

The Horsley Drive upgrade between M7 Motorway and Cowpasture Road

Submissions report

Roads and Maritime Services | December 2018

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Prepared by GHD and Roads and Maritime Services

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Approval and authorisation

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Signed:	
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Executive summary

The proposal

Roads and Maritime Services (Roads and Maritime) is proposing to upgrade The Horsley Drive between the M7 Motorway and Cowpasture Road at Horsley Park. The proposal involves the provision of additional lanes and new intersection configurations to address traffic congestion, improve road safety and to meet a predicted increase in traffic volumes due to growth of the Western Sydney Employment Area. Key features of the project include:

- Widening and upgrading of about 2.4 kilometres of The Horsley Drive from the M7 Motorway to Cowpasture Road to a four lane divided road with a wide median to allow for upgrade to six lanes if required in future
- Providing a third lane from the west of Ferrers Road to Cowpasture Road utilising the future third eastbound lane in the six lane corridor
- Upgrading The Horsley Drive western carriageway between the M7 Motorway and Wallgrove Road to provide an additional right turn onto Wallgrove Road with provision for a second westbound lane if required in the future
- Upgrading The Horsley Drive/Ferrers Road signalised intersection
- Upgrading the turning lanes at The Horsley Drive/Cowpasture Road North intersection
- Converting the existing The Horsley Drive/Cowpasture Road roundabout to a signalised intersection and tie-ins to Cowpasture Road and The Horsley Drive east of Cowpasture Road
- Extending turning lanes on The Horsley Drive eastern approach at the M7 Motorway interchange
- Realigning a section of The Horsley Drive at the Ferrers Road intersection
- Widening and realigning of Ferrers Road at the intersection with The Horsley Drive
- A turning cul-de-sac opposite Ferrers Road intersection
- A new access road / shared path between the proposed turning cul-de-sac opposite Ferrers Road intersection to access WaterNSW land and meet the existing Western Sydney Parkland cycle way parallel to the Upper Canal
- An off-road shared path for cyclists and pedestrians on southern side of the road corridor and connection to M7 cycleway and parkland cycleway
- A footpath on northern side of the road corridor
- A bus priority lane on the western approach and indented bus bays on the departure sides of the Ferrers Road intersection
- Signalised crossings for pedestrians and cyclists at intersections

The proposed upgrade requires some land within the Western Sydney Parklands (identified as a regional park under the *National Parks and Wildlife Act 1974*) to be acquired by Roads and Maritime. For this land to be acquired, it would first need to be removed from the gazetted regional park area. Discussions regarding this process are currently underway. If approval is obtained to acquire the land within the regional park and subject to funding availability Roads and Maritime would then proceed to final design and issue tenders for construction.

Environmental investigation report exhibition

The Environment Investigation Report (EIR) was publicly displayed for 37 days between Wednesday 28 June and Friday 4 August 2017. During this time, a number of community consultation activities were undertaken, including community information sessions, letterbox drops, doorknocks, meetings, media releases and online updates. Further details on community consultation activities are shown in Table 1-1.

A total of 33 submissions were received in response to the community consultation activities. Of these submissions, 28 were received from community members, including:

- Twelve from local businesses
- Fifteen from individual members of community

- One from a community special interest group

In addition to the 28 community submissions, a total of 5 government agency, local council and utility provider submissions were received in response to the exhibition of the EIR.

Summary of key issues

The main issues raised in submissions from members of the community and government bodies include:

- Issue: Traffic and access issues relating to increase in travel time and distance of some access arrangements resulting from the upgrade of The Horsley Drive/Cowpasture Road roundabout to a signalised intersection

Response: The need to signalise The Horsley Drive and Cowpasture Road intersection has been identified in the traffic study to meet future demand. Any interim improvement to the roundabout was not considered to provide value for money. The increased travel time using alternative routes is not considered significant when taking into account overall commuter journey times, and the traffic and safety benefits provided by replacing the roundabout with new traffic signals.

- Issue: Socio-economic issues relating to impact of the loss of The Horsley Drive/Cowpasture Road roundabout on businesses in the vicinity of the proposal (ie changed to some travelling routes and increased times)

Response: In response to this issue raised, Roads and Maritime has undertaken a Business Impact Assessment (BIA) regarding the potential impacts to businesses located at three sites within the established Wetherill Park industrial/commercial area. Based on the outcomes of the business impact assessment, it is likely that most customers will continue to visit the businesses across the three sites, given the existing cluster of industrial/commercial uses, availability of specialist products and services at some businesses, and the fact that some receive a large proportion of customer appointments. An additional mitigation measure has been proposed in order to minimise the impacts to the businesses.

- Issue: Noise issues relating to potential increase in noise resulting from the proposal and adequacy of noise assessment and proposed mitigation measures

Response: A noise and vibration assessment was undertaken for the proposal and noise mitigation options have been evaluated for noise receivers within the study area in accordance with Roads and Maritime guidelines. The noise criteria is exceeded by 5 dBA or more at 23 residential receivers and these receivers are considered eligible for noise mitigation in accordance with the Roads and Maritime's Noise Mitigation Guideline, subject to review during the detailed design process. The affected sensitive receivers are located along Derwent Place, adjacent to the M7 Motorway/Wallgrove Road intersection and both side of The Horsley Drive.

- Issue: Non-aboriginal heritage issues relating to the impact of the road realignment on the Upper Canal corridor, a controlled area declared under *WaterNSW Act 2014* owned and managed by WaterNSW.

Response: The EIR states that there would be up to four metres in height difference at the Upper Canal crossing when compared to the existing alignment. This height difference has been incorrectly reported in the Statement of Heritage Impact Assessment (SoHI), Landscape and Visual Impact Assessment report and in the EIR. Roads and Maritime wishes to clarify that the overall height difference between the existing road and proposed road is only up to 2.4 metres at the tunnel crossing. While this would not result in as greater visual impact as a four metres height difference, it would still result in a visually more dominant road than the current road alignment. It is considered

that views to and from the Upper Canal are amenable to change and would not adversely affect the heritage significance of the item.

Roads and Maritime has responded to the issues raised by justifying and clarifying the scope and elements of the proposal as well as confirming access arrangements. Additional assessment of the potential impacts to businesses as a result of changes to some access arrangements was undertaken. The issues raised during the public display period of the EIR by the community have been summarised and responded to in Chapter 2 and the issues raised by government agencies, local government and utilities have been summarised and responded to in Chapter 3 of this report.

Additional assessment

Roads and Maritime has carried out a Business Impact Assessment (BIA) in response to submissions received regarding the potential impacts to businesses as a result of the proposal. The aim of the assessment was to provide additional information about the potential impacts of the proposal to businesses located at three sites within the established Wetherill Park industrial/commercial area. Existing access arrangements to some of these businesses will be altered by the proposal. An additional mitigation measure and recommendations have been proposed in order to minimise the impacts to these businesses. These measures have been incorporated into the revised environmental safeguards and management measures for the project. The assessment is discussed in section 4.1.

Design changes

There have been no changes to the proposal resulting from the submissions that are of a nature deemed so great as to result in a fundamentally different project to that displayed in the EIR.

Environmental safeguards

All potential environmental impacts have been assessed adequately with appropriate safeguards and management measures identified to avoid, minimise and mitigate impacts. The implementation of the safeguards and management measures identified in the EIR and submissions report would appropriately manage and mitigate the potential impacts.

An updated consolidated set of environmental safeguards is provided in Table 6-1 of this report.

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1. Introduction and background

1.1 The proposal

Roads and Maritime Services (Roads and Maritime) is proposing to upgrade The Horsley Drive between the M7 Motorway and Cowpasture Road in the suburbs of Horsley Park, Abbotsbury, Bossley Park and Wetherill Park about 30 kilometre west of the Sydney central business district.

The Horsley Drive is a 15 kilometre long arterial road providing a strategic east-west link between the M7 Motorway and the Hume Highway. The proposal comprises a 2.4 kilometre section of this road. The location of the proposal is shown in Figure 1-1 and key features of the proposal are shown in Figure 1-2, 1-2a and 1-2b.

Key features of the proposal include:

- Widening and upgrading of about 2.4 kilometres of The Horsley Drive from the M7 Motorway to Cowpasture Road to a four lane divided road with a wide median to allow for upgrade to six lanes if required in the future
- Providing a third lane from the west of Ferrers Road to Cowpasture Road utilising the future third eastbound lane in the six lane corridor
- Upgrading The Horsley Drive western carriageway between the M7 Motorway and Wallgrove Road to provide an additional right turn onto Wallgrove Road with provision for a second westbound lane if required in future
- Upgrading the Horsley Drive/Ferrers Road signalised intersection
- Upgrading the turning lanes at The Horsley Drive/Cowpasture Road north intersection
- Converting the existing The Horsley Drive/Cowpasture Road roundabout to a signalised intersection and tie-ins to Cowpasture Road and The Horsley Drive east of Cowpasture Road
- Extending turning lanes on The Horsley Drive eastern approach at the M7 Motorway interchange
- Realigning a section of The Horsley Drive at the Ferrers Road intersection
- Widening and realigning of Ferrers Road at the intersection with The Horsley Drive
- A turning cul-de-sac opposite Ferrers Road intersection
- A new access road/shared path between the proposed turning cul-de-sac opposite Ferrers Road intersection to access WaterNSW land and meet the existing Western Sydney Parkland cycle way parallel to the Upper Canal
- An off-road shared path for cyclists and pedestrians on the southern side of the road corridor and connection to M7 cycleway and parkland cycleway
- A footpath on the northern side of the road corridor
- A bus priority lane on the western approach and indented bus bays on the departure sides of the Ferrers Road intersection
- Signalised crossings for pedestrians and cyclists at intersections
- Improvements to flood immunity and drainage upgrades including replacing the existing box culverts with a single span concrete bridge to accommodate the proposed widening of The Horsley Drive over Eastern Creek and upgrading culverts at an associated un-named tributary west of Cowpasture Road roundabout
- Protection structure over Westons Tunnel to accommodate the proposed road widening over the heritage structure
- Urban design elements including landscaping to integrate with the environment, including the Western Sydney Parklands
- Adjustments to existing property access
- Temporary access tracks, site compounds, stockpile sites, and construction sedimentation basins.

A more detailed description of the proposal, including a discussion of the need for the proposal and its objectives, can be found in Chapters 1 and 2 of The Horsley Drive Upgrade Environmental Investigations Report (EIR) prepared by Roads and Maritime in June 2017. The EIR can be found on the project website:

<http://www.rms.nsw.gov.au/projects/sydney-west/the-horsley-drive-upgrade/index.html>

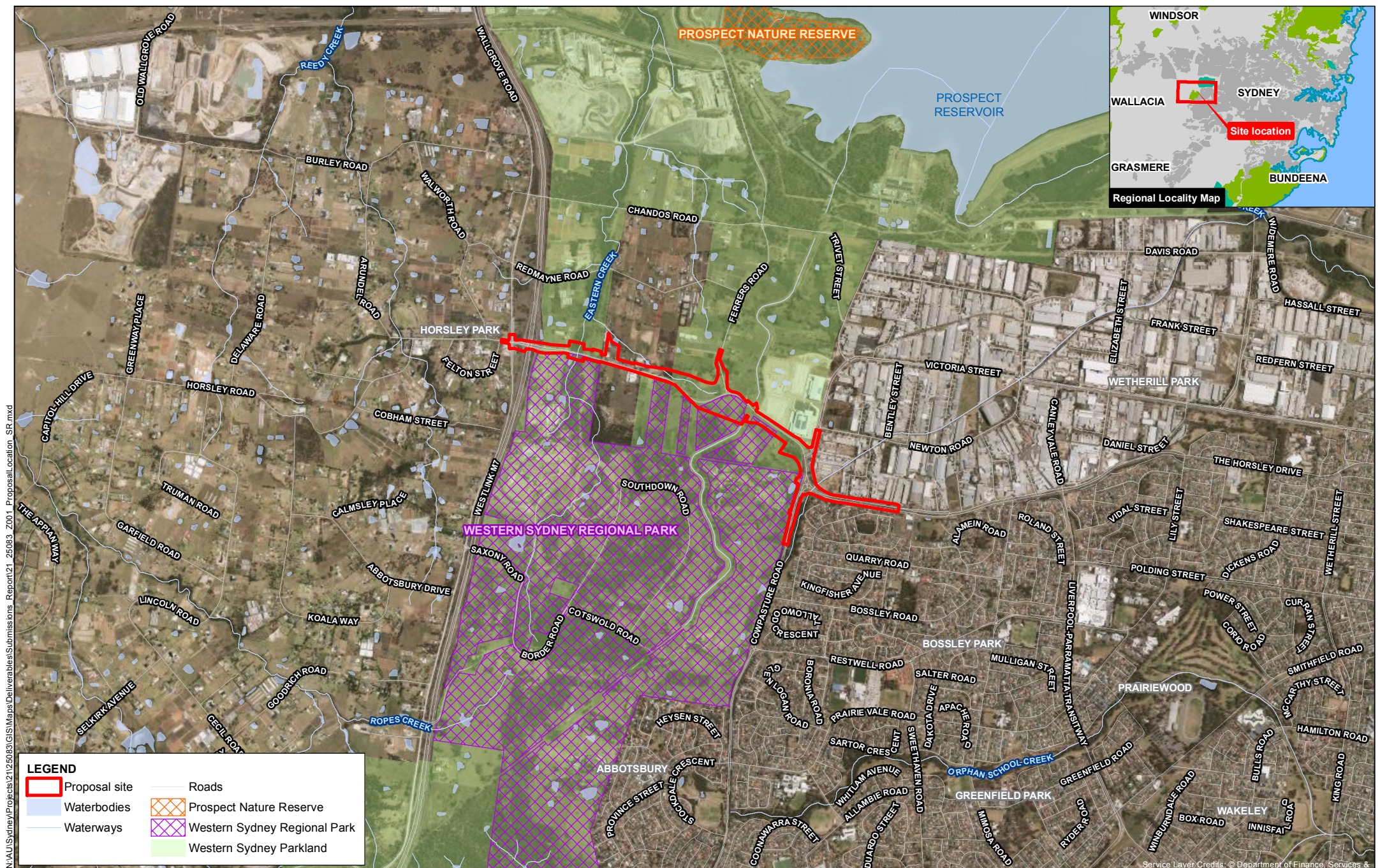
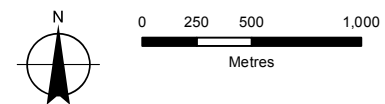


