12-34 – Incorrect pollutant names in header row of table. The columns should read Benzene, Toluene, Xylene not Toluene, Xylene and Formaldehyde
Volume 4 Appendix F1	It is not clear what emission factors were used to determine emissions for parking facilities and road traffic
- Section 3.1.2.3	 Section 3.1.2.3 states that "roadways and parking emissions have been based on the Australian traffic emissions data developed by PIARC".
- Appendix F1 Section C.4	 Appendix F Section C.4 states "Emissions from a given car park were calculated in EDMS for vehicles moving and idling"
- Appendix F1 Section C.5	 Appendix F Section C.5 states "emissions from road traffic were calculated using the emission factors developed by the EPA for the latest emissions inventory for the Greater Metropolitan Region (GMR)."

Section of EIS	Comment					
	• Table 5-7 - "µg/m ³ "	- Incorrect units prese	nted for CO concentrations. Conc	centrations should read "mg/m ³ " no	ot	
Volume 4 Appendix F1	Table 5-10 Should rea	Table 5-10 – Table heading indicates the 99 th percentile 1-hour average concentrations are presented. Should read 99.9 th percentile.				
- Section 5.2	Table 5-12 Xylene not	e columns should read Benzene, T	Γoluene			
	Table 5-13 average. N	Averaging period for the clear whether types	or odour is stated as 1-hour 99.9 th graphical error or incorrect averaç	. This should be 1-s nose-respons ging period for concentrations.	se-time	
				ation are higher than predicted NC are R59, R99, R124, R126, R127		
		Table F1 and Figure F1 – Inconsistencies between reported 1-hour concentration in the Table F1 and Figure F1. Examples are provided below.				
	Po	Receptor	Cumulative 1-h	our NO₂ (μg/m³)		
	1/6	Сертог	Table F1	Figure F1		
	R1	04	305	100		
Johanna A. Amana dia E4	R1	18	241	Between 100 and 120		
Volume 4 Appendix F1 - Section F1 Stage 1 Development	domain. The presented	nis has resulted in line in the Figures with the	s disappearing. For some receptor	ontours that do not cover the entire ors it is difficult to compare concentes esented in the Tables. There are a res.	trations	
		nd Figure 14 – Incons		concentration at R24 due to airpor	rt in	
	isolation • Table F5-b	Ū	istencies in predicted 1-hour CO			
	• Table F5-b to cumulat	and Figure F26 - Inco	posistencies in predicted 1-hour CO consistencies in predicted 1-hour Sare provided below.	concentration at R24 due to airpor		
	• Table F5-b to cumulat	and Figure F26 - Inco	posistencies in predicted 1-hour CO consistencies in predicted 1-hour Sare provided below.	concentration at R24 due to airpor GO_2 concentrations at some recept		

Section of EIS	Comme	nt			
		R6	115	Between 60 and 80	
		R17	122	Between 60 and 80	
		R117	141	Between 100 and 120	
		•	names and NEPM-AAQ Investigati		
 Table F9 – incorrect averaging period in table header. Should read "1-hour" not "24-hour" Figure F56 and Table F9 – Inconsistencies in 1-hour NO₂ concentrations in the table and figure 					
Volume 4 Appendix F1 - Appendix F	indica	 Figure F56 – Contour line displaying criterion is not presented on figure. This should be included as it would indicate areas where exceedance of the criterion is predicted for NO₂. Figure F57 and Table F10 – Inconsistencies in 24-hour PM₁₀ concentrations in the table and figure 			
	• Figur	e F61 - Contour line display	ing criterion is not presented on fige of the criterion is predicted for Pl	gure. This should be included as	
	• Table	earth works" not "Predicted of G3 – Typographical error r	egarding table description. Should cumulative results during site prep egarding averaging period in head ir hour" for the pollutant PM _{2.5} .	aration works"	
Volume 4 Appendix F1	 Table G4 – Typographical error regarding averaging period in header row of table. Sixth column acros should read "Annual" not "24-hour" for the pollutant PM_{2.5}. Table G5 and Figure G17 - Inconsistencies in odour concentrations in the table and figure. Examples provided below. 				
- Section G.1.2					
		Becenter	99 th percentile	e Odour (ou)	
		Receptor	Table G5	Figure G17	
		I .	l l	9	
		R14	1.7	Between 0.02 and 0.04	
		R14 R17	1.7 0.4	Between 0.02 and 0.04 Between 0.02 and 0.04	

Section of EIS	Comment
	Table G5 – Averaging period referred to as "1-hour". The odour criterion is a "nose-response" average. It is not clear whether the 1-hour concentrations have been converted to a "nose-response" average using the peak to mean ratios in the Approved Methods.

Table A3 Review of regional air quality assessment against NSW EPA's tiered assessment approach

Documentation required for NSW EPA's Tiered Ozone Assessments		Comment		
Photochemical model used		Comprehensive Air Quality Model with extensions (CAMx) used. This is acceptable		
Chemical mechanism used		CB05. This is acceptable.		
Source of input data • Emissions		 Acceptable Scenarios – 2008/2009 base case, 2030 future base case, 2030 Airport case, 2063, Airport case Base emissions used 2030 projected inventory for Greater Metropolitan Region (with the exception of biogenics Biogenics derived using Model of Emissions of Gases and Aerosols from Nature (MEGAN) Airport emissions for 2030 Road emissions due to airport only (excluded existing as incorporated in base emissions) 		
	Meteorology	 Acceptable TAPM derived meteorology using OEH and BoM data for data assimilation. TAPM configuration in accordance with recommendations in TAPM manual. Justification provided for deviation in nesting of grids ratio 		

Documentation required for NSW EPA's Tiered Ozone Assessments		Comment	
		Used November 2008 to February 2009	
Source of input data	Boundary conditions	Acceptable Obtained using global model MOZART	
Modelling periods		 Acceptable November 2008 to February 2009 for model validation 12 case days for impact assessment 	
Procedures for evaluating base case	model performance	Acceptable	
Sources of ambient data		Acceptable OEH data	
Statistical evaluation methods		Acceptable	
Graphical evaluation methods		Acceptable	
Characteristics of new source	Location	Not provided	
Stack parameters		•	
	Emissions rates	Acceptable	
	VOC speciation	Acceptable	
Procedures for selecting days to evaluate ozone impacts		Acceptable	

Documentation required for NSW EPA's Tiered Ozone Assessments		Comment		
Ozone increases from new source emission on evaluation days	Results for 1-hour and 4-hour ozone	Acceptable		
	Maximum ozone increases	Acceptable		
	Base case ozone at location of maximum increase	Not provided in tables; however, can see in figures provided.		
Significance assessment of new sour against 1-hour and 4-hour average in criterion		 Acceptable. As the project is in a nonattainment area assessed against maximum increment of 1ppb 		
Ozone impact (increase plus background) due to new source emissions on evaluation day		Acceptable		
Significance assessment of new source ozone impact against 1-hour and 4-hour average Air NEPM ozone standards		Acceptable		



Traffic and Transport (ARUP)



WSROC and MACROC Councils

Western Sydney Airport EIS Peer Review

Peer Review: Traffic and Transport sections within the Western Sydney Airport EIS

Final | 20 November 2015

This report takes into account the particular instructions and requirements of our client. It is not intended for and should not be relied upon by any third party and no responsibility

is undertaken to any third party.

Job number 24624100

Arup Arup Pty Ltd ABN 18 000 966 165



Arup Level 10 201 Kent Street PO Box 76 Millers Point Sydney 2000 Australia www.arup.com



Document Verification



Job title Western S			dney Airport EIS	Peer Review	Job number		
					24624100		
			w: Traffic and Tra Sydney Airport	nnsport sections within EIS	File reference		
Document	ref				1		
Revision	Date	Filename	Peer Review W	SA EIS.docx			
Draft 1	29 Oct 2015	Description	First draft				
			Prepared by	Checked by	Approved by		
		Name	Sam Gray	Peter Dunn	Andrew Hulse		
		Signature					
Draft 2	11 Nov 2015	Filename Description	Peer Review W Final	SA EIS.docx			
			Prepared by	Checked by	Approved by		
		Name	Sam Gray	Peter Dunn	Andrew Hulse		
		Signature					
Final	20 Nov	Filename	Peer Review W	SA EIS.docx	1		
	2015	Description					
			Prepared by	Checked by	Approved by		
		Name	Sam Gray	Peter Dunn	Andrew Hulse		
		Signature					
		Filename					
		Description					
			Prepared by	Checked by	Approved by		
		Name					
		Signature					
	•	•	Issue Do	cument Verification with I	Document 🗸		

Contents

			Pag					
1	Execu	ative Summary	1					
2	Peer I	Peer Review Methodology						
	2.1	Approach	4					
	2.2	Limitations	4					
	2.3	Draft EIS Sections Reviewed	5					
3	Detail	led Findings: Construction & Stage 1	6					
	3.1	Compliance of the report with the (EPBC Act) EIS Guidelines	6					
	3.2	Commentary on validity of assumptions	10					
	3.3	Discussion whether the conclusions reached in the studies valid	are 16					
	3.4	Review of proposed mitigation and management measures	s 17					
	3.5	The level of uncertainty over impacts and the environmen risks	tal 18					
4	Detail	led Findings: Long Term development	19					
	4.1	Approach of Airport long term development assessment	19					
	4.2	Potential 'gaps' of long term development assessment relato a conventional EIS assessment	ative 19					
	4.3	Key risks and implications as a result of the gaps	21					
	4.4	Effectiveness of the assessment in setting a framework for further assessment.	r 21					
5	Summ	nary of key impacts and opportunities	23					
	5.1	Construction	23					
	5.2	Stage 1	23					
	5.3	Long term Airport development	24					
6	Peer I	Reviewers Qualifications	25					

1 Executive Summary

Background and Scope

Arup has been commission by WSP | Parsons Brinckerhoff on behalf of the Western Sydney Regional Organisation of Councils (WSROC) and Macarthur Regional Organisation of Councils (MACROC) to provide Peer Review Services of the traffic and transport sections of the draft environmental impact statement (EIS) for Western Sydney Airport.

The purpose this review was to inform these member authorities regarding the technical adequacy and completeness of this traffic and transport impact assessment. As such this peer review purpose is to present factual, unbiased information about the technical rigour of the study (both the positive and negative aspects contained within). All views expressed within the peer review will be substantiated with reference to information in the draft EIS or published elsewhere.

The peer review has been intended to assess the merits of the proposal as presented in the draft EIS – it has not been intended that the peer review will develop recommendations for alternative designs for the project.

The results of the peer review will be provided to the member authorities of WSROC and MACROC to assist them in making their submissions to the draft EIS.

In relation to Arup's comments regarding any short comings of this assessment, it should be noted that Arup has not been privy to any specific requirements above and beyond those described in the *Guidelines for the Content of a Draft Environmental Impact Assessment Statement, Western Sydney Airport, Environment Protection and Biodiversity Conservation Act, 1999.*

It is understood traffic and transport is likely one of the key environmental issues associated with the Airport. Arup has provided independent traffic and transport reviews relating to the adequacy of the documentation provided in and the appropriateness of the mitigation measures proposed in:

- "WSA EIS 19 volume 2 chapter 15"
- "WSA EIS 39 volume 3 chapter 33"
- "WSA EIS GHD volume 4 appendix j surface transport and access"

Stage 1 Airport

Issues identified in terms of predicted traffic impacts as a result of the Stage 1 airport include:

- Limitation of the strategic traffic model's (STM3) ability to capture traffic impacts at a detailed level
- Detailed intersection traffic modelling not undertaken

| Final | 20 November 2015 | Arup Page 1

- Intersection operations and performance not assessed
- Future land take impacts as a result of intersection operations
- Freight traffic generation and associated impacts (outside of specific air cargo) not assessed
- Traffic generation and associated impacts caused by the zoned lands within the Airport precinct not assessed
- Impact to public transportation operations (bus network) not assessed

The above issues and limitations are considered significant. Further information would need to be provided to enable Arup to reach a firm opinion as to whether the conclusions reached in the study are valid. Until these comments are addressed or further information supplied, Arup is unable to comment on the validity of the traffic impact conclusions reached in this draft EIS.

Long Term Airport Development

The predicted traffic impacts of the long term development of the Western Sydney Airport largely followed the Stage 1 assessment. A number of the issues identified for Stage 1 are also apparent in the longer term development including:

- Limitation of the strategic traffic model's (STM3) ability to capture traffic impacts at a detailed level
- Detailed intersection traffic modelling not undertaken
- Intersection operations and performance not assessed
- Future land take impacts as a result of intersection operations
- Freight traffic generation and associated impacts (outside of specific air cargo) not assessed
- Traffic generation and associated impacts caused by the zoned lands within the Airport precinct not assessed
- Impact to public transportation operations (bus network) not assessed

Additionally, a number of issues identified in the longer term development (above and beyond Stage 1) include:

- The local road network adjacent to the Airport reaches capacity by 2063. No road planning mitigation measures were provided
- Airport Access Drive (from M12) reaches capacity by 2050, 13 years before long term development year of 2063. Capacity is predicted to be reached for approximately 15 hours a day.
- Insufficient information was provided to determine how air passenger demands would access and egress the Airport beyond 2050 (when the Airport Access Road reaches capacity)

| Final | 20 November 2015 | Arup Page 2

 No assessment was included to understand what impact the air passenger demands using the SWRLe would have on the wider Sydney Rail Network.

Prior to the long term development of the airport being constructed, a major development plan (managed in accordance with the Commonwealth Airports Act 1996) will be required with final approval provided by the Minister of Infrastructure and Regional Development.

As such, Arup believes the above issues and limitations should be viewed in conjunction with this context

Key Impacts and Opportunities

The traffic impacts caused by Stage 1 of the Airport is predicted to be relatively low. With consideration to the methodology used, the draft EIS states the future road network is able to accommodate the predicted Airport traffic demand.

Nonetheless, it was difficult for Arup to confirm the validity of these impacts with confidence. Arup has identified further information that could be provided to quantify the potential impacts, including:

- Freight traffic generation within the Airport precinct (outside of air cargo)
- Private vehicle traffic generation from land uses within the Airport precinct (outside of air passengers)
- Vehicle travel time comparison (as predicted by strategic modelling)
- Intersection performance (as predicted by intersection modelling)
- Intersection layout requirements (as predicted by intersection modelling)

The following describes the predicted traffic impacts caused by the long term development of the Airport as described in the draft EIS:

- The traffic impacts caused by the Airport is predicted to be significant. The Airport Access Drive from the M12 is predicted to fail in 2050. This is approximately 13 years before the ultimate long term airport development year (2063).
- The traffic impacts also effect the wider road network with significant congestion predicted on key road links in 2063. The assessment acknowledges this is a result of significant background growth in conjunction with unknown road infrastructure commitments past 2041.
- The Airport also impacts wider transport modes. The assessment suggests additional rail link capacity (above and beyond the SWRLe) would be required to accommodate both the Airport trips and background growth trips by 2063.

With consideration to the above potential impacts, it is recommended that detailed transport network planning including road and rail network planning be undertaken.

| Final | 20 November 2015 | Arup

2 Peer Review Methodology

2.1 Approach

Arup reviewed the traffic and transport assessment of the draft EIS of the proposed Western Sydney Airport with respect to its technical adequacy and completeness. The review considered relevant guidelines, requirements and legislation.

Specifically, Arup undertook the following tasks:

- Consider whether the traffic and transport study meet the requirements of the EPBC EIS Guidelines and relevant other guidelines and methodologies.
- Reviewed the validity of the draft EIS conclusions i.e. an independent evaluation of whether the predicted impacts are in accordance with published standards and guidelines, and whether the conclusions of the assessment are likely to be a realistic reflection of the actual impacts.
- Evaluated the appropriateness of the underlying assumptions used to inform the assessment (including any construction or operational assumptions and modelling assumptions) are plausible.
- Reviewed the mitigation and management measures proposed and advised on their adequacy in mitigating impacts.
- Assessed the level of uncertainty over impacts and the environmental risks identified in the draft EIS.
- Reviewed the transport modelling and analysis presented in the report of the construction scenario and the Stage 1 and long term development scenarios for the Airport and assessed each models fitness to draw conclusions of the Airports impacts
- Provided a summary of the key impacts and opportunities associated with the projects traffic and transport impact assessment based on the information provided.

2.2 Limitations

The following details the limitations within Arup's peer review assessment:

- The peer reviews was based on the draft EIS reports provided, with no fieldwork undertaken or any direct communication with the specialists preparing the report, or regulators.
- No detailed model auditing was undertaken, Arup only provided comment on the modelling methodology and results presented in the draft EIS documentation
- Arup did not undertake any additional modelling or analysis to assess the adequacy of the modelling results provided

| Final | 20 November 2015 | Arup

2.3 Draft EIS Sections Reviewed

Arup reviewed the following specific sections of the Environmental Impact Statement (EIS) for the proposed Western Sydney Airport, including:

- "WSA EIS 19 volume 2 chapter 15"
- "WSA EIS 39 volume 3 chapter 33"
- "WSA EIS GHD volume 4 appendix j surface transport and access"

| Final | 20 November 2015 | Arup

3 Detailed Findings: Construction & Stage 1

The following details Arup's peer review of the construction and operational traffic impacts caused by Stage 1 of the proposed Western Sydney Airport.

3.1 Compliance of the report with the (EPBC Act) EIS Guidelines

The following describes Arup's consideration of the key Traffic and Transport sections of the Western Sydney Airport draft EIS compared to the requirements set out in the EPBC Guidelines.

a. The EPBC guidelines, Section 5 Relevant Impacts suggests that the EIS should assess changes in traffic movements during construction and operation (associated with both passenger movements and workers) where this assessment should be prepared according to best practice guidelines and compared to best practice standards.

The Sydney Strategic Travel Model (STM3) model has been used to forecast and assess the changes in traffic movements as a result of construction and operational traffic generated by the Airport. STM3 is the accepted travel demand forecasting tool for Greater Sydney Metropolitan Area (GMA) that is operated and maintained by the Bureau of Transport Statistics within Transport for New South Wales. STM's features include:

- Examining the effects of significant land use changes and significant transport initiatives which may include packages of road, rail and travel demand management measures
- Travel demand forecasts for the Greater Sydney Metropolitan Area by travel zone by mode choice and distribution.
- Private vehicle assignment on the strategic road network based on link based delay functions
- Transport mode choice and distribution for trips to/from the Airport. It therefore has additional rigour when conducting its vehicle assignment.
- When calibrated and validated, the STM3 is best suited to forecasting changes in demand or growth rather than absolute forecasts on a corridor.

With consideration of the above, the STM3 is likely to be a well suited model that is able to capture the effects of the Airport at a strategic level.

However, Arup also appreciates the strategic nature of the STM3 and the limitations inherent within the model, namely:

• The STM3 is a large area travel demand model that includes complex functions and interactions that approximate travel behavioural characteristics based on relatively large input dataset. The model therefore approximates travel patterns experienced in the real world.

| Final | 20 November 2015 | Arup Page 6

- The STM3 contains road link geometry that is relatively simplified, using only link lengths and number of lanes as inputs. For example, turning bays at intersections are not specifically modelled.
- The STM3 models vehicle operations on the road links in a relatively simplified manner. Predicted traffic delays and congestion follow only basic 'volume to speed' relationships.
- Vehicle operations at intersections are not specifically modelled. For example, traffic delays and congestion caused by inefficient intersection geometry and/or inefficient signal phasing is not captured.

Furthermore, as disclosed in the draft EIS assessment, there is a risk that the STM3 is not effectively calibrated and validated for the purposes of this draft EIS. The assessment states "STM3 models were provided by Transport for NSW for this task. The models are currently in development by Transport for NSW. However, due to the time constraints for the Western Sydney Airport EIS, GHD has used the latest available versions as the basis for the analysis in this study. GHD has not reviewed or corroborated the models provided beyond consistency checks of outputs" (WSA EIS GHD volume 4 appendix i surface transport and access). This is a limitation of the draft EIS methodology and is considered a risk.

With consideration to both the STM's features and limitations listed above, Arup further acknowledges the industry standards that suggest strategic models like the STM3 be only applied for strategic purposes. It is generally accepted that strategic models can form strong baselines for transport impact assessments, but are not considered the best tool for detailed assessments. (BTS Technical Documentation, February 2011)

The BTS describes that "For specific projects, the STM outputs should be used as a starting point to produce estimates of overall demand in response to alternative land use and/or transport supply scenarios. However, the STM, due to its limitations as a strategic modelling tool, may need to be supplemented with more detailed analyses for project evaluation purposes" (BTS InfoSheet, December 2013)

Hence the STM analysis undertaken for the draft EIS would have captured the effects of changing traffic movements as a result of the Airport at a strategic rather than detailed level. STM, as a strategic travel demand model, does not include representation of intersections and would not provide confidence in traffic forecasts at a corridor level. This is why a model hierarchy exists in Sydney with STM providing strategic travel forecasts, and more detailed traffic and public transport patronage assessments being undertaken in the Roads and Maritime's traffic model and the BTS's PTPM model respectively. Furthermore, various project specific models can be developed on a project by project basis for detailed traffic analysis.

b. Section 5 of the EPBC guidelines, Section 5 Relevant Impacts suggests that the EIS should assess changes in traffic movements during construction and operation (associated with both passenger movements and workers) where this assessment should be prepared according to best practice guidelines and compared to best practice standards.

| Final | 20 November 2015 | Arup Page 7 The draft EIS did not include intersection modelling to assess the Airports potential traffic impacts. This is a key limitation of the assessments methodology and is considered a significant risk.

Traffic intersection modelling could supplement the broad strategic baseline set by strategic traffic models, and further capture impacts on road networks at a detailed level. For example, unlike strategic traffic models, intersection traffic models can capture the relationship between intersection capacity and intersection lane geometry. Namely, they can be used to assess if additional land take would be required to widen intersections to allow for acceptable traffic operations. Hence, unlike strategic models, they can be used to capture the direct effects of traffic impacts on land acquisition. In relation to adhering to the EPBC requirements for 'best practice', Arup acknowledges the use of both strategic traffic modelling and intersection traffic modelling in other EIS submissions. The following large scale infrastructure projects in Sydney used detailed intersection traffic modelling coupled with strategic traffic modelling to capture future traffic impacts:

- Sydney Metro Northwest (North West Rail Link): Intersection modelling of construction and operational impacts
- WestConnex Stage 1a: Intersection modelling of construction and operational impacts
- WestConnex Stage 1b: Intersection modelling of construction and operational impacts
- NorthConnex (M1-M2 Link): Intersection modelling of construction and operational impacts
- c. The EPBC guidelines, Section 5 Relevant Impacts suggests that the EIS should assess changes in traffic movements during construction and operation (associated with both passenger movements and workers) where the assessments should be supported by maps, graphs and diagrams as appropriate to ensure information is readily understandable, and where this assessment should be prepared according to best practice guidelines and compared to best practice standards.

The following tables and diagrams are contained within the assessment (but not limited to):

- Mid-block Volume/Capacity Diagrams (existing)
- Mid-block Level of Service Diagrams (existing)
- Mid-block Level of Service Tables (existing)
- Mid-block Volume/Capacity Diagrams (future)
- Mid-block Level of Service Diagrams (future)
- Mid-block Level of Service Tables (future)
- Mid-block Volume Difference Diagrams (future)

When considering Level of Service, Arup acknowledges that the worst Level of Sevice reported is F and also acknowledges that comparative distinctions can be made when Level of Service changes within the A to F spectrum. For example, 'as a result of the future traffic generated by the shopping centre, the existing road deteriorates in performance from Level of Service C to E'.

However, when roads links already operate at Level of Service F the addition of traffic and associated impacts can be hidden within Level of Service results. For example Level of Service F to F. For this reason, a table of midblock volume to capacity values should be provided to gauge and quantify any potential traffic impacts caused above and beyond Level of Service F.

The draft EIS provided mid-block volume to capacity diagrams, but did not provide tables with explicit volume to capacity values. When comparing to other large scale infrastructure EIS assessment, Arup notes the provision of these values is generally accepted as industry best practice.

Vehicle travel time comparisons were not provided in this draft EIS assessment. These are important metrics that identify future congestion levels and accessibility to the airport. This is a limitation of the assessments methodology and is considered a risk. Arup notes that strategic modelled travel time comparison metrics were used in the WestConnex, NorthConnex and NWRL EIS assessments.

The STM3 could be used to predict vehicle travel times along road links 'with' and 'without the Airport' to further quantify the traffic impacts.

d. The EPBC guidelines, Section 3 Feasible Alternatives suggests the EIS should consider feasible alternatives, provide comparative analysis and commentary of the alternative, and also make clear which alternative is preferred.

Importantly, one such alternative could be the 'do nothing' alternative (i.e do not build the Airport). Arup acknowledges that the traffic and transport sections of this assessment did provide analysis and commentary pertaining to the 'do nothing' alternative. Through the use of the STM3 strategic model, this assessment provided commentary on performance of the road network 'with Airport' and 'without Airport (do nothing).

However, Arup also understands that the potential use of Wilton or the RAAF Base Richmond were also considered alternatives. The Traffic and Transport sections of this draft EIS did not provide analysis and commentary pertaining to either of these alternatives.

e. The EPBC guidelines, Section 5 Relevant Impacts suggests the EIS should identify and address the cumulative impacts of the project in addition to existing impacts of other activities. Critically, the impacts should include future developments from other proponents in the region or vicinity.

This assessment provided analysis and commentary pertaining to the existing impacts of other activities (including future developments) in the region or vicinity. As described, these future regional impacts will arise from key land use developments from the South West Growth Centre (SWGC), the Broader Western Sydney Employment Area (BWSEA) and the Greater Macarthur Land Release Area. The STM3 strategic model captured the combined effects of traffic

generation from the proposed Airport land uses and also traffic generation of these future land uses in the in the region. Hence, through the use of the STM3, this assessment made commentary on the cumulative impacts of the Airport land uses above and beyond future non-airport land uses.

However, no commentary pertaining to future land use assumptions were provided. This assessment makes the following comment in relation to the traffic impacts of the Airport in 2031 "the substantial package of road improvements proposed as part of the WSIP, in addition to those identified in the BWSEA and SWGC, would have sufficient capacity to cater for the expected airport passenger and employee traffic demand in 2031". As land use is one of the key underlying drivers of traffic generation, the explicit future land uses in the region should be provided. This would hence cater for improved comparisons between future land use traffic generation and future roadway capacity. To support this claim Section 5 of the EPBC guidelines suggests that the EIS should assess changes in traffic movements during construction and operation (associated with both passenger movements and workers) where standards and guidelines used to quantify baselines and impacts should be explained or justified. Arup believes the disclosure of the explicit land use assumptions of future land uses in the area is justified by the EPBC Act.

f. The *EPBC guidelines*, *Section 5 Relevant Impacts* suggests that the EIS should assess *changes in traffic movements during construction and operation* (associated with both passenger movements and workers) where this assessment should be against appropriate background/baseline levels.

As described in point (e) above, the draft EIS has captured effects of traffic generation from the future non-airport related land uses in the in the region and has therefore established and 'appropriate background/baseline level'. Nonetheless, this should be viewed in conjunction with lack of information provided on the specifics of these land use assumptions.

3.2 Commentary on validity of assumptions

The following describes Arup's consideration on the validity of the assumptions used in the Traffic and Transport sections of the Western Sydney Airport draft EIS.

3.2.1 Traffic Generation Assumptions

- a. Non Direct Airport Related Traffic As described in the methodology section of the Traffic and Transport assessment, trips originating in and destined for the Airport site were defined as
- Construction traffic
- Air passenger arrival and departing vehicle traffic
- Airport related employee traffic (only those who work directly for the Airport)
- Freight traffic (only those vehicles required to service the predicted tonnage of air cargo)

From above, the traffic impact assessment of Stage 1 only considered traffic generation from these 'direct airport-related trips'. Any traffic generation caused by other land uses (either by staff, businesses or general public) within the Airport site has not been presented in the draft EIS. As in, the assessment has not considered the impacts from non-directly related airport traffic, but traffic that would otherwise not be in existence without the Airport being constructed.

As described in section 2.3 of *Draft Airport Plan – Western Sydney Airport* (October 2015), 229 hectares and 167 hectares would be zoned for 'Terminal and Support Services' and 'Business Development' respectively.

Section 2.4.2.2 states that 'Terminal and Support Services' would include "Developments to facilitate the provision of goods and services necessary to meet the quality and standards that international, domestic and regional travellers have come to reasonably expect" including, but not limited to the following uses:

- Business premises
- Markets
- Kiosks
- Freight handling and transport facility
- Hotel or motel accommodation
- Office premises

Section 2.4.2.5 states that 'Business Development' would "enable a mix of business, retail and industrial uses in locations that are close to and that support the functioning of the Airport" including, but not limited to the following uses:

- Business premises
- Retail premises
- Recreational facility
- Hotel or motel accommodation
- Freight handling and transport facility
- Warehouse and distribution centres
- Light Industry
- Office premises

The scale and function of the above land use developments could generate a significant cumulative amount of traffic. This draft EIS did not make any assumptions to account for this potential traffic and associated potential impacts.

Adjustments to the land use assumptions that inform STM and the use of traffic generation first principles or empirical benchmarking data (of other airports) could have been used to capture and assess this potential traffic impact.

b. Flight Related Traffic – Commentary on the validity of the assumptions used in the draft EIS are found in Section 2.2.2 Aviation Demand and Activity of

the Arup document entitled "Western Sydney Airport EIS Peer Review - Aviation Planning and dated 6 November 2015":

With respect to passenger transfer reductions and in relation to traffic generation, it is noted the draft EIS did not account for the potential transfer of air passengers between flights. Namely, no assumptions were made pertaining to whether any passengers may arrive by one flight, transfer, and then depart on a subsequent flight. A behaviour sequence like this would result in the passenger not impacting on the landside road network.

This passenger transfer information would likely be available for other airports of similar size and type to the proposed Airport. Hence, Arup believes a benchmarking exercise could be undertaken that would result in an informed assumption of 'transfer of air passengers'. Arup understands that without such an assumption, all arriving airside passengers convert into landside trips. This represents a worst case scenario, but also an unlikely scenario.

c. Airport Related Staff Traffic – Arup acknowledges the level of detail and rigour used to predict the quantity and mode share of trips created by Airport staff. Considering that the Airport is in early stages of planning, Arup believes the assumptions used in these predictions are fit for purpose for the draft EIS assessment.

However, Arup does not agree with the validity of the assumption that states "For each shift, 50 percent of employees have been assumed to arrive in the hour before their shifts starts..." Arup believes it is unlikely that many staff members (if any) would arrive more than a full hour prior to their shift start. Nonetheless, Arup does not believe this assumption would significantly affect the outcomes of this assessment.

d. Air Freight Cargo Traffic – For commentary on the validity of the assumptions used to predict peak hour air freight cargo for the Airport are found in Section 2.2.2 Aviation Demand and Activity of the Arup document entitled "Western Sydney Airport EIS Peer Review - Aviation Planning and dated 6 November 2015".

Regarding the predicted vehicle trips generated by the air freight cargo only, Arup notes a discrepancy between the freight trips tabulated in Table 6-10 and the freight trips described in section 7.4 of WSA EIS GHD volume 4 appendix j surface transport and access. Table 6-10 indicates a total of 9 and 13 freight trips to/from the Airport in the 2 hours AM and PM peaks respectively. While section 7.4 describes a total of 3,966 freight trips to the Airport in the 2 hour AM peak and a total of 1,905 freight trips from the Airport in the 2 hour PM peak. It is unknown where this discrepancy has come from. It should be noted the 3,966 and 1,905 trip volumes seem to relate to the total traffic trips to/from the Airport shown in Table 6-10.

e. Public Transport Trip Generation –

Air Passenger Public Transportation Use

EIS

As described in Table 6-3 of 'WSA EIS GHD volume 4 appendix j surface transport and access', public transportation use (for air passenger trips) originating in and destined for the Airport in 2031 were assumed as:

- 5% Shuttle
- 5-10% Bus
- 0% Train

The draft EIS indicates the Sydney Airport Land Transport Model (SALTM) was used to predict the proportions of each transport mode used by air passengers to and from the Airport (no rail trips) in 2031. It appears that adjustments were made to these mode proportions to respond to the predicted capacity constraint of the Airport Access Drive. The approach in determining these adjustments is unclear.

However, the results shown in Figure 7-6 and 7-7 of 'WSA EIS GHD volume 4 appendix j surface transport and access', contradicts the suggestion that the Airport Access Drive forms a constraint in 2031. The figures show the Airport Access Drive is not coloured pink or red, and therefore operates below capacity in 2031.

It is hence unclear why road link capacity was used to adjust transport mode proportions.

The NSW Government is currently planning the SWRLe. At the time of the draft EIS publication, no commitment to its construction had been made. As a result, this draft EIS assumed no rail link would service the Airport by 2031. This lack of rail service is likely to generate higher dependency on private vehicle usage and possibly higher dependency on buses and shuttles. The draft EIS did not specifically assess any predicted impacts of future Airport bus servicing on the local bus network.

There is insufficient supporting information in the Draft EIS for Arup to comment on the methodology used to assess air passenger public transport use in 2031. Further modelling and benchmarking the public transportation use of the proposed Airport against other airports of comparative size and function should be considered.

Airport Employees Public Transportation Use

The draft EIS indicates the 2031 airport employee transport mode splits were determined using journey to work (JTW) data for the existing Kingsford Smith Airport.

As it was assumed that the airport in 2031 will not be serviced by rail, the rail trips found in the JTW were apportioned to the other modes. The draft EIS then compared these apportioned mode splits with JTW data for other employees in adjacent areas to the proposed Airport site (Liverpool, Penrith, Camden, Fairfield, Campbelltown, Blacktown and Holroyd).

The comparison suggested the JTW splits for the proposed Airport contained higher private vehicle usage than the JTW splits for the adjacent areas. Hence its use is considered conservative for the assessment of employee traffic impacts of the proposed airport in 2031.

3.2.2 Strategic Modelling Assumptions

To assess the changes in traffic movements as a result of construction and operational traffic of the proposed Airport, this assessment used the STM3 transport model. Arup believes the STM3 is likely to contain the most up to date assumptions and hence be well suited to capture the effects of the Airport at a *strategic level*.

However, the following lists those assumptions that may be considered invalid or lack supportive information:

- a. Road Link Calibration and Validation As stated in Appendix J of this draft EIS, at the time of the assessment, the STM3 models were currently in development by BTS. This assessment used the latest available version as the basis for the draft EIS assessment. No model calibration or validation statistics have been provided in this assessment, in particular for the existing major road links in the vicinity of the Airport site. Arup appreciates the calibration challenges of previous versions of the STM (STM and STM2). Poor calibration of existing road links in base models can generate large errors in the forecast performance of these road links in the future. Alternatively the previously calibrated STM2 could have been used as the strategic model for this assessment.
- b. Model Road Toll Choice The STM3 does not contain sophisticated toll choice functionality. Arup notes that other large scale infrastructure EIS assessments used a separate toll choice model to capture these effects with greater confidence. Westconnex 1a and 1b used "...a toll choice model for assigning road traffic to toll routes through the application of a toll choice diversion model, known as a distributed value of time (VOT) multi-class equilibrium assignment model" (Westconnex Stage 1B EIS). As stated in Appendix J of this draft EIS, the use of a two-stage process to assign vehicles to road links was used for the base year and future year road networks. The second stage used a toll-choice assignment to reflect those vehicle drivers who are willing to pay for tolls and those who are not. The methodology used to model toll choice was not disclosed in the draft EIS. This is a potent a risk as several major toll roads would provide access to the airport in the future including:
 - M4
 - WestConnex
 - M7
- c. Base year selection This draft EIS indicated that 2011 was modelled as the base year to represent existing conditions. Observed traffic data from 2011 was used to validate the model.

As stated in the assessment, the use of 2011 data does not include recent land use developments in the region. This includes vehicles trips that are generated by the BWSEA and SWGC today in 2015. As described in the assessment, some of the road links in the region have grown by up to 2.8% per year between 2008 and 2014.

forecast modelling.

Future years modelled in this assessment include the construction year (2021), Stage 1 operation (2031) and longer term airport development year (2063) are all forecast based on the 2011 base year calibration. There were no calibration and validation results provided in the draft EIS. Furthermore, as described by BTS "there may be some variation between (existing) modelled results and on the ground results for the base year. For this reason the BTS recommends using STM growth factors applied to known base year numbers, rather than the directly

d. Future year selection – The draft EIS identified that 2031 was selected as the year to represent Stage 1 Airport conditions.

predicted STM volumes" (BTS Technical Documentation, February 2011). This suggests the importance of using correct 'known' base year data for all future

As stated in the *Draft Airport Plan – Western Sydney Airport (October 2015)*, the Plan's primary concern relates to 'the Stage 1 Development... (which) would cater for the predicted demand for the first five years of operation to around 2030'.

It also identifies that any airport development beyond this time (including a rail link) will be 'staged in line with demand' and that 'Developments after Stage 1 will be undertaken under the existing planning framework in Part 5 of the Act (Airports Act 1996)'.

Arup understands the above to mean that prior to any long term development of the airport being constructed, a major development plan (managed in accordance with the Airports Act 1996) will be required with final approval provided by the Minister of Infrastructure and Regional Development.

Hence, the use of 2031 as the year that represents Stage 1 of the Airport is considered appropriate for this draft EIS.

e. Freight Traffic – The draft EIS considered future freight vehicle trips as a result of the Airport. However, Arup notes these generated vehicle trips are only related to the predicted tonnage of air cargo in 2031. It was identified this would equate to approximately 9 and 13 heavy vehicle trips to/from the Airport in the 2 hour AM and PM peaks respectively.

This heavy vehicle freight traffic is the only freight traffic predicted in this draft EIS assessment. No allowance, assumption or testing of any other freight traffic has been made in the assessment. Arup understands the proposed Airport is predicted to serve freight operations (24 hours per day) that would generate vast economic benefits to the region. The freight operations are predicted to unlock economic benefits of Western Sydney's growing population (SWGC) and growing economy (BWSEA). Considering this strategic objective, and also that this draft EIS assessment noted "the analysis excludes the traffic to and from the proposed Airport generated by associated commercial development or freight traffic for consumables", there may be insufficient assumptions being made regarding the likely freight traffic generation caused by the Airport.

Without a detailed terminal plan, it would be difficult to determine the heavy vehicle traffic required to service the Airport with full confidence. However, as stated in section 2.3 of the *Draft Airport Plan – Western Sydney Airport (October*

2015), provision for specific types and quantity of zoned areas within the Airport precinct is made. It also provides the potential uses within these zones. Hence, the lack assumption regarding wider freight traffic generation and subsequent lack of inclusion of such in this draft EIS is considered a risk.

It is not clear what assumptions were made regarding future freight movements in the strategic modelling undertaken as part of the draft EIS. The Freight Movement Model (FMM) has been used in other transport planning assessments. Like the (STM3), the FMM is government owned and operated (by BTS). It predicts freight movements by professional drivers that are not found explicitly in the STM.

It should be noted, the FMM contains the Kingsford Smith Airport (both domestic and international terminals) modelled and calibrated as a 'special generator'. *TDC Heavy Vehicle Forecasts - February 2010 Release*.

3.3 Discussion whether the conclusions reached in the studies are valid

With consideration to Arup's comments described in sections 3.1 and 3.2, Arup notes some limitations within the Traffic and Transport sections of this assessment, namely:

- Potential gaps in and/or potential lack of supportive information for:
 - o Explicit future land use assumptions in the region of the Airport
 - Potential land use within the Airport precinct that has not been accounted for
 - Airport related freight generation (above and beyond air cargo tonnage)
- Methodologies that measure traffic impacts that may not be considered industry best practice, including:
 - o Intersection modelling not undertaken
- Sections of analysis and commentary that may not be considered industry best practice, including:
 - Quantifiable values of road capacity (volume to capacity)
 - Vehicle travel time comparisons on major road links, 'with' and 'without' the Airport not provided
 - o Intersection performance values, 'with' and 'without' the Airport, are not provided (intersection modelling not undertaken)
 - Intersection layouts (and subsequent potential land acquisition impacts) required to accommodate future Airport traffic are not provided or not described.

Based on our review, these limitations could be considered significant. Further information would need to be provided to enable Arup to reach a firm opinion as to whether the conclusions reached in the study are valid. Until these comments are addressed or further information supplied, Arup is unable to comment on the validity of the conclusions reached in this draft EIS.

3.4 Review of proposed mitigation and management measures

Regarding the traffic impacts caused by construction activities, industry standards and best practice allow EIS documents to refer to the requirement of a Construction Traffic Management Plan (CTMP) as part of a Construction Environment Management Plan (CEMP) to capture and mitigate specific construction disruptions to the community. This assessment nominates these requirements. Arup believes this approach is fit for purpose.

Regarding the traffic impacts caused by the operation of Stage 1 of the Airport, this assessment concluded that the Western Sydney Infrastructure Plan will provide sufficient road capacity that will accommodate airport related traffic. Nonetheless, this assessment also mentions that mitigation and management measures that will reduce any other impacts will be delivered via a Ground Transport Plan (as part of detailed design). Subject to the comments raised by Arup in the rest of this peer review, this approach could be considered in accordance with industry standards.

3.5 The level of uncertainty over impacts and the environmental risks

The following matrix tabulates what Arup believes to be the level of uncertainty to the traffic and transport impacts caused by the Airport.

Level of Uncertainty					
		Low	Medium	High	Unknown
	Assumption gaps				
	+ Lack of supportive information				
	Explicit future land use in region and subsequent traffic generation	X			
	Potential land use within the Airport precinct subsequent traffic generation		X		
	Freight generation (outside of air cargo)				X
	Assessment Methodology				
	Intersection performance				X
	Analysis and Commentary				
	Explicit volume to capacity ratios of midblock road links	X			
	Vehicle travel time comparisons				X
	Public transport operations				X
	Intersection layout descriptions				X

4 Detailed Findings: Long Term development

Arup understands that the assessment of the long term development of the Western Sydney Airport should be viewed as 'preliminary consideration'. Prior to the long term development of the airport being constructed, a major development plan (managed in accordance with the Commonwealth Airports Act 1996) will be required with final approval provided by the Minister of Infrastructure and Regional Development.

4.1 Approach of Airport long term development assessment

The predicted traffic impacts of the long term development of the Western Sydney Airport largely followed the Stage 1 assessment, including:

- Similar Airport vehicle traffic generation
 - Air Passengers (private vehicles, taxis and buses)
 - Airport Employees (private vehicles, taxis and buses)
 - Air Cargo Tonnage (freight vehicles)
- Similar road network modelling assessment (traffic impacts)
 - Midblock capacity assessment (STM3)
- Similar presentation of analysis, results and commentary

However, the key difference between the Stage 1 and long term development assessment are:

- Road network configuration
 - Introduction of Castlereagh Highway connection to the M7
- Introduction of passenger rail link
 - South West Rail Link Extension (SWRLe)
 - North and south connection of the SWRLe to St Marys and Narellan respectively

4.2 Potential 'gaps' of long term development assessment relative to a conventional EIS assessment

When identifying the potential gaps in the long term airport development impact assessment, Arup broadly considered the following:

• Arup's comments regarding the limitations of the Stage 1 assessment described in sections 3.1 to 3.4,

- The long term development impact assessment largely follows the Stage 1 assessment
- Prior to the long term development of the airport being constructed, a major development plan (managed in accordance with the Commonwealth Airports Act 1996) will be required with final approval provided by the Minister of Infrastructure and Regional Development.

The following are specific gaps or areas of concern that Arup believes are related to the long term development impact assessment:

- The draft EIS states that the Airport Access Drive (from M12) is predicted to fail in 2050
 - o Failure of the Airport Access Drive has been defined as when the midblock reaches LoS of D. This corresponds to a midblock capacity of 1,700 vehicles per hour per lane.
 - When considering the environment of an airport access road (multi decision points, merging and weaving effects, passenger drop offs effects), Arup notes the 1,700 vehicles per hour per lane capacity is likely to be overestimated. Nonetheless without a detailed layout plan of the internal road network, it is difficult to comment on the appropriateness or the likely effects of this capacity assumption.
 - Arup inferred (via the graphical results provided) the inbound or outbound vehicle movements on the Airport Access Road will be over capacity for 15 hours out of 24 hours per day
 - o The road link capacity is reached approximately 13 years before the long term airport development impact assessment scenario year (2063)
- The Northern Road, M7, Elizabeth Drive, Mamre Road, Luddenham Drive reach capacity with the Airport in 2063. The assessment has not provided any strategic measures to mitigate these constraints.
- Passenger Rail Link Provision (SWRLe)
 - Insufficient information has been provided to determine how air passenger demand would access and egress the Airport beyond 2050 (when the Airport Access Road reaches capacity). The WSA EIS GHD volume 4 appendix j surface transport and access does identify:
 - "..... that this forecast level (access road failure) is predicted to be achieved in based on current airport passenger volumes 2050 and investment in rail infrastructure would be required beyond this point... to enable the Airport to reach the desired 82 MAP"
 - "the modelling undertaken for the concept plan requires the capacity of the proposed access road network to be a

- constraint, the mode split proportions are required to be an input....(and) are shown in Table 9.3"
- "the mode split for car modes was modified down based on the capacity of a potential staff car park when the access road reaches its nominal capacity"
- Arup has hence inferred (from above) that a large proportion of air passenger and airport staff trips will be required to shift from vehicles to rail beyond 2050. However:
 - The STM3 does not account for rail capacity constraints
 Passengers are therefore not deterred from catching trains even if they are crowded
 - The graphs contained within the long term airport development assessment suggest train arrival and departure demands of approximately 2,000 trips per hour for many hours of the day. No information has been provided as to assess what impact this would have on the Sydney Rail Network.
 - STM3 modelling only considered the morning peak public transportation network only.

Arup understands the long term airport development assessment to be in a 'preliminary consideration' phase and may not require the level of detail of an EIS assessment. Hence the issues or 'gaps' noted above should be viewed in this context

Arup recommends a future airport long term development assessment could be undertaken with additional rigour which could explicitly address the issues relating to detailed passenger rail planning and detailed road network planning.

4.3 Key risks and implications as a result of the gaps

As Arup understands the long term airport development assessment to be in a 'preliminary consideration' phase it may not require the level of detail of an EIS assessment. As a result, the implications of the aforementioned gaps are less severe. This is subject to a commencement of further investigations.

4.4 Effectiveness of the assessment in setting a framework for further assessment.

The assessment of the long term airport development impact has mentioned limitations within the methodology and/or limitations in available information required for the assessment. These are:

- Committed road network beyond 2041 (to 2063)
- Commitments to the nature of the SWRLe.

Arup hence believes the assessment has eluded to further studies that may be required to assess the long term airport development and hence has effectively provided some of the framework required for further assessment.

5 Summary of key impacts and opportunities

5.1 Construction

The following describes the predicted construction traffic impacts caused by the Airport as described in the draft EIS:

• The traffic impacts of construction of the Airport on the local road network is predicted to be relatively low. The proponent predicts the local road performance and operations 'with' and 'without' construction traffic to remain relatively stable.

With regard to above, it is difficult for Arup to confirm the validity of these impacts with confidence. Arup has identified further information that could be provided to quantify the potential impacts, including:

- Vehicle travel time comparison (as predicted by strategic modelling)
- Intersection performance (as predicted by intersection modelling)
- Intersection layout requirements (as predicted by intersection modelling)

5.2 Stage 1

The following describes the predicted traffic impacts caused by Stage 1 of the Airport as described in the draft EIS:

• The traffic impacts caused by Stage 1 of the Airport is predicted to be relatively low. The draft EIS states "the substantial package of road improvements proposed as part of the WSIP, in addition to those identified in the BWSEA and SWGC, would have sufficient capacity to cater for the expected airport passenger and employee traffic demand in 2031" (WSA EIS GHD volume 4 appendix j surface transport and access). With consideration to the methodology used, the draft EIS states the future road network is able to accommodate the predicted Airport traffic demand.

With regard to above, it is difficult for Arup to confirm the validity of these impacts with confidence. Arup has identified further information that could be provided to quantify the potential impacts, including:

- Freight traffic generation within the Airport precinct (outside of air cargo)
- Private vehicle traffic generation from land uses within the Airport precinct (outside of air passengers)
- Vehicle travel time comparison (as predicted by strategic modelling)
- Intersection performance (as predicted by intersection modelling)
- Intersection layout requirements (as predicted by intersection modelling)

5.3 Long term Airport development

The following describes the predicted traffic impacts caused by the long term development of the Airport as described in the draft EIS:

- The traffic impacts caused by the Airport is predicted to be significant. The Airport Access Drive from the M12 is predicted to fail in 2050. This is approximately 13 years before the ultimate long term airport development year (2063).
- The traffic impacts also effect the wider road network with significant congestion predicted on key road links in 2063. The assessment acknowledges this is a result of significant background growth in conjunction with unknown road infrastructure commitments past 2041.
- The Airport also impacts wider transport modes. The assessment suggests additional rail link capacity (above and beyond the SWRLe) would be required to accommodate both the Airport trips and background growth trips by 2063.

For the purposes of the Peer Review, Arup was not privy to the specific requirements of the draft EIS. Arup recommends detailed transport network planning including road and rail network planning.

6 Peer Reviewers Qualifications

Sam Gray

Sam is a Senior Traffic Engineer based in Sydney with extensive experience in the development, design and management of transport planning and road design projects. Sam is a specialist in planning and operational assessments of road networks, motorways and public transportation.

Specifically, Sam has vast experience in the application of land used changes on motorway and surface road networks. His has expertise working with forecasting demands and operational flows to suitably assess road and motorway projects. His strategic and operational assessments include road construction staging, interim network staging and ultimate layouts. He completes design options analysis, traffic impacts and environmental impacts to validate a wide variety of projects.

Sam also understands the strategic elements of road planning and the relationship between modal shifts which is evidenced by his involvement on related projects that incorporate wider transportation solutions. His qualities and experience allow him to identify project hurdles early and he has shown that he can overcome these project hurdles by relaying the critical information pieces above and below first hand. This practise allows for quality decisions making across the project, manages expectations of possible project changes, and ultimately allows for timely delivery of quality project outcomes.

Project Experience

NorthConnex (M1-M2) EIS Approvals, Sydney

Mona Vale Road REF Traffic and Transport Study, Sydney

North West Rail Link EIS Approvals, Sydney

WestConnex Stage 3 Road Operations Assessment, Sydney

WestConnex Full Scheme Business Case, Sydney

WestConnex Alignment and Interchange Assessment, Sydney

Northern Beaches Hospital Road Network Assessment, Sydney

Old Wallgrove Road Upgrade Design Construction Staging, Sydney

Camden Valley Way Road Upgrade Design, Sydney

Edmondson Park Road Network Assessment, Sydney

Inner Newcastle Road Network Study and Concept Designs, Newcastle

Peter Dunn

Peter is a transport planner specialising in strategic transport planning, economic evaluation, demand forecasting, and design of transport infrastructure. He has extensive international experience in major transportation projects. As an Associate Principal, Peter is responsible for the project management of transport related work undertaken in Australia and New Zealand. Peter has a firm understanding of transport issues as they relate to the needs of different cities, through being responsible for significant transport planning studies in Australia, New Zealand, England, Ireland and Hong Kong. He is experienced in the application of analytical techniques to assess and provide solutions to complex transport issues. His design experience includes numerous road planning and intersection design studies.

Project Experience

Public Transport Project Model Audit, Sydney

NSW Long Term Transport Master Plan: Transport for New South Wales

Auckland Public Transport Model: Review of mode specific constant

Wellington Strategic Transport Model Peer Review, New Zealand.

AMETI Model Peer Review, Auckland New Zealand

Wellington Public Transport Model Review

Sydney Metro Demand Analysis Advisor, New South Wales

Sydenham to Bankstown Corridor Study

Central to Eveleigh Transport Study

Canberra Light Rail Master Plan

Andrew Hulse

Andrew is an Associate Principal in the Transport Planning division of Arup, Sydney. He provides transport planning advice and design input on a range of major development projects. Andrew has worked with Arup for 30 years in a number of the Arup Australian offices, in London for a two year secondment and Hong Kong and Singapore on specific projects.

He has particular skills in the areas of traffic management, bicycle planning, traffic calming, hospital parking demand and town centre traffic and parking design. Many of these projects have involved public consultation and Andrew has acted as an expert witness on a range of project types.

Andrew provides transport advice on multi-disciplinary projects working closely with planners and architects on projects such as CBD office developments, land rezoning studies and site master planning. He provides patronage assessment, interchange design and route assessment for public transport infrastructure projects, and undertakes traffic assessment for major road projects.

Project Experience

Melbourne Airport Southern Precinct Project

Brisbane Domestic Terminal (Precinct) Expansion Projects, QLD, Australia

Sydney Airport International Terminal, Ground Access Project

Newcastle Airport Car Park

Canberra Airport Master Plan

FIFA World Cup Transport Strategy

Sydney International Convention and Exhibition Centre Peer Review

Barangaroo Development

TfNSW Transport Access Program

Appendix E

Human Health (Centre for Health Equity Training Research and Evaluation)



Centre for Health Equity Training Research and Evaluation UNSW Australia

Human Health Impacts Peer Review of the Western Sydney Airport Environmental Impact Statement

Commissioned by WSP/PARSONS BRINCKERHOFF

19 November 2015

Table of Contents

Li	st of Abbreviations	2
Ex	xecutive Summary	3
1.	Methods Limitations Components of Draft EIS Reviewed 1 st Stage Airport Findings Long Term Development Findings Key Impacts and Opportunities Introduction	3 4 8
2.	Approach	9
3.	Health Impacts of Airports Table 1 Examples of Key Determinants of Health	10 12 13 14 14
5.	Table 2 Compliance of the Report with Draft EIS Guidelines (EPBC Act) Table 3 Health Pathways Included in the Draft EIS - Air Quality Table 4 Health Pathways Included in the Draft EIS - Noise Table 5 Health Pathways Included in the Draft EIS – Water Quality Table 6 Review of Overall Report Coverage of Health Topics	31 43 51
6.	Table 7 Health Topics Covered in Health Chapter Table 8 Health Topics Not Covered in Health Chapter Important health implications of the determinants of health that have not been fully assessed the draft EIS Environmental impacts Economic impacts Socio-cultural impacts Detailed Findings – Long Term Development	68 in 70 70 71
7	Table 9 Long Term Health Impacts Considered in the Draft EIS	
8.	Air Quality	81 83 85
	Scope of impacts included in the health chapter	
9.	Qualifications of the Reviewers	89

List of Abbreviations

CHETRE Centre for Health Equity Training, Research and Evaluation

EIA Environmental Impact Assessment
EIS Environmental Impact Statement

EPBC Environment Protection and Biodiversity Conservation Act

HIA Health Impact Assessment HRA Health Risk Assessment

HRAPIE Health Risks of Air Pollution in Europe

MACROC Macarthur Regional Organisation of Councils

REVIHAPP Review of Evidence on Health Aspects of Air Pollution

SES Socio-Economic Status
SIA Social Impact Assessment
UNSW University of New South Wales
WHO World Health Organisation
WSA Western Sydney Airport

WSROC Western Sydney Regional Organisation of Councils

Executive Summary

A peer review of the human health sections of the Western Sydney Airport (WSA) draft Environmental Impact Statement (EIS) was undertaken by a team of international reviewers, led by the Centre for Health Equity Training, Research and Evaluation (CHETRE) at the University of New South Wales (UNSW). This work was commissioned by WSP/Parsons Brinckerhoff on behalf of the Western Sydney Regional Organisation of Councils (WSROC) and the Macarthur Regional Organisation of Councils (MACROC).

Methods

The review team developed a peer review framework based upon existing best practice review guidelines for evaluating health impact assessment (HIA). The framework incorporated key elements, processes, and requirements that should be included in the health assessment of an EIS. Additionally, the review team reviewed existing HIAs of airport developments to establish the range of health effects that are relevant to airport health assessments. This framework allowed the review team to assess the quality of the health assessment that was included in the draft EIS, and also determine important health effects that were not included.

Limitations

The review team were only able to conduct a review of the health impacts included in the health chapters (Human Health Chapter and Community Health Appendix). These were limited to noise, air quality, and water impacts, therefore the review team were not able to further review the assessment of other potential significant health impacts associated with airport development, such as changes to employment, transportation, amenity, and housing.

Although the review team assessed the methods used we were not able to assess the validity of the calculations used in predicting health outcomes. Validity of the findings in the health risk assessment (HRA) were based upon what was included in the health appendix, which did not include all necessary methods and formulas to test the findings. It is assumed that the calculations were carried out correctly.

As there was not a comprehensive HIA included in the draft EIS, the review team were limited in the range of recommendations we could make.

Components of Draft EIS Reviewed

Primary:

- Part D Human Health Chapter
- Appendix G Community Health

Secondary:

- Volume 1
 - Executive Summary
 - o Part A Project Background
 - o Part B Airport Plan
- Volume 2
 - Chapter 9 Approach to Impact Assessment

- o Chapter 27 Cumulative Impact Assessment
- o Part E Environmental Management
- Part F Conclusions
- Volume 3
 - o Chapter 39, Section 8 Human Health
 - Part H Conclusion and recommendations
- Volume 4
 - Appendix E Noise
 - Appendix F Air quality
 - o Appendix P1 Social impact
 - Appendix P3 Economic analysis

1st Stage Airport Findings

Compliance with EIS Guidance:

- Overall, the Health Chapters of the draft EIS comply with most of the Environment Protection and Biodiversity Conservation (EPBC) Guidelines.
- The impacts that are considered in the Health Chapters are those associated with changes in air quality, water quality and noise. Generally, these are assessed in detail in terms of nature and extent of short and long-term impacts.
- Some of the information is presented in a way that makes it difficult for interested stakeholders to fully understand the scope and scale of the potential health impacts. The information provided is not always, clear, succinct and supported by maps or other accessible materials. Technical jargon is generally avoided without losing technical precision or the validity of the statements made. Cross-referencing is used however summaries of the findings of other chapters often do not fully explain key issues. Not all relevant sensitive population sub-groups or receptors have been considered in the areas assessed.
- The rational and justification for why a HRA has been undertaken rather than an HIA are not discussed. There is national and state level guidance on HIA that should have been consulted in the development of the scope and methodology of the health assessment of the draft EIS. Key guidance documents include Health Impact Assessment Guidelines (enHealth, 2001), and Health Impact Assessment: A practical guide (UNSW and NSWHealth, 2007). Ideally the health assessment would have used an HIA framework incorporating an HRA approach.
- Ecologically sustainable development in relation to health is not considered. EPBC guidance states that ecologically sustainable development should ensure that the *health*, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.
- Considering the most significant health impacts/effects/risks considered in the draft EIS are those related to changes in air quality, noise and water quality, the level of analysis and detail presented in the Health Chapters is reflective of the potential significance of these descriptors. However, the potential inequality/inequity impacts have not been sufficiently assessed or discussed. This is a significant gap.

Recommendations for the Health Chapters of the draft EIS to better comply with EPBC guidelines are provided:

- The Health Chapters of the draft EIS should assess the health impacts/effects of changes in the full range of environmental and social determinants of health and the potential inequalities/equity issues due to the proposed development. The level of analysis and detail should be reflective of their likely significance. Examples are changes to road traffic movements and their potential health consequences (community severance, risk of road traffic accident and injury), changes in qualities and characteristics of the surrounding areas (including land values and other economic impacts) and changes in recreational use, amenity of natural areas and access to greenspace and nature and their associated health and wellbeing impacts through, for example, changes to levels of physical activity; effects on services and amenities.
- Findings should be presented in a way that helps to communicate the scale of the population affected, by determinant of health, and also what the synergistic (combined) impacts are likely to be to various communities from exposure to the combined hazards.
- Not all unknown variables, assumptions, and limitations are included in the assessment. A specific comment relates to certain health impacts (e.g. air quality-related health impacts on children, other chronic effects such as incidence of chronic bronchitis in adults) known to occur from exposure to air pollution but for which the level (extent/magnitude) of the health impact associated with a certain level of pollution exposure is uncertain or unknown. These additional health impacts, for which quantification is uncertain or unknown, are not discussed. The Health Chapters should consider and discuss health impacts where quantification is not currently recommended by national guidance (e.g. Australian Government Guidelines for Health Risk Assessment) such as air quality impacts on children, other chronic effects, and other additional morbidity effects of short-term exposure but for which there is a widely acceptable evidence base supporting their likely occurrence.

Assessment of Air Quality:

- The assessment of air quality-related health impacts follows a health risk assessment approach, focussing on quantification of health endpoints from exposure to a range of air pollutants. The methodology used is adequate. The range of air pollutants addressed is adequate. The range of health endpoints considered is also adequate and follows Australian evidence and guidance.
- However, the range of health endpoints addressed could be expanded to include others for which solid exposure-response coefficients exist, for example, group A coefficients provided in the WHO HRAPIE Project report¹.
- It is also not clear what baseline incidence rates were used (Sydney average or Liverpool/suburb rates). If Sydney rates are used, this may have resulted in a small underestimation of risks.
- Risks are estimated for 2030 and 2063 snapshots and separately for each pollutant. An
 overview of the expected scale of impacts resulting from the combined effect of all
 pollutants should be provided to provide a picture of the total risk to the exposed

¹ Table 1. CRFs recommended by the HRAPIE project, p5-11

- communities. It would also have been useful to include stage 1 predictions at full capacity (2050).
- Risks could also have been provided for the entire assessment period e.g. 30 years and not
 just for the snapshots. Discussion of the uncertainty around estimates could be enhanced,
 for example through the use of the upper and lower 95% confidence interval values of the
 exposure-response coefficients used. This would provide a better understanding of the likely
 range of actual impacts (for the worst-case unmitigated scenario).
- A general level of acceptability for estimated risks is used, stated to be accepted by regulatory agencies. This is for a risk between 1 x 10⁻⁶ (1 in a million) and 1x10⁻⁵ (1 in 100,000). The regulatory agencies should be named and references for this statement should be provided. Consideration should also be given to stakeholder perceptions of acceptability of risk.
- There is no discussion of the implication of the distribution of effects for inequality and equity although baseline information on sensitive/vulnerable groups is provided.
- Community feedback and any potential perceptions or concerns of local residents are not
 discussed. Community feedback on health concerns should be described and how this
 feedback was considered and addressed in the assessment should be described. Where
 community comments have not been incorporated or addressed an explanation justifying
 this should be presented. If there were no specific comments or concerns about health
 impacts/effects or some determinants of health then this should also be stated explicitly.
 There should also be a discussion of how communities were consulted in regards to
 potential impacts on health.
- Perception effects are different from biological or epidemiological risks, can cause stress and anxiety, and should be considered separately from mortality and morbidity effects.
- Mitigation measures are not discussed; readers are cross-referred to the air quality chapter.
 An outline of proposed measures (i.e. an air quality management framework or plan) should be provided in the health chapter and an explanation provided for how and to what extent these measures will mitigate the identified health impacts.

Assessment of Noise:

- The assessment of noise-related health impacts follows a health risk assessment approach, focussing on quantification of health endpoints from exposure to a range of noise. The quantitative methodology used is adequate. The range of noise metrics used is adequate. The range of health endpoints considered is also adequate and follows Australian and international evidence and guidance, namely the enHealth Guidance Health Effects of Environmental Noise other than Hearing Loss (enHealth, 2004). Risks are estimated for 2030, 2050 and 2063 periods for three different operation phase scenarios.
- A qualitative analysis and discussion of impacts/risks/effects on vulnerable/sensitive groups and on health inequality/equity issues has not been undertaken.
- There is no discussion of the implication of the distribution of effects for inequality and equity.
- Community feedback and any potential perceptions or concerns of local residents are not discussed. Community feedback on health concerns should be described and how this feedback was considered and addressed in the assessment should be discussed. Where

community comments have not been incorporated or addressed an explanation justifying this should be presented. If there were no specific comments or concerns about health impacts/effects or some determinants of health then this should also be stated explicitly. There should also be a discussion of how communities were consulted.

- Perception effects are different from biological or epidemiological risks, can cause stress and anxiety and should be considered separately from mortality and morbidity effects.
- Mitigation measures are only discussed in passing and readers are cross-referred to the
 noise chapter. An outline of proposed measures (i.e. a noise management framework or
 plan) should be presented in the Health Chapters and an explanation provided for how and
 to what extent these measures will mitigate the identified health impacts.

Assessment of Water Quality:

A complete health risk assessment is not provided for water quality due to the limitations in water quality sampling (i.e. only 1997 data was available; no new data was collected for this EIS). A more complete assessment is required that includes a clear list of assumptions, a description of population affected, and an assessment of impacts on vulnerable receptor population groups.

Review of Overall Report:

The description of the context and requirements for the HRA are generally sufficient. It would have been advantageous to understand why only an HRA was undertaken and not a full HIA, considering that the Health Chapters recognize the significance of the social determinants of health. The population health profile was very limited in scope and is missing clarification for why only certain information is provided. Consideration of vulnerable populations is based around SEIFA scores only and again, it should be explained why only these scores, and not additional indicators of disadvantage are included. Any further information that is included in other chapters in the draft EIS should be referenced within the Health Chapters.

Coverage of Health Topics:

The health risks described in the Health Chapter (air quality, noise and water) shows that some key determinants of health have been considered in reasonable detail. However, the potential inequality/inequity impacts have not been sufficiently assessed or discussed. This is a significant gap.

Some key determinants either do not seem to have been considered anywhere in the draft EIS or have not been considered and discussed in relation to health impacts in the Human Health Chapter and appendix. The approach taken to considering health impacts in the Health Chapters is narrow and does not take into account the findings of other health-relevant assessments, such as in the social impact assessment (SIA). This has resulted in key environmental and social determinants of health not being considered. The scoping process whereby the decision to focus on air quality, noise and water is unclear so it is not possible to assess whether the narrow focus is justified. However given the current level of evidence on the effects of airports on health as well as the more general evidence base around the social determinants of health, it is likely that relevant health impacts are missing from the Health Chapters. The 'non health' sections of the draft EIS do however contain information about a number of significant impacts on the determinants of health (e.g. housing affordability, visual amenity). The majority of these relevant health determinants are covered within

the SIA. These have not been identified as health impacts and the range and magnitude of potential health outcomes resulting from these impacts have not been assessed.