Figure 1-1
Proposal location



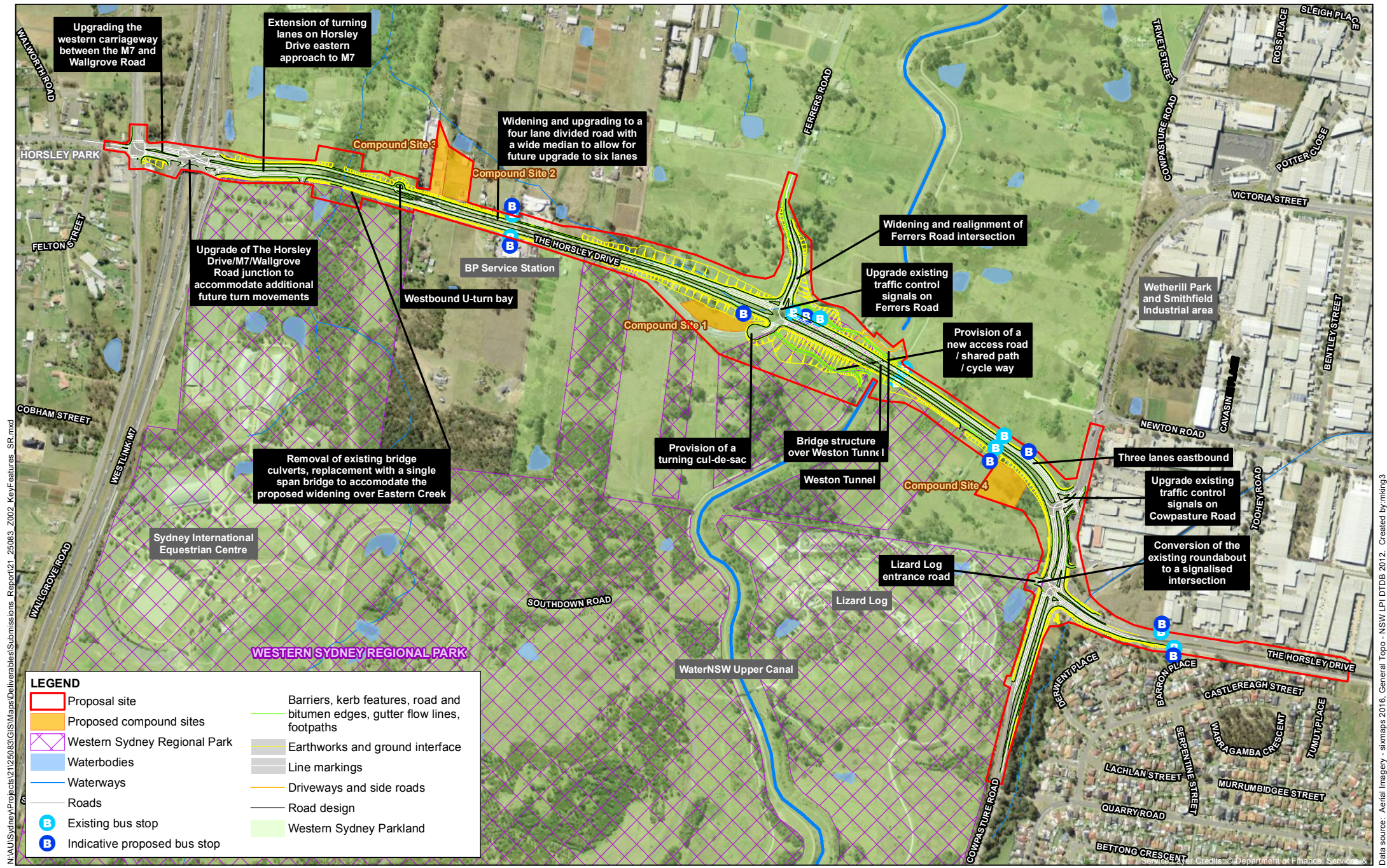
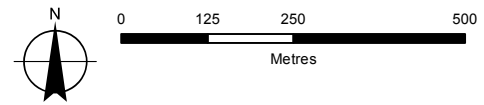


Figure 1-2
Key features of the proposal



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Data source: Aerial Imagery - sixmaps 2016, General Topo - NSW LPI DTDB 2012. Created by:mking3

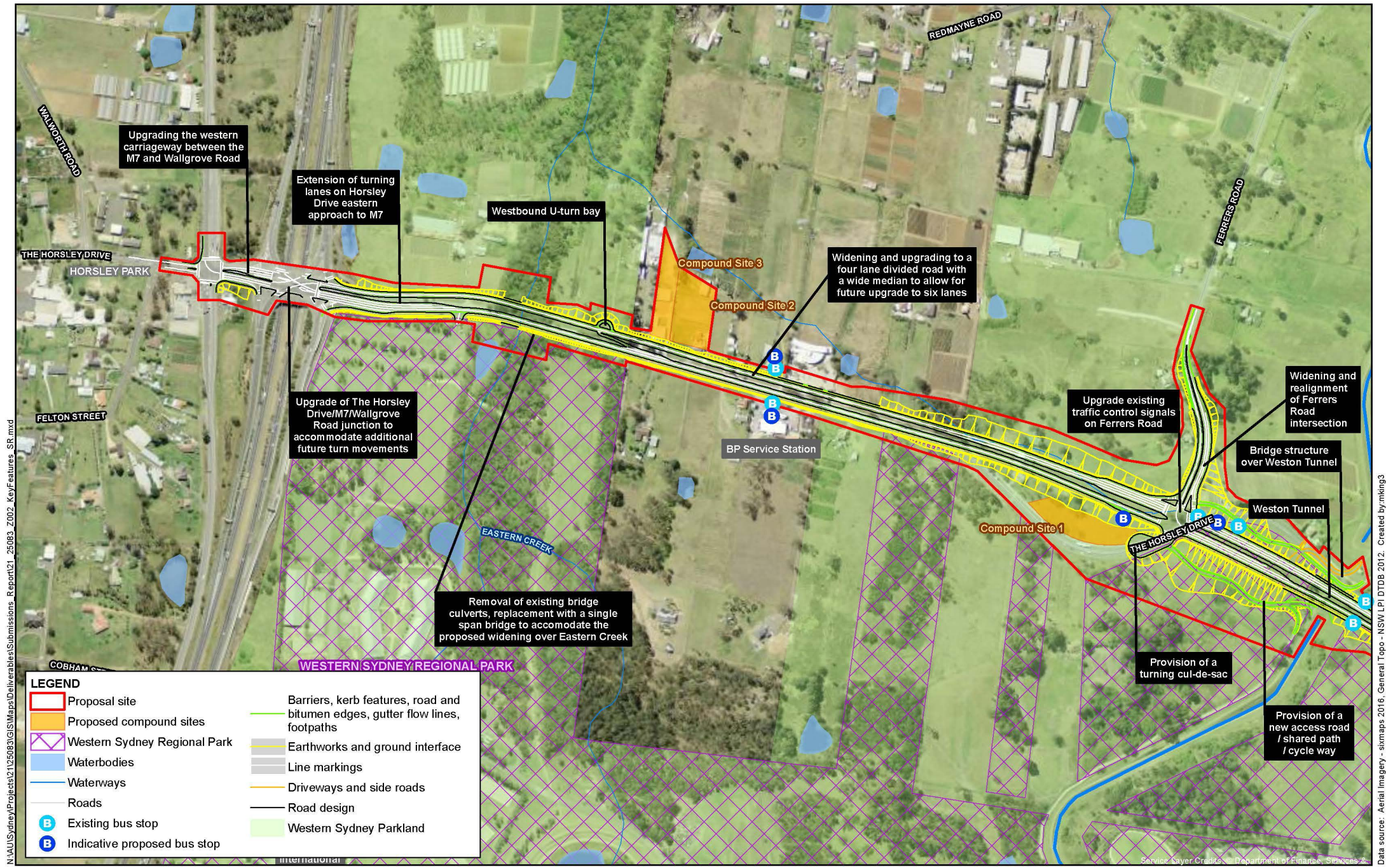
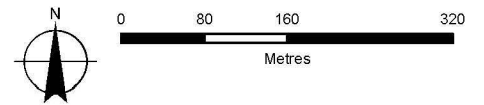


Figure 1-2a
Key features of the proposal



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Data source: Aerial Imagery - sixmaps 2016, General Topo - NSW LPI DTDB 2012. Created by mking3

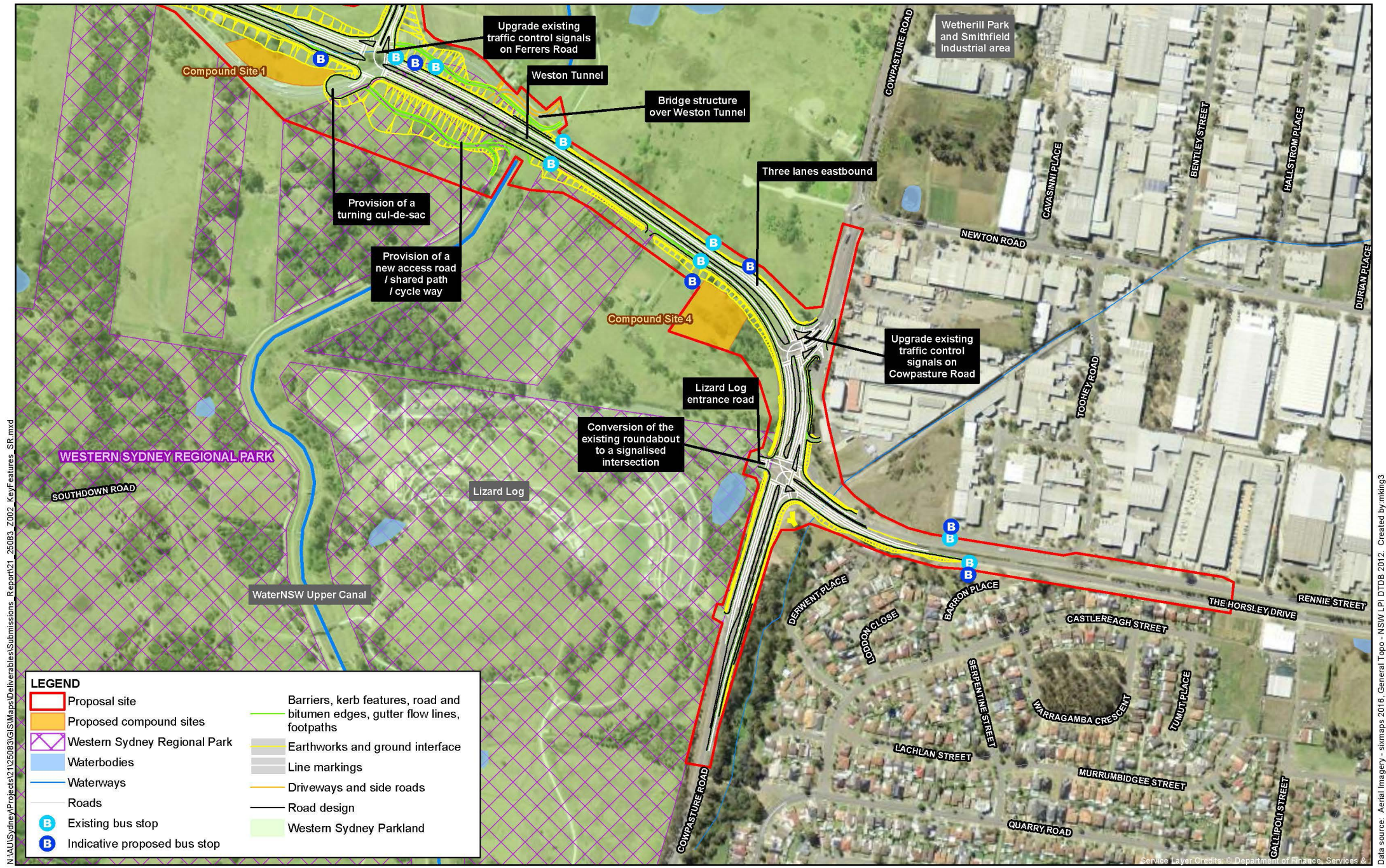
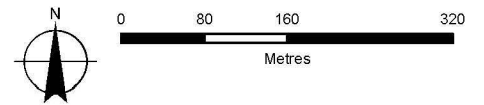


Figure 1-2b
Key features of the proposal



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Data source: Aerial Imagery - siskmaps 2016, General Topo - NSW LPI DTDB 2012. Created by mking3

1.2 EIR display and consultation

Roads and Maritime prepared an environmental investigation report (EIR) to assess the environmental impacts of the proposed works.

A number of other consultation activities were undertaken to ensure that key stakeholders and the broader community were aware of the proposal and were given the opportunity to express their views, including public display of the EIR for 37 days between Wednesday 28 June and Friday 4 August 2017. Community consultation activities are shown in Table 1-1.

Table 1-1: Consultation activities

Activity	Details
Community update newsletter	A community update newsletter was produced including the key features of the proposal, details of the community information sessions and how to provide feedback on the EIR and concept design. The community update newsletter was distributed to about 8000 properties via letterbox drop and was also made available on the Roads and Maritime website and at the community information sessions.
Doorknocks/meetings with property and business owners	At the beginning of the consultation period, 104 property and business owners were doorknocked or met with by the project team. The purpose was to notify owners and stakeholders of the potential impacts to their property and to encourage them to attend the community information sessions. A community update newsletter was left with each property or business.
Frequently Asked Questions (FAQs)	A 'frequently asked questions' (FAQ) document was produced to provide stakeholders with a summary of responses to questions that were readily asked as part of the announcement of the proposal. These FAQs were published on the website and supplied at the community information sessions.
Media release	A media release was issued by the Member of Mulgoa, Tanya Davies, on 23 June 2017. It was titled ' <i>Planning progresses on The Horsley Drive upgrade</i> ' and encouraged local community members and stakeholders to engage in the consultation process.
Public display	The EIR was publicly displayed for 37 days between Wednesday 28 June and Friday 4 August 2017 at the following location: Wetherill Park Library Stockland Wetherill Park 561-583 Polding Street, Wetherill Park.
Newspaper advertisement	Newspaper advertisements appeared in local papers between 5 July and 11 July 2017 to raise awareness of the consultation and information sessions. Publications included: <ul style="list-style-type: none">• Fairfield Advance – 5 July 2017• Fairfield City Champion – 11 July 2017.
Email notifications	Direct emails were sent from Roads and Maritime to 85 stakeholders (community members and groups), local Members of Parliament (MPs), and other Government stakeholders on 5 July 2017 to announce the EIR and concept design, raise awareness of the start of the consultation period, and to provide details of the information sessions.
Webpage	The project webpage was updated on 23 June 2017 with latest project information including the community update newsletter, EIR, concept design, FAQs and information on how to submit feedback. A total of 570 page views were recorded during the consultation period.

Activity	Details
Social Media (Facebook)	A Facebook advertisement was live between 12 June to 17 July 2017. The post targeted a 17 kilometre radius around The Horsley Drive area. The post was published to target a broader geographic area and encourage community members to make a formal submission on the proposal. A total of 21,180 views were recorded during this period.
Community information sessions	Two community consultation sessions were held with a total of 27 people attending: <ul style="list-style-type: none"> • Wednesday 19 July 2017 between 4pm and 7pm at Horsley Park Community Hall, Arundel Road, Horsley Park • Saturday 22 July 2017 between 10am and 1pm at Abbotsbury Community Centre, 64 Stockdale Crescent, Abbotsbury.

1.3 Purpose of the report

This submissions report relates to the EIR prepared for the proposed upgrade of The Horsley Drive between M7 Motorway and Cowpasture Road and should be read in conjunction with that document.

The EIR was placed on public display and submissions relating to the proposal and the EIR were received by Roads and Maritime.

The issues raised during the public display period of the EIR by the community have been summarised and responded to in Chapter 2 and the issues raised by government agencies, local government and utilities have been summarised and responded to in Chapter 3. Additional assessment undertaken to address the proposal's potential impacts to businesses is summarised in Chapter 4. New or revised environmental management measures are in Chapter 6.

2. Responses to community issues

During the consultation period (28 June to Friday 4 August 2017) Roads and Maritime Services received 33 submissions. Of these submissions, 28 were received from community members including:

- Twelve from local businesses
- Fifteen from individual members of community
- One from a community special interest group

A list of submissions received from community members is provided in Table 2-1, including where in this report the issue has been addressed. Each community submission was assigned an individual number. These numbers are referred to in Table 2-1 and throughout this chapter.

Table 2-1: List of respondents (community)

Respondent	Submission No.	Section number where issues are addressed
Local business	1	2.3.1, 2.3.2
Community member (individual)	2	2.3.4
Community member (individual)	3	2.2.1, 2.3.1
Community member (individual)	4	2.2.1, 2.4.1, 2.4.2
Local business	5	2.3.3, 2.6
Community member (individual)	6	2.3.2, 2.6
Community member (individual)	7	2.3.2
Community member (individual)	8	2.4.2, 2.5.2, 2.9
Community member (individual)	9	2.2.2, 2.3.5
Local business	12	2.2.1, 2.9
Local business	14	2.3.3, 2.6
Community member (individual)	15	2.2.1, 2.5.1
Community member (individual)	16	2.8
Community member (individual)	17	2.5.1
Local business	18	2.3.2, 2.3.5
Local business	19	2.2.1, 2.3.3, 2.6
Local business	21	2.3.3, 2.6
Local business	22	2.3.3, 2.6
Local business	23	2.2.1, 2.3.3, 2.6
Community member (individual)	24	2.3.2
Community member (individual)	25	2.9
Community member (individual)	26	2.7

Respondent	Submission No.	Section number where issues are addressed
Community member (individual)	27	2.2.1
Local business	28	2.2.1, 2.9
Community member (individual)	29	2.3.2, 2.7, 2.9
Local business	30	2.3.2
Local business	31	2.2.1
Community group	32	2.3.2

2.1 Overview of issues raised

As identified above, a total of 28 submissions were received from the community during the exhibition of the EIR. Each submission has been examined individually to understand the issues raised. In many cases several issues were raised in a single submission.

The issues raised in each submission have been extracted and collated, and corresponding responses to the issues have been provided. Where similar issues have been raised in different submissions, only one response has been provided. The issues raised and Roads and Maritime's response(s) to these issues form the basis of this chapter.

Comments made in the submissions focussed on the following key issues:

- Justification for the project, including support for the proposal and comment on the design of current road network
- Traffic and access, including alternate design suggestions, concern over the elimination of the existing The Horsley Drive/Cowpasture Road roundabout to a signalised intersection and safety issues
- Noise, including potential increase in noise resulting from the proposal and adequacy of the noise assessment and proposed mitigation measures
- Biodiversity, including the potential for the proposal to result in a disconnection for native fauna in the Western Sydney Parklands
- Socio-economic issues, including the impact of the proposal on current and future customers to nearby businesses, residents and prospective visitors, particularly due to the loss of The Horsley Drive/Cowpasture Road intersection roundabout
- Consultation, including a comment on the community information session.

The following sections of this report will discuss these issues in more detail.

2.2 Justification for the project

2.2.1 Support for the proposal

Submission number(s)

3, 4, 12, 15, 19, 23, 27, 28, 31

Issue description

A number of submissions stating support for the proposal were received. These ranged from comments stating full support, to comments stating support for the proposal with conditions, or comments supporting specific elements of the proposal, and included:

- Support for the proposal in general
- Support for the elimination of Cowpasture Road roundabout as it does not function properly during peak hours
- Support for the proposal with the condition that there are provisions for noise barriers
- Support for westbound u-turn bay at M7 end of The Horsley Drive
- Support for the proposal on the condition that a westbound right turn bay is provided prior to The Horsley Drive and Cowpasture Road intersection, or Cowpasture Road roundabout is maintained with additional lanes feeding into Cowpasture Road.

Response

Roads and Maritime thank everyone for taking the time to consider the proposal and for their feedback, and will keep the community and stakeholders informed as the project progresses.

The noise assessment undertaken as part of the EIR included an assessment of a potential noise barrier for sensitive receivers. Further response to submissions relating to noise mitigation for the proposal is provided in section 2.4 of this report.

An option to retain and upgrade the existing roundabout at The Horsley Drive/Cowpasture Road has been assessed. However, this option was found to be an interim solution only and a total reconstruction of the intersection would be needed within a short time to meet predicted demand beyond 2026. The Horsley Drive/Cowpasture Road roundabout would be upgraded to a signalised intersection, resulting in changes to current access arrangements for some businesses in Smithfield/Wetherill Park industrial area. Impacts to these businesses and how these are being addressed are discussed in further detail in section 2.6 of this report.

2.2.2 Need and options

Submission number(s)

9

Issue description

Concerns were raised regarding the effectiveness of the project in relieving congestion, in particular:

- Concern over the design of the current road system in Wetherill Park and Smithfield
- Suggestion that it would be preferable for Victoria Street to continue through to the M7.

Response

The Horsley Drive is a state road and currently provides access to Smithfield Wetherill Park Industrial Area. Traffic modelling has identified the need to upgrade The Horsley Drive between the Wallgrove Road intersection and Cowpasture Road. This upgrade would provide a safer and more efficient road network for residents and local freight movement and would also meet future traffic demand. Roads and Maritime acknowledge the suggestion to upgrade and extend Victoria Road through to the M7, however, it is outside the scope of this proposal.

2.3 Traffic and access

2.3.1 Capacity

Submission number(s)

1, 3

Issue description

Two of the submissions received included comments regarding the effectiveness of the proposal in improving the capacity of The Horsley Drive. These included:

- Concern that the four lane upgrade will not provide capacity for the current and future peak hour traffic in/out of Wetherill Park
- Suggestion that there is land available within the Western Sydney Parkland to provide a third slow lane up the hill for westbound traffic
- Suggestion that the additional lane between Cowpasture Road to Ferrers Road would help ease congestion.

Response

Section 2.4.3 of the EIR concludes that upgrading The Horsley Drive performed best against the project objectives, and meets the current traffic projections to 2036.

It is expected that the provision of four lanes (two lanes in each direction) would adequately address the near term demand to 2036. The proposal also provides a wide central median which could be utilised to provide a six-lane road (three lanes in each direction) if additional capacity is needed after 2036 due to predicted traffic growth in the area. Traffic modelling to this extent was reported in the Options Report (SMEC 2015). The section of The Horsley Drive on approach to Ferrers Road is also proposed to be realigned with improvements to vertical grades.

One of the main project engineering constraints is to minimise the extent of impact on the Western Sydney Parklands, including impacts to the land recognised as Western Sydney Regional Park under the *National Parks and Wildlife Act 1974* and land owned by WaterNSW in relation to the Upper Canal. The proposal includes the provision for a third lane from the west of Ferrers Road to Cowpasture Road utilising the future third eastbound lane in the six lane corridor.

2.3.2 Design

Submission number(s)

1, 6, 7, 18, 24, 29, 30, 32

Issue description

Numerous submissions with comments on the design of the proposal were received. These include:

- Concern that the planned upgrade fails to align Cowpasture Road north with Cowpasture Road south
- Suggestion to provide new westbound lane on The Horsley Drive (approaching Cowpasture Road)

- Concern that the proposed median island outside business premises on Cowpasture Place would impact the left turn exit for semi-trailers and trucks onto Cowpasture Road and The Horsley Drive
- Concern that the median strip will impact on driveway access in and out of Horsley Park Social Club
- Concern over the impact on the business due to trucks not been able to turn to and from the property in both directions due to the proposed median
- Concern that a u-turn bay east of Eastern Creek near the M7 would be too small for trucks
- Concern that the turning bay at Ferrers Road will not be suitable for trucks
- Concern at how traffic will flow better with the removal of the Cowpasture Road roundabout
- Request for right turn southbound at The Horsley Drive/Wallgrove Road intersection to be modified to right turn or straight ahead
- Concern over the congestion at the Horsley Drive/Wallgrove Road intersection caused by delays with left turns northbound.

Response

General

The design has considered future upgrade requirements while minimising the impact to existing land use and minimising impact to the environment, including the Western Sydney Regional Park. Proposed upgrades at the Cowpasture Road north intersection would be accommodated within the existing road corridor which would meet the traffic demand to 2036 in combination with signalisation of the Cowpasture Road roundabout.

Median strip

A wide median strip has been included in the proposal to improve safety for motorists by separating traffic, and to allow for further upgrades in the future. Left in/left out access will be maintained to all approved driveways within the proposal. As part of the road upgrade works, property adjustments would be carried out to impacted driveways in accordance with Fairfield City Council's driveway requirements to the approved land use.

The median island in Cowpasture Place is painted only and can be traversed where required by 26 metre long B-double trucks.

U-turn bay east of Eastern Creek

The proposal incorporates a u-turn bay east of Eastern Creek to allow motorists travelling from the east to perform a u-turn and access the driveways on the northern side of The Horsley Drive without having to go up to the M7 intersection. This u-turn facility has been designed for a 5.2 metre vehicle. Roads and Maritime will reassess the provision of this u-turn bay if land use changes in the future.

Ferrers Road intersection

The intersection upgrade of The Horsley Drive and Ferrers Road allows vehicles travelling east to perform a safe u-turn to travel west. The proposal incorporates a cul-de-sac to allow B-double vehicles to turn around.

Cowpasture Road roundabout to be replaced with a signalised intersection

Traffic studies have identified that Cowpasture Road roundabout is currently at capacity and any interim improvements to the roundabout will not be sustainable. Upgrading Cowpasture Road roundabout to an intersection with traffic lights is the preferred option to meet the future traffic demand and ensure the safety of motorists, pedestrians and cyclists.

To improve the performance of left turn from The Horsley Drive onto Cowpasture Road south, the proposal includes two dedicated left turning lanes.

Wallgrove Road intersection

Section 5.1.3 of the EIR discusses the traffic impacts of the proposal. Table 5-5 of the EIR contains a summary of the intersection modelling undertaken (including The Horsley Drive/Wallgrove Road intersection).

The modelling shows that the proposal has the ability to significantly improve the performance at all key intersections compared to the future base case ("do minimum") scenario.

An additional right-turn lane onto Wallgrove Road north would be provided which will improve the intersection performance.

2.3.3 Access strategy

Submission number(s)

5, 14, 19, 21, 22, 23

Issue description

The following comments have been raised regarding access strategy for road users that are impacted by the upgrade of Cowpasture Road roundabout into a signalised intersection:

- Concern that the estimated average additional travel of 2.4 kilometres (4 minutes) as communicated by Roads and Maritime is unrealistic and not accurate for the proposed alternative access route 1
- Concern that there is no guarantee that the Restwell Road roundabout would remain available in the future
- Suggestion to provide a right-hand turn for light vehicles prior to Cowpasture Road/Horsley Drive intersection for motorists travelling westbound at a location deemed safe by Roads and Maritime
- Request to upgrade the Cowpasture Road roundabout with additional lanes if a u-turn bay east of Cowpasture Road intersection cannot be provided to access the property on the northern side of The Horsley Drive
- Suggestion for a u-turn bay on The Horsley Drive west of The Horsley Drive/Cowpasture Road intersection to allow motorists exiting Cowpasture Place to turn back towards M7
- Recommended the provision of a turning bay west of The Horsley Drive/Cowpasture Road intersection similar to that provided at the Ferrers Road intersection
- Suggestion for u-turn bay east of The Horsley Drive/Cowpasture Road intersection for westbound traffic to enter businesses on the northern side of The Horsley Drive.

Response

One of the options assessed was to retain and upgrade the existing roundabout at The Horsley Drive/Cowpasture Road. However, this option was found to be meeting the traffic demand only for a short term and a total reconstruction of the intersection would still be needed by 2026 to meet the future traffic demand. Therefore, an interim upgrade of the roundabout was not considered a value for money outcome. Section 5.1.3 of the EIR recommends upgrading The Horsley Drive/Cowpasture Road roundabout to a signalised intersection to meet future traffic demands.