Long Term Development Findings

The long-term development section (Chapter 39, Section 8) provides a summary of the long term health impacts that are discussed in more detail in the appendix. While the report does, at times, make reference back to the appendix, there is a lot of pertinent detail that is missing that should be referenced to the appendix. This section also lacks core components for clarity – such as discussing the methods used or mitigation measures - that would make this section acceptable as a standalone piece of work without having first read the appendix. This section also misses any discussion of long term cumulative impacts. Cumulative impacts are considered elsewhere in the report however this report does not make clear if the cumulative impact assessments were used in this assessment. It would be particularly relevant to include discussion of cumulative impacts here as there is no mention of health impacts in the cumulative impacts chapter. This section should also provide better characterisation of health impacts or otherwise provide a reference to where it is located in the appendix.

Key Impacts and Opportunities

The Health Chapter contains predictions of the attributable health outcomes from air and noise exposures in communities near the airport. The majority of outcomes for air quality were below accepted thresholds, however there were some exceedances for Particulate Matter 10, Particulate Matter 2.5, and Nitrogen Dioxide. Impacts from noise were also mostly below standards, however, impacts varied widely for different communities, with Luddenham likely to experience the most impacts associated with noise. Sufficient data was not available to conduct a complete HRA for ground water and surface water, therefore there are no predicted health impacts.

The Health Chapter and appendix utilises a Health Risk Assessment approach. This is a quantitative methodology that takes changes to these environmental determinants and estimates their risk to health (i.e. the chances or risk of a disease or fatality occurring). This narrow approach does not address the full range of determinants of health and makes no use of the large evidence base on the association between health determinants, particularly social, and health outcomes.

There are two major weaknesses in relation to the assessment of health impacts that the review team strongly recommend be addressed in order to ensure that health effects are not overlooked or not taken into account when mitigation/enhancement is being considered. These are: the reporting of the identified health impacts; and the scope of the impacts included in the health chapter.

1. Introduction

This report details the findings of a peer review conducted on the Western Sydney Airport (WSA) draft Environmental Impact Statement (EIS). The peer review was commissioned by WSP/Parsons Brinckerhoff to examine the quality of the health and human impacts considered within the draft EIS. The review was conducted by a team of international experts in health impact assessment (HIA) and was led by researchers from the Centre for Health Equity Training, Research and Evaluation (CHETRE) at the University of New South Wales (UNSW). The review was conducted rapidly over 2 weeks in order to fit within the public comment period for the draft EIS. The findings of this review may be used by the consultant to inform the Western Sydney Regional Organisation of Councils (WSROC) and Macarthur Region of Councils (MACROC) in their comments on the draft EIS.

2. Approach

Health Impacts of Airports

Human health is a broad concept that encompasses more than the absence of disease. "Health is a state of complete physical, social and mental wellbeing and not simply the absence of disease or infirmity," it is a "resource for everyday life, not the objective of living; it is a positive concept, emphasizing social and personal resources, as well as physical capacities." This understanding recognises that though illness and disease (mortality and morbidity) are useful ways of measuring health, they need to be fitted within a broader understanding of health and wellbeing.

It is important to note that health is influenced by a very broad range of factors – the determinants of health (see figure 1⁴). These can be categorized as inherent factors, lifestyles and behaviours, socio-economic and environmental conditions, and access to services. These determinants are affected by development proposals (policies, plans, programmes and projects) from all sectors of society. Therefore, health is influenced by actions from all sectors and not just the health sector. Infrastructure projects, and airport development in particular, can have a wide range of impacts including on several determinants of health, therefore directly, indirectly, in-combination (synergistically) and cumulatively impacting on health.

Anything which alters a determinant of health, such as those listed in Table 1, may as a consequence, have an impact on health. Impacts on health determinants can be thought of as leading to changes in health outcomes such as communicable diseases, non-communicable diseases, physical injury, mental health and wellbeing, and nutrition-related disorders.

² WHO, 1948. Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference, New York, 19-22 June, 1946; Official Records of the World Health Organization, no. 2, p. 100

³ WHO Regional Office for Europe, 1984. Health Promotion. Summary report of the Working Group on Concept and Principles of Health Promotion, Copenhagen, 9-13 July 1984

⁴ Barton, H. and Grant, M., 2006. A health map for the local human habitat. Journal of the Royal Society for the Promotion of Public Health, 126 (6) pp252-261.

Table 1 Examples of Key Determinants of Health

Fixed	Social and Economic	Lifestyles & Behaviours	Access to Services	Environmental
• Genes • Sex • Ageing	 Poverty Employment Social exclusion Community structure and infrastructure 	 Diet Physical activity Smoking Alcohol Sexual behaviour Drugs Coping skills 	EducationHealth servicesSocial servicesTransportLeisure	 Safe water and clean air Healthy workspaces Safe housing

Source: enHealth 2001⁵, Adapted from UK DOH⁶ Inset 1A

Impact assessment, an important decision-support tool, providing information to decision makers on the impacts of proposed action and their management, needs to cover health impacts adequately to be fit-for-purpose. Historically, health impacts within environmental impact assessment (EIA) have been addressed narrowly, assessing only changes to traditional environmental determinants such as air quality, noise or water quality. Health Risk Assessment (HRA) is a quantitative methodology that takes changes to these environmental determinants and estimates their risk to health (i.e. the chances or risk of a disease or fatality occurring). This narrow approach does not address the full range of determinants of health and makes no use of the large evidence base on the association between health determinants, particularly social, and health outcomes. The narrow approach has over the years been found to be of limited use to policy and decision-makers and a fuller, more comprehensive qualitative and quantitative assessment of health impacts is often called for. This has

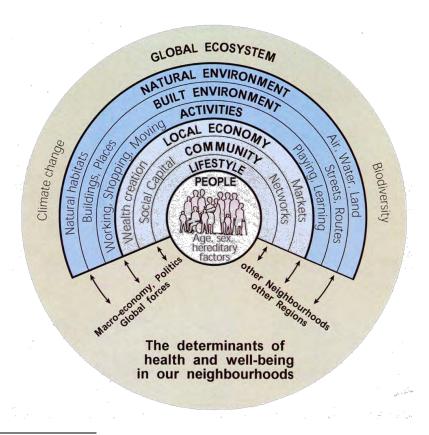


Figure 1 Determinants of Health (Barton and Grant, 2006)

Department of Health, UK, 2000. A resource for Health Impact Assessment. http://www.doh.gov.uk/london/healthia.htm

occurred internationally as well as in Australia, with guidelines and practical guides published on how to undertake a comprehensive assessment of health impacts^{7 8}.

What is Health Impact Assessment?

The international Gothenburg Consensus definition of HIA is:

"A combination of procedures, methods and tools by which a policy, program or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population." 9

The more recent International Association for Impact Assessment's definition of HIA, which updates the earlier Gothenburg Consensus definition, is that HIA is:

"A combination of procedures, methods and tools that systematically judges the potential, and sometimes unintended, effects of a policy, plan, programme or project on the health of a population and the distribution of those effects within the population. HIA identifies appropriate actions to manage those effects." ¹⁰

The aim of HIA is to inform and add value to the decision-making process by providing a systematic analysis of the potential impacts as well as recommending options, where appropriate, for enhancing the positive effects, mitigating the negative ones and reducing health inequities/inequalities. It uses a psycho-social definition of health and considers the full range of environmental and social determinants of health. To do this HIA uses a range of structured and evaluated sources of qualitative and quantitative evidence that includes public and other stakeholders' perceptions and experiences as well as public health, epidemiological, toxicological and medical knowledge. It is the preferred methodology to ensure development proposals are undertaken in a way that safeguards the health and wellbeing of affected communities, promotes health opportunities, reduces health inequalities and promotes health equity. HIA is therefore particularly concerned with the distribution of effects within a population, as different groups are likely to be affected in different ways, and therefore looks at how health and social inequities/inequalities might be reduced or widened by a proposed plan or project.

The World Health Organization (WHO) describes health equity as:

"...the absence of avoidable or remediable differences among groups of people, whether those groups are defined socially, economically, demographically, or geographically. Health inequities therefore involve more than inequality with respect to health determinants and access to the resources needed to improve and maintain

⁷ enHealth, 2001. Health Impact Assessment Guidelines. Australia

⁸ Harris, P., Harris-Roxas, B., Harris, E., & Kemp, L., 2007. Health Impact Assessment: A Practical Guide, Sydney: Centre for Health Equity Training, Research and Evaluation (CHETRE). Part of the UNSW Research Centre for Primary Health Care and Equity, UNSW.

⁹ European Centre for Health Policy, WHO Regional Office for Europe, 1999. Gothenburg Consensus Paper on Health Impact Assessment. Main Concepts and Suggested Approach

¹⁰ Quigley, R., L. den Broeder, P. Furu, A. Bond, B. Cave and R. Bos 2006. Health Impact Assessment International Best Practice Principles. Special Publication Series No. 5. Fargo, USA: International Association for Impact Assessment.

health or health outcomes. They also entail a failure to avoid or overcome inequalities that infringe on fairness and human rights norms.

Reducing health inequities is important because health is a fundamental human right and its progressive realisation will eliminate inequalities that result from differences in health status (such as disease or disability) in the opportunity to enjoy life and pursue one's life plans.

A characteristic common to groups that experience health inequities—such as poor or marginalized persons, racial and ethnic minorities, and women—is lack of political, social or economic power. Thus, to be effective and sustainable, interventions that aim to redress inequities must typically go beyond remedying a particular health inequality and also help empower the group in question through systemic changes, such as law reform or changes in economic or social relationships." ¹¹

Internationally the WHO Commission on the Social Determinants of Health in "Closing the Gap in a Generation" (2008) and the Marmot Review in the UK in "Fair Society, Healthy Lives" (2010) demonstrated and advocated for the importance of considering health inequities and inequalities when assessing the health and wellbeing impacts of policies and projects. 12 13

Relevant Determinants of Health for Airport Development

An airport is a large infrastructure project. Like any large infrastructure, a considerable construction phase is anticipated, followed by a very long operation phase. Decommissioning is not always clear and may never occur. As with other infrastructures with a large requirement for land/space, an airport has the potential to affect the full range of health determinants and not just those related to air transport. For example, communities may need to be relocated, greenspace may be lost, employment may be generated and lost, economic development may be fostered or changed, opportunities for learning ad education may be provided or disrupted, pollutants may be emitted to the air, water and soil, activities may generate noise, physical barriers may be erected, and traffic patterns may be altered to name just a few. Consequently, a wide range of health impacts can potentially occur. These need to be systematically identified, scoped, analysed and managed as part of comprehensive impact assessment process.

3. Methods

A review framework was developed based on existing guidelines for reviewing assessments and reporting of human health and wellbeing impacts. A Review Package for Health Impact Assessment Reports of Development Projects formed the core review framework. This framework has been used

¹¹ World Health Organization (WHO). (2015). Equity. Health systems. Available at http://www.who.int/healthsystems/topics/equity/en/

¹² World Health Organization (WHO). (2008). Closing the gap on a generation: Health equity through action on the social determinants of health. Commission on Social Determinants of Health. Available at: http://www.instituteofhealthequity.org/projects/commission-on-social-determinants-of-health

¹³ The Marmot Review. (2010). Fair Society, Healthy Lives: Strategic Review of Health Inequalities in England post-2010.

extensively over the last six years,¹⁴ including by the Wales Health Impact Assessment Support Unit, South Cambridgeshire District Council¹⁵ and Bristol City Council in the UK.¹⁶ The Review Package was also used to review an HIA on proposals for expansion at London City Airport for the London Borough of Newham. It has also been used to assess 55 HIAs in both Australia and New Zealand.¹⁷

A Guide for the Evaluation of Health Impact Assessments Carried Out Within the EIA Process, ¹⁸ published this year, was also analysed and incorporated into the review package to enhance the peer review framework and methodology described in A Review Package for Health Impact Assessment Reports of Development Projects. This Australian guidance was developed at the WHO Collaborating Centre for Environmental Health Impact Assessment.

Lastly, specifications for the draft EIS, the Environment Protection and Biodiversity Conservation Act (EPBC) guidelines, were also taken into account in developing the review framework (See Table 2 for details).

The final review framework considers both the possible and likely health and wellbeing effects as well as the distribution of those impacts and health equity issues, and the fulfilment of draft EIS guidance.

Components of the Draft EIS Considered in the Review

In accordance with the commissioned work, a comprehensive review was conducted on the Community Health Appendix (G) and the Human Health Chapter (Volume 2, Part D) (Health Chapters). In order to complete the review frameworks, the following parts of the EIS were considered although not fully reviewed in detail:

- Volume 1
 - Executive Summary
 - o Part A Project Background
 - o Part B Airport Plan
- Volume 2
 - Chapter 9 Approach to Impact Assessment
 - Chapter 27 Cumulative Impact Assessment
 - o Part E Environmental Management
 - Part F Conclusions
- Volume 3

o Chapter 39, Section 8 – Human Health

- Part H Conclusion and recommendations
- Volume 4

14

¹⁴ Winge Fredsgaard M, Cave B and Bond A. A review package for Health Impact Assessment reports of development projects. Leeds, UK: Ben Cave Associates Ltd. (2009).

¹⁵ https://www.scambs.gov.uk/content/health-impact-assessment-spd

¹⁶ Bristol City Council. Planning a healthier Bristol: Assessing the health impacts of develoment. 2013. Bristol City Council. Planning a healthier Bristol: Assessing the health impacts of develoment. 2013.

¹⁷ Haigh F, et al. "The effectiveness of health impact assessment in influencing decision-making in Australia and New Zealand 2005–2009." BMC public health 13.1 (2013): 1188.

¹⁸ Spickett J and Katscherian D, A Guide for the Evaluation of Health Impact Assessments Carried Out Within the EIA Process, WHO Collaborating Centre for Environmental Health Impact Assessment, Curtin University.

- o Appendix E Noise
- Appendix F Air quality
- Appendix P1 Social impact
- Appendix P3 Economic analysis

Review of Past Airport HIAs

Prior to beginning the peer review, the review team carried out a review of past airport HIAs in order to identify the existing evidence on the likely and potential health and wellbeing impacts of airports in settings similar to the proposed Western Sydney Airport (WSA).

Criteria for inclusion in the review were:

- Comparability to WSA
- Availability of report
- Recent (<5 years)
- Fulfilled basic quality criteria in terms of reporting (in particular adequate descriptions of methods used and findings)

Exclusion criteria were:

 Health Risk Assessments that only considered a narrow range of impacts (e.g. noise, air quality)

The review team identified 13 Airport HIAs. Three of which satisfied the inclusion criteria:

- 1. HIA of proposed expansion to Billy Bishop Toronto City Airport
- 2. HIA of London Luton Airport
- 3. The Stanstead Generation 2 Project HIA¹⁹

Impacts were categorised according to type of health impact (e.g. environmental, economic, sociocultural), activity (e.g. air traffic movements, traffic, construction), and the potential health outcome (e.g. respiratory effects, mental health).

An initial review of the Health Chapters was carried out to identify health topics covered. These health impacts were subject to peer review using the peer review framework. This peer review was commissioned to focus on the Health Chapters, however, it became apparent that significant areas of potential health impact were missing from the health chapter and technical report. The review team carried out an additional search of the technical documents within the appendix to identify whether there were relevant health impacts included within the draft EIS that had not been included in relevant health sections. A discussion of the impacts located in sections of the draft EIS outside the Health Chapters is in Section 5 of this report.

Limitations

The framework developed for this peer review enables a comprehensive assessment of the draft EIS Health Chapters, however there are limitations to our review. Primarily, the review team were limited to conducting a review of the health impacts included in the health chapters. Given that

¹⁹ This HIA was outside of the time criteria but is considered an early example of a comprehensive HIA submitted as part of a planning application and alongside an EIS

these were limited to only noise, air quality, and water impacts, the review team were not able to further discuss the potential significant impacts associated with airport development, such as changes to employment, transportation, amenity, and housing. Also, given the significant time restraints of the review, the review team were not able to assess the validity of the calculations used in predicting health outcomes. Validity of the findings in the HRA were based upon what was included in the health appendix, which did not include all necessary methods and formulas to test the findings. The review team were limited to discussing the assumptions used in the methods, any limitations with the methods used, and the presentation of the findings. Furthermore, without a comprehensive health impact assessment included in the draft EIS, the review team were limited in the types of recommendations we could make.

4. Detailed Findings – 1st Stage Airport

This section details the findings of the peer review conducted on the Health Chapters for 1st Stage Airport development. The findings are presented according to different components of the review: compliance of the Health Chapter with draft EIS guidance (Table 2); assessment of health pathways included in the draft EIS – air quality (Table 3), noise (Table 4), water quality (Table 5); and components of the overall report such as the context and baseline health profile (Table 6).

Table 2 Compliance of the Report with Draft EIS Guidelines (EPBC Act)

Requirement		Comment	Recommendation
1.1. Reporting			
shou stake unde cons deve	draft EIS [health chapters] uld enable interested eholders and the Minister to erstand the environmental sequences of the proposed elopment. (1 General tent)	The Health Chapters of the draft EIS identify, describe and discuss the health consequences of changes to noise, air quality and the water environment from the proposed development. Some of this information is presented in a way that makes it difficult for interested stakeholders to fully understand the scope and scale of the potential health impacts. Health consequences associated with potential changes in other environmental and social determinants of health are not addressed in the Health Chapters. An example is risk of road traffic accidents and injuries associated with project-induced traffic.	The Health Chapters of the draft EIS should assess the health impacts/effects of changes in the full range of environmental and social determinants of health due to the proposed development. Key additional health consequences and or determinants of health to consider are (not an exhaustive list): effects on services and amenities; traffic and transport, in particular road traffic accidents and injuries; employment (see Table 8 about the main health determinants influenced by airports and airport-related developments). Findings should be presented in a way that helps the reader to understand the scale of

Requiremen	t	Comment	Recommendation
		Equally importantly, the potential unequal and inequitable impacts/effects to affected communities and vulnerable/sensitive subgroups are not analysed or discussed.	the population affected, by determinant of health, and also what the synergistic impacts are likely to be to various communities from exposure to the combined hazards.
1.1.2.	Information provided in the draft EIS [health chapters] should be objective, clear, and succinct and, where appropriate, be supported by maps, plans, diagrams or other descriptive detail. (1 General Content)	Health Chapters mostly fulfil this requirement. See 1.1.3.	None at this time.
1.1.3.	The body of the draft EIS [health chapters] is to be written in a clear and concise style that is easily understood by the general reader. Technical jargon should be avoided wherever possible. Cross-referencing should be used to avoid unnecessary duplication of text. (1 General Content)	Health chapters mostly fulfil this requirement. One subsection where technical jargon is used without a subsequent description of what it entails is the final paragraph of section 13.8.3: "The health risk assessment predicts an increase in cancer risk attributable to diesel particles ranging from 1.3 x 10-6 to 8.4 x 10-6 per 1µg/m³. Accordingly, the resultant cancer risk estimates are demonstrated to fall within levels for risk generally considered acceptable to regulators (by two orders of magnitude)."	Make this paragraph more clear and understandable. HRA should use consistent measurements of risk, and detail risk according to the community impacted, in terms of geographic areas and/or by vulnerable/sensitive subgroups, to allow the audience a quicker and more accessible understanding of the information.

Requiremen	t	Comment	Recommendation
		It may be difficult for the general public to understand the magnitude of the risk involved i.e. a low risk.	
1.1.4.	The level of analysis and detail in the draft EIS [health chapters] should reflect the level of significance of the expected impacts on the environment. (1 General Content)	Assuming that the most significant health risks are those related to changes in air quality, noise and the water environment, the level of analysis and detail presented in the Health Chapters of the draft EIS is reflective of the potential significance of these determinants of health. However, what has not been considered is the full range of environmental and social determinants of health, related potential health impacts/effects/risks and inequality/equity issues. This is an omission.	The Health Chapters of the draft EIS should address the full range of environmental and social determinants of health, related potential health impacts/effects/risks and inequality/equity issues with a level of analysis and detail reflective of their likely significance.
1.1.5.	Any and all unknown variables or assumptions made in the assessment must be clearly stated and discussed. The extent to which the limitations, if any, of available information may influence the conclusions of the environmental assessment should be discussed. (1 General	Not all unknown variables, assumptions, and limitations are included in the assessment. For example, using region level baseline statistics in the HRA calculations introduces errors that affect the precision of the predications stated (e.g. 6 death over 100 years), in that using the central value for the exposure response coefficients is the best "guess" but there is a 95% confidence interval (CI) that should be stated. The predictions should be understood	There should be qualitative discussion and analysis of health impacts/effects where quantification is not currently recommended by national guidance (e.g. Australian Government <i>Guidelines for Health Risk Assessment</i>). Uncertainties should be more clearly discussed including by presenting and discussing confidence intervals.

Requirement	Comment	Recommendation
Content)	as a best estimate, recognising there is some	
	variance around the estimate but that the	
	true value (for a worst case unmitigated	
	scenario) is likely to lie within that order of	
	magnitude.	
	The scientific literature shows that the range	
	of health impacts/effects associated with	
	exposure to air pollutants is broader than the	
	range of health impacts/effects for which	
	internationally accepted exposure-response	
	coefficients exists (i.e. where good quality	
	research has identified exposure-response	
	coefficients and there is international	
	scientific consensus). This means that there	
	are health impacts known to occur from	
	exposure to air pollution (e.g. some air	
	quality-related health impacts on children,	
	some chronic effects such as incidence of	
	chronic bronchitis in adults) but the level of	
	health impacts/effects associated with a	
	certain level of pollution exposure is uncertain	
	or unknown.	
	These health impacts/effects and the	
	uncertainty around their extent/magnitude	
	are not considered or discussed.	

Requiremen	t	Comment	Recommendation
		The implications of future population growth	
		are also not addressed.	
1.2. Prir	nciples of Ecologically Sustainable D	Development	
Requiremen	t	Comment	Recommendation
The Propone	nt should ensure that the draft EIS		
-	ters] assesses compliance of the		
	he principles of Ecologically		
Sustainable	Development:		
1.2.1.	Decision-making processes	While vulnerable populations are identified	The human health chapter of the draft EIS
	should effectively integrate both	e.g. those with high levels of deprivation,	should assess distribution of potential health
	long-term and short-term	health impacts/effects are not assessed for	impacts and consider assessing health impacts
	economic, environmental, social	their potentially disproportionate distribution	for the entire assessment period, e.g. 60
	and equitable considerations. (1	(inequalities/inequity).	years, both quantitatively (e.g. report
	General Content)	Health impacts/effects are quantified for	attributable cases for this period) and
		'snapshots' in time and not over the whole life	qualitatively.
		of the project.	There should also be discussion of the
		of the project.	synergistic or in-combination impacts/effects.
		Synergistic or in-combination impacts/effects	syncigistic of in combination impacts/circus.
		are not considered and discussed.	
1.2.2.	If there are threats of serious or	None at this time.	None at this time.
	irreversible (health relevant)		
	environmental damage, lack of		
	full scientific certainty should		

Requiremen	t	Comment	Recommendation
	not be used as a reason for postponing measures to prevent environmental degradation. (Attachment 1 3A(b))		
1.2.3.	The principle of intergenerational equity – that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations –should be addressed. (Attachment 1 3A(b))	The Health Chapters do not take into consideration inequality, equity, or intergenerational impacts/effects.	There should be discussion of inequality, equity, or intergenerational impacts/effects.
1.3. Asses			
Requiremen	t	Comment	Recommendation
1.3.1.	A detailed assessment of the nature and extent of the likely short-term and long-term relevant impacts (detailing direct and indirect impacts) is provided. (Relevant Impacts 5(a))	The health impacts that are addressed in the Health Chapters of the draft EIS are described in terms of their characteristics, specific health endpoints (range of mortality and morbidity endpoints) for both the construction and operation phases; and their magnitude/extent. However, as described in 1.1.1 the health impacts/effects associated with potential	The health implications of impacts on social determinants of health currently included in other draft EIS chapters should be addressed and included in the Health Chapters.

Requiremen	t	Comment	Recommendation
		changes in environmental (other than noise, air quality and water quality) and social determinants of health are not addressed.	
1.3.2.	A statement whether any relevant impacts are likely to be unknown, unpredictable or irreversible is provided. (Relevant Impacts 5(a))	For the impacts discussed, all are considered to be likely for a scenario where mitigation measures are not in place. It is considered that with mitigation in place, impacts are likely to be lower. Unknown, unpredictable or irreversible impacts are not discussed (e.g. relocation of local residents). There is also no discussion of residual impacts/effects after mitigation is in place.	See 1.3.1 The significance and implications of the residual impacts/effects should also be addressed.
1.3.3.	An analysis of the significance of the relevant impacts is provided. (Relevant Impacts 5(a))	Impacts and effects are discussed in terms of their significance to national and international guidance, standards and thresholds. Significance is assumed to be defined in terms of national and international guidance, standards and thresholds. There is no discussion of the significance of impacts/effects to affected communities i.e. community perception of risks.	Consider including a broader discussion of the significance of the health impacts/effects for affected communities (e.g. community perception of risks).
1.3.4.	Any technical data and other information used or needed to make a detailed assessment of	Most underlying technical data regarding the environmental exposures to noise, air or water pollutants is not presented in the	See Air Quality and Noise Review Tables. The actual worked out health impact

Requirement	Comment	Recommendation
the relevant impacts are discussed. (Relevant Impacts 5(a)) 1.3.5. The draft EIS [health chapters] should identify and address cumulative impacts, where potential project impacts are in addition to existing impacts of other activities (including known potential future expansions or developments by the proponent and other proponents in the region and vicinity). (Relevant Impacts 5(b))	Health Chapters. There are cross-references to the respective Noise, Air Quality and Water Quality chapters. No exposure-response coefficients for the quantification of health impacts/effects/risks are provided nor are the actual worked out calculations presented. Some key references are also missing from the methods. For example the sources of the exposure response functions for pm10 and pm2.5 (EPHC, 2011; HEI, 2009) are not included in the reference section. Cumulative impacts from potential future expansions or developments by the proponent and other proponents in the region and vicinity are not discussed. There is a cumulative impact chapter (volume 2 chapter 27) but this does not have a specific section on the implication for health of the cumulative impacts of other projects occurring around the proposed development.	calculations and exposure-response coefficients used should be presented and discussed. All references to enable a review of the methods should be provided. The health impacts/effects/risks of potential cumulative impacts should be discussed in the cumulative impact chapter and the health chapter should reference this and the air quality, noise and other health relevant sections in the cumulative impact chapter.
1.3.6. Aircraft noise and vibration impacts on everyday activities and on sensitive environmental	Vibration and its potential health and wellbeing impacts/effects/risks (e.g. disturbing sleep patterns, annoyance and	There should be discussion and assessment of the health impacts/effects/risks to other sensitive receptors and population sub-

Requiremen	t	Comment	Recommendation
	receptors (all sensitive receptors within the community and natural environment) are discussed. (Relevant Impacts 5(g))	wellbeing effects) are not discussed. Noise impacts are discussed for learning impairment and interference with sleep (as well as other morbidity endpoints). Noise impacts on schools (sensitive receptors) are discussed. However, sensitive receptors are narrowly scoped to only looking at schools. There is no discussion of other sensitive receptors e.g. hospitals, nursing homes.	groups. There should also be discussion of the health impacts/effects/risks of vibration.
1.3.7.	The draft EIS should consider: noise and vibration from construction activities and machinery changes in traffic movements during construction and operation (associated with both passenger movements and workers) changes to air quality during construction and operation (including consideration of seasonal and meteorological variations that influence local air quality)	Noise from construction activities is considered. Vibration from construction activities and their potential health and wellbeing impacts/effects/risks (e.g. disturbing sleep patterns, annoyance and wellbeing effects) are not discussed. Changes to road traffic movements and their potential health consequences (severance, risk of road traffic accidents and injuries) are not considered except for their noise and air quality implications. Changes to air quality and their health effects	The potential health impacts/effects/risks from road traffic changes e.g. severance and road traffic accidents and injuries (this not an exhaustive list) should be assessed and discussed. The potential health impacts/effects/risks on local communities from changes in the qualities and characteristics of the surrounding areas (including land values and other economic impacts) should also be assessed and discussed. The potential health impacts/effects/risks (e.g. associated with levels of physical activity, access to greenspace and nature) from

Requirement	Comment	Recommendation
 potential fuel dumping impacts lighting impacts on everyday activities and on sensitive environmental receptors (all sensitive receptors within the community and natural environment) change in qualities and characteristics of the surrounding areas and associated impacts to local communities (including land values and other economic impacts) Creation of any risks or hazards to people or property that may be associated with any component of the action. changes in recreational use and amenity of natural areas (Relevant Impacts 5(g)) 	are considered. Potential fuel dumping is considered. The potential health impacts/effects/risks on local communities from changes in the qualities and characteristics of the surrounding areas (including land values and other economic impacts) have not been discussed. The potential health impacts/effects/risks from changes in recreational use and amenity of natural areas have not been discussed. Some health-relevant issues (e.g. traffic, local amenity, visual impacts) are discussed in the social chapter (Volume 2, Chapter 23), but they are not discussed or referenced in the health chapter.	changes in recreational use and amenity of natural areas should also be assessed and discussed. See 1.3.1
 1.3.8. Quantification and assessment of impacts should: be against appropriate background/baseline levels 	Quantification of health impacts/effects/risks is in relation to existing rates of disease and existing burden of ill health attributable to air pollution.	The assessment should consider and develop a broader health and wellbeing baseline (taking into account of the full range of environmental and social determinants of

Requirement	Comment	Recommendation
 be prepared according to best practice guidelines and compared to best practice standards consider seasonal and temporal variations where appropriate (including temporal changes in the sensitivity of the receptor) be supported by maps, graphs and diagrams as appropriate to ensure information is readily understandable Guidelines and standards used to quantify baselines and impacts should be explained and justified. (Relevant Impacts 5(g)) 	However, the baseline health conditions are narrowly defined both in terms of scope (a narrow range of health impact/effects/risks and no consideration of wellbeing) and geography (only Liverpool LGA). The assessment also does not adequately take into account future population growth. Impacts are assessed according to national guidance, namely the Australian Government Guidelines for Health Risk Assessment (enHealth 2012) and the National Health and Medical Research Council Approach to Hazard Assessment for Air Quality (NHMRC 2006). However, for future assessments, it is worth noting that the above guidance is based on outdated international (state-of-the-art) knowledge and guidance on quantification of health impacts from air pollution. The current state-of-the art is described in the World Health Organization HRAPIE and REVIHAPP reports. Impacts are assessed against national and international noise and air quality guidance, standards, and thresholds.	health), a geography that includes all affected populations, and the implications of future population growth. See 1.3.1

Requirement		Comment	Recommendation
1.3.9.	For information given in the draft EIS, the EIS must state: (a) the source of the information (b) how recent the information is (c) how the reliability of the information was tested (d) what uncertainties (if any) are in the information (e) what guidelines, plans and/or policies have been considered during preparation of the draft EIS. (Information Sources Provided in the EIS, 11)	Sources of health baseline data are presented. Dates for the information are provided. Policy guidelines are discussed in relation to air quality and noise however, there is no discussion of the public health policy context. Recent information is used for noise and air quality but not for water – the limitations of this are stated in the report. Uncertainties are not presented in terms of using confidence intervals.	The public health policy context should have been reviewed, summarised in the draft EIS and used to inform the scope and approach of the assessment. For example, there is no discussion or justification of why a health risk assessment approach was used instead of a health impact assessment approach. See 1.1.5.
1.4. Conclus			
Requiremen	t	Comment	Recommendation
acceptability	onclusion as to the environmental or of the proposal on protected st be provided, which includes:		

Requiremen	t	Comment	Recommendation
(Conclusion	12)		
1.4.1.	a discussion on how consideration has been given to the objects of the EPBC Act, the principles of ecologically sustainable development, and the precautionary principle	A discussion on how consideration has been given to the objects of the EPBC Act is provided. Principles of ecologically sustainable development, and the precautionary principle are not explicitly discussed.	See 1.2.3
1.4.2.	justification for undertaking the proposal in the manner proposed, including the acceptability of the avoidance and mitigation measures	Mitigation is not described in the Chapters but there is cross-referencing to air quality, water quality and noise chapters. There is no explanation of why the assessment only considers and assesses the health impacts/effects/risks of noise, air quality and water.	An outline of the mitigation framework/plan should be provided in the Health Chapters alongside cross-referencing to the air quality, noise and water quality chapters.
1.4.3.	If relevant, a discussion of residual impacts and any offsets and compensatory measures proposed or required for significant residual impacts on protected matters, and the relative degree of compensation and acceptability.	There is also no discussion of residual impacts/effects after mitigation is in place. See 1.3.2 There is no discussion of the acceptability of mitigation measures.	The significance and implications of the residual impacts/effects should be discussed. See 1.3.2 There should also be a consideration and discussion of the acceptability to the community of proposed mitigation and compensation measures.

Requirement	Comment	Recommendation

EPBC Compliance Comments:

Overall, the Health Chapters of the draft EIS (draft EIS volume 2, chapter 13, volume 4, appendix G) comply with most of the EPBC Guidelines.

The impacts that are considered in the human health chapters are those associated to changes in air quality, water quality and noise. Generally, these are assessed in detail in terms of nature and extent of short- and long-term impacts.

Some of the information is presented in a way that makes it difficult for interested stakeholders to fully understand the scope and scale of the potential health impacts. The information provided is not always, clear, succinct and supported by maps or other accessible materials. Technical jargon is generally avoided without losing technical precision or the validity of the statements made. Cross-referencing is used however summaries of the findings of other chapters often do not fully explain key issues. Not all sensitive population sub-groups or receptors have been considered.

The rational and justification for why a health risk assessment has been undertaken rather than a health impact assessment (HIA) are not discussed. There is existing national and state level guidance on the value of using HIA that should have been consulted in the development of the scope and methodology of the health assessment of the draft EIS. The key guidance documents are Health Impact Assessment Guidelines (enHealth, 2001), and Health Impact Assessment: A practical guide (UNSW and NSWHealth, 2007).

Ecologically sustainable development in relation to health is not considered.

Considering the most significant health impacts/effects/risks considered in the draft EIS are those related to changes in air quality, noise and water quality, the level of analysis and detail presented in the Health Chapters is reflective of the potential significance of these descriptors.

Recommendations for the Health Chapters of the draft EIS to better comply with EPBC guidelines are provided below:

• The Health Chapters of the draft EIS should assess the health impacts/effects of changes in the full range of environmental and social determinants of health and the potential inequalities/equity issues due to the proposed development. The level of analysis and detail

Requirement	Comment	Recommendation

should be reflective of their likely significance. Examples are changes to road traffic movements and their potential health consequences (community severance, risk of road traffic accident and injury), changes in qualities and characteristics of the surrounding areas (including land values and other economic impacts) and changes in recreational use, amenity of natural areas and access to greenspace and nature and their associated health and wellbeing impacts through, for example, changes to levels of physical activity; effects on services and amenities.

- Findings should be presented in a way that helps to communicate the scale of the population affected, by determinant of health, and also what the synergistic impacts are likely to be to various communities from exposure to the combined hazards.
- Not all unknown variables, assumptions, and limitations are included in the assessment. A specific comment relates to certain health impacts (e.g. air quality-related health impacts on children, other chronic effects such as incidence of chronic bronchitis in adults) known to occur from exposure to air pollution but for which the level (extent/magnitude) of the health impact associated with a certain level of pollution exposure is uncertain or unknown. These additional health impacts, for which quantification is uncertain or unknown, are not discussed. The Health Chapters should have considered and discussed health impacts where quantification is not currently recommended by national guidance (e.g. Australian Government *Guidelines for Health Risk Assessment*) such as air quality impacts on children, other chronic effects, other additional morbidity effects of short-term exposure but for which there is a widely acceptable evidence base supporting their likely occurrence (e.g. WHO REVIHAPP report).

Table 3 Health Pathways Included in the Draft EIS - Air Quality

Assessment		Comment	Recommendation
1.1 Descript	tion of health effects		
1.1.1	The potential health impacts/effects of the project, both beneficial and adverse, should be identified and presented in a systematic way. ²⁰	Health impacts/effects i.e. mortality and morbidity endpoints are presented systematically for short-term and long-term health effects in association with changes in both short-term and long-term exposure to air pollutants; health impacts are described for both the construction and operation (start of operation 2030 and full operation 2063) phases. Health impacts/effects are presented inconsistently and in a manner that makes it difficult to understand the potential scale of the impacts/effects across all the affected communities. Health impacts resulting from perceived risk and community concern have not been considered.	Develop summary tables that provide consistent presentation of potential health impacts. For example: "For health impact/effect A an X increase in PM2.5 would lead to an additional Y events per 100,000 population. In M town with a population of N this would mean an extra Z cases in the next ten years."
1.1.2	Has the exposure pathway been identified?	The exposure pathway for air quality is described from likely emission sources (during both construction and operation phases) to exposure of populations living within the vicinity of the airport.	None at this time.

²⁰ Does the identification of impacts consider short-term, long-term (and are these timescales defined?), direct and indirect impacts on health and well-being? Does the identification of health impacts distinguish between the construction phase, the operational phase and where relevant the decommissioning phase?

Assessment		Comment	Recommendation
1.1.3	Has an appropriate time period been considered for health and wellbeing impacts/effects?	Health and wellbeing impacts have been described for 'snapshot' years: 2030 and 2063.	Consider presenting impacts for the entire assessment period e.g. 33 years (from 2030-2063).
1.1.4	Has an appropriate range of possible future (health relevant) scenarios been considered?	A worst case scenario was considered. This is appropriate and in line with common practice.	None at this time.
1.1.5	What is the predicted exposure level or condition? How does this compare with the exposure standard (for environmental impacts/risks) or acceptable condition (for social, community or psychological impacts/risks)?	Exposure levels are described in figures and the highest exposure level is discussed in the text in relation to the national air quality standard.	None at this time.
1.1.6	What level of risk has been designated for this impact?	Risks have been considered to be low with the highest risk being for all-cause mortality from long-term exposures of 6 additional deaths per 10 years predicted for 2063.	None at this time.

1.1.7 What justification has been provided for this risk level? Ranking risks as low has been based on what is considered acceptable levels of risk ("It is generally accepted by regulatory agencies that an increase in risk between 1 x 10-6 (1 in a million) and 1x10-5 (1 in 100,000) is considered to be a low risk and within acceptable criteria") and against current deaths in Sydney ("According to Health Statistics NSW in 2012-13 Ranking risks as low has been based on what is considered threshold in the general introductory paragraphs on air quality rather than initrogen dioxide section so that it is clustered to be a low risk and within acceptable criteria") and against current deaths in Sydney ("According to Health Statistics NSW in 2012-13	
there were 10,127 deaths in the Western Sydney Local Health District due to all causes. This is in a population of 904,886 people. "). The human health chapter (volume 2 part D) discusses the widely accepted scientific consensus that there is no known safe level of exposure to key air pollutants below which there is no adverse health effect. However, this is only discussed under sub-section 13.10.3 on nitrogen dioxide when this is also true for the other air pollutants. In contrast in the health appendix (Appendix G) this is stated in the general introductory paragraphs to the air	in the lear that ts

Assessment	Comment	Recommendation
1.1.8 Has the weighting/significance of health impacts/effects/risks been described and is it appropriate? ²¹	Impacts are described as adverse; severity is implicit as impacts are for mortality (death) or a range of morbidity effects (hospital admissions	There should be a clearer discussion of certainty or uncertainty, how levels of uncertainty are taken, or not taken into account, and
 Direction: Whether the potential change would be beneficial or adverse Severity: More severe effects include 	for cardiovascular or respiratory effects or emergency visits for asthma).	assumptions used in the modelling and the calculation of predicted/forecasted health effects/impacts/risks.
those that are disabling, life- threatening, and permanent	Magnitude is described in terms of risk and attributable cases; likelihood is described in	Clarify whether population growth, and the
Magnitude: How widely the effects would be spread within a population or across a geographical area	terms of risk i.e. probability of occurrence, and described in the context of an unmitigated worst case scenario.	increase in people, affected by changes in air pollution, is taken into account in the estimation of magnitude.
 Likelihood: How likely it is that a given exposure or effect will occur. 	Certainty and uncertainty issues are implicit as	
Certainty: level of certainty or uncertainty attached to the predictions of health effects.	the evidence base supports a strong association/causation between exposure to air pollution and occurrence of health impacts.	
	Exposure response coefficients used are the central values. The uncertainty over the actual coefficients (captured by the 95% confidence intervals, CI) is not discussed.	

Does the assessment consider the severity of impact/exposure (intensity, reversibility and impact on vulnerable population groups), the impact magnitude (number of people affected and duration of impact/exposure) and the importance (political and ethical)? Have the health impacts of each alternative been assessed? Sometimes the health impacts are ranked and prioritized before making recommendations, if so; have the criteria for prioritizing and ranking health impacts been given?

Assessment		Comment	Recommendation
1.1.9	Does it take into account stakeholder and community concerns?	Stakeholder and community concerns are not discussed.	Community feedback on air quality and health (as well as other concerns) should be described and how this feedback was considered and addressed in the assessment should be discussed. Where community comments have not been incorporated or addressed an explanation justifying this should be presented. If there were no specific comments or concerns about noise and health then this should also be stated explicitly.
1.1.10	What mitigation measures have been proposed?	Mitigation measures for the operation are not described or discussed in this chapter. There is cross-referencing to the air quality chapter where the main mitigation is described and discussed. The reviewers have not reviewed the air quality chapter as this was not in the terms of reference for this review.	Provide in the Health Chapters a brief summary of the mitigation framework/plan and measures discussed in the air quality chapter.

Assessment		Comment	Recommendation
1.1.11	Has a residual health risk level been determined and mitigated where practicable?	There is no discussion of residual impacts/effects after mitigation. However, the risks assessed for worst case and unmitigated scenarios are estimated to be low and therefore implicitly the likely residual risks after mitigation would be even lower. The report seems to assume that mitigation measures will attenuate most risk without discussing what the remaining risk will be and how they could be further minimised through ongoing monitoring and evaluation of the effectiveness of the proposed main mitigation measures.	Even though the residual risks are likely to be low/very low there should be a discussion/explicit statement about the level and significance of the residual risks from air quality changes after mitigation strategies are taken into account.
1.1.12	Have community concerns been identified and adequately addressed?	Same as 1.1.9	Same as 1.1.9
1.1.13	The causal pathway leading to health effects should be outlined along with an explanation of the underpinning evidence. ²²	Causal pathways are described and evidence underpinning the pathway is detailed except for statements on the "international levels of acceptability" (discussed below in 1.2.2)	See 1.2.2

²² The potential health effects may be presented in diagrams, which show the causal pathways and changes in intermediate factors by which the project may affect population health, or may be descriptive.

Assessment		Comment	Recommendation
1.2 Risk asse	essment		
1.2.1	Have assumptions been made explicit and uncertainties considered and taken into account?	A range of assumptions underpinning the evidence base and the health impact/risk/effect calculation methods are discussed. Exposure response coefficients used are the central values. The uncertainty over the actual coefficients (captured by the 95% confidence intervals, CI) is not discussed.	Provide estimates for the health impacts/effects estimated as a central value and a range to provide a sense of what the possible magnitude/extent of the impacts/effects may be.
1.2.2	The report should identify and justify the use of any standards and thresholds used to assess the significance of health impacts.	Standards and thresholds used are identified: - NEPM air quality standards - "It is generally accepted by regulatory agencies that an increase in risk between 1 x 10 ⁻⁶ (1 in a million) and 1x10 ⁻⁵ (1 in 100,000) is considered to be a low risk and within acceptable criteria." – reference for this is not provided. While valid for cancer risk, the reviewer is unaware of its application or validity for mortality and morbidity effects from exposure to PM or NO ₂ .	It should be stated what regulatory agencies consider an increase in risk between 1 x 10 ⁻⁶ (1 in a million) and 1x10 ⁻⁵ (1 in 100,000) to be low and "within acceptable criteria" and references should be provided for this statement. In addition, the phrase "acceptable criteria" needs to be explained in terms of what is acceptable and to whom and again referenced.

Assessment		Comment	Recommendation
1.2.3	Have the methods used to calculate impacts been adequately described (e.g. replicability, transparency, sources of information identified)	Yes, the health Risk Assessment (HRA) method is described. The formulas/equations used are described in the chapter. However, the quantification of health impacts/effects makes use of "baseline health incidence rate/100,000 population" figures taken from "baseline health statistics for Sydney". It is unclear whether these figures are for the Sydney average or the relevant suburbs within 5 km of the airport site boundary. These figures are not presented in the human health chapter or the health appendix (appendix G) nor is a reference to their source provided.	It should be stated what "baseline health incidence rate/ 100,000 population" figures are used i.e. the Sydney average, suburb values or other area. A reference to the source of the information should be provided, and the actual rates should be presented as a table to enable the reader to understand the calculations made (enables replicability and transparency).
1.3 Analysis	of distribution of effects	Comment	Recommendation
1.3.1	The affected populations should be explicitly identified.	Affected populations are described geographically i.e. the suburbs within 5 km of the airport site boundary.	See also 1.1.8 in relation to population growth.

Assessment		Comment	Recommendation
1.3.2	Inequalities in the distribution of	Inequality and equity, as important concepts	There should be a discussion of how the
	predicted health impacts should	that should be considered as part of the health	distribution of health impacts/risks/effects
	be investigated and the effects of	assessment, are not discussed in the report.	between and within the suburbs/affected
	these inequalities should be		populations narrow or widen existing
	stated. ²³	Potential impacts/effects/risks in terms of	inequalities and whether these may be
		health inequalities or equity are not assessed or	inequitable.
		discussed.	There should also be a discussion of mitigation measures that could/are likely to reduce any
		There is some allusion to potential impacts on	identified health inequalities.
		inequality as the affected suburbs are rated in	
		terms of relative deprivation but there is no	
		discussion of whether the most deprived	
		suburbs, or suburbs with higher proportions of	
		vulnerable or sensitive group (e.g. children) are	
		more affected than other suburbs.	

²³ How does the report define inequalities? Inequalities are found between social groups and can be measured in different ways e.g. by geography, social class or social position, population (ethnicity, gender, sexuality etc.).

Assessment		Comment	Recommendation
1.3.3	Have populations more vulnerable to impacts/risk/effects been identified and discussed; and have mitigations been proposed?	Populations more vulnerable to air quality impacts have been identified, specifically elderly, people with existing cardiovascular and respiratory disease, people with asthma, low socio-economic groups/socially deprived, and children as groups likely to be more affected by exposure to air pollution and the reasons for this are discussed.	Develop a more detailed qualitative discussion of the health impacts/risks/effects of changes in air pollution on vulnerable groups described in Appendix G, and children specifically.
		However, differential impacts from exposure to the airport-related air pollution have not been discussed qualitatively or quantitatively except for PM _{2.5} and ozone and emergency department attendance in 1-14 year olds.	
		Mitigation measures aimed at these groups are not discussed in the health chapter or health appendix. There is cross-referencing to the air quality chapter however the reviewers has not reviewed the air quality chapter, as this was not in the terms of reference for this review, and therefore cannot give a judgment on the appropriateness of the proposed mitigation in terms of sensitive groups.	

Assessment		Comment	Dagaranaandatian
1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			Recommendation
sho	pacts/risks/effects on health ould be examined based on the pulation profile. ²⁴	The health impacts/effects have been calculated based on existing levels of mortality and morbidity. It appears that population projections have not been taken into account. Where results are presented as expected numbers of cases this is likely to be an underestimation given the expected increases in population. This is not identified clearly as a limitation.	Population projections should be included in the calculations or, at a minimum, if excluded this should be clearly identified as a limitation. See also 1.1.8 and 1.3.1

²⁴ It should be possible to determine whether effects are more prevalent in certain demographic or vulnerable groups.

Assessment	Comment	Recommendation

Air Quality Assessment Comments:

- The assessment of air quality-related health impacts follows a health risk assessment approach, focussing on quantification of health endpoints from exposure to a range of air pollutants. The methodology used is adequate. The range of air pollutants addressed is adequate. The range of health endpoints considered is also adequate and follows Australian evidence and guidance.
- However, the range of health endpoints addressed could be expanded to include others for which solid exposure-response coefficients exist, for example, group A coefficients provided in the WHO HRAPIE Project report²⁵.
- It is also not clear what baseline incidence rates were used (Sydney average or Liverpool/suburb rates). If Sydney rates are used, this may have resulted in a small underestimation of risks. For example, the Liverpool standardized mortality ratio is 107.3 (compared to New South Wales).
- Risks are estimated for 2030 and 2063 snapshots and separately for each pollutant. As risks from exposure to different pollutants have similar effects (are synergistic) e.g. mortality and hospital admissions, these could have been added across pollutants to provide a picture of the total risk to the exposed communities.
- Risks could also have been provided for the entire assessment period e.g. 30 years and not just for the snapshots. Discussion of the uncertainty around estimates could be enhanced, for example through the use of the upper and lower 95% confidence interval values of the exposure-response coefficients used. This would provide a better understanding of the likely range of actual impacts (for the worst-case unmitigated scenario).
- A general level of acceptability for estimated risks is used, stated to be accepted by regulatory agencies. This is for a risk between 1 x 10⁻⁶ (1 in a million) and 1x10⁻⁵ (1 in 100,000). The regulatory agencies should be named and references for this statement should be provided. Consideration should also be given to stakeholder perceptions of acceptability of risk.
- There is no discussion of the implication of the distribution of effects for inequality and equity although baseline information on sensitive/vulnerable groups is provided.
- Community feedback and any potential perceptions or concerns of local residents are not discussed.
- Perception effects are different from biological or epidemiological risks, can cause stress and anxiety and should be considered separately from mortality and morbidity effects.
- Mitigation measures are not discussed, readers are just cross-referred to the air quality chapter. An outline of proposed measures (i.e. an air quality management framework or plan) should be provided in the health chapter and an explanation provided for how and to what extent these measures will mitigate the identified health impacts.

²⁵ Table 1. CRFs recommended by the HRAPIE project, p5-11

Table 4 Health Pathways Included in the Draft EIS - Noise

Assessment		Comment	Recommendation
2.1 Descript	ion of health effects		
2.1.1	The potential health impacts/effects of the project, both beneficial and adverse, should be identified and presented in a systematic way. ²⁶	Health effects and attributable cases associated with exposure to daytime and night time noise are presented systematically; health impacts/effects are described for both the construction and operation phases.	None at this time.
2.1.2	Has the Exposure Pathway been identified?	Yes, exposure pathways linking noise to health effects are discussed in detail in Appendix G, Community Health, 6.1 Literature on Health Effects related to Noise.	None at this time.
2.1.3	Has an appropriate time period been considered for health and wellbeing impacts/effects?	Health and wellbeing impacts/effects have been described for 'snapshot years': 2030, 2050 and 2063 during the operation phase. There is a general discussion of the potential health effects during the construction phase.	None at this time.
2.1.4	Has an appropriate range of possible future (health relevant) scenarios been considered?	Yes. Potential health impacts/effects of noise are considered for the "Prefer 05", "Prefer 23" and "head-to-head" operation phase scenarios. There is a general discussion on construction phase noise, though specific scenarios for the construction phase are not discussed.	None at this time.

Does the identification of impacts consider short-term, long-term (and are these timescales defined?), direct and indirect impacts on health and well-being? Does the identification of health impacts distinguish between the construction phase, the operational phase and where relevant the decommissioning phase?

Assessment		Comment	Recommendation
2.1.5	What is the predicted exposure level or condition? How does this compare with the exposure standard (for environmental impact/risks) or acceptable condition (for social, community or psychological impacts/risks)?	Tables detailing a range of daytime and night time exposure levels for different periods and scenarios are provided and compared to World Health Organisation (WHO) guidelines.	None at this time.
2.1.6	What level of risk has been designated for this impact?	The level of risks is generally considered to be low. Some risks for some locations (Luddenham) are considered higher than low (not ranked but actual risk is described e.g. "In 2063, the increase is predicted to be about 10%").	Health risks should be presented for the different communities in a more accessible manner than what is currently presented in the tables. This should also be presented in a way so that multiple impacts (myocardial infarction, sleep disturbance, learning, etc.) and from multiple causes (daytime ground operations, night-time operations, over flights etc.) can be understood by a interested stakeholders.
2.1.7	What justification has been provided for this risk level?	Levels of risk have been compared, or benchmarked, against World Health Organization (WHO) or other similar guideline values (e.g. EEA identify that 33 dB Lnight, outside appears to be a threshold value for awakenings related to aircraft noise and below this, sleep disturbance is unlikely to occur), as well as described in the context of existing baseline levels of risk.	Explain why certain standards are used for different aspects of the assessment (i.e. the European Environment Agency - EEA - guidance/evidence is used at times and then WHO guidance/evidence is used at others)

Assessment	Comment	Recommendation
 2.1.8 Has the weighting/significance of health impacts/effects/risks been described and is it appropriate? ²⁷ Direction: Whether the potential change would be beneficial or adverse Severity: More severe effects include those that are disabling, life- 	Impacts are described as adverse; severity, in terms of morbidity, is implicit for some impacts e.g. cardiovascular disease. Severity for cognitive impairment in children or annoyance is not clearly defined, though this is a difficult area to consider.	There should be a clearer discussion of certainty or uncertainty, how levels of uncertainty are taken, or not taken into account, and assumptions used in the modelling and the calculation of predicted/forecasted health effects/impacts/risks.
threatening, and permanent Magnitude: How widely the effects would be spread within a population or across a geographical area Likelihood: How likely it is that a given	Magnitude is described in terms of risk and attributable cases (or events); it is not clear how population growth was considered/factored into the calculation of future attributable cases (magnitude).	Consider a clearer discussion of the uncertainty in relation to the severity of the health effects of cognitive impairment and annoyance.
 exposure or effect will occur. Certainty: level of certainty or uncertainty attached to the predictions of health effects. 	Likelihood is described in terms of risk, i.e. probability of occurrence, and described in the context of an unmitigated range of scenarios.	Clarify whether population growth, and the increase in people, affected by changes in noise is taken into account in the estimation of magnitude.
	Certainty and uncertainty attached to the predictions is not explicitly discussed. However, there is implicit discussion of the likelihood or certainty of key health effects occurring in the evidence base section. This discusses the scientific consensus that there is good/strong evidence of the link between exposure to noise and occurrence of some health impacts/effects.	

Does the assessment consider the severity of impact/exposure (intensity, reversibility and impact on vulnerable population groups), the impact magnitude (number of people affected and duration of impact/exposure) and the importance (political and ethical)? Have the health impacts of each alternative been assessed? Sometimes the health impacts are ranked and prioritized before making recommendations, if so; have the criteria for prioritizing and ranking health impacts been given?

Assessment		Comment	Recommendation
2.1.9	Does it take into account stakeholder and community concerns?	Stakeholder and community concerns are not discussed.	Community feedback on noise and health (as well as other health concerns) should be described and how this feedback was considered and addressed in the assessment should be discussed. Where community comments have not been incorporated or addressed an explanation justifying this should be presented. If there were no specific comments or concerns about noise and health then this should also be stated explicitly.
2.1.10	What mitigation measures have been proposed?	Mitigation measures for the operation are not described or discussed in this chapter. There is cross-referencing to the noise chapter where the main mitigation is described and discussed. The reviewers have not reviewed the noise chapter as this was not in the terms of reference for this review. A short description on some specific temporary measures is provided for the construction phase.	Provide in the human health chapter a brief summary of the mitigation framework/plan and measures discussed in the noise chapter. Some specific temporary mitigation measures that are mentioned for the construction phase, e.g. temporary noise barriers and exclusions buffers, should become recommendations rather than "could be considered" measures.
2.1.11	Has a residual health risk level been determined and mitigated where practicable?	There is no discussion of residual impacts/effects after mitigation. The report seems to assume that mitigation measures will attenuate most risk without discussing what the remaining risk will be and how they could be further minimised through ongoing monitoring and evaluation of the effectiveness of the proposed main mitigation measures.	Residual impacts/risks/effects should be discussed given that it is stated that these could still be significant. There should be a discussion of the significance of the residual or unmitigated impacts/risks/effects given the discussion that some mitigation measures may not be feasible or effective.

Assessment		Comment	Recommendation
2.1.12	Have community concerns been identified and adequately addressed?	See 1.1.9	See 1.1.9
2.1.13	The causal pathway leading to health effects should be outlined along with an explanation of the underpinning evidence. ²⁸	Causal pathways are described and the evidence underpinning the pathway is discussed.	None at this time.
2.2 Risk asse	ssment		
2.2.1	Have assumptions been made explicit and uncertainties considered and taken into account?	A range of assumptions underpinning the evidence base and the health impact/risk/effect calculation methods are discussed. Assumptions relate to the assessment methodology and analysis of impacts/risks/effects. However, there are some assumptions mentioned in the HRA without a clear explanation in the health chapter and appendix of why they are used. For example, it is not clear in Appendix G why the "Head to Head" operation model is only used for the night-time operations. These types of assumptions should be clearly explained.	Include a clearer explanation/discussion of all the assumptions made.
2.2.2	The report should identify and justify the use of any standards and thresholds used to assess the	Standards and thresholds used are identified, namely WHO daytime and night time noise guideline values and EEA 33dBL _{night, outside}	See 1.1.7
	significance of health impacts.	threshold value for awakenings.	

_

²⁸ The potential health effects may be presented in diagrams, which show the causal pathways and changes in intermediate factors by which the project may affect population health, or may be descriptive.

Assessment		Comment	Recommendation
2.2.3	Have the methods used to calculate impacts/risks/effects been adequately described (e.g. replicability, transparency, sources of information identified)	The HRA method is described. The methods used to calculate impacts/risks/effects are adequately described and cross-referenced to literature. Unclear what sensitivity analysis has been carried out. The calculations are not always clear and incorporate many assumptions that are not well described. For example, it is not clear how population estimates and growth are considered in the calculation of health impacts/risks/effects.	Methods used should be presented in a manner that is clear and easily understood to a lay audience (to the extent possible). Indicate possible range of estimates by including results from sensitivity analysis (using range of parameters such as possible change in population upper and lower 95% CIs of risk estimates used in calculations and different exposure scenarios)
2.3 Analysis	of distribution of effects		
2.3.1	The affected populations should be explicitly identified.	Affected populations are described geographically i.e. the suburbs and schools in the vicinity of the airport site boundary. However, how the growth in affected populations has been considered in the calculation of impacts/risks/effects is not clear.	See also 1.1.8 in relation to population growth.

Assessment		Comment	Recommendation
2.3.2	Inequalities in the distribution of predicted health impacts should be investigated and the effects of these inequalities should be stated. ²⁹	Inequality and equity, as important concepts that should be considered as part of the health assessment, are not discussed in the report. Potential impacts/effects/risks in terms of health inequalities or equity are not assessed or discussed. There is no discussion of whether the most deprived suburbs, or suburbs with higher proportions of vulnerable or sensitive groups (e.g. children) are more affected than other suburbs.	There should be a discussion of how the distribution of health impacts/risks/effects between and within the suburbs/affected populations narrow or widen existing inequalities and whether these may be inequitable. There should also be a discussion of mitigation measures that could/are likely to reduce any identified health inequalities.
2.3.3	Have populations more vulnerable to impacts/ effects/risks been identified and discussed; and have mitigations been proposed?	Populations more vulnerable/sensitive to noise impacts have been identified but only the impacts/risks/effects on children are discussed (hazard quotient for learning and cognitive development). Mitigation measures aimed at these groups are not discussed in the health chapter or health appendix. There is cross-referencing to the noise chapter however the reviewers have not reviewed the noise chapter, as this was not in the terms of reference for this review, and therefore cannot give a judgment on the appropriateness of the proposed mitigation in terms of sensitive groups.	Develop a more detailed qualitative discussion of the long term health impacts/risks/effects of noise on vulnerable groups described in Appendix G, and children specifically.

²⁹ How does the report define inequalities? Inequalities are found between social groups and can be measured in different ways e.g. by geography, social class or social position, population (ethnicity, gender, sexuality etc.).

Assessment	Comment	Recommendation
2.3.4 Impacts/effects/risks on health should be examined based on the population profile. ³⁰	Impacts/risks/effects have been assessed against the existing health status of affected populations.	None at this time.

Noise Assessment Comments:

- The assessment of noise-related health impacts follows a health risk assessment approach, focussing on quantification of health endpoints from exposure to a range of noise. The quantitative methodology used is adequate. The range of noise metrics used is adequate. The range of health endpoints considered is also adequate and follows Australian and international evidence and guidance, namely the enHealth Guidance Health Effects of Environmental Noise other than Hearing Loss (enHealth, 2004). Risks are estimated for 2030, 2050 and 2063 periods for three different operation phase scenarios.
- A qualitative analysis and discussion of impacts/risks/effects on vulnerable/sensitive groups and on health inequality/equity issues has not been undertaken.
- There is no discussion of the implication of the distribution of effects for inequality and equity.
- Community feedback and any potential perceptions or concerns of local residents are not discussed.
- Perception effects are different from biological or epidemiological risks, can cause stress and anxiety and should be considered separately from mortality and morbidity effects.
- Mitigation measures are only discussed in passing and readers are cross-referred to the noise chapter. An outline of proposed measures (i.e. a noise management framework or plan) should be presented in the health chapter and an explanation provided for how and to what extent these measures will mitigate the identified health impacts.

³⁰ It should be possible to determine whether effects are more prevalent in certain demographic or vulnerable groups.

Table 5 Health Pathways Included in the Draft EIS - Water Quality

Assessment		Comment	Recommendation
3.1 Description	n of health effects		
3.1.1	The potential health effects of the project, both beneficial and adverse, should be identified and presented in a systematic way. ³¹	conducted. The risk identification is generally	A detailed quantitative assessment of water impacts is required. Further information on baseline conditions, exposure pathways, population affects and potential health outcomes is required.
3.1.2	Has the Exposure Pathway been identified?	No - The potentially contaminating activities, contaminants of potential concern and exposure pathway linkages are identified. However these are not fully assessed to determine potential health outcomes.	A full assessment to determine health risks and potentially affected populations see be conducted
3.1.3	Has an appropriate time period been considered for health and wellbeing impacts?	1	Identify latency of health impacts in full assessment.
3.1.4	Has an appropriate range of possible future (health relevant) scenarios been considered?	_	Include assessment of long term operations.

-

³¹ Does the identification of impacts consider short-term, long-term (and are these timescales defined?), direct and indirect impacts on health and well-being? Does the identification of health impacts distinguish between the construction phase, the operational phase and where relevant the decommissioning phase?

Assessment	Comment	Recommendation
3.1.5 What is the predicted exposure level or conditions? How does this compare with the exposure standard (for environmental risks) or acceptable condition (for social, community or psychological risks)? 3.1.6 What level of risk has been designated for this impact?	Standards are identified, but the exposure levels are not clearly articulated. The risks are not clearly and transparently assessed. The ground water and surface water risk	See 1.1.2
3.1.7 What justification has been provided for this risk level?	There is an argument presented on potential risk though this is based on limited evidence.	See 1.1.2

Assessment	Comment	Recommendation
3.1.8 Has the weighting/significance of health impacts been described and is it appropriate? 32 Direction: Whether the potential change would be beneficial or adverse Severity: More severe effects include those that are disabling, life-threatening, and permanent Magnitude: How widely the effects would be spread within a population or across a geographical area Likelihood: How likely it is that a given exposure or effect will occur. Certainty: level of certainty or uncertainty	No weighting has been made for severity, magnitude, likelihood or certainty.	A description of the severity, magnitude, likelihood and certainty of health impacts should be provided as part of a complete assessment.
attached to the predictions of health effects. 3.1.9 Does it take into account stakeholder and community concerns?	This is not detailed in this section. Although the report does mention that there were community concerns raised about the potential impacts from aircraft emissions to tank water (p137), it is not clear how these were considered in the assessment.	Community feedback on water quality and health (as well as other health concerns) should be described and how this feedback was considered and addressed in the assessment should be discussed. Where community comments have not been incorporated or addressed an explanation justifying this should be presented. If there were no specific comments or concerns about noise and health then this should also be stated explicitly.

Does the assessment consider the severity of impact/exposure (intensity, reversibility and impact on vulnerable population groups), the impact magnitude (number of people affected and duration of impact/exposure) and the importance (political and ethical)? Have the health impacts of each alternative been assessed? Sometimes the health impacts are ranked and prioritized before making recommendations, if so; have the criteria for prioritizing and ranking health impacts been given?

Assessment		Comment	Recommendation
3.1.10	What mitigation measures have been proposed?	Dust control Surface water discharge control and monitoring Monitoring of water quality in Warragamba Dam, Prospect Reservoir and local water tanks	Further detail on mitigation measures and monitoring requirements is needed. Or make explicit where else these are listed in the draft EIS.
3.1.11	Has a residual health risk level been determined and mitigated where practicable?	There is no discussion of residual risks after mitigation strategies have been implemented.	Include discussion of residual risk.
3.1.12	Have community concerns been identified and adequately addressed?	Not addressed in section.	See 1.1.9
3.1.13	The causal pathway leading to health effects should be outlined along with an explanation of the underpinning evidence. ³³	The pathway beyond risk identification is not described.	Assessment should clearly outline impacts to health, including a literature review.
3.2 Risk assess	ment	Comment	Recommendation
3.2.1	Have assumptions been made explicit and uncertainties are considered and taken into account?	A number of assumptions have been alluded to in the section on "potential health risks associated with construction and operation". These are used to argue against the significance of certain health risks but have not been clearly stated earlier in the section.	A clear list of assumptions underpinning the assessment of Groundwater and Surface Water impacts should be included.
3.2.2	The report should identify and justify the use of any standards and thresholds used to assess the significance of health impacts.	Standards are identified but their use and application is not described.	Include further justification for the inclusion and use of standards.

³³ The potential health effects may be presented in diagrams, which show the causal pathways and changes in intermediate factors by which the project may affect population health, or may be descriptive.