The conversion of Cowpasture Road southern roundabout into a four leg intersection would change access arrangements for some businesses in Smithfield/Wetherill Park industrial area and The Horsley Drive Business Park as u-turns would not be possible at this intersection in future. The proposed access strategy for these impacted commercial businesses is the utilisation of the existing surrounding road network, including Elizabeth Street/Victoria Street/Cowpasture Road north/The Horsley Drive and roundabouts at Cowpasture Road/Restwell Road intersection.

The Traffic and Transport Assessment Report provided in Appendix E of the EIR conducted vehicle travel time surveys on 9 February 2017 to collect travel time data during both the AM and PM peak periods along designated routes, including the existing u-turn movements within the study area. Further to this, travel times of the proposed alternative routes were forecast using traffic modelling to include the proposed signalised intersection and expected traffic improvements as a result of the proposal.

Roads and Maritime currently have no plans to remove the roundabout at Restwell Road.

Additional u-turn facilities at the suggested locations are undesirable due to their proximity to the new intersection and considering the network performance and safety.

Roads and Maritime has undertaken an additional assessment about the potential impacts to businesses located at three sites within the established Wetherill Park industrial/commercial area as a result of changes to some access arrangements with the signalisation of The Horsley Drive/ Cowpasture Road roundabout. Further details can be found in Section 2.6 of this report.

2.3.4 Public transport

Submission number(s)

2

Issue description

One submission was made with a comment on the potential impact of the proposal on public transport:

- Concern that the bus stop near The Horsley Drive/Cowpasture Road intersection heading in easterly direction may cause traffic delays during peak hour if the bus is not in an allocated lane.

Response

The location of bus stops would be refined during detailed design phase in consultation with bus companies and Transport for New South Wales, if required. Section 6.6 of the EIR states that the proposal has the ability to improve average bus travel times and bus operating speeds under modelled 2031 traffic conditions from average existing operating speeds.

2.3.5 Safety

Submission number(s)

9, 18

Issue description

Submissions were received with comments regarding road safety. These include:

- Concern that accidents will still continue to happen at Cowpasture Road despite there being traffic lights due to the size of the intersection
- Noted the current difficulty of trucks accessing and exiting the property at 1672 The Horsley Drive, Horsley Park, and concern that increasing the speed limit to 80 km/h would pose a safety risk due to the increased speed of oncoming vehicles and slower moving trucks entering and exiting the property

Response

The Traffic and Transport Assessment undertaken as part of the EIR has identified that the upgrade from roundabout to a signalised intersection with signal controlled pedestrian crossings will improve safety for all road users at The Horsley Drive/Cowpasture Road intersection.

Roads and Maritime advises that the road is designed to the approved standards and for a speed limit of 80 km/h to improve the traffic performance on this section of The Horsley Drive and contribute to the network performance. The proposal would maintain left in / left out access to the existing driveways along the road corridor. As part of the proposed upgrade, property adjustment works to the impacted driveways would be carried out to meet Fairfield Council's driveway requirements for the approved existing land use.

2.4 Noise and vibration

2.4.1 Noise assessment

Submission number(s)

4

Issue description

One submission was received regarding the noise assessment undertaken in the EIR, in particular:

- Concern that the noise assessment insufficiently considered the residential areas.

Response

A noise and vibration assessment was undertaken for the proposal in May 2017. The assessment included residential areas west of the M7 Motorway, east of Cowpasture Road and along The Horsley Drive. Road traffic noise monitoring was undertaken from 23 November to 3 December 2015 at residential properties in the project area which were used to verify a noise model. These locations are depicted on page 92 of the EIR and Figure 3-1 of the noise report.

The study area is considered appropriate, as it has been defined as 600 metres from the centreline of the outer most traffic lane on each side of the road in accordance with the Office of Environment and Heritage (OEH)'s Road Noise Policy (RNP) and the Roads and Maritime's Noise Criteria Guideline (NCG). Residential areas of Bossley Park (to the east) have been included within 600 metres of the road corridor. Residential receptors farther away from the corridor are shielded from the road by intervening structures.

2.4.2 Noise mitigation

Submission number(s)

4, 8

Issue description

Submissions were received regarding the potential for increased noise impacts associated with the proposal, in particular:

- Concern about the current high levels of noise from The Horsley Drive and that the proposal would result in increased noise

- Concern over the extent of the noise barriers proposed.

Response

A noise and vibration assessment has been undertaken for the proposal and noise mitigation options have been evaluated for noise receivers within the study area in accordance with Roads and Maritime guidelines. Noise criteria are assigned to sensitive receivers using Roads and Maritime's Noise Criteria Guideline (NCG) which provides guidance on how to apply the NSW Road Noise Policy (RNP). Noise mitigation is based on Roads and Maritime's Noise Mitigation Guideline (NMG) which provides guidance on reasonable and feasible mitigation.

The following mitigation measures are considered through the process in order of preference for application of the Road Noise Policy:

- Road design and traffic management
- Quieter pavement surfaces
- In-corridor noise barriers/mounds
- At-property treatments or localised barriers/mounds.

The Noise Mitigation Guideline (NMG) provides guidance where a receiver may qualify for consideration of noise mitigation as follows:

- The predicted Build noise level exceeds the noise criteria and the noise level from the project increases by more than 2.0 dBA over the scenario where the project does not go ahead (no build). Note that an increase of up to 2 dB represents a minor impact that is considered barely perceptible to the average person.
- The predicted Build noise level is 5 dBA or more above the noise criteria and the receiver is significantly influenced by project road noise, regardless of the incremental impact of the project
- The noise level contribution from the road project is acute (daytime LAeq (15hour) 65 dBA or more, or night-time LAeq (9hour) 60 dBA or more) even if noise levels are dominated by another road

The first bullet point above limits increase in noise level whereas the latter two bullet points address high noise levels.

The assessment concluded that during operation the proposal is expected to exceed the noise criteria at 155 sensitive receivers during the day and 146 sensitive receivers during the night time period however at most of these locations the noise level increase is less than 2.0 dBA when compared to the no build case. Section 3.4 of the RNP states, *"In assessing feasible and reasonable mitigation measures, an increase of up to 2 dB represents a minor impact that is considered barely perceptible to the average person."* The noise criteria is exceeded by 5 dBA or more at 23 residential receivers and these receivers are considered eligible for noise mitigation in accordance with the NMG, subject to review during the detailed design process. Figure 5-4 of the EIR identifies sensitive receivers. Five of these sensitive receivers will potentially be acquired during the construction of the project. The affected sensitive receivers are located along Derwent Place, adjacent to the M7 Motorway/Wallgrove Road intersection and both sides of The Horsley Drive.

A noise barrier was considered in the noise and vibration assessment at the corner of Ferrers Road and Cowpasture Road and this would be investigated further during detailed design taking into account engineering, safety, environmental, overshadowing and urban design and other reasonable and feasible considerations. At other locations, noise barriers were not considered reasonable or feasible. Further road design and traffic measures would also be considered during detailed design, all subject to reasonable and feasible considerations in accordance with Roads and Maritimes policy. At-property treatment would be considered where the receiver qualifies for treatment under the NMG. Consideration of mitigation options would be further investigated during the detailed design stage in consultation with affected sensitive receivers and in accordance with relevant guidelines.

2.5 Biodiversity

2.5.1 Fauna

Submission number(s)

15, 17

Issue description

Submissions were received with concerns about the impact the proposal may have on native fauna, including:

- Disconnection of native fauna, particularly the Eastern Grey Kangaroo and Wallaroo, in the Western Sydney Parklands and associated conservation lands
- Request for wildlife movement corridor to consider underpasses large enough to allow for kangaroo unrestricted access and located beside areas of open vegetation as opposed to thick, closed vegetation
- Request for wildlife movement corridor to keep both people and wildlife safe from accidents.

Response

Roads and Maritime has prepared a biodiversity impact assessment as part of the EIR. Targeted fauna surveys were conducted as part of the field surveys. Surveys focussed particularly on identifying habitat for threatened fauna and associated impacts, however, all fauna observed or heard were recorded. Habitat connectivity was assessed, with the Eastern Creek corridor identified as the main wildlife corridor in the area. While no evidence of macropods, including the Eastern Grey Kangaroo and Wallaroo, were recorded in the study area during field surveys, it is assumed that these species may occur on occasion.

The EIR states that opportunities to improve fauna connectivity would be explored as part of detailed design. It is likely this would include exploring options such as dry culverts where they are achievable and/or likely to be effective. However it is likely that the culvert size necessary for an Eastern Grey Kangaroo crossing will not be achievable due to the current road level and proposed road level assessed to provide 1 in 100 flood immunity, while minimising the overall impacts to the environment. Raising the road in order to meet the minimum height requirements for an under road crossing suitable for the Eastern Grey Kangaroo is considered to have greater impacts to the environment. There is currently a barrier to kangaroo movement and this disconnection would not be increased by the proposal.

2.5.2 Landscape

Submission number(s)

8

Issue description

A submission was received with a concern regarding the proposed landscaping:

- Landscaping needs to reduce the impact of the proposal on nearby parklands.

Response

Roads and Maritime, in consultation with Western Sydney Parklands Trust, has developed an urban design and landscape plan for the proposal. The purpose of the plan would be to visually integrate the proposal into the existing landscape and create a positive visual improvement while accounting for future urban development and minimising the potential impacts on sensitive adjacent areas. Landscape design would be further developed at detailed design stage in consultation with Western Sydney Parkland Trust, Fairfield Council, WaterNSW and utility authorities as and where appropriate. Tree planting and other urban design strategies would be implemented to reduce landscape character impacts as discussed in section 5.9.3 of the EIR.

2.6 Socio-economic

Submission number(s)

5, 6, 14, 19, 21, 22, 23

Issue description

Numerous submissions were received with concerns over the potential socio-economic impacts of the proposal:

- General concern about the impact of the proposal on current and future customers, residents and prospective visitors to their property
- Concern that the proposal would compromise on property value and rental income
- Concern that the loss of roundabout at the intersection with Cowpasture Road would impact access to numerous employment and retail activity generating uses available on the northern side of The Horsley Drive
- Concern that the loss of roundabout at the intersection with Cowpasture Road would impact businesses on Cowpasture Place as the current arrangement of vehicles making u-turns to travel towards M7 would no longer be possible
- Concern about the lost opportunity for westbound traffic turning around the roundabout at the intersection of The Horsley Drive/Cowpasture Road to access the businesses on the northern side of The Horsley Drive including 1403 The Horsley Drive, currently subject to council assessment under DA588/2016.

Response

The upgrade of the Cowpasture Road southern roundabout into a four leg intersection would result in some changes to the current access arrangements for some of the businesses in Smithfield/Wetherill Park industrial area and along The Horsley Drive Business Park as u-turns would not be possible at this intersection in the future.

The traffic impact assessment undertaken as part of the EIR has identified alternate routes to these businesses by utilising the existing surrounding road network, including Elizabeth Street, Victoria Street, Cowpasture Road north, The Horsley Drive and the roundabout at the Cowpasture Road/Restwell Road intersection. Additional travel time by using the alternate routes is not considered significant when considering overall commuter journey times, the congested network in Sydney and the overall traffic benefits provided to the community by the new traffic signal.

Roads and Maritime has undertaken an additional assessment of the potential impacts to businesses in response to the issues raised. The aim of the assessment was to provide additional information about the potential impacts as a result of changed access arrangements to the businesses located at three sites within the established Wetherill Park industrial/commercial area. Further details of that assessment can be found in Appendix B Business Impact Assessment. The assessment was undertaken in March 2018 at the following three locations:

- 1 and 2 Cowpasture Place, Wetherill Park
- 1353, 1357 and 1345 The Horsley Drive, Wetherill Park
- 1336 The Horsley Drive, Bossley Park.

The impacts as a result of changes to access arrangement differ at each location. A summary of the impacts at each location is as follows:

Businesses located at 1 and 2 Cowpasture Place

The access arrangements for customers and delivery vehicles visiting businesses at this location would not change as a result of the proposal. However, customers and delivery vehicles exiting this site with the intention to travel west on The Horsley Drive or north on Cowpasture Road would be required to take an alternate route or use Restwell Road/ Cowpasture Road roundabout to make a u-turn as they would no longer be able to make a u-turn at The Horsley Drive/Cowpasture Road roundabout.

Based on the outcomes of the business impact assessment, it is unlikely that the small increase in travel distance for some customers would deter them from visiting these businesses. Given that deliveries are scheduled and correspond to business agreements, it is considered that the delivery vehicles exiting to the west or north are likely to plan their journey ahead to meet their schedules.

Businesses located at 1353, 1357 and 1345 The Horsley Drive, Wetherill Park

Customers and delivery vehicles travelling to businesses at this location from the east would be required to take an alternative route as they would no longer be able to perform a u-turn at The Horsley Drive/Cowpasture Road roundabout. This would mean a potential increase in travel distance of 1.1 kilometres (around 3.7 minutes) or 2.4 kilometres (around four minutes), depending on the chosen alternative. The access arrangements for customers and delivery vehicles traveling from the west along the Horsley Drive or north/south along Cowpasture Road would not change as a result of the proposal. There would also be no change to customers and delivery vehicles exiting the site as a result of the proposal.

Based on the outcomes of the business impact assessment, it is likely that the majority of customers will continue to visit the businesses at this location given the existing cluster of industrial/commercial uses, availability of specialist products and services at some businesses, and the fact that many of the businesses receive a large proportion of customers by appointment.

Business located at 1336 The Horsley Drive, Bossley Park

The access arrangements for customers and delivery vehicles visiting this business would not change as a result of the proposal. However, customers and delivery vehicles exiting this site with the intention to travel east along The Horsley Drive would be required to take an alternate route as they would no longer be able to make a u-turn at The Horsley Drive/Cowpasture Road roundabout. This would result in a potential increase in travel distance of up to 2.4 kilometres or four minutes. The existing arrangements for customers exiting the site to other directions, such as west on The Horsley Drive or north/south on Cowpasture Road, is not expected to change as a result of the proposal.

Based on the outcomes of the business impact assessment, given the type of specialist products and services offered at the business (nursery and farming) and that it receives some appointments, it is likely that customers would plan ahead to intentionally visit the business. It is unlikely that the potential increase in travel distance when exiting the site to some of the customers would deter them from visiting the business.

With timely and ongoing consultation between Roads and Maritime and the businesses, it is expected that most impacts would be reduced. This consultation should include project updates about timing of construction work and changed access to provide sufficient time for the businesses to inform their customers and deliveries about access changes. Businesses would also be encouraged to implement strategies to address potential impacts, including providing communications about alternate access routes on their website, social media, email distribution, advertising and leaflets. They could also ensure that their staff are informed about alternate access routes to assist customer travel.

Roads and Maritime has not assessed the impacts of the road upgrade proposal on the development proposal DA588.1/2016, as it is not an approved development.

2.7 General

Submission number(s)

26, 29

Issue description

Submissions were received with a general comment on the project:

- General disagreement with the project, no specific issues raised.

Response

Submissions noted.

2.8 Consultation

Submission number(s)

16

Issue description

A submission was received from a property owner, stating that the information session in Abbotsbury was very useful. The property owner thanked Roads and Maritime for the information provided and requested additional information regarding land acquisition.

Response

Roads and Maritime has started consultation with affected property owners to describe the road upgrade proposal and the extent of associated impacts, however final acquisition boundaries will be confirmed during detailed design.

Roads and Maritime advises that the timing and of potential acquisition would be subject to project approval and funding availability. Any property acquisition would be carried out in accordance with the *Land Acquisition (Just Terms Compensation) Act 1991* and accounting for the NSW Government Land Acquisition Reform 2016, available online at <https://landacquisition.nsw.gov.au>

2.9 Outside the project scope

Submission number(s)

8, 12, 25, 28, 29

Issue description

Submissions outside the project scope regarding traffic within the local road network include:

- Concern that little is being done to reduce heavy vehicle traffic along the section of The Horsley Drive to Mimosa Road
- Concern that the intersection of The Horsley Drive and Wallgrove Road is unsafe and an upgrade of this intersection as well as The Horsley Drive to the west of this intersection is required
- Suggestion for speed cameras installed on The Horsley Drive
- Suggestion that Victoria Road would be a better option.

Response

The scope of work of the current proposal is to upgrade The Horsley Drive between the M7 Motorway and Cowpasture Road.

Roads and Maritime acknowledge and have noted the above submissions, however, these issues are outside the scope of this proposal.

The Horsley Drive is a state road and currently provides access to Smithfield Wetherill Park Industrial Area. Traffic modelling has identified the need to upgrade The Horsley Drive between the Wallgrove Road intersection and Cowpasture Road. This upgrade would provide a safer and more efficient road network for residents and local freight movement and would also meet future traffic demand. Roads and Maritime acknowledge the suggestion to upgrade and extend Victoria Road through to the M7, however, it is outside the scope of this proposal.

3. Responses to government agency, local council and utility providers

3.1 Respondents

In addition to the 28 community submissions addressed in Chapter 2 of this report, Roads and Maritime received a total of five government agency, local council and utility provider submissions in response to the proposal during the exhibition of the EIR.

The issues raised in each submission have been extracted and collated, and corresponding responses to the issues have been provided. Where similar issues have been raised in different submissions, only one response has been provided.

The most common issues raised by government agencies, local councils and utility providers are listed in Table 3-1.

This chapter addresses each government agency, local council and utility provider submission and associated response provided by Roads and Maritime. Each submission is outlined verbatim and individual responses have been provided specific to each submission.

3.2 Overview of the issues raised and advice provided

Responses to government agencies, local councils and utility providers' issues are outlined within this chapter and summarised in Table 3-1.

Table 3-1 Summary of government agencies, local councils and utility providers' issues and advice

Respondent	Submission No.	Section number where issues are addressed	Issues raised
TransGrid	10	3.3	Consultation
Sydney Water	11	3.4	Request for extension
Jemena	13	3.5	Utilities and consultation
WaterNSW	20	3.6	<ul style="list-style-type: none">• Water quality, drainage and flooding• Air quality• Soils, topography and geology• Non-aboriginal heritage• Property and land use• Access• Hazard
Fairfield City Council	33	3.7	<ul style="list-style-type: none">• General support• Traffic and access• Consultation

3.3 TransGrid

Issue description

TransGrid stated that the proposal does not impact on TransGrid's infrastructure. The Sydney West – Guildford No.2 132 kV Transmission Line (93M/93J) now belongs to Endeavour Energy and, therefore, Endeavour Energy should be consulted regarding the proposal.

Response

Roads and Maritime acknowledges this submission. Consultation with public utility authorities including Endeavour Energy has been undertaken as part of the concept design to identify and locate existing utilities and incorporate utility authority requirements for relocation and/or adjustments. Preliminary investigations have indicated that a number of utilities would require relocation or adjustment as part of the proposal. This would be undertaken in consultation with the utility authorities. Consultation with all affected utility authorities would continue throughout the detailed design stage in order to confirm adjustments.

3.4 Sydney Water

Issue description

Sydney Water requested an extension of time until November 2017 in order to provide indicative sizing for the ultimate servicing for growth up to the year 2036 as well as provision of an indicative corridor for the proposed infrastructure.

Response

Roads and Maritime acknowledges this submission. Consultation with Sydney Water occurred as part of the development of the concept design to incorporate Sydney Water requirements. Roads and Maritime has advised Sydney Water that consultation would be continued to detailed design phase and feasibility of any additional requirements would be considered during the detailed design stage of the proposal.

3.5 Jemena

Issue description

Jemena noted that the proposal is likely to impact a Jemena gas pipeline and requested a meeting with Roads and Maritime.

Response

Consultation with public utility authorities has been undertaken as part of the concept design to identify and locate existing utilities and incorporate utility authority requirements for relocation and/or adjustments. Preliminary investigations have indicated that a number of utilities would require relocation or adjustment as part of the proposal. Gas mains are located in the proposal area at three locations. The gas mains would be protected during construction including possible protection slab over the high pressure trunk main near Eastern Creek. This would be undertaken in consultation with Jemena. Consultation would continue through the detailed design stage. A meeting with Jemena was held, as requested.

3.6 WaterNSW

3.6.1 Water quality, drainage and flooding

Issue description

WaterNSW provided comments about the impact of the proposal on water quality, drainage and flooding, and requested that:

- It is a requirement that the proposal would not result in an increase in stormwater flows into the Upper Canal corridor
- The design and location of the sediment basin, steel pipe and any temporary structures that may impact on the Upper Canal be finalised in consultation with WaterNSW
- It is preferable for the temporary pipe to be free standing from the Upper Canal structure
- Mitigation measures should include preventing waste and rubbish from entering the open waters of the Upper Canal
- Mulch should not be used in close proximity to the open waters of the Upper Canal
- WaterNSW be consulted during the development of the soil and water management plan (SWMP) and site specific erosion and sediment control plans (ESCP).

Response

Potential impacts of the proposal on catchments have been assessed in Section 5.8.3 of the EIR. As the proposal comprises widening an existing road and incorporates appropriate road drainage, it would not have a substantial influence on either the quality or quantity of flows to waterways. The proposal would not alter the WaterNSW Upper Canal stormwater flumes which prevent runoff from entering the Canal. The final catchment for the canal within the proposal site is reduced compared to the existing catchment size.

Consultation with WaterNSW would continue throughout the detailed design stage and construction stage of the project, including design and location of the sediment basin (proposed to the west of the Upper Canal) and steel pipe and any temporary structures that may impact on the Upper Canal. WaterNSW will also be consulted during development of the soil and water management plan (SWMP) and site specific erosion and sediment control plans (ESCP).

An additional mitigation measure, W7, has been included to address prevention of rubbish from entering the Upper Canal during construction (Table 6-1).

3.6.2 Air quality

Issue description

The following comments from WaterNSW regarding air quality are noted:

- Request that the Upper Canal should be included as a sensitive receiver for air quality impacts and requested that dust generated during earthworks and construction activities be addressed to prevent polluting the open waters of the Upper Canal on either side of Westons Tunnel
- No stockpiles are to be established in close proximity to the Upper Canal.

Response

Environmental safeguard A1 has been modified to include Upper Canal as a sensitive receiver for air quality impacts. An additional safeguard, A10, has been included to avoid any stockpiles placed in close proximity of the Upper Canal.

3.6.3 Soils, topography and geology

Issue description

- WaterNSW requested that all areas of their land impacted by the proposal would be stabilised and restored after construction is concluded.

Response

All WaterNSW land impacted by the proposal will be restored once construction is completed.

3.6.4 Non-aboriginal heritage

Issue description

The following comments from WaterNSW regarding non-aboriginal heritage are noted:

- WaterNSW noted that the proposal includes realignment of the road where it crosses the Upper Canal corridor, which is a controlled area declared under the *WaterNSW Act 2014* owned and managed by WaterNSW
- WaterNSW noted that the main concerns from an asset protection point of view have been addressed, specifically, the provision of a clear span over Westons Tunnel (5 to 7 metres on each side); a dilapidation assessment, and a Collapse Contingency Plan
- WaterNSW noted that Roads and Maritime has committed to providing the assessment and Contingency Plan to WaterNSW for review at least four weeks prior to works commencing
- Upper Canal could potentially be impacted by vibration from construction of the project and as such guideline and vibration velocity as per the EIR are to be adopted
- The proposal would result in the removal of crepe myrtle trees associated with a previous occupation and requested that the gate posts be protected as far as possible
- The proposal would adversely affect the heritage significance of the Upper Canal due to visual impacts of the road at the crossing of the Upper Canal
- Deep rooted or species with invasive moisture seeking root systems should not be used in the proposed landscape buffer between the Canal and The Horsley Drive
- WaterNSW supported the archival recording, pre-and post-dilapidation surveys of Westons Tunnel and agreed vibration monitoring would minimise risks and potential impacts
- All works should be carried out under a Section 60 application under the *Heritage Act 1977* as identified in Table 5.11.4 of the EIR
- WaterNSW requested that if there are any changes to project arising from further assessment and if these amendments have potential implications for WaterNSW, that Roads and Maritime consult with WaterNSW on these amendments prior to making decisions
- WaterNSW requested that consultation with WaterNSW should be continued throughout the detailed design and construction phase of the project particularly regarding the design of the bridge over the Upper Canal.

Response

Roads and Maritime will provide a dilapidation assessment and contingency plan to WaterNSW for review at least four weeks prior to works commencing. Consultation with WaterNSW would continue throughout the detailed design stage and construction stage of the project, including decisions regarding the bridge over the Upper Canal.

The EIR identifies the potential for the Upper Canal to be impacted by vibration from construction of the project. As outlined in Sections 5.2.3 and 5.11.3 of the EIR, the *German Standard DIN 4150-3:1999 'Structural Vibration Part 3: Effects of Vibration in Structures'* would be used to assess vibration effects. The guideline vibration velocity levels to be adopted for the Upper Canal are those listed in Table 5-11 of the EIR.

An application will be made to the OEH's Heritage Division for a permit under s60 of the *Heritage Act 1977* prior to the commencement of works. A Non-Aboriginal Heritage Management Plan (NAHMP) will be prepared and implemented as part of the CEMP. It will provide specific guidance on measures and controls to be implemented to avoid and mitigate impacts to Non-Aboriginal heritage.

In the event that there are amendments to the project arising from further assessment that result in implications for WaterNSW, Roads and Maritime will consult with WaterNSW regarding the outcomes of any such amendments.

The EIR states that there would be up to four metres in height difference at the Upper Canal crossing when compared to the existing alignment. This height difference has been incorrectly reported in the Statement of Heritage Impact Assessment (SoHI), Landscape and Visual Impact Assessment report and in the EIR. Roads and Maritime wishes to clarify that the overall height difference between the existing road and proposed road is only up to 2.4 metres at the tunnel crossing. While this would not result in as greater visual impact as a four metres height difference, it would still result in a visually more dominant road than the current road alignment.

A Statement of Heritage Impact Assessment (SoHI) was prepared for the proposal by RPS Consultants. The Canal is of State heritage significance based on its rarity and technical achievement. Its aesthetics are not considered as an important element of its heritage significance. Because of this, it is considered that views to and from the heritage item are amenable to change and would not adversely affect the heritage significance of the item. While views to and from the item will be impacted, with the road becoming more dominant in the landscape, the SoHI concluded that the proposal would not adversely affect the heritage significance of the item. This change of view comprises a very small part of the Upper Canal heritage item as a whole.

Trees will be planted along the verge of The Horsley Drive, providing a visual buffer between the Upper Canal and the new road alignment in consultation with WaterNSW and WSPT.

An additional environmental safeguard, H14, has been included in this report to address impact of deep rooted or species with invasive moisture seeking root systems on the Upper Canal (Table 6-1).

3.6.5 Property and land use

Issue description

WaterNSW made the following requests regarding property and land use:

- Acquisition of part of Lot 2 DP596353 to occur post construction to allow accurate survey and acquisition to the new boundaries, with an access, works and services lease in place during the construction period.
- Clarification from Roads and Maritime regarding the intended use of Lot 1 DP596354 and the fate of existing road alignment where it crosses the Upper Canal, whether Roads and Maritime intends to retain this land or dispose of it.

Response

Roads and Maritime has noted WaterNSW's preference of acquisition to the new boundaries to occur once construction is completed. Further details regarding the occupation of land during construction and acquisition process will be discussed with WaterNSW during the detailed design phase.

Roads and Maritime proposes to hand over surplus land including unused road corridor back to Western Sydney Parklands and WaterNSW as relevant. The extent of land handover and any rehabilitation required will be discussed and agreed with WaterNSW during the detailed design phase.

Roads and Maritime will consult with WaterNSW during the detailed design stage of the project regarding fencing and access arrangements to be employed during the construction stage.