Assessment		Comment	Recommendation
3.2.3	Have the methods used to calculate impacts been adequately described (e.g. replicability, transparency, sources of information identified)	The processes for exposure assessment and risk characterisation have not been clearly described.	See 1.1.2
3.3 Analysis of	distribution of effects	Comment	Recommendation
3.3.1	The affected populations should be explicitly identified.	A population profile is provided earlier in the appendix but this section does not described which populations will be affected.	Include an analysis of potential impacts to populations including vulnerable receptors (vulnerable groups) in the full assessment.
3.3.2	Inequalities in the distribution of predicted health impacts should be investigated and the effects of these inequalities should be stated. 34	No differential impacts have been described.	Include discussion of the distribution of impacts with consideration for vulnerable populations as part of the full assessment.
3.3.3	Have populations more vulnerable to this impact been identified, discussed and mitigations proposed?	Vulnerable populations have not been described or assessed.	See 1.3.2
3.3.4	Effects on health should be examined based on the population profile. ³⁵	The impacts have not been assessed relative to the existing population profile.	Include assessment of impacts relative to the existing population profile as part of the full assessment.

Water Quality Assessment Comments:

A more complete assessment is required that includes a clear list of assumptions, a description of population affected, and an assessment of impacts on vulnerable receptor population groups.

How does the report define inequalities? Inequalities are found between social groups and can be measured in different ways e.g. by geography, social class or social position, population (ethnicity, gender, sexuality etc.).

³⁵ It should be possible to determine whether effects are more prevalent in certain demographic or vulnerable groups.

Table 6 Review of Overall Report

Assessment		Comment	Recommendation
4.1 Site desc	cription and policy framework		
4.1.1	The report should describe the physical characteristics ³⁶ of the project ³⁷ site and the surrounding area.	A brief description and map of the project site is located in the appendix. A more comprehensive description is in vol.1 introduction p. 59-61	Sufficient description for the appendix and health chapter.
4.1.2	Is there an adequate description and location of the communities likely to be affected by the proposed development?	Only includes a description of communities within close proximity to the airport site. It is not clear, given the proximity of other LGAs, and the reach of some health impacts (noise, AQ) why other communities were not considered.	Either include better justification of only assessing impacts to close proximity communities, Or also consider impacts to other affected communities.
4.1.3	The report should describe the way in which the project site and the surrounding area are currently used. ³⁸	Given that most of the land has been obtained and cleared by the Government for this project, there was not much description provided of the existing use of the land. There is no discussion of how development of the project may change use/demand on existing infrastructure and services.	A description of the land use of the area surrounding the airport (not just the airport itself) should be included. This would help to understand the community character not just the physical land use.

³⁶ The physical characteristics may include the location, design, size and an outline of the area of land take during the construction and operation phase. Presentation or reference to diagrams, plans or maps will be beneficial for this purpose. Graphical material should be easy to understand without having any knowledge about planning and design.

³⁷ The review package uses the term project to mean the execution of construction works or of other installations or schemes; or other interventions in the natural surroundings and landscape including those involving the extraction of mineral resources (30;46).

³⁸ Does the site description indicate whether the site and the surrounding area are used, either formally or informally, and if so who by? What are the demands of the project on local infrastructure and services?

Assessment		Comment	Recommendation
4.1.4	The report should describe the policy context and state whether the project accords with significant policies ³⁹ that protect and promote wellbeing and public health and reduce health inequalities.	The only policies referenced are the EPBC Act and Airports Act. It is stated in the health appendix that a health risk assessment is not required under the EPBC but that one has been undertaken because of the known effects of airports on human health. It states that the HRA has been conducted in accordance with Australian HRA guidelines and other practice guidelines (NHMRC, NEPC). No reference is made to relevant Health Impact Assessment Guidelines (e.g. enHealth HIA Guidelines, WHO guidelines:- A Guide for the Evaluation of Health Impact Assessments carried out within the EIA process) The context for the inclusion of an assessment on health is described but it is unclear why a health risk assessment rather than a health impact assessment was commissioned.	impacts of airports on human health, that only an HRA was undertaken. Further clarification should be provided for only doing an HRA and not an HIA. Given the EPBC requirements to consider principles of inter-generational equity — "that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for

 $^{^{39}}$ The policies may be local, regional, national or international policies or they may be sector-specific.

4.2 Descript	tion of project	Comment	Recommendation
4.2.1	The aims and objectives of the project should be stated and the final operational characteristics of the project should be described. ⁴⁰	The objectives of the airport are described briefly in the appendix and are described in detail elsewhere in the draft EIS. The previous EIS considered site alternatives so none were explored in this draft EIS. There is also considerable detail provided around the governance structure of approval of both the EIS and the airport master plan. The objectives of the EIS are also clearly stated.	None.
4.2.2	The estimated duration of the construction phase, operational phase and, where appropriate, decommissioning phase should be given.	The multi-stage development (construction, stage 1, long term) are not described in the appendix or health chapter but are described in detail elsewhere in the report (vol. 1, introduction).	It would be helpful to have a summary of the various activities that will take place at the different stages within the health chapters, although activities are described within the assessment of each health pathway.
4.2.3	The relationship of the project with other proposals should be stated.	There is ample description of the justification of the airport and its relationship to other planning processes elsewhere in the report (Volume 1, chapter 2). Further description is not necessary for the health appendix or chapter.	None.

-

⁴⁰ Has a do-nothing option and other alternatives to the project been described? Does the report also describe the primary advantages and disadvantages to health of the proposal and alternatives? It should be noted if no alternatives are being assessed.

4.3 Public health profile	Comment	Recommendation
4.3.1 The public health profile should establish an information base from which requirements for health protection, health improvement and health services can be assessed.	General health information is provided for Liverpool LGA. Data is presented as real estimates and as a proportion of the NSW average. They also give childhood asthma prevalence for Liverpool, but nowhere else. It is not clear why the baseline data is only provided for Liverpool LGA when some of the communities that they are assessing are located in Penrith LGA. There is no rationale provided for why only Liverpool LGA is profiled. Page 24 of the Health Chapter states that "It should be noted that the airport site will occupy significant parts of Badgerys Creek and Luddenham and a number of current residents will be relocated. Therefore the future populations in these areas is likely to be much lower than that recorded in 2011." This is misleading in that it does not acknowledge the future expected increases in population in the profile area.	The baseline indicators are appropriate for assessing predicted health impacts related to air quality. Given the impacts of noise on sleep disturbance and learning ability, it would have been useful to include baseline rates of depression (or overall mental health) and any cognitive learning indicators (if available). If these were not available then they should have been more clear about why they included the health indicators that they did. They should also either make explicit why they only provided baseline data for Liverpool LGA or should include the same data for Penrith LGA and any other relevant LGAs. The demographic profile should provide

Assessment		Comment	Recommendation
4.3.2	The profile should identify vulnerable population groups. The profile should describe, where possible, inequalities in health between population groups and should include the wider determinants of health 41.	They acknowledge that people of disadvantage are more at risk to airport impacts (i.e. air/noise pollution) and therefore provide indicators of socio economic disadvantage through the SEIFA index. They do point out that certain communities appear to be more disadvantaged than the Australian average but it is hard to discern to what extent they are disadvantaged based merely on the SEIFA score (e.g. how much more disadvantaged is someone with a SIEFA score of 881 vs. 914?) They do recognize that as a whole, due to their low SEIFA scores, certain communities will be more vulnerable to effects than others.	While the SEIFA index does help to show overall disadvantage, it is not a very useful tool in comparing communities or for the lay person to understand what a particular SEIFA score means. If possible, would be more useful to use SEIFA quintiles for a clearer comparison. Likewise, it is difficult to understand the overall burden of disease when it is compared to the NSW average. It would be more helpful to see the health indicators expressed as proportions of the local population rather than a comparison to state averages (or could do both). If data is available, it would also be helpful to understand the health status of the communities that have been identified as having vulnerability based on their SEIFA scores (i.e. do they also have higher rates of asthma or heart disease) if this data is available.
4.3.3	information provided should include characteristics of the populations such as:		
	Population size, age and gender profile	Population Size – yes Age – Not in actual numbers but expressed as percentage less than 15, and over 65 years of age, but no further breakdown Gender - no	What is provided is generally sufficient

⁴¹ People's health is influenced by the conditions in which they live. Health determinants are the personal, social, cultural, economic and environmental factors that influence the health status of individuals or populations. These include, but are not limited to, factors such as income, employment, education, social support and housing.

Assessment	Comment	Recommendation
Population density and distribution	No	Include if possible, or reference to where it is located in other part of the draft EIS
Ethnicity	no	Include if possible, or reference to where it is located in other part of the draft EIS
Socioeconomic status	Yes – SEIFA score	Included
Vulnerable groups/locations such as schools, aged care facilities, hospitals	No	Should include
Health status from clinics and other authorities	Health status is expressed for Liverpool LGA level	It would be helpful to have more specific health data if available but the LGA may be all there is available
Sources of and types of employment	No	Include if possible, or reference to where it is located in other part of the draft EIS
Health behaviour indicators such as physical activities, smoking drug use	Rates of prevalence of the behaviour are not included but the disease burden (death and hospitalisations) attributable to smoking, high BMI and alcohol is included.	Include if possible
Environmental conditions such as air, water, soil quality	This is not included in the health appendix but it is available in the draft EIS (Air quality appendix, water appendix). Some current air quality, hydrogeology and water conditions are mentioned and/or described in the health chapter but a full baseline assessment is not included in the health chapters.	Include only as needed to further clarify information in the assessment or reference to where they are located in other parts of the draft EIS.

Assessment		Comment	Recommendation
	Roads and other infrastructure such as power, water, transport – rail, road, air, and so on	No	Include if possible, or reference to where it is located in other part of the draft EIS
	Housing types and quality	No	Include if possible, or reference to where it is located in other part of the draft EIS
	Health services such as hospitals, clinics	No	Include if possible, or reference to where it is located in other part of the draft EIS
	Community services such as police, ambulance, fire and other emergency services, recreation, etc.	No	Include if possible, or reference to where it is located in other part of the draft EIS
4.3.4	The information in the profile should be specific about the timescale, the geographic location and the population group being described and links should be made with the proposed project. 42	Information is provided about the anticipated population growth of the Liverpool LGA. It is also mentioned that there will be a population decline in certain areas that inhabit the airport site. There is no further mention of whether anticipated population growth incorporates growth due to the airport, or whether there will be growth in those same areas in close proximity to the airport site.	Further clarification on population growth estimates and assumptions around population size of communities in close proximity to the airport in the future should be included.

 $^{^{\}rm 42}$ Does the profile include consideration of the future profile of the population?

Overall Report Comments:

The description of the context and requirements for the HRA are generally sufficient. It would have been helpful to understand why only an HRA was undertaken and not a full HIA, particularly considering that recognition of the significance of the social determinants of health and their impacts on health. The population health profile was very limited in scope and is missing clarification for why only certain information is provided. Consideration of vulnerable populations is based around SEIFA scores only and again, it should be explained why only these scores, and not additional indicators of disadvantage are include. Any further information that is included in other chapters in the draft EIS should be referenced within the health chapters.

5. Coverage of Health Topics

The review team have identified the extent to which potential health impacts have been identified in the health chapter and associated appendix. The approach taken to considering health impacts in the health chapter is narrow and does not take into account the findings of other health-relevant assessments, such as in the SIA. This has resulted in key environmental and social determinants of health not being considered. The scoping process whereby the decision to focus on air quality, noise and water is unclear so it is not possible to assess whether the narrow focus is justified. However given the current level of evidence on the effects of airports on health as well as the more general evidence base around the social determinants of health it is likely that relevant health impacts are missing from the health chapter.

The review team have carried out a scoping review of the technical reports other than the health appendix to identify the extent to which health topics have been included within the entire draft EIS. It is outside the scope of this peer review to carry out a comprehensive review of the health topics covered in the non-health documentation or to assess/assess in more detail any health impacts.

The 'non health' sections of the draft EIS contain information about a number of significant impacts on the determinants of health (e.g. housing affordability, visual amenity). The majority of these relevant health determinants are covered within the SIA. These have not been identified as health impacts and the range and magnitude of potential health outcomes resulting from these impacts have not been assessed. For example, significant impacts on amenity have been identified but the link between amenity and health outcomes such as mental health has not been made. This means that the impacts on health resulting from these changes are unknown. As these are not currently included within the health chapter they risk being overlooked by stakeholders concerned with understanding how WSA potentially impacts on human health. Health effects may be overlooked and not taken into account when mitigation/enhancement is being considered. In addition, the inter-related nature of the health and wellbeing impacts identified in the draft EIS has not been fully considered and therefore combined effects from, for example, changes to air pollution, noise, water quality, flood risk, community, place and local economy have not been considered.

Table 7 shows potential health effects arising from the project that are covered in the health chapter and associated appendix. They are arranged by health determinant. For each determinant Table 7 shows project activity and the sub-activities by stage (e.g. construction and operation). The potential health outcomes arising from these activities are shown as are the likely affected communities. Communities are defined by geography and by shared characteristics. The potential effect on vulnerable populations is noted. The final two columns note where this information is located in the draft EIS and any mitigation measures provided. Table 7 shows that some key determinants of health have been considered in reasonable detail. However, the potential inequality/inequity impacts have not been sufficiently assessed or discussed. This is a significant gap.

Table 8 shows that some key determinants either do not seem to have been considered anywhere in the draft EIS or have not been considered and discussed in relation to health impacts in the Human Health Chapter and Community Health Appendix. The determinants that do not seem to have been covered anywhere in the draft EIS are those in table listed under the heading of socio-cultural:

Healthcare, Other public and community services, Recreation, Social capital and community cohesion and Housing. The determinants that have been covered elsewhere in the draft EIS but where specific health impacts or a discussion of the implications for community health have not been addressed in the Human Health Chapter and associated appendix are: Traffic and transportation, Economic (Employment/income), Visual intrusion, Odour and Climate change.

These determinants and why they should have been assessed or assessed in more detail is discussed in the next section.

Table 7 Health Topics Covered in Health Chapter

Health determinant	Activity	Sub activity	Potential health outcome/effect	Likely affected communities	Vulnerable populations	Where addressed in the draft EIS	Mitigation measures in draft EIS
Air quality	Operation-related activities	Bulk earthworks and aviation infrastructure works (emissions and dust deposition) Construction traffic (emissions) Passenger vehicle movements Staff vehicle movements Internal airport vehicle movements Air traffic movements Airport-related energy production and waste management including power plant/s Aircraft Auxiliary Power Units (APUs) and Ground Support Equipment (GSE)	Long-term: All-cause mortality in adults; cardiopulmonary, ischemic heart disease, lung cancer mortality in adults (subset of all-cause mortality) Short-term: all-cause mortality in all ages; Cardiovascular disease mortality; hospital admissions for respiratory, cardiac, cardiovascular, ischemic heart disease COPD and pneumonia/bronchit is in 65+; hospital admissions for respiratory disease in 15-64; ED visits for asthma in 1-14 year olds;	Geographically: communities/suburb s within 5 km from the airport boundary have been considered – Bringelly, Luddenham, Greendale, Kemps Creek, Mulgoa, Wallacia, Badgerys Creek, Rossmore and Mount Vernon Vulnerable/sensitive groups considered: elderly, people with existing cardiovascular and respiratory disease, people with asthma, low socio-economic groups/socially deprived and children	Impacts on inequality/equity not explicitly discussed but implicitly as impacts are described by areas for which information on existing levels of elderly, children and proportion of deprived residents is presented.	Human health chapter (chapter 13) and Health Risk Assessment appendix (appendix G)	Not presented in the human health chapter or appendix but cross-referred to the air quality and greenhouse gases chapter (chapter 12).
Noise	Construction activities	Construction traffic	Wellbeing (annoyance and sleep disturbance) Learning Cardiovascular	Geographically: Bringelly, Kemps Creek, Erskine Park, Kemps Creek 2, St Marys, Greendale,	Sensitive receptors such as schools mentioned.	Human health chapter (chapter 13) and Health Risk Assessment appendix (appendix	Not presented in the human health chapter or appendix but cross-referred to the noise chapter.

Health determinant	Activity	Sub activity	Potential health outcome/effect	Likely affected communities	Vulnerable populations	Where addressed in the draft EIS	Mitigation measures in draft EIS
			effects	Silverdale, Rossmore, Horsley Park, Rooty Hill, Prospect; Additionally, a range of locations for educational facilities have been considered given their sensitive nature;		G)	
Water quality	Chemical and fuel storage Equipment Operation Equipment maintenance Fire fighting	Potential leaking of underground storage tanks and pipes; fuel spillage or leakage during ground handling of aircraft; washing of aircraft and vehicles and fire-training for which flame-retardant chemicals may be used; fuel jettisoning Surface water discharge	Acute or chronic exposure to range of health hazards leading to range of health effects	No analysis of differential impacts in relation to water quality, including likely affected communities	None discussed	Pages 141-143	Monitoring proposed for surface water discharge but not detailed in this section. Spill management and containment protocols Fuel discharge is characterised as a rare occurrence.
	Dust emissions during construction	Impact on potable water supply at Warragamba Dam	Impact on water quality	No analysis of differential impacts in relation to water quality, including likely affected communities		Pages 142-143 Assessed risk to water quality through PM 10 modelling as being low	Dust controls through water spray

Error! Not a valid bookmark self-reference. shows potential health effects arising from the project that are not covered in the health chapter and associated appendix. They are arranged by health determinant. For each determinant Table 8 shows project activity and the sub-activities by stage (e.g. construction and operation). The potential health outcomes arising from these activities are shown.

Table 8 Health Topics Not Covered in Health Chapter

Health determinant	Activity	Sub activity	Potential health outcome/effect
Environmental			
	Construction-related traffic		RTAs related injuries and fatalities Severance (see social capital and community cohesion)
Traffic and transportation	Operation-related traffic (passengers, staff and freight HGVs e.g. fuel, retail, other)		
·	Aircraft accidents		Aircraft accident related injuries and fatalities
	Fly parking and speeding		Wellbeing (annoyance/ frustration)
	Congestion and travel times		Wellbeing (annoyance/ frustration)
	National and international connectivity		Wellbeing (improved for those using)
Odour	Odour associated with aircraft		Wellbeing (annoyance)
Climate change	Construction	Primary and linked secondary greenhouse gas emissions	No direct health effects but potential for contributing to increase extreme weather events globally that have health effects (e.g. drought,
	Operation	Primary and linked secondary greenhouse gas emissions	flooding, forest fires, etc.)
Economic			
Employment/income	Job opportunities at airport and associated facilities (skills, training and additional income)		Physical and mental health and wellbeing (improved)
	Property Values		
Socio-cultural			
Healthcare	Increased demand on local level health care because of the		Mental health and wellbeing Physical health

Health determinant	Activity	Sub activity	Potential health outcome/effect
	presence of the workforce		
Other public and community services	Disruption to utilities	Construction Land take	Mental health and wellbeing Physical health
Recreation	Loss of public and green space		Mental health and wellbeing Physical health
	Land take for proposed runway	Displacement of People Loss of housing and sense of community	Mental health and wellbeing (e.g. psychosocial distress) Physical health
Social capital and community cohesion	Community disruption due to noise of air traffic and noise and severance of construction and operation related road traffic		
	Migration of workers and presence of non-local workers		
	Community concerns/ perceptions and beliefs about the airport		
Housing	Additional Housing		Mental health and wellbeing (improved) Physical health (improved)
	Creation of new facilities Land take for proposed runway	Loss of green space Loss of farming space	Mental health and wellbeing Physical health
Visual intrusion	Construction		
	Visual effect of additional vehicles		

Important health implications of the determinants of health that have not been fully assessed in the draft EIS

Below potential health implications of the determinants of health that have not been fully assessed in the draft EIS, based on current public health evidence are described.

Environmental impacts

Traffic and transport

Higher levels of traffic in residential areas are associated with poor health and lower levels of social cohesion. This particularly affects older people and children. Time spent commuting can impact on family life and mental wellbeing. Increases in traffic can lead to increases in traffic related accidents. The social impact assessment identifies opportunity for "comprehensive planning, improvements to the road network in conjunction with new public transport infrastructure would create connected communities, reducing commute times and providing opportunities for an active lifestyle" (pg. 97). In addition, increased local job opportunities were predicted to reduce travel times and improve quality of life. Risk due to aircraft accidents is discussed but road traffic accidents due to increased traffic density has not been assessed.

Odour

Odour can cause annoyance and avoidance behaviour (for example, changes in use of outside areas). Odour from exhaust emissions and the on-site waste water treatment plant is assessed within the Air Quality Assessment. These were assessed to be below detectable levels off site for Stage 1. Odour was not assessed for the longer term scenario.

Climate Change

Climate change has significant impacts on human health ranging from changes to food production to increases in extreme weather events. Climate change is addressed in the draft EIS in the Biodiversity assessment. Climate change is identified as being exacerbated by WSA. Potential impacts on health from climate change have not been identified.

Economic impacts

Employment

Evidence shows that higher levels of employment lead to better population health. Participating in employment has been shown to have strong positive effects on mental and physical wellbeing. In general being in work is better for health than having no job; however there are exceptions. Workers in jobs that are poor quality, low paid and precarious (insecure) have similar health scores to the unemployed. Low paid, low skill, insecure jobs with few opportunities for training, development and progression are less healthy than higher paid, higher skill, secure jobs with good opportunities for training, development and progression. Previous HIAs of airports have shown that airports tend to generate a relatively high proportion of lower paid, low skill level jobs.

Employment and economic impacts are discussed in depth in the Social Impact Assessment technical report. It is estimated that during stage 1 construction there will be approximately 758 FTE jobs created. In addition, there is an estimated 7,500 FTE airport related employment by the end of stage

1 (2030) and a further 4,400 FTE jobs in the business parks associated with the airport. Longer term it is estimated that approximately 61,500 FTE jobs would be required for airport operations (2063). Although employment opportunities are expected to increase there are some expected negative impacts on agricultural and manufacturing industry due to competition for land. This could also result in potential loss of agricultural land. The potential health impacts related to the existing local economy and those employed in that economy are not described in the SIA.

The SIA identified a potential reduction in commuting times for Western Sydney residents by being able to access jobs closer to where they live. This could have positive benefits for community and family life.

Socio-cultural impacts

Community facilities

Healthcare

Changes on population, both residential and workforce, can lead to increased demand on health services. There are also potential effects on health services through risks associated with airport development. People within healthcare facilities also tend to be disproportionately vulnerable to impacts such as noise and air quality. The SIA identifies insignificant impacts on healthcare demand for Stage 1 and potential additional demand in the longer term scenario. Health care facilities are also identified as 'sensitive social infrastructure' more likely to be affected by impacts such as noise, social amenity, etc. but the specific health impact on these sensitive settings is not assessed.

Other public and community services

The SIA identifies sensitive social structures that may be particularly vulnerable to potential negative impacts (child care, schools, hospitals, recreational spaces and places of worship) but the specific health impact on these sensitive structures is not assessed.

New facilities

The SIA identifies that it is likely that new facilities will be developed as part of the growth associated with the airport.

Recreation resources

Access to good quality green space is associated with improved mental and physical health outcomes. This may happen through ameliorating stress, increased physical activity and there is also evidence of exposure to nature reducing blood pressure. The mental health benefits of activities in a natural environment have been identified as:

- Social, emotional, creative and cognitive development of children and young people
- Quality of life and relaxation
- Recovery from stress
- Relief of symptoms
- Therapeutic and healing; spiritual
- Physical activity; sport; adventure; challenge
- Learning; intellectual and creative development
- Sense of meaning/purpose/perspective
- Social contact; cohesion; belonging; identity
- Volunteering; conservation; "giving something back"

The SIA identifies loss of amenity for recreational areas from visual and noise impacts. Noise is expected to negatively impact on the amenity of Bents Basin Recreational Area in Greendale, Rossmore Grange, Twins Creek Golf and Country Club, Whalan Reserve at St Marys, Burragorang State Conservation Area and a small part of the Western Sydney Parklands and Prospect Nature Reserve). The Blue Mountains World Heritage Area is going to be negatively impacted on by noise and visual impact from planes. The impacts on recreational facilities and greenspace on health have not been considered.

Social capital and community cohesion

Research has demonstrated a link between social capital and health, in particular mental wellbeing. Communities with high social capital have higher levels of trust, reciprocity and participation. At an individual level social participation and support are associated with lower levels of metal health problems and higher levels of self-reported health. Further discussion on how social capital and community cohesion is addressed in the points below.

Land take for Airport

Loss of housing and forced relocation of residents and businesses have been shown to have significant negative health impacts on individuals as well as community level impacts due to loss of or disruption to social capital and community cohesion. The SIA excludes the impacts of forced relocation on health and wellbeing because the relocations have already taken place.

The SIA identifies that there will be a loss of agricultural land. Food security is an important public health issue and has not been assessed within the draft EIS.

Community disruption due to noise of air traffic and noise and severance of construction and operation related road traffic

The health chapter includes an assessment of noise related impacts in terms of awakenings, cardiovascular events, learning and cognitive development in children. Air quality is assessed in terms of impacts on physical health (e.g. cancer risk, increased mortality and morbidity). Community disruption, and impacts on social capital and community wellbeing are not assessed in the health chapters. Stress and anxiety related impacts are also not assessed. Within the SIA loss of amenity due to air and road traffic noise is identified as a potential negative impact. The implications of this for public health and wellbeing are not identified. The draft EIS has not assessed the potential increase in road traffic accidents as a result of airport related traffic.

Migration of workers and presence of non-local workers

Migration of workers and the presence of non-local workers in communities can cause community disruption and impacts on local facilities and resources. The SIA identifies that the majority of the workforce is expected to be local but also some moving into the area permanently and also people commuting in from other parts of Sydney. The expectation for a mostly local workforce appears to be based on the availability of working-age people in the South Western Sydney area. It was beyond the scope of this peer review to assess the validity of assumptions around employment opportunities. It is not clear whether the expected increase in employment opportunities will benefit young residents, unemployed residents and residents experiencing deprivation in the surrounding area. These residents are also likely to be most negatively affected by existing and future environmental, social and health impacts from airport activities.

Community concerns/ perceptions and beliefs about the airport

Evidence of health impacts, as laid out in the draft EIS, may not be the same as the community's perception of health risks. The perception of changes to noise, air quality, and home prices can influence the behaviour of local community members and in turn affect their health. This has been evidenced by other HIAs on airport developments. The extent to which individuals and communities have control over their lives has a significant influence on mental health and overall health. Lack of control and lack of influence (believing you cannot influence the decisions that affect your life) are independent risk factors for stress. Heightened risk perceptions, low control and low involvement in decision-making are associated with negative physical and mental health impacts. The SIA acknowledges uncertainty over the airport plans (e.g. flight path location) that could cause anxiety among local community but the potential impacts on health and wellbeing are not drawn out. This is a potentially significant area of health impact that has not been assessed.

Housing

The SIA reports that most stakeholders noted housing affordability during consultation as a key issue. The SIA identified no significant impacts on values for large blocks of land that are currently common around the airport. The population forecast carried out for the draft EIS predicts significant population growth in Southwest Sydney. Areas close to the airport have been identified as both employment and housing growth areas. The SIA identifies that potential longer term housing unaffordability due to growth may negatively impact on already disadvantaged groups.

In addition, housing prices may be relatively more affordable in areas exposed to higher levels of noise. This means that already vulnerable population groups are more likely to live closer to environmental risks. Communities close to the airport may have already experienced disruption and corresponding loss of identity, social capital and social cohesion due to relocation of housing and community facilities, changes in employment opportunities, and other environmental impacts due to the airport development. Although longer-term housing unaffordability is identified as a potential problem in the SIA, the implications of this for health and health equity are not drawn out.

Visual intrusion

The airport itself and associated development, construction and additional traffic will negatively impact on visual amenity. The SIA identifies the loss of agricultural land; this will impact on the visual amenity of the area as it is replaced by other more built up industries. As mentioned previously, recreational areas including the Blue Mountains will suffer loss of visual amenity due to the presence of planes overhead and for some areas changes to the landscape. Some residential areas will also have views of the airport.

The potential negative permanent impacts from the loss of amenity and green space on health are not identified in the SIA. These impacts would affect future generations. The potential health impacts on communities that will experience multiple amenity impacts (e.g. noise and visual) has not been considered. These impacts can lead to a significant loss of community and sense of place (with or without any additional increase in aircraft noise) making the area less desirable to live in and affecting community identity and cohesion.

6. Detailed Findings - Long Term Development

This section details the findings of the peer review conducted on the Health Chapters for long-term development. The peer review took into consideration long-term impacts described in the Health Appendix (G) and any health considerations included in Volume 3.

Table 9 Long Term Health Impacts Considered in the Draft EIS

Requiremen	t	Comment	Recommendation
4.4 Descript	ion of health effects		
4.4.1	The potential health effects of the project, both beneficial and adverse, should be identified and presented in a systematic way. ⁴³	The assessment focuses only on the risks (adverse effects) to human health. This section only considers the effects from the long-term development scenario (other timescales are considered in the health appendix). Impacts are limited to direct risks via noise, air quality and water exposure.	Consider broader range of health pathways and indirect impacts, as well as considering positive impacts/effects.
4.4.2	Has the Exposure Pathway been identified?	Exposure pathways for air, noise and water are clearly explained. They include exposure from aircraft overflights, ground activity, and traffic, which seem to include all the major pathways for these health determinants.	None.

⁴³ Does the identification of impacts consider short-term, long-term (and are these timescales defined?), direct and indirect impacts on health and well-being? Does the identification of health impacts distinguish between the construction phase, the operational phase and where relevant the decommissioning phase?

Requirement		Comment	Recommendation
4.4.3	Has an appropriate time period been considered for health and wellbeing impacts?	Without considering the appropriateness of the assumptions used in the air, noise and water assessments it is not possible to determine whether the assumptions used for the health assessment are appropriate. The HRA assesses for increased risk from exposure with an assumption for continued exposure (non-mitigated) in which case this would seem appropriate.	Given the long-term stage of this assessment, the time period for the health impacts seem appropriate.
4.4.4	Has an appropriate range of possible future (health relevant) scenarios been considered?	The health outcomes are very narrowly considered (all-cause mortality; cardiopulmonary mortality; respiratory mortality; ED visits for asthma in children; EEG awakenings; learning and cognitive development; myocardial infarction). These do not take into consideration any assumption about future health scenarios which may be appropriate given the uncertainties about the assumptions for the air and noise modelling for this future stage of development. However, the assessment does not taken into account future population growth scenarios.	Consider population growth scenarios in the assessment of long term impacts.

Requirement		Comment	Recommendation
4.4.5	What is the predicted exposure level or conditions? How does this compare with the exposure standard (for environmental risks) or acceptable condition (for social, community or psychological risks)?	The Human health Chapter authors note that all exposure levels are below accepted standards. However this does not take into consideration the potential health outcomes of synergistic impacts (of the combined exposures). Likewise, the authors note that for NO2, even though it falls below the NEPM standards, there is no safety threshold for NO2. This is also true for PM 2.5, although this is not stated in the report. There is also no mention of the acceptability of these risks by communities or health professionals.	In addition to comparing risks to NEPM standards, they should also consider synergistic impacts and the acceptability of risks for the communities, particularly those that will be most impacted.
4.4.6	What level of risk has been designated for this impact?	The authors don't include specific findings for all pathways in this section, they only summarize the health impacts (i.e. they don't say what the actual dB will be just that it will result in 10 EEG awakenings). This information is in the Appendix (volume 4 appendix G). Only the "highest risk" for health effects are reported in this section.	This report should either provide better clarification on the level of risk or otherwise provide a reference to where it is located in the appendix.
4.4.7	What justification has been provided for this risk level?	Level of risk is only presented as a comparison (i.e. "highest" not "high, medium, low"). No further discussion of the justification of risk is provided.	Further characterisation of risk should be provided. See 1.1.8

Requirement	Comment	Recommendation
4.4.8 Has the weighting/significance of health impacts been described	Health effects are characterized according to level of risk and community with highest risk.	As most risks look at mortality or hospitalization for AQ there's no need to define severity in this
and is it appropriate? 44 Direction: Whether the potential change		case. However, it would help to define severity for noise, such as EEG awakenings. There is a
would be beneficial or adverse Severity: More severe effects include		greater discussion in the literature review of awakenings in the appendix but some discussion
those that are disabling, life- threatening, and permanent		or definition of the severity of awakenings and cognitive development should be included.
Magnitude: How widely the effects would be spread within a population or across a geographical area		Magnitude of impacts should also be considered. The authors include which communities will be most affected for PM2.5,
 Likelihood: How likely it is that a given exposure or effect will occur. 		PM10 and noise but not for NO2 or Ozone. They should be clearer about which communities will
 Certainty: level of certainty or uncertainty attached to the predictions 		be impacted for all pathways, and discuss the magnitude of the impact in those communities
of health effects.		including consideration for the most vulnerable. Consideration of likelihood and certainty should
		also be included.

Does the assessment consider the severity of impact/exposure (intensity, reversibility and impact on vulnerable population groups), the impact magnitude (number of people affected and duration of impact/exposure) and the importance (political and ethical)? Have the health impacts of each alternative been assessed? Sometimes the health impacts are ranked and prioritized before making recommendations, if so; have the criteria for prioritizing and ranking health impacts been given?

Requirement		Comment	Recommendation
4.4.9	Does it take into account stakeholder and community concerns?	There is no discussion of stakeholder or community concerns. The assessment only makes mention of community concerns within the discussion of surface water.	Community feedback on health concerns should be described and how this feedback was considered and addressed in the assessment should be discussed. Where community comments have not been incorporated or addressed an explanation justifying this should be presented. If there were no specific comments or concerns about health impacts/effects or some determinants of health then this should also be stated explicitly. There should also be a discussion of how communities were consulted.
4.4.10	What mitigation measures have been proposed?	Within the three pathways assessed, mitigation strategies are only referenced within the noise pathway, and are in reference to chapter 31 (volume 3). No other reference to mitigation strategies is provided although they are discussed elsewhere in the report.	Mitigation measures should be discussed for each pathway or at least referenced to where they are discussed elsewhere in the draft EIS. Provide a brief summary of the mitigation framework/plan and measures discussed for each pathway.
4.4.11	Has a residual health risk level been determined and mitigated where practicable?	There is no discussion of residual health risk.	As part of the discussion of mitigation measures, residual health risk should also be determined.
4.4.12	The causal pathway leading to health effects should be outlined along with an explanation of the underpinning evidence. ⁴⁵	The casual pathway between health risks and outcomes is not discussed nor does it reference where this information is in the report. The relationship is presented in the literature reviews for each pathway in the appendix.	Reference the appendix to show relationship between health determinants, health risks and health outcomes (exposure pathways).

-

⁴⁵ The potential health effects may be presented in diagrams, which show the causal pathways and changes in intermediate factors by which the project may affect population health, or may be descriptive.

Requirement		Comment	Recommendation
4.5 Risk assessment			
4.5.1	Have assumptions been made explicit and uncertainties are considered and taken into account?	The assumptions and limitations provided are in reference to the limitations and assumptions in the technical reports used to do the assessment (air/noise/water assessments). Other assumptions used for the HRA are not described.	Make explicit any assumptions or limitations in conducting the HRA or reference where these are located in the appendix.
4.5.2	The report should identify and justify the use of any standards and thresholds used to assess the significance of health impacts.	The report does not justify the use of standards or thresholds.	Provide better explanation of the use of thresholds and standards in the assessment (particularly when the report also discusses the lack of a safety threshold such as in the case for NO2). If it is not included in this section then it should at least be referenced to in the full assessment appendix.
4.5.3	Have the methods used to calculate impacts been adequately described (e.g. replicability, transparency, sources of information identified)	The HRA process is briefly described but the assessment calculations are not. These are provided in the health appendix but this section does not make reference to them.	This report should reference the detailed methods in the appendix when they are not provided in the report.
4.6 Analysis of distribution of effects			
4.6.1	The affected populations should be explicitly identified.	There is no discussion of the potentially affected populations aside from identifying which communities will be most affected from noise and air quality impacts.	Report should provide a description of the populations potentially affected or reference where that information is located in the appendix.

Requirement		Comment	Recommendation
4.6.2	Inequalities in the distribution of predicted health impacts should be investigated and the effects of these inequalities should be stated. 46	There is no discussion of the equity distribution of impacts.	Report should provide a discussion of the equity impacts or reference where that information is provided in the appendix.
4.6.3	Have populations more vulnerable to this impact been identified, discussed and mitigations proposed?	There is no discussion of vulnerable populations.	Report should provide a discussion of vulnerable population or reference where information is provided in the appendix.
4.6.4	Effects on health should be examined based on the population profile. 47	The report makes mention of comparing impacts to a baseline assessment from health statistics for Sydney. However, there is no reference to where this information is available in the report.	Report should reference where the full baseline health profile and health statistics are available in the appendix.

Long Term Impacts Assessment Comments:

This section is presented as a summary of the impacts that are discussed in more detail in the assessment. While the report does, at times, make reference back to the appendix, there is a lot of pertinent detail that is missing that should be referenced to the appendix. This section also lacks core components for clarity – such as discussing the methods used or mitigation measures - that would make this section acceptable as a standalone piece of work without having first read the appendix. This section also misses any discussion of long term cumulative impacts. It appears that cumulative impacts are considered elsewhere in the report (Volume 2. Chapter 27) however this report does not make clear if those cumulative impact assessments were used in this assessment. It would be particularly relevant to include discussion of cumulative impacts here as there is no mention of health impacts in the cumulative impacts chapter (Volume 2 chapter 27). This section should also provide better characterisation of health impacts or otherwise provide a reference to where it is located in the appendix.

⁴⁶ How does the report define inequalities? Inequalities are found between social groups and can be measured in different ways e.g. by geography, social class or social position, population (ethnicity, gender, sexuality etc.).

⁴⁷ It should be possible to determine whether effects are more prevalent in certain demographic or vulnerable groups.

7. Summary of Key Findings

The Health Risk Assessment (HRA) predicted the attributable health outcomes from air and noise exposures in communities near the airport. The summary of key findings from the review team's interpretation of the data is provided below. Sufficient data was not available to conduct a complete a health risk assessment for ground water and surface water, therefore the health impacts from changes in ground and surface water are not presented below.

Air Quality

The HRA primarily considered the health outcomes of exposure to particulate matter 10, particulate matter 2.5, nitrogen dioxide, sulfur dioxide, and carbon monoxide from exposure associated with airport construction, stage 1 operations, and long term operations. The communities assessed were Badgerys Creek, Bringelly, Greendale, Luddenham, Kemps Creek, Mulgoa, Wallacia, Rossmore and Mount Vernon. The primary health outcomes considered were mortality, cardiovascular disease, respiratory disease, and emergency department visits related to asthma for 0-14 year olds. It should be noted that airport constructions is scheduled to occur over 10 years. Therefore, any impacts from construction that occur beyond 10 years are less likely to be realised.

Particulate Matter 10 (PM₁₀)

Stage 1 Operations

The communities with the highest predicted attributable cases across all health outcomes were Bringelly, Kemps Creek, Wallacia and Rossmore. Kemps Creek had the highest number of annual mortality cases (over 30 year olds) with 0.1 deaths per year, or 1 death every 10 years attributable to PM_{10} .

Long Term Operations

Bringelly, Kemps Creek, and Rossmore had the highest predicted attributable cases across all health outcomes. Rossmore had the highest number of annual mortality cases (over 30 year olds, long-term) with 0.4 deaths per year, or 4 deaths every 10 years attributable to PM₁₀.

Construction Bulk Earthworks

Luddenham will be most impacted with the most predicted attributable cases across all health outcomes and with the highest number of annual mortality cases (over 30 year olds) with .01 deaths per year, or 1 death every 100 years attributable to PM_{10} .

Construction Aviation Infrastructure

Kemps Creek had the highest predicted attributable cases across all health outcomes. Kemps Creek, Bringelly, Luddenham and Badgerys Creek all had the highest number of annual mortality cases (over 30 year olds) with .01 deaths per year, or 1 death every 100 years attributable to PM_{10} in each community.

Particulate Matter 2.5 (PM_{2.5})

Stage 1 Operations

Bringelly, Kemps Creek and Rossmore had the highest predicted attributable cases across all health outcomes. The highest predicted risk is for all-cause mortality and cardiopulmonary mortality from long-term exposure. Rossmore and Kemps Creek had the highest number of annual mortality cases (over 30 year olds) with .06 deaths per year, or 6 deaths every 100 years, in both communities. Rossmore and Kemps Creek also had the highest number of cardiopulmonary mortality cases (over 30 years old) with .06 deaths per year, or 6 deaths every 100 years, in both communities, attributable to PM_{2.5}.

Long Term Operations

The communities with the highest predicted attributable cases across all health outcomes were Bringelly, Kemps Creek, and Rossmore. Rossmore had the highest number of annual mortality cases (over 30 year olds, long-term) with 0.3 deaths per year, or 3 deaths every 10 years attributable to $PM_{2.5}$.

Construction Bulk Earthworks

Kemps Creek had the highest predicted attributable cases across all health outcomes. Bringelly and Luddenham had the highest number of annual mortality cases (over 30 year olds, long-term) with 0.004 deaths per year, or 4 deaths every 1000 years attributable to $PM_{2.5}$ in each community.

Construction Aviation Infrastructure

Luddenham had the highest predicted attributable cases across all health outcomes. Bringelly and Luddenham had the highest number of annual mortality cases (over 30 year olds, long-term) with .02 deaths per year, or 2 deaths every 100 years attributable to $PM_{2.5}$ in each community.

Nitrogen Dioxide (NO₂)

Stage 1 Operations (including traffic)

The communities with the highest predicted attributable cases across all health outcomes were Bringelly, Kemps Creek, Mulgoa and Rossmore. Kemps Creek had the highest number of annual mortality cases (over 30 year olds, long-term), with .6 deaths per year, or 6 deaths every 10 years attributable to NO₂

Long Term Operations (including traffic)

Kemps Creek had the highest predicted attributable cases across all health outcomes. Kemps Creek, Bringelly and Rossmore had the highest number of annual mortality cases (over 30 year olds, long-term), with .6 deaths per year, or 6 deaths every 10 years attributable to NO₂.

Sulfur Dioxide (SO₂)

Stage 1 Operations

Modelling for health impacts from SO₂ was only conducted for stage 1 operations. The highest predicted attributable cases were related to respiratory disease hospital admissions (over 65 year olds) and emergency department visits for asthma (1-14 year olds). Kemps Creek had the highest number of respiratory disease hospital admissions with .004 admissions per year, or 4 admissions

every 1000 years attributable to SO_2 . Bringelly had the highest number of emergency department visits for asthma with .007 visits per year, or 7 visits per 1000 years attributable to SO_2 .

Carbon Monoxide (CO)

Stage 1 Operations

The primary health outcome considered in the HRA for CO was cardiovascular disease hospital admissions (over 65 year olds). Kemps Creek had the highest number of cases with .005 admissions per year or 5 admissions per 1000 years attributable to CO.

Noise

The HRA considered the health outcomes associated with noise from aircraft over flights and ground based operations. The primary health outcomes considered were impacts on sleep disturbance, cognitive development and learning, and annoyance. The WHO has calculated the health effects from exposure to varying levels of noise (WHO, 2009). Noise exposure in a school environment over 35 dB may lead to interruptions in learning and cognitive development. Exposure over 40 dB inside at night may lead to sleep disruptions in the form of EEG awakenings (partial awakenings detected by electroencephalogram, EEG, readings) and full awakenings. Noise exposure above 55 dB may lead to annoyance, and increased risk for cardiovascular disease. The HRA considered impacts to Bringelly, Kemps Creek, Erskine Park, Kemps Creek 2 (secondary monitoring station), St Marys, Greendale, Silverdale, Rossmore, Horsley Park, Rooty Hill and Prospect. It also used data from monitoring stations at various schools: Warragamba Preschool; Emmaus Catholic College Kemps Creek; Horsley Park Public School; Luddenham Public School; Bringelly Public School; Mount Druitt Public School; St Marys South Public School; Bennett Road Public School; Colyton High School; St Clair High School; Banks Public School; Blackwell Public School; and Plumpton High School. It is assumed in the HRA that the noise levels at schools may be representative of the noise levels of the surrounding communities.

Aircraft Noise

Daytime

Annoyance

No community site exceeded the 55dB threshold for daytime noise exposure. No school site exceeded the 55dB threshold either.

Learning and Cognitive Development

Luddenham Public School and Horsley Park Public School exceeded the 35dB threshold for daytime noise exposure inside for certain operation stages and flight scenarios. The highest noise exposures would occur in Luddenham in 2063 operations with 39bB for flight scenario 'Prefer 05' and 41dB for flight scenario 'Prefer 23.'

Night Time

EEG Awakenings

Luddenham Public School had the most predicted additional EEG awakenings across all operation stages and flight scenarios. The most additional EEG awakenings would occur at Luddenham Public School in 2050 and 2063 with the most occurring in the 2063 operation stage with flight scenario 'Prefer 23' with 110 additional EEG awakenings per person per year, or .3 EEG awakenings per person per night. It is important to note that the average person will experience 24 EEG awakenings per night during 8 hours of undisturbed sleep.

Full Awakenings

Luddenham Public School had the most predicted additional full awakenings across all operation stages and flight patterns. The most additional full awakenings would occur at Luddenham Public School for 2050 operations with 10 additional full awakenings per person per year, in all flight scenarios.

Ground Operations Noise

Daytime

Annoyance

Only Luddenham Public School exceeded the daytime threshold of 55dB from ground operations noise. The highest level is for 2063 operations, with a noise level of 58dB.

Learning and Cognitive Development

Bringelly Public School and Luddenham Public School exceeded the 35dB daytime noise exposure inside. Luddenham Public School exceeded 35dB for all operation scenarios, with 44dB inside in 2030, 45dB inside in 2050, and 48dB inside in 2063. Bringelly Public School only exceeded the guideline in 2063 with 36dB inside.

Night Time

EEG Awakenings

Luddenham Public School had the most predicted additional EEG awakenings across all operation stages. The most additional EEG awakenings would occur at Luddenham Public School in 2063 with the most occurring in the 2063 operation with 400 additional EEG awakenings per person per year, or 1 additional EEG awakening per person per night from ground operations noise. It is important to note that the average person will experience 24 EEG awakenings per night during 8 hours of undisturbed sleep.

Full Awakenings

The most full awakenings per person per year would occur in Luddenham Public School with 10 additional awakenings in 2030, 12 additional awakenings in 2050, and 15 additional awakenings in 2063 operations stage from ground operations noise.

8. Opportunities in relation to assessment of health effects

The health chapter and associated technical reports considered health impacts resulting from changes in air quality, noise and water. The methods of assessment used for assessing the resulting predicted impacts are appropriate and largely in accordance with published standards and guidelines. The Review Team's detailed comments and recommendations are contained within the relevant sections in the review tables. It should be noted that where weaknesses in the assessment method have been identified this does not necessary mean that if these were addressed the findings would be significantly different. However given the scale of this development, the potential for significant permanent impacts and this being the only environmental impact assessment currently planned for the WSA, it is recommended that these identified weaknesses be addressed.

The Health Chapter and appendix utilise a Health Risk Assessment approach. This is a quantitative methodology that takes changes to these environmental determinants and estimates their risk to health (i.e. the chances or risk of a disease or fatality occurring). This narrow approach does not address the full range of determinants of health and makes no use of the large evidence base on the association between health determinants, particularly social, and health outcomes. The narrow approach has over the years been found to be of limited use to policy and decision-makers and a fuller, more comprehensive qualitative and quantitative assessment of health impacts is often called for. This has occurred internationally as well as in Australia, with guidelines and practical guides published on how to undertake a comprehensive assessment of health impacts (enHealth 2001; NSW Health 2007).

There are two major weaknesses in relation to the assessment of health impacts that the review team strongly recommend be addressed in order to ensure that health effects are not overlooked or not taken into account when mitigation/enhancement is being considered. These are: the reporting of the identified health impacts; and the scope of the impacts included in the health chapter.

Reporting of the identified health impacts

Currently the results of the health risk assessment are presented in a way that it is difficult for readers of the report to identify the scale of the health impacts identified.

The review team recommend:

- 1. Presenting total number of people potentially affected by health outcomes (i.e. not just presented for individual communities).
- 2. Presenting information for all affected geographic areas not just worst affected area.
- 3. Presenting information in formats from which people can easily extract key information (i.e. clearly identifying significant impacts within tables, providing all necessary information within tables, clearly labelling tables).
- 4. Using consistent measurements of risk (e.g. number of cases per year) and detailing risk according to the community impacted, in terms of geographic areas and where appropriate by vulnerable/sensitive sub-groups.
- 5. Where numbers are presented, identify levels of certainty and assumptions used. For example, indicate possible range of estimates by including results from sensitivity analysis; where predictions of health outcomes are made for future scenarios (2030, 2060) state clearly if population growth predictions have not been taken into account and if the numbers presented are likely to be an underestimation.
- 6. Describing (qualitatively) the synergistic (combined) health impacts on communities close to the

airport.

- 7. Disaggregating the assessment to identify the potential differential health impacts on:
 - a. population groups (e.g. younger people, older people, low socio-economic people); and
 - b. 'sensitive social infrastructure,' such as education and health care facilities.

Scope of impacts included in the health chapter

Currently the 'non health' sections of the draft EIS contain information about a number of potentially significant impacts on the determinants of health (e.g. housing affordability, amenity, and employment). These impacts have not been identified as health impacts and the range and magnitude of potential health outcomes resulting from these impacts have not been assessed. This means that the potential health impacts resulting from these changes are currently unknown. This is likely the result of a Health Risk Assessment rather than a Health Impact Assessment being carried out. It is unclear why a health risk assessment rather than a health impact assessment, which would have incorporated the full range of health impacts, was not carried out. The review team recommends that the health implications of changes in determinants of health identified in 'non health' chapters be reported in the health chapter. This would enable interested stakeholders to identify the range and scale of potential health impacts.

The review team recommend:

- 8. The full range of potential significant impacts on health should be assessed and appropriate mitigation measures developed. Consideration should be given to including:
 - 8.1. Assessment of the public and community health impacts of the loss of agricultural land, green, open and recreation space.
 - 8.2. Potential impacts on health caused by perceived risk, stress and anxiety about the airport development.
 - 8.3. Loss of greenspace and loss of amenity of greenspace and the impact of this on health and wellbeing of current and future generations.
 - 8.4. Detailed information on the likely mix of part-time and full-time, low vs. high skill and low vs. high paid jobs generated by the airport and the likelihood of jobs being taken up by local communities and unemployed people to assess the quality and uptake of the employment likely to be generated and corresponding health benefits.
 - 8.5. The permanent loss of agricultural land should be considered from a food security, sustainability and public health perspective.
 - 8.6. The potential impacts on housing affordability on health, in particular the impacts on health inequalities resulting from increased housing prices and potential exposure of lower SES populations to residential areas with higher noise levels.
 - 8.7. Impacts on communities (e.g. social capital, community severance, social cohesion, community identity) due to noise and increases in traffic.
 - 8.8. Perception effects from noise and air quality different from biological or epidemiological risks and can cause stress and anxiety should be considered separately from mortality and morbidity effects.
 - 8.9. The potential for an increase in road traffic incidents, accidents and congestion including impacts on physical health and communities.
 - 8.10. The residual impact on communities resulting from compulsory relocations.

Mitigation Measures

Mitigation measures are only discussed in passing and readers are cross-referred to other sections of the draft EIS (e.g. noise chapter, air quality chapter). Mitigation measures to manage impacts identified in the draft EIS are described for noise, air quality and water issues. Mitigation measures specifically addressing health issues are not detailed as the health issues that have been considered are all associated with changes to air, water and noise hence managing these is considered sufficient in the environmental management framework. Mitigation measures aimed at vulnerable groups are not discussed in the health chapter or health appendix. There is no discussion of residual impacts (effects after mitigation). The report seems to assume that mitigation measures will attenuate most risk.

Where there is cross-referencing to the water/noise/air quality chapter the reviewers have not reviewed these chapters, as this was not in the terms of reference for this review, and therefore cannot give a judgment on the appropriateness of the proposed mitigation in terms of health impacts. The Part E Environmental Management Chapter does not include health specific mitigation measures.

The range of mitigation measures proposed for noise during Stage 1 design and construction is appropriate and likely to effectively manage the associated health impacts, provided the community aviation consultation forum and the community feedback provided by it is satisfactorily incorporated into the final specific mitigation measures and on an on going basis.

The range of mitigation measures proposed for air quality and greenhouse gases during Stage 1 design and construction is appropriate and likely to lower the likely health and wellbeing impacts associated with exposure to air pollutants.

The range of mitigation measures proposed for noise during Stage 1 operation is appropriate and likely to reduce some of the associated health impacts, provided health issues are given specific attention through involvement of NWS Health and/or other relevant health authorities and local communities are effectively engaged and their feedback satisfactorily incorporated into the noise management plan on an on going basis.

The range of mitigation measures proposed for air quality and greenhouse gases during Stage 1 operation is likely to lower the health and wellbeing impacts associated with exposure to air pollutants provided best available technologies and techniques are employed to reduce emissions. As this is uncertain, effective pre-operation air quality monitoring (to establish baseline conditions) and monitoring during operation is key to manage and address potential emerging health risks.

Stakeholder and community engagement will be managed through the use of a Community and Stakeholder Engagement Plan to guide activities, keep the community informed, address enquiries and complaints, and help manage potential impacts during construction of the proposed airport. Coordination with relevant government agencies should ensure NSW Health is included as a primary stakeholder.

The review team recommend:

9. An outline of proposed measures (i.e. a noise/air quality/water management framework or plan) should be presented in the health chapter and an explanation provided for how and to what

- extent these measures will mitigate the identified health impacts.
- 10. In line with our previous recommendations to broaden the scope of the health chapter to include all relevant health impacts, the review team also recommend that corresponding health specific mitigation measures be provided.
- 11. This should include targeted mitigation measures for addressing impacts on vulnerable groups and sensitive social infrastructure.
- 12. Mitigation measures that take into account the synergistic (combined) nature of the impacts on communities close to the airport should be developed. This would include consideration of impacts due to: noise, air quality, traffic, loss of amenity, changes in populations, perceived risk, and community identity.

Part E Environmental Management Chapter currently proposes the development of specific management plans. There is no proposed management plan for health impacts.

The review team recommend:

- 13. A health specific management plan should be developed for both construction and operation phases.
- 14. In line with our previous recommendations this should include mitigation measures addressing:
 - 14.1. All relevant health impacts (i.e. not just limited to noise, air quality and water)
 - 14.2. Impacts on vulnerable groups and sensitive social infrastructure
 - 14.3. Synergistic nature of the impacts on areas close to the airport.
 - 14.4. Any health inequalities that may be widened (or health equity that is reduced).
- 15. Include identification of residual risks.
- 16. Identification of health opportunities where community health can be promoted and improved, health inequalities narrowed and health equity enhanced.

9. Qualifications of the Reviewers

Fiona Haigh

Project Manager

Fiona is an experienced Health Impact Assessment practitioner, researcher and educator. She has spent the last twelve years working in the field of HIA in Germany, United Kingdom and Australia. Fiona has had extensive experience of conducting HIAs using a range of methods. This includes, for example, modelling impacts of noise on health outcomes, literature reviews, collecting and analysing qualitative date from, surveys, focus groups, workshops and interviews. Fiona has routinely project managed large and small HIA projects and as well as providing expert support. Fiona has collaborated in the development of methods for HIAs, including 'EPHIA' – the European Policy Health Impact Assessment Guide, 'URHIA' – Urban HIA methodology, Health Equity Impact Assessment, Migrant Health Impact Assessment and Human Rights Health Impact Assessment. In addition Fiona was the lead project officer on a large study evaluating the effectiveness of HIA in Australia and New Zealand. This involved reviewing the quality of 55 HIA reports.

Fiona has led and been involved in a wide variety of HIAs including: airport runway extension, intermodal terminal, energy from waste facility, sports stadium and retail development, employment strategies, health service redevelopment, housing regeneration, and new housing developments.

Katie Hirono

Review Coordinator and Main Reviewer

Katie is an experienced trainer and practitioner of health impact assessment. Katie came to Australia from the leading HIA organisation in the U.S. - the Health Impact Project, a collaboration of the Pew Charitable Trusts and the Robert Wood Johnson Foundation. With over US \$10 million in funding to support the growth of HIA, the Health Impact Project provided grants, hosted national events, and developed legislative support for HIAs. As part of this Katie provided grant management, advisory support, and technical assistance to over 15 organisations conducting HIA. She also participated in national capacity developing events, including advisory sessions with the US Environmental Protection Agency to discuss integration of HIA in EIA. At the Centre for Health Equity Training, Research and Evaluation her research has focused on health impact assessment, health equity, and the social determinants of health. Katie was the lead project officer on the Trans Pacific Partnership Agreement HIA and conducted an evaluation of the HIA learning by doing training program. She has also helped to conduct two equity focused HIAs on health programs in Victoria.

Katie has been involved in HIAs on topics including: biomass fuel; intermodal terminals; public housing redevelopment; casino development; solar energy; water and plumbing development; clean water; concession bus fares; public transportation extension; waterway clean-up; and free trade agreements.

Salim Vohra

International HIA Expert Reviewer (Health Impact Evidence Review and Assessment Methods)

Salim has extensive experience of undertaking and researching Health Impact Assessment (HIA) in the UK and internationally (15 years) on economic, energy, health services, housing, transport, regeneration and waste at project and policy levels. These were either stand-alone HIAs or ones that were part of environmental, social and health impact assessments (ESHIAs) and strategic environmental assessments/ sustainability appraisals.

He has undertaken a Strategic Health Equity-Focused Policy Review for the London Borough of Hillingdon, that critically reviewed the appropriateness and comprehensiveness of the health-relevant assessments undertaken as part of the Airports Commission, led by Sir Howard Davies, on where a new runway should be built in the South of England. He also has experience of HIAs of Nationally Significant Infrastructure Projects in the UK such as Thames Tideway Tunnel, High Speed 2 and Transport for London Tube Extensions.

He has worked with a range of international organisations such as the World Health Organization and the International Council on Mining and Metals as well as environmental consultancies and multinational commissioners of HIA and ESHIAs.

He is a specialist in public health with 23 years of experience in public health medicine in various settings. Apart from HIA he has extensive experience of public health research and epidemiology (13 years), management of community perceptions of environmental and health risks (10 years), stakeholder engagement (23 years), health systems management (6 years), reviewing public health and medical research ethics (6 years), community development work (5 years) and public health teaching and training (13 years ad hoc). He has over 20 years of project management experience gained in a variety of settings — university and voluntary, public and private sectors. He has worked with public, private and voluntary sector organisations throughout my career.

His educational background is in medicine (MBChB), environmental epidemiology (MSc) and public health policy (PhD).

He is a Lecturer in Health Promotion and Public Health at the University of West London. He is also an Honorary Fellow of Staffordshire University and Conjoint Lecturer at the University of South Wales for his expertise in HIA.

He is a Fellow of the Royal Society for Public Health; Associate Member of the Faculty of Public Health; Member and Webmaster for the Transport and Health Study Group; Affiliate Member of the Institute of Environmental Management and Assessment; Member of the Town and Country Planning Association and Member, and ex Co-Chair of the Health Section, of the International Association for Impact Assessment. He is also an Editorial Board member for Environmental Impact Assessment Review.

Ben Harris-Roxas

International HIA Expert Reviewer (Social Determinants, Equity)

Ben has over 14 years' experience working in public health and program evaluation, both in Australia and overseas. He has worked in consulting and research for private sector companies, several universities, government agencies and NGOs.

Ben has project managed several large multi-year evaluation projects for Commonwealth and state government departments. Ben has conducted projects for the Commonwealth Department of Health, the NSW Ministry of Health, the Health Education and Training Institute, the Agency for Clinical Innovation, Queensland Health, NSW Treasury, the National Heart Foundation, private sector clients and several Australian local governments. These projects have involved developing logic

models, evaluation frameworks, in-depth interviewing and stakeholder consultations, statistical analysis of routinely collected quantitative service data, data linkage, qualitative research, and program and service evaluation.

Ben is also Conjoint Lecturer in the Faculty of Medicine at the University of NSW. He has also guest lectured and tutored at Macquarie University, the University of Newcastle and the University of Western Sydney.

Ben's PhD research was on the use of health impact assessment in health service planning. Ben has published 23 peer reviewed journal articles and seven book chapters and editorials. He is an Associate Editor for BMC Public Health and is on the Editorial Committee for Environmental Impact Assessment Review.

Ben is Convenor of the International Union for Health Promotion and Education's Global Working Group on Health Impact Assessment. He is on the NSW Committee of the Australasian Evaluation Society and was Health Section Co-Chair of the International Association for Impact Assessment from 2011-2015. He recently participated in expert consultations for the WHO Centre for Health Development in Kobe on multisectoral action for health and health indicators for urban development. Ben is also a member of the International Association for Public Participation (IAP2).

Ben Cave

International HIA Expert Reviewer (Airport Health Impacts, Peer Review Methods and Methodologies)

Ben has specialised in health and social impact assessment for the last 16 years. He has worked across the UK, in mainland Europe and further afield with policy makers, public health academics, environmental scientists and spatial planners. He has provided public health and policy advice at a senior level in local, regional, national and international arenas.

Ben conducts Strategic Environmental Assessments and advises the World Health Organization on requirements and methodologies for SEA. He also integrates health into environmental assessment at the project level: He has led Health Impact Assessments (HIAs) in conjunction with environmental assessments and focused on providing high quality HIAs that are robust and defensible. He has lead HIAs in a wide range of sectors: for example infrastructure for energy, mining, road and rail. Ben has also worked on health in environmental assessments at the following UK airports: Stansted; Heathrow; London-Luton; Bristol and London City.

He is committed to improving standards and quality in the field of impact assessment: he is an active member of, and has held leadership positions in, the International Association for Impact Assessment (IAIA). In 2009 he led research for, and development of, a review package for HIA reports with input from an expert panel of reviewers. He convened a seminar on quality in impact assessment at the 2015 annual meeting of the IAIA. His work contributes to national and international developments.

His awards include: 2015 Honorary Member of the Faculty of Public Health; 2011 International Association for Impact Assessment (IAIA) "Individual Award" for major achievement and advancement in the theory and/or practice over a period of time at an international level.

His professional associations include: Chair of Section Coordinating Committee of the IAIA (2011-2014) and co-chair of the Health Section of the IAIA (2005-2011); Associate member of the Institute for Environmental Management and Assessment. Ben is a member of the International Union of

Health Promotion and Education Global Working Group on HIA (2010-present); and sole European member of National Research Council/Institute Of Medicine committee for a study on Health Impact Assessment in the USA (2009-2011).

Filipe Silva

International HIA Expert Reviewer (Health Impact Evidence Review and Assessment Methods)

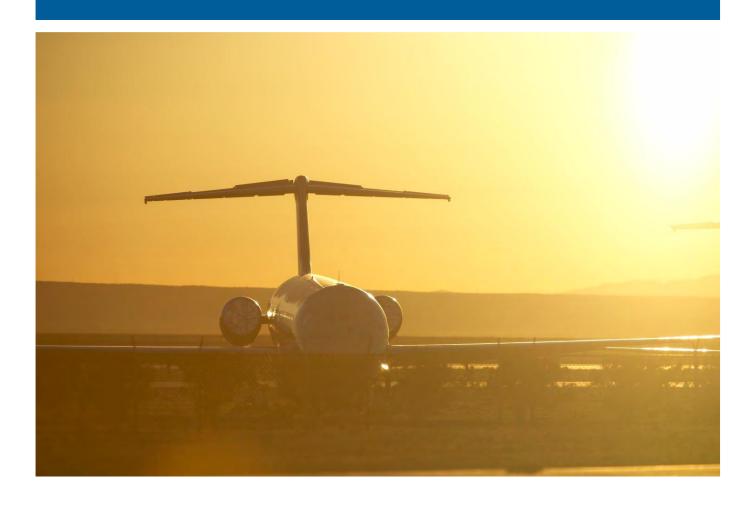
Filipe has 6 years of experience in public health medicine in various settings — undertaking health impact assessment and health assessment components of environmental and social assessments (3 years), public health research and epidemiology (3 years), epidemiological surveillance (1 year), health systems management (2 years), community development and health promotion work in both high income and low to middle income countries, mostly in the UK but also across Europe, Africa, South East Asia and South America, within public, private and voluntary sector organisations.

Filipe has participated in more than fifteen impact assessments including stand-alone health impact assessments and the health assessment component of EIAs and SEAs on policies, plans and projects in the transport, urban and spatial planning, and extractive sectors. He has a strong focus on the quantitative assessment of health effects, particularly in relation to air pollution. Filipe was part of the team that undertook a Strategic Health Equity-Focused Policy Review for the London Borough of Hillingdon, critically reviewing the appropriateness and comprehensiveness of the health-relevant assessments undertaken as part of the Airports Commission, led by Sir Howard Davies, on where a new runway should be built in the South of England. He also has experience of HIAs of Nationally Significant Infrastructure Projects in the UK such as High Speed 2 and Transport for London Tube Extensions. He has worked with a range of international organisations such as the World Health Organization and the Asian Development Bank as well as environmental consultancies and multinational commissioners of HIA and ESHIAs.

Filipe has a Bachelor and Masters in Medicine from the University of Oporto, Portugal, a Master's in Public Health by the London School of Hygiene and Tropical Medicine (2013) with a focus on health in EIA and SEA, environmental health and environmental epidemiology. He has undertaken additional specific training in geographical information systems applied to public health research and practice, health impact assessment (IMPACT, University of Liverpool, 2013), strategic environmental assessment and environmental impact assessment principles and practice.



Aviation planning (ARUP and The Airport Group)



WSP PB

Western Sydney Airport - Draft EIS Peer Review

Aviation Planning

001

FINAL | 20 November 2015

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 246163

Arup Arup Pty Ltd ABN 18 000 966 165



Arup Level 17 1 Nicholson Street East Melbourne VIC 3002 Australia www.arup.com



Contents

			Page
Exec	cutive Sumi	mary	1
1	Scope		5
	1.1	Approach	5
	1.2	Limitations	6
	1.3	Components of the draft EIS Reviewed	6
2	Detaile	d Findings – Stage 1 Airport	8
	2.1	Compliance with the EIS Guidelines	8
	2.2	Assumptions	9
	2.3	Validity of Conclusions	23
	2.4	Mitigation and Management Measures	25
	2.5	Uncertainty over Impacts and Environmental Risks	27
3	Detaile	d Findings – Long term Development	28
	3.1	Approach	28
	3.2	Gap analysis	28
	3.3	Key risks and implications	31
	3.4	Effectiveness	32
4	Key Im	pacts and Opportunities	33
5	Review	Team	36

Executive Summary

Scope of Review

Our approach has been to review the four volumes of the draft EIS as well as the draft Airport Plan provided on the website (www.westernsydneyairport.gov.au).

This document is based on a desktop study and a literature review of the four volumes of the draft EIS and the draft Airport Plan, comparison of these against the EIS guidelines, identification of potential opportunities or inconsistencies and a comparison against available benchmarks.

Stage 1 airport

Issues identified in terms of aviation planning for the Stage 1 airport include:

Airport planning

- No vocation or aviation purpose is described for Western Sydney Airport.
- There is a degree of variability in the forecasts and demand information used in the draft EIS and draft Airport Plan. In addition, the forecast passenger loads per aircraft for Western Sydney Airport as presented in the draft EIS appear to be high.
- It is unclear what benchmarks or planning decisions sit behind the 1900m runway separation shown for Western Sydney and it is noted that other airports in Australasia are proposing wider runway separation.
- Benchmarking indicates that passenger throughput per aircraft stand is
 potentially high for Western Sydney Airport. This would imply that the
 number of aircraft stands shown is less than one might typically expect.

Airspace and flight tracks

- The proposed airspace model is noted as a "proof of concept" and not the subject of exhaustive analysis. The indicative airspace design was not developed with consideration to potential noise or other environmental impacts.
- A single airspace model is presented for Stage 1 development. The basis
 of the model is that operations at Sydney Kingsford Smith Airport are
 unaffected. Other than minor flight path displacement, feasible alternatives
 are not presented or evaluated. However, presenting alternatives is a
 requirement of the EIS guidelines provided by the Department of
 Infrastructure and Regional Development.
- Departures track to 'exit gates', concentrating aircraft on several defined routes. This is a common tool used to improve air traffic flow. The impact of concentration and location of turn points has not been tested for environmental impact.

- Modes of operation (flight paths based on runways in use) are mentioned, but not how they affect surrounding areas.
- Noise abatement procedures, commonly implemented at other major airports, have not been developed.

Bird and bat strike

• The bird and bat strike assessment concludes that the overall risk for the airport is low. However the assessment is preliminary.

Fuel dumping

• Fuel dumping is concluded to be low risk and it is considered that the information presented in the draft EIS is appropriate.

Long term development

A number of the issues identified for Stage 1 are also apparent in the longer term planning of Western Sydney Airport.

- The lack of vocation or purpose for Western Sydney Airport and its relationship to the ongoing operation at Sydney Kingsford Smith Airport and, in particular, that potential long-term growth forecasts are very high.
- The variability in the number of stands and the apparent lack of consistency in terms of a base set of planning parameters used in developing the airport.
- Narrow runway separation to achieve all the proposed aviation uses.
- Lack of a full and thorough assessment of the interaction of aircraft traffic in the Sydney Basin which requires an airspace and flight path review not considered as part of Stage 1. The Stage 1 flight paths proposed in the Draft EIS are not considered appropriate for the long term plan.

Key impacts and opportunities

Key impacts and opportunities from an airport planning perspective for the above issues are as follows:

Vocation or purpose of Western Sydney Airport – One might expect that, certainly in its early stages of development, the Western Sydney Airport would potentially be a domestic, low-cost carrier airport with a significant cargo operation, reflecting lower charges and the lack of noise curfew. Premium international flights would continue to use Sydney Kingsford Smith as the primary airport in New South Wales and the one which provides proximity to the tourist and business centre of Sydney CBD. This vocational aspect is important in influencing how the future airport will operate, peak periods of activity and the type of traffic that will use the airport.

- Forecasts There is potential that the forecasts understate the number of aircraft movements required, which has knock-on impacts on dependent analysis such as noise modelling. This is a potential area for further assessment or clarification to confirm that findings in the draft EIS and draft Airport Plan based on these forecasts are robust.
- Runway separation Any wider runway spacing would increase land take, with downstream environmental impacts on biodiversity, surface water and groundwater, landscape and visual amenity. In addition, wider spacing for the future two runway airport will impact on flight tracks and noise, given changes to runway thresholds.
- Aircraft stand provision The number of aircraft stands shown is
 potentially less than one might typically expect, which has implications for
 land take and therefore related environmental impacts, though it is noted
 that the Land Use plan for Stage 1 shows a large area available for
 development.
- Airspace, OLS and PANS-OPS In terms of requirements, the evaluation of protection volumes for flight paths and airspace containment is in accordance with normal methods mentioned in the Airports (Protection of Airspace) Regulations and under the Airports Act 1996. Analysis of Obstacle Limitation Surfaces (OLS) and Instrument Flight Procedure protection volumes (known as PANS-OPS surfaces) indicates that, operationally, the Western Sydney airport can operate unrestricted from terrain and artificial obstacles.

However, the following impacts are identified which are either unresolved or which require further clarification:

- 1. The proposed airspace architecture is 'indicative' and has not been rigorously tested. The draft EIS proposes that another airspace model is tested closer to commencement of operations.
- 2. The modelling indicates several flight paths over water storages, such as Warragamba Dam and Prospect Reservoir. Other flight paths traverse the Blue Mountains National Park. The environmental impact is unclear.
- 3. The requirement under the Guidelines, produced by the Department of Infrastructure and Regional Development (DIRD), for feasible alternatives to be included has not been met. This is particularly important in consideration of concentration of approaching traffic over the township of Blaxland for the Stage 1 development and departure tracks.
- 4. There is no consideration of community sentiment regarding changes to flight paths, proposed in the draft EIS, when the Airport operates with two runways.
- 5. An alternative Stage 1 airspace model, based on the long term proposal but operating with a single runway, is not tested.

- 6. Except for Sydney Kingsford Smith, flight paths for aerodromes, affected by the Western Sydney Airport are not evaluated.
- 7. The draft EIS suggests that Western Sydney Airport will detrimentally affect the operations at Bankstown and Camden, and affect Richmond (military). The environmental impact is not quantified.
- 8. Relocation of light aircraft traffic to other airports, the definition of new training airspace and consequent environmental impact, is not assessed.

Given the above, it is considered that the information on airspace presented in the draft EIS does not meet requirements.

- Bird and bat strike the bird and bat strike assessment is preliminary and therefore further works in the airport site and study area are required to confirm the level of bird and bat strike risk and to refine the mitigation strategies.
- Fuel dumping It is considered that the information presented in the draft EIS is appropriate though more detail could be provided to give certainty for local government and communities.

001 | FINAL | 20 November 2015 | Arup

1 Scope

The following document provides a peer review of airport planning aspects of the draft Environmental Impact Statement (EIS) for Western Sydney Airport released by the Federal Government for public exhibition on 19th October 2015. Airspace and flight tracks have been reviewed by The Airport Group (TAG) and salient points and key findings are also captured in this document. For the full discussion on airspace and flight tracks, the TAG report entitled "Peer Review - Western Sydney Airport EIS" and dated 17th November 2015 is also included in its entirety as Appendix A.

Given that Western Sydney Airport is a new facility, amendments to the Airports Act 1996 have been passed which provide for the preparation of an "Airport Plan" to guide the development of the airport and a draft of this Plan has been provided along with the draft EIS.

The draft EIS and draft Airport Plan have been put forward to obtain "planning, environment and development approval <u>for Stage 1</u> of the proposed [Western Sydney] airport". In addition, indicative information is also provided for a longer term planning horizon out to 2063 to enable stakeholders and the public to understand and consider potential longer term environmental impacts of the new airport, including noise.

The document states that the "draft EIS has been prepared in accordance with the requirements of the EPBC Act and the EIS guidelines, including the requirement for public consultation. In determining the Airport Plan, the Minister for Infrastructure and Regional Development must accept any environmental conditions proposed by the Minister for the Environment, taking into account the finalised EIS".²

Longer term development beyond Stage 1 would be subject to the requirements of the Airports Act including provision of additional Master Plan and MDP studies, and potentially additional EIS requirements, as appropriate.

1.1 Approach

Our approach has been to review the four volumes of the draft EIS as well as the draft Airport Plan provided on the website (www.westernsydneyairport.gov.au).

The four volumes of the draft EIS are Volume 1 – Project Background, Volume 2 – Stage 1 Development, Volume 3 – Long Term Development and Volume 4 – Technical Appendices.

-

¹ p.9, Regulatory framework, Department of Infrastructure and Regional Development, Western Sydney Airport – Environmental Impact Statement – Volume 1, October 2015

² p.10, Regulatory framework, Department of Infrastructure and Regional Development, Western Sydney Airport – Environmental Impact Statement – Volume 1, October 2015

1.2 Limitations

This document is based on a desktop study and a literature review of the four volumes of the draft EIS and the draft Airport Plan, comparison of these against the EIS guidelines³, identification of potential opportunities or inconsistencies and a comparison against available benchmarks.

No analysis or modelling has been undertaken and indeed modelling files have not been made available.

The document provides guidance to WSROC in terms of the work undertaken and where further clarification may be required on key issues.

1.3 Components of the draft EIS Reviewed

The following sections have been reviewed for this aviation planning peer review:

• Draft Airport Plan

Part 1: Airport Plan for Western Sydney Airport

Part 2: Concept Design

Part 3: Specific Developments

• Draft EIS Volume 1 - Project Background, including

Part A – Project background and rationale

- 1. Introduction
- 2. The need for Western Sydney Airport
- 3. Approvals framework

Part B – Airport plan

- 4. Land use plan
- 5. Stage 1 Western Sydney Airport
- 7. Airspace architecture and operation

• Draft EIS Volume 2 – Stage 1 Development, including

Part D - Environmental impact assessment

- 9. Approach to impact assessment
 - 10. Noise (aircraft)
 - 12. Air quality and greenhouse gases
 - 14. Hazard and risk
 - 21. Planning and Land Use
 - 26. Greater Blue Mountains
 - 27. Cumulative Impact

Part E – Environmental Management

28. Environmental management framework

• Draft EIS Volume 3 – Long Term Development, including

Part G – Assessment of long term development

30. Introduction

-

³ These guidelines are provided in EIS Volume 4 Appendix C.

- 32. Air quality and greenhouse gases
- 39. Other environmental matters
- **Draft EIS Volume 4 Appendices**, including:

Appendix E1 Aircraft overflight noise

Appendix F1 Local Air Quality and Greenhouse Gas

Appendix I Bird and Bat Strike

• Western Sydney Airport, Preliminary Airspace Management Analysis, Airservices Australia, 2015

001 | FINAL | 20 November 2015 | Arup Page 7

2 Detailed Findings – Stage 1 Airport

2.1 Compliance with the EIS Guidelines

In general, most requirements of the EIS guidelines have been addressed in relation to aviation planning aspects.⁴ However, it is considered that the information on airspace presented in the draft EIS does not meet requirements.

From an aviation planning perspective, the EIS requirements are as described below:

- In accordance with Section 5(a) of the EIS guidelines, all operational components of the action, in this case the proposed development of a Western Sydney Airport, driven by aviation demand and planning of appropriate infrastructure, need to be presented. The draft Airport Plan which accompanies the draft EIS is provided to guide the development of the physical characteristics of airport, including runway, taxiways, aprons, terminal and landside facilities.
- The assessment needs to consider the Stage 1 operation, which is the action for which approval is sought, but also to foreshadow longer term development. This is in accordance with Section 5(a) of the EIS guidelines.
- The EIS Guidelines, Section 5(g) require a description of all of the relevant impacts of the action to the environment including:
 - 1. Consideration of potential flight paths and varying aircraft operating procedures (with respect to noise etc).
 - Airspace is discussed in Sections 7, 14, 21, 27 and 30 of the EIS, Volume 4 Appendix E1 Aircraft Overflight & Operational Noise and in the documents entitled Western Sydney Airport, Preliminary Airspace Management Analysis, Airservices Australia, 2015.
 - 2. Bird or bat airstrike EIS Guidelines, Section 5(g) require the consideration of impacts arising from bird or bat airstrike, and the creation of any risks or hazards to people or property that may be associated with any component of the action.
 - Bird or bat airstrike is discussed in Section 14.4, 16.5 and 16.6 of the EIS and Volume 4 Appendix I.
 - 3. Aviation fuel dumping EIS Guidelines, Section 5(g) require the consideration of air quality and environmental impacts arising from potential fuel dumping impacts.

⁴ The guidelines are entitled Guidelines for the Content of a draft Environmental Impact Statement Western Sydney Airport Environment Protection and Biodiversity Conservation Act 1999 (Reference: EPBC 2014/7391) and dated 22nd January 2015. They are provided in Appendix C of Volume 4 of the draft EIS.

- Fuel dumping is discussed in Section 7.8, 12.6 and 32.4 of the EIS and Volume 4 Appendix F1.
- In addition, under EIS Guidelines Section 3. Feasible Alternatives, the draft EIS is supposed to assess "feasible alternatives" to the action and then "undertak[ing] a comparative description of the impacts of each alternative on the matters of national environmental significance". ⁵

The following sections of this document describe the outcomes of the Arup and TAG peer review, with respect to the above guidelines and with commentary on assumptions and findings.

2.2 Assumptions

2.2.1 General

The draft Airport Plan and much of the draft EIS is focussed on the Stage 1 scenario, for which approval is sought. This is equivalent to an airport with a mixture of domestic and international traffic with a maximum throughput of 10 million annual passengers.

No rationale is provided for the 10 million passenger per annum threshold other than it provides for predicted demand in 2030, 5 years after the proposed opening of the airport in 2025. One might typically expect the approach to have been to look at the maximum capacity of single runway airport and to identify logical capacity stages to get to that point. The maximum capacity of the single runway as set out in the draft EIS is 37 million annual passengers by 2050, equivalent to the current throughput of Sydney Kingsford Smith Airport.

The approach taken leads to an incremental planning solution when moving to the long-term capacity scenario, with full build-out of terminal and apron capacity between two parallel runways, stated to be by 2063.

No vocation or aviation purpose is described for Western Sydney Airport. One might expect that, certainly in its early stages of development, the airport would potentially be a domestic, low-cost carrier airport with a significant cargo operation, reflecting lower charges and the lack of noise curfew. Premium international flights would continue to use Sydney Kingsford Smith as the primary airport in New South Wales and the one which provides proximity to the tourist and business centre of Sydney CBD.

⁵ p.4 Section 3, Feasible Alternatives, Appendix C, Guidelines for a draft Environmental Impact Statement for Western Sydney Airport, Australian Government, Department of Infrastructure and Regional Development, Western Sydney Airport – Environmental Impact Statement, October 2015

⁶ It is assumed that the need or otherwise for a noise curfew at Western Sydney is discussed in the review undertaken by the noise consultant. From an operational standpoint, it is preferable that an airport operates unrestricted by curfews, however it is imperative that principles of "Fly Neighbourly" are introduced to minimise the environmental impact of noise.

This vocational aspect is important in influencing how the airport will operate, peak periods of activity and the type of traffic that will use the airport. A number of these aspects are alluded to in the draft EIS without ever being fully explained.⁷

2.2.2 Aviation Demand and Activity

Estimating future aviation activity and demand is fundamental component of airport masterplanning, impacting not only on sizing of the airport and its associated infrastructure requirements but also being an important element in predicting aircraft noise as well as understanding landside transport impacts.

Future demand estimates to 2063

Demand estimates in the main volumes of the draft EIS broadly align and are summarised in Table 1 of this report. It is noted that growth between 2050 and 2063 is extremely high – 45 million annual passengers in 13 years, which is unprecedented. It is assumed that the 2063 time horizon is therefore indicative though this is not explained in the draft EIS.

Table 1: Western Sydney Airport - Aviation Demand

	2030	2050	2063
Annual passengers (arrivals and departures)	10,000,000	37,000,000	82,000,000
Peak hour passengers (international and domestic)	3,400	9,500	18,700
Total annual air traffic movements (passenger and freight)	63,000	185,000	370,000
Total peak hour air traffic			
movements	21	49	85

Source: p.16 Table ES 1 and p.106 Table 2-6, Department of Infrastructure and Regional Development, Western Sydney Airport – Environmental Impact Statement – Volume 1, October 2015

Whilst Tables ES 1 and 2-6 in the draft EIS reference 85 peak hour aircraft movements, elsewhere draft EIS volume 1 states "with parallel runways, the proposed airport could potentially achieve aircraft movement rates of around 100 movements per hour (one landing or one arrival constitutes an aircraft movement)". This has potential implications for noise modelling.

Moreover, when considering the data provided, it would seem that peak hour demand in terms of passengers per movement is comparable to and potentially even less than the annual average – as shown in blue in Table 2.

⁷ p.150, Activity Forecasts, Department of Infrastructure and Regional Development, Western Sydney Airport – Environmental Impact Statement – Volume 1, October 2015

⁸ p.19, Department of Infrastructure and Regional Development, Western Sydney Airport – Environmental Impact Statement – Volume 1, October 2015

2030 2063 2050 Annual passengers 10,000,000 (arrivals and departures) 37,000,000 82,000,000 Peak hour passengers (international and domestic) 3,400 9,500 18,700 Total annual air traffic movements (passenger and freight) 63,000 185,000 370,000 Passengers per movement (annual) 159 200 222 Total peak hour air traffic 49 movements 21 85 162 220 Passengers per movement (peak)

Table 2: Western Sydney Airport - Passengers per Aircraft Movement

Source: Arup analysis using the data provided in Table ES1 and Table 2-6 of draft EIS Volume 1

This is counter-intuitive and does not reflect trends at other airports. One would typically expect a 15% to 20% difference between peak hour and annual loads.

The passenger load per aircraft and its impact on ATMs is important as variations in this will affect the number of aircraft flying in an hour, across a day or across the year, which in turn impacts on other considerations, including noise modelling.

It is noted that the above data includes both annual and peak hour air freight traffic movements (which are broken out for Stage 1 only in the draft Airport Plan, as described in the section below). However, assuming consistent patterns of growth between peak hour and annual freight, the findings still seem atypical.

In addition, when considering other Australian Airports and load factors in their most recently approved Master Plans, passenger loads estimated for Western Sydney Airport seem high.

Current passenger loads through Sydney, Melbourne and Brisbane are as follows:

- Sydney Airport 36.9 million passengers on 292,800 passenger movements in 2012, at an average load per movement of 126 passengers.
- Melbourne Airport 30.17 million passengers on 210,350 passenger movements in 2013, at an average load per movement of 143 passengers.
- Brisbane Airport 21.3 million passengers on 194,000 passenger movements in 2012/13, at an average load per movement of 110 passengers.

All of these airports are mature, with well-defined markets, and reasonable share of international traffic. It therefore seems optimistic for Western Sydney Airport to expect higher average passenger loads per aircraft movement than these three airports in the 5 years after it opens.

Assuming higher passenger loads has the potential to understate the number of aircraft movements required, which has knock-on impacts on dependent analysis such as noise modelling. This is a potential area for further assessment or clarification.

Demand estimates for Stage 1 Airport

Table 3 provides information from Table 1 of the draft Airport Plan in terms of the mix of international and domestic passengers and air traffic movements (ATMs) and this data differentiates between passenger and freight ATMs.

When considering the data in the draft Airport Plan, peak hour arriving and departing passengers are shown as 4,000 passengers over 19 peak hour passenger ATMs (2,000 departing and 2,000 arriving passengers). This gives an average passenger load per aircraft of 211 which is higher than the annual average of 179 passengers.

This is intuitive as peak hour demand is generally higher than daily or annual averages, though it is noted that an average passenger load per ATM of 211 is very high when considering a predominantly domestic airport using Code C aircraft at 2030 – which is how the Stage 1 airport is described. The capacity of typical Code Cs flown in Australia are as follows - Qantas 737-800s at 168 seats, Jetstar A320s at 180 seats and Virgin Australia A320s at 168 seats.

Table 3: St	age 1 Avi	iation D	emand
-------------	-----------	----------	-------

Annual Traffic	International	Domestic	Stage 1 Total
Annual passengers	2,200,000	7,800,000	10,000,000
Annual passengers ATM	7,700	48,300	56,000
Passengers per ATM	286	161	179
Annual freight throughput (tonnes)	167,000	52,000	220,000
Annual freight ATM	3,900	3,100	7,000
Design busy hour passengers			
Departing (passengers per hour)	550	1,600	2,000
Arriving (passengers per hour)	600	1,600	2,000
Design busy hour ATM			
Passenger (movements per hour)	4	17	19
Passengers per ATM	288	188	211
Freight (movements per hour)	3	4	6
Peak movements per hour	4	19	21

Source: p.73, Table 11, Draft Airport Plan, Australian Government, Department of Infrastructure and Regional Development, Draft Airport Plan – Western Sydney Airport, October 2015

From the draft Airport Plan, it is not clear if the 2,000 arriving and 2,000 departing passengers occur at the same time (i.e. if this is a two-way peak, or if these are peak passenger numbers for a specific arrivals peak hour and departures peak hour at different times of the day) and indeed elsewhere in the draft EIS, the combined peak hour of international and domestic passengers is quoted as 3,400 over 19 movements, which would be 179 passengers per aircraft, or in line with the annual average.

⁹ "In 2030, Code C aircraft are expected to account for the majority of domestic operations at the Airport, representing approximately 90 per cent of the domestic fleet mix. In the long-term, Code C aircraft could represent 80 per cent of the domestic fleet mix." p.26, Aircraft Fleet Mix, Draft Airport Plan, Australian Government, Department of Infrastructure and Regional Development, Draft Airport Plan – Western Sydney Airport, October 2015

Landside Transport Analysis

It is noted that a separate analysis has been undertaken of surface transport impacts as documented in draft EIS Volume 4, Appendix J Surface transport and access. This analysis uses the following assumptions:¹⁰

- For each domestic aircraft, an assumed average capacity of 180 passengers with an average flight occupancy of 90 per cent has been assumed.
- For each international aircraft, an assumed average capacity of 420 passengers with an average flight occupancy of 90 per cent has been assumed.

It is unclear how these assumptions relate to the demand presented for the Stage 1 airport as repeated in Table 3 of this report. For example, assuming 4 international aircraft movements as per Table 3, this would equate to 4 aircraft at $420 \times 90\% = 378$ passengers for a total of 1,512 passengers. This is much higher than the combined international departing and arriving passenger numbers shown in the table (550 + 600 = 1,150 passengers) both in the draft Airport Plan and elsewhere in the draft EIS

Summary

Given the importance of demand forecasts both for sizing the airport and it infrastructure but also for informing other dependent analysis such as noise modelling and planning of landside infrastructure, the variation in some of this data requires clarification to confirm that findings in the draft EIS and draft Airport Plan based on the aircraft forecasts are robust.

2.2.3 Airport Master Plan

The draft Airport Plan states that the Land Use Plan presented for Stage 1 "will apply from the grant of an airport lease until approval of the first master plan". ¹¹ Indeed, the draft Airport Plan clarifies further by stating that "some components of the Airport, such as the location of the runway and the required spacing of airfield infrastructure elements are fixed, while others such as the location and shape of the terminal and cargo areas may change provided they comply with the Land Use Plan and the development objectives for the airport". ¹²

-

001 | FINAL | 20 November 2015 | Arup

¹⁰ p.58, GHD,| Report for Western Sydney Unit - Western Sydney Airport EIS, 21/24265, which forms draft EIS Volume 4 Appendix J, Australian Government, Department of Infrastructure and Regional Development, Draft Airport Plan – Western Sydney Airport, October 2015

¹¹ p.59 Land Use Plan, Draft Airport Plan, Australian Government, Department of Infrastructure and Regional Development, Western Sydney Airport – Environmental Impact Statement, October 2015

¹² p.17, Stage 1 Development – construction and initial operations (approximately 2016–2030), Draft Airport Plan, Australian Government, Department of Infrastructure and Regional Development, Western Sydney Airport – Environmental Impact Statement, October 2015

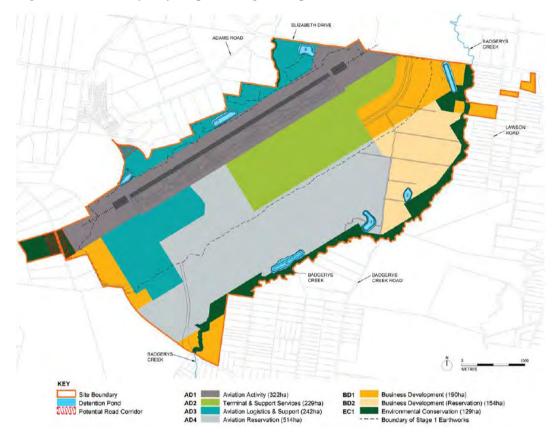


Figure 1: Western Sydney Airport - Stage 1 Airport Land Use Plan





Runway Characteristics

The aircraft mix used in assessing runway length requirements, in planning the airport is provided in Table 5-4 of Volume 1 of the draft EIS and is shown in Figure 3.

Figure 3: Fleet Mix used in Stage 1 Airport Planning

Table 5-4 - Maximum take-off weights for critical aircraft expected to use the proposed airport

Aircraft	Code	Maximum take-off weight (kg)	Runway length requirements (m)
B737-500	С	60,550	2,960
B747-400	E	396,894	3,790
B747-800	F	447,696	3,670
B767-300ER	D	186880	3,790
B777-200	E	286,900	3,320
B777-300ER	E	351,535	3,640
A321-200	С	93,500	3,000
A330-300	E	242,000	3,650
A340-600	E	380,000	3,400
A380-800	F	575,000	2,900

Source: Aircraft Manufacturer's Manuals

The runway length shown for Stage 1 is 3,700m which is appropriate for all but the 747-400 and 767-300ER at Maximum Take-Off Weight (MTOW). As the draft EIS notes these two aircraft "are currently being phased out of the Boeing fleet" and accordingly a 3,700m accommodates the other main aircraft types.

The runway will be 60m wide to accommodate up to Code F aircraft.

Whilst the runway length and width are described, other characteristics which one might expect to see in an EIS are not included such as runway longitudinal and transverse slopes, runway surface, runway shoulder and strip longitudinal and transverse slopes etc. One would expect these to be included as they impact upon water run-off and drainage which is usually an important consideration in an EIS.

In terms of operation, the draft Airport Plan identifies that the airport will operate with a single runway to around 2050 at 37 million annual passengers on 185,000 movements, equivalent to 49 busy hour ATMs. At this point a second parallel runway of 3,700 metres is expected to be required.

It should be noted that 49 movements per hour off a single runway is close to the current maximum at Gatwick, which is the world's busiest single runway airport at 39.7 million passengers¹⁴ and which achieves up 55 movements per hour. However, Gatwick is an exception globally and is currently engaged in discussion with the UK Government in relation to building a second runway. The next

-

¹³ p.154, Runway length requirements, Western Sydney Airport – Environmental Impact Statement – Volume 1, October 2015

¹⁴ Gatwick Airport website, http://mediacentre.gatwickairport.com/press-releases/2015/15-10-09-london-gatwick-september-traffic-figures.aspx

busiest single runway airport in the world is San Diego Airport at 18.8 million annual passengers.

These benchmarks would indicate that a potential second runway may be sought earlier than 2050 and this would require its own Master Plan and MDP process, potentially with additional EIS requirements as appropriate.

Runway Separation

In general, the principles behind the Land Use plans appear sensible.

The plans for Western Sydney Airport allow 1900m between the two runways which provides for development area for terminal, aviation and logistics support land uses when considering long-term growth. This aligns with the distance between the main runways for the original Beijing Airport and for the recently opened Kunming Airports and is greater than the runway separation for new Beijing T3 and Hong Kong Chek-Lap-Kok which are both at approximately 1500m.

However, recent development of independent parallel runways with main terminal complexes between them are typically wider between 2000m and 2500m (Auckland, Kuala Lumpur, New Istanbul and New Dubai). This is also reflected by other Australian and New Zealand Airports which are allowing for 2000m to 2100m including:

- 2000m at Brisbane, Melbourne and Perth Airports; and
- 2072m at Auckland Airport;

This is to provide greater flexibility for the central terminal area development.

It is unclear what benchmarks or planning decisions sit behind the 1900m runway separation shown and any wider spacing would increase land take, with downstream environmental impacts on areas such as in turn impacts on biodiversity, surface water and groundwater, landscape and visual amenity. In addition, wider spacing for the future two runway airport will impact on flight tracks and noise given changes to runway thresholds.

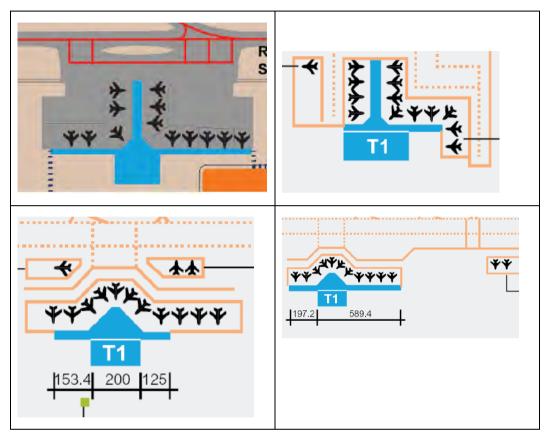
This closer runway separation will also likely provide for less room to manage the proposed incremental development of the site, in particular when considering construction, construction access, site compounds etc.

It is recommended that clarification is sought on the issue of runway separation and whether the proposed 1900m is appropriate.

Aircraft Stands

There are a number of inconsistencies in terminal sizing and provision of stands when considering the Stage 1 Master Plan, as shown in Figure 4.

Figure 4: Indicative Stage 1 Terminal Arrangements



Whilst the draft Airport Plan identifies that multiple terminal and stand configurations exist, one would expect the fundamental elements to remain the same. However, the total number of widebody (Code E or F) aircraft stands shown ranges from 13 to 14 and the location of these stands connected to the terminal (also known as contact stands) and those that are remote for aircraft parking ranges from all contact to up 3 widebody aircraft on remote stands.

Indeed, the draft Airport Plan describes "the expectation that approximately 21 passenger aircraft stands (Code C, Code D and Code F) and four freight aircraft stands will be required to provide the Stage 1 Capacity. MARS and swing gates may be used to meet the Stage 1 Capacity and reduce the overall stand requirement to approximately 19". This is different set of numbers again, although the Master Plan options shown in Figure 4 would provide enough space for this mix.

Whilst not considered critical issue at this stage, it does raise the question of consistency in terms of the base set of planning parameters used in developing the airport. Moreover, when considering 10 million annual passengers on 21 stands,

¹⁵ p.75, 3.2.3 Apron, Draft Airport Plan, Australian Government, Department of Infrastructure and Regional Development, Draft Airport Plan – Western Sydney Airport, October 2015

this gives a passenger throughput of 467,190 passengers per stand. This is a very high throughput and benchmarks with major airports such as Atlanta, Dubai, Amsterdam, Denver and Hong Kong. However, these are major hubs with much higher throughputs and 6 or 7 waves of arrivals or departures and high levels of transfer. One would not expect this level of demand per stand through a 10 million passenger per annum airport but a lower throughput. This implies that the Western Sydney Airport will actually require more aircraft stands than those shown on the plans.

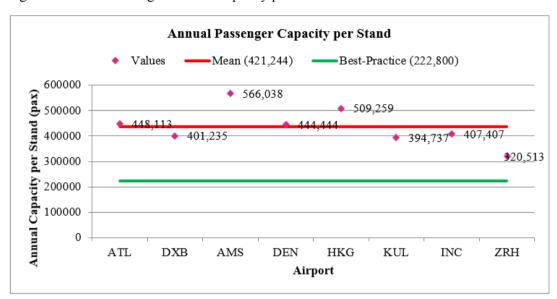


Figure 5: Benchmarking - Annual Capacity per Stand

Source: Graph extracted from Arup benchmarking study using 2008 data

This is reaffirmed through benchmarking against current Australian airports. For example, when considering the current Sydney Airport, the published Aeronautical Information Package (AIP) indicates a total of 106 stands. Current throughput at Sydney is 36.9million passengers, which over 106 stands is equivalent to 348,113 passengers per stand.

It is unlikely that new airport in the same region would perform more efficiently than an existing airport with a mature route network and more extensive international reach, in particular in its early years of operation.

As per the passenger load per aircraft data described earlier in this section, this benchmarking would imply that the number of aircraft stands shown is less than one might typically expect, which has potential implications for land take and therefore related environmental impacts, though it is noted that the Land Use plan for Stage 1 shows a large area available for development.

Phasing

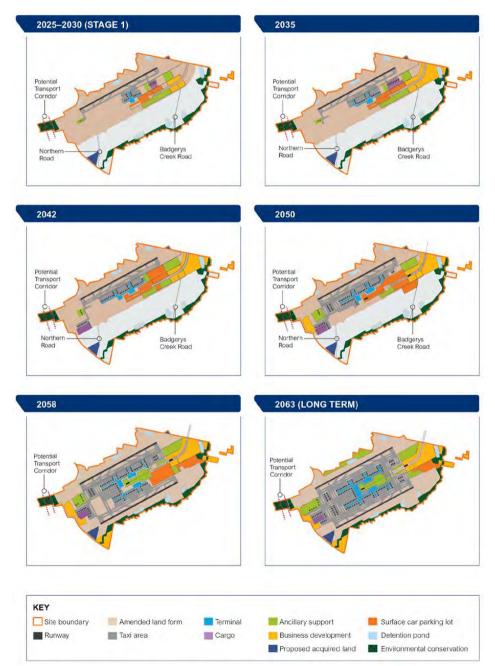
Overall the Master Plan appears to be largely influenced by the initial stage of development at 10mppa with incremental expansion out to 2063. This would imply that Western Sydney airport is not seen as a true competitor or even replacement airport to Sydney Kingsford Smith but more of a complementary airport to the existing one. Therefore, the planning appears to have been

developed on the basis of decanting traffic in as similar way to past development priorities at London Stansted or Montreal Mirabel.

As can be seen from Figure 6, the expansion plan is extremely incremental using multiple terminal processors and pier extensions all linked to each other. This raises questions with regard to the vision and purpose of Western Sydney Airport in relation to the current Sydney Airport.

In addition, the amount of capacity being added every 7 to 8 years is sometimes equivalent to 12 widebody Code E or F aircraft or 24 narrowbody Code C aircraft which is significant and implies the airport will be a continuous building site which raises questions of construction and buildability.

Figure 6: Indicative Staging of Expansion



2.2.4 Noise from Aircraft

Another consultant is reviewing the noise modelling presented in the draft EIS.

The aircraft mix used in the noise modelling is provided in Table 10-3 of Volume 3 of the draft EIS and is shown in Figure 7 below.

Figure 7: Fleet Mix used in Stage 1 Airport Planning

Aircraft	Daily movements	
Passenger Movements		
Airbus A320	100	
Airbus A330	18	
Airbus A380	9	
Boeing 737	28	
Boeing wide-body general	9	
Boeing 777	4	
DeHaviland DHC8	8	
Saab 340	12	
Freight Movements		
Airbus A330	2	
Boeing 737	2	
Boeing 747	10	
Boeing 767	4	
Boeing 777-300	-	
Small Freight	10	

It is noted that planning to 2030 for Stage 1 of the airport includes aircraft that may not be operational at that time such as the B747-400 and B767-300 which as the draft EIS notes "are currently being phased out of the Boeing fleet". By including for these in noise modelling, it is likely that this aspect of the modelling has been conservative as older aircraft are typically noisier than the more current generation. However, as noted earlier in this section, it is not clear whether the number of aircraft movements is correct or whether these numbers have been understated owing to high load factors.

2.2.5 Airspace and flight tracks

Airspace and flight tracks have been reviewed by The Airport Group (TAG) and salient points and key findings are also captured in this document. For the full discussion on airspace and flight tracks, the TAG report entitled "Peer Review - Western Sydney Airport EIS" and dated 17th November 2015 is also included in its entirety as Appendix A.

In summary, the airspace modelling presented in the draft EIS is repeatedly referenced as being "indicative" with further statements on the high-level nature

-

¹⁶ p.154, Runway length requirements, Western Sydney Airport – Environmental Impact Statement – Volume 1, October 2015

of the work such as being a "preliminary assessment undertaken by Airservices Australia ... limited to a conceptual level airspace management design".¹⁷

The draft EIS goes on to explain that the "indicative airspace design did not consider potential noise or other environmental considerations". ¹⁸ In essence, the development of flight tracks has not been undertaken to respond to environmental considerations.

Moreover the work undertaken by Airservices Australia and which underpins the draft EIS is described as being "intended to meet a narrow scope focussed on demonstrating a proof of concept. It does not present a comprehensive airspace and air route design and does not consider all essential components that would be necessary to implement an air traffic management plan for the Sydney basin. Certain assumptions have been made and significant additional steps would be required to develop air traffic management plans suitable for implementation". ¹⁹

Both statements, above, indicate that the airspace components presented in this draft EIS do not meet the requirements of the EIS guidelines.

In addition, draft EIS does not explore alternatives to the flight paths shown. For Stage 1, other than minor flight path displacement, "feasible" alternatives are not presented or evaluated, as required in the Guidelines provided by the Department of Infrastructure and Regional Development. This is evidenced by a single flight path "Point Merge" being located over Blaxland township for the Stage 1 development, as shown in Figure 8 overleaf.

The draft EIS implies that this single Point Merge for the short term plan can accommodate both runways and describes movement of the point by up to 3 nautical miles. However, no other options are considered for Stage 1, despite the long term plan having a different set of four Point Merges for the two runway system. This is at odds with the EIS guidelines provided in Appendix C and needs further investigation. A single untested airspace model based on traffic considerations is unlikely to provide a satisfactory outcome, as no comparative scenario is offered.

Based on the above, this draft EIS does not therefore meet the requirement of the EIS guidelines to demonstrate feasible alternatives. A refined method, considering a several alternative models, is required to meet the guidelines and also to remove uncertainty of flight paths and the consequent impact on the community from environmental considerations, such as noise, pollution, building restriction, etc.

¹⁷ p.18, Department of Infrastructure and Regional Development, Western Sydney Airport – Environmental Impact Statement – Volume 1, October 2015

¹⁸ p.197, Section 14.4.1 Flight Tracks, Western Sydney Airport – Environmental Impact Statement – Volume 2, October 2015

¹⁹ p.25, Section 2.6 Flight Tracks, Western Sydney Airport – Environmental Impact Statement – Volume 4, Appendix E1 Aircraft Overflight Noise

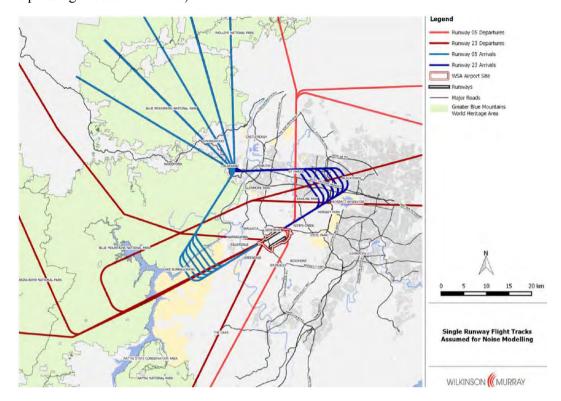


Figure 8: Flight Tracks Modelled for Initial Development (Single Runway – All Operating Modes Combined)

2.2.6 Bird and bat strike

The draft EIS references relevant standards and guidelines for the assessment and management of bird and bat strike risk, in accordance with Section 5(g) of the EIS guidelines.

However, the fieldwork described is limited to one set of surveys therefore seasonal/temporal changes cannot be identified. In addition, some sites within the study area were not assessed due to access limitations. Monitoring of seasonal variability is required by Section 5(g) of the EIS guidelines.

Volume 4 Appendix I states that study area for the assessment is 25km radius from the airport site centre point. This is based on international and national guidelines for identifying and managing wildlife attractants within 13km of runways. This is potentially misleading as Figure 7 shows the Study Area Assessment Locations and these extend to approximately 15km from the airport site. This requires clarification.

2.2.7 Aviation fuel dumping

No analysis is presented on fuel dumping in the draft EIS.

The draft EIS benchmarks current instances of "emergency fuel jettisoning occurring in approximately 0.001 per cent of all aircraft movements" and

.

²⁰ p.247, 7.9.4 Emergency fuel jettison (fuel dumping), Western Sydney Airport – Environmental Impact Statement – Volume 1, October 2015

concludes that "given the rarity of fuel jettisoning globally, the known low occurrence in Australian airspace, the standards set out in the Aeronautical Information Package (AIP), and the high evaporation rates known to occur at high altitude, authorised fuel jettisoning associated with the operation of the proposed airport, is unlikely to cause significant environmental or social impacts".²¹

If fuel dumping occurs as part of an emergency, the AIP as specified by Airservices Australia states that fuel jettison must occur "where possible, ... in clear air at an altitude of above 6,000 feet (approximately 1.8 kilometres) and in an area nominated by air traffic control" to limit local impacts to allow the fuel to evaporate. However, if fuel dumping were to occur below 6,000 feet, there is potential that this could occur over Blacktown or Wetherill Park when considering the flight tracks related to Rwy 23 or over Camden and Blacktown when considering the flight tracks related to Rwy 05. In order to reassure local government and communities, the draft EIS could discuss local measures which would prevent fuel dumping over these areas.

2.3 Validity of Conclusions

In general, the approach and findings appear valid. However, it is recommended that further explanation is ought on the following matters:

- Vocation or purpose of Western Sydney Airport No vocation or aviation purpose is described for Western Sydney Airport. One might expect that, certainly in its early stages of development, the airport would potentially be a predominantly domestic, low-cost carrier airport with a significant cargo operation, reflecting lower charges and a lack of noise curfew.²² Premium international flights would continue to use Sydney Kingsford Smith as the primary airport in New South Wales and the one which provides proximity to the tourist and business centre of Sydney CBD. This vocational aspect is important in influencing how the airport will operate, peak periods of activity and the type of traffic that will use the airport.
- Forecasts There is a degree of variability in the forecasts and demand information used in the draft EIS and draft Airport Plan. In addition, the forecast passenger loads per aircraft for Western Sydney Airport as presented in the draft EIS appear to be high. Assuming higher passenger loads has the potential to understate the number of aircraft movements required, which has knock-on impacts on dependent analysis such as noise modelling. This is a potential area for further assessment or clarification to confirm that findings in the draft EIS and draft Airport Plan based on these forecasts are robust.
- Runway separation It is unclear what benchmarks or planning decisions sit behind the 1900m runway separation shown for Western Sydney and it

²¹ p.247, Section 7.9.4 Emergency fuel jettison (fuel dumping), Western Sydney Airport – Environmental Impact Statement – Volume 1, October 2015

²² It is assumed that the need or otherwise for a noise curfew at Western Sydney is discussed in the review undertaken by the noise consultant. From an operational standpoint, it is preferable that an airport operates unrestricted by curfews, however it is imperative that principles of "Fly Neighbourly" are introduced to minimise the environmental impact of noise.

is noted that other airports in Australasia are proposing wider runway separation. Any wider spacing would increase land take, with downstream environmental impacts on areas such as in turn impacts on biodiversity, surface water and groundwater, landscape and visual amenity. In addition, wider spacing for the future two runway airport will impact on flight tracks and noise given changes to runway thresholds.

- Aircraft stand provision benchmarking indicates that passenger throughput per aircraft stand is potentially high for Western Sydney Airport. This would imply that the number of aircraft stands shown is less than one might typically expect, which has potential implications for land take and therefore related environmental impacts, though it is noted that the Land Use plan for Stage 1 shows a large area available for development.
- Airspace and flight tracks In terms of airspace and flight tracks, conclusions drawn from the draft EIS with respect to Stage 1 flight paths and airspace (Air Traffic Management) include:
 - 1. There are no known physical impediments to the operation of an airport at Western Sydney;
 - 2. An indicative "proof of concept" airspace plan exists which facilitates the management of aircraft traffic, which conforms to current standards.
 - 3. Based on the airspace "concept", noise modelling is indicative of the effect of aircraft on those flight paths.
 - 4. Maintaining aircraft at higher altitudes will reduce the noise impact on the community.

The conclusions are valid for the cases presented and they follow current "best practice" guidelines for flight path design and protection of airspace.

Items which are not considered include:

- 1. Any alternative airspace model and flight paths. It is considered that alternative scenarios should be developed to determine an acceptable overall model for airspace.
- 2. Environmental impact on selection of flight paths needs to be included to minimise impacts on the community.
- 3. There is no consideration of community acceptance of change to aircraft flight path and altitudes. The effect of noise is not restricted solely to loudness, but also to perception, and this has not been tested. Metrics of noise evaluation should be considered for the proposed paths.
- 4. Height restrictions on buildings not located in the immediate vicinity of the airport. Locations, such as the Blue Mountains Council region, Camden, Penrith, Parramatta etc, are potentially affected by the airport at Western Sydney and should be evaluated.

- 5. Noise abatement procedures are promulgated for major airports around Australia. They define modes of operation at certain times to reduce the effect on surrounding population centres. No consideration has been given to operational management to minimise public impact.
- Bird and bat strike the bird and bat strike assessment in draft EIS,
 Volume 4, Appendix I concludes that the overall bird and bat strike risk
 for the airport is low. However the assessment is preliminary and
 therefore further works in the airport site and study area are required to
 confirm the level of bird and bat strike risk and to refine the mitigation
 strategies, in parallel with design development. Indeed, Appendix I
 provides recommendations for further work in Section 6, including
 monthly bird and bat surveys for one year to account for seasonal changes.
- Fuel dumping It is considered that the information presented in the draft EIS is appropriate though discussion of local effects would provide reassurance to local governments and communities. The advice presented in the draft EIS accords with policy for both the US Federal Aviation Authority (FAA) and UK Civil Aviation Authority.

2.4 Mitigation and Management Measures

2.4.1 Airport planning

No mention is made of measures to reduce environmental impact on airport e.g. reducing the impact of water run-off by minimising areas of pavement for aircraft parking.

No mention is made of terminal building design which is currently moving towards low energy consumption and sustainable or 'green' solutions including the harvesting of rain water for grey water reuse, reduced use of artificial light through the use of skylights, and so on.

Whilst this may be a level of detail too far for a Master Plan, this is something one might expect in an EIS.

2.4.2 Airspace and flight tracks

The primary methods of mitigation against flight path environmental impacts is to create a Point Merge System to reduce the emissions and noise generated on approach and to have tracking of departures over less sensitive areas. The former maximises the altitude of aircraft whilst reducing the thrust required, thereby minimising adverse environmental effects. The latter seeks to separate the emissions and noise events from sensitive areas.

Both strategies are commonplace, are considered 'best practice' and are presented in the draft EIS.

2.4.3 Bird and bat strike

Section 5 of Appendix I identifies mitigation measures for detailed design, construction and operation, in accordance with Section 6 of the EIS guidelines. The strike risk mitigation strategies described in Section 5 of Appendix I apply to Stage 1 of the development only.

Section 16.6.2.3 of the draft EIS describes the significance of the potential impacts to the EPBC listed Grey-Headed Flying Fox, and includes consideration of aircraft strike as a potential impact. The assessment concludes that the project is likely to have a significant impact to the Grey-Headed Flying Fox but that aircraft strike is unlikely to substantially impact the population as a whole.

Section 7 of the draft EIS guidelines require that details are provided of likely residual impacts upon a matter protected by a controlling provision, after the proposed avoidance and mitigation measures have been taken into account. This includes quantification of the extent and scope of significant residual impacts. The assessment does not specifically link the mitigation measures to a reduction in the level of impact, and residual impacts are not detailed for bird and bat strike, specifically for the Grey-Headed Flying Fox.

2.4.4 Fuel dumping

No mitigation measures proposed. Approach taken for Western Sydney aligns with the approach taken for other major Australian Airports though the majority of these are existing.

2.5 Uncertainty over Impacts and Environmental Risks

The issues presented around forecasts have implications for:

- Economics and social impact;
- Noise, which in turn impacts on Human Health;
- Air quality and greenhouse gases;
- Hazard and risk; and
- Traffic.

Wider runway separation and more aircraft stands have a potential impact on:

- Land take which in turn impacts on:
 - 1. Biodiversity;
 - 2. Surface water and groundwater;
 - 3. Landscape and visual amenity; and
 - 4. Airport construction and staging.

Changes to airspace and flight tracks will have potential impacts on:

- Noise and air quality;
- Hazard and Risk;
- Greater Blue Mountains; as well as
- The cumulative impact assessment when considering other airports.

Bird and bat strike have a potential impact in terms of:

- Hazard and risk.
- Impacts on birds and bats also relate to:
 - 1. Biodiversity.

3 Detailed Findings – Long term Development

3.1 Approach

As for Stage 1, our approach has been to review the four volumes of the draft EIS as well as the draft Airport Plan provided on the website (www.westernsydneyairport.gov.au).

The four volumes of the draft EIS are Volume 1 – Project Background, Volume 2 – Stage 1 Development, Volume 3 – Long Term Development and Volume 4 – Technical Appendices.

3.2 Gap analysis

A number of the issues identified for Stage 1 are also apparent in the longer term planning of Western Sydney Airport. Additional longer-term considerations are provided in the following sections.

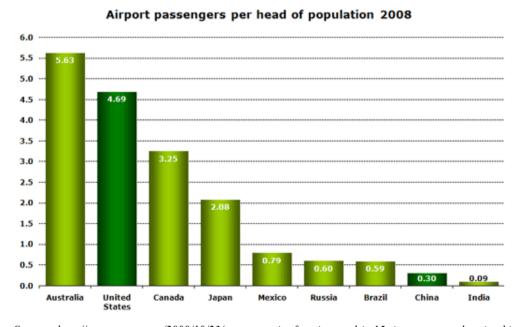
3.2.1 Aviation demand and activity

In addition to the variations in demand identified in Section 2, the relationship between Western Sydney and Sydney Airport is not fully explored long-term.

Current throughput at Sydney is 40mppa as compared to a NSW population of 7.7 million. This is equivalent to ~5.2 trips per capita of population which aligns with analysis undertaken for Australia by anna.aero and Airbus, and as presented in the figures below.

figures below.

Figure 9: Airport Passengers per head of Population for non-European Countries



Source: http://www.anna.aero/2009/10/23/us-propensity-for-air-travel-is-15-times-greater-than-in-chinacyprus-tops-european-rankings/

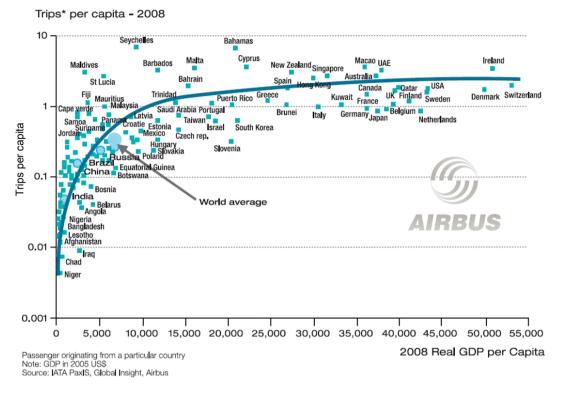


Figure 10: Airbus-Trips per Capita by Country

The draft EIS reflects the Government's Joint Study on Aviation Capacity in the Sydney Region which projects potential demand to be 165 million passengers by 2060.²³ This would imply Sydney Airport operating at over 80 mppa. In addition, across the state, this would imply trips per capita more than doubling by 2060 at 13 trips per capita of population²⁴ which is significantly higher than current maximums for countries of the size and characteristics of Australia (as per Figure 9 and Figure 10).

The relationship between the two Sydney Airports is not explored in the draft EIS, although planning of the Airport and indeed flight tracks and airspace have been allocated assuming maximum growth at each airport without any exploration of the vocation of each airport or how traffic might be split between the two. This could affect the type of aircraft and carriers (e.g. low-cost, cargo etc) using each airport, which in turn will influence the environmental impacts of each airport.

3.2.2 Master Plan

As described in 2.2.3 for the Stage 1 Airport, total stands provision for the ultimate long-term airport development varies from 150 widebody stands to 165 widebody stands and significant variation in the amount of contact and remote capacity.

-

²³ Note that Joint Study on Aviation Capacity in the Sydney Region indicates even higher demand in the Sydney region at 165 million passengers by 2060. p.84, Capacity Constraints – The Joint Study, Western Sydney Airport – Environmental Impact Statement – Volume 1, October 2015

²⁴ Based on the Australian Bureau of Statistics projection of a NSW population of 12.6 million. http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/3222.0main+features72012%20(base)%20to%202101

Figure 11: Indicative Long-Term Terminal Arrangements

The variability in the number of stands again raises the question of consistency in terms of the base set of planning parameters used in developing the airport.

In terms of runway separation, the terminal and transport centre are all contained within the 1900m separation between the runways and the space looks narrow for all of the functions that will be required here. In addition, when building the airport, it will be difficult to construct everything within this envelope whilst not disrupting airport operations.

3.2.3 Airspace and flight tracks

Most issues identified for Stage 1 are also apparent in the longer term planning of Western Sydney Airport. Additional longer-term considerations are provided in the following sections.

Flight path development

Due to the requirements for separation of aircraft on parallel runways, the modelling is much more complex for the longer term scenario than for that on a single runway. Aircraft must be separated vertically, longitudinally (time between aircraft crossing a point) or laterally. Flight paths created facilitate the separation with little, if any, external involvement by Air Traffic Control.

The draft EIS proposal contains a single model for flight paths, developed for parallel runway operations. Similarly, to Stage 1, there is no consideration of more than one scenario included in the modelling. The draft EIS includes statements that this is solely due to the extended timeframe and that there is uncertainty about the service available at implementation. Further, it is intimated

that amount of work required was not justified and would be required prior to commissioning in about 2050. This does not align with the DIRD guidelines.

Interaction with other airports

The model considers broad interaction with Sydney Kingsford Smith and notes that there will significant effects on the operation of other airports in the Sydney basin. The specific interactions, restrictions and changes to airspace is encapsulated in Section 7.4.1 in Volume 1 of the draft EIS entitled Airspace architecture, and potential impacts on air traffic movement. This states that "CASA recently identified a number of important Sydney basin airspace matters that should be considered in in future airspace design process".²⁵

The implication is that the current modelling may not have, or be able to have, future CASA determinations included for the draft EIS. However, it is clear that the ultimate mode of operation of Western Sydney Airport will result in operational incompatibility with the operations at smaller airports like Bankstown and Camden, potentially forcing closure or relocation. Neither eventuality is investigated.

Modelling

The draft EIS is based on assumptions for fleet operations and performance, and "indicative" and "proof of concept" flight paths and airspace definitions. As with Stage 1, no consideration of feasible alternatives is made. The location of Point Merge and Departure tracks and did not consider potential noise or other environmental considerations. Therefore, there has been no testing of alternate solutions.

Within the model, there are several modes of operation, and each is evaluated. The analysis associated with the above follows standard procedure and the results are consistent. It indicates that the modelling conducted will allow the operation of both Western Sydney Airport and Sydney Kingsford Smith independently and as high capacity aerodromes.

3.3 Key risks and implications

These are as for Stage 1 and as described in Section 4 below.

In terms of aircraft noise (which is being reviewed by another consultant), other than modes of runway operation, it is unclear whether the evaluation considers noise abatement. From an operational standpoint, it is preferable that an airport operates unrestricted by curfews, however it is imperative that principles of "Fly Neighbourly" are introduced to minimise the environmental impact of noise.

In terms of airspace, for the certainty of local government management and processes, it is expected that the draft EIS would develop some clarity regarding matters such as impacts on water quality, building restrictions, noise abatement

-

²⁵ p.229, 7.4 Interactions with Sydney Airport and the broader Sydney region airspace, Western Sydney Airport – Environmental Impact Statement – Volume 1, October 2015

and continuity of airspace flight paths. As with Stage 1, it is unclear whether any evaluation was undertaken with respect to building development restriction within local government areas surrounding the airport, with the exception of areas immediately at the runway ends. One would expect that this would be considered as part of the draft EIS.

For the long term development of the airport there is a potential risk to long term operation if the airspace and flight paths change. Revision to Stage 1 flight paths and airspace may meet with resistance from stakeholders, such as property owners and local authorities. As such, it would be expected that flight paths and airspace developed for Stage 1 can also be staged for the long term operation.

3.4 Effectiveness

The plan presented for longer term development are indicative. Whist these highlight similar issues to those raised for the Stage 1 airport, it is noted that longer term development beyond Stage 1 would be subject to the requirements of the Airports Act including provision of additional Master Plan and MDP studies as appropriate.

In terms of airspace, it appears that the draft EIS is orientated to the current conditions and has not explored in sufficient depth the conditions expected for Stage 1, nor long term development at Western Sydney Airport.

4 Key Impacts and Opportunities

The following section summarises key impacts and opportunities from an airport planning perspective as identified in Sections 2 and 3.

- Vocation or purpose of Western Sydney Airport No vocation or aviation purpose is described for Western Sydney Airport. One might expect that, certainly in its early stages of development, the airport would potentially be a predominantly domestic, low-cost carrier airport with a significant cargo operation, reflecting lower charges and the lack of noise curfew. Premium international flights would continue to use Sydney Kingsford Smith as the primary airport in New South Wales and the one which provides proximity to the tourist and business centre of Sydney CBD. This vocational aspect is important in influencing how the airport will operate, peak periods of activity and the type of traffic that will use the airport.
- Forecasts There is a degree of variability in the forecasts and demand information used in the draft EIS and draft Airport Plan. In addition, the forecast passenger loads per aircraft for Western Sydney Airport as presented in the draft EIS appear to be high. Assuming higher passenger loads has the potential to understate the number of aircraft movements required, which has knock-on impacts on dependent analysis such as noise modelling. This is a potential area for further assessment or clarification to confirm that findings in the draft EIS and draft Airport Plan based on these forecasts are robust.
- Runway separation It is unclear what benchmarks or planning decisions sit behind the 1900m runway separation shown for Western Sydney ad it is noted that other airports in Australasia are proposing wider runway separation. Any wider spacing would increase land take, with downstream environmental impacts on areas such as in turn impacts on biodiversity, surface water and groundwater, landscape and visual amenity. In addition, wider spacing for the future two runway airport will impact on flight tracks and noise given changes to runway thresholds.
- Aircraft stand provision benchmarking indicates that passenger throughput per aircraft stand is high for potentially high for Western Sydney Airport. This would imply that the number of aircraft stands shown is less than one might typically expect, which has potential implications for land take and therefore related environmental impacts, though it is noted that the Land Use plan for Stage 1 shows a large area available for development.
- Airspace, OLS and PANS-OPS In terms of requirements, the evaluation of protection volumes for flight paths and airspace containment is in accordance with normal methods mentioned in the Airports (Protection of Airspace) Regulations and under the Airports Act 1996. Analysis of Obstacle Limitation Surfaces (OLS) and Instrument Flight Procedure protection volumes (known as PANS-OPS surfaces) indicates that,

operationally, the Western Sydney airport can operate unrestricted from terrain and artificial obstacles

However, the following impacts are identified which are either unresolved or which require further clarification:

- 1. The proposed airspace architecture is 'indicative' and has not been rigorously tested. The draft EIS proposes that another airspace model is tested closer to commencement of operations.
- 2. The modelling indicates several flight paths over water storages, such as Warragamba Dam and Prospect Reservoir. Other flight paths traverse the Blue Mountains National Park. The environmental impact is unclear.
- 3. The requirement under the Guidelines, produced by the Department of Infrastructure and Regional Development (DIRD), for feasible alternatives to be included has not been met. This is particularly important in consideration of concentration of approaching traffic over the township of Blaxland for the Stage 1 development and departure tracks.
- 4. There is no consideration of community sentiment regarding changes to flight paths, proposed in the draft EIS, when the Airport operates with two runways.
- 5. An alternative Stage 1 airspace model, based on the long term proposal but operating with a single runway, is not tested.
- 6. Except for Sydney Kingsford Smith, flight paths for aerodromes, affected by the Western Sydney Airport are not evaluated.
- 7. The draft EIS suggests that Western Sydney Airport will detrimentally affect the operations at Bankstown and Camden, and affect Richmond (military). The environmental impact is not quantified.
- 8. Relocation of light aircraft traffic to other airports, the definition of new training airspace and consequent environmental impact, is not assessed.

Given the above, it is considered that the information on airspace presented in the draft EIS does not meet requirements.

• Bird and bat strike – the bird and bat strike assessment in draft EIS, Volume 4, Appendix I concludes that the overall bird and bat strike risk for the airport is low. However the assessment is preliminary and therefore further works in the airport site and study area are required to confirm the level of bird and bat strike risk and to refine the mitigation strategies. Indeed, Appendix I provides recommendations for further work in Section 6, including monthly bird and bat surveys for one year to account for seasonal changes.

 Fuel dumping – It is considered that the information presented in the draft EIS is appropriate though more detail could be provided to give certainty for local government and communities. The advice presented in the draft EIS accords with statements made by both the US Federal Aviation Authority (FAA) and UK Civil Aviation Authority which forbids fuel dumping unless in an emergency.

001 | FINAL | 20 November 2015 | Arup Page 35

5 Review Team

Jim Peacock

Jim Peacock is an Associate with over 15 years of experience at Arup. Since joining Arup, he has attained particular experience in airport masterplanning and in airport terminal design.

Jim is currently Arup's Project Manager for provision of transport planning services to Gatwick Airport, including Gatwick's response to the UK Airports Commission for a second runway. Jim was Arup's Project Manager for the Auckland Airport Master Plan (2012-2013) and Arup's lead airport planner for the Terminal 1expansion project at Perth Airport working with Woods Bagot. Jim also has terminal planning and masterplanning experience at Brisbane Airport, Hobart Airport and for a number of regional aerodromes in Victoria.

Kay Casson

Kay is a Senior Environmental Consultant in the Arup Brisbane office with 10 years' experience. Kay has been involved in a broad range of projects including environmental impact assessments and constraints studies for major infrastructure projects for government and private clients.

Kay has a strong background in airport projects, including Major Development Plans for Brisbane Airport, Gold Coast Airport and the environmental components of the Hobart Airport Master Plan, and the environmental referral documents for the Sunshine Coast Airport Expansion Project.

For airspace and flight tracks, the review team from TAG is as follows:

Name	Ray Romano		
Location	Brisbane		
Designation	Chief Designer and Airspace Specialist		
Role	QA of product in accordance with CASA Parts 139 and 173		
Qualifications	Bachelor of Engineering (Honours, Civil, UQ)		
	Diploma in Instrument Flight Procedure Design (with		
	Distinction, Singapore Aviation Academy)		
Relevant	Over 20 years' experience in airspace and instrument flight		
Experience	procedure design.		
	Former Chief Designer, Airservices Australia (2007-2012).		
	Instrument Flight Procedure Designer (1999-).		
	Airways Data Officer (1996-1999).		
	Commercial Pilot (1990-).		
	Trainer of PANS-OPS instrument Flight Procedure Design.		

Name	Mark Fineran		
Location	Brisbane		
Designation	Senior Procedure Designer		
Role	Instrument Flight Procedure Design, Air Traffic		
	Management		
Qualifications	Diplomas in Aviation (Air Traffic Services) and Transport		
	and Distribution (Air Traffic Control). Airservices Training		
	College (2003)		
	Diploma in Instrument Flight Procedure Design (Singapore		
	Aviation Academy)		
Relevant	Over 10 years' experience in aviation.		
Experience	Specialising in Instrument Flight Procedure Design and		
	Air Traffic Control liaison.		

001 | FINAL | 20 November 2015 | Arup Page 37

Appendix A

TAG Report - Peer Review, Western Sydney Airport EIS, Airspace and Flight Tracks



Peer Review

Western Sydney Airport EIS

Prepared for ARUP

November 2015



DOCUMENT SUMMARY

Project:	Peer Review of Western Sydney Airport	
- I OIEGI	LEEL VENEW OF MESIETT SAUTEN VILDOLI	-10

Client: ARUP

Client Contact: Ms Marissa Powell, Senior Specialist

Conducted By: TAG173 Pty Ltd, a licensee of The Airport Group

The Airport Group Pty Ltd

Brisbane Office

Unit 8/441 Nudgee Rd HENDRA QLD 4011

T: 07 3268 6300

E: enquiries@theairportgroup.com.au

Contact: Ray Romano, Airspace Specialist, Chief Designer of

Instrument Flight Procedures

Document Version: Draft Peer Review: Version 2.0

Copyright & Disclaimer

© The Airport Group Pty Ltd. All rights reserved.

PLEASE NOTE: - The information contained in this document is provided solely and to be used only for the scope of the contract for which this document is prepared. No part of the this material may be reprinted, reproduced, removed, distributed, translated, transmitted or utilised in any form or by any electronic, mechanical, or other means without verifiable prior permission including written consent from the Directors. By default, any third party using the information contained within the document accepts complete responsibility for the information's use and origin.



DOCUMENT VERSION LISTING

Version	Version Description	Changes/ Actions	Staff	Date
1.0	Draft Peer Review	Initial draft created	RRR	03 Nov 2015
1.1	Draft Peer Review	Formatting	JN	06 Nov 2015
2.0	Draft Peer Review	Incorporation of comments	RRR	17 Nov 2015



TABLE OF CONTENTS

DOCL	JMENT SUMMARY	2
TABL	E OF CONTENTS	4
1.	EXECUTIVE SUMMARY	5
1.1.	Scope of Review	5
1.2.	Stage 1 Airport	5
1.3.	Long Term Development	6
1.4.	Key Impacts and Opportunities	6
2.	SCOPE	8
2.1.	Approach	8
2.2.	Limitations	8
2.3.	EIS Components Reviewed	8
3.	DETAILED FINDINGS - Stage 1 Airport	10
3.1.	Compliance with EIS Guidelines	10
3.1.1.	General Content	10
3.1.2.	Feasible Alternatives	10
3.1.3.	Modelling	10
3.1.4.	Flight path design	12
3.2.	Validity of Assumptions	14
3.3.	Validity of Conclusions	15
3.4.	Mitigations and Management Measures	16
3.5.	Impacts and Risks	16
4.	DETAILED FINDINGS – Long Term Development	18
4.1.	Overview	18
4.2.	Differences to Assessment based on Stage 1	18
4.2.1.	Flight path development	18
4.2.2.	Interaction with other airports	19
4.2.3.	Modelling	19
4.3.	Risks and Implications	19
4.4.	Further Assessment	20
4.5.	Key Impacts and Opportunities	20
5.	Review Team	22



1. EXECUTIVE SUMMARY

1.1. Scope of Review

This review is based on a desktop study and a literature review of the four volumes of the draft EIS and the draft Airport Plan with respect to flight paths. A comparison is made against the EIS guidelines, specifically for flight paths, to identify any potential inconsistencies with legislation and common practice.