3.6.6 Access

Issue description

The following comments regarding access to WaterNSW's property are noted:

- Access to the Upper Canal corridor is prohibited without a written access consent from WaterNSW
- Open waters of the Upper Canal south of the Westons Tunnel entrance (outside the construction site boundary) must be securely fenced to prevent access by construction workers
- WaterNSW's access to the Upper Canal corridor must be maintained at all times during construction. Access on the southern side of The Horsley Drive is proposed to be achieved via Cotswold Avenue. As this access is limited to smaller vehicles, the contractor must permit WaterNSW to use the contractor's access track for all instances where larger vehicles must access the Upper Canal, not just for emergencies as noted in Section 3.3.7 of the EIR
- Security fencing to be installed to WaterNSW standards along the new boundaries. Any existing security fencing along boundaries that are not proposed to change must be maintained. Any repairs or replacement on fencing must occur to WaterNSW's standards and at Road and Maritime's expense. Any existing fencing proposed to be replaced must be removed and disposed of at a facility licenced to accept such waste
- WaterNSW endorsed the installation of protection screens separating the area under the bridge for maintenance access and requested access to the area under the bridge during emergencies.

Response

Additional environmental safeguards have been added in Table 6-1 of this submission report regarding the following:

- Roads and Maritime will seek written access consent from WaterNSW prior to entering the Upper Canal corridor (P5)
- WaterNSW's access to the Upper Canal corridor is to be maintained at all times during construction (P6)
- The contractor would permit WaterNSW to use the Contractor's access track for all instances where larger vehicles need to access the Upper Canal (P7)
- Security fencing would be installed to WaterNSW standards along the new boundaries (P8)
- Protection screens are to be installed separating the area under the bridge with a gate for maintenance access (P9)
- Access to the area under the bridge will be made available to WaterNSW during emergencies (P10).

3.6.7 Hazard

Issue description

The following comments were made by WaterNSW regarding potential hazards:

- All refuelling, oil changes and vehicle wash-downs are to be conducted within the construction compounds and appropriate mitigation measures are adopted to prevent spills and leaks at all other operational locations
- Notification to WaterNSW of any incident such as vehicle accident, personnel falls into open waters, canal collapse, discovery of any heritage items, spill or fire that affects or could affect the Upper Canal including the corridor. Any such incident should be reported to WaterNSW on the Incident Notification Number 1800 061 069 (24 hour service) as a matter of urgency
- Fisheries NSW will be notified immediately of any fish kills in the vicinity of the works. In such cases, all works other than emergency response procedures are to cease until the issue is rectified and a written approval to proceed is provided by Fisheries NSW.

Response

Two existing environmental safeguards have been amended and shown in Table 6-1 of this submission report. These safeguards are to ensure all refuelling, oil changes and vehicle wash-downs are conducted within the construction compound (W3) and within impervious bunded area (W4).

An additional safeguard, Gen7 is added in Table 6-1 to outline the procedure regarding incident notification. Incident types covered in the procedure include the following:

- vehicle accident
- personnel falls into open waters
- canal collapse
- discovery of any heritage items
- spills
- fire that affects or could affect the Upper Canal and its corridor.

Consultation with WaterNSW would continue throughout the detailed design stage and construction stage of the project, including decisions regarding the bridge over the Upper Canal.

The submission report will be available online and all the stakeholders including WaterNSW will be advised upon publication.

3.7 Fairfield City Council

Issue description

- A submission from Fairfield City Council noted that issues raised previously relating to mainstream and overland flooding, evacuation route, environmental conservation, property, asset, traffic and development planning impacts have been considered and appropriate actions are being taken
- Fairfield Council noted that the request made to provide a u-turn facility near Toohey Road has not been included as part of the proposal
- Fairfield City Council recommended that measures to enhance the legibility of the road network between Cowpasture Road and Mcllwraith Street, and measures to improve current access from The Horsley Drive to properties to the north
- Fairfield City Council requested that Roads and Maritime advise the Cumberland Business Chamber of the reasons for not proposing to install a u-turn facility on The Horsley Drive near Bond Crescent or Toohey Road.

Response

- Roads and Maritime acknowledge the submission by the Fairfield Council noting that previous issues raised have been considered for appropriate action
- As reported previously, the proposed access strategy for the businesses on the northern side of The Horsley Drive east of Cowpasture Road is the utilisation of the existing surrounding road network, including Elizabeth Street, Victoria Street, Cowpasture Road North, The Horsley Drive and the roundabout at Cowpasture Road/Restwell Road intersection. The impact assessment of the traffic using alternate access routes in the surrounding road network has been carried out as part of the traffic study. Additional travel time from using the alternate routes is not considered significant when considering overall commuter journey times, and the traffic and safety benefits provided by replacing the roundabout with new traffic signals, the congested network in Sydney and overall traffic benefits provided to the community by the new traffic signal. It is expected that commuters, including employees, customers and deliveries to businesses, will plan their journeys and identify suitable travel routes like other similar locations along the State road network. A u-turn bay near Toohey Road is not desirable due to a number of factors including the proximity to the proposed The Horsley Drive/Cowpasture Road signalised intersection and considering the overall network performance and safety.
- Roads and Maritime has undertaken an additional assessment about the potential impacts to businesses located at three sites within the established Wetherill Park industrial/commercial area as a result of changes to some access arrangements with the signalisation of The Horsley Drive/Cowpasture Road roundabout. Further details can be found in Section 2.6 of this report.
- The scope of work under the current proposal is to upgrade The Horsley Drive between the M7 Motorway and Cowpasture Road to address the current traffic congestion and meet the future traffic needs. The road network between Cowpasture Road and Mcllwraith Street is outside the scope of the project.
- This submission report with the responses to the submissions made during the public display will be made available online once published. All stakeholders and community, including Cumberland Business Chamber, will be advised of the publication of the submission report.

4. Additional assessment

4.1 Business impact assessment

4.1.1 Summary

As a response to numerous submissions received regarding the change in traffic conditions and property access as a result of the signalisation of The Horsley Drive/Cowpasture Roads intersection, Roads and Maritime engaged GHD to prepare a Business Impact Assessment (BIA). This assessment aimed to understand the potential impacts to businesses located at three sites to the east of the roundabout at The Horsley Drive and Cowpasture Road.

The BIA focuses on three sites within Wetherill Park industrial/commercial area potentially impacts by changes to the current access arrangements on The Horsley Drive. These are:

- 1 and 2 Cowpasture Place, Wetherill Park
- 1353, 1357 and 1345 The Horsley Drive, Wetherill Park
- 1336 The Horsley Drive, Bossley Park.

The locations of these sites are shown in Figure 3-1. There are approximately 90 businesses located across these sites.

A full report is included in Appendix B and a summary of the report is given below. Business impacts would be minimised through the implementation of management and mitigation measures in Section 6.2.

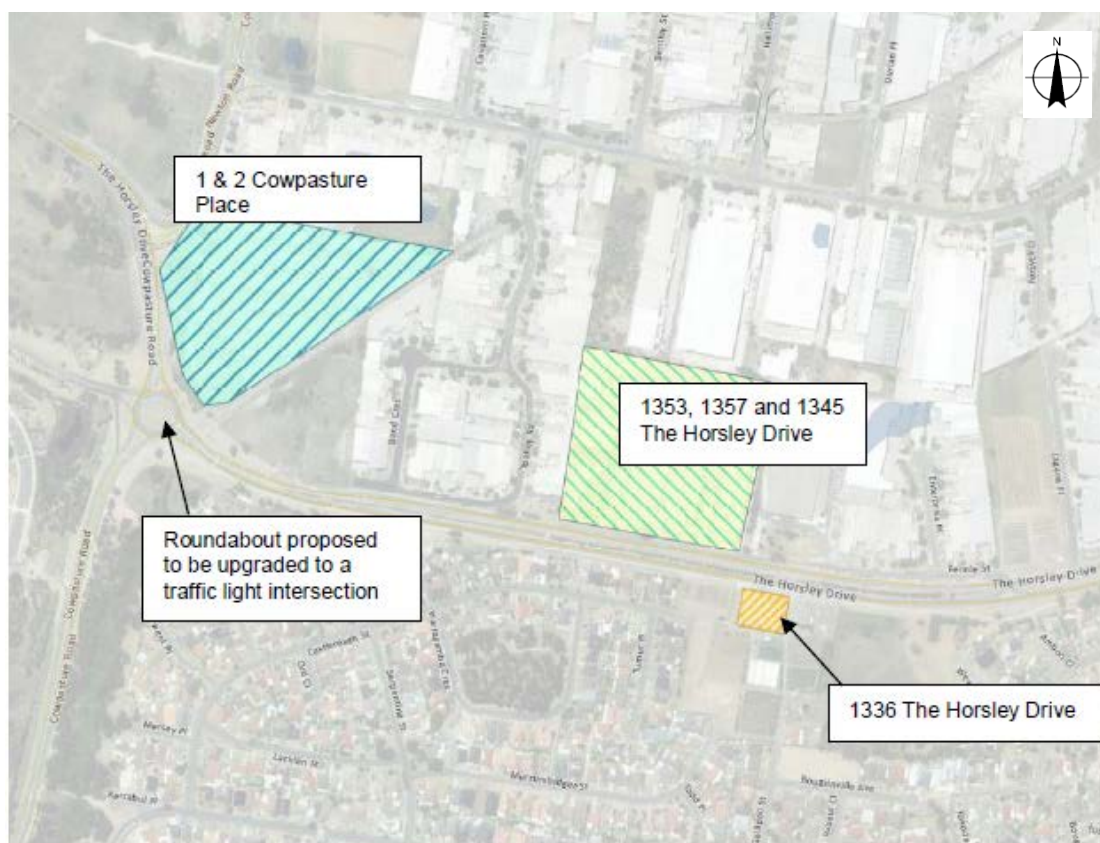


Figure 4-1 Location of the businesses assessed in the BIA (Source: SMEC, 2017 – modified by GHD)

Businesses located at 1 and 2 Cowpasture Place

The access arrangements for customers and delivery vehicles visiting businesses at this location would not change as a result of the proposal. However, customers and delivery vehicles exiting this site with the intention to travel west on The Horsley Drive or north on Cowpasture Road would be required to take an alternate route as they would no longer be able to make a u-turn at The Horsley Drive/Cowpasture Road roundabout.

Based on the outcomes of the BIA, it is unlikely that the small increase in travel distance for some customers would deter them from visiting these businesses. Given that deliveries are scheduled and correspond to business agreements, it is considered that the delivery vehicles exiting to the west or north are likely to plan their journey ahead to meet their schedules.

Businesses located at 1353, 1357 and 1345 The Horsley Drive, Wetherill Park

Customers and delivery vehicles travelling to businesses at this location from the east would be required to take an alternative route as they would no longer be able to perform a u-turn at The Horsley Drive/Cowpasture Road roundabout. This would mean a potential increase in travel distance of 1.1 kilometres (around 3.7 minutes) or 2.4 kilometres (around four minutes), depending on the chosen alternative. The access arrangements for customers and delivery vehicles traveling from the west along the Horsley Drive or north/south along Cowpasture Road would not change as a result of the proposal. There would also be no change to customers and delivery vehicles exiting the site as a result of the proposal.

Based on the outcomes of the business impact assessment, it is likely that the majority of customers will continue to visit the businesses at this location given the existing cluster of industrial/commercial uses, availability of specialist products and services at some businesses, and the fact that many of the businesses receive a large proportion of customers by appointment.

Business located at 1336 The Horsley Drive, Bossley Park

The access arrangements for customers and delivery vehicles visiting this business would not change as a result of the proposal. However, customers and delivery vehicles exiting this site with the intention to travel east along The Horsley Drive would be required to take an alternate route as they would no longer be able to make a u-turn at The Horsley Drive/Cowpasture Road roundabout. This would result in a potential increase in travel distance of up to 2.4 kilometres or four minutes. The existing arrangements for customers exiting the site to other directions, such as west on The Horsley Drive or north/south on Cowpasture Road, is not expected to change as a result of the proposal.

Based on the outcomes of the business impact assessment, given the type of specialist products and services offered at the business (nursery and farming) and that it receives some appointments, it is likely that customers would plan ahead to intentionally visit the business. It is unlikely that the potential increase in travel distance when exiting the site to some of the customers would deter them from visiting the business.

4.1.2 Additional management and mitigation measures

Based on consultation with the businesses, additional management and mitigation measures will be implemented to address business impacts arising from the proposal. Businesses will be informed of project updates as well as available alternate access routes to enable the business owners to inform customers about construction commencing and alternate access routes.

5. Design changes

There have been no changes to the proposal that are of a nature deemed so great as to result in a fundamentally different project to that displayed in the EIR.

6. Environmental management

The EIR for The Horsley Drive upgrade between M7 Motorway and Cowpasture Road identified the framework for environmental management, including safeguards and management measures that would be adopted to avoid or reduce environmental impacts (section 5 of the EIR).

The issues raised in the public submissions have been considered and addressed in this submission report. There were no fundamental changes to the proposal. The safeguard and management measures have been revised to include additional measures as listed in Table 6-1.

Should the proposal proceed, environmental management will be guided by the framework and measures outlined below.

6.1 Environmental management plans (or system)

A number of safeguards and management measures have been identified in order to minimise adverse environmental impacts, including social impacts, which could potentially arise as a result of the proposal. Should the proposal proceed, these management measures would be incorporated into the detailed design and applied during the construction and operation of the proposal.

A Construction Environmental Management Plan (CEMP) will be prepared to describe safeguards and management measures identified. The CEMP will provide a framework for establishing how these measures will be implemented and who would be responsible for their implementation.

The CEMP will be prepared prior to construction of the proposal and must be reviewed and certified by environment staff prior to the commencement of any on site works. The CEMP will be a working document, subject to ongoing change and updated as necessary to respond to specific requirements. The CEMP would be developed in accordance with the specifications set out in the *QA Specification G36 – Environmental Protection (Management System)*, *QA Specification G38 – Soil and Water Management (Soil and Water Plan)*, *QA Specification G40 – Clearing and Grubbing* and *QA Specification G10 – Traffic Management*.

6.2 Summary of safeguards and management measures

The EIR for The Horsley Drive upgrade between M7 Motorway and Cowpasture Road identified a range of environmental outcomes and management measures that would be required to avoid or reduce the environmental impacts.

After consideration of the issues raised in the public submissions, the environmental management measures for the project (refer to Chapter 6 of the EIR) have been revised. Should the project proceed, the environmental management measures in Table 6-1 will guide the subsequent phases of the development. Additional and/or modified environmental safeguards and management measures to those presented in the EIR have been underlined and deleted measures, or parts of measures, have been struck out.