1.2. Stage 1 Airport

Issues identified in the Draft EIS regarding Airspace and Flight Paths for the development of the Stage 1 Airport include:

- Airspace and flight paths are derived from 'WESTERN SYDNEY AIRPORT, Preliminary Airspace Management Analysis', produced by Airservices Australia 2015.
- Due to assumptions regarding traffic numbers, fleets, staged airport development and primarily long timeframes, the proposed airspace model is noted as a 'proof of concept' and not the subject of exhaustive analysis.
- The indicative airspace design did not consider potential noise or other environmental considerations in flight path development.
- A single airspace model is presented for Stage 1 development. The basis of the model is that operations at Sydney Kingsford Smith Airport are unaffected.
- Other than minor flight path displacement, 'feasible' alternatives are not presented or evaluated, as required in the Guidelines provided by the Department of Infrastructure and Regional Development. This is evidenced by a single flight path 'Point Merge' being located over Blaxland township for the Stage 1 development.
- Mitigation for environmental issues relies on the proposed airspace being based on adopted International Civil Aviation Organization (ICAO) methodologies. These methods have been implemented at several locations worldwide with positive results.
- Flight paths based on the ICAO methodology facilitate aircraft operations which minimise pollutants and noise generation on approach when compared to existing methods.
- Departures track to 'exit gates', concentrating aircraft on several defined routes.
 This is a common tool used to improve traffic flow. The impact of concentration and location of turn points is not tested for environmental purposes.



- Modes of operation (flight paths based on runways in use) are mentioned, but not how they affect surrounding areas.
- Noise abatement procedures, commonly implemented at other major airports, are not developed.

1.3. Long Term Development

There are several issues regarding airspace and flight paths for the long term development of a Western Sydney Airport.

- For safety of flight, the introduction of a second runway operating in parallel requires rules for separation of parallel traffic. Flight paths for separation of traffic at Western Sydney Airport will affect those at Sydney Kingsford Smith Airport and other airports in the Sydney Basin.
- Interaction of aircraft traffic in the Sydney Basin requires an airspace and flight path review not considered as part of Stage 1.
- The Stage 1 flight paths proposed in the Draft EIS are considered not appropriate for the long term plan.
- Except for Sydney KSA, the effects on other airports in the Sydney region are not quantified, other than in general terms.

1.4. Key Impacts and Opportunities

Key impacts and opportunities from the perspective of airspace and flight paths are as follows:

- The evaluation of protection volumes for flight paths and airspace containment is in accordance with normal methods mentioned in the Airports (Protection of Airspace) Regulations, and under the Airports Act, 1996.
- Analysis of Obstacle Limitation Surfaces (OLS) and Instrument Flight Procedure protection volumes (known as PANS-OPS surfaces) indicates that, operationally, the Western Sydney airport can operate unrestricted from terrain and artificial obstacles.
- The proposed airspace architecture is 'indicative' and has not been rigorously tested. The draft EIS proposes that another airspace model is tested closer to commencement of operations.
- Flight paths appear to fly over water storages such as Warragamba Dam and Prospect Reservoir. The environmental impact is unclear.



- The requirement under the Guidelines, produced by the Department of Infrastructure and Regional Development (DIRD), for 'feasible alternatives' to be included has not been met. This is particularly important in consideration of concentration of approaching traffic over the township of Blaxland for the Stage 1 development and departure tracks.
- There is no consideration of community sentiment regarding changes to flight paths, proposed in the draft EIS, when the Airport operates with two runways.
- An alternative Stage 1 airspace model, based on the long term proposal but operating with a single runway, is not tested.
- Except for KSA, flight paths for aerodromes, affected by the Western Sydney Airport, are not evaluated
- The draft EIS suggests that Western Sydney Airport will detrimentally affect the operations at Bankstown and Camden, and affect Richmond (military). The environmental impact is not quantified.
- Relocation of light aircraft traffic to other airports, the definition of new training airspace and consequent environmental impact, is not assessed.



2. SCOPE

The scope of this assessment is a Peer Review conducted with respect to Airspace and Flight Path matters discussed within the draft EIS for Western Sydney Airport released by the Federal Government for public exhibition on 19th October 2015.

2.1. Approach

The approach to this EIS peer review includes relevant matters in the four volumes of the draft EIS as well as the draft Airport Plan provided at the website www.westernsydneyairport.gov.au.

The methodology is to assess proposed flight paths and their containment volumes against the requirements of the Act and common practice. This entails correlating the proposed flight paths in relation to the sensitive areas for environmental significance and noise concentrations and population.

2.2. Limitations

This document is based on a desktop study and a literature review of the four volumes of the EIS and the draft Airport Plan, comparison of these against the EIS guidelines, identification of potential opportunities or inconsistencies and a comparison against available benchmarks.

No analysis or modelling has been undertaken.

The document provides guidance to WSROC in terms of considerations included in the draft EIS and where further clarification may be required on key issues,

2.3. EIS Components Reviewed

Airspace assessments contained in the following have been reviewed:

Volume 1 - Project Background

Part A – Project background and rationale

Chapter 1 Introduction,

Chapter 2 Need for Western Sydney Airport,

Chapter 3 Approvals Framework,

Part B – Airport plan

Chapter 7 Airspace architecture and operation,

Volume 2 – Stage 1 Development

Part D - Environmental impact assessment

Chapter 10 Noise,



Chapter 14 Hazard and Risk,

Chapter 21 Planning and Land Use,

Chapter 26 Greater Blue Mountains,

Chapter 27 Cumulative impact assessment.

Volume 3 – Long Term Development

Part G – Assessment of long term development

Chapter 30 Introduction

Volume 4 – Appendices

Appendix E1 Aircraft overflight noise

and, specifically,

'WESTERN SYDNEY AIRPORT, Preliminary Airspace Management Analysis', produced by Airservices Australia 2015.



3. **DETAILED FINDINGS - Stage 1 Airport**

3.1. Compliance with EIS Guidelines

3.1.1. General Content

The level of analysis and detail in the EIS does reflect the level of significance of the expected impacts on the environment.

Unknown variables and assumptions made in the assessment, such as future aircraft types, proposed staged runway development, technology implementation, assumed traffic and fleet projections, are stated and discussed.

Items which are not discussed include:

- Potential restriction of building heights in local government areas not directly in line with the runway complex;
- Environmental impacts of placing flight paths directly overhead water storage locations such as Warragamba Dam and Prospect Reservoir; and
- Noise Abatement Procedures.

3.1.2. Feasible Alternatives

Section 3 of the DIRD guidelines refers to *feasible alternatives*, and suggests that **any** feasible alternatives should be discussed and the rationale for the preferred option is presented. It also suggests that short, medium and long-term advantages and disadvantages of each should be considered.

The assessment concludes that a 'proof of concept', rather than an exhaustive analysis, is appropriate due to length of time before the operation of an airport at Western Sydney (reference § 7.3 Preliminary assessment of airspace). This concept is at odds with the guidelines and needs further investigation. Furthermore, as the proposed paths are the basis for all subsequent environmental considerations, the single, untested airspace model based on traffic considerations is unlikely to provide a satisfactory outcome, as no comparative scenario is offered.

3.1.3. Modelling

The airspace plan and flight paths are based on work done by Airservices Australia. The following are annotated excerpts from the draft EIS.

Note that the **proof of concept** "indicative airspace design did not consider potential noise or other environmental considerations". (reference §14.4.1)



"The design and analysis presented in this report is intended to meet a narrow scope focussed on demonstrating a proof of concept. It does not present a comprehensive airspace and air route design and does not consider all essential components that would be necessary to implement an air traffic management plan for the Sydney basin. Certain assumptions have been made and significant additional steps would be required to develop air traffic management plans suitable for implementation". (reference Volume 4 Appendix E1).

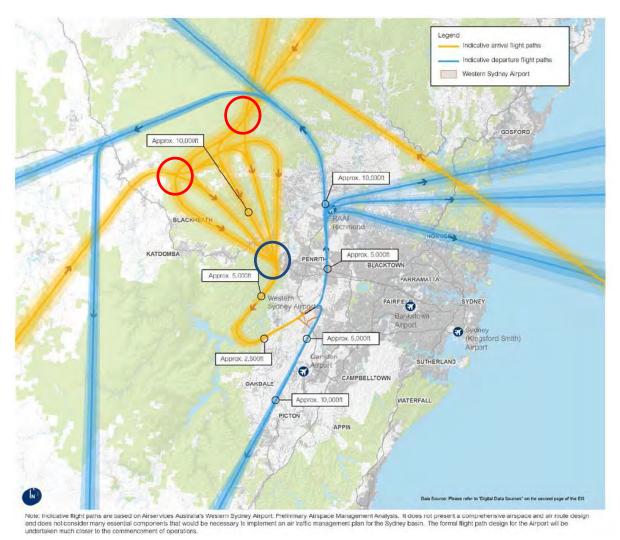
Both statements, above, indicate that the airspace components do not meet the requirements of the EIS guidelines. A refined method, considering a several alternative models, is required to meet the guidelines and also to remove uncertainty of flight paths and the consequent impact on the community from environmental considerations, such as noise, pollution, building restriction, etc.

In both the short term and long term, only one airspace and air route design is offered, and the long term plan does not expand on that proposed for the Stage 1.

This is due to the Stage 1 plan being based on leaving operations at Sydney KSA unaffected by the implementation of a new airport in Western Sydney. The long term plan considers that requirements for safe operation of parallel runways are inconsistent with current operations at Sydney KSA and thus a more comprehensive air traffic management plan for the Sydney basin is required. This is reasonable; however, it raises the question of why the long term alternative wasn't considered as an extension of Stage 1, especially given the concentration of traffic over Blaxland township for the short term plan.



3.1.4. Flight path design



The proposed plans make use of 'Point Merge System' for approach, highlighted in yellow in the attached diagram. The concept is to offer several 'entry gates' (circled in red) and then use longer or shorter paths to increase or reduce flight times, such that aircraft arrive at the Point Merge (circled in blue) in a sequence to provide separation and minimise delays.

The International Civil Aviation Organization (ICAO) sets worldwide standards for aviation. Future improvements and standardisation of aircraft operations are set out in blocks called Aviation System Block Upgrade (ASBU). The Point Merge System is part of the next ABSU to be introduced, and will facilitate Continuous Descent Operations (CDO). CDO is recognised as the best method of reducing and mitigating the environmental footprint of aviation, by requiring aircraft to remain at high altitudes



(where they are most efficient) for as long as possible, and then descend through altitudes where they operate inefficiently using just minimum engine thrust and gravity.

The Point Merge has been shown to minimise aviation environmental effects in both emissions and noise, have cost benefits for operators and reduce traffic delays and congestion.

The draft EIS suggests that there is a single Point Merge for the short term plan, which is located over Blaxland township and accommodates both runways. The report entertains movement of the point by up to 3 nautical miles, but considers no other options, despite the long term plan having a different set of 4 Point Merges (one for each runway). This is not in keeping with the guidelines, where 'all feasible' alternatives should be considered.

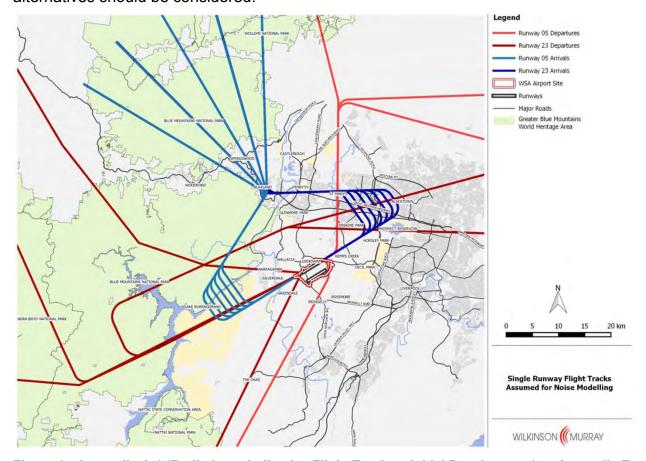


Figure 1 - Appendix A-1 (Preliminary Indicative Flight Tracks – Initial Development) to Appendix E of the EIS.



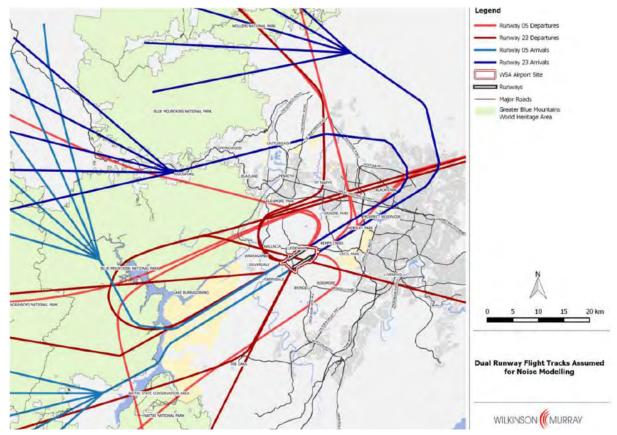


Figure 2 - Appendix B (Preliminary Indicative Flight Tracks – Longer Term Development) to Appendix E of the EIS.

Departures are to be implemented by conventional methods, and that aircraft will assigned flight paths along a corridor to a point from which routes to destination will commence. This is common practice and provides aircraft separation from both approaching and departing aircraft. However, indicative flight paths require refinement and evaluation of alternatives which are not provided in the draft EIS.

3.2. Validity of Assumptions

In dealing with flight paths and the containing airspace, the draft EIS indicates that it is a 'proof of concept'. This means that it is recognised that further work is required prior to implementation. Although the work presented is indicative of the final outcome, and thus suitable for an evaluation, it does not compare any alternative scenarios as required by the DIRD guidelines.

The assumptions made for flight paths are based on known performance and operating characteristics of current aircraft fleets. Using this data is conservative with respect to emissions and noise effects.



The assumption regarding the orientation and length of runways at Western Sydney Airport is based on information derived from the Bureau of Meteorology and on the land holdings set aside for the airport. Both are reliable data sets and form valid assumptions.

Traffic utilisation of the airport is based on current fleets, and this is considered conservative. The operation of aircraft, and specifically the flight paths, are in accordance with current 'best practice'. The protection of airspace via Obstacle Limitation Surfaces and 'PANS-OPS' surfaces does meet the requirements of current regulations. However, a rigorous evaluation will be required at the construction phase.

The assumption that the Stage 1 development of airport flight paths can exist isolated from other airports is questionable, especially where long term parallel operations will require a comprehensive review of procedures in the Sydney basin. Although it is indicated that a system does exist to allow an isolated mode of operation, it delays the inevitable review and may potentially affect the ultimate airport development. The latter assertion is based on increasing population near the airport, as a centre for employment, and a resistance by community to changes in the environment and flight paths.

3.3. Validity of Conclusions

Conclusions drawn from the draft EIS with respect to Stage 1 flight paths and airspace (Air Traffic Management) include:

- There are no known physical impediments to the operation of an airport at Western Sydney;
- A 'concept' airspace plan exists which facilitates the management of aircraft traffic, which conforms to current standards.
- Based on the 'concept', noise modelling is indicative of the effect of aircraft on those flight paths.
- Maintaining aircraft at higher altitudes will reduce the noise impact on the community.

The conclusions are valid for the cases presented and they follow current 'best practice' guidelines for flight path design and protection of airspace.

Items which are not considered include:



- Any alternative airspace model and flight paths. It is considered that scenarios should be developed to determine an acceptable model for airspace.
- Environmental impact on selection of flight paths needs to be included to minimise impacts on the community.
- There is no consideration of community acceptance of change to aircraft flight path and altitudes. The effect of noise is not restricted solely to loudness, but also to perception, and this has not been tested. Metrics of noise evaluation should be considered for the proposed paths.
- Height restrictions on buildings not located in the immediate vicinity of the airport. Locations, such as the Blue Mountains Council region, Camden, Penrith, Parramatta etc, are potentially affected by the airport at Western Sydney and should be evaluated.
- Noise abatement procedures are promulgated for major airports around Australia. They define modes of operation at certain times to reduce the effect on surrounding population centres. No consideration has been given to operational management to minimise public impact.

3.4. Mitigations and Management Measures

The primary methods of mitigation against flight path environmental impacts is to create a Point Merge System to reduce the emissions and noise generated on approach and to have tracking of departures over less sensitive areas. The former maximises the altitude of aircraft whilst reducing the thrust required, thereby minimising adverse environmental effects. The latter seeks to separate the emissions and noise events from sensitive areas.

Both strategies are commonplace and are considered 'best practice'.

3.5. Impacts and Risks

The air traffic management methods and proposed flight paths work to minimise distribution of adverse effects.

Part of the strategy is to concentrate aircraft on specific, repeatable flight paths. Provided that those paths are separated from sensitive areas, the methodology is simple, predictable and repeatable, offering economies in fuel, efficiency and standardisation of procedure and the risks are moderated.



However, repeatable flight paths leads to the concentration of noise events and emissions and may involve risk when those paths cross populated areas.

The draft EIS adopts the above methodology for flight paths; however it does not evaluate alternatives to the presented modelling.



4. **DETAILED FINDINGS – Long Term Development**

4.1. Overview

As for Stage 1, the approach to this EIS peer review includes relevant matters in the four volumes of the draft EIS as well as the draft Airport Plan provided at the website www.westernsydneyairport.gov.au.

4.2. Differences to Assessment based on Stage 1

Most issues identified for Stage 1 are also apparent in the longer term planning of Western Sydney Airport. Additional longer-term considerations are provided in the following sections.

4.2.1.Flight path development

Due to the requirements for separation of aircraft on parallel runways, the modelling is much more complex than for that on a single runway. Aircraft must be separated vertically, longitudinally (time between aircraft crossing a point) or laterally. Flight paths created facilitate the separation with little, if any, external involvement by Air Traffic Control.

The principles for the development of airspace remain the same; however, the proximity of another flight path has implications for spacing. The proposed runway layout and spacing will allow the runways to operate independently, meaning that each operation on a runway is not required to wait (time separation) for an operation on the other runway. This minimises delays and maximises the utilisation of the airport.

With widely spaced runways it is also possible to operate in a mode called Simultaneous Opposite Direction Parallel Runway Operations (SODPROPS). SODPROPS allows aircraft to land in one direction and take-off in the other from different runways. The benefit of SODPROPS is that all airport operations can be to one end of the airport when weather conditions allow, thereby confining environmental impacts to the end where it has lesser impact. Weather conditions play a major role and may preclude SODPROPS.

The draft EIS proposal contains a single model for flight paths, developed for parallel runway operations. Similarly, to Stage 1, there is no consideration of more than one scenario included in the modelling. The draft EIS includes statements that this is solely due to the extended timeframe and that there is uncertainty about the service available



at implementation. Further, it is intimated that amount of work required was not justified and would be required prior to commissioning in about 2050. This is at odds with the DIRD guidelines.

4.2.2.Interaction with other airports

The model considers broad interaction with Sydney KSA and notes that there will significant effects on the operation of other airports in the Sydney basin. The specific interactions, restrictions and changes to airspace is encapsulated in § 7.4.1 *Airspace architecture and potential impacts on air traffic movement*. This states that 'CASA has identified matters that should be considered in future airspace design'. The implication is that the current modelling may not have, or be able to have, future CASA determinations included for the draft EIS. However, it is clear that the ultimate mode of operation of Western Sydney Airport will result in operational incompatibility with the operations at smaller airports like Bankstown and Camden, potentially forcing closure or relocation. Neither eventuality is investigated.

4.2.3.Modelling

The draft EIS is based on assumptions for fleet operations and performance, and 'proof of concept' flight paths and airspace definitions. As with Stage 1, no consideration of feasible alternatives is made. The location of Point Merge and Departure tracks and "indicative airspace design did not consider potential noise or other environmental considerations". (reference §14.4.1) Therefore, there has been no testing of alternate solutions.

Within the model, there are several modes of operation, and each is evaluated. The analysis associated with the above follows standard procedure and the results are consistent. It indicates that the modelling conducted will allow the operation of both Western Sydney Airport and Sydney KSA independently and as high capacity aerodromes.

4.3. Risks and Implications

For the certainty of local government management and processes, it is expected that the draft EIS would develop some clarity regarding matters such as impacts on water quality, building restrictions, noise abatement and continuity of airspace flight paths.

The modelling indicates several flight paths over water storages, such as Warragamba Dam and Prospect Reservoir. Other flight paths traverse the Blue Mountains National Park. The environmental impact was not considered in selection of the flight paths.



As with Stage 1, it is unclear whether any evaluation was undertaken with respect to building development restriction within local government areas surrounding the airport, with the exception of areas immediately at the runway ends. One would expect that this would be considered as part of the draft EIS.

Other than modes of operation, it is unclear whether evaluation considers Noise Abatement. From an operational standpoint, it is preferable that an airport operates unrestricted by curfews, however it is imperative that principles of 'Fly Neighbourly' are introduced to minimise the environmental impact of noise.

For the long term development of the airport there is a potential risk to long term operation if the airspace and flight paths change. Revision to 'established' Stage 1 flight paths and airspace may meet with resistance from stakeholders, such as property owners and local authorities. As such, it would be expected that flight paths and airspace developed for Stage 1 can also be staged for the long term operation.

4.4. Further Assessment

As noted in the draft EIS, a revised assessment will be required closer to implementation. However, the work included will form the basis of a review. It would be expected that the EIS would form a solid base from which to commence that evaluation. It appears that the draft EIS is orientated to the current conditions and has not explored in sufficient depth the conditions expected for Stage 1, nor long term development at Western Sydney Airport.

4.5. Key Impacts and Opportunities

Key impacts and opportunities from the perspective of airspace and flight paths are summarised as follows:

- The evaluation of protection volumes for flight paths and airspace containment is in accordance with normal methods mentioned in the Airports (Protection of Airspace) Regulations, and under the Airports Act, 1996.
- An Obstacle Limitation Surface (OLS) and Instrument Flight Procedure protection volume (PANS-OPS) analysis indicates that, operationally, the Western Sydney Airport can operate unrestricted from terrain and artificial obstacles.
- The proposed airspace architecture is noted as 'indicative' and has not been rigorously tested. The draft EIS proposes that another airspace model is tested



closer to commencement of operations. This would indicate that the draft EIS is non-compliant with the requirements of the Department of Infrastructure and Regional Development (DIRD) Guidelines.

- Flight paths appear to fly over water storages such as Warragamba Dam and Prospect Reservoir. The environmental impact is unclear.
- The requirement under the Guidelines for 'feasible alternatives' to be included has not been met.
- There is no consideration of community sentiment regarding changes to flight paths, proposed in the draft EIS, when the Airport operates with two runways.
- Except for KSA, flight paths for airports, affected by the Western Sydney Airport, are not evaluated.
- The draft EIS suggests that Western Sydney Airport will detrimentally affect the operations at Bankstown and Camden, and affect Richmond (military). The environmental impact is not quantified.
- Relocation of light aircraft traffic to other airports, the definition of new training airspace and consequent environmental impact, is not assessed.



5. Review Team

Name Ray Romano

Location Brisbane

Designation Chief Designer and Airspace Specialist

Role QA of product in accordance with CASA Parts 139 and 173

Qualifications Bachelor of Engineering (Honours, Civil, UQ)

Diploma in Instrument Flight Procedure Design (with

Distinction, Singapore Aviation Academy)

Relevant Over 20 years' experience in airspace and instrument flight

Experience procedure design.

Former Chief Designer, Airservices Australia (2007-2012).

Instrument Flight Procedure Designer (1999-).

Airways Data Officer (1996-1999).

Commercial Pilot (1990-).

Trainer of PANS-OPS instrument Flight Procedure Design.

Name Mark Fineran

Location Brisbane

Designation Senior Procedure Designer

Role Instrument Flight Procedure Design, Air Traffic Management

Qualifications Diplomas in Aviation (Air Traffic Services) and Transport and

Distribution (Air Traffic Control). Airservices Training College

(2003)

Diploma in Instrument Flight Procedure Design (Singapore

Aviation Academy)

Relevant Over 10 years' experience in aviation.

Experience Specialising in Instrument Flight Procedure Design and

Air Traffic Control liaison.



Social and economic (Hill PDA Consulting)



Independent Review of the Western Sydney Airport Environmental Impact Statement

Social and Economic Issues

Prepared for:

Western Sydney Regional Organisation of Councils (WSROC) and Macarthur Regional Organisation of Councils (MACROC)

November 2015





TABLE OF CONTENTS

Executive Summary		2	PART C: Compliance with draft EIS Guidelines	
			Compliance with (EPBC ACT) EIS Guidelines	21
PART A: Stage 1 Economic and Social Impacts			About the Reviewers	23
Stage 1 Airport – Social (A	ssessment Gaps)	8	Abbreviations and Definitions	25
Stage 1 Airport – Economi	c (Assessment Gaps)	10	Document Reference	25
Stage 1 Airport – Economic & Conclu		13	Doddinent Reference	20
Stage 1 Airport – Social an (Mitigati Measure	on & Management	15		
Stage 1 Airport - Uncertainty & Risk		16	Limitations This assessment is a desktop based review of the relevant documentation submitted with the EIS within	
PART B: Long Term Impacts			three week period. It does not therefore encompass a independent modeling, research or testing of	ıny
Long Term Development –	Social and Economic Impacts (Information Gaps)	18	assumptions.	
Long Term Development –	Social and Economic Impacts (Ricks and Gaps)	19		

EXECUTIVE SUMMARY

Report Purpose

The following Report has been commissioned as an independent review of the Social and Economic components of the Environmental Impact Statement (EIS) prepared for the Western Sydney Airport (WSA).

This Report contributes to a broader review being undertaken by multiple specialists to provide independent advice to the Western Sydney Regional Organisation of Councils (WRSROC) together with the Macarthur Regional Organistion of Councils (MACROC).

Report Approach

In undertaking this review we have had particular regard to the requirements established by Section 10 of the Guidelines for the *Content of the Draft EIS – Western Sydney Airport* issued in January 2015 by the Department of the Environment.

We have also considered the implications of both the Stage 1 Airport and longer term development with regards to:

- Potential gaps in the preparation of the Social and Economic Specialist Studies;
- Any concerns regarding the validity of assumptions and conclusions; and
- Suggestions to improve the effectiveness of the proposed mitigation measures.

Components of the EIS Reviewed

This Report has reviewed the following EIS components:

- Relevant sections of the Executive Summary
- Volume 2—Stage 1 development Chapters 23 and 24 social and economic
- Volume 3—Long term development Chapter 37
- Volume 4 Specialist studies in appendix P1, P2 and P3

To discuss the key issues, this Report is structured into three parts:

Part A – Stage 1 – Social and Economic Impacts

Part B – Long Term Development – Social & Economic Impacts

Part C – Assessment against the draft EIS Guidelines

Key Finding

Our Review support's the EIS's summation that the main benefits of the WSA relate to the generation of jobs in Western Sydney and associated economic activity.

The importance of this contribution to Sydney represents an important policy shift since the preparation of the earlier EIS's for a second airport on the site as Western Sydney has become a greater focus for economic growth and activity.

In drawing this conclusion however we maintain the need for a balanced assessment across positive and negative social and economic impacts, both at a local and regional level, over the short and longer term. To this effect we identify six overarching issues in relation to the current EIS and its assessment of impacts during Stage 1 of the Airport and a further four regarding its assessment over the longer term as discussed on the following pages of this Executive Summary.



EXECUTIVE SUMMARY CONT.

1 STAGE AIRPORT REVIEW FINDINGS

1. Balance of Discussion - Impacts

We identify a strong focus in the EIS on the economic benefits of Stage 1 of the WSA as distinct from a balanced discussion of economic and social costs and benefits.

For example the economic Chapter (24) in Vol. 2 focuses entirely on the regional (Western Sydney) and broader (Sydney, NSW and Australian) employment and economic benefits of the WSA with only one general reference to potential adverse economic impacts as follows.

"However there would be some negative impacts in the immediate vicinity of the airport site due to combination of the airport development and the changing land uses" Vol. 2, Chapter 23, Pg. 504

A more balanced discussion of costs and benefits is therefore encouraged. For example in relation to matters such as impacts to local business activity during construction or the potential impacts of a new business park (with retail as a permissible use) to existing and proposed centres in the South West (i.e. Leppington, Edmondson Park and Liverpool).

2. Balance of Discussion - Geography

Our comments regarding the balance of discussion also relate to the EIS's strong focus on the regional and Australian economic benefits of the WSA as distinct from any prospective local impacts. For example the economic benefits and costs to centres within close proximity to the WSA (i.e. Luddenham or within the South West Growth Centre) are little, if at all discussed. Whilst the impacts may be positive or minimal, it is appropriate that they are considered and where possible quantified.

3. Translation of Issues within the EIS

The Specialist Social Impact Study in Appendix P identifies a number of likely adverse impacts to the local communities. Despite the significance of these impacts and their potential to raise notable social concerns, many are given relatively minor reference in the relevant Chapter (23) with no reference in the Executive Summary.

This results in an ill informed view of social issues for readers of the EIS who may not progress to read Chapter 23 or Appendix P in detail.

4. Statements without Assessment

In the Stage 1 social and economic chapters (23 and 24) many of the potential issues are stated with little assessment of their implications to communities, their degree of significance or duration and alternative approaches that may be applied to alleviate them. For example the provision of alternative open spaces to communities during the construction process, the severity of noise impacts to recreational areas, the degree of noise disturbance for different locations over the short and longer terms.

This approach weakens the appreciation of the issues and the means to mitigate them. It could also result in greater angst by the community as to the likely degree, duration and severity of impacts.



EXECUTIVE SUMMARY CONT..

STAGE 1 AIRPORT REVIEW FINDINGS

5. Direct Response to Stakeholder Engagement

The initial stakeholder engagement programme for the WSA identified a range of social and economic concerns (Vol.1, Chapter 8).

A number of these concerns are listed by the specialist studies yet are not specifically addressed by Vol. 2 or 3 of the EIS. Furthermore the consultation chapter (Vol 1, Chapter 8) refers to an EIS summary paper being prepared however it is understood that this paper was not made available.

It is recommended that a summary consultation paper is prepared and made publically available and that each issue raised by stakeholders is considered and responded to by the specialist studies . In turn the body of the EIS should identify the most appropriate mitigation measures and minimise community concerns.

6. Transfer and Redistribution Effects

Much of the EIS's discussion regarding the economic value add as a consequence of the WSA recognises its "....role in attracting economic activity to the Region" at the expense of others i.e. "There is a reduction in value-add in the Rest of Australia" (Pg. 139) and "The model assumed the future regional employment growth would be redistributed across Sydney..." (Pg. 141).

Whilst the generation of jobs in Western Sydney is a strong positive of the WSA, the EIS does not discuss the economic or social implications of this transfer of activity from the other areas in Sydney 4. or *"the rest of Australia"*. Whilst any such impact might be negligible or acceptable, the potential impact should be recognised and considered in the assessment.

LONGER TERM DEVELOPMENT REVIEW FINDINGS

The longer term assessment of impacts by the EIS is generally an extension of those identified upon operation for Stage 1. Our review finds that if left unmitigated, these impacts would generally be exacerbated on account of the significant increase in flights and passengers owing to the introduction of the second runway.

Key issues relate to:

- How potential social and economic impacts could be managed and mitigated with such a significant and relatively quick increase in the number of passengers and associated on site employment (+120%) over the 13 year period between 2050 and 2063;
- 2. The potential impact of additional flight paths and operations to regional amenity and the impacts to the longer term development potential of affected areas in Western Sydney and more specifically in the South West Growth Centre i.e. height and noise restrictions to increasing residential density;
- 3. The degree to which the WSA could "...lead to the reduction in social amenity and impacts on the existing lifestyle of people living and working...." (Pg. 138) identified by the EIS; and
- The economic costs or implications of the WSA's "....role in attracting economic activity to the Region" at the expense of others i.e. "There is a reduction in value-add in the Rest of Australia" (Pg. 139).

EXECUTIVE SUMMARY

LONG TERM DEVELOPMENT REVIEW FINDINGS

Mitigation of Longer Term Impacts

A review of the discussion concerning mitigation measures over the longer term focuses heavily on planning mechanisms (i.e. zoning of land to exclude residential uses) together with local and State Government investment to address broader traffic, transport and infrastructure issues.

There is no discussion however of how this would be coordinated or resourced to address specific impacts resonating from the WSA. Further there is no discussion as to who the key accountability would fall with.

This results in a potential risk that some mitigation measures and impacts would be missed or forgotten over time.

Setting a Framework for Further Assessment

To improve the longer term assessment and give some comfort to its approach, we suggest:

- Further assessment of the potential social and business impacts and the information gaps with some parameters or ranges of assessment; and
- The identification of the main body responsible for managing and mitigating these impacts and risks over time or how the mitigation framework will be managed.



EXECUTIVE SUMMARY

POTENTIAL IMPACTS AND OPPORTUNITIES

A review of the EIS has identified the following potential impacts and opportunities during Stage 1 and over the longer term.

STAGE 1

Social

- Improved employment opportunities
- Reduced travel time to work opportunities
- Increases in average wages
- Improved retail and business service choice and price competition
- Changes to semi-rural lifestyle
- Changed access to spaces and community facilities on the WSA site
- Impacts to community cohesion
- Impacts to social service provision
- Perceived impacts and associated social anxiety
- Amenity impacts during construction (dust, noise, road closures)
- Amenity and health impacts (noise, visual and air quality) upon operation
- Housing affordability

Economic

- Construction jobs
- Multiplier benefits of operational job generation
- Economic value add for the economy
- Increased customer base and business activity
- Redistribution of jobs to Western Sydney
- Local business impacts during construction and operation
- Land value changes
- Impact to retail and centre viability
- Changes in traffic congestion
- Congestion impacts to WSEA and local and regional roads
- Decline in agriculture industries

• Greater population growth and diversity (age and socio-economic) owing to employment opportunities

- Improved live / work connections
- Potential increase in tourism in the Blue Mountains
- Greater appeal of Western Sydney to business and investment

Legend:

Positive impacts

Negative impacts / opportunities

Neutral or positive or negative impacts / opportunities dependant on stakeholder

LONGER TERM

Social

- Improved employment opportunities
- Reduced travel time to work opportunities
- Increases in average wages
- Improved retail and business service choice and price competition
- Impacts to social service provision
- Amenity and health impacts (noise, visual and air quality) owing to airport operation

Economic

- Multiplier benefits of job generation
- Agglomeration benefits for Western Sydney businesses
- Economic value add for the Western Sydney economy
- Redistribution of jobs to Western Sydney
- Improved appeal of investing and operating airport related businesses in Western Sydney
- Land value changes
- Impact to retail viability and opportunities

• Continued population growth and improvements in social diversity

- Improved balance of economic outcomes across Sydney
- Improved balance of social and community outcomes
- Enhanced local, Sydney and Australian economies

Opportunities

Impacts

Part A Stage 1 Economic and Social Impacts

The following Part reviews the Stage 1 Social and Economic assessments provided in the EIS having particular regard to:

- Information and assessment gaps
- Assumptions and conclusions
- Proposed mitigation measures



STAGE 1 AIRPORT – SOCIAL

ASSESSMENT GAPS

The Stage 1 social impacts are assessed within:

- Vol 2. Chapter 23
- Appendix P1 Report for Western Sydney Unit, WSA EIS (GHD, 2015)
- Appendix P1 Socio Economic Impact Assessment, Western Sydney Population and Demographic Analysis (SGS, 2015)

There are varying references in the GHD Specialist Study as to whether it is a Social Impact Assessment (SIA) or Socio-economic Assessment. In any case it draws together the findings of the specialist studies in Appendix P1 prepared by SGS, Appendix P2 prepared by JLL and Appendix P3 prepared by EY suggesting that it is in fact a Social and Economic Assessment of the WSA. It is on this basis that the Specialist Study is considered and the subsequent translation of issues into the body of the EIS.

Local Community - Perceived and Actual Impacts

As identified by the GHD specialist study "perceived impacts are as important as actual (measurable) impacts as people may modify their behaviours or experience discomfort simply because of a perceived impact" (Page 12).

Despite this recognition, we highlight a number of potential or perceived social impacts to the local communities that do not appear to been adequately identified or assessed by the Specialist Study including:

- Consideration of the physical and perceived impacts of a new airport (and resulting restrictions to access across the locality) to social cohesion and any associated community and cultural connections;
- Consideration of the potential social concerns relating to the perceived or actual impacts of the WSA to the local communities health (i.e. noise disturbance, fuel jettisoning etc.);
- Consideration of the potential social concerns relating to airport related risks and hazards (i.e. terrorism, aircraft crashes etc.) identified during initial stakeholder engagement (Vol. 1, Chapter 8);
- Consideration of the social implications of the locality changing from a rural and low density residential area to a more urbanised one. Whilst the GHD Specialist Study (Appendix P1) makes the assumption that this transition would be a positive one (i.e. provide additional jobs and improved access to work Page 485) we highlight that different communities may value varying levels of urbanisation differently. Therefore a change to a denser built form may be considered undesirable and stressful for some established and retired community members;
- Consideration of the degree and duration of the impacts to existing residents located in Luddenham, Badgerys Creek, Bringelly, Greendale and Wallacia during construction and operation i.e. construction noise, access and traffic congestion.

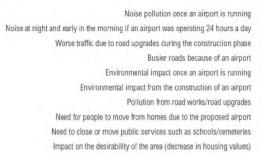


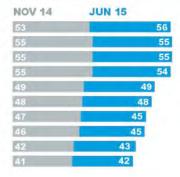
STAGE 1 – AIRPORT- SOCIAL

ASSESSMENT GAPS CONT...

- Further consideration of the implications of increased pressure on social services as well as impacts to housing availability and affordability owing to worker relocation (as identified by the SIA);
- Consideration of the implications of the identified impacts of the WSA to the range of existing facilities likely to be adversely affected by the WSA including:
 - Five schools;
 - A child care centre;
 - Three parks and recreational facilities;
 - Three places of worship in Luddenham and Mulgoa; and
 - Thirteen recreational areas.

Concerns (% of respondents that strongly agree with the following issues)





Source: Fig 8-5, Volume 1 of Draft EIS

Relocations from the WSA Site

- Further gaps in assessment have been identified in relation to the relocation of existing residents, business and community uses from the WSA site.
- The need to relocate from the WSA site was identified as a concern by stakeholders in the Benchmark surveys referenced in the Vol. 1, Chapter 8 of the EIS. Whilst the uses affected have been listed in the GHD Specialist Study (Appendix P1) and subsequently in Chapter 23, they are not discussed or assessed to any degree as the majority (yet not all) had been relocated a few months prior to the GHD Specialist Study's finalisation.
- Whilst the relocations have been actively managed by the Commonwealth in conjunction with the NSW Government, including the appointment of a Place Manager, the assessment would benefit from reference to this and the approach employed to mitigate:
 - The impacts to the 139 residential tenancies relocated or extinguished from the WSA site having particular regard to the elderly, disabled and / or longer term tenants;
 - The impacts of lost or restricted community access to existing uses and facilities on the WSA site i.e.
 Badgery's Creek Park, the Scout Hall, cemeteries etc.; and
 - The loss or relocation of jobs generated by businesses on the WSA site i.e. the 16 agricultural tenancies and eight commercial tenancies (quarry, vineyard and Christmas tree farm).



ASSESSMENT GAPS

The Stage 1 economic impacts are assessed within:

- Vol 2. Chapter 24
- Appendix P1 Socio Economic Impact Assessment, Western Sydney Population and Demographic Analysis (SGS, 2015)
- Appendix P2 Potential Impacts on Property Prices (JLL, 2015)
- Appendix P3 Draft Economic Analysis (EY, 2015)

The relevant sections of the EIS have a strong focus on job generation and economic value add. As described in Vol.2 Chp 24 an SCGE model was prepared to "identify the potential economic impacts" of the WSA and assist "....in the translation of the benefits and costs into real economic impacts accrued through time...".

The model has a number of inputs including improvements to value add, gross business profits, gross household labour incomes, enhanced productivity per worker and net imports.

Each of these elements have a positive focus resulting in a strong narrative regarding the economic and employment benefits of the WSA to Western Sydney and Sydney more generally. There is no discussion however with respect to the modeling or otherwise assessment of the potential costs of the WSA.

Whilst on balance the benefits of the WSA might outweigh the costs for Sydney, a more detailed discussion of costs, and who would be affected is recommended i.e. costs with respect to increased traffic generation and congestion, health impacts, the loss of agricultural land, local business impacts etc.

Chapter 24 and the specialist studies provided in Appendix P1, P2 and P3 also identify that the WSA would result in employment and population growth being redirected from Sydney to Western Sydney.

For example it is stated that the "... WSA is a city-shaping investment that will contribute to a more balanced and sustainable growth for Sydney."

In doing this however the same report states that "A project such as the WSA has the potential to impact jobs and population growth in Sydney. In particular the WSA would be expected to redistribute population and employment towards Western Sydney, away from other parts of Sydney" (EY, Page 29).

Whilst this is a welcome redistribution with regards to Government Policy objectives, the redistribution does come at an opportunity cost from other areas that are 'loosing' prospective employment and growth. The effects of this redistribution and any associated opportunity costs to areas such as the City of Sydney, Botany Bay, Rockdale, North Sydney and Randwick are not however assessed.

This effect should also be considered in the context of Kingsford Smith Airports capacity challenges and the impact of no WSA to actual job growth across Sydney more generally.



ASSESSMENT GAPS CONT...

- The costs and / or benefits of redistributing growth from inner city, urban infill areas of Sydney to greenfield areas is also not discussed with respect to infrastructure provision.
- In this regard it is unclear what the 'standing' of any cost benefit analysis is for the assessment that is what is the area being assessed. If the standing is Western Sydney as a whole, there would be a net benefit gained by the WSA to the area of assessment. If the standing is Greater Sydney, the Specialist Studies infer that there would be no net increase with regards to job growth or value add over the short term as result of the WSA.

Local Business Impacts

- The risk assessment profiled in Vol. 2 Chp 9 states that a risk to be assessed by the Social and Economic Chapters relates to the:
 - "Significant reduction in business activity and services caused by general access and land use changes associated with construction" (Vol.2 Pg 17).
- Despite this identified risk, impacts to local businesses during construction and operational phases are not discussed in Chapters 24 (Stage 1) or 37 (longer term) nor by all four specialist studies.

- Whilst it is recognised that the area immediately surrounding the WSA site is not a dense business area, a number of businesses do operate within the locality. The EIS should provide details about the local business context to better understand the potential Impacts to existing businesses (i.e. access constraints, additional traffic congestion, noise effects and customer implications) together with potential benefits and costs to businesses operating within surrounding centres such as Luddenham.
- We also identify the need to balance the discussion regarding job generation with the impacts of relocating the existing businesses on the site and any implications this might have to local business activity and job provision.
- The EIS also recognises that the WSA would increase congestion on parts of the M4, M5 and M7 Motorways together with the M31 Hume Highway. The potential impacts to businesses reliant on these access routes for servicing and delivery should also be considered.
- As a final consideration, there is no assessment of the potential impacts of the WSA (positive or negative) to the future operation of businesses within the Western Sydney Employment Lands (i.e. in relation to noise or congestions impacts, access improvements and land value increases – perceived or otherwise).



ASSESSMENT GAPS CONT....

Local and Regional Centre Impacts

A number of minor references are made within the EIS to the designation of land on the WSA site as a business park. More specifically 167ha of land is proposed in Stage 1 with the potential for a further 148ha over the longer term.

Of particular note, the proposed permissible uses within this zone include commercial, business and retail. On this basis, the EY 2015 report provides the most detail regarding the business park calculating:

- In Stage 1 it could provide over 158,000sqm of bulky goods floorspace increasing to a significant 561,000sqm by 2063;
- Over the longer term a new regional shopping centre of 200,000sqm – equating to the size of a new Liverpool or Leppington centre;
- 15,000sqm of petrol station and food outlets increasing to 40,000sqm by 2063;
- 10,000sqm to 100,000sqm of office space; and
- 350,000sqm to 845,000sqm of industrial space.

Importantly these calculations are estimates and do not necessarily mean that this type of development and the associated jobs would transpire. By the same token, there is potential for additional floorspace (i.e. retail and bulky goods) to be provided within the proposed business park zone and at an earlier date i.e. during Stage 1.

Despite the significant quantum of new retail, commercial and industrial floorspace proposed, the EIS does not:

- Assess the potential economic impacts of the retail floorspace to the economic viability of existing centres in the South West (i.e. Luddenham or Liverpool) or the timely delivery of proposed centres in the South West Growth Centre (i.e. Leppington and Edmondson Park);
- Assess the demand for, or impacts as a result of, a new business park in this part of the South West and the potential implications to other centres such as Campbelltown and Leppington that both aspire to provide a regionally significant business park;
- Assess the demand for, and implications of a potential 845,000sqm of additional industrial floorspace to the Western Sydney Employment Lands;
- Assess the level of demand for, and impact to social infrastructure in the locality as a result of these uses and their employees (+4,400 to +27,000 people); and
- Assess the potential benefits of a business park and how these jobs would align with the characteristics and skills of the new population in the South West.



VALIDITY OF ASSUMPTIONS AND CONCLUSIONS

Property Prices

The potential impact of the WSA to property prices as a consequence of noise impacts was identified as a key concern by stakeholders during the WSA's initial stakeholder engagement (Vol.1, Chapter 8). To this effect, whilst property prices are discussed within the Social impacts Chapter (23), we believe they are also an important economic consideration.

A specific specialist study was commissioned to consider the effects of the WSA to property prices (JII,2015). The JLL Study identified that the noise impacts associated with the WSA would be likely to adversely affect the sale value of land zoned for non-residential uses. Owing however to the complexities of quantifying this impact the assessment was restricted to residential properties having particular regard to large lot residential.

Impacts to Residential Property Prices

- The JLL 2015 Study's multiple regression analysis of property sales data for Brisbane and Adelaide found a strong correlation (most significantly in Adelaide owing to the wealth of available sales data) between airport noise and land values.
- A similar correlation was not however found for land affected by Sydney and Melbourne airports.

- The JLL Study poses a number of reasons for this result including the fact that property values in Central Sydney may be more significantly and positively influenced by factors other than noise including proximity to Sydney CBD. We support this suggestion and caution any conclusions that seek to draw the same correlation as central Sydney between property prices and airport noise for the WSA. Despite this, Chapter 24 concludes:
 - "Overall there would be no discernable negative impact expected on property values, as the anticipated value uplift from land use changes will outweigh any consequence or concern about noise impacts" Pg. 489
- PRather we caution that the characteristics of land and properties surrounding the WSA could be more akin to the localities surrounding Adelaide or Brisbane airports (i.e. land that is not located within a few kilometres of a Global CBD) resulting in a different correlation between noise and land values to the Kingsford Smith Airport analysis.
- We also draw attention to the conclusion made by the JLL Study that the growth rates for properties affected by Sydney airport were on par with other non affected areas in Sydney. Whilst this may certainly be the case with respect to growth rates, there is likely to be very different actual sale value starting points i.e. lower land values in noise affected areas than non affected areas consistent with the findings of other literature cited by the Study.



VALIDITY OF ASSUMPTIONS & CONCLUSIONS CONT...

Impacts to Large Lot Residential

We also caution against the JLL Study's inability to find a discernible effect between airport noise and the value of large lot housing. This result was drawn from the Study's assessment of land value impacts within a 5km radius of the WSA site following the announcement of the WSA. In this regard we highlight:

- Not all land within a 5km radius of the WSA site would be noise affected. Therefore the sale values sample has a mix of noise and non noise affected land skewing results and contributing to the conclusion of no discernible effect:
- The recent increase in property prices in the locality may be a short term speculative response to the announcement of the investment stimulus and once again incorporates a notable proportion of land that would not be noise affected; and
- Unlike the other case studies referenced, the WSA is not yet operational and therefore the degree or significance of potential noise is not yet apparent to the market.

Employment Calculations

- The EY Report 2015 estimates that the proposed business park would generate 4,439 jobs by Stage 1 increasing to 27,148 by 2063.
- A review of the employee occupancy rates used to calculate these figures (Table 10, Page 24) indicates they are likely to be overly ambitious. For example 1 employee per 10sqm of commercial floorspace equates to rates achieved in new Sydney CBD stock and not greenfield business parks. Further 1 employee per 50sqm of industrial floorspace is also considered high, particularly if the uses are more orientated to freight and logistics.
- Conversely we believe that the employee occupancy figures calculated for the regional shopping centre (1 job per 90sqm) are too low and should be re-adjusted to 55-65sqm GFA per worker.
- Applying our revised rates, we calculate that the Stage 1 workforce would be 3,800 workers by 2031 increasing up to 20,000 in 2063, lower than the EY Report estimates.
- To improve the accuracy of these estimates, we suggest a similar approach is taken to benchmarking employment related to airports in other parts of the EIS. That is the benchmarking of rates achieved by business parks connected with airports internationally.



STAGE 1 AIRPORT – SOCIAL & ECONOMIC IMPACTS

MITIGATION AND MANAGEMENT MEASURES PROPOSED

A review of the proposed mitigation measures for both the social and economic impacts finds the following.

- No mitigation measures have been identified by the economic Chapter 24 or Specialist Studies as very few adverse impacts were identified.
- A fairly standard approach to mitigation measures has been taken to address the social impacts. That is the GHD Specialist Study cross references identified risks to appropriate measures. Further the the majority of key issues are addressed through a series of plans with the detail yet to be determined i.e. stakeholder engagement plans, construction and environmental management plans etc.
- This general approach is considered appropriate given the timescale associated with the development of the WSA. The approach does however rely on the quality of approach detail provided within the subsequent plans regarding how best to manage the implementation of the measures set out in the plans.

- Chapter 23 Social summarises these measures down to two – the development of an Australian Industry Participation Plan and Stakeholder Engagement. Both of these measures are supported however we would add the need for an engagement plan that provides timely and regular information updates to allay any concerns and fears by stakeholders during construction and a point of contact during operation.
- We also highlight the strong reliance on mitigation measures being addressed and implemented by local and State Government with little discussion as to how this would work in practice nor how any ongoing mitigation measures would be resourced or coordinated / who would be accountable for their implementation and any associated ongoing monitoring.
- This becomes a particular issue over the longer term when construction management plans are no longer applicable and it is unclear who the responsible party is to mitigate impacts i.e. the airport operators vs. local and State Governments.



STAGE 1 AIRPORT

UNCERTAINTY OVER IMPACTS AND ENVIRONMENTAL RISKS

On the basis of our independent review, we summarise some of the key uncertainties and risks of the WSA to be:

- The potential economic costs i.e. health services, reduced travel times by road, viability impacts to existing and proposed centres;
- The degree of economic impact to the viability and desirability of existing and proposed centres and business parks in the South West as a result of a significant supply of new retail, bulky goods and commercial floorspace on the WSA site;
- Potential impacts during construction and operation to existing local businesses together with prospective future businesses in the Western Sydney Employment Area;
- Implications as a consequence of the transfer of population and job growth to Sydney's greenfields as opposed to infill locations;
- Potential impacts to non-residential land values;
- Potential implications to existing residents, businesses and community services of being relocated from the WSA site;

- The degree of potential impacts, consequences and alternatives to local residents, businesses and community facilities during construction and operation;
- The potential for social concerns regarding community dislocation, airport related risks and hazards (i.e. terrorism, aircraft crashes etc.) and the potential impacts of this to business investment and land values; and
- The degree of impact to housing supply and affordability.



Part B Longer Term Impacts

The following Part reviews the Longer Term Social and Economic assessments provided in the EIS having particular regards to:

- Information and assessment gaps
- Assumptions and conclusions
- Proposed mitigation measures



LONG TERM DEVELOPMENT – SOCIAL & ECONOMIC IMPACTS

INFORMATION GAPS

The longer term social and economic impacts associated with the WSA are assessed within:

- Vol 3. Chapter 37
- Appendix P1 Report for Western Sydney Unit, WSA EIS (GHD, 2015) and Socio – Economic Impact Assessment, Western Sydney Population and Demographic Analysis (SGS, 2015)
- Appendix P2 Potential Impacts on Property Prices (JLL, 2015)
- Appendix P3 Draft Economic Analysis (EY, 2015)

The longer term assessment of impacts by the EIS is generally an extension of those identified upon operation for Stage 1. These impacts are generally recognised as being exacerbated however on account of the significant increase in flights and passengers owing to the introduction of the second runway. Those longer term impacts that could be quantified relate to:

- Significant employment growth associated with both the airport and expanded business park (4,400 employees to over 27,000);
- The value add as a result of the additional airport activity.

Other impacts that could not be quantified relate to:

- The changing nature of the locality and the impacts this would have to communities.
- The reduction in social amenity and impacts on existing lifestyles in the locality as a result of noise, air quality, traffic and social infrastructure impacts (medical facilities, schools, dentists, pharmacies and child care) together with 13 identified recreational areas.

Information Gaps

The first 3 of the 9 pages of the longer term impact assessment provided by Chapter 37 reiterates the same methodological approach applied for the assessment of the Stage 1 impacts.

A further 2 pages identifies general social impacts related to amenity impacts. The remaining 4 pages reiterate the employment benefits, population projections and conclusion.

It therefore follows that many of the information gaps identified in Part A of this Report hold true for the longer terms impacts. We highlight however some additional matters that we believe should be considered including:

 How potential social and economic impacts would be managed and mitigated with such a significant and relatively quick increase in the number of passengers and associated on site employment (+120%) over the 13 year period between 2050 and 2063;



LONG TERM DEVELOPMENT – SOCIAL & ECONOMIC IMPACTS

RISKS AND GAPS

- What impact the additional flight paths, operations and associated amenity impacts would have to the longer term development potential of affected areas in Western Sydney, and specifically in the South West Growth Centre i.e. height and noise restrictions to increasing residential density;
- The degree to which the airport could "...lead to the reduction in social amenity and impacts on the existing lifestyle of people living and working...." (Pg. 138) identified by the EIS; and
- The economic costs or implications of the WSA's "....role in attracting economic activity to the Region" at the expense of others i.e. "There is a reduction in valueadd in the Rest of Australia" (Pg. 139).

Key Risks and their Implications

As discussed above, the EIS identified the potential for additional amenity impacts to the local communities as a consequence of the WSA. Means to mitigate these impacts are not identified other than general references to the need for local and State Government planning (i.e. appropriate land use zoning) and service provision (i.e. new community facilities etc.).

Whilst it is difficult to be definitive with respect to mitigation measures over such a period of time, this predicament, combined with the significant scale of the development, creates a significant risk over the longer term. This risk is on account of uncertainties as to how these additional facilities would be funded and who would be responsible for their provision, operation and maintenance to a level that adequately addressed the impacts.

This reliance on other parties to manage the WSA's impacts has the potential to result in missed mitigation measures and governance overlaps or gaps.

Setting a Framework for Further Assessment

To improve the longer term assessment and give some comfort to its approach, we suggest:

- Further assessment of the potential social and business impacts and the information gaps with some parameters or ranges of assessment; and
- The identification of the main body responsible for managing and mitigating these impacts and risks over time or how the mitigation framework will be managed.



Part C Compliance with Section 10 of the Draft EIS Guidelines for the WSA



COMPLIANCE WITH EIS GUIDELINES

Based on the assessment discussed in Parts A and B of this Report, we provide the following comments (in blue font) in relation to the matters established under Section 10 of the Department of the Environment's guidelines (black font).

a) The economic and social impacts of the action, both positive and negative, must be analysed.

The EIS has a strong focus on the economic benefits of the WSA. Concerns are raised by this Report however regarding the balance of the assessment having particular regard to the assessment of potential economic costs as well as the translation of social costs to matters summarised in the Executive Summary.



Source: Volume 1, Chapter 8 of Draft EIS

Matters of interest may include:

i. details of any public consultation activities undertaken, and their outcomes

The GHD Specialist Study profiles the stakeholders consulted during its preparation (Appendix P1, Pg. 12).

The Specialist Study does not however profile the issues raised by these stakeholders (as set out in Part in Vol.1 Chapter 8), nor whether they have been addressed by the assessment and where.

As discussed in this Report, some of the Stakeholder issues identified within Vol. 1 of the EIS (shown in the adjacent image) have not been discussed or assessed in detail including:

- property access for site investigations;
- integration with other major infrastructure projects; and
- ensuring local economic benefits are realised.
- ii. details of any consultation with Indigenous stakeholders

Whilst discussed in other sections of the EIS, matters raised by these stakeholders and responses to them are not clear from a reading of Chapter 23 or the GHD Specialist Study.



COMPLIANCE WITH EIS GUIDELINES CONT...

iii. projected economic costs and benefits of the project, including the basis for their estimation through cost/benefit analysis or similar studies

The SGS and EY Specialist Studies (Appendix P1 and P3) identify many of the economic benefits of the WSA however they do not constitute a cost benefit analysis prepared in accordance with Australian Treasury Guidelines. We note that there is some reference to broader cost benefit analysis in Vol.1 Chapter 2 with respect to site choice, however there is no assessment of the costs and benefits of the WSA compared to the base case – i.e. no airport or alternative staging and development scenarios.

iv. employment opportunities expected to be generated by the project (including construction and operational phases).

The number of potential jobs generated by the WSA are quantified by the SGS and EY Specialist Studies (Appendix P1 and P3). Our independent assessment suggests that there may be a modest overestimation of jobs generated by the proposed business park based on benchmark employee occupancy ratios.

b) The economic and social impacts must include impacts at the local, regional and national level.

The EIS has a strong focus on the economic benefits of the WSA at the regional (Western Sydney and Sydney wide) and national level. Our review identifies a gap however with respect to the assessment of economic and social impacts at the local level.

 Details of the relevant cost and benefits of alternative options to the proposed action, as identified in Section 3, should also be included.

In response to this requirement, the EIS (Vol.2 Chapter 2) discusses the findings of a rapid cost benefit analysis of potential airport locations across NSW.

The details of the analysis have not however been provided nor any cost benefit analysis of alternative scenarios for the WSA itself i.e. with / without the business park, alternative flight paths etc.



ABOUT THE REVIEWERS

Sarah Hill is a an Adjunct Professor at the University of Technology Sydney in the Faculty of Design, Architecture and Building as well as a Director of Hill PDA, Australia's leading firm of land economists, property valuers and planners. Sarah specialises in providing strategic advice to local and State Government to bridges the divide between land economics and planning.

Previously Sarah worked as a Principal Planner in London where she developed and led the London Borough of Hackney (LBH) Major Projects Development Assessment Team. While working for the LBH Sarah created a new planning authority known as the London Olympic and Paralympic Joint Planning Authority that successfully assessed the planning application for the London 2012 Olympic Games and its Legacy. In turn, Sarah acted as lead consultant for the London Olympic Delivery Authority on planning, design and environmental matters.

Sarah is the immediate past President of the NSW Division of the Planning Institute of Australia and a graduate of the Australian Institute of Company Directors. Sarah is presently appointed as:

- The Land Economics and Planning Advisor to the Parramatta Road Precinct Review Panel for UrbanGrowth NSW (panel to sit from March to April 2015);
- Chair of the UTS Dean's Advisory Board;
- Member of the University of Sydney Planning Research Centre;
- Member of the Planning Institute of Australia NSW Divisional Committee and Executive Committee;
- Director of the NSW Building Professionals Board (BPB); and
- Member of the BPB Accreditation and Judiciary Committees.

Previously Sarah was appointed as:

 The independent chair of the Industry Advisory Panel (Minister appointed role) to assess the market, economic and planning

- implications of the Redfern Waterloo Built Environment Plan 2;
- A member of the NSW Affordable Housing Taskforce (Minister appointed role);
- A Specialist advisor to the Sydney
- Metropolitan Development Authority (SMDA);
- An advisor to the NSW Department of Planning and Infrastructure (as it was known) on matters relating to NSW planning reform;
- An independent panel member of



SARAH HILL Adjunct Professor, UTS, Director, HillPDA

- the DP&E E planning Steering Committee, funding review panel and metropolitan open space grant funding panel;
- The Independent member of the NSW Panel for the grant allocations in relation to the National Rental Affordability Scheme (Housing NSW);
- Member of the PIA NSW Division Code of Conduct and Disciplinary Committee:
- The planning expert on the NSW Minister for Justice's Break and Enter Working Group; and
- A member of the NSW Department of Planning and Infrastructure Culture Change Working Group.

Sarah has been the recipient of numerous awards including the Mayor of London's Award for Planning Excellence (2005), the 2005 Royal Town Planning Institute Award for Planning (2005) and the UDIA NSW and Stockland Women in Development Leadership Award (2012).



ABOUT THE REVIEWERS

Adrian is a principal of the firm with over 22 years of service at Hill PDA. Prior to Hill PDA he worked 10 years in both local and state government (Department of Housing and Darling Harbour Authority) in strategic planning, statutory planning and project management.

At Hill PDA Adrian has played a leadership role in all consultancy activities of the practice including market research, analysis and forecasting, development feasibility appraisal, economic appraisals (including cost benefit analysis), economic impact assessment, financial modelling, policy research, affordable housing studies and employment lands and commercial centres strategies. This has led to an involvement in diverse array of projects for government bodies, private sector corporations, institutions and other organisations.

Adrian manages the retail economics team in the preparation of both long-term strategies and specific development proposals. He developed and continues to refine numerous models in this field including expenditure forecasts, retail floor space demand, gravity modelling and economic impact assessment.

Regularly he provides expert advice and evidence in the land and environment court in the area of economic impact assessment (in relation to appeals and compulsory acquisition) and in highest and best use assessment (land valuation cases).

Adrian is also on the NSW Planning Institute's Economic Development Chapter. The chapter's role seeks to promote the understanding of economics, property and development in the Planning profession.

Through much of the 1990's and the early part of the following decade he was the principal architect of Estate Master, the industry standard in property development analysis software and he is still responsible for its continued development and refinement. This involved working with industry representatives in refining the

the development feasibility model, sensitivity and probability procedures and the funding structuring. Adrian also had a major role in developing the investment analysis and development management models.

Relevant Projects Experience

- North West Rail Link Economic Analysis, Urban Growth NSW (2014)
- Meadowbank Railway Station Precinct Master Plan – Stage 1 Market Demand Assessment (2014)
- Bays Precinct Urban Activation Precinct Financial Modelling, UrbanGrowth NSW (2014)



ADRIAN HACK Principal, HillPDA

- Economic Impact Study of Pacific Highway Upgrade at Wyong Town Centre (2014)
- Eastern Creek Business Hub, Western Sydney Parklands Trust (2013)
- Liverpool Retail Centres Hierarchy Review, Liverpool City Council (2012)
- Campsie Retail Revitalisation Plan, RailCorp (2012)



ABBREVIATIONS AND DEFINITIONS

EIS – Environmental Impact Statement

GFA - Gross Floor Area

MACROC - Macarthur Regional Organistion of Councils

WSA – Western Sydney Aiprot

WSROC - Western Sydney Regional Organisation of Councils

DOCUMENTS REFERENCES

Western Sydney Airport Environmental Impact Statement Incorporating:

- Volume 2 Stage 1 Development Chapter 37 Social and Economic
- Volume 3 —Long Term Development.
- Volume 4, Appendix P1 The Socio Economic Impact Assessment undertaken by GHD (October 2015) and associated specialist studies including:
 - Western Sydney Population and Demographic Analysis (SGS, July 2015)
 - Potential Impacts on Property Prices (JLL, September 2015)
 - Western Sydney Airport Draft Economic Analysis (EY, September 2015



HIIIPDA SYDNEY

Level 3, 234 George Street Sydney NSW 2000 GPO Box 2748 Sydney NSW 2001

t: +61 2 9252 8777 f: +61 2 9252 6077

e: sydney@hillpda.com

HIIIPDA MELBOURNE

Suite 114, 838 Collins Street Docklands VIC 3008 GPO Box 3424 Melbourne VIC 3001

t: +61 3 9629 1842

f: +61 3 9629 6315

e: melbourne@hillpda.com

HIIIPDA BRISBANE

Level 27 Santos Place, 32 Turbot Street Brisbane QLD 4000 GPO Box 938 Brisbane QLD 4001

t: +61 7 3181 5644 e: brisbane@hillpda.com

FOLLOW US

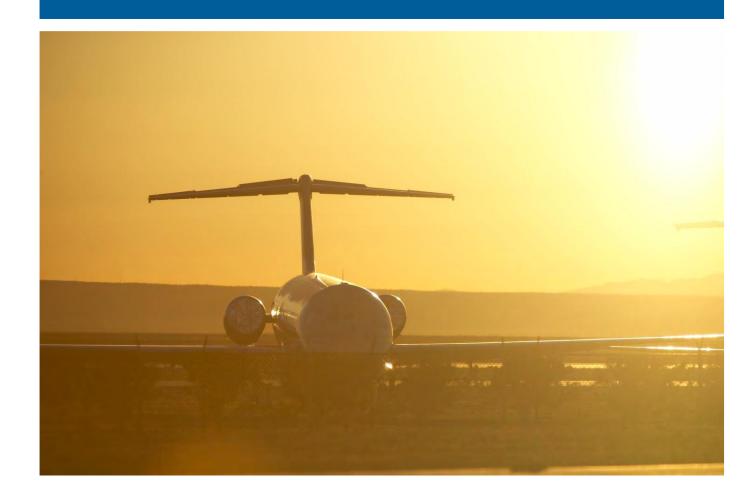




www.hillpda.com



Surface water and groundwater (Cardno)

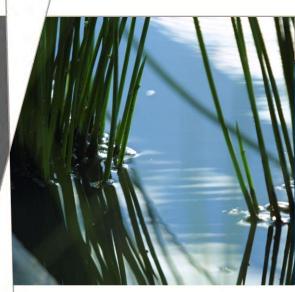


Peer Review of Draft EIS -Surface Water and Groundwater

Western Sydney Airport Environmental Impact Statement

Prepared for WSROC

23 November 2015







Contact Information

Cardno (NSW/ACT) Pty Ltd Trading as Cardno (NSW/ACT)

ABN 95 001 145 035

Level 9, The Forum, 203 Pacific Highway

St Leonards NSW 2065

PO Box 19 St Leonards NSW 1590

Telephone: 02 9496 7700 Facsimile: 02 9439 5170

International: +61 2 9496 7700

sydney@cardno.com.au www.cardno.com

Author(s):

David Whyte

Manager - Water Engineering

Approved By:

Kevin Roberts

Manager - Environment

Document Information

Prepared for WSROC

Project Name Western Sydney Airport

Environmental Impact

Statement

File Reference 59916060 R001 RevB

Western_Syd_Airport_Draft

EIS SW and GW

review.docx

Job Reference 59916060

Date 23 November 2015

Document History

Version	Effective Date	Description of Revision	Prepared by:	Reviewed by:
Α	10/11/2015	Draft for Client Review	D Whyte, F d'Hautefeuille	K Roberts
В	20/11/2015	Final Report including comments	D Whyte, F d'Hautefeuille	K Roberts

This document is produced by Cardno solely for the benefit and use by the client in accordance with the terms of the engagement. Cardno does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by any third party on the content of this document.

23 November 2015 Cardno ii

[©] Cardno. Copyright in the whole and every part of this document belongs to Cardno and may not be used, sold, transferred, copied or reproduced in whole or in part in any manner or form or in or on any media to any person other than by agreement with Cardno.



Executive Summary

1. Scope of review

Cardno was engaged by WSP Parsons Brinckerhoff on behalf on the Western Sydney Regional Organisation of Councils (WSROC) to undertake a peer review of the Western Sydney Airport Draft Environmental Impact Statement (EIS) and the supporting surface water and groundwater studies including hydrology, hydraulics, stormwater management, groundwater and water quality components.

It is noted that any reference to EIS throughout the document should be taken as referring to the draft EIS.

Approach

Cardno have undertaken a desktop review of the draft EIS documents and have assessed the draft EIS with respect to the following items:

- An evaluation of whether the ground and surface water studies meets the requirements of the EIS Guidelines and relevant other guidelines and methodologies;
- An evaluation of whether the conclusions reached in the studies are valid;
- An evaluation of whether the underlying assumptions used to inform the assessment are plausible and credible;
- A review of the mitigation and management measures proposed and advice provided on their likely adequacy in mitigating impacts;
- An evaluation of the level of uncertainty over impacts and the environmental risks that will arise as a result of the project; and,
- A summary of the key impacts and opportunities associated with the project in relation to the Surface Water and groundwater studies.

Descriptions of methodologies and impacts have been cross-referenced across chapters and the technical reports and figures checked for whether they aid understanding. Limited spot checks on values presented in tables have been undertaken together with applying sanity checks to data and model results with expected outcomes.

Surface water and groundwater have been reviewed by separate specialists, except where there is an interconnection between the two, such as with water quality.

Prior to release of the draft EIS, Cardno initially reviewed available background documents to gain an understanding of site settings and project history including EPBC documentation and the 1997-99 draft EIS by PPK.

Limitations

The following limitations apply to the review of the surface water and groundwater:

- No site visit has been undertaken;
- No numerical models were available and hence no review of models or inputs has been undertaken other than what has been reported, nor have any models been run as part of the review;
- No data is available for review and assessment is limited to commentary on the data provided, however, data gaps have been identified;
- Cardno assumed the data used for the impact assessment had gone through a quality control
 process before use and therefore can be relied upon; and,
- Similarly Cardno did not review the interpretation of the data, for example the attribution of a bore to a specific aquifer.



Components of the EIS reviewed

The following components of the draft EIS have been reviewed in relation to surface water and groundwater:

• Volume 1—Project Background

- Executive Summary
- o Part A—Project background
- Part B—Airport Plan

• Volume 2—Stage 1 Development

- Part D—Environmental Impact Assessment:
 - Chapter 9: Approach to impact assessment
 - Chapter 17: Topography, geology and soils
 - Chapter 18: Surface water and groundwater
 - Chapter 27: Cumulative impact assessment
- o Part E—Environmental Management
- Part F—Conclusions

• Volume 3—Long Term Development

- Part G—Assessment of Long Term Development
 - Chapter 30: Approach to impact assessment
 - Chapter 34: Surface water and groundwater
 - Chapter 39: Other environmental matters
- Part H—Conclusion and recommendations

• Volume 4—EIS Technical Reports

- Appendix C: Western Sydney Airport EIS Guidelines
- Appendix L:
 - L1 Surface water hydrology and geomorphology
 - L2 Surface water quality
 - L3 Groundwater

2. Stage 1 airport

Summary of detailed findings including compliance with EIS guidelines

A summary of the assessment of compliance of the draft EIS with the EIS guidelines is provided in **Table 2-1**. In general the elements of the EIS Guidelines have been addressed, however, some gaps have been identified in the assessments which means that compliance with certain EIS guidelines are incomplete.

Primarily, discussion on how the reliability of the information was tested and what uncertainties (if any) are in the information is not presented. Further, figures and maps are provided, however, many figures and maps are not clear and could be improved to aid understanding.

Mitigation and management measures are identified, however, are generally broad and do not necessarily target specific residual impacts or propose specific measures or targets. The proposed mitigation and management measures are not concise and appear to differ in different sections of the draft EIS.

The review has also identified some technically incorrect statements made in the EIS, however, Cardno has assessed that consequences for the outcomes of the impact assessment are limited.



Surface Water

The overall outcome of the impact assessment is that there are minimal impacts to surface water, geomorphology and water quality as a result of the Stage 1 development incorporating mitigation measures. Some specific residual impacts are noted in relation to changes to water level and geomorphology at Oaky Creek and on a tributary of Badgerys Creek.

The identified gaps in the assessment relate to:

- Flooding Residual impacts in Cosgroves, Oaky and Badgerys Creek are identified. Cardno agree
 that the impacts may be relatively minor if the results as presented are correct. However, it is difficult
 to confirm whether the statements and conclusions are valid as there is a lack of supporting
 information and presentation of inputs and results are not clear and concise. Further, these impacts
 still require management to mitigate them to negligible levels.
- Duncans Creek and its tributaries have not been modelled to allow definition of baseline and relative
 hydraulic impacts in these locations. Such impacts have been assessed by the changes in the
 hydrology for these catchments. As such, all summary impacts do not fully consider impacts to the
 Duncans Creek downstream areas. Investigation of a basin at this location is proposed as a
 mitigation/management measure.
- Many of the figures/maps provided in both the main chapters of the EIS and in the technical reports
 are either not easy to understand or omit relevant information to aid ease of understanding.
- Cumulative impacts have been discussed, however, no assessment has been undertaken to quantify
 the potential impacts other than for climate change scenarios.
- Geomorphological changes are documented as being expected to be low, however, have simplified/understated the potential impact. Changes to bed shear stress are determined to be around a 5% change, however, could be as high as 25% (or more in isolated locations). Further, assessment of erosion potential has centred on threshold values for vegetation (100-200 N/m2) rather than consideration of the in-situ sediment critical shear stress which is likely much lower (potentially <5N/m2).
- Water quality has not been presented in terms of achieved pollutant load reduction or assessment
 against guideline pollutant reduction targets. The EIS seems to dimiss any relevance of increased
 pollutant loads on the receiving environment and instead determines that impacts are acceptable
 because there are general improvements in pollutant concentrations due to increased flow volumes.
- There are significant impacts to water quality which are not addressed as part of the currently
 proposal water quality measures and significant improvements to the design will be required to
 address water quality to meet any of the identified guidelines.
- The EIS discusses the tributary of Badgerys Creek that joins Badgerys Creek approximately 300 metres downstream of Elizabeth Drive under existing conditions. It acknowledges that threatened ecological communities have not been mapped outside the site as part of the biodiversity assessment, but there is evidence of some remnant native vegetation along this reach of creek which would be reliant on occasional flooding and would be impacted under the current proposals. Such impacts need to be assessed to ensure there are no impacts and any mitigation and management measures identified.
- Management and mitigation measures are not concise and are not clearly identified consistently
 throughout the document. No costing is provided and there is no specific criteria recommended to
 address certain residual impacts as part of future mitigation and management measures.



Surface water impact management is required to address the following residual risks to surface water:

- Outstanding localised increases to flood depths in Cosgroves, Oaky and Badgerys Creeks.
- Risks to erosion and geomorphological changes to the downstream creeks due to increases in bed shear stress at various locations
- Undefined impacts and mitigation for runoff to Duncans Creek.
- Implications of increases in pollutant loads, particularly for cumulative impacts are not addressed. Water quality with current management measures does not currently meet any guidelines.
- Ecological impacts in receiving waters are not clearly addressed
- Impacts of potential use of stormwater to provide water supply for site preparation works has not been considered.

Groundwater

The overall outcome of the impact assessment is that there would be no impact to groundwater systems and associated values due to the presence of tight clay soils and limited groundwater presence directly below the site. Cardno does not concur fully with the assessment, this difference results from a key assumption made in the EIS by characterising the uppermost aquifer.

The identified gaps in the assessment relate to:

- Groundwater values are identified, however the groundwater dependent ecosystem lacks characterisation and conceptualisation with respect to water source.
- Sufficiently complete characterisation of the weathered rock (regolith) aquifer is not provided. For
 example, the aquifer composition, nature and thickness distribution is unknown (this could have
 been collated through a review of all drilling logs performed on site overtime), and the level of
 saturation of the aquifer is also unknown. This is a limitation in understanding the connectivity of the
 weathered rock (regolith) aquifer to the alluvium aquifer supporting groundwater dependent
 ecosystem.
- Similarly, no baseline time-series data has been collected. This is especially a limitation when it
 comes to characterisation of the weathered rock (regolith) aquifer and the contribution of this aquifer
 to the alluvium formations along the creek lines where groundwater dependent ecosystems are
 primarily located.
- The impacts are reasonably well identified, however some of the impact assessment is missing a clear outcome statement.
- Impact management and mitigation measures are only discussed generally with potential mitigation
 measures to be considered and monitoring to be implemented. Groundwater impact arising from
 contamination is suitably addressed. Groundwater impact arising from the development of the site
 is, in view of the lack of information on the uppermost aquifer, inappropriate especially when
 addressing impacts on groundwater dependent ecosystems.
- Consideration of groundwater recharge is discussed at length for the Bringelly Shale and overlying aguifer, however, the discussion does not extend to the alluvium aguifer.

Groundwater management is required to address the two residual risks to groundwater values:

- Risk of soil and subsurface contamination from spill/release of chemicals or contaminants. A
 discussion is suitably provided to this effect in the EIS documents. Cardno agrees that the details of
 the management program cannot be defined at this stage and should be incorporated in a site
 environmental management plan.
- Risk of impact on groundwater dependent ecosystems from reduced water supply to the creek alluvium system. In Cardno's view, the EIS documents do not provide a robust impact assessment of the risk to the Cumberland Plain Woodland along Badgerys Creek. Cardno would suggest that



the following management and mitigation approach could be considered to address the EIS guidelines requirements:

- Implementation of baseline data acquisition with an aim to document the contribution of recharge to the creek alluvial system from the weathered rock (regolith) aquifer, the Bringelly Shale and streamflow;
- o A review of the risk to the groundwater dependent ecosystem;
- Based on the outcome of the previous item, the management and mitigation will vary with the level of risk. A risk propagation based monitoring strategy and response plan may be suitable. In this case, a response plan would propose a suitable early warning indication of impact propagation and provide the management and mitigation measures if necessary to prevent adverse impact. If the risk is identified to be more significant, engineered solutions may need to be considered in the site design. Another management and mitigation solution could involve inputs into site design to prevent impact on streamflow and indirectly aquifer recharge or mitigate the loss of recharge.

3. Long term development

O Summary of detailed findings including key gaps, risks and effectiveness of assessment in setting a framework for further assessment.

Surface Water

For the long term development, the impact assessment builds on the assessment for Stage 1. The hydrologic, hydraulic and water quality models used in the assessment include representations of the drainage system incorporated into the concept design of the indicative long term development.

The concept design of the long term development includes expanding the drainage system to control the flow of surface water. An extension of the Stage 1 detention basins is proposed together with provision of an additional detention basin in the longer term.

The following risks to surface water for the long term development and their implications have been identified:

- Outstanding localised increases to flood depths in Cosgroves, Oaky and Badgerys Creeks.
- Risks to erosion and geomorphological changes to the downstream creeks due to increases in bed shear stress at various locations
- Undefined impacts and mitigation for runoff to Duncans Creek.
- Implications of increases in pollutant loads, particularly for cumulative impacts are not addressed.
- Ecological impacts in receiving waters are not clearly addressed
- Impacts of potential use of stormwater to provide water supply for site preparation works has not been considered.

It is believed that most of the above issues can be addressed through refinement of the drainage strategy to manage flows, velocities and water quality. There are some outstanding impact assessments which have not been considered and should be addressed such as ecological impacts, use of stormwater for construction and impacts on Duncans Creek.

A reasonably robust assessment of the long term development has been undertaken. There is no formal framework for further assessment established as part of the EIS. The EIS for the Long Term Development simply lists considerations for future development as part of future design stages to address the impacts to be minimised. While this list identifies some of the key items to be addressed, in does not recommend any specific measures or processes that must be adhered to so as to tie those activities back to this EIS and associated approvals.



Groundwater

The following risks to groundwater for the long term development and their implications have been identified:

- Risk associated with change of land use and decrease of groundwater recharge. The implication is possibly, a lack of groundwater supply to the groundwater dependent ecosystems (EPBC listed). If the studies highlighted in the data gap analysis confirm that there is a risk, an artificial groundwater supply scheme to the alluvial aquifer or designed streamflow release upstream of the ecosystem will possibly be required to support aquifer recharge. If the studies identify that there is no risk of impact to the groundwater dependent ecosystem water supply, then no further work will be required.
- Risk associated with the possible use of chemicals over irrigated areas. The level of risk will depend
 largely on locations and practices. The implication is possibly an impact to the health of
 groundwater dependent ecosystem through runoff and infiltration in the alluvial aquifer.
 Management of this risk implies best practices be followed for the use of fertilizer and pesticides,
 additionally, targeted analytes could be included in groundwater monitoring.
- Risk associated with the use of groundwater as a supply. A groundwater assessment will be
 required to establish whether the extraction of the required volume is feasible and the impact on
 nearby groundwater users. It should be noted that the target aquifer will be the deeper Hawkesbury
 Sandstone. The implications in terms of work required will depend on the volume required. At
 most, the studies for a groundwater assessment are likely to require the drilling of a few wells (at
 least one observation and one pumping well), pump testing and analysis and some groundwater
 modelling.

The EIS identifies some of the required assessments and activities especially in relation to water quality management. The EIS also identifies that additional assessments will be required would the project require to use groundwater as a water supply. However, the EIS did not identify the state and federal regulatory processes likely to be required for the management of the site groundwater values (liaison, review and approvals, licences for example), nor did it clearly identify the management plans and response plans required to be in place. The EIS did not identify assessment remaining to be performed to collect baseline data and confirm the hydrogeological conceptual model.

4. Key impacts and opportunities

Key project impacts and opportunities are as follows:

- Localised increases in flood depths are indicated at a number of locations.
- Impacts in Duncans Creek are not fully considered and additional modelling would be required to determine residual impacts and any proposed management measures.
- Potential erosion and geomorphology changes with increased flow volumes and isolated increases in bed shear stress
- Increased pollutant loads for total suspended solids and nutrients, although pollutant concentration are equal or reduced compared to existing.
- Impacts on the groundwater dependent ecosystem associated with Badgerys Creek are not fully identified due to a lack of characterisation of the alluvium aquifer and in particular of:
 - o The relationship between the alluvial aquifer and the weathered rock (regolith) aquifer; and
 - o The characterisation of the recharge of the alluvium aquifer.
- These groundwater dependent ecosystems are declared a Matter of National and Environmental Significance under the EPBC Act. A review of the groundwater conceptual model would be required to enable characteristion of impacts on the Badgerys Creek groundwater dependent ecosystem.

There is an opportunity to improve the outcomes of the EIS to manage the residual impacts through refinement of the drainage strategy and management plans during future detailed design stages. It is recommended that the residual impacts are clearly defined in the EIS and appropriate specific management measures and targets be proposed or specified to ensure that these issues are addressed.



Given the complete redevelopment and earthworks taking place on site, there is opportunity to introduce even higher levels of stormwater management and water quality treatment to further minimise the impacts of the project and potentially improve the outcomes. This would assist in minimising cumulative impacts on the environment that may occur in combination with the surrounding South West Growth Centre and Western Sydney Employment Area development impacts.

With respect to groundwater impacts, there is an opportunity before site activities to acquire suitable baseline data and review the level of risk to the groundwater dependent ecosystem along the creeks. There is also an opportunity to define site design requirements to ensure recharge of the alluvium aquifer and, consequently, preservation of Badgerys Creek groundwater dependent ecosystem.

Overall there are some key shortcomings of the draft EIS and the assessment and the document could be improved by addressing these:

- The main chapters of the report in relation to surface water and groundwater, particularly Chapter 18, lack much of the key content of the technical reports and passes over some key information, descriptions, residual impacts and management measures.
- Figures and graphs are not well presented, missing some key information, which makes it difficult to understand some of the descriptions and inputs of data.
- There are inconsistencies between different chapters with similar content. E.g. key environmental impacts as well as mitigation and management measures.
- Residual Impacts are not clearly identified and listed in a separate section, but are rather interspersed throughtout the document.
- There are no proposed specific compliance criteria linked to future assessments to address any
 outstanding items not completed in the current assessment to ensure that residual impacts are
 addressed to a specific recommended outcome.



Table of Contents

1	Scope of the Review					
	1.1	Introdu	ction	1		
	1.2	Approa	nch	1		
	1.3	Limitati	ions	2		
	1.4	Components of the EIS reviewed				
2	Detailed Findings – 1 st Stage Airport					
	2.1	Compli	ance with the requirements of the (EPBC Act) EIS Guidelines	4		
		2.1.1	Requirements	4		
		2.1.2	Assessment of Compliance	5		
		2.1.3	Conclusion of Assessment of Compliance with EIS Guidelines	1		
		2.1.4	Surface Water	1		
		2.1.5	Groundwater	2		
	2.2	Comme	entary on Validity of Assumptions	3		
		2.2.1	Surface Water	3		
		2.2.2	Groundwater	3		
	2.3	Suitabi	lity of Technical Findings/Conclusions	4		
		2.3.1	Surface Water – Overall Findings	4		
		2.3.2	Groundwater – Overall Findings	6		
		2.3.3	Surface Water – Detailed Findings	g		
		2.3.4	Groundwater – Detailed Findings	16		
	2.4	Review	of Mitigation & Management Measures Proposed	19		
		2.4.1	Surface Water	19		
		2.4.2	Groundwater	20		
	2.5	,				
		2.5.1	Surface Water	21		
		2.5.2	Groundwater	22		
3	Detailed findings – Long Term Development					
	3.1	Descrip	otion of Approach to Impact Assessment Developed in the EIS	23		
		3.1.1	Surface Water	23		
		3.1.2	Groundwater	23		
	3.2	Assess	sment Gap Identification	23		
		3.2.1	Surface Water	23		
		3.2.2	Groundwater	24		
	3.3	Resulti	ng Key Risks and Implications	25		
		3.3.1	Surface Water	25		
		3.3.2	Groundwater	25		
	3.4	Effectiv	veness of assessment in setting a framework for further assessment	25		
		3.4.1	Surface Water	25		
		3.4.2	Groundwater	26		
4	Key F	Project im	npacts and opportunities	27		
5	Revie	wers' Qu	ualifications	28		

Tables

Table 2-1 Compliance with the EIS Guidelines



1 Scope of the Review

1.1 Introduction

Cardno was engaged by WSP Parsons Brinckerhoff on behalf on the Western Sydney Regional Organisation of Councils (WSROC) to undertake a peer review of the Western Sydney Airport Draft Environmental Impact Statement (EIS) and the supporting surface water and groundwater studies including hydrology, hydraulics, stormwater management, groundwater and water quality components.

The scope of the review falls under compliance with the "Guidelines for a content for a draft Environmental Impact Assessment", issued by the Department of the Environment (DoE) under the Environment Protection and Biodiversity Conservation Act 1999 (the EPBC Act) in January 2015 for the Western Sydney Airport.

It is noted that any reference to EIS throughout the document should be taken as referring to the draft EIS.

1.2 Approach

Cardno have undertaken a desktop review of the draft EIS documents and have assessed the EIS with respect to the following items:

- An evaluation of whether the ground and surface water studies meets the requirements of the EIS Guidelines and relevant other guidelines and methodologies;
- An evaluation of whether the conclusions reached in the studies are valid;
- An evaluation of whether the underlying assumptions used to inform the assessment are plausible and credible;
- A review of the mitigation and management measures proposed and advice provided on their likely adequacy in mitigating impacts;
- An evaluation of the level of uncertainty over impacts and the environmental risks that will arise as a result of the project; and,
- A summary of the key impacts and opportunities associated with the project in relation to the Surface Water and groundwater studies.

Descriptions of methodologies and impacts have been cross-referenced across chapters and the technical reports and figures checked for whether they aid understanding. Limited spot checks on values presented in tables have been undertaken together with applying sanity checks to data and model results with expected outcomes.

Surface water and groundwater have been reviewed by separate specialists, except where there is an interconnection between the two, such as with water quality.

Prior to release of the draft EIS, Cardno initially reviewed available background documents to gain an understanding of site settings and project history.

Cardno referred to the following documents:

- 1. EPBC documentation:
 - Guidelines for the content of a draft Environmental Impact statement, Western Sydney Airport, Environment Protection and Biodiversity Conservation Act 1999 (Reference: EPBC 2014/7391), 29 January 2015
 - Decision whether action needs approval/approval required, 23 December 2014. This decision confirms that the development requires assessment and approval under the EPBC Act before it can proceed.



- Invitation for Public Comment on Referral, 04 December 2014
 - Western Sydney Airport Referral of proposed action, Dec 2014, Department of Infrastructure and Regional Development*
 - Environmental field survey of Commonwealth land at Badgerys Creek Report prepared for Western Sydney Unit Department of Infrastructure and Regional Development, SMEC, 2014*
 - Biodiversity Report Commonwealth land at Badgerys Creek, Prepared for Western Sydney Unit Department of Infrastructure and Regional Development, SMEC, October 2014*
 - Badgerys Creek Initial Environmental Survey: Historic Heritage, Australian Museum Consulting for SMEC, October 2014
 - Environmental Survey of Commonwealth Land at Badgerys Creek: Aboriginal Heritage, Australian Museum Consulting for SMEC, October 2014
- 2. 1997-99 EIS and associated technical studies documentation:
 - Draft EIS, Summary of the Environmental Impact Statement for the Proposed Second Sydney Airport at Badgerys Creek, PPK, 1997-1999
 - Second Sydney Airport Proposal, Technical Paper 7: Geology, Soils and Water, PPK, 1997
 - Second Sydney Airport Proposal Technical Paper 10: Hazards and Risks, PPK, 1997

Upon release of the draft EIS, Cardno reviewed:

- general chapters of the draft EIS to obtain an understanding of the proposal, the general approach to the impact assessment, and any community hydrological and hydrogeological concerns;
- the (EPBC Act) EIS Guidelines and any requirements relevant to surface and groundwater; and
- the chapters relevant to surface water and groundwater; and
- surface water and groundwater technical reports of the draft EIS.

1.3 Limitations

The following limitations apply to the review of the surface water and groundwater:

- No site visit has been undertaken.
- No numerical models were available and hence no review of models or inputs has been undertaken other than what has been reported, nor have any models been run as part of the review
- Assessment is limited to commentary on the data provided, however, data gaps have been identified
- Cardno assumed the data used for the groundwater impact assessment had gone through a quality control process before use and therefore can be relied upon
- Similarly Cardno did not review the interpretation of the data, for example the attribution of a bore to a specific aquifer.



1.4 Components of the EIS reviewed

The following components of the EIS have been reviewed in relation to surface water and groundwater:

• Volume 1—Project Background

- Executive Summary
- o Part A—Project background
- o Part B—Airport Plan

• Volume 2—Stage 1 Development

- Part D—Environmental Impact Assessment:
 - Chapter 9: Approach to impact assessment
 - Chapter 17: Topography, geology and soils
 - Chapter 18: Surface water and groundwater
 - Chapter 27: Cumulative impact assessment
- o Part E—Environmental Management
- o Part F—Conclusions

• Volume 3—Long Term Development

- Part G—Assessment of Long Term Development
 - Chapter 30: Approach to impact assessment
 - Chapter 34: Surface water and groundwater
 - Chapter 39: Other environmental matters
- o Part H—Conclusion and recommendations

• Volume 4—EIS Technical Reports

- Appendix C: Western Sydney Airport EIS Guidelines
- o Appendix L:
 - L1 Surface water hydrology and geomorphology
 - L2 Surface water quality
 - L3 Groundwater



2 Detailed Findings – 1st Stage Airport

2.1 Compliance with the requirements of the (EPBC Act) EIS Guidelines

2.1.1 Requirements

The draft EIS was assessed for compliance with the requirements of the EIS Guidelines and key requirements for impact assessment from the NSW Office of Water or NSW EPA on groundwater.

The EPBC EIS Guidelines for the Western Sydney Airport requires the EIS is to provide the following with respect to surface water and groundwater:

- A Description of the Environment
 - Information on listed threatened species (including suitable habitat) and ecological communities that are or are likely to be present in all areas of potential impact.
 - A description of the environment in all areas of potential impact, including all components of the environment as defined in Section 528 of the EPBC Act:
 - ecosystems and their constituent parts, including people and communities
 - natural and physical resources
 - the qualities and characteristics of locations, places and areas
 - Heritage values of places
 - the social, economic and cultural aspects of a thing mentioned in preceding dot points.
- Relevant impacts are required to be identified
 - Impacts to the environment (as defined in section 528) should include but not be limited to the following:
 - changes to water quality on site and downstream of the site
 - changes to siltation
 - hydrological changes
 - native flora and fauna habitat removal and degradation (on site and in surrounding areas that may be affected by the action)
 - changes in recreational use and amenity of natural areas
 - creation of any risks or hazards to people or property that may be associated with any component of the action.
 - The guidelines require that Quantification and assessment of impacts should be:
 - against appropriate background/baseline levels
 - be prepared according to best practice guidelines and compared to best practice standards
 - consider seasonal and temporal variations where appropriate (including temporal changes in the sensitivity of the receptor)
 - be supported by maps, graphs and diagrams as appropriate to ensure information is readily understandable
 - Guidelines and standards used to quantify baselines and impacts should be explained and justified.
- The EIS must provide information on proposed avoidance and mitigation measures to manage the relevant impact to a MNES
- The EIS is to provide specifics on the management measures



- The EIS must provide details of the likely residual impacts on MNES and any proposed offset packages to reduce the residual impact
- The EIS must include information on any other requirements for approval or conditions that apply, or that the proponent reasonably believes are likely to apply, to the proposed action i.e. State Government's applicable requirements.
- The EIS must inform on sources of information as follows: the source of the information, how recent the information is, how the reliability of the information was tested, what uncertainties (if any) are in the information
- Reference to the Guidelines, plans and/or policies that have been considered during preparation of the EIS.

2.1.2 <u>Assessment of Compliance</u>

The summary of the assessment of compliance of the draft EIS with the EIS guidelines is provided in **Table 2-1**. Please note that technical validity is discussed in later sections in further detail (Section 2.1.3 to Section 2.5 for the first stage and Section 3 for long term development).



Table 2-1 Compliance with the EIS Guidelines

	Groundwater	Surface Water
Identification of Matters of National Environmental Significance (MNES)	The response of the draft EIS is incomplete. MNES are not clearly identified in the groundwater chapters. A discussion on the presence of high value Groundwater Dependent Ecosystems (GDEs) is given, however, there appears to be conflicting information between maps and text on the Cumberland Plain Woodland and sources, age and reliability of data is not provided.	MNES are not clearly identified in the surface water chapters. However, the relevant MNES is taken as the environment in general.
4. Description of the Environment (a) Information on listed threatened species (including suitable habitat) and ecological communities that are or are likely to be present in all areas of potential impact.	The response of the draft EIS is incomplete. The hydrogeological settings are reasonably well provided albeit for some gaps in the characterisation having significant impact on the ability of characterise impacts to some of the groundwater values. Some technical limitations identified.	The response of the draft EIS only partly addresses the guideline. Ecological communities that are or are likely to be present in all areas of potential impact are not defined outside the airport site in the receiving creeks which are impacted by the project.
(c) A description of the environment in all areas of potential impact		Description of catchments and watercourses is well presented.
 ecosystems and their constituent parts, including people and communities natural and physical resources the qualities and characteristics of locations, places and areas heritage values of places the social, economic and cultural aspects of a thing mentioned in preceding dot points. 		There is no discussion of the social, economic and cultural aspects of the natural and physical resources. No linkages to specific ecosystems is provided.
5. Identification of relevant impacts	The guideline is addressed, however, there are gaps in the assessments.	The guideline is addressed however, there are gaps in the assessments.
	Relevant impacts are identified, however the qualification of the level of impact is not fully addressed.	Impacts are identified, however the qualification of the level of impact is not fully addressed and gaps in the assessment exist. For Example, surface water and geomorphological impacts on Duncans Creek have not been defined.
(b) Cumulative Impacts	Long term development scenario is addressed	Impacts of the long-term development scenario have been undertaken (except for Duncans Creek). Cumulative impacts have been considered for Climate Change and future adjacent development,



		however, impacts have only been quantified through modelling for Climate Change.
(g) Changes to water quality on site and downstream of the site	The response of the draft EIS is acceptable. Impacts include change to water quality. Impact to water quality resulting from release of contamination and runoff water management are addressed fully. Technical limitations identified in relation to potential water quality changes to the creek alluvial aquifer from reduced groundwater inter-aquifer flows.	Impacts include changes to surface water quality, however, there are some queries around the assessment and conclusions discussed in more detail in sections of this review.
(g) Changes to siltation	N/A	The response of the draft EIS is acceptable. Changes to siltation are discussed, particularly impacts during construction
(g) Hydrological Changes	The response of the draft EIS is not appropriate. Changes to hydrological behaviour and impact on groundwater recharge are considered but exclude the alluvium aquifer along Badgerys Creek.	The response of the draft EIS is incomplete. Changes to hydrology are considered extensively with regards to impacts. However, there are still gaps and some changes are undefined, particularly for Duncans Creek. Geomorphological conclusions may have technical deficiencies.
 (g) Quantifications and assessment of impacts are prepared: Against baseline levels Follow best practices Consider seasonal and temporal variations be supported by maps, graphs and diagrams for ease of understanding 	The draft EIS response is only partly appropriate, it is not appropriate in regards to impacts to groundwater dependent ecosystems. Quantification of impact against baseline levels are not provided. The reviewer agrees with the report that considering the low level of changes and hazards that a qualitative discussion is appropriate. The reviewer notes that a sentence to this effect could be added to the impact assessment section introduction. Follow best practice – the impact assessment could gain by using a clearer risk assessment approach Consider seasonal and temporal variations – not considered however Cardno agrees with the technical report that it is not necessary for the impact assessment at this stage. It is required to be addressed for monitoring and management measures in regards to surface water flows and water levels in the weathered rock (regolith) aquifer. Supporting maps, graphs and diagrams are provided	The EIS guideline is mainly addressed. Quantification of baseline flood behaviour, geomorphology and water quality is presented. Impacts are compared to baseline levels. Assessment generally follows best practice, although impacts for the full range of design rainfall events is not reported. There is consideration of seasonal variability of rainfall when planning construction stage activities when managing soil and water. However, this is not deemed to be as important during operation because major flood events can occur at any time of year. Maps and graphs are provided to support the assessment, however, do not necessarily provide the relevant information to aid ease of understanding. Many figures could include additional information e.g. Appendix L1 Figure 3-5 should include ground contours to assist with demonstrating the catchment delineation.



6. (a) Information on proposed avoidance and mitigation measures to manage the relevant impact to a MNES	The response of the draft EIS is acceptable. Some generic discussion on approach to avoidance and mitigation is provided.	The response of the draft EIS is incomplete. Management and mitigation measures are identified, albeit are fairly general and aren't necessarily targeted to mitigating a specific impact.
6. (c) Specifics of the mitigation measures	The response of the draft EIS is not appropriate. Partly provided, for groundwater monitoring. Technical limitations identified. No response plan provided. Agency responsible not identified.	The response of the draft EIS is partly appropriate. This is noted generally within Chapter 17 and 18, however, more specific measures are identified in the Appendix L1 technical report. No costing has been provided. Agency responsible has not been provided for all measures. Criteria for the success of a mitigation measure has
7. Details of the likely residual impacts on MNES	Not discussed	not been provided. Residual impacts are identified, however, these are not clearly identified in a concise format or dedicated section. Some impacts are omitted from Table 29–1 –summary of key environmental impacts in Chapter 34 – Conclusion.
9. Other requirements for approval or conditions that apply, or likely to apply	Only partly provided	This is provided in reference to development of various management plans and their need to adhere to industry standards and guidelines to ensure effective mitigation of impacts. No proposed conditions for approval are made to ensure specific residual impacts are effectively mitigated or long term development impacts are managed.
11.(a) – (d) Document sources of information including age of data, reliability and uncertainties	The response of the draft EIS is acceptable. Source and age references are provided, reliability and uncertainties of data not provided	The response of the draft EIS is acceptable. Source and age references provided, reliability and uncertainties of rainfall or water quality data is not provided.
11. (e) Reference to guidelines, plans and/or policies considered during preparation of the EIS	The response of the draft EIS is appropriate. Provided.	The response of the draft EIS is appropriate. Provided.



2.1.3 Conclusion of Assessment of Compliance with EIS Guidelines

In general the elements of the EIS Guidelines have been addressed however, some gaps have been identified in the assessments. The review has also identified some technically incorrect statements made in the EIS, however, Cardno has assessed that consequences for the outcomes of the impact assessment are generally limited.

2.1.4 Surface Water

Overall the surface water impact assessment addresses the relevant EIS guidelines including:

- Description of existing environment (catchments and watercourses) is well presented.
- · Description of baseline flood conditions are presented
- Impact assessment during construction has been undertaken
- Impact assessment during operation has been undertaken
- Mitigation and management measures are identified
- Reference to guidelines, plans and/or policies considered during preparation of the EIS is provided.

However, full compliance with many of the EIS guidelines fall short due to incomplete or missing assessments or information. The identified gaps in the assessment relate to:

- Flooding It is difficult to confirm whether the statements and conclusions are valid as there is a lack
 of supporting information and presentation of inputs to confirm their validity. E.g. Residual impacts in
 Cosgrove, Oaky and Badgerys Creek are identified. Cardno agree that the impacts in Cosgrove,
 Oaky and Badgerys Creek may be relatively minor if the results as presented are correct. Further,
 these residual impacts still require management to mitigate them to negligible levels.
- Duncans Creek and its tributaries have not been modelled to allow definition of baseline and relative
 hydraulic impacts in these locations. Such impacts have been assessed by the changes in the
 hydrology for these catchments. As such, all summary impacts do not fully consider impacts to the
 Duncans Creek downstream areas. Investigation of a basin at this location is proposed as a
 mitigation/management measure.
- Many of the figures/maps provided in both the main chapters of the EIS and in the technical reports
 are either not easy to understand or omit relevant information to aid ease of understanding. E.g.
 Stage 1 design contour information, to identify the proposed ridgeline separating the Stage 1 runway
 and longer term second runway and the extent of earthworks proposed is not provided on any
 figures.
- Cumulative impacts have been discussed, however, no assessment has been undertaken to quantify
 the potential impacts other than for climate change scenarios.
- Water quality has not been presented in terms of achieved pollutant load reduction or assessment
 against guideline pollutant reduction targets. The EIS seems to dimiss any relevance of increased
 pollutant loads on the receiving environment and instead determines that impacts are acceptable
 because there are general improvements in pollutant concentrations due to increased flow volumes.
- The EIS discusses the tributary of Badgerys Creek that joins Badgerys Creek approximately 300 metres downstream of Elizabeth Drive under existing conditions. It acknowledges that threatened ecological communities have not been mapped outside the site as part of the biodiversity assessment, but there is evidence of some remnant native vegetation along this reach of creek which would be reliant on occasional flooding and would be impacted under the current proposals. Such impacts need to be assessed to ensure there are no impacts and any mitigation and management measures identified.
- Management and mitigation measures are not concise and are not clearly identified consistently
 throughout the document. No costing is provided and there is no specific criteria recommended to
 address certain residual impacts as part of future mitigation and management measures.



2.1.5 **Groundwater**

The overall outcome of the impact assessment is that there would be no impact to groundwater systems and associated values due to the presence of tight clay soils and limited groundwater presence directly below the site. Cardno does not concur fully with the assessment, this difference results from a key assumption made in the EIS by characterising the uppermost aquifer.

The identified gaps relate to:

- The lack of qualification of the data (previous data and interpretation of the reliability and uncertainty of outcomes).
- The identification of MNES is not provided in the groundwater studies. The MNES of relevance appears to be the Cumberland Plain Woodland. This ecosystem is also classified as a high priority groundwater dependent ecosystem under the NSW regulatory framework. The text of the EIS does not clearly define the Cumberland Plain Woodland as a MNES. Additionally, the text in the EIS documents locates the Cumberland Plain Woodland along Badgerys Creek, however, the map appears to locate the ecosystem at several places over the site. Due to the nature of the project, vegetation over most of the site is expected to be cleared. As such, impacts to the Cumberland Plain Woodland ecosystem only need to be addressed for the groundwater impact assessment along creek lines. This is provided in the EIS documents.
- Sufficiently complete characterisation of the weathered rock (regolith) aquifer is not provided as no additional data from previous studies was collected.
- Similarly, no baseline time-series data has been collected. This is especially a limitation when it
 comes to characterisation of the weathered rock (regolith) aquifer and the contribution of this aquifer
 to the alluvium formations along the creek lines where groundwater dependent ecosystems are
 primarily located.
- The impacts are reasonably well identified, however some of the impact assessment is missing a clear outcome statement.
- Impact management and mitigation measures are only discussed generally with potential mitigation measures to be considered and monitoring to be implemented. Groundwater impact management is required to address the two residual risks to groundwater values:
 - Risk of soil and subsurface contamination from spill/release of chemicals or contaminants. A discussion is suitably provided to this effect in the EIS documents. Cardno agrees that the details of the management program cannot be defined at this stage and should be incorporated in a site environmental management plan.
 - Risk of impact on groundwater dependent ecosystems from reduced water supply to the creek alluvium system. In Cardno's view, the EIS documents do not provide a robust impact assessment of the risk to the Cumberland Plain Woodland along Badgerys Creek. Cardno would suggest that the following management and mitigation approach could be considered to address the EIS guidelines requirements:
 - Implementation of baseline data acquisition with an aim to document the contribution of recharge to the creek alluvial system from the weathered rock (regolith) aquifer and the Bringelly Shale;
 - A review of the risk to the groundwater dependent ecosystem;
 - Based on the outcome of the previous item, the management and mitigation will vary with the level of risk. A risk propagation based monitoring strategy and response plan may be suitable. In this case, a response plan would propose a suitable early warning indication of impact propagation and provide the management and mitigation measures if necessary to prevent adverse impact. If the risk is identified to be more significant, engineered solutions may need to be considered in the site design.



2.2 Commentary on Validity of Assumptions

2.2.1 Surface Water

The surface water and water quality impact assessment developed for the Western Sydney Airport makes the following assumptions:

- Hydrology % Impervious parameters are generally reasonable for the existing scenario except it is reported that 10% imperviousness has been used for "Infrastructure". It is not clear what "Infrastructure" refers to or what it was applied to. This might be a typographical error and is supposed to be 100% for buildings etc.
- Hydraulics Roughness parameters are generally reasonable, although there could be a wider range of categories to represent more land use or vegetation types.
- Downstream boundary of the hydraulic model is noted as a normal depth boundary. This should be
 checked against flood levels in South Creek and an appropriate coincident flood chosen for the
 tailwater condition. For example if the 5 year ARI flood in South Creek is higher than the normal
 depth within Badgerys Creek for a 100 year ARI, then the South Creek tailwater condition should be
 adopted. A validation of results with the South Creek flood model appears to indicate an acceptable
 correlation.
- The EIS assumes that current impacts (increases in stream depths and modelled shear stress values) indicated along sections of Badgerys Creek between Basin 2 and Basin 3 are not expected to eventuate as the design layout used in the hydraulic model has been subsequently superseded. This may be a valid assumption, however, not enough information has been provided about the differences in the concept layout and modelling of the new concept would be required to demonstrate this is correct.
- The Water quality assessment for Stage 1 development notes that there are some discrepancies between the surface water management plans provided and the land use plan for which assumptions had to be made, however, there is no detail on the assumptions and hence no comment on the validity of the assumptions can be made.

Overall, the impact assessment has followed appropriate methodology and used industry standard software. It is difficult to assess the validity of some inputs as the presentation of data to match the descriptions and assumptions is lacking in some instances.

2.2.2 **Groundwater**

The hydrogeological impact assessment developed for the Western Sydney Airport makes the following assumptions:

- The EIS assumes that existing hydrogeological site conditions have not changed significantly since the previous studies (Coffey, 1991 and PPK, 1999). Previous investigation results have been considered suitable for this EIS. Cardno agrees that since the site activities have remained unchanged, hydrogeological conditions are unchanged and previous data can be used. Cardno would however point out that this EIS is required to address additional elements than was required in the previous EIS, for example impact on groundwater dependent ecosystems, and that data had not necessarily been collected or analysed consistent with the current objectives. As a consequence, the previous assessment dataset or outcomes may not fully address the current EIS guidelines.
- The hydrogeological conceptual model assumes the weathered rock unconfined aquifer to be
 intermittent. No data is provided to support this assumption. Under this assumption, contribution of
 groundwater flow to the creek alluvial aquifer is limited to water seeping from the Bringelly Shale. As
 a consequence, there could be an under estimation of impacts to groundwater dependent
 ecosystems located along the creek.
- Cardno notes that there appears to be a reasonable spread of groundwater bores over the site so that sufficient, additional stratigraphy data could be available from the geotechnical investigation, provide to better confirm the assumption about the weathered rock (regolith) aquifer.



- The technical report assumes a low aquifer recharge rate from rainfall. The information provided on recharge rates does not confirm this assumption due to the heterogeneity of the results presented and the lack of associated discussion. However, this is of no consequence to the outcome as the soils are defined as being silt and clay overlying residual clays (Section 17.3.3 EIS) which by nature are associated with low rainfall recharge.
- The risk of dewatering of the Bringelly Shale associated with the potential construction of an underground train station and other types of excavation required for buildings has been dismissed based on the low hydraulic conductivity value of the Bringelly Shale at depth and the small seepage volumes expected. It should be noted that no project specifications are developed enough at this stage to document further the risk associated with underground facilities. Cardno generally agrees that underground facilities at depth in the Bringelly Shale are unlikely to cause significant groundwater impacts.
- The risk associated with groundwater impact assessment does not address the impact from groundwater extraction to partially sustain site water supply. Site requirements for groundwater use are unknown at this stage. The EIS documents states that this would be subject to a separate approval. Cardno agrees with this assumption.

2.3 Suitability of Technical Findings/Conclusions

2.3.1 <u>Surface Water – Overall Findings</u>

Cardno has reviewed the description of the hydrological settings and the methodology and inputs to models to ensure validity of the discussions which support the impact assessment. Based on the site information provided, Cardno has checked that all environmental values associated with surface water have been identified and that impact on these values has been assessed in the draft EIS.

Appropriate and industry recognised software has been used for hydrology (XP-RAFTS), hydraulics (MIKE 21) and water quality (MUSIC) modelling.

Identification of environmental values:

The key indicators of changes considered throughout the EIS are:

- changes in discharge from the site;
- changes in watercourse bed shear stress;
- · changes in water quality; and
- · changes in downstream water level.

It is agreed that these are the main considerations, however, note that additional considerations should be considered including:

- Changes to biodiversity
- Changes to hazards and risks to downstream people and property due to flooding or dam break of proposed detention basins

Outcome of impact assessment

The following conclusions are reached in the EIS for the Stage 1 Development:

- Modelling of stream flows indicates that duration, volume and velocity of surface water flows in watercourses would generally be similar or reduced when compared to existing flow conditions.
- Flood impacts noted are "increases of up to 100 mm in stream depths may occur at Cosgroves
 Creek and up to 250 mm in limited reaches of its tributary Oaky Creek for the smaller one year ARI
 and five year ARI events, plus associated increases in flow volume and velocity. No changes to flood
 levels are expected to occur at dwellings or other infrastructure surrounding the airport site".
- The EIS concludes that the Stage 1 Development will have a low impact on the morphology of watercourses adjoining and downstream of the airport site.



- The Stage 1 development leads to "general improvements in pollutant concentrations locally and regionally, the improvements would not be sufficient to meet ANZECC guideline objectives, noting the catchment has not met ANZECC guidelines for several years.
- The attenuation of the incoming flows by the basins indicates that a basin strategy can be used to manage the increase in flow peaks and impacts to flood peak timing. Cardno agree with this conclusion.

Cardno make the following comments

- Duncans Creek or its tributaries have not been modelled with a hydraulic model to allow definition of baseline and relative hydraulic impacts in these locations. The EIS notes that "The land use downstream of the site was largely primary industry, with few dwellings identified close to the creek. Following the hydrology assessment, the benefit of developing a detailed hydraulic model of Duncans Creek to inform the impact assessment was considered limited. An impact assessment was carried out but was based on the findings of the hydrology model at the points of discharge from the site for Duncans Creek". As such, all summary impacts do not fully consider impacts on the Duncans Creek downstream areas.
- No figures presented show the topography or DEM used for the different model scenario runs, so it
 is difficult to understand the topography used for catchment delineation or hydraulic model setup,
 particularly for Stage 1 where only half the site will be constructed.
- Figures of Stage 1 flood depth and flood difference results would be enhanced with an overlay of the Stage 1 development to understand the flood extents in relation to the development and potential flood affected dwellings. Further providing the locations of properties with above floor flooding from Appendix L1 Figure 1-1 would allow an easy assessment of flood impacts at those locations.
- Figures showing afflux (change in flood level/depth) for Stage 1 development are only provided for the 1, 5 and 100 year ARI events, so it is not clear what the relative impacts are for other modelled design storm events i.e. 20 year ARI and PMF.
- Conclusions focus on the one year ARI, five year ARI and the 100 year ARI. There is no
 presentation or discussion of other intermediate design storm events to ascertain whether there are
 impacts for these events.
- Geomorphological changes are documented as expected to be low, however, have simplified/understated the potential impact. Changes to bed shear stress are determined to be around a 5% change, however, could be as high as 25% (or more in isolated locations). Further, assessment of erosion potential has centred on threshold values for vegetation (100-200 N/m²) rather than consideration of the in-situ sediment critical shear stress which is likely much lower (potentially <5N/m²).
- The EIS discusses the tributary of Badgerys Creek that joins Badgerys Creek approximately 300
 metres downstream of Elizabeth Drive under existing conditions. It acknowledges that threatened
 ecological communities have not been mapped outside the site as part of the biodiversity
 assessment, but there is evidence of some remnant native vegetation along this reach of creek
 which would be reliant on occasional flooding and would be impacted under the current proposals.
- There are significant impacts to water quality which are not addressed as part of the currently
 proposal water quality measures and significant improvements to the design will be required to
 address water quality to meet any of the identified guidelines.
- Despite the general decrease in pollutant concentrations, Stage 1 would result in increased loads of phosphorous and nitrogen, largely as a function of the increase in runoff volumes associated with the modified catchment areas and changes to land-use". The EIS notes that "further resolution of mitigation measures would be provided in the final EIS having regard to identified downstream assets and potential for impacts". This is a fairly key statement and should have already been addressed given that downstream assets and potential for impacts should have already been identified as part of this draft EIS.



- The adopted reduction pollutant targets are derived from the UPRCT WSUD Guidelines for Western Sydney as being 80% for TSS, 40% for Total Phosphorus and 40% for Total Nitrogen. This document may be considered to be outdated and that adjacent Council DCP requirements may provide a better guidance on targets that should be adopted to align with the overall objectives of the receiving areas being managed by the relevant Councils. These would indicate pollutant reduction targets of 80% for TSS, 60% for Total Phosphorus, 45% for Total Nitrogen and 90% for Gross Pollutants.
- The EIS notes there would be increased pollutant loads due to increased runoff volumes, however, the focus of impacts reporting centres around ANZECC guidelines for pollutant concentrations and do not focus on the achieved reduction targets versus the adopted guidelines. Pollutant load guidelines are not met at the basin outlets and are not met for the overall site.

2.3.2 <u>Groundwater – Overall Findings</u>

Cardno has reviewed the description of the hydrogeological settings and the hydrogeological conceptual model to ensure validity of the discussions which support the impact assessment. Based on the site information provided, Cardno has checked that all environmental values associated with groundwater have been identified and that impact on these values has been assessed in the draft EIS.

Identification of groundwater values

The groundwater values identified throughout the EIS documents are:

- Groundwater dependent ecosystems located within the alluvial formation along Badgerys Creek;
- Groundwater users (private groundwater bores); and
- Water quality (through potential changes to groundwater quality affecting surface water through baseflow and migrating off-site).

Cardno agrees with these findings.

Groundwater Conceptual Model

A groundwater conceptual model is the simplified representation of the groundwater system characteristics (aquifer/aquitards characteristics, groundwater flows, groundwater levels and groundwater quality), its environmental values and the interactions between the characteristics and with surface water. The groundwater conceptual model needs to be well defined for a robust approach to the risk identification and impact assessment.

The EIS describes the aquifer system as including:

- unconfined aquifer in the shallow alluvium of the main watercourses at the airport site;
- intermittent aquifer in weathered clays overlying the Bringelly Shale;
- confined aquifer within the Bringelly Shale; and
- confined aguifer within the Hawkesbury Sandstone.

The following statements in the EIS further define the hydrogeological conceptual model:

- The aquifer extents are interpreted to be limited to the three creeks surrounding the site (Badgerys Creek, Cosgrove Creek and Duncan Creek);
- The Bringelly Shale is considered to have low hydraulic conductivity (EIS Chapter 18) and, the
 technical groundwater study describes the aquifer systems as having low yield (this statement is
 expected to exclude the Hawkesbury Sandstone);
- There appears to be a strong downward head gradient (EIS Chapter 18) and the technical groundwater study only relates to a downwards head gradient of the alluvial aquifer and the Bringelly Shale;
- Groundwater recharge is low;
- Groundwater quality is poor (high salinity levels);



- Baseflow to creeks is limited (based on electrical conductivity values). Note that no quantification is provided. The technical report adds that the creeks are intermittent, reinforcing the low reliance of creek flow on baseflow;
- Groundwater levels are found between 1 to 12 m below ground level and a groundwater level map is provided.

Overall, the different elements of the hydrogeological conceptual model are provided and appear thorough, however, Cardno's review has identified a number of technically incorrect conclusions. The significant ones are listed below, the detailed findings section enters further into the technical findings.

- The definition of the different aquifers, more specifically the Bringelly Shale and the weathered rock (regolith) aquifer.
 - Characterisation of the "intermittent aquifer in weathered clays overlying the Bringelly Shale: is necessary, including thickness of the formation, geographical distribution, discussion of material, water levels. This characterisation is required to understand the potential interactions (if any) of the weathered rock (regolith) aquifer with the alluvial aquifer. This has potential implication on the impact assessment and support of groundwater dependent ecosystems. This aquifer is not reflected on the hydrogeological conceptual model drawing.
 - The Bringelly Shale is defined as an aquifer where it should be defined as an aquitard. Apart from being confusing terminology there is no consequence to the impact assessment as the properties of the shale formation are accurately considered.
 - Although the aquifer in weathered clays overlying the Bringelly Shale will be bounded by the creeks as defined in the EIS documents, the Bringelly Shale and Hawkesbury Sandstone extend regionally. The Luddenham Dyke is a flow barrier and a local flow divide in the southern part of the site.
- Based on the data provided in the EIS documents, the nature of the hydraulic connectivity between formations should be qualified as follows:
 - Very small downwards gradient between the alluvial aquifer and the Bringelly Shale. No information is available on seasonal variations, the gradients could possibly be reversed at times;
 - Under natural conditions, the Hawkesbury Sandstone is not hydraulically connected to the upper alluvial aquifer or unconfined weathered rock aquifer simply due to the stratigraphical properties, low hydraulic conductivity and significant thickness (approximately 100 m over the site, as informed in the EIS documents) of the Bringelly Shale.
- The occurrence of baseflow (groundwater flow into the creek) is discussed. Cardno notes that the
 discussion should also include groundwater recharge of the alluvium aquifer and the contribution
 made by the surrounding aquifers. This would set the scene for assessing the impact to
 groundwater ecosystems.
- A groundwater quality summary for each aquifer is not provided. A suitable baseline would be necessary prior to the start of the project (further discussed in Section □).

Overall, Cardno considers that the conceptual model is lacking information about aquifer characterisation and the aquifers geographical distribution and interactions along Badgerys Creek. If the weathered rock formation proves to be thin and effectively only carries interflow, then these gaps are of no consequence to the impact assessment findings. If the aquifer is reasonably thick and has a constant water table, the conclusion of the current impact assessment on impacts to groundwater dependent ecosystems may be different.

Impact Assessment Process

Cardno's review of the groundwater impact assessment process is that it is not supported by a rigorous risk analysis process:

• The impact assessment is based on three categories of consequences of the site activities (i.e. decreased recharge, decreased water levels and change of water quality) rather than approaching



the impact assessment from the activities that are the source of the impact. While good practice Cardno considers that this deficiency does not appear to be important for the outcome of the assessment. The impact qualification is not based on a risk matrix approach, this has the potential to make the outcome quite subjective.

The impact assessment does provide a clear conclusion on the impact to groundwater for each risk.
 A clear statement could have been provided for each risk. For example, the impact conclusion on water quality changes states that the likelihood of the impact is (low) and the pathway for impact (low hydraulic conductivity) is medium. However, the impact could still rank as high if the risk resulted in a non-reversible impact on high value receptors.

Outcome of impact assessment

The technical study and section 18.5.4 of the EIS come to the following conclusions:

- Reduction of recharge is not expected to affect sensitive ecological receptors and beneficial uses;
- Groundwater drawdown resulting from the re-profiling of the soil would result in minor impacts. The drawdown is not expected to be below creek level and dry the creeks;
- Adverse impact on groundwater quality may potentially emerge. The emergence of groundwater quality impact would be slow (EIS). The technical report discussed the risk to groundwater quality and concludes it is low, with the risk level possibly decreasing upon implementation of control measures.

The conclusion on the impact from reduced recharge is intrinsically linked to the hydrogeological conceptual model. Cardno would comment that the role of the upper weathered rock (regolith) aquifer needs to be confirmed to conclude either way.

Cardno agrees that groundwater drawdown due to excavations is not likely to affect groundwater levels substantially. It may cause local groundwater built up and local groundwater flow changes, but have no impact on environmental values. The technical report states that groundwater drawdown in the upper part of the ground profile associated with cuts is expected to result in seepages (as opposed to flows) and result in minor drawdown impacts.

Groundwater quality impacts will be associated with the accidental release of contaminants. Cardno agrees with the general findings of the study that impact levels are low and that impact can be controlled through management and monitoring measures.

Vulnerability of groundwater values

Groundwater users:

Impact on groundwater users is not clearly addressed in the EIS documents. Cardno's review however concludes that groundwater users are not at risk of impact due to the distance of existing bores from the site and the different aquifer that existing private bores are tapping. Groundwater users tap into the Hawkesbury Sandstone that is located at depth and isolated from surface activities at the project site by the Bringelly Shale. It should be noted here, that no requirement for groundwater supply from the Hawkesbury Sandstone for the project is included in the project definition. If groundwater supply was required, additional review would be required.

Groundwater dependent ecosystems

Vulnerability of the groundwater dependent ecosystems was assessed through impact of reduced recharge and groundwater drawdown. The technical report concludes that drawdown impact in areas of sensitive vegetation are expected to be minor. The report states that construction and development of the airport will reduce recharge and hence reduce groundwater discharge to the surrounding creek systems. The technical report appears to associate contribution to the alluvial aquifer to baseflow discharge and implies that the reliance on groundwater discharge is low and would have minor impacts. Cardno's review is that there is currently not sufficient data to conclude the vulnerability of groundwater dependent ecosystems.

The level of the risk will be linked to the level of groundwater contribution from the unconfined regolith aquifer (undocumented until now) to the alluvial aquifer. If the aquifer is intermittent as stated in the EIS documents, then Cardno agrees the impact will be insignificant.



Groundwater quality

Cardno's review supports the conclusion that there is a risk on groundwater quality. The technical report classified it as low in Section 6.2 and the EIS report does not provide a conclusion on the risk (as discussed earlier). Cardno believes that the risk is likely to rank low to medium if using a risk matrix approach. The risk can be decreased to low by implementing site controls as defined in EIS documents.

2.3.3 <u>Surface Water – Detailed Findings</u>

This section follows a chronological reading of the surface water and geomorphology technical report (Appendix L1) and water quality technical report (Appendix L2) and the various sections of the EIS document related to surface water. The comments below are only presented when providing more detailed technical findings that are presented in the overall findings section.

2.3.3.1 Appendix L1 – Surface Water hydrology and geomorphology

Section 3.2 - Data Collection and Review

Data review and sources are presented. No discussion of quality or accuracy of data is presented.

Section 3.3 - Existing environment modelling and analysis

Hydrology – % Impervious parameters are generally ok for existing except it is reported that 10% imperviousness has been used for Infrastructure. It is not clear what "Infrastructure" refers to or what it was applied to. Might be a typographical error and is supposed to be 100% for buildings etc.

Figure 3-1 shows catchment areas for the existing scenario. This figure would aid understanding if surface contours were also provided to show the topography associated with the catchment delineation. The figure also does not show the Badgerys Creek, Cosgroves Creek and Duncans Creek catchments, which are referenced in Table 3-3. Such broader catchments are shown in Figure 4-2.

Roughness parameters used in hydraulic modelling are generally acceptable, although there could be a wider range of categories to represent more land use types, particularly for creek roughness.

Downstream boundary is noted as a normal depth boundary. This should be checked against flood levels in South Creek and an appropriate coincident flood chosen for the tailwater condition. For example if the 5 year ARI flood in South Creek is higher than the normal depth within Badgerys Creek for a 100 year ARI, then the South Creek tailwater condition should be adopted.

Section 3.4 – Stage 1 and longer term modelling and analysis

Figure 3-5 and Figure 3-6 would be enhanced by providing the Stage 1 design contours and the longer term development design contours, respectively. It is difficult to understand the topography used for catchment delineation or hydraulic model setup, particularly for Stage 1 where only half the site will be constructed.

Section 3.5 Impact Assessment

The assessment considered the impacts of the development on:

- surface flows, including the effectiveness of the proposed basins in mitigating changes to hydrology;
- watercourse geomorphology;
- · flooding and flood risk to surrounding developments and people; and
- cumulative aspects.

The assessment did fully consider:

- native flora and fauna habitat removal and degradation (on site and in surrounding areas that may
 be affected by the action) e.g. the ecology of sensitive receiving environments
- changes in recreational use and amenity of natural areas
- creation of any risks or hazards to people or property no consideration of flood hazard (velocity x depth criteria) or any risks posed by dam break of detention basins.

Consideration of climate change is included in the assessment



Sensitivity of model parameters is included in the assessment

A validation of model results against previous studies has been undertaken

Section 4 - Existing Environment

The report notes the following flood affected properties – "There are a number of existing dwellings located within the flood extent or in close proximity to the flood extent clustered on Badgerys Creek upstream of the site. Two dwellings in close proximity to the flood extent were also identified downstream of the airport site on Cosgroves Creek. On the eastern bank of Badgerys Creek are a number of flood affected lots, though the existing dwellings are located beyond the 100 year flood extent".

There is no comparison of the actual increase in flood level at these properties documented as part of impact assessment in later sections of the report.

Section 5 - Construction Impacts

It is noted that due to the long construction period, the likelihood of a major flood event occurring is high. Due to the modifications to the site and impervious area added, the volume of runoff from the site would increase and without mitigation, this would result in increased peak flows from the site and the potential for associated flooding and geomorphological impacts downstream.

Given the high likelihood of flooding, specific management measures should be identified rather than a general statement that it needs to be managed.

Section 6.1 - Operational Impacts Stage 1 Development

Duncans Creek or its tributaries have not been modelled with a hydraulic model to allow definition of baseline and relative hydraulic impacts in these locations. The EIS notes that "The land use downstream of the site was largely primary industry, with few dwellings identified close to the creek. Following the hydrology assessment, the benefit of developing a detailed hydraulic model of Duncans Creek to inform the impact assessment was considered limited. An impact assessment was carried out but was based on the findings of the hydrology model at the points of discharge from the site for Duncans Creek". As such, all summary impacts do not fully consider impacts on the Duncans Creek downstream areas.

Figures 4-6 to 4-9 of Stage 1 development flood depth results would be enhanced with an overlay of the Stage 1 development masterplan to understand the flood extents in relation to the development. Further providing the locations of properties with above floor flooding from Figure 1-1 would allow an easy assessment of flood impacts at those locations.

Figures showing afflux (change in flood level/depth) for Stage 1 development are only provided for the 1, 5 and 100 year ARI events, so it is not clear what the relative impacts are for other modelled design storm events i.e. 20 year ARI and PMF.

Conclusions focus on the one year ARI, five year ARI and the 100 year ARI. There is no presentation or discussion of other intermediate design storm events to ascertain whether there are impacts for these events.

The EIS discusses the tributary of Badgerys Creek that joins Badgerys Creek approximately 300 metres downstream of Elizabeth Drive under existing conditions. It acknowledges that threatened ecological communities have not been mapped outside the site as part of the biodiversity assessment, but there is evidence of some remnant native vegetation along this reach of creek which would be reliant on occasional flooding and would be impacted under the current proposals. Such impacts may be important and should be addressed.

The EIS states that "Where increases in flow discharging from the basins are predicted, no major impacts to flood prone residences are predicted, though some increases in flow depths are indicated".

 There is no quantification of the impact to flood prone residences, so it is unknown what is meant by "no major impacts.

The EIS identifies residual impacts on Oaky Creek and the identified tributary of Badgerys Creek. It states that it is expected that the basin strategy would mitigate the major impacts of changes to surface water from the development, though refinement of the strategy during design development would be required to reduce



impacts to negligible levels and address specific more substantial impacts on Oaky Creek and the identified tributary of Badgerys Creek.

 This is a loose statement and merely states that the action would be required. There is no specific criteria set to tie achievement of an appropriate outcome back to the approval.

The EIS does not clearly summarise the residual impacts, rather they are dispersed through the sections.

Section 6.1.2 – Impacts on watercourse geomorphology

The EIS concludes that as flow durations for the modelled events under the Stage 1 conditions remain similar to existing conditions, and peak discharges typically reduce, the potential for significant impacts to the morphology of watercourses downstream is considered low.

Further, existing bed shear stress levels are noted to be between 20- 100 N/m^2 (from Figures C1-C3) and changes in shear stress values as a result of the Stage 1 Development are between -5 to $+5 \text{ N/m}^2$. The EIS uses shear stress thresholds for the disturbance of vegetation and surface erosion in the range of 100 to 200 N/m^2 and concludes that "Given the modelled shear stress changes under the Stage 1 Development are typically at least less than 5% of this threshold range, the Stage 1 Development is unlikely to result in widespread and significant further exceedances of thresholds for the disturbance of vegetation and surface erosion along watercourses adjoining and downstream of the airport site".

The following comments are made:

- The statements assume vegetation cover for this threshold value to be valid and does not consider the critical shear stress of the in-situ bed sediments which are likely present which have lower threshold shear stress, generally 50-200 for cobbles, 5-50 for gravel and <5 for sands, silts and clays
- the in-situ stream condition may be susceptible to erosion under existing shear stress values and any change may worsen the level of erosion.
- o further, if the existing shear stress is actually closer to 20N/m², then a 5N/m² change is actually a 25% change which could be significant.
- the calculations note increases in bed shear stress which could lead to greater erosion, so it is difficult to conclude that impacts are low without further management or criteria placed on future design.

Section 6.2 - Long Term Development

It is noted that changes to catchments could create a transfer of water from the Water Sharing Plan's Wallacia Weir Management Zone (in which Duncans Creek is located) to the Upper South Creek Management Zone (in which Badgerys, Oaky and Cosgroves Creeks are located). The implications of this are not discussed.

On Duncans Creek, there is a predicted increase in flow in a 100 year ARI event at Location K, and there is potential for localised increase in flooding and scour at this location under large flood events. No basin is currently proposed at this location although is noted that consideration of a basin at this location is included as a management measure.

The EIS concludes that as flow durations for the modelled events under the longer term development conditions remain similar to existing conditions, and peak discharges typically reduce, the potential for significant impacts to the morphology of watercourses downstream is considered low. Figures 6-14 to 6-21 show that flow durations will actually be longer under the longer term development as would be expected from the behaviour of detention basins.

In addition, Cardno make the same comments as for Stage 1 in that increases in bed shear stress could lead to greater erosion, so it is difficult to conclude that impacts are low without further management or criteria placed on future design.

Section 7 Cumulative Impacts



Changes to flood depth for Climate Change scenarios are presented in Figure 7-1 and Figure 7-2. The scale and information presented does not provide a clear understanding of the impacts. An afflux/difference plot would more clearly show the changes in flood depth expected in these scenarios.

Cumulative impacts of surrounding development is discussed, however, only very briefly and no assessment or quantification of the impacts has been undertaken.