Table 6-1: Summary of environmental safeguards and management measures

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
General				
Gen1	General	All environmental safeguards must be incorporated within the following: <ul style="list-style-type: none"> Project environmental management plan Detailed design Contract specifications for the proposal Contractor's Environmental Management Plan (CEMP) 	Project manager	Pre-construction
Gen2	General	A risk assessment has been/must be carried out on the proposal in accordance with project pack and risk assessment procedures to determine an audit and inspection program for the works. The recommendations of the risk assessment are to be implemented. A review of the risk assessment must be undertaken after the initial audit or inspection to evaluate if the level of risk chosen for the project is appropriate. Any work resulting from the proposal and as covered by the environmental investigation report may be subject to environmental audit(s) and/or inspection(s) at any time during their duration.	Project manager and regional environmental staff	Pre-construction After first audit
Gen3	General	The environmental contract specification must be forwarded to the Roads and Maritime Environment Manager for review. A contractual hold point must be maintained until the CEMP is reviewed by the Roads and Maritime Environment Manager prior to commencement of activity.	Project manager Construction contractor	Detailed design and pre-construction
Gen4	General	The Project Manager must notify the Roads and Maritime Environment Officer at least five working days prior to work commencing.	Project manager	Pre-construction
Gen5	General	All businesses and residences likely to be affected by the proposed works must be notified at least five working days prior to the commencement of the proposed activities.	Project manager/ Construction contractor	Pre-construction
Gen6	General	Environmental awareness training must be provided, by the contractor, to all field personnel and subcontractors.	Construction contractor	Pre-construction and construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
Gen7	<u>Incident notification</u>	<u>Notification of any incident such as a vehicle accident, personnel falls into open waters, Canal collapse, discovery of any heritage items, spill or fire that affects or could affect the Upper Canal including the corridor, should be reported to WaterNSW on the Incident Notification Number 1800 061 069 (24 hour service) as a matter of urgency.</u>	<u>Construction contractor</u>	<u>Construction</u>
Gen 8	<u>Incident notification</u>	<u>Fisheries NSW will be notified immediately of any fish kills in the vicinity of the works. In such cases, all works other than emergency response procedures are to cease until the issue is rectified and a written approval to proceed is provided by Fisheries NSW.</u>	<u>Construction contractor</u>	<u>Construction</u>
Traffic and access				
T1	Access to properties	Residents and businesses will be notified of any specific impacts to property access and arrangements required during construction.	Roads and Maritime	Detailed design
T2	Traffic	A detailed traffic management plan will be prepared in accordance with <i>Traffic Control at Work Sites</i> (RTA 2010) and Specification G10 - <i>Control of Traffic</i> . The plan will be approved by Roads and Maritime before implementation to provide a comprehensive and objective approach to minimise any potential impacts on road network operations during construction.	Construction contractor	Pre-construction
T3	Traffic	The traffic management plan will include measures such as: <ul style="list-style-type: none"> • Safe access points to work areas from the adjacent road network • Safety barriers where necessary • Temporary speed restrictions when necessary • Maintaining adequate sight distance • Displaying prominent warning signage • Minimise the use of local roads by construction vehicles • Hours of work and night work safety issues The plan will be reviewed when complaints are received.	Construction contractor	Pre-construction
T4	Community notification	The community will be kept informed about construction through advertisements in the local media and by prominently placed advisory notices or variable message signs.	Roads and Maritime	Pre-construction and construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
T5	Public transport	<p>Consultation will be undertaken with local bus operators and freight transport groups before and during construction, regarding temporary relocation of bus stops and changes to the road network.</p> <p>Bus stop relocation needs to be communicated with the service users and community.</p>	Roads and Maritime	Pre-construction and construction
T6	Active transport	<p>To minimise safety risk and reduction in amenity to pedestrians and cyclists:</p> <ul style="list-style-type: none"> • Appropriate signage and way finding provisions relating to changes in pedestrian and cyclist access • Pedestrians to be kept clear from work site at all times, with work areas defined by, at a minimum, plastic pedestrian fencing • Temporary footpaths adequately signposted to indicate direction of footpath and have an unobstructed width at local constrictions of no less than one metre, at an absolute minimum. Two metres width is desirable • Crossing facilities and associated signage is to be maintained throughout construction • Cyclists should be considered when providing lighting at night and positioning road works signage, i.e. above head height of cyclist. 	Roads and Maritime Construction contractor	Pre-construction and construction
T7	Congestion and safety	Traffic control will be provided to manage and regulate traffic movements during construction. For example, construction and delivery vehicles entering or leaving the site compound and/or stockpile sites will use arterial roads.	Construction contractor	Construction
T8	Access to properties	Property access will be maintained. Pedestrian access will be maintained at all time.	Construction contractor and Roads and Maritime	Construction
T9	Access to properties	Where changes to access arrangements are necessary, Roads and Maritime will advise owners and tenants and consult with them in advance regarding alternate access arrangements.	Construction contractor and Roads and Maritime	Pre–construction and construction
T10	Parking	Construction workers will be encouraged to use public transport since there are limited parking spaces at the potential compound sites.	Construction contractor and Roads and Maritime	Construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
Noise and vibration				
N1	Operational noise	Detailed design will consider addressing residual exceedances of noise criteria in order of preference: quieter road surfaces, barriers and at-property treatments. More than one treatment may be required. Noise criteria for the Horsley Park Public School is based on an internal to external transmission loss of 10 dB. This transmission loss is considered conservative and should be verified through attended measurements at the school. A higher transmission loss (e.g. 20 dB) will not qualify the school for noise mitigation.	Construction contractor	Pre-construction and construction
N2	Construction noise and vibration	A Noise and Vibration Management Plan (NVMP) will be prepared and implemented as part of the CEMP. The NVMP will generally follow the approach in the Interim Construction Noise Guideline (ICNG) (DECC, 2009) and identify: <ul style="list-style-type: none"> all potential significant noise and vibration generating activities associated with the activity feasible and reasonable mitigation measures to be implemented, taking into account Beyond the Pavement: urban design policy, process and principles (Roads and Maritime, 2014) a monitoring program to assess performance against relevant noise and vibration criteria arrangements for consultation with affected neighbours and sensitive receivers, including notification and complaint handling procedures contingency measures to be implemented in the event of non-compliance with noise and vibration criteria.	Construction contractor	Pre-construction and construction
N3	Noise and vibration	All sensitive receivers (eg schools, local residents) likely to be affected will be notified at least five days prior to commencement of any works associated with the activity that may have an adverse noise or vibration impact. The notification will provide details of: <ul style="list-style-type: none"> the project the construction period and construction hours contact information for project management staff complaint and incident reporting how to obtain further information.	Construction contractor	Pre-construction and construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
N4	Construction hours and scheduling	Where reasonable and feasible, construction should be carried out during the standard daytime working hours. Work generating high noise and/or vibration levels should be scheduled during less sensitive time periods. Work undertaken outside of standard construction hours will comply with <i>Construction Noise and Vibration Guidelines</i> (RMS 2016).	Construction contractor	Pre-construction and construction
N5	Construction hours and scheduling	An out of hours procedure will be prepared and include as a minimum: <ul style="list-style-type: none"> • Background levels for noise criteria in accordance with the Interim Construction Noise Guideline (DECC, 2009) • Locations of the works • Locations of sensitive receivers • Predicted noise levels • Communications plan. 	Construction contractor	Pre-construction and construction
N6	Construction compounds	Construction compound 4 is located in close proximity to the residential receivers east of Cowpasture Road. It is recommended that the compound should be located at locations 1, 2 or 3 from an acoustic perspective to minimise potential adverse impacts.	Construction contractor	Pre-construction and construction
N7	Construction compounds	Construction compounds will be laid out to maximise the distance of noise sources and loading areas from residences with solid structures (sheds etc) placed between residences and noise sources, where possible.	Construction contractor	Pre-construction and construction
N8	Construction noise from machinery and equipment	All equipment will be selected to minimise noise emissions. Equipment will be fitted with appropriate silencers and will be appropriately maintained to ensure optimum running conditions with periodic monitoring. The noise levels of plant and equipment must have operating Sound Power or Sound Pressure Levels compliant with the maximum levels provided in Table F1 of the CNVG. Quieter and less vibration emitting construction methods where reasonable and feasible.	Construction contractor	Construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
N9	Construction noise from machinery and equipment	<p>High noise and vibration generating activities should be carried out in continuous blocks, not exceeding three hours each, with a minimum respite period of one hour between each block.</p> <p>Unless negotiated with the community with consultation documented and approved by the Roads and Maritime project manager or permitted under the licence, there should be no more than:</p> <ul style="list-style-type: none"> • 2 consecutive evenings or nights per week; and • 3 evenings or nights per week; and • 6 evenings or nights per month. • For night work, these periods of work should be separated by not less than one week. 	Construction contractor	Construction
N10	Construction noise from machinery and equipment	The use of mulchers, jack hammers, concrete saws, rock breakers, compaction or other equipment used in very close proximity to a receiver should be limited where feasible and reasonable to the standard construction hours.	Construction contractor	Construction
N11	Construction noise from machinery and equipment	<p>Noise-emitting plant will be located and directed away from sensitive receivers where possible.</p> <p>Stationary noise sources should be enclosed or shielded whilst ensuring that the occupational health and safety of workers is maintained.</p>	Construction contractor	Construction
N12	Construction noise from machinery and equipment	Traffic flow, parking and loading and unloading areas will be planned to minimise reversing movements within the proposal site.	Construction contractor	Construction
N13	Construction noise from machinery and equipment	Non-tonal reversing beepers (or an equivalent mechanism) will be fitted and used on all construction vehicles and mobile plant regularly used on site and for any out of hours work.	Construction contractor	Construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
N14	Construction noise from inappropriate practices	<p>Site inductions will be provided to train staff on ways to minimise construction noise impacts on-site. The induction will include as a minimum:</p> <ul style="list-style-type: none"> • All relevant proposal specific and standard noise and vibration mitigation measures • Relevant licence and approval conditions • Permissible hours of work • Any limitations on high noise generating activities • Location of nearest sensitive receivers • Construction employee parking areas • Designated loading/unloading areas and procedures • Construction traffic routes • Site opening/closing times (including deliveries) • Environmental incident procedures • Avoid the use of outdoor radios during the night-time period • Avoid shouting and slamming of doors • Where practical, operate machines at low speed or power and switched off when not being used rather than left idling for prolonged periods • Minimise reversing • Avoid dropping materials from height and avoid metal to metal contact on material. 	Construction contractor	Construction
N15	Construction vibration	<p>Where non-vibration inducing construction methods are impractical, the following principles from the <i>Assessing Vibration: A Technical Guideline</i> (DEC 2006) will be utilised to assist with minimisation of adverse reactions from the community:</p> <ul style="list-style-type: none"> • Confining vibration generating operations to the least vibration sensitive part of the shift which could be when the background disturbance is highest • Determining an upper level for vibration impact also considering what is achievable using feasible and reasonable mitigation. 	Construction contractor	Construction
N16	Construction vibration	<p>Attended vibration measurements should be undertaken at the commencement of vibration generating activities to confirm that vibration levels are within the acceptable range to prevent cosmetic building damage.</p>	Construction contractor	Construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
N17	Construction vibration	Building dilapidation surveys on all buildings located within the buffer zone (safe working distances) for cosmetic damage will be undertaken prior to the commencement of construction activities	Construction contractor	Construction
N18	Construction vibration	Confirm safe working buffer distances for that equipment in that work area based on the vibration criteria. When vibration generating equipment is operating within the above confirmed buffer distances, a permanent vibration monitoring system should be deployed at the building foundation with a trigger level based on the vibration criteria. If the vibration level exceeds the criteria, a visual alarm should be triggered to alert the operators that the vibration criteria have been exceeded.	Construction contractor	Construction
N19	Construction vibration	Reducing vibratory roller size to less than 6 (or 4) tonnes within 15 metres of residential receivers	Construction contractor	Construction
N20	Vibration impacts to heritage features	Vibration monitoring would be undertaken for work around Westons Tunnel and the Upper Canal, to measure vibration levels and alert the operators if the vibration criteria has been exceeded. In addition, in line with the WaterNSW document <i>Requirements for protection of Upper Canal Draft</i> (January 2015) the following mitigation measures should be adopted: <ul style="list-style-type: none"> • No excavation will be made within 5 metres distance without prior analysis of structure stability with respect to the effects of the excavation • Detailed dilapidation survey of the Upper Canal prior to the commencement of any works. The dilapidation survey should be submitted to WaterNSW at least four weeks prior to the commencement of construction works • A dilapidation survey of Weston's Tunnel brick lining would be prepared to assess its condition following completion of construction • Preparation of an Upper Canal Collapse Contingency Plan due to construction activities. The plan will be submitted to WaterNSW at least four weeks prior to the commencement of construction works. 	Construction contractor	Construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
N21	Vibration impacts consultation	<p>Where alternative non-vibration inducing construction methods are impractical, the following principles will be utilised to assist with minimisation of adverse reactions from the community:</p> <ul style="list-style-type: none"> • Confining vibration-generating operations to the least vibration-sensitive part of the shift – which could be when the background disturbance is highest • Determining an upper level for vibration impact also considering what is achievable using feasible and reasonable mitigation • Consulting with the community regarding the proposed events Contacting all potentially affected residents within 100 metres and inform them of the location, type of vibrations and duration. 	Construction contractor and Roads and Maritime	Pre-construction and construction
N22	Monitoring	A noise monitoring program will be carried out for the duration of the works in accordance with the Construction Noise and Vibration Management Plan and any approval and licence conditions.	Construction contractor	Construction
N23	Additional mitigation measures	<p>Based on the predicted noise levels, additional mitigation measures are likely to be required for works during both standard construction hours and outside of standard construction hours. Measures recommended in the CNVG should be considered where feasible and reasonable. These include:</p> <ul style="list-style-type: none"> • Notifications, phone calls and individual briefings • Respite offers and respite periods • Alternative accommodation • Verification of noise and vibration levels. 	Construction contractor	Construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
N24	Post construction noise monitoring	<p>The noise monitoring program (including simultaneous traffic counts) should be undertaken within 12 months of opening once traffic flows have stabilised. Monitoring locations should be selected along the route at the monitoring locations undertaken in this assessment and at locations where any noise complaints are received.</p> <p>The measured noise levels should be compared to the noise level assessment targets. If the noise level targets are exceeded the CNVG recommends the following action:</p> <ul style="list-style-type: none"> • If the exceedance is less than two dBA, 'the prediction methodology and suitability of noise mitigation measures should be reassessed and the reasons for the marginal exceedance should be identified in the report' • If the exceedance is greater than two dBA, 'the adequacy of the noise mitigation measures needs to be reviewed, and if problems are identified steps need to be taken to rectify the situation. Additional noise treatments may be required to achieve the design noise level, where this is feasible and reasonable.' 	Roads and Maritime	Operation
N25	Pedestrian crossing audio tactile devices	General noise mitigation measures applicable to the audio tactile devices will include volume adjustment as well as auto gain control in response to changes in ambient noise levels.		
Air quality				
A1	General air quality impacts	<p>An air quality management plan will be prepared as part of the construction environmental management plan. The plan will include but not be limited to:</p> <ul style="list-style-type: none"> • A map identifying locations of sensitive receivers <u>(including Upper Canal as a sensitive air quality impact receiver)</u> • Identification of potential risks/impacts due to the work/activities as dust generation activities • Management measures to minimise risk including a progressive stabilisation plan • A process for monitoring dust on-site and weather conditions • A process for altering management measures as required. 	Construction contractor	Pre-construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
A2	Dust emissions	Dust suppression measures will be implemented as per the air quality management plan.	Construction contractor	Construction
A3	Dust emissions	Stockpiled materials will be covered, stabilised or stored in areas not subject to high wind.	Construction contractor	Construction
A4	Dust emissions	All trucks will be covered when transporting material to and from the site.	Construction contractor	Construction
A5	Dust emissions	Work activities will be reprogrammed if the mitigation measures are not adequately restricting dust generation.	Construction contractor	Construction
A6	Dust emissions	Works (including the spraying of paint and other materials) will not be carried out during strong winds or in weather conditions where high levels of dust or air borne particulates are likely.	Construction contractor	Construction
A7	Exhaust emissions	Construction plant and equipment will be maintained in a good working condition in order to limit impacts on air quality.	Construction contractor	Construction
A8	Exhaust emissions	Plant and machinery will be turned off when not in use.	Construction contractor	Construction
A9	Impacts on sensitive receivers	Local residents will be advised of hours of operation and duration of work and supplied with a contact name and number for queries regarding air quality.	Construction contractor	Construction
A10	<u>Impacts on sensitive receivers</u>	<u>No stockpiles are to be located in close proximity of the Upper Canal.</u>	<u>Construction contractor</u>	<u>Construction</u>
Property and land use				
P1	Acquisition impacts	Roads and Maritime will liaise and consult on an ongoing basis with landowners and tenants whose property will be acquired or leased regarding the status and timing of acquisition.	Roads and Maritime	Detailed design and pre-construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
P2	Acquisition impacts	All property acquisition will be carried out in accordance with the <i>Land Acquisition Information Guide</i> (Roads and Maritime, 2012) and the <i>Land Acquisition (Just Terms Compensation) Act 1991</i> . Property acquisition plans will be prepared for each of the properties to be acquired as part of the detailed design.	Roads and Maritime and contractor	Detailed design and pre-construction
P3	Acquisition impacts	Particular attention will be given to ensuring appropriate consultation is undertaken with any vulnerable (elderly or low income) households.	Roads and Maritime	Pre-construction and construction
P4	Changes to permanent access	Roads and Maritime will advise owners and tenants and consult with them in advance regarding alternate access arrangements.	Road and Maritime and contractor	Detailed design and pre-construction
<u>P5</u>	<u>Access to the Upper Canal</u>	<u>Roads and Maritime will seek written access consent from WaterNSW prior to entering the Upper Canal corridor.</u>	<u>Contractor/Roads and Maritime Project Manager</u>	<u>Detailed design, pre-construction and construction</u>
<u>P6</u>	<u>Access to the Upper Canal</u>	<u>Access by WaterNSW to the Upper Canal corridor must be maintained at all times during construction.</u>	<u>Contractor/Roads and Maritime Project Manager</u>	<u>During construction</u>
<u>P7</u>	<u>Access to the Upper Canal</u>	<u>The contractor would permit WaterNSW to use the Contractor's access track for all instances where larger vehicles need to access the Upper Canal.</u>	<u>Contractor/Roads and Maritime Project Manager</u>	<u>During construction</u>
<u>P8</u>	<u>Access</u>	<u>Security fencing would be installed to WaterNSW standards along the new boundaries. Any existing security fencing along boundaries that are not proposed to change must be maintained. Should the fencing be damaged, any repairs or replacement must occur to WaterNSW's standards. Any existing fencing proposed to be replaced must be removed and disposed of at a facility licenced to accept such a waste.</u>	<u>Contractor/Roads and Maritime Project Manager</u>	<u>During construction</u>
<u>P9</u>	<u>Access</u>	<u>Protection screens will be installed separating the area under the bridge with a gate for maintenance access.</u>	<u>Contractor/Roads and Maritime Project Manager</u>	<u>Detailed design, pre-construction and construction</u>

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
P10	Access	<u>Access to the area under the bridge will be made available to WaterNSW during emergencies.</u>	<u>Contractor/Roads and Maritime Project Manager</u>	<u>During and after construction</u>
Landscape character and visual impact				
L1	Landscape character zone 1	Provide tree and low understory planting in the median, considering maintenance requirements and safety standards. Provide informal tree and understorey planting bordering both sides of the road corridor. Provide habitat restoration planting to disturbed areas in vicinity of Eastern Creek. Investigate wildlife crossing opportunities at Eastern Creek during detailed design development.	Roads and Maritime	Detailed design
L2	Landscape character zone 2	Provide tree and low understory planting in the median, considering maintenance requirements and safety standards. Provide formalised planting at Ferrers Road 'gateway' to future Horsley Park Urban Farming Precinct. Ensure the realignment of the shared path is in keeping with existing parkland character of the path.	Roads and Maritime	Detailed design
L3	Landscape character zone 3	Provide tree and low understory planting in the median, considering maintenance requirements and safety standards. Provide informal tree and understorey planting on the southern side of the road corridor.	Roads and Maritime	Detailed design
L4	Viewpoint 1a, 1b and 1c, 8, 12, 13 and 17	No specific environmental safeguards are required due to the negligible predicted impact.	Roads and Maritime	Detailed design
L5	Viewpoint 2 Horsley Park Urban Farming Precinct	Revegetate cut and fill embankments. Provide screen planting adjoining the road corridor (Planting in front of private properties will be undertaken in consultation with the property owners).	Roads and Maritime	Detailed design
L6	Viewpoint 3 Horsley Park Urban Farming Precinct	Revegetate cut and fill embankments using species derived from Cumberland Plain Woodland. Provide formal planting at Ferrers Road 'gateway' to future Horsley Park Urban Farming Precinct.	Roads and Maritime	Detailed design

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
L7	Viewpoint 4 Horsley Drive residences	Revegetate cut and fill embankments. Provide screen planting adjoining the road corridor (planting in front of private properties will be undertaken in consultation with the property owners).	Roads and Maritime	Detailed design
L8	Viewpoint 5 Horsley Drive residences	Revegetate cut and fill embankments. Provide screen planting adjoining the road corridor (planting in front of private properties will be undertaken in consultation with the property owners).	Roads and Maritime	Detailed design
L9	Viewpoint 6 Golf driving range	Investigate use of retaining wall to minimise encroachment on private property. Revegetate cut and fill embankments, if applicable, using species derived from Cumberland Plain Woodland. Provide screen planting adjoining the road corridor (planting in front of private properties will be undertaken in consultation with the property owners).	Roads and Maritime	Detailed design
L10	Viewpoint 7 Service station	Provide tree planting along the shared path where feasible.	Roads and Maritime	Detailed design
L11	Viewpoint 9 Ferrers Road southbound	Revegetate cut and fill embankments using species derived from Cumberland Plain Woodland. Provide formal planting at Ferrers Road 'gateway' to future Horsley Park Urban Farming Precinct.	Roads and Maritime	Detailed design
L12	Viewpoint 10 Western Sydney Parklands path	Ensure the realignment of the shared path is in keeping with existing parkland character of the path. Provide formal planting at Ferrers Road 'gateway' to future Horsley Park Urban Farming Precinct. Revegetate cut and fill embankments using species derived from Cumberland Plain Woodland. Develop detailed design of retaining wall in the vicinity of WaterNSW Upper Canal in consultation with Western Sydney Parklands Trust	Roads and Maritime	Detailed design

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
L13	Viewpoint 10A WSP- WaterNSW Upper Canal looking south	Develop detailed design of any proposed construction works in the vicinity of WaterNSW Upper Canal in consultation with WaterNSW and Western Sydney Parklands Trust. Re-instate the backdrop of rolling grassland over the northern section of the Weston tunnel. Use utilitarian materials which complement the existing canal, such as plain concrete, brick and sandstone in the construction of the retaining structures.	Roads and Maritime	Detailed design
L14	Viewpoint 11 Western Sydney Parklands path	Ensure the realignment of the shared path is in keeping with existing parkland character of the path. Provide formal planting at Ferrers Road 'gateway' to future Horsley Park Urban Farming Precinct. Revegetate cut and fill embankments using species derived from Cumberland Plain Woodland south of shared path. Develop detailed design of retaining wall in the vicinity of WaterNSW Upper Canal in consultation with Western Sydney Parklands Trust.	Roads and Maritime	Detailed design
L15	Viewpoint 11A WSP- WaterNSW Upper Canal looking north	Develop detailed design of any proposed construction works in the vicinity of WaterNSW Upper Canal in consultation with WaterNSW and Western Sydney Parklands Trust. Provide tree planting where appropriate in consultation with WaterNSW to mitigate the visual impact of the proposal within the visual curtilage of the canal. Consider endemic grassland planting at the base of wing walls to reduce the visual scale of the walls. Use utilitarian materials which complement the existing canal, such as plain concrete, brick and sandstone in the construction of the retaining structures.	Roads and Maritime	Detailed design
L16	Viewpoint 14 The Horsley Drive	Provide street tree and understorey planting to the new road edge where feasible.	Roads and Maritime	Detailed design
L17	Viewpoint 15 Bossley Park residences	Revegetate cut and fill embankments. Provide planting at intersection of The Horsley Drive and Ferrers Road. Provide screen planting adjoining the road corridor (planting in front of private properties will be undertaken in consultation with the property owners).	Roads and Maritime	Detailed design

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
L18	Viewpoint 16 Cowpasture Road	Provide street tree and understorey planting to the new road edge, where feasible, using species derived from Cumberland Plain Woodland.	Roads and Maritime	Detailed design
L19	Viewpoint 18 Horsley Drive residence	Revegetate cut and fill embankments. Provide screen planting adjoining the road corridor (planting in front of private properties will be undertaken in consultation with the property owners).	Roads and Maritime	Detailed design
L20	Access to Western Sydney Parklands during construction	Retain existing entrances to the Parklands or provide alternative access arrangements during the construction period, including access to Lizard Log and the Sydney International Equestrian Centre's emergency access.	Construction contractor	Construction
L21	Visual impacts during construction	Ensure landscape treatments within the Parklands, including fencing, are consistent with the Western Sydney Parklands Design Manual.	Construction contractor	Construction
L22	Construction footprint	Define the extent of all construction activity within detailed design and documentation drawings, including temporary works, to minimise the footprint of the proposal and protect adjoining areas during construction, particularly endangered vegetation communities within the Parklands.	Roads and Maritime	Detailed design
L23	Construction impacts on vegetation	Identify, protect and maintain existing trees to be retained, including those within construction compound areas, throughout the entire period of the works in accordance with Australian Standard 4970 Protection of Trees on Development Sites and under the direction of a suitably qualified Arborist.	Construction contractor	Construction
L24	Pedestrian and cycle access during construction	Ensure north-south pedestrian/cycle connectivity along the shared path adjacent the WaterNSW Upper Canal is maintained during the construction period, by either maintaining existing access routes until construction of the new path alignment is complete or by providing temporary alternative access routes.	Construction contractor	Construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
L25	Visual impacts during construction	Consider providing suitable barriers to screen views from adjacent areas where practical during construction.	Construction contractor	Construction
L26	Visual impacts during construction	Screen or divert temporary lighting to reduce unnecessary light spill to adjoining residential and commercial areas, as well as to adjoining areas of nocturnal habitat.	Construction contractor	Construction
L27	Visual impacts during construction	Protect heritage items to be retained under the direction of a suitably qualified heritage consultant.	Construction contractor	Construction
L28	Visual impacts during construction	Return disturbed areas of land to their pre-construction state progressively throughout the construction period where possible, or once construction is complete.	Construction contractor	Construction
Socio-economic and land use				
S1	Construction impacts on the community.	A complaint handling procedure and register will be included in the construction environment management plan.	Construction contractor	Pre-construction
S2	Construction related amenity impacts	<p>A proposal communications strategy will be developed to include:</p> <ul style="list-style-type: none"> • Communication with the community with timely and relevant information to enable them to understand the likely nature, extent and duration of vibration, dust and noise impacts and access changes • Particular attention should be given to ensuring any vulnerable (elderly or low income) households are appropriately targeted • Communications should include roadside signage, letterbox dropped newsletters, newspaper advertisements, Roads and Maritime web based information, a complaints line, and advice to specific service providers such as community transport and seniors organisations. 	Construction contractor	Pre-construction and construction
<u>S3</u>	<u>Business impacts</u>	<u>Businesses will be informed of project updates as well as available alternate access routes to enable the business owners to inform customers about construction commencing and alternate access routes.</u>	<u>Roads and Maritime Project Manager</u>	<u>Before, during and upon completion of construction</u>

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
Soils topography and geology				
G1	Erosion and sedimentation	<p>A soil and water management plan (SWMP) will be prepared as part of the construction environmental