2.3.3.2 Appendix L2 – Surface Water Quality

Section 2 – Methodology

Legislation and guidelines are well documented.

The assessment uses industry accepted software – the Model for Urban Stormwater Improvement Conceptualisation (MUSIC).

Section 2.5 - MUSIC water quality modelling approach

The MUSIC model has used user defined nodes for the model setup and has adjusted parameters to calibrate the model against field data. This may not be appropriate given (as noted in the EIS) that the field data were discrete rather than continuous and little or no correlation to rainfall or flow conditions at the time of the sampling was available. As such, adjusted the model to suit sampling from a discrete time with no correlation and then using this to estimate water quality changes over longer periods may be flawed.

Table 2-7 and Table 2-9 show the Adopted Modelling Parameters for existing conditions and then the Stage 1 and longer term development, respectively. There are changes to parameters such as recharge rate increasing from 30% under existing conditions to 50% under Stage 1 which are not explained/justified and which may influence the results of the water quality modelling.

Section 2.5.4 notes that for the Stage 1 development modelling "The surface water management plans provided were based on an earlier version of the land use plan. As a result, there were minor inconsistencies between the data sources characterising the airport site. Where necessary, assumptions in the assessment were made to manage those discrepancies". However, there is no detail provided about the assumptions.

<u>Section 2.6 – Bio-retention basins sizing and treatment targets</u>

In evaluating the effectiveness of the proposed measures, three treatment targets were assessed, as follows:

- existing or pre-development pollutant loads for total phosphorus, total nitrogen, and suspended solids (Neutral OR Beneficial Effect (NORBE));
- WSUD Guidelines (pollutant load reduction targets); and
- ANZECC Guidelines (pollutant concentration criteria).

The report states that "It is understood that the bio-retention sizes adopted in the Draft Airport Plan have been provided with the aim of satisfying WSUD Guidelines, rather than Neutral or reduced Beneficial Effects (NORBE) or ANZECC Guidelines. Accordingly, it is expected that supplementary design and management measures would be required during detailed design to further improve the water quality prior to downstream discharge."

This statement doesn't indicate which criteria/guidelines the detailed design would need to meet. The technical report focusses on meeting ANZECC guidelines and suggest that this cannot be met with the current design. The report doesn't give the impression that there are significant water quality issues other than this statement.

Section 3 – Existing Conditions

The existing environment is well described.

The presentation of meteorological data is complete and includes discussion of seasonal variability.

The assessment and description of existing land uses is well documented.

Section 4 – Assessment of operational impacts of proposal



Table 4-2 notes considerable increases in impervious (paved and roofed areas) for Stage 1 and longer term development scenarios which does not appear to be consistent with impervious area increases documented in Appendix L1 for hydrology. As such, it is not clear whether the water quality and flooding assessments are consistent.

Section 4.3 - Stage 1 development

Section 4.3.1 notes impacts in relation to NORBE guidelines. Key findings are:

- Local Impacts There are large increases in pollutant loads at basin outlets as a result of the Stage 1 development (-40% to +497% for TSS, +108% to +624% for TP and +42% to +308% for TN). It is concluded that the bio-retention basins proposed for Stage 1 for water quality management are not adequate in satisfying the NORBE or pre-development load targets.
- Regional Impacts the EIS states that "results indicate that the NORBE targets are not achieved at
 the downstream regional locations assessed with the bio-retention basins in place. However, it is
 expected that these regional impacts would progressively decrease at locations further downstream
 of the airport due to the increasing loads derived from catchments outside the airport at those
 downstream locations".

Section 4.3.2 documents performance in relation to WSUD Technical Guidelines for pollutant load reduction targets. This shows that reduction targets are met at only a few locations and generally only for one pollutant, never for all three (other than Basin 6 and 7 which come close to meeting the targets).

Section 4.3.3 notes impacts in relation to ANZECC guidelines. Key findings are:

- Local Impacts There are general improvements in pollutant concentrations discharging from the site except for a few exceptions.
- Regional Impacts similar to local impacts other than Duncans Creek where the concentrations are estimated to increase for all the three pollutants.
- ANZECC water quality objectives would not be achieved, despite the general improvements in water quality.

Cardno make the following comments:

- There are significant impacts to water quality which are not addressed as part of the currently proposal water quality measures and significant improvements to the design will be required to address water quality to meet any of the identified guidelines.
- Statements around meeting NORBE for regional impacts relies and flows and loads from other rural areas to "dilute" the impacts. This does not consider the cumulative impacts of surrounding developments that would reduce or worsen this effect.
- Not meeting the WSUD Guidelines is explained that this is due to land areas modified for the
 proposed airport development, or residual areas, that cannot physically discharge into the basins
 under Stage 1 of the development. Additional land management is required to intercept and treat
 such flowpaths or over-treatment of other areas which do discharge to basins would be required.

Section 5 – Assessment of Construction Impacts

This section identifies the appropriate impacts expected during construction and identifies then need for management through a Soil and Water Management Plan (SWMP) and a Construction Environmental Management Plan (CEMP). A water quality monitoring plan would also be developed and implemented as part of these plans to monitor any potential impacts during the construction phases of the project.

Section 6 - Mitigation and management measures

This section identifies mitigation and management measures that can be implemented through design and management based measures for Operational Phase along with Construction Phase measures, namely erosion and sediment control. Mitigation measures are identified in a reasonably comprehensive list to address identified risks. However, as required by the EIS guidelines, the measures are not costed or responsibilities identified, nor are there any criteria provided which must be met for specific impacts requiring management.



2.3.3.3 Chapter 14 – Hazard and Risk

Chapter 14 addresses broadly how stormwater will be managed on site and the relevant design criteria.

The following comments are made:

- Section 14.5.3 notes that the airport infrastructure has been designed in accordance with the Stormwater Drainage Design Manual, however, this is not a full reference and it is not clear which Stormwater Drainage Design Manual is being referenced.
- In Section 14.5.3 it is noted that a "detailed surface water management plan would be developed to manage the impacts of on-site flooding during the construction period", however, stormwater management plan to mitigate/manage site flooding is not listed in Table 14–5 – Mitigation measures to be resolved in future design stages.
- The EIS in Chapter 14 focusses on hazards and risks on site such as site flooding (Section 14.5.3), but does not necessarily consider hazards to people or property off-site such as the potential change in flood depth or hazard to adjacent and downstream areas. The EIS guidelines require consideration of the creation of any risks or hazards to people or property that may be associated with any component of the action.

2.3.3.4 Chapter 17 – Topography, geology and soils

Chapter 17 focusses on soil erosion and degradation on site and does not discuss the erosion potential for soils off-site that may be impacted by increased flow. Erosion and geomorphology are, however, discussed in Chapter 18 and Appendix L1.

Stage 1 design contour information, to identify the proposed ridgeline separating the Stage 1 runway and longer term second runway and the extent of earthworks proposed is not provided on any figures. Long term development design contours are not provided in any figures.

Chapter 17 also identifies a reclaimed water irrigation scheme and notes that "the principal risk associated with the operation of a reuse scheme is excess irrigation, leading to additional waterlogging, leaching of nutrients, a rise in water tables and increases in soil salinity or other soil properties."

Section 17.6 identifies suitable management and mitigation measures to address:

- soil erosion and degradation through a site soil and water management plan and erosion and sediment controls in accordance with relevant guidelines and standards as part of a construction Environmental Management Plan (EMP).
- Reclaimed irrigation scheme through risk management framework in accordance with relevant guidelines and standards. It is also proposed that soil and groundwater conditions would be monitored to identify and correct trends in soil salinity or other potential effects of irrigation.

Cardno agree that these issues could be addressed through appropriate management plans, though identifying the appropriate standards and guidelines in use today would be a good benchmark, even if changes to standards require these references to be updated in the future.

2.3.3.5 Chapter 18 – Surface Water and Groundwater

Information reported in Chapter 18 is essentially taken from the technical reports Appendix L1 and L2, however, there is some omission of key information with no reference to the relevant information in the technical reports.

Cardno makes the following comments:

Stormwater and Flooding

 A sub-catchment breakdown of impervious areas is not provided and the impervious areas in Table 18-6 do not appear to be high enough given the expected large impervious areas presented by the airport. No figure is provided to show the catchments for Stage 1 in relation to the airport plan to understand the derivation of these values. This figure would also demonstrate the changes to the catchments from existing and how the detention basins are situated with respect to the proposed catchments.



- The only flood impacts noted are "increases of up to 100 mm in stream depths may occur at Cosgroves Creek and up to 250 mm in limited reaches of its tributary Oaky Creek for the smaller one year ARI and five year ARI events, plus associated increases in flow volume and velocity. No changes to flood levels are expected to occur at dwellings or other infrastructure surrounding the airport site". There are no figures in the main EIS Chapter 18 provided to show where and what extents such increases cover. It does not describe what is impacted and does not quantify the impact in terms or areas or duration and any associated economic, social or environmental impacts. Further, it seems to only identify impact to current property and ignores future growth plans for WSEA and SWGC where such increases may affect the development potential of lands or properties that have been built in the interim prior to the airport's construction.
- The EIS notes that stormwater would be used for site preparation works and notes that "to meet water demand during construction it may be necessary to source water from other sources such as groundwater or other sources of surface water. However, consideration of the impacts associated with using these alternative sources would be subject to a separate assessment". these impacts should be considered as part of this assessment if it is deemed that such sources would be potentially required either during normal weather or due to drought periods. Consideration of the total storage capacity of identified sources or basins with relation to demand should be undertaken to assess the likelihood of this eventuality.
- The nominated mitigation measures of potential impacts are through further refinement of the surface water drainage system to reduce flows as far as reasonably practical. However, this does not nominate whether this is likely to be easily achieved or whether there are limitations to this. Nor does it propose specific measures associated with the residual impacts and does not nominate a target outcome.

Water Quality

- Table 18-8 there are some unusual results in this table. Phosphorus and suspended solids would normally increase and decrease in correlation with each other as phosphorus is adhered to sediments and is removed through settlement of suspended solids. Some results in this table show opposite trends for the two parameters.
- Section 18.6.3 notes that Stage 1 development leads to "general improvements in pollutant concentrations locally and regionally, the improvements would not be sufficient to meet ANZECC guideline objectives, noting the catchment has not met ANZECC guidelines for several years.
 Despite the general decrease in pollutant concentrations, Stage 1 would result in increased loads of phosphorous and nitrogen, largely as a function of the increase in runoff volumes associated with the modified catchment areas and changes to land-use".
- The EIS notes that "further resolution of mitigation measures would be provided in the final EIS
 having regard to identified downstream assets and potential for impacts". This is a fairly key
 statement and should have already been addressed given that downstream assets and potential for
 impacts should have already been identified as part of this draft EIS.
- The adopted reduction pollutant targets are derived from the UPRCT WSUD Guidelines for Western Sydney as being 80% for TSS, 40% for Total Phosphorus and 40% for Total Nitrogen. This document may be considered to be outdated and that adjacent Council DCP requirements may provide a better guidance on targets that should be adopted to align with the overall objectives of the receiving areas being managed by the relevant Councils. These would indicate pollutant reduction targets of 80% for TSS, 60% for Total Phosphorus, 45% for Total Nitrogen and 90% for Gross Pollutants.
- The EIS notes there would be increased pollutant loads due to increased runoff volumes, however, these are not reported in terms of the achieved reduction targets versus the adopted guidelines.
- The EIS also notes the potential for accidental spills of fuels and chemicals being released to the environment in the event of a mishap during refuelling, maintenance or general storage and handling. Management and mitigation of such spills is noted as the implementation of Australian



standards for the storage and handling of hazardous materials. This does not identify the appropriate example measures and does not call out the need for the development of a spill and remediation action plan.

2.3.3.6 Chapter 27 – Cumulative impacts

Section 27.3.5. Water Resources only considers cumulative impacts of water quality of receiving waters and indicates that there is an improvement in water quality from the airport site, which is not true for all locations, as documented in Section 18.6.3. Further, this seems to be with respect to general reductions in pollutant concentrations, yet it is noted that there would be increased loads of phosphorous and nitrogen due to increased runoff volume. Such loads are important and would in fact have a bearing on the cumulative impact and the capacity of the receiving environment to cope with such increased nutrient loads, particularly when added to loads from other surrounding developments.

Other potential cumulative impacts such as flood affectation and total runoff volumes have not been addressed in this chapter.

Cumulative Impacts of climate change and urban development are presented in Appendix L1, however, are not discussed in this Chapter of the draft EIS.

2.3.3.7 Chapter 28 – Environmental Management

This chapter discusses mitigation measures identified in earlier chapters. It identifies proposed environmental management plans and timing, however, does not always note what organisation is responsible for undertaking the monitoring/management except during construction and operation. Preparation of a plan to refine the surface water drainage system during detailed design timing is identified as a "pre-construction", however, does not note who would be responsible for developing it.

2.3.3.8 Chapter 29 – Conclusion

Table 29–1 – Provides a summary of key environmental impacts. The following comments are made:

- Under "Water" it states "While there are potential risks to surface and groundwater resources from
 construction and operation of the airport site, most of these are not specific to airport developments
 and a range of standard industry design and precautionary measures would be implemented to
 reduce these risks".
 - It does not appear relevant whether impacts are specific to airport developments. It appears as though it is suggesting that impacts can be managed as per common practice for other major infrastructure developments, however, the specific impacts have not been identified in this summary.
- Under "Surface water and groundwater" it states "Changes to catchment areas within the airport site
 and the permeability of the ground surface, would alter the duration, volume and velocity of surface
 water flow".
 - There is no discussion on the implications or actual impacts that altered duration, volume and velocity of surface water flow would have.

2.3.4 <u>Groundwater – Detailed Findings</u>

This section follows a chronological reading of the technical groundwater report (Appendix L3) and the groundwater sections of the EIS document (Section 18). The comments below are only presented when providing more detailed technical findings that are presented in the overall findings section.

2.3.4.1 Groundwater Technical Report – Appendix L3

Table of contents:

Cardno notes that no methodology is included therefore, no qualification of the data is provided in terms of reliability, age and completeness.

Section 2.4.2 Water Sharing Plans on Access to Groundwater



The water sharing plan identifies spare allocation for the Sydney Basin central porous rock aquifer as stated in the report. If the project requires groundwater supply, it will need to be provided from the Hawkesbury Sandstone and will require liaison with the NSW Office of Water.

Section 3.3 Geology:

There is a terminology error in the Bringelly Shale description. The report should read laminite (defined as a sedimentary rock composed of very fine layers) instead of laminate.

The Luddenham Dyke should be named on the geological map. This would provide more understanding about groundwater flow direction if mapped on the groundwater level contour map.

Section 3.4.1 Aquifer Parameters

Aquifer water levels need to be compared together using the same elevation reference system. Water levels cannot be compared as the depth below ground level for bores are located at significant distance from each other. The values should be expressed as an elevation (m AHD). Because of this, the sentence "The standing water elevations relative to well depth in the surrounding registered use bores (presented in Appendix B), suggests there is a strong downward head gradient, which supports the presence of very low vertical hydraulic conductivities" is technically incorrect. If compared correctly the data is likely to still indicate a downwards gradient. The issue however does not affect the outcome of the impact assessment.

Section 3.5 Groundwater Elevation

Cardno's review disagrees with the conclusion that the data presented indicate that there is a limited hydraulic connection between the two aquifer systems. Cardno considers that there is the presence of low vertical hydraulic conductivities in the Bringelly Shale aquifer. The groundwater head difference between the alluvial aquifer and the Bringelly Shale are observed at two location to be 0.4 m and 1.4 m (not 2.4 m as wrongly calculated in the report). Cardno agrees that these values indicate a downward gradient. The gradient may change overtime due to the recharge or discharge of the alluvial aquifer. The formations being adjacent, there is likely to be some level of connectivity at the interface generally with a downwards contribution.

The presence of low vertical hydraulic conductivity in the shale is linked to the nature of the formation, the low value of the hydraulic conductivity acquired through hydraulic testing and the fact that generally vertical conductivity in fractured rock aquifers are a few orders of magnitude lower than the horizontal conductivity.

Section 3.7 Groundwater Recharge

This section is unnecessarily long and provides a list of previously acquired results without discussion and conclusion, the data is not used later in the report. Additionally, Cardno notes that the units are inconsistent preventing comparison of results.

Section 3.10 Groundwater Dependent Ecosystems

There is inconsistency between the map and the statement of the second paragraph as to the location of the vegetation of high groundwater dependence. The source and date of the data mapped is not provided. Ultimately, any remaining vegetation not in the creek corridor is expected to make place for the airport facilities. The groundwater impact assessment focusses on the groundwater dependent ecosystems along Badgerys Creek.

Section 3.11 Conceptual Model

The aquifer extents are wrongly defined if it applies to all aquifers. The current definition will only apply to the unconfined weathered rock aquifer (which is defined as intermittent).

For the unconfined regolith aguifer, the following comments are made:

- the thickness of the aquifer over the site needs to be known to inform on the role of the aquifer within the hydrogeological conceptual model;
- The water levels are unknown and the intermittent status is undocumented. The depth to groundwater is identified as ranging between 2.4 m and 4 m below the measuring point. This statement requires further characterisation on the timing of these measurements, the reliability of the



data and the distribution of the data available. The intermittent nature of the aquifer needs supporting information.

For the Bringelly Shale aquifer, the following comment is made:

• The classification as an aquifer requires some qualification. On a regional scale, the Bringelly Shale is considered as an aquitard (McNally 2009)1, this is the reason why no producing bores are drilled within the Bringelly Shale and is supported by low hydraulic conductivities. Nevertheless, the classification needs to be consistent with the definition of the term aquifer adopted for the EIS. The technical report defines an aquifer as a groundwater bearing formation sufficiently permeable to transmit and yield groundwater. It is noted that the Bringelly Shale may contain some small water bearing zones associated with minor sandstone beds but the storage capacity is expected to be very low. As such the Bringelly Shale is more likely to seep water than yield a useful amount of water.

Figure 6 – Conceptual Hydrogeological Model shows the water pressures in the Bringelly Shale and the alluvial aquifer as the same which contradicts the previous findings. In line with the defined intermittent status of the weathered rock aquifer, no water table is drawn for that aquifer.

The interaction between creek and groundwater is partly explained through the documents. It could however be improved by including discussion on creek perennial or ephemeral characteristics and illustration of surface water-groundwater interactions.

Section 4 Impact assessment

The approach taken in the EIS identified three categories of impact:

- impact from decreased recharge,
- · impact from decrease of water levels,
- impact from change of water quality.

This approach ignores any other impacts as for example the potential increase of water levels due to underground constructions. However, this is unlikely to affect the outcome of the assessment. The report would gain in ease of reading by presenting a visual approach such as a table summarising the activity causing the impact (for e.g. change in ground conditions), the potential consequence/risk (for e.g. decrease of groundwater recharge) of the impact and the resulting impact on receptors/ groundwater values.

2.3.4.2 Groundwater Impact EIS Chapter 18

Information reported in Chapter 18 is essentially taken from the technical report, however some rewording has resulted in wrong statements.

Cardno makes the following comments:

- The section on groundwater levels (S 18.4.6) appears to assimilate water levels (expressed in depth to water in a monitoring bore) and the depth of the top of an aquifer. For confined systems, the depth to water level (water pressures) is usually not the depth to the top of the water bearing zone and can be found metres above the top of the geological formation. Access to it, however requires access to the geological formation.
- Paragraph 3 of Section 18.4.6, plural form for the Bringelly Shale suggesting a different groundwater system than previously stated.
- Last paragraph of Section 18.4, the Hawkesbury Sandstone is not preferably targeted for its better water quality than the Bringelly Shale but critically because it is an aquifer able to yield commercial amount of water as opposed to an aquitard.
- Section 18.5, introduction, the use of groundwater as a potential water supply has been commented upon earlier.

_

¹ Greg McNally, Soil and groundwater salinity in the shales of western Sydney, Proceedings of the International Association of Hydrogeologists, New South Wales Branch Groundwater in the Sydney Basin Symposium, Sydney, NSW, Australia, 4 – 5, August 2009



2.4 Review of Mitigation & Management Measures Proposed

Cardno has reviewed the proposed management strategies for technical soundness, practicality and reliability of the outcomes.

2.4.1 Surface Water

The EIS documents propose the following broad mitigation and management measures for surface water:

- Surface Water Drainage System: Preparation of a plan to refine the surface water drainage system during detailed design to address the following:
 - detailed design of basins and channels to capture the majority of runoff, including during construction;
 - refinement of drainage system design performance standards to optimise capacity and release timing, mimicking natural flows as far as practicable;
 - provision of intermediate sediment retention basins upstream of larger basins to provide additional treatment;
 - provision of separate bio-retention swales and basins to provide additional treatment and separation of these features from the drainage system to protect contained water during floods;
 - provision of pollutant traps to prevent debris and other coarse material entering the drainage system;
 - stabilisation structures at outlets to include rock check dams at regular intervals along channels and energy dissipaters at basin outlets; and
 - capacity for containment of accidental leaks or spills in the drainage system at maintenance areas, fuel farms or other areas where fuels or chemicals are stored or handled in accordance with Australian standards.
- Erosion and Sedimentation: The surface area disturbed at any one time would be minimised as far as possible by construction staging and stabilised with vegetation or appropriate cover.

Appendix L1 provides the following mitigation and management measures for specific surface water impacts:

- Changes to water level at Oaky Creek and on a tributary of Badgerys Creek need to be managed through subsequent design development.
- Need to further develop the basin strategy during design development such that the basins would be
 effective at mimicking natural flows as closely as possible across a range of storm durations and
 magnitudes including low and high flows.
- Consideration should be given to the need to introduce a basin or alternative water quantity management measure at one of the site discharge points into a tributary of Duncans Creek.
- Requirement to ensure that any future development in the vicinity of Badgerys Creek where it
 passes through the site would be appropriate for a third order creek, including protecting and
 preserving habitat along the riparian corridor and ensuring no worsening of flooding downstream.

The EIS documents provides the following monitoring specifications:

- Baseline and ongoing monitoring of surface water and groundwater would be undertaken to characterise any residual impacts and prompt corrective action where necessary.
- Surface water quality monitoring would be conducted at basin outflows and selected upstream and downstream conditions.

Cardno makes the following comments:

 There are differences between the summary tables for mitigation and management measures (Table 18–9 and Appendix L1 Table 8-1, Table 28–4 and Table 28-5) and mitigation and management measures discussed throughout the various chapters. Alignment of these would provide a clearer outcome and framework for future assessment and mitigation measures.



- It is agreed that many of the residual impacts relating to increase flows, velocities and water levels can be managed through refinement of the drainage system during detailed design.
- It is agreed that residual impacts relating to water quality can be managed through refinement of the
 drainage system during detailed design. However, the impacts at present are not clearly defined in
 terms of their ability to meet pollutant reduction loads and hence the likelihood of achieving these
 through refinement of the drainage treatment system is not clear.
- The EIS also notes the potential for accidental spills of fuels and chemicals being released to the environment in the event of a mishap during refuelling, maintenance or general storage and handling. Management and mitigation of such spills is noted as the implementation of Australian standards for the storage and handling of hazardous materials. This does not identify the appropriate example measures and does not call out the need for the development of a spill and remediation action plan in Chapter 28.

2.4.2 **Groundwater**

The EIS documents propose the following mitigation and management measures for groundwater:

- The documents discuss possible mitigation measures to mitigate the risk of impact to groundwater dependent ecosystems. The documents recommend a reactive approach based on monitoring be considered.
- Water quality risks are to be managed through a series of measures either as part of the airport design or to be incorporated in the site construction environmental management plan and the operational environmental management plan.

The EIS documents provides the following monitoring specifications:

- Key locations for monitoring: the areas of monitoring proposed in the EIS report target sensitive creeks and groundwater dependent ecosystems. The technical report provides additional locations.
 - o areas of subsurface infrastructure and cuttings where seepage could occur to characterise potential groundwater impacts (water level);
 - areas near creeks and areas with groundwater dependent ecosystems (water level, water quality);
 - o around and down-gradient of major infrastructure (water quality);
 - surface water down-gradient of key site works (seepage monitoring during dry periods, water quality).
- Monitoring target: Bringelly Shale, alluvial aquifer, possibly targeted fill areas and creeks.
- Frequency: quarterly monitoring for water levels and water quality
- Length: three years or until stabilisation
- Baseline monitoring on a quarterly basis.

Cardno makes the following comments:

- Monitoring location and frequency needs to be defined based on the risk of impact. Generally
 Cardno agrees with the locations defined in the technical report, however Cardno would recommend
 that the need for monitoring near infrastructure be assessed on a case by case basis;
- Cardno agrees with the monitoring targets. The unconfined weathered rock aquifer may need to be included in the target (this will depend on the outcome of its characterisation);
- Frequency:
 - The water quality monitoring frequency is suitable for detection of contamination near the infrastructure;



- The water quality monitoring frequency is suitable for acquisition of baseline in the aquifers near sensitive ecological receptors and upon review of the data, the frequency could then be reduced;
- The water level frequency is not suitable for baseline acquisition or for ongoing monitoring. Baseline acquisition requires daily water level data (through the use of an automated logger and quarterly manual water level to confirm the logged data). This is even more critical in aquifers which are subject to discharge to creek and to direct rainfall recharge. The data is critical for assessment of water level changes during operation and removal of natural variability which may otherwise trigger an exceedance. The definition of the frequency monitoring for ongoing monitoring should be based on the assessment of the baseline data.
- Length: the length provided in the EIS documents is acceptable. Cardno notes that monitoring of baseline would ideally start before the start of any activities on site, one year is often a minimum recommended time.
- Water quality parameters: the parameters defined in the technical study are suitable for contamination identification. With respect to baseline, some analytes would need to be changed to allow for a full characterisation. Critically major cations and anions should be added. Cardno notes that suspended solids are typically done only in surface water monitoring.

Cardno makes the additional comments on the approach and specifications taken to management and mitigation:

- The management and mitigation measures do not include a response plan. The approach provided in the EIS documents is suitable for the detection of contamination, however not suitable for the identification of impact to groundwater levels affecting groundwater dependent ecosystems. The response plan should take into consideration the level of risk associated with a confirmed exceedance, the time for impact propagation (i.e. the time available for implementing mitigation if required), identify the various steps between identification of an exceedance and mitigation and identify the regulatory and compliance requirements applicable to the situation.
- The use of the ANZECC Guidelines 2000 as a trigger will not necessarily be successful. As
 identified in the EIS documents, natural concentrations for a number of water parameters currently
 exceed the ANZECC 20000. It is recommended that triggers be defined specific to the protected
 environmental value. For contamination to groundwater, the NSW Contaminated Land Management
 Act 1997 (CLM Act) should be referred to.

2.5 Discussion on Existing Level of Uncertainty over Environmental Risks and Impacts

2.5.1 Surface Water

While the approach, methodology and description of parameters appear to be appropriate, a robust presentation of inputs to the hydrology and hydraulic model setup is lacking. For example, figures showing catchments do not show overlays of topography, airport concept plan layouts or the water management strategy. As such the figures do not allow an assessment of the appropriateness of catchment delineation, stormwater design or assignment of impervious percentages.

While it is noted that a full range of design rainfall events has been modelled (1, 2, 5, 20, 100 year ARI and PMF), not all events are presented in the impacts. It is assumed that intermediate events are unlikely to alter from the trend of results presented, however, they have not been documented and hence some uncertainty remains.

Impacts on Duncans Creek are only assumed at this stage and no hydraulic assessment has been undertaken. Further no mitigation measures are proposed other than consideration of a basin at this location

Limitations with water quality monitoring are noted and this lends to uncertainty over the baseline water quality levels. However, a model has been used for simulating water quality impacts and was calibrated to the monitoring data. As such, the model should provide a reasonable estimate of the relative impacts from the airport construction.

23 November 2015 Cardno 21



Further, it is noted that a surface water quality monitoring program will be implemented to collect additional background data prior to the commencement of construction to provide additional baseline data to allow further calibration of the modelled results. This will allow a more robust design to be developed to address water quality relative to better data into the future.

2.5.2 Groundwater

The main uncertainties come from the assumption that the unconfined regolith aquifer is intermittent. The assumption is unsubstantiated in the EIS documents. If the assumption is proven to be valid, then the overall risk to groundwater values will be insignificant. If the assumption is not valid, the groundwater dependent ecosystems in Badgerys Creek could be at risk of impact from reduced groundwater flow towards the groundwater dependent ecosystem due to changes to the ground surface and infiltration/recharge.



3 Detailed findings – Long Term Development

3.1 Description of Approach to Impact Assessment Developed in the EIS

3.1.1 Surface Water

The assessment of the Long Term Development builds on the assessment of impacts associated with the Stage 1 development. The assessments focusses on the operational impacts and construction impacts have not been considered due to the unknowns surrounding the final Stage 2 layout and the timing of construction being so far into the future.

The EIS uses the predictive numerical models to consider the impact of the change in landform characteristics on runoff volumes and the subsequent impacts on stream flow, flooding, groundwater recharge and water quality. Potential impacts on the environmental values and beneficial uses of surface and groundwater resources were identified, and options for future management practices were considered as part of the assessment.

The hydrologic, hydraulic and water quality models used in the assessment include representations of the drainage system incorporated into the concept design of the indicative long term development.

The concept design of the long term development includes expanding the drainage system to control the flow of surface water. An extension of the Stage 1 detention basins is proposed together with provision of an additional detention basin in the longer term.

The results of the models were analysed to identify impacts on waterways, people and property and thereby assess the effectiveness of the drainage system. The drainage system has been designed to contain flows up to the 100 year average recurrence interval (ARI) event.

A climate change scenario to determine likely impacts has also been considered.

3.1.2 <u>Groundwater</u>

The EIS's approach is that the risk to groundwater and groundwater values will not change between the first stage and the operational phase, neither will the level of impact (S 34.4.4).

Cardno agrees that the risks to groundwater values are unchanged. However, a new risk, the risk associated with irrigation of reclaimed water needs to be included in the discussion. The risk is discussed in a previous section (S 34.4.3), but the discussion does not consider products such as fertilisers often associated with irrigation which may have an impact on groundwater dependent ecosystem along the creek.

The risk to groundwater dependent ecosystem is the same as during the first stage of development and also needs to be considered for the long term development unless proven insignificant.

Cardno agrees with the EIS on other conclusions regarding long term impacts to groundwater, as follows:

- The modification of groundwater flow are minor and located near underground structures, they would result in minor groundwater seepage which is required to be controlled through infrastructure design.
- There would be no impact to groundwater users, note that this assumes groundwater will not be
 used as water supply at the site. Impact to groundwater users will required to be assessed
 separately would the project decide to use groundwater as a supply.
- There is a risk to groundwater quality through chemical contamination release and spills. The risk
 can be managed efficiently though a number of measures such as implementation of Australian
 standards and best practices and implementation of an environment management plan.

3.2 Assessment Gap Identification

3.2.1 <u>Surface Water</u>

Gaps in the assessment are largely the same as for Stage 1 development:



- Duncans Creek and its tributaries have not been modelled to allow definition of baseline and relative
 hydraulic impacts in these locations. As such, all summary impacts do not fully consider impacts to
 the Duncans Creek downstream areas. Investigation of a basin at this location is proposed as a
 mitigation/management measure.
- Cumulative impacts have been discussed, however, no assessment has been undertaken to quantify
 the potential impacts other than for climate change scenarios.
- Various detention basin peak outflow values are higher than existing peak flows, indicating that there
 is likely to be an impact of stream flood depths downstream, however, such increases are not
 reported to occur. Further, there are no figures presenting the afflux (changes in flood level/depth)
 presented in the main report (Chapter 18) to clearly show the modelled impacts at all locations.
- Water quality impacts have not been presented in terms of achieved pollutant load reduction or
 assessment against guideline pollutant reduction targets. The EIS seems to dimiss any relevance of
 increased pollutant loads on the receiving environment and instead determines that impacts are
 acceptable because there are general improvements in pollutant concentrations due to increased
 flow volumes.
- Threatened ecological communities have not been mapped outside the site as part of the
 biodiversity assessment. But there is evidence of some remnant native vegetation along the tributary
 of Badgerys Creek that joins Badgerys Creek approximately 300 metres downstream of Elizabeth
 Drive under existing conditions. This reach of creek would be reliant on occasional flooding and
 would be impacted under the current proposals. Such impacts need to be assessed to ensure there
 are no impacts and any mitigation and management measures identified.

3.2.2 <u>Groundwater</u>

The following gaps have been identified. The data gaps affect both the first stage and the operational phase of the airport project.

- The weathered rock (regolith) aquifer requires further characterisation to establish its role in regards
 to supply to the alluvial aquifer and as such potential indirect impact from reduced recharge to the
 groundwater dependent ecosystems. This data gap should ideally be addressed during the first
 stage of development. The study will be followed by a review of the risk to groundwater dependent
 ecosystems along Badgerys Creek.
- Similarly, attention should also be brought to the role played by streamflow in the recharge of the alluvial aquifer and the impacts which can result from the design of flow control elements.
- Time series water level data are required to be collected as baseline for the alluvial aquifer, the Bringelly Shale and the weathered rock (regolith) aquifer to allow for the consideration of natural variations when assessing long term compliance data.
- A groundwater management and mitigation plan will need to be developed upon collection of
 groundwater baseline and groundwater characterisation of the groundwater dependent ecosystem
 and the weathered rock (regolith) aquifer. The plan should allow for a risk based approach to
 monitoring and mitigation and the project team should engage early during preparation with the
 applicable regulatory agencies.
- Handling of chemical and wastes may warrant some operation licences under the NSW POEO Act.
 The project team should consult with the NSW EPA. The monitoring requirements should be included in the site environmental management plan.
- A separate groundwater assessment and liaison with the NSW Office of Water would be required
 would the project decides to use groundwater as a water supply option either for construction or
 ongoing use. Groundwater would be sourced from the Hawkesbury Sandstone.

Upon addressing the data gaps identified above, the risks and associated impacts should be reviewed.

23 November 2015 Cardno 24



3.3 Resulting Key Risks and Implications

3.3.1 Surface Water

The following risks to surface water for the long term development and their implications have been identified:

- Outstanding localised increases to flood depths in Cosgroves, Oaky and Badgerys Creeks.
- Risks to erosion and geomorphological changes to the downstream creeks due to increases in bed shear stress at various locations
- Undefined impacts and mitigation for flood and geomorphology due to runoff to Duncans Creek.
- Implications of increases in pollutant loads, particularly for cumulative impacts are not addressed.
- Ecological impacts in receiving waters are not clearly addressed
- Impacts of potential use of stormwater to provide water supply for site preparation works has not been considered.

It is believed that most of the above issues can be addressed through refinement of the drainage strategy to manage flows, velocities and water quality. There are some outstanding impact assessments which have not been considered and should be addressed.

3.3.2 **Groundwater**

The following risks to groundwater for the long term development and their implications have been identified:

- Risk associated with change of land use and decrease of groundwater recharge. The implication is
 possibly, a lack of groundwater supply to the groundwater dependent ecosystems (EPBC listed). If
 the studies highlighted in the data gap analysis confirm that there is a risk, an artificial groundwater
 supply scheme to the alluvial aquifer will possibly be required. If the studies identify that there is no
 risk of impact to the groundwater dependent ecosystem water supply, then no further work will be
 required.
- Risk associated with the possible use of chemicals over irrigated areas. The level of risk will depend
 largely on locations and practices. The implication is possibly an impact to the health of
 groundwater dependent ecosystem through runoff and infiltration in the alluvial aquifer.
 Management of this risk implies best practices be followed for the use of fertilizer and pesticides,
 additionally, targeted analytes could be included in groundwater monitoring.
- Risk associated with the use of groundwater as a supply. A groundwater assessment will be
 required to establish whether the extraction of the required volume is feasible and the impact on
 nearby groundwater users. It should be noted that the target aquifer will be the deeper Hawkesbury
 Sandstone. The implications in terms of work required will depend on the volume required. At
 most, the studies for a groundwater assessment are likely to require the drilling of a few wells (at
 least one observation and one pumping well), pump testing and analysis and some groundwater
 modelling.

3.4 Effectiveness of assessment in setting a framework for further assessment

3.4.1 <u>Surface Water</u>

A reasonably robust assessment of the long term development has been undertaken. There is no formal framework for further assessment established as part of the EIS. The EIS for the Long Term Development simply lists considerations for future development as part of future design stages to address the impacts to be minimised. While this list identifies some of the key items to be addressed, in does not recommend any specific measures or processes that must be adhered to so as to tie those activities back to this EIS and associated approvals.

23 November 2015 Cardno 25



3.4.2 **Groundwater**

The EIS identifies some of the required assessments and activities especially in relation to water quality management. The EIS also identifies that additional assessments will be required would the project require to use groundwater as a water supply. However, the EIS did not identify the state and federal regulatory processes likely to be required for the management of the site groundwater values (liaison, review and approvals, licences for example), nor did it clearly identify the management plans and response plans required to be in place. The EIS did not identify assessment remaining to be performed to collect baseline data and confirm the hydrogeological conceptual model.



4 Key Project impacts and opportunities

Key project impacts are as follows:

- Localised increases in flood depths are indicated at a number of locations.
- Impacts in Duncans Creek are not fully considered and additional modelling would be required to determine residual impacts and any proposed management measures.
- Potential erosion and geomorphology changes with increased flow volumes and isolated increases in bed shear stress.
- Increased pollutant loads for total suspended solids and nutrients, although pollutant concentration are equal or reduced compared to existing.
- Impacts during construction related to water demand for site preparation works are not fully considered.
- Impacts on the groundwater dependent ecosystem associated with Badgerys Creek are not fully identified due to a lack of characterisation of the alluvium aquifer and in particular of:
 - o The relationship between the alluvial aquifer and the weathered rock (regolith) aquifer; and
 - o The characterisation of the recharge of the alluvium aquifer.
- These groundwater dependent ecosystems are declared a Matter of National and Environmental Significance under the EPBC Act. A review of the groundwater conceptual model would be required to enable characterisation of the impacts on the Badgerys Creek groundwater dependent ecosystem.

There is an opportunity to improve the outcomes of the EIS to manage the residual impacts through refinement of the drainage strategy and management plans during future detailed design stages. It is recommended that the residual impacts are clearly defined in the EIS and summarised in a separate chapter and appropriate specific management measures and targets be proposed or specified to ensure that these issues are addressed.

Given the complete redevelopment and large earthworks taking place on site, there is opportunity to introduce even higher levels of stormwater management and water quality treatment to further minimise the impacts of the project and potentially improve the outcomes. This would assist in minimising cumulative impacts on the environment that may occur in combination with the surrounding South West Growth Centre and Western Sydney Employment Area development impacts. With respect to groundwater impacts, there is an opportunity before site activities to acquire suitable baseline data and review the level of risk to the groundwater dependent ecosystem along the creeks. There is also an opportunity to define site design requirements to ensure recharge of the alluvium aquifer and consequently preservation of Badgerys Creek groundwater dependent ecosystem.

23 November 2015 Cardno 27



5 Reviewers' Qualifications

No significant qualifications are noted other than the limited time available for review. The entire document has not been read and reviewed, and only selected components have been reviewed as outlined in Section 1.4.

The general chapters, particularly describing the project and the airport plan have not been read in depth, but rather reviewed in brief to identify relevant background information sufficient to inform this review. The focus has been on reviewing the relevant specialist chapters and technical reports in detail.

While all care has been taken to identify the relevant sections of the EIS, a guarantee cannot be provided that some relevant information pertaining to surface water and groundwater is not contained within other sections of the EIS such as "Biodiversity" and "Planning and Land Use".

The review is limited to comments on the methodology, processes and outcomes presented. As no data or models have been reviewed, it is difficult to confirm whether the inputs, parameters and model setup is accurate and appropriate, especially for the water quality assessment. As noted throughout the review, figures to support the descriptions of inputs and outcomes are not well presented often lacking vital information to ease understanding.

23 November 2015 Cardno 28



Appendix I

Biodiversity (EMM)





Western Sydney Airport EIS

Biodiversity Assessment Peer Review

Prepared for WSP Parsons Brinckerhoff | 19 November 2015





Western Sydney Airport EIS

Biodiversity Assessment Peer Review

Prepared for WSP Parsons Brinckerhoff | 19 November 2015

Ground Floor, Suite 01, 20 Chandos Street St Leonards, NSW, 2065

> T +61 2 9493 9500 F +61 2 9493 9599 E info@emmconsulting.com.au

Western Sydney Airport EIS

Final

Report J15103RP2 | Prepared for WSP Parsons Brinckerhoff | 19 November 2015

Prepared by	Katie Whiting	Approved by	Duncan Peake
Position	Associate – Ecology Services Manager	Position	Associate Director - Executive Leader
Signature	KatioWhytaro	Signature	
Date	19 November 2015	Date	19 November 2015

This report has been prepared in accordance with the brief provided by the client and has relied upon the information collected at the time and under the conditions specified in the report. All findings, conclusions or recommendations contained in the report are based on the aforementioned circumstances. The report is for the use of the client and no responsibility will be taken for its use by other parties. The client may, at its discretion, use the report to inform regulators and the public.

© Reproduction of this report for educational or other non-commercial purposes is authorised without prior written permission from EMM provided the source is fully acknowledged. Reproduction of this report for resale or other commercial purposes is prohibited without EMM's prior written permission.

Document Control

Version	Date	Prepared by	Reviewed by
1	9 November 2015	Katie Whiting	Duncan Peake
2	19 November 2015	Katie Whiting	Duncan Peake



ES1 Introduction

EMM Consulting Pty Limited was commissioned to conduct a peer review of the Biodiversity Assessment (EIS Appendix K1), Offsets Strategy (EIS Appendix K2) and biodiversity chapter (EIS Chapter 16) of the Western Sydney Airport Environmental Impact Statement (GHD 2015a). The purpose of the review is to provide the Western Sydney Regional Organisation of Councils (WSROC) and Macarthur Regional Organisation of Councils (MACROC) with factual, unbiased information regarding the technical rigour of the biodiversity study. The review will provide information to support individual submissions from WSROC and MACROC on the environmental impact statement (EIS) and supporting technical studies.

ES2 Approach

The adequacy of the above documents was reviewed against the *Western Sydney Airport EIS guidelines* (the EIS guidelines), biodiversity survey and assessment guidelines and background data, where appropriate. The review criteria comprised:

- evaluate if the biodiversity study meets the requirements of the EIS guidelines and other relevant guidelines and methods;
- evaluate the validity of the data relied upon to inform the Biodiversity Assessment (EIS Appendix K1);
- evaluate the validity of the underlying assumptions of the Biodiversity Assessment (EIS Appendix K1);
- evaluate the validity of the conclusions reached in the Biodiversity Assessment (EIS Appendix K1);
- review the mitigation and management measures proposed and advise of the adequacy in mitigating impacts; and
- evaluate the level of uncertainty of biodiversity impacts and provide advice on the resulting environmental risks.

A summary of the key impacts and opportunities associated with the project has also been provided.

ES3 Stage 1 development review findings

The reports were found to be generally compliant with the EIS guidelines. However, a number of partial and non-compliances were identified. The assumptions and conclusions of the assessment were considered valid, with the exception of three criteria which were deemed 'partially compliant'. The proposed mitigation and management measures were deemed suitable for this stage of the project, with further information required prior to construction with respect to biodiversity and environmental management.

Data gaps were identified with respect to land access restrictions, threatened species locations, the assessment of threatened species, and a large deficit in the proposed offsets. The Biodiversity Assessment (EIS Appendix K1) does not clearly define the extent of land access restrictions. A key risk associated with

J15103RP2 E.1

insufficient access (if this is the case) is that biodiversity values and offsetting requirements may have been underestimated.

Assessments of significance were not completed for the Green and Golden Bell Frog, Australasian Bittern, Australian Painted Snipe and a number of migratory species listed under the EPBC Act. Key risks associated with the omission of these assessments are that the level of impact and the offsets required may have been underestimated. The large credit deficit, particularly for Cumberland Plain Woodland in the Sydney Basin Bioregion, listed as a critically endangered ecological community under the *Threatened Species Conservation Act 1995* (TSC Act) and *Environment Protection and Biodiversity Conservation Act 1999* is a key risk as it is not currently known if the quantum of offsets required is available.

ES4 Long-term development review findings

The Biodiversity Assessment (EIS Appendix K1) (GHD 2015b) provides a general assessment of adverse the long-term development impacts of the project. However, it does not consider the potential impact of successful implementation of biodiversity management measures from the Stage 1 development, which may result in increased biodiversity values and therefore underestimate the longer-term development impacts. In addition, the Offsets Strategy (EIS Appendix K2) does not state how offsets will be identified and secured for the long-term development.

ES5 Key impacts and opportunities

Key impacts of the project comprise:

- the loss of 90 ha of Cumberland Plain Shale Woodlands and Shale Gravel Transition Forest critically endangered ecological community; and
- the loss of 120 ha of habitat critical to the survival of the Grey-headed Flying-fox, a vulnerable species.

Key opportunities of the project comprise:

- location of the airport site on predominantly cleared land;
- identification of potentially suitable offset sites on private property that may have otherwise degraded, and been subject to key threatening processes;
- in addition to the offsets, the creation of an on-site environmental conservation zone, containing native vegetation representative of the vegetation types to be cleared.

J15103RP2 E.2



Table of contents

Executive	summary	E.1
Chapter 1	Introduction	1
1.1	Background	1
1.2	Approach	1
1.3	Limitations	3
1.4	Components of the EIS reviewed	3
Chapter 2	Detailed findings - Stage 1 development	5
2.1	Compliance of the Biodiversity Assessment with the Western Sydney Airport EIS Guidelines	5
2.2	Validity of data relied upon	15
2.3	Validity of assumptions	17
2.4	Validity of conclusions	18
2.5	Efficacy of proposed mitigation and management measures	18
	2.5.1 Design	18
	2.5.2 Pre-construction	19
	2.5.3 Construction	20
	2.5.4 Pre-operation and operation	20
2.6	Level of uncertainty regarding impacts and environmental risks	21
	2.6.1 Uncertainty identified by the author	21
	2.6.2 Data gaps and potential associated risks	22
Chapter 3	Detailed findings – long-term development	25
3.1	Overview of approach to assessment to long-term development taken in the Biodiversity Assessment	25
3.2	Gaps identified relative to a comprehensive/ conventional assessment	25
3.3	Key risks and implications as a result of the gaps	25
3.4	Effectiveness of assessment in setting a framework for further assessment	26
Chapter 4	Key impacts	27
4.1	Key project impacts to biodiversity	27
4.2	Key opportunities	28
Chapter 5	Conclusion	29
Chapter 6	Qualifications and study team	31
6.1	Lead peer reviewer - Katie Whiting – BSc, MWldMgt (Habitat)	31
6.2	Strategic direction - Duncan Peake – BSc (Hons)	31
Reference	S The state of the	33

Appendices

A Qualifications of reviewers

Tables

1.1	Method	1
2.1	Overview of compliance of EIS Chapter 16 Biodiversity, Biodiversity Assessment (EIS Appendix K1) and Offsets Strategy (EIS Appendix K2) with the EIS guidelines	7
2.2	Validity of data relied upon	15
2.3	Validity of assumptions	17

1 Introduction

1.1 Background

WSP Parsons Brinckerhoff commissioned EMM Consulting Pty Limited (EMM) to complete a technical peer review of the biodiversity components of the Western Sydney Airport Environmental Impact Statement (EIS) (GHD 2015a). These components comprise the EIS chapter 16 Biodiversity (GHD 2015a), Biodiversity Assessment Report (EIS Appendix K1) (GHD 2015b) and Offsets Strategy (EIS Appendix K2) (GHD 2015c).

The purpose of the review is to provide the Western Sydney Regional Organisation of Councils (WSROC) and Macarthur Regional Organisation of Councils (MACROC) with factual, unbiased information regarding the technical rigour of the biodiversity study. The review will provide information to support individual submissions from WSROC and MACROC on the EIS and supporting technical studies.

1.2 Approach

The review method is shown in Table 1.1, which provides details on the guidelines against which the technical rigour of the biodiversity study was assessed, and how each component of the biodiversity study was evaluated.

Table 1.1 Method

Scope item Guidelines assessed against		How each scope item was evaluated
Prior to exhibition		
Background reading	N/A	 Detailed review of the 1997-1999 EIS. Desktop review of local vegetation mapping datasets and plant community types for the bioregion.
		 Database searches on the Atlas of NSW Wildlife, OEH threatened species database and Protected Matters Search Tool to determine relevant threatened species, populations and communities (threatened biodiversity).
		 Review other publically available local biodiversity studies.
During exhibition		
Evaluate if the biodiversity study meets the requirements of the EIS Guidelines and relevant other guidelines and methods	 Guidelines for the content of a draft Environmental Impact Statement: Western Sydney Airport (Reference: EPBC 2014/7391) Survey guidelines for Australia's threatened bats 	 Detailed review against Section 4(a) of the EIS guidelines to and Commonwealth survey guidelines and referral guidelines for the Koala to determine if the survey effort has been completed satisfactorily. Identify gaps in survey effort or the threatened biodiversity considered in the Biodiversity Assessment (EIS Appendix K1).
	Survey guidelines for Australia's threatened birds	 Confirm that potential groundwater dependent ecosystems have been investigated.
	• Survey guidelines for Australia's threatened frogs	
	 Survey guidelines for Australia's threatened mammals 	

Table 1.1 Method

Scope item	Guidelines assessed against threatened mammals	How each scope item was evaluated
	 Survey guidelines for Australia's 	
	threatened reptiles	
	EPBC Act referral guidelines for the vulnerable Koala	
Evaluate the validity of the information relied upon	 EPBC Act Policy Statement 1.1 Significant Impact Guidelines for Matters of National Environmental Significance 	 Compare local vegetation mapping datasets to those identified in the Biodiversity Assessment (EIS Appendix K1) determine if vegetation types are accurate.
	EPBC Act Environmental Offsets Policy	 Review of justification for plant community types assigned in accordance with the Vegetation Information System to check accuracy.
		 Compare database search results to those identified in the Biodiversity Assessment (EIS Appendix K1) to ensure all relevant threatened biodiversity have been identified and considered.
		 Review preliminary determinations for threatened species, populations and communities to ensure they are considered.
		 Compare the list of target threatened biodiversity to those identified in the desktop study to ensure all relevant target biodiversity has been identified.
		 Review of known threats to the threatened biodiversity identified.
		 Review the likelihood of occurrence for threatened biodiversity, to ensure all relevant species have been considered.
		 Review the assessments of significance to ensure that the necessary assessments have been completed.
		 Review calculations and assumptions used in the Commonwealth offset calculator.
		 Comparison of offset package against the offset principles in the EPBC Act Environmental Offsets Policy.
		 Review the identification of groundwater dependent ecosystems.
Evaluate the validity of the underlying assumptions used to inform the assessment	• N/A	 Assess validity and consistency against EIS Chapter 16, the Biodiversity Assessment (EIS Appendix K1) and Offsets Strategy (EIS Appendix K2).
Evaluate the validity of conclusions reached in the biodiversity study	thed in the Significant Impact Guidelines for	 Review the project description to determine the intensity, duration, magnitude and geographic extent of impacts.
		 Review assessments of significance against the Significant Impact Criteria in the Significant Impact Guidelines for Matters of National Environmental Significance for each relevant threatened species, population and community to ensure that all relevant direct and indirect impacts have been considered.

Table 1.1 Method

Scope item	Guidelines assessed against	How each scope item was evaluated		
		 Review assessment of impacts on potential groundwater dependent ecosystems. 		
Review the mitigation and management measures proposed and advise of the adequacy in mitigating impacts	N/A	 review management and mitigation measures for the pre-construction, construction and operational stages and assess their suitability for the threatened species, communities and populations to be impacted. 		
Evaluate the level of uncertainty of biodiversity impacts and provide advice on the resulting environmental risks	 EPBC Act Policy Statement 1.1 Significant Impact Guidelines for Matters of National Environmental Significance 	 Review conclusions of each assessment of significance and the impact assessment chapter to determine any uncertainty openly identified (ie where the precautionary principle has been applied due to data gaps) by the report author. 		
		 Identify areas where data gaps exist and conclusions have been made without sufficient background data. 		
		 Identify potential risks resulting from data gaps and changes to the outcome of assessments of significance. 		
Provide a summary of the key impacts and opportunities	N/A	 Summarise the key impacts and opportunities identified in the biodiversity report. 		
associated with the project and the biodiversity study		 Summarise key data gaps and potential risks arising from these. 		

1.3 Limitations

This report is based on a desktop based assessment, with no field verification. Therefore, this review is reliant on the provision of information that is publically available, to determine the reliability and accuracy of the biodiversity study.

1.4 Components of the EIS reviewed

Three components of the EIS were reviewed, comprising the:

- Biodiversity Assessment (EIS Appendix K1) (GHD 2015b);
- Offsets Strategy (EIS Appendix K2) (GHD 2015c); and
- EIS Chapter 16 Biodiversity (GHD 2015a).

Other relevant background documents reviewed comprise the:

- Guidelines for the content of a draft Environmental Impact Statement: Western Sydney Airport (hereafter referred to as the EIS guidelines);
- Draft Environmental Impact Statement Second Sydney Airport Proposal: Technical Paper 8 Flora and Fauna (Biosis 1997); and
- Biodiversity Report: Commonwealth Land at Badgery's Creek (SMEC 2014), hereafter referred to as 'the baseline report'.

2 Detailed findings - Stage 1 development

2.1 Compliance of the Biodiversity Assessment with the Western Sydney Airport EIS Guidelines

Table 2.1 summarises the EIS guidelines with respect to biodiversity and assesses the compliance of the Biodiversity Assessment (EIS Appendix K1) with these guidelines. The Biodiversity Assessment (EIS Appendix K1)is generally compliant with the EIS guidelines, with a few exceptions. Items that are not compliant have been classified into:

- partially compliant: items that have been completed, however sufficient detail has not been provided; and
- not compliant: items that have not been considered.

These comprise:

- partial compliance:
 - a detailed outline of the monitoring and management has been provided, however the future management plans will detail the outcomes to be achieved and a framework for auditing their effectiveness;
 - the self-assessment of biodiversity survey effort is not quantitative (ie does not compare number of plots, targeted searches and fauna survey effort against the number of sampling points and effort required);
 - assessments of significance have been completed for most species and communities listed under the EPBC Act. However, assessments have not been completed for the Green and Golden Bell Frog (*Litoria aurea*), Australasian Bittern (*Botaurus poicilioptilus*), Australian Painted Snipe (*Rostratula australis*) and migratory species, which are all considered likely to occur;
 - recovery plans have been considered in the assessments of significance. However, the recovery plans of species where assessments of significance were omitted (as above) have not been considered:
 - the EIS Chapter 16 and the Biodiversity Assessment (EIS Appendix K1) report state that highprobability groundwater dependent ecosystems occur in the project area. However, potential impacts to these groundwater dependent ecosystems as a result of the project have not been discussed;
 - potential traffic impacts to fauna are examined for the operational phase, but not the construction phase of the project; and
 - a detailed assessment of significance on the Greater Blue Mountains Heritage Area will be included in the final draft of the report following a multidisciplinary workshop to assess potential impacts.
- not compliant:

- a statement has not been provided regarding whether the impacts are unknown, unpredictable or irreversible;
- the predicted effectiveness, policy basis and likely cost of mitigation measures has not been assessed/provided;
- an Offsets Strategy (EIS Appendix K2) has been presented for the project, while the EIS guidelines require an offset package (ie finalised offset plan); and
- an analysis of how the Offsets Strategy (EIS Appendix K2) meets the requirements of the EPBC Act Environmental Offset Policy (SEWPaC 2012) has been provided. However, as this has not been finalised into an offset package, an assessment of how it meets the policy cannot be provided.

A detailed assessment of the Biodiversity Assessment's (EIS Appendix K1) compliance against the EIS guidelines is provided in Table 2.1. The adequacy of the Biodiversity Assessment (EIS Appendix K1) is discussed in further detail in the following sections.

Table 2.1 Overview of compliance of EIS Chapter 16 Biodiversity, Biodiversity Assessment (EIS Appendix K1) and Offsets Strategy (EIS Appendix K2) with the EIS guidelines

Relevant part of EIS guideline	Section addressed in the EIS Chapter 16	Section addressed in EIS Appendix K1	Section addressed in EIS Appendix K2	Compliance with EIS guidelines
Section 4 Description of the environment				
The EIS must include a description of the environment, land uses and character of the include the following information:	proposal site and the sui	rounding areas that may be affected by	the action. It is recon	nmended that this
(a) Listed threatened species (including suitable habitat) and ecological communities that are or are likely to be present in all areas of potential impact.	Section 16.3	Chapter 4	Section 2.1	Compliant
To satisfy this requirement details must be presented on the scope, timing/effort (survey season/s) and methodology for studies and surveys used to provide information on the relevant listed threatened species/ecological community/habitat (as identified in Attachment 3). This includes details of:	Section 16.2.3 (terrestrial) and 16.2.4 (aquatic)	Section 4.4	N/A	Compliant
how best practice survey guidelines have been applied;	Section 16.2.3 (terrestrial) and 16.2.4 (aquatic)	Section 3.1	N/A	Compliant
 how surveys are consistent with (or a justification for divergence from) published Australian Government guidelines and policy statements. 	Not detailed	Appendix B provides a general assessment of compliance, but does not quantify how these guidelines have been met.	N/A	Partially compliant
Section 5 Relevant impacts				
(a) The EIS must include a description of all of the relevant impacts of the action. Relevant impacts are impacts that the action will have or is likely to have on a matter protected by a controlling provision (as listed in the preamble of this document). Impacts during both the construction, operational and (if relevant) the decommissioning phases of the project should be addressed, and the following information provided:	Section 16.4 and 16.5	Chapter 5 and Chapter 6	N/A	Compliant
 a detailed assessment of the nature and extent of the likely short-term and long-term relevant impacts (detailing direct and indirect impacts); 	Summary provided in Section 16.4 and 16.5	Section 5.1 and 5.2	N/A	Compliant
 a statement whether any relevant impacts are likely to be unknown, unpredictable or irreversible; and 	Not provided	Not provided	N/A	Not compliant
 analysis of the significance of the relevant impacts; and any technical data and other information used or needed to make a detailed assessment of the relevant impacts. 	Summary provided in Section 16.6	Summary provided in Chapter 8, Assessments of Significance in accordance with the EPBC Act	N/A	Partially compliant

Table 2.1 Overview of compliance of EIS Chapter 16 Biodiversity, Biodiversity Assessment (EIS Appendix K1) and Offsets Strategy (EIS Appendix K2) with the EIS guidelines

Relevant part of EIS guideline	Section addressed in the EIS Chapter 16	Section addressed in EIS Appendix K1	Section addressed in EIS Appendix K2	Compliance with EIS guidelines
		provided in Appendix D. It should be noted that Assessments of Significance were not prepared for the Green and Golden Bell Frog, Australasian Bittern, Australian Painted Snipe and migratory species were not completed because significant impacts were not predicted. Further information is provided in Section 2.2 of this report.		
(b) The EIS should identify and address cumulative impacts, where potential project impacts are in addition to existing impacts of other activities (including known potential future expansions or developments by the proponent and other proponents in the region and vicinity).	Not detailed	Chapter 7	N/A	Compliant
(c) The EIS should address the potential for facilitated impacts upon MNES at the local, regional, state, national and international scale.	Not detailed	Chapter 7	N/A	Compliant
(d) If the conclusion is made that any relevant controlling provision or element of a relevant controlling provision will not be impacted by the proposed action, then justification must be provided for how this conclusion has been reached. This includes any threatened species or ecological communities that are likely to be present on site, heritage items/places likely to be on site and other relevant elements of the environment that may be impacted by the proposed action.	Summary provided in Section 16.6	Summary provided in Chapter 8, assessments of significance in accordance with the EPBC Act provided in Appendix D. It should be noted that Assessments of Significance were not prepared for the Green and Golden Bell Frog, Australasian Bittern, Australian Painted Snipe and migratory species were not completed because significant impacts were not predicted. Further information is provided in Section 2.2 of this report.	N/A	Partially compliant
(g) Impacts to the environment (as defined in section 528) should include but not be limited to the following:				
changes to water quality on site and downstream of the site;	Section 16.4.1.3	Section 6.1.7	N/A	Compliant

Table 2.1 Overview of compliance of EIS Chapter 16 Biodiversity, Biodiversity Assessment (EIS Appendix K1) and Offsets Strategy (EIS Appendix K2) with the EIS guidelines

Re	levant part of EIS guideline	Section addressed in the EIS Chapter 16	Section addressed in EIS Appendix K1	Section addressed in EIS Appendix K2	Compliance with EIS guidelines
•	changes to siltation;	Section 16.4.2	Section 6.1.8	N/A	Compliant
•	hydrological changes;	Section 16.4.2	Section 4.2.4 states that high probability groundwater dependent ecosystems are present. However, the impacts to these are not assessed.	N/A	Partially compliant
•	native flora and fauna habitat removal and degradation (on site and in surrounding areas that may be affected by the action);	Section 16.4.1.1	Section 5.1.2 (Stage 1) and 5.2.1 (Longer-term)	Section 2.2.1	Compliant
•	aircraft noise and vibration impacts on everyday activities and on sensitive environmental receptors (all sensitive receptors within the community and natural environment);	Section 16.4.2	Section 5.2.2	N/A	Compliant
•	noise and vibration from construction activities and machinery;	Section 16.4.2	Section 5.1.11	N/A	Compliant
•	potential fuel dumping impacts;	Section 16.4.2.5	Section 5.2.2	N/A	Compliant
•	changes in traffic movements during construction and operation (associated with both passenger movements and workers);	Not provided for construction. Detailed in and 16.5.1.2 (operation)	Not provided for construction. Detailed in Section 6.1.2 (operation)	N/A	Partially compliant
•	bird or bat airstrike; and	Section 16.6.2.3 and 16.5.1.1	Section 6.1.1. It should be noted that a separate independent review is being completed to determine the adequacy of the bird and bat airstrike assessment.	N/A	Compliant
•	lighting impacts on everyday activities and on sensitive environmental receptors (all sensitive receptors within the community and natural environment).	Summary provided in Section 16.4.2.7 (construction) and 16.5.2.1 (operation)	Section 5.1.11 (construction) and 6.1.4 (operation)	N/A	Compliant
Qu	antification and assessment of impacts should:	Section 16.2.1 states	Section 3.1.1 states that the baseline	N/A	Compliant
•	be against appropriate background/baseline levels;	that the baseline assessment (SMEC 2014) was used to verify results, against	assessment (SMEC 2014) was used to verify results, against which the impact assessment was completed.		

Table 2.1 Overview of compliance of EIS Chapter 16 Biodiversity, Biodiversity Assessment (EIS Appendix K1) and Offsets Strategy (EIS Appendix K2) with the EIS guidelines

Relevant part of EIS guideline	Section addressed in the EIS Chapter 16	Section addressed in EIS Appendix K1	Section addressed in EIS Appendix K2	Compliance with EIS guidelines
	which the impact assessment was completed.			
 be prepared according to best practice guidelines and compared to best practice standards; and 	Section 16.1 states that the assessment was prepared in accordance with the EIS guidelines.	Appendix B provides a general assessment of compliance, but does not quantify how these guidelines have been met.	N/A	Partially compliant
 be supported by maps, graphs and diagrams as appropriate to ensure information is readily understandable Guidelines and standards used to quantify baselines and impacts should be explained and justified. 	Figures 16-1-A to 16- 1-D, Figure 16-2-A to 16-2-D	Figure 4A to 4D, Figure 5A to 5D, Figure 6A to 6D	N/A	Compliant
6 Avoidance and mitigation measures				
(a) The EIS must provide information on proposed avoidance and mitigation measures to manage the relevant impact of the action on a matter protected by a controlling provision (as listed in the preamble of this document).	Section 16.7.1 provides a summary of minimisation measures. However, avoidance measures are not discussed.	Avoidance is discussed in Section 9.1 and minimisation measures are discussed in Section 9.2.	N/A	Compliant
(b) The EIS must take into account relevant agreements and plans that cover impacts or known threats to a matter protected by a controlling provision (including but not necessarily limited to:				
(i) any recovery plan and/or conservation advice for the affected species or ecological community	Discussed in Section 16.8.3.2, 16.3.3.4, 16.6.2.1 with respect to threatened species, populations and communities.	Recovery plans are considered in all assessments of significance in Appendix D, with the exception of the assessments of significance that were omitted.	N/A	Partially compliant
(ii) any threat abatement plan for a process that threatens an affected species or ecological community	Not discussed	Addressed in Section 8.1.3	N/A	Compliant
(iii) any wildlife conservation plan for the affected species	Discussed in Section 16.8.3.2, 16.3.3.4, 16.6.2.1 with respect	Recovery plans are considered in all assessments of significance in Appendix D, The Offsets Strategy (EIS	N/A	Partially compliant

Table 2.1 Overview of compliance of EIS Chapter 16 Biodiversity, Biodiversity Assessment (EIS Appendix K1) and Offsets Strategy (EIS Appendix K2) with the EIS guidelines

Relevant part of EIS guideline	Section addressed in the EIS Chapter 16	Section addressed in EIS Appendix K1	Section addressed in EIS Appendix K2	Compliance with EIS guidelines
	to threatened species, populations and communities.	Appendix K2) has not been finalised into an offset package. Therefore, an analysis cannot be provided.		
(iv) any relevant strategic assessment undertaken in accordance with an agreement under Part 10 of the EPBC Act.	Not described	Section 9.3.1 states that the future offset package would consider the North West and South West growth centres strategic assessment.	section 1.2 states that the future offset package would consider the North West and South West growth centres strategic assessment.	Compliant
(v) the Greater Blue Mountains Area World Heritage property, the World Heritage Convention; the Australian World Heritage Management Principles; the Greater Blue Mountains Area World Heritage Area Strategic Plan, and relevant NSW National Parks and Wildlife Service/Office of Environment and Heritage Plans of Management.	Section 16.2.7	Appendix D states that a detailed assessment of significance of impacts on the BMWHA will be included in a Final Draft of this report after a multidisciplinary workshop is held to help identify and assess potential impacts.	N/A	Partially compliant
(c) The EIS must include specific and detailed descriptions of the proposed avoidance and mitigation measures based on best available practices. This must include the following elements:	Section 16.7.1 provides a summary of minimisation measures. However, avoidance measures are not discussed.	Avoidance is discussed in Section 9.1 and minimisation measures are discussed in Section 9.2.	N/A	Compliant
i. A consolidated list of mitigation measures proposed to be undertaken to prevent, minimise or compensate for the relevant impacts of the action, including:	Section 16.7.1 provides a summary of minimisation measures. However, avoidance measures are not discussed.	Table 70	N/A	Compliant
a detailed description of proposed measures;	Section 16.7.1	Table 70	N/A	Compliant

Table 2.1 Overview of compliance of EIS Chapter 16 Biodiversity, Biodiversity Assessment (EIS Appendix K1) and Offsets Strategy (EIS Appendix K2) with the EIS guidelines

Relevant part of EIS guideline	Section addressed in the EIS Chapter 16	Section addressed in EIS Appendix K1	Section addressed in EIS Appendix K2	Compliance with EIS guidelines
	provides a summary of minimisation measures. However, avoidance measures are not discussed.			
 assessment of the expected or predicted effectiveness of the mitigation measures; 	Not provided	Not provided	N/A	Not compliant
any statutory or policy basis for the mitigation measures; and	Not provided	Not provided	N/A	Not compliant
the likely cost of the mitigation measures.	Not provided	Not provided	N/A	Not compliant
ii. A detailed outline of a plan for the continuing management, mitigation and monitoring of relevant matters protected by a controlling provision, including a description of the outcomes that will be achieved and any provisions for independent environmental auditing.	Not described	Table 70 outlines the management and monitoring plans that will be completed for the project.	N/A	Partially compliant
iii. Where appropriate, each project phase (construction and operation) must be addressed separately. It must state the environmental outcomes, performance criteria, monitoring, reporting, corrective action, contingencies, responsibility and timing for each environmental issue.	Not described	Table 70 outlines the management and monitoring plans that will be completed for the project.	N/A	Partially compliant
iv. The name of the agency responsible for endorsing or approving each mitigation measure or monitoring program.	Not described	Table 70 outlines the management and monitoring plans that will be completed for the project, which would include the responsible agency.	N/A	Partially compliant
7 Residual impacts and offsets				
i) The EIS must provide details of the likely residual impacts upon a matter protected by a controlling provision after the proposed avoidance and mitigation measures have been taken into account. This includes:	Section 16.8.2	Section 9.3.2	Chapter 3	Compliant
 the reasons why avoidance or mitigation of impacts may not be reasonably achieved; and 	Section 16.8.2	Section 9.3.2	Chapter 3	Compliant
• quantification of the extent and scope of significant residual impacts.	Section 16.8.2	Section 9.3.2	Chapter 3	Compliant
ii) The EIS must include details of an offset package to be implemented to	Section 16.8.3	Section 9.3.3 outlines the proposed	Chapter 4	Not compliant

Table 2.1 Overview of compliance of EIS Chapter 16 Biodiversity, Biodiversity Assessment (EIS Appendix K1) and Offsets Strategy (EIS Appendix K2) with the EIS guidelines

Relevant part of EIS guideline	Section addressed in the EIS Chapter 16	Section addressed in EIS Appendix K1	Section addressed in EIS Appendix K2	Compliance with EIS guidelines
compensate for residual significant impacts associated with the project, as well as an analysis of how the offset meets the requirements of the Department's Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy October 2012 (SEWPaC 2012).	discusses the proposed offset strategy	offset strategy, and the compliance of the strategy against the EPBC offset policy. This offset strategy has not yet been finalised into an offset package.	outlines the proposed offset strategy. However, no analysis is provided on how the offsets meet the EPBC Act Environmental Offset Policy (SEWPaC 2012).	
b) The offset package can comprise a combination of direct offsets and other compensatory measures, as long as it meets the requirements of the EPBC Act Environmental Offset Policy. Offsets should align with conservation priorities for the impacted protected matter and be tailored specifically to the attribute of the protected matter that is impacted in order to deliver a conservation gain.	Section 16.8.3 discusses the proposed offset strategy, which only includes direct offsets. The offset package has not yet been finalised, however the strategy only references impacts from the Stage 1 development with no consideration of the subsequent long term development.	Section 9.3.3 discusses the proposed offset strategy, which only includes direct offsets. The offset package has not yet been finalised, however the strategy only references impacts from the Stage 1 development with no consideration of the subsequent long term development.	Chapter 4 outlines the proposed offset strategy, which only includes direct offsets. The offset package has not yet been finalised, however the strategy only references impacts from the Stage 1 development with no consideration of the subsequent long term development.	Not compliant
c) Offsets should compensate for an impact for the full duration of the impact.	Section 16.8.3.1	Section 9.3.3 states that offsets will	Section 1.3.2	Compliant

Table 2.1 Overview of compliance of EIS Chapter 16 Biodiversity, Biodiversity Assessment (EIS Appendix K1) and Offsets Strategy (EIS Appendix K2) with the EIS guidelines

Relevant part of EIS guideline	Section addressed in the EIS Chapter 16	Section addressed in EIS Appendix K1	Section addressed in EIS Appendix K2	Compliance with EIS guidelines
	states that offsets will be protected into perpetuity.	be protected into perpetuity.	states that offsets will be protected into perpetuity.	
d) Offsets must directly contribute to the ongoing viability of the protected matter impacted by the project and deliver an overall conservation outcome that maintains or improves the viability of the protected matter, compared to what is likely to have occurred under the 'status quo' (i.e. if the action and associated offset had not taken place).	As the offset strategy and package has not been finalised, this cannot be determined.	As the offset strategy and package has not been finalised, this cannot be determined.	As the offset strategy and package has not been finalised, this cannot be determined.	Partially compliant
e) Note: offsets do not make an unacceptable impact acceptable and do not reduce the likely impacts of a proposed action. Instead, offsets compensate for any residual significant impact.	Section 16.8.2 states that the purpose of offsets is to compensate for residual impacts.	Section 9.3.2 states that the purpose of offsets is to compensate for residual impacts.	Chapter 3 states that the purpose of offsets is to compensate for residual impacts.	Compliant
f) The EIS must provide: i details of the offset package to compensate for significant residual impacts on a protected matter; and	Section 16.8.2 provides details of the offset strategy. The offset package has not been finalised.	Section 9.3.2 provides details of the offset strategy. The offset package has not been finalised.	Chapter 3 provides details of the offset strategy. The offset package has not been finalised.	Not compliant
ii an analysis of how the offset package meets the requirements of the EPBC Act Environmental Offsets Policy (SEWPaC 2012).	The offset package has not been finalised. Therefore, an analysis cannot be provided.	The offset package has not been finalised. Therefore, an analysis cannot be provided.	The offset package has not been finalised. Therefore, an analysis cannot be provided.	Not compliant

2.2 Validity of data relied upon

The validity of the data relied upon in the Biodiversity Assessment (EIS Appendix K1) (GHD 2015b) was tested against 11 criteria, listed in Table 2.2. The data relied upon in the Biodiversity Assessment (EIS Appendix K1) are valid, with the exception of three criteria which are partially valid (ie some information has been omitted). Some threatened and migratory species have not been considered. While they are not expected to occur in the project area, it was required that this was considered and documented accordingly. Assessments of significance were not completed for the Green and Golden Bell Frog, Australasian Bittern, Australian Painted Snipe and migratory species listed under the EPBC Act. A comparison of the Offsets Strategy (EIS Appendix K2) was provided against the EPBC Act Environmental Offset Policy (SEWPaC 2012). However, as the offset strategy has not yet been finalised into an offset package, an effective comparison against the policy cannot be made.

Table 2.2 Validity of data relied upon

Criteria to test validity of data relied upon	Assessment	Validity of data relied upon
Compare local vegetation mapping datasets to those identified in the Biodiversity Assessment (EIS Appendix K1) to determine if vegetation types are accurate.	The vegetation types in the Biodiversity Assessment were compared to the baseline assessment (SMEC 2014) and vegetation mapping for the Cumberland Plain (NPWS 2002). Vegetation types in the Biodiversity Assessment were found to be consistent.	Valid
Review of justification for plant community types assigned in accordance with the Vegetation Information System to check accuracy.	The plant community types assigned in the biodiversity assessment were compared to their descriptions in the Vegetation Information System (OEH 2015a). These were found to be consistent.	Valid
Compare database search results to those identified in the biodiversity assessment to ensure all relevant threatened biodiversity have been identified and considered.	The Biodiversity Assessment (EIS Appendix K1) considered all threatened flora and fauna species listed under the EPBC Act that are predicted to occur in the locality (DoE 2015), with the exception of the Dural Land Snail. Whilst the species distribution is outside the project area, as it was predicted by the Protected Matters Search Tool (DoE 2015), it was required to be considered and documented accordingly in the Biodiversity Assessment (EIS Appendix K1). Irrespective of distribution, it is a DoE requirement to report all species predicted to occur by the Protected Matters Search Tool. It is noted that this species has been recently listed on the EPBC Act.	Partially valid
	Four migratory species listed under the EPBC Act were also not considered. Whilst they were not expected to occur in the project area (based on the habitat types), they were required to be considered and documented accordingly. These comprise:	
	 Oriental Cuckoo – non-breeding vagrant to Australia, therefore habitat in the project area is not important to the species; 	
	 Black-faced Monarch – only occurs in rainforest, which is absent from the project area; 	
	 Yellow Wagtail – non breeding vagrant to Australia, therefore habitat in the project area is not important to the species; and 	
	• Satin Flycatcher – only occurs in tall wet forest, which is absent from the project area.	
	Whilst not required to consider state environmental and planning legislation due to the Commonwealth <i>Airports Act 1996</i> , the EIS stated that it would consider relevant state legislation, which includes the NSW <i>Threatened Species Conservation Act 1995</i> (TSC Act).	

Table 2.2 Validity of data relied upon

Criteria to test validity of data relied upon	Assessment	Validity of data relied upon
	Further, Section 1.1 of the Offsets Strategy (EIS Appendix K2) states that DoE instructed the proponent to include impacts to species listed under the TSC Act in the offset package.	·
	The Biodiversity Assessment (EIS Appendix K1) considered all threatened flora and fauna species and populations listed under the TSC Act that have been previously recorded in the locality (OEH 2015b).	
Review preliminary determinations for threatened species, populations and communities to ensure they are considered.	The Biodiversity Assessment (EIS Appendix K1) has not reviewed preliminary determinations. There are currently nine preliminary determinations, none of which are relevant to the project area.	Valid
Compare the list of target threatened biodiversity to those identified in the baseline study to ensure all relevant target biodiversity has been identified.	The Biodiversity Assessment (EIS Appendix K1) builds upon the results of the baseline study and is consistent with its findings.	Valid
Review of known threats to the threatened biodiversity identified.	Section 8.1 of the Biodiversity Assessment (EIS Appendix K1) identifies relevant key threatening processes.	Valid
Review the likelihood of occurrence for threatened	The likelihood of occurrence was reviewed for all species considered. I agree with the assessment.	Valid
biodiversity, to ensure all relevant species have been considered.	It is worth noting that the White-bellied Sea Eagle was considered as a migratory species under the EPBC Act. This species was delisted shortly after the EIS was exhibited.	
Review the assessments of significance to ensure the necessary assessments have been completed.	Assessments of significance have been completed for most of the relevant species in accordance with the EPBC Act. However, no assessments carried out for the Green and Golden Bell Frog, Australasian Bittern, Australian Painted Snipe or migratory species that were deemed 'possible' to occur in the project area.	Partially valid
	The EPBC Act Policy Statement 1.1 Matters of National Environmental Significance guidelines (DoE 2013) state that their purpose is to:	
	'The significant impact criteria, set out on the following pages, for each matter of national environmental significance, are intended to assist you in determining whether the impacts of your proposed action on any matter of national environmental significance are likely to be significant impacts'.	
	In consideration of the above, assessments of significance should have been completed for the abovementioned species.	
Review calculations and assumptions used in the Commonwealth offset calculator.	The calculations and assumptions used in the Commonwealth offset calculator have been reviewed, and are commensurate to the impacts of the project and the value of the offset sites.	Valid
Comparison of offset package against the offset principles in the EPBC Act Environmental Offsets Policy (SEWPaC 2012).	Section 9.3.4 of the Biodiversity Assessment (EIS Appendix K1) has compared the offset strategy against the offset principles in the EPBC Act Environmental Offsets Policy (SEWPaC 2012). However, as the Offsets Strategy (EIS Appendix K2) has not yet been finalised into an offset package, an effective comparison against the policy cannot be made.	Partially valid

2.3 Validity of assumptions

The validity and consistency of the assumptions in Section 1.5 of the Biodiversity Assessment (EIS Appendix K1) was evaluated against the content of EIS Chapter 16, the Biodiversity Assessment (EIS Appendix K1) and the Offsets Strategy (EIS Appendix K2), and the EIS guidelines. One assumption was found to be partially valid, one was not valid, and four assumptions were valid.

Table 2.3 Validity of assumptions

Assumption	Assessment	Validity
No vegetation clearing or other direct impacts would occur outside the airport site to meet the requirements of the proposed airport's Obstacle Limitation Surface (OLS) or for other significant infrastructure.	The Western Sydney Infrastructure Plan (DIRD 2015) identifies the need for significant infrastructure, comprising upgrades to the existing Bringelly Road and The Northern Road, and a new motorway connecting the M7 and The Northern Road. These significant infrastructure projects have been assessed separately to the EIS, and therefore only need to be considered with respect to cumulative impacts with the Stage 1 development and long-term development.	Partially valid
The environmental conservation zones shown on Figure 2 would be managed as open space. Native vegetation would be retained and would be available as refuge habitat for displaced fauna and translocated snails, frogs, habitat resources etc. as required.	The Standard instrument - Principal Local Environmental Plan 2015 does not contain an 'open space' zoning. Section 9.2 of the Biodiversity Assessment (EIS Appendix K1) states that the cleared parts of the proposed environmental conservation zone would be revegetated. A more appropriate zoning for this area would be E2 Environmental Conservation, as the zone objectives aim to: • protect, manage and restore areas of high	Not valid
	ecological, scientific, cultural or aesthetic values; and	
	 prevent development that could destroy, damage or otherwise have an adverse effect on those values. 	
	However, if a Biobanking agreement is established in this area (see Section 2.6.1), rezoning to E2 is not recommended as the land would generate more offset credits if it retained its rural zoning.	
Assessments of significance have been prepared in accordance with the 'Matters of National Environmental Significance Significant Impact Guidelines 1.1 Environment Protection and Biodiversity Conservation Act 1999' (DotE 2013a) for impacts on threatened biota and other MNES and the 'Significant Impact Guidelines 1.2 - Actions on, or impacting upon, Commonwealth land and Actions by Commonwealth Agencies' (DotE 2013b) for impacts on flora and fauna. Impacts on other aspects of the environment are discussed in the EIS and relevant technical reports.	These are the correct guidelines to assess impacts on matters of national environmental significance.	Valid
The biodiversity offset package is for Stage 1 only and includes the preferred approach to offsetting along with the specific detail that was available at the time of publication.	The Offsets Strategy (EIS Appendix K2) does not explicitly state that its purpose is to only compensate for the Stage 1 development's impacts, however the long-term development is not considered. The EIS guidelines require that offsets are calculated for the	Not valid

Table 2.3 Validity of assumptions

Assumption	Assessment	Validity
	entire project, which would include both the Stage 1 development and long-term development.	
Offsets on threatened biota listed under the EPBC Act have been calculated with reference to the EPBC Act Environmental Offset Policy.	The EIS guidelines require that offsets for matters of national environmental significance are calculated in accordance with the EPBC Act Environmental Offset Policy.	Valid
The suite of biodiversity credits that would be presented to offset impacts on threatened biota listed under the EPBC Act and TSC Act have been calculated using BioBanking.	Section 1.1 of the Offsets Strategy (EIS Appendix K2) states: 'Further consultation with the Commonwealth Department of the Environment (DotE) has revealed that the estimate of offsets for residual impacts on the environment, including threatened biota and their habitats listed under the New South Wales (NSW) Threatened Species Conservation Act 1995 (TSC Act), should be calculated using the NSW Biodiversity Banking and Offsets Scheme (BioBanking) assessment methodology'.	Valid
	Therefore, credits have also been calculated using BioBanking.	

2.4 Validity of conclusions

The validity of the conclusions reached in the Biodiversity Assessment (EIS Appendix K1) was tested against the intensity, duration, magnitude and geographic extent of the project's expected impacts. The impacts have been deemed significant for Cumberland Plain Shale Woodland and Shale-Gravel Transition Forest critically endangered ecological community and the Grey-headed Flying-fox. These conclusions have been deemed valid.

Assessments of significance have not been completed for threatened species, populations and communities listed under the TSC Act, as this is not required for the project. As stated in Section 1.1 of the Offsets Strategy (EIS Appendix K2)(, the impacts to threatened biodiversity listed under the TSC Act will be accounted for by finding and securing suitable offsets in accordance with the NSW Biodiversity Banking and Offsets Scheme (BioBanking) assessment methodology. These conclusions have been deemed valid.

No conclusion has been reached with respect to the impacts on high-priority groundwater dependent ecosystems in the conservation area, or outside the project area. This conclusion is partially valid as the information is incomplete.

2.5 Efficacy of proposed mitigation and management measures

2.5.1 Design

The Biodiversity Assessment (EIS Appendix K1) recommended measures to be implemented at the design stage to address four issues, comprising:

- fauna hazard: development of a wildlife hazard management plan and implementing ways to make the airport less attractive to fauna (and reduce wildlife hazard);
- hydrology: design of surface water systems that are sensitive to downstream environments;

- waterway crossings: in accordance with Policy and guidelines for fish habitat conservation and management (DPI 2013); and
- lighting: as far as is practical, reducing light spill.

These proposed measures are considered suitable for implementation at the design stage. However, it may be very difficult to achieve a reduction in light spill from the project, to the extent that nocturnal fauna would still use brightly lit areas adjacent to the project. Increased light is known to be a deterrent to some nocturnal species that will move away from suitable habitat if it is too brightly lit.

2.5.2 Pre-construction

The Biodiversity Assessment (EIS Appendix K1) recommended a number of measures for the preconstruction stage, comprising:

- the preparation of a construction environmental management plan (CEMP) and relevant sub-plans;
- worker inductions;
- sediment and erosion controls;
- deferral of vegetation clearance and habitat loss as long as practical;
- inclusion of disease management (ie *Phytopthora cinnamomi,* Myrtle Rust and Chytrid Fungus) in the CEMP;
- development of threatened fauna management plans;
- development of a threatened flora translocation plan;
- completion of pre-clearance surveys for threatened species;
- development of a habitat clearing and fauna management protocol;
- preparation of a weed management plan;
- development of an unexpected finds protocol;
- development of a dam decommissioning protocol; and
- development of a bushfire management plan.

The measures were compared against the expected impacts identified in Section 5.1 (construction impacts) of the Biodiversity Assessment (EIS Appendix K1). The recommended measures are considered suitable for this stage of the project. Their effectiveness should be determined through the development of review and monitoring protocols within each of the management plans to be developed. Each management plan should also be prepared in consultation with the relevant agencies (ie DoE for the threatened species management plan).

2.5.3 Construction

The Biodiversity Assessment (EIS Appendix K1) has recommended a number of measures to minimise biodiversity impacts during construction. These comprise:

- water quality management in accordance with the ANZECC (2000) guidelines;
- groundwater seepage treatment prior to discharge;
- reduction of lighting spill;
- implementation of erosion and sediment controls in accordance with the CEMP;
- implementation of weed management in accordance with the CEMP;
- fauna management, including the completion of pre-clearance surveys and the use of a fauna spotter/catcher to safely relocate fauna outside the clearing area;
- implementation of threatened species management plans; and
- implementation of dam decommissioning protocol.

The measures have been compared against the expected impacts identified in Section 5.1 (construction impacts) of the Biodiversity Assessment (EIS Appendix K1). The recommended measures are considered suitable for the construction stage of the project. Their effectiveness should be determined through the monitoring and reporting protocols within each of the management plans to be developed and conditions of approval.

2.5.4 Pre-operation and operation

The Biodiversity Assessment (EIS Appendix K1) has recommended a number of pre-operation and operational measures to minimise biodiversity impacts. These comprise:

- active bird and bat strike management;
- the development of operational environmental management plans (OEMPs);
- preparation of a vegetation management plan;
- compliance with the Quarantine Act 1908;
- compliance with wildlife strike management practices prescribed by the *Civil Aviation Safety Requirements 1998*;
- implementation of the bushfire management plan;
- implementation of measures to manage contaminants; and
- implementation of stormwater and water quality measures.

The measures were compared against the expected impacts identified in Section 6.1 (operational impacts) of the Biodiversity Assessment (EIS Appendix K1). The recommended measures are considered suitable for the operational stage of the project, with the exception of the Vegetation Management Plan. It is recommended that the Vegetation Management Plan is prepared at the pre-construction stage to adequately manage the clearing operations and salvage of habitat resources for use in the proposed conservation zone and biodiversity offset sites. The effectiveness of these measures should be determined through the monitoring and reporting protocols within each of the operational environmental management plans to be developed and conditions of approval.

2.6 Level of uncertainty regarding impacts and environmental risks

2.6.1 Uncertainty identified by the author

The author of the Biodiversity Assessment (EIS Appendix K1) has stated that there were limitations with respect to weather conditions, access, and targeted surveys for the Green and Golden Bell Frog:

The targeted Green and Golden Bell Frog surveys were conducted towards the end of the nominated September-March survey period because of property access restrictions. On no occasion did a total of greater than 50 mm of rain fall in the week prior to a given survey as is specified in the EPBC Act significant impact guidelines for the species (DEWHA 2009a). However conditions were warm, humid and still and other frog species were calling and were active and easily detected during surveys at the airport site. Green and Golden Bell Frogs were active (but not calling) at the reference site and were readily observed. Given these considerations it is likely that the targeted Green and Golden Bell Frog surveys would have detected the species if a population was present at the airport site.

However, the author has stated that the following measures should be implemented for the species, prior to construction:

...additional targeted searches of the airport site for the Green and Golden Bell Frog in optimal conditions to confirm that they are not present at the site (surveys for the species were conducted at the end of the survey season and were subject to access constraints as discussed in Section 3.4.3). A management plan should be prepared as a sub plan to the CEMP to provide more detail on Green and Golden Bell Frog relocation and habitat management should this species be located during targeted surveys. Frog collection and relocation would need to be conducted by appropriately experienced ecologists.

Given the inclusion of this measure, it appears that there is some uncertainty from the author whether the Green and Golden Bell Frog is present in the project area. As the survey did not access all properties and the conditions were not optimal (although it is acknowledged that they were close to optimal), I agree that this additional targeted survey is completed for the species in the project area when access is granted, during optimal weather conditions.

The author of the Biodiversity Assessment (EIS Appendix K1) states in Section 1.3.1 that an environmental conservation zone would be established, and that it would be managed for the purposes of biodiversity conservation. Section 5.1.2 on native vegetation clearing states that:

Impacts would be further mitigated by the retention of around 122 hectares of land in the environmental conservation zone, including around 61 hectares of native vegetation and representative areas of each of the vegetation types at the airport site (see Figure 4). All or part of the 61 hectares of land within the conservation zone that does not currently contain native vegetation could be revegetated.

However, the protection mechanism for the environmental conservation zone has not been discussed. Despite containing vegetation communities that would be impacted by the project and the potential to reduce the offset deficit, the environmental conservation zone has not been included in the Offsets

Strategy (EIS Appendix K2). If the environmental conservation zone was protected under a BioBanking agreement it would have protection into perpetuity and ongoing management funding. Its protection under an environmental conservation zone only does not provide protection into perpetuity and ongoing management funding, therefore the continued ability of these areas to mitigate the project's impacts are uncertain.

2.6.2 Data gaps and potential associated risks

- Key data gaps were identified in the Biodiversity Assessment (EIS Appendix K1) and Offsets Strategy (EIS Appendix K2) which relate to:land access restrictions;
- assessments of significance; and
- offset requirements

i Land access restrictions

The Biodiversity Assessment (EIS Appendix K1) states that land access was not possible in all areas and some survey seasons. However, the report does not detail or provide any map to show the extent of land that could not be accessed, and the methods used to assess the biodiversity values in areas of restricted access.

The risk associated with restricted land access is that biodiversity values and offset requirements may have been underestimated in these areas, if suitable methods were not employed to address data gaps, ie assessing aerial imagery, available vegetation mapping datasets and biodiversity databases to infer biodiversity values.

ii Assessments of significance

Assessments of significance were not completed for the following species that have been deemed 'possible' to occur in the project area:

- Australasian Bittern;
- Australian Painted Snipe; and
- migratory species listed under the EPBC Act.

The author stated that the assessments were not completed as impacts to these species were not predicted to be significant. The EPBC Act Policy Statement 1.1 Matters of National Environmental Significance guidelines (DoE 2013) state that their purpose is to:

The significant impact criteria, set out on the following pages, for each matter of national environmental significance, are intended to assist you in determining whether the impacts of your proposed action on any matter of national environmental significance are likely to be significant impacts.

In consideration of the above, assessments of significance should have been completed for the abovementioned species to adequately consider potential impacts.

In addition, the Green and Golden Bell Frog was considered by the author to have a low probability of occurrence. However, the author has recommended that an additional targeted survey should be completed for the species to verify their presence (or otherwise) despite close to optimal survey conditions. As there is some doubt, the precautionary principle should have been applied in this instance, and an assessment of significance should have been completed.

Where there is risk of serious or irreversible harm, it is necessary to establish whether there is adequate scientific knowledge of the subject to evaluate the perceived threat. Where risk of serious or irreversible harm and lack of scientific knowledge of the nature of environmental harm combine, the precautionary principle applies. Case law has established that if the precautionary principle is triggered the proponent bears the burden of proof for demonstrating that their actions will not cause environmental harm (Preston 2008 in RMS 2014).

The potential risks association with not completing assessments of significance for these species are that the proposed mitigation and offsets may not account for their specific requirements.

iii Offset requirements

Section 7a of the EIS guidelines state that an offset package must be developed for the project. However, the Offsets Strategy (EIS Appendix K2) has not been finalised into an offset package (ie all offsets identified to compensate for project impacts), and only refers to offsets required for the Stage 1 development. In addition, the offset sites identified do not satisfy the requirements of the EPBC Act Offset Policy (SEWPaC 2012).

The author of the Offsets Strategy (EIS Appendix K2) against the EPBC Act Environmental Offset Policy (SEWPaC 2012). The author states:

The outcome of these preliminary EPBC offset assessment calculations is that:

- the proposed offset areas containing around 180 hectares of EPBC Act Cumberland Plain Woodland would offset 59 per cent of the proposed airport's impacts on the ecological community;
- the proposed offset areas containing around 79 hectares of poorer condition Cumberland Plain Woodland would offset around 15 per cent of the proposed airport's impacts on the ecological community, resulting in a total offset contribution of 74 per cent of the proposed airport's impacts;
- the proposed offset areas containing up to 401 hectares of habitat for the Grey-headed Flying-fox would offset around 136 per cent of the proposed airport's impacts on this vulnerable species.

Based on these preliminary calculations, the proposed offset sites could not meet all of the proposed airport's EPBC Act offsetting requirements as direct offsets. Additional offset sites containing Cumberland Plain Woodland will be identified throughout the environmental assessment and approval process for the proposed airport and will be included in the final offset package.

As the Offsets Strategy (EIS Appendix K2) cannot achieve a 90% direct offset, it does not meet criteria 4 of the EPBC Act Environmental Offset Policy (SEWPaC 2012), in that it is not 'of a size and scale proportionate to the residual impacts on the protected matter'. Therefore, the Offsets Strategy (EIS Appendix K2) currently does not meet the requirements of the EPBC Act Environmental Offset Policy (SEWPaC 2012). The above statetement also says that additional offset sites will be identified during the environmental assessment and approval process. Given the approval pathway for the development, the finalised EIS (which considers the issues raised during the public exhibition of the draft EIS) would need to

include a final offset package to satisfy the EPBC Act Environmental Offset Policy (SEWPaC 2012). Following finalisation of the EIS, the DotE notifies the DIRD (as determining authority) of any conditions to be included to protect the environment. The statement within the Offsets Strategy (EIS Appendix K2) is not clear that the offset package will be finalised for the review of DotE..

As referenced in Section 1.1 of the Offsets Strategy (EIS Appendix K2), the proponent was instructed by the Commonwealth to use the NSW Biodiversity Offset and Banking Scheme to estimate offsets for residual impacts on the environment. A review of this information indicates large deficits for offsets calculated using the NSW Biodiversity Offset and Banking Scheme. This comprises a deficit of 5,689 ecosystem credits for HN528 (Cumberland Plain Woodland critically endangered ecological community), 156 credits for HN512 (Shale-Gravel Transition Forest endangered ecological community) and 688 credits for HN630 (Freshwater Artificial Wetlands). If the Biobanking metric used to convert the credits into hectares is used (ie division of credits by 9.3), the credit deficit for Cumberland Plain Woodland translates to approximately 645 ha of the community. This is a large area and it has not yet been determined if sufficient offsets exist in the area that would meet these credit requirements. In addition, a large number of species credits are required, totalling 6,723. The author has completed a preliminary assessment of the proposed offset sites to provide these species credits. The feasibility of the offset sites providing the required species credits therefore has not yet been determined.

3 Detailed findings – long-term development

3.1 Overview of approach to assessment to long-term development taken in the Biodiversity Assessment

The Biodiversity Assessment (EIS Appendix K1) investigated the biodiversity values of the entire project area (ie Stage 1 and long-term) in their method and results. Therefore, their assessment of impacts is based upon the current biodiversity values, and the threatened species, populations and communities that currently occupy the site.

The author provided a general assessment of the direct and indirect long-term development impacts for both the construction and operational stages of the project, separately to the Stage 1 development. Although not explicitly stated as the purpose in the Offsets Strategy (EIS Appendix K2), the author has only provided biodiversity offset calculations for the Stage 1 development, and has not provided calculations for long-term development. In addition, the Offsets Strategy has not identified how and when suitable offsets for the long-term development would be identified.

3.2 Gaps identified relative to a comprehensive/ conventional assessment

The Biodiversity Assessment (EIS Appendix K1) identified the current biodiversity values of the long-term development area, and assesses impacts on this basis. However, the long-term development is forecast to commence in approximately 2050. It is very difficult to predict the biodiversity values of the long-term development area in 35 years time. As the clearing of these areas will be deferred until approximately 2050, their biodiversity values may degrade, and therefore the impact of their removal would be lower than is currently predicted. Conversely, the biodiversity values of these areas may increase through good management (ie higher number of threatened flora and fauna species present), and therefore the impact of their removal may be greater than is currently predicted. For example, the removal of key threatening processes such as 'predation by the Eastern Gambusia' may lead to expansion of the Green and Golden Bell Frog population (if present) or re-colonisation (if not currently present). It is also likely that new species and communities will be listed in the years leading up to 2050, and the current biodiversity planning and assessment legislation may change.

3.3 Key risks and implications as a result of the gaps

The Biodiversity Assessment (EIS Appendix K1) does not acknowledge the effect of the biodiversity management applied for the Stage 1 development, and how its success may influence biodiversity of the area in 35 years time for the longer-term development (ie regeneration of vegetation communities and/or improvement of corridors and habitat connectivity.

Key risks and implications resulting from a potential increase in biodiversity values leading up to 2050 include:

- underestimation of the range of the mitigation and management measures required to account for threatened biodiversity in the long-term development area; and
- no consideration of the successful implementation of biodiversity management measures for the Stage 1 development and its influence on the biodiversity of the area for the long-term development.

3.4 Effectiveness of assessment in setting a framework for further assessment

The Biodiversity Assessment (EIS Appendix K1) has not set a framework for further assessment of the long-term development area. It is acknowledged that it would be very difficult to do so, as an assessment can only be made based on the current biodiversity values of the long-term development area. However, the following measures are recommended for inclusion to ensure that threatened biodiversity impacts of the longer-term development are adequately managed and offset:

- review of current listings of threatened species, populations and communities prior to construction of the longer-term development area;
- consider the successful implementation of biodiversity management measures for the Stage 1 development and its influence on the biodiversity of the area for the longer term development; and
- review the current biodiversity legislation, assessment and offsetting requirements, prior to construction of the long-term development area.

4 Key impacts

4.1 Key project impacts to biodiversity

The Biodiversity Assessment (EIS Appendix K1) has identified the following key impacts relevant to threatened biodiversity listed under the EPBC Act:

- the loss of 90 ha of Cumberland Plain Shale Woodlands and Shale Gravel Transition Forest critically endangered ecological community; and
- the loss of 120 ha of habitat critical to the survival of the Grey-headed Flying-fox, a species listed as vulnerable.

The Biodiversity Assessment (EIS Appendix K1) has determined that the project is likely to result in a significant impact for this community and species, and that offsets are required in accordance with the EPBC Act Environmental Offsets Policy (SEWPaC 2012).

The Biodiversity Assessment (EIS Appendix K1) also identified the following key impacts relevant to threatened biodiversity listed under the TSC Act which were required to be considered in the estimate of residual impacts using the NSW Biodiversity Offset and Banking Scheme:

- removal of the local occurrence of *Pultenaea parviflora*, a vulnerable shrub;
- removal of the local occurrence of *Marsdenia viridiflora* subsp. *viridiflora* endangered population in the Bankstown, Blacktown, Camden, Campbelltown, Fairfield, Holroyd, Liverpool and Penrith local government areas;
- the loss of 221.3 ha of Cumberland Plain Woodlands in the Sydney Basin Bioregion critically endangered ecological community, 34.1 ha of River Flat Eucalypt Forest in the Sydney Basin Bioregion endangered ecological community and 2.6 ha of Shale Gravel Transition Forest in the Sydney Basin Bioregion endangered ecological community;
- the removal of 120.6 ha of known habitat of the endangered Cumberland Plain Land Snail; and
- removal of and fragmentation of known habitat for the vulnerable Eastern Freetail Bat (Mormopterus norfolkensis) and potential habitat for the Eastern False Pipistrelle (Falsistrellus tasmaniensis), Greater Broadnosed Bat (Scoteanax rueppellii) and Yellow-bellied Sheathtail Bat (Saccolaimus flaviventris).

The Biodiversity Assessment (EIS Appendix K1) has determined that the project is likely to result in significant impacts to these threatened species, populations and ecological communities, and that biodiversity offsets are required in accordance with the NSW Biobanking framework.

4.2 Key opportunities

Key opportunities of the project comprise:

- location of airport site on predominantly cleared land, comprising 784 ha; and
- identification of potentially suitable offset sites on private property that may have otherwise degraded and subjected to key threatening processes listed under the TSC and EPBC Acts, including:
 - the clearing of native vegetation;
 - invasion of native plant communities by African Olive;
 - aggressive exclusion of birds from potential woodland and forest habitat by overabundant Noisy Miners;
 - forest eucalypt dieback associated with overabundant psyllids and Bell Miners;
 - clearing of hollow-bearing trees; and
 - removal of dead wood and dead trees.
- in addition to the offsets, the creation of an on-site environmental conservation zone covering 122 ha. This environmental conservation zone currently contains 61 ha of native vegetation representative of the vegetation types to be cleared. The remainder of the area not currently containing native vegetation (ie 61 ha) would be revegetated.

5 Conclusion

The Biodiversity Assessment (EIS Appendix K1), Offsets Strategy (EIS Appendix K2) and EIS Chapter 16 of the *Western Sydney Airport EIS* have been reviewed. The purpose of the review was to:

- determine the compliance of these reports with the EIS guidelines;
- test the validity of data relied upon, assumptions and conclusions;
- determine the efficacy of proposed mitigation and management measures;
- determine the level of uncertainty regarding impacts and environmental risks;
- examine the efficacy of the assessment approach with respect to longer-term development; and
- identify key project impacts and opportunities.

The review was completed by comparing the methods, results, impact assessment and offsets against the relevant government guidelines, and by comparison with a structured set of criteria.

The Biodiversity Assessment (EIS Appendix K1), Offsets Strategy (EIS Appendix K2) and EIS Chapter 16 were found to be generally compliant with the EIS guidelines. Some items were found to be partially compliant, where further information was required to comply with the guidelines. However, some items were also found to be non-compliant where required items had not been considered.

The underlying assumptions of the Biodiversity Assessment (EIS Appendix K1) were valid, with the exception of three criteria tested. Although their distribution is outside the project area, one threatened and four migratory species listed under the EPBC Act had not been considered. Assessments of significance were not completed for three threatened species and a number of migratory species that may occur in the project area. The Offsets Strategy (EIS Appendix K2) had also been compared against the EPBC Act Environmental Offsets Policy (SEWPaC 2012). However, as the Offsets Strategy (EIS Appendix K2) has not been finalised into an offset package, an effective comparison against the policy cannot be made. These items were deemed as 'partially valid', as additional information is required to achieve compliance with the EIS guidelines.

The proposed mitigation and management measures were deemed effective for the current stage of the project. Further detail is required to be included in the CEMP and specific sub-plans to be developed. The efficacy of these plans can be tested in the future through the development and implementation of monitoring and reporting protocols contained within the plans.

Data gaps and associated risks were identified, relating to:

- land access restrictions: the extent of land access restrictions has not been clearly identified in the Biodiversity Assessment (EIS Appendix K1). Biodiversity values and offset requirements may have been underestimated in these areas if suitable methods were not employed to address data gaps;
- threatened species assessment: assessments of significance were not completed in accordance
 with the EPBC Act for the Green and Golden Bell Frog, Australasian Bittern, Australian Painted
 Snipe and a number of migratory species. If these assessments predict that impacts are significant,
 then the biodiversity has underestimated the level of impact and offsets required; and

proposed offsets: the offsets do not meet the EPBC Act Environmental Offsets Policy (SEWPaC 2012) of providing a 90% direct offset. In addition, there is a large deficit in the proposed offsets under the BioBanking scheme, particularly for Cumberland Plain Woodland critically endangered ecological community, which equates to approximately 645 ha. It is not currently known if this large area of this critically endangered ecological community is available to secure as biodiversity offsets.

The Biodiversity Assessment (EIS Appendix K1) has provided a general assessment of the adverse direct and indirect long-term development impacts of the project. This assessment is based upon the current biodiversity values of the longer-term project area. It is acknowledged that accurate assessment of the long-term impacts is difficult as they will occur approximately 35 years from now, when the area may have degraded (ie reduced biodiversity value) or improved (ie increased biodiversity value) through successful implementation of biodiversity measures from the Stage 1 development. In addition, new threatened species, populations and/or communities may be listed, and the biodiversity planning and assessment legislation and mechanisms may have changed.

It is recommended that the following measures are implemented to ensure that threatened biodiversity impacts of the long-term development are adequately managed and offset:

- review of current listings of threatened species, populations and communities prior to construction of the longer-term development area;
- consider the successful implementation of biodiversity management measures for the Stage 1 development and its influence on the biodiversity of the area for the long-term development; and
- review of the current biodiversity legislation, assessment and offsetting requirements, prior to construction of the long-term development area.

6 Qualifications and study team

6.1 Lead peer reviewer - Katie Whiting – BSc, MWldMgt (Habitat)

Katie is EMM's Ecology Services Manager and the nominated lead peer reviewer for the project. She has over a decade of experience in ecological and environmental consulting, and has a broad range of experience in infrastructure projects. Katie provides expert ecological advice to her clients and their projects. She has led biodiversity assessments for state significant infrastructure projects, and has a strong background in:

- peer review for biodiversity assessments;
- ecological and environmental impact assessment;
- preparation of Commonwealth referrals;
- threatened biodiversity survey, monitoring and assessment; and
- biodiversity offsets.

Katie has successfully completed the Biobanking Assessor Accreditation Course and is in the process of applying for accreditation through the OEH.

In addition to her strong technical experience, Katie has excellent communication skills and high ethical standards. She communicates with clients in an open and practical manner to achieve best-for-project outcomes. Katie also has great time management skills and has a strong focus on delivering projects on time and within budget.

Katie's CV is provided at Appendix A.

6.2 Strategic direction - Duncan Peake – BSc (Hons)

Duncan is a very experienced Project Director and peer reviewer of complex environmental impact assessments, inclusive of high profile state significant developments in NSW. He has extensive experience working within the framework of the EPBC Act for a range of infrastructure projects, including at airports with the Commonwealth as the proponent. Duncan has the following directly relevant experience for the project:

- has over 15 years experience in the preparation of environmental impact assessments for state significant development within the NSW and Commonwealth planning framework;
- is a nominated pre-qualified EIS peer reviewer for the NSW Department of Planning and Environment;
- has managed environmental assessments for airports and associated infrastructure; and
- obtained approvals for state significant development under the EPBC Act.

Duncan has provided strategic direction to the project and a technical and quality review of the document prior to submission. Duncan's CV is provided at Appendix A.

References

Biosis 1997, Draft Environmental Impact Statement Second Sydney Airport Proposal: Technical Paper 8 Flora and Fauna, report prepared for PPK Environmental Consultants

Department of Primary Industries (DPI) 2013, *Policy and guidelines for fish habitat and conservation*, NSW Department of Primary Industries (Fisheries), Wollongbar

Department of Infrastructure and Regional Development (DIRD) 2015, Western Sydney Infrastructure Plan, https://infrastructure.gov.au/infrastructure/western_sydney/index.aspx, viewed 18 November 2015

Department of Sustainability, Environment, Water, Populations and Communities (SEWPaC) 2012, EPBC Act Environmental Offsets Policy, Department of the Environment, Canberra

Department of the Environment (DoE) 2015, *Protected Matters Search Tool*, <u>www.environment.gov.au/</u>, viewed November 2013

DoE 2013, EPBC Act Policy Statement 1.1 Matters of National Environmental Significance, Department of the Environment, Canberra

GHD 2015a, Western Sydney Airport EIS Chapter 16: Biodiversity, report prepared for the Department of Infrastructure and Regional Development

GHD 2015a, Western Sydney Airport EIS Volume 4 Appendix K1: Biodiversity, report prepared for the Department of Infrastructure and Regional Development

GHD 2015b, W Western Sydney Airport EIS Volume 4 Appendix K2: Offset strategy, Biodiversity, report prepared for the Department of Infrastructure and Regional Development

NSW National Parks and Wildlife Service (NPWS) 2002, *Interpretation guidelines for the native vegetation maps of the Cumberland Plain, Western Sydney*, NSW National Parks and Wildlife Service, Hurstville

OEH 2015a, VIS Classification v2.0, http://www.environment.nsw.gov.au/NSWVCA20PRapp, viewed November 2013

OEH 2015b, Atlas of NSW Wildlife, www.environment.nsw.gov.au/atlasapp/, viewed November 2013

RMS 2014, Ecologically sustainable development - practice note, Environment Branch, Roads and Maritime Services

SMEC 2014, *Biodiversity Report: Commonwealth Land at Badgery's Creek,* report prepared for the Department of Infrastructure and Regional Development

Appendix A		
Qualifications of reviewer	rs	









Duncan Peake

Associate Director

Duncan is an Associate Director with over 15 years experience in environmental impact assessment (EIA), environmental compliance auditing, environmental management and community and stakeholder engagement in Australia, Europe and Africa. He has considerable experience in the following sectors: mining, extractive industries, transport, energy industry, agriculture, oil and gas and waste management.

Duncan has specialised in EIA for state significant development and infrastructure under the NSW *Environmental Planning and Assessment Act* 1979.

Duncan has considerable project management and direction experience in the development of approval strategies and the preparation of EIAs for large infrastructure projects.

Qualifications and memberships

- Bachelor of Science (Hons) in Applied Economic Geography, University of New South Wales, 2000
- Member of the Environment and Sustainability Committee for the Urban Development Institute of Australia, NSW branch, 2011–2014

Career

- EMM Consulting, 2009–present
- Associate Environmental Planner, AECOM (formerly HLA-Envirosciences), 2005–2009
- Environmental Planner, Environmental Resources
 Management, Sydney and Edinburgh, 2000–2005

Representative experience

Key environmental impact assessment and approvals

- Mount Thorley and Warkworth Continuation Projects, Singleton LGA NSW (Rio Tinto Coal Australia)
- Mangoola Coal Mine Modification 6, Muswellbrook LGA NSW (Glencore)
- Warkworth Mine Extension, Singleton LGA (Warkworth Mining)
- Mount Pleasant Project modifications, Mount Pleasant NSW (Rio Tinto Coal Australia)
- Gloucester Gas Project modifications, Gloucester LGA NSW (AGL Energy)
- Integrated oilseed processing and biodiesel plant, Wagga Wagga NSW (ROBE)

Environmental management plans

- Baal Bone Colliery, annual environmental management plan, Wallerawang NSW (Wallerawang Collieries)
- Hunter Gas Project Exploration, Hunter Valley NSW (AGL Energy)
- Gloucester Gas Project Exploration, Gloucester NSW (AGL Energy)
- Mount Pleasant Project, Mount Pleasant NSW (Rio Tinto Coal Australia)
- Camden Gas Projects, Camden NSW (AGL)

Environmental compliance auditing

 Doyles Creek Exploration Program, independent compliance audit, Doyles Creek NSW (Sparke Helmore Lawyers)

1

OCTOBER 2015







Other environmental impact assessment and approvals

- Teven Quarry modifications, Teven NSW (Boral Resources)
- Mount Pleasant, modification to operations, Mount Pleasant NSW (Rio Tinto Coal Australia)
- Camden Gas Project, coal seam methane expansion, Spring Farm and Menangle Park NSW (AGL)
- Attemperation Reservoir, capacity increase, Sydney NSW (Eraring Energy)
- Camden Gas Project Modifications, Camden NSW (AGL Energy)
- Continued operation of Baal Bone Colliery, Lithgow NSW (Xstrata coal)
- Camden Gas Project, northern expansion, Camden NSW (AGL Energy)
- Upgrade and extension of electricity distribution line along Wolgan Road, Wolgan Valley NSW (Emirates)
- Geothermal Energy, various locations in rural NSW (AGL Energy)

Review of environmental factors

- Rookwood Road Substation, Rookwood NSW (TransGrid)
- Hunter Gas Project, Windermere pilot testing, Hunter Valley NSW (AGL Energy)
- Hunter Gas Project, Spring Mountain pilot testing, Hunter Valley NSW (AGL Energy)
- Gloucester Gas Project, corehole exploration, Gloucester NSW (AGL Energy)
- Gloucester Gas Project, 2D seismic exploration, Gloucester NSW (AGL Energy)
- Gloucester Gas Project, Waukivory pilot testing, Waukivory NSW (AGL Energy)
- Gloucester Gas Project, Wards River pilot testing, Wards River NSW (AGL Energy)

Environmental risk assessments

- Coleambally Ethanol Plant, scoping study, Coleambally NSW (AIE)
- Mount Pleasant, environmental gap analysis, Mount Pleasant NSW (Rio Tinto Coal Australia)
 Environmental opportunities and constraints analysis for a new coal mine, Hunter Valley NSW (confidential)

OCTOBER 2015 2







Katie Whiting

Ecology Services Manager

Katie is EMM's Ecology Services Manager. She provides expert ecological advice to clients and has led studies with complex technical issues. Katie has a strong focus on achieving best for project outcomes, and works closely with her clients to find balanced solutions.

Katie has extensive experience in ecological and environmental impact assessment, threatened biodiversity survey and providing practical on site biodiversity management assistance to construction teams.

Katie's ecological expertise lies in the survey of microchiropteran bats including harp trapping, ultrasonic detection and the collection of reference calls. Katie is skilled in the identification and analysis of ultrasonic bat call signatures.

Qualifications and memberships

- Bachelor of Science in Ecology, Macquarie University, 2003
- Master of Wildlife Management (Habitat), Macquarie University, 2008
- Australasian Bat Society extended executive
- Australasian Bat Society NSW Flying-fox subcommittee

Career

- EMM Consulting, 2011–present
- Senior Ecologist, SMEC Australia, 2007–2011
- Environmental Consultant, SPA Consulting, 2004– 2007

Representative Experience

Ecological impact assessments and due diligence

- Sydney Sewer Rehabilitation Program ecological impact assessments, Sydney NSW, Abergeldie Watertech
- Hume Coal Project Terrestrial Ecology Impact Assessment, Southern Highlands NSW (Hume Coal Pty Ltd)
- North West Rail Link Due Diligence Ecological Assessment, Sydney NSW (Lend Lease)
- HVO North Fine Reject Emplacement Modification Ecological Assessment, Singleton NSW (Coal & Allied);
- Cobbora Coal Project, Cobbora NSW (Cobbora Holding Company)
- Moolarben Coal Project Stage 1, optimisation modification, Moorlarben NSW (Moolarben Coal)
- Talbragar Quarry Ecological Assessment, Dubbo NSW (Boral Country)
- Allandale Quarry Expansion ecological assessment, (Quarry Products Newcastle)

Ecological impact statements

- Hume Coal Project, Southern Highlands NSW (Cockatoo Coal)
- Majura Parkway Project, Pialligo ACT (Roads ACT)
- Clarrie Hermes Drive Extension, Nicholls ACT (Roads ACT)
- Kings Highway Upgrade, Kowen district ACT (Roads ACT)

NOVEMBER 2015 1







Peer review services

- Goonbri Road Biodiversity Assessment Peer Review, Narrabri NSW (Narrabri Shire Council)
- Objection to Moorebank Waste Facility Biodiversity Assessment, Sydney NSW (Investa Property Group)
- Moorebank Intermodal Offset Review (assistance to peer reviewer), Sydney NSW (Moorebank Intermodal Company Ltd)

Expert witness services

- Broken Head Quarry Redevelopment Expert Witness, Ballina NSW (Broken Head Quarries)
- Allandale Quarry (assistance to expert witness), Hunter Valley NSW (Quarry Products Newcastle)

Ecological monitoring and management plans

- Auburn Stabling Project Grey-headed Flying-fox monitoring project, Sydney NSW (Transport for NSW)
- North West Rail Link Project baseline ecological monitoring, Sydney NSW (Lend Lease)
- Tarcutta Bypass, threatened species monitoring, Tarcutta NSW (Tarcutta Hume Alliance)
- Upper Nepean Borefields, baseline ecological monitoring, Sydney NSW (Sydney Catchment Authority)
- Georges River, estuary process study, Sydney NSW (Georges River Combined Council's Committee)
- Prospect Creek, strategic management plan and rehabilitation plan, Sydney NSW (Fairfield City Council)

Fauna mitigation and on-site ecological management

- HVO South and Mount Thorley Warkworth pre-clearance surveys, Hunter Valley NSW (Rio Tinto Coal Australia)
- Johns River and Seaham Quarry pre-clearance survey and fauna rescue, NSW (Boral)
- North West Rail Link Early Works pre-clearing surveys, fauna rescue and nest box allocation, Sydney NSW (Lend Lease)
- Tarcutta Bypass, fauna rescue and nestbox allocation, Tarcutta NSW (Tarcutta Hume Alliance)
- Holbrook Bypass, fauna rescue and nestbox allocation, Holbrook NSW (Abigroup; RTA)
- Hume Highway, nestbox survey, pre-clearing surveys and fauna rescue, Wagga Wagga NSW (Northern Hume Alliance;
 RTA)

November 2015

2





SYDNEY

Ground floor, Suite 1, 20 Chandos Street St Leonards, New South Wales, 2065 T 02 9493 9500 F 02 9493 9599

NEWCASTLE

Level 5, 21 Bolton Street Newcastle, New South Wales, 2300 T 02 4927 0506 F 02 4926 1312

BRISBANE

Suite 1, Level 4, 87 Wickham Terrace Spring Hill, Queensland, 4000 T 07 3839 1800 F 07 3839 1866



12.2 Further information for consideration in dealing with the Planning and Environment Committee Item 5.2 - Pet Adoption Program

Attachments

Nil

Report

This report responds to a request at the Planning and Environment Committee meeting held on 8 December 2015, for further information to be provided for consideration in dealing with item 5.2 of the Planning and Environment Committee – Pet Adoption Program.

The recommendation of the Committee for Item 5.2 was:

- 1. That Council trial a free pet adoption program for all pets adopted from Campbelltown City Council pound in February 2016 to encourage the adoption of animals resulting from unwanted Christmas presents.
- 2. That the offer is to be advertised to Campbelltown City Council residents and a report be presented about the outcome of the trial.

The guestions raised sought advice on:

- 1. The number of dogs that are impounded or surrendered to Council during January and February (see Table 1)
- 2. The total number of dogs impounded (see Table 1)
- 3. The number of dogs that are euthanased annually (and within the months of January and February) (see Table 1)
- 4. The number of dogs sold by Council annually (see Table 1)
- 5. The cost to Council to sell a dog (see Table 2)

Prior to 2012, Council's statistics for euthanasing dogs were significantly high, with approximately 40 per cent of all dogs impounded being destroyed.

In the second half of 2012, Council began working with rescue organisations to assist in reducing the number of euthanased dogs. Table 1 below identifies the number of dogs impounded and euthanased in 2011 (before the implementation of working with approved rescue organisations) with a comparison of statistics over the following three years that identifies a significant reduction in dog euthanasia rates through the engagement of rescue organisations. In addition, the second part of the table provides a monthly breakdown of each area, from October through to March, for the years 2013-2014 and 2014-2015.

Table 1 also includes figures for dogs that were surrendered to the Animal Care Facility by their owners to be euthanased. Reasons for owners to surrender their dog for euthanasia include illness, being elderly or assessed as having severe behaviour issues. The cost to take a pet to a vet for this purpose can be as high as \$216.00. This is compared to Council's fee of \$80.00 for the same service for residents of the Campbelltown Local Government Area (LGA).

A fee for \$200.00 has recently been implemented for the surrender of dogs from outside of the Campbelltown LGA.

Table 1 – Answer to questions 1 to 4													
Animal Care Facility (ACF) Dog Statistics													
	Im	pounde	ed	Released to		Sold	Euth	Euthanased		Euthanased (includes			
		Or		rescue			(at owner's		3	declared			
	Sur	render	ed	organisation			request)		da	dangerous/restricted			
								dogs)					
2011		2346		0		284		427 747			747	7	
The ACF implemented working with rescue organisations in the third quarter of 2012.													
2013		1827		18	32	330	236			288			
2014		1744		252		324		137		163			
2015		1249		193		176	79			84			
(to end of													
September)													
Dog Statistics for the individual months of October – March													
(2013-2014 and 2014-2015)													
Year	2013-2014					2014-2015							
Month	Oct	Nov	Dec	Jan	Feb	Mar	Oct	Nov	Dec	Jan	Feb	Mar	
Impounded													
Or	149	163	133	172	133	193	146	139	120	130	103	140	
Surrendered													
Released to													
rescue	15	24	36	20	16	25	20	23	15	19	16	28	
organisation													
Sold	9	23	16	32	21	28	24	36	25	46	25	30	
Euthanased													
(at owner's	21	15	16	12	11	24	11	12	12	6	5	9	
request)													
Euthanased													
(includes													
declared	14	12	22	13	20	19	11	6	12	5	7	8	
dangerous/	14	12		13	20	19	' '	0	12	3	'	0	
restricted													
dogs)													

Euthanasing of Dogs

As per Council's agreement with Macarthur Vet Group, the vet attends the Animal Care Facility (ACF) every Thursday to carry out euthanasing services. A standard fee of \$120.00 per visit is charged. On average the vet may euthanase anywhere from 3-10 dogs, at a cost of \$11.20 per dog or \$8.20 per dog with weight of less than 5kg. All dogs are then disposed of through an agreement with Sydney University Teaching Hospital.

Sale Price of Dogs

Council offers dogs for sale at a fixed price of \$334.00, which includes a vet-check, vaccination (variable depending on the age of the dog and necessary treatment), desexing, micro-chipping and registration. As can be seen within Table 2 below, depending on the veterinary services provided, it can cost the Council anywhere from \$30.00 upwards. Table 2 provides a breakdown of costs for the selling of each dog type. It is noted that the costs shown in the table may be higher in some circumstances subject to additional work required by the attending veterinarian.

Table 2 - Answer to question 5

Costs for selling a		Fen	Male			
dog*	In Heat		Not In	n Heat	-	
uog	Small	Large	Small	Large	All Sizes	
De-Sexing	\$212.70	\$254.00	\$177.20	\$212.60	\$147.80	
General Health						
Check and	\$42.50					
Vaccination						
Heartworm	\$34.30					
Micro-chipping	\$47.00					
Registration	\$26.00					
Total	\$362.50	\$403.80	\$327.00	\$362.40	\$297.60	
*Other costs may be associated with selling a dog - individual costs may vary						

When considering the above costs and the price of dogs offered for sale when compared to other pound facilities providing the same services, it is considered that the fees charged by the Council are competitive and reasonable.

Details of the price for the sale of dogs at other pound facilities are listed in Table 3 below:

Table 3

Price of Dogs for Sale at other pound facilities – with same service				
Renbury Farm	\$325.00			
Sutherland Council	\$333.00			
Blacktown City Council	\$340.00 + (starting price - Tender			
	process for dog under 4 years)			
Hawkesbury Council	\$349.50			
Wollondilly Council	\$280.00			

The introduction of the assistance of rescue organisation in rehoming unwanted dogs together with implementing changes in the way Council advertises and promotes dogs for sale has seen a significant improvement in finding homes for dogs.

Officer's Recommendation

That the information be noted.

Council Meeting 15 December 2015

This item was moved forward and dealt with in conjunction with Planning and Environment Committee Item 5.2 - Pet Adoption Program.

14. ANSWERS TO QUESTIONS WITH NOTICE

14.1 Answers to Questions With Notice

The following answers are provided to questions that were raised at Council's previous Ordinary meeting held 17 November 2015:

Varro Ville outbuildings

Background



'Varro Ville' is under private ownership and listed as an item of heritage significance on the State Heritage Register (and Council's LEP D8).

- The listed heritage curtilage (see above) captures the main homestead but excludes the 'outbuildings' which are located on the adjoining Lot 22 DP 564065 under different ownership. It is important to understand that while the Varro Ville Homestead is heritage listed, the nearby outbuildings the subject of this Question With Notice are not.
- 1. What specific action has Council taken to ensure the stability and public safety of the 19th century Varro Ville outbuildings?

Answer: In response to a Notice of Proposed Order served by Council on 19 November 2014, in December 2014 the owner of the subject site commissioned 'Graham Brooks and Associates - Architects Heritage Consultants' to guide the repair and provision of protective works on the subject buildings. The Notice served by the Council required the owner of the property to secure dislodged roof sheeting that, in the event of detaching from the building and becoming airborne, may present a risk to public safety.

An inspection of the site in January 2015 revealed that the works specifically identified on the Notice were satisfactorily completed. As such, no Order was subsequently issued by Council.

In addition to those works, other works identified by the heritage report have been undertaken on the site which includes the refixing of loose/missing timber supports, clearing of the undergrowth from around the buildings and nearby fire hydrant, as well as repairs to the existing access road so as to enable easy access for fire fighting vehicles if required.

It is also the case that the use of the buildings has been ceased and the site has been cordoned off to prevent public access and so as to ensure the public is not at risk from failure of the building/s. Currently the site is considered a building site and is being maintained as such.

Notwithstanding the above, a more recent inspection of the site has revealed that in addition to the works that have been completed, there may be further works required to ensure that the building/s are shored/propped in accordance with the heritage reports recommendations. As a result, investigations are currently being undertaken by Council officers to determine whether or not such works are in fact required. In the event that it is established that urgent works are required, a new Notice of Proposed Order will be served on the owner to ensure that the structures are shored/propped in accordance with the recommendations of the heritage report and to the satisfaction of a suitably qualified structural engineer.

2. Can Council outline how the owners of the 19th century Varro Ville outbuildings have complied with their written undertakings and obligations in relation to those buildings?

Answer: The owners have complied with their legal obligations under the *Local Government Act 1993* to ensure the public safety of the site and buildings as outlined above.

Any (future) proposed development of the land or buildings would need to examine the heritage significance of the site, and this may include further repair or restoration works. However there is no obligation on the owner to undertake this assessment until such time as a development application is submitted for the development of the site.

Notwithstanding, and separate to the issue of continued public safety, it is Council's understanding that the owner of the site is continuing with reparation works as and when funds become available.

18. PRESENTATIONS BY COUNCILLORS

18.1 Presentations by Councillors

- 1. Councillor Brticevic wished Council staff and fellow Councillors a Merry Christmas and a safe and happy New Year. Councillor Brticevic thanked all staff for the work they will be doing in ensuring Council's events run smoothly over the holiday period.
- 2. Councillor Lound wished Council staff and fellow Councillors a Merry Christmas and a safe and happy New Year.
- 3. Councillor Lound referred to Leumeah High School's gifted and talented event he attended, noting the excellent display of local talent. Councillor Lound also congratulated His Worship the Mayor, Councillor Hawker, on the speech he delivered at the event.
- 4. Councillor Lound referred to the Carols event held at the Ron Moore Community Centre, Minto, thanking all Council staff involved in ensuring that the area was mowed and well maintained for the event.
- 5. Councillor Borg wished everyone well for the holiday period and thanked His Worship the Mayor, Councillor Hawker for including Christ in his Christmas message to the community.
- 6. Councillor Lake advised that he had the pleasure of representing His Worship the Mayor, Councillor Hawker, at the recent tree planting at Rizal Park, Rosemeadow, for the Philippine Ambassador.
- 7. Councillor Lake wished Council staff and fellow Councillors a Merry Christmas and a safe and happy New Year.
- 8. Councillor Mead wished Council staff and fellow Councillors a Merry Christmas and a safe and happy New Year. Councillor Mead also thanked the media for attending Council meetings to keep local community informed.
- 9. Councillor Thompson wished Council staff and fellow Councillors a Merry Christmas and a safe and happy New Year. Councillor Thompson also thanked all City Works staff for their ongoing support of our community.
- Councillor Greiss advised that he had the pleasure of representing His Worship the Mayor, Councillor Hawker, at the Masonic Retirement home at Glenfield for the Annual Employee of the Year event.
- 11. Councillor Greiss advised that he had the pleasure of representing His Worship the Mayor, Councillor Hawker, at the recently held 2015 Award Presentation Night City of Campbelltown State Emergency Service (SES). Councillor Greiss advised that the event was impressive and included many recognition awards. Councillor Greiss wished all members of the SES a Merry Christmas and noted that this time of year can often be busy for the SES and expressed his hope that this year would be uneventful.
- 12. Councillor Greiss wished Council staff, fellow Councillors, the media and the people of Campbelltown a Merry Christmas and a safe and happy New Year.

- 13. Councillor Rowell wished Council staff and fellow Councillors a Merry Christmas and a safe and happy New Year. Councillor Rowell also thanked all Council Divisions for their support and assistance throughout the year.
- 14. Councillor Rowell thanked the staff that will be tending to the animals at the Animal Care Facility over the holiday period. Councillor Rowell also thanked Council's Information Management and Technology section for the work that has commenced on upgrading Council's Animal Care Facility webpage.
- Councillor Greiss referred to the recently gazetted Campbelltown Local Environmental Plan 2015 and congratulated all Planning and Environment staff involved in its preparation.
- 16. Councillor Matheson advised that she had the pleasure of representing His Worship the Mayor, Councillor Hawker, at a recent function held at Broughton Anglican College.
- 17. Councillor Matheson wished Council staff and fellow Councillors a Merry Christmas and a safe and happy New Year and thanked all Councillors for their personal and professional support and assistance throughout the year.
- 18. His Worship the Mayor, Councillor Hawker thanked those Councillors that have attended events on his behalf, noting that there have been many events to attend this year, the highlight of which was an event held at Passfield Park Public School. Councillor Hawker advised that this special needs school has many talented students and expressed his admiration for the staff that work at the school.
- 19. His Worship the Mayor, Councillor Hawker referred to the success of Council's recently held community Carols event at the Campbelltown Sports Stadium, noting the popularity of the visit from Katrina Warren and her wonderdogs with local children. Councillor Hawker noted that this year had a record crowd in attendance and included performances from local children and a fireworks display.

RESOLUTIONS FROM THE CONFIDENTIAL SECTION OF THE ORDINARY MEETING OF COUNCIL HELD 15 DECEMBER 2015

Confidentiality Recommendation

It was **Moved** Councillor Lake, **Seconded** Councillor Kolkman that the Council in accordance with Section 10A of the *Local Government Act 1993*, resolve to exclude the public from the meeting during discussions on the items in the Confidential Agenda, due to the confidential nature of the business and the Council's opinion that the public proceedings of the Committee would be prejudicial to the public interest.

Planning and Environment Committee

No reports this round

City Works Committee

21.1 Confidential Report Directors of Companies - City Works

Reason for Confidentiality

This report is **CONFIDENTIAL** in accordance with Section 10A(2)(c) of the *Local Government Act 1993*, which permits the meeting to be closed to the public for business relating to the following: -

(c) information that would, if disclosed, confer a commercial advantage on a person with whom the council is conducting (or proposes to conduct) business

Council Meeting 15 December 2015 (Borg/Lound)

That the information be noted.

Council Resolution Minute Number 243

That the information be noted.

CARRIED

Community Services Committee

No reports this round

Corporate Governance Committee

23.1 Multi Deck Car Park 24 Hour Feasibility Operation

Reason for Confidentiality

This report is **CONFIDENTIAL** in accordance with Section 10A(2)(c) of the *Local Government Act 1993*, which permits the meeting to be closed to the public for business relating to the following: -

(c) information that would, if disclosed, confer a commercial advantage on a person with whom the council is conducting (or proposes to conduct) business.

Council Meeting 15 December 2015 (Mead/Oates)

That the information be noted.

Council Resolution Minute Number 243

That the information be noted.

CARRIED

CONFIRMATION OF COUNCIL'S ORDINARY MEETING MINUTES

At the Council Meeting held 16 February 2016 the following Council minutes were adopted:

There being no further business at the meeting of 15 December 2015, the meeting closed at 9.38pm.

Confirmed by Chairperson:

There being no further business at the meeting of 22 December 2015, the meeting closed at 7.40pm.

Confirmed by Chairperson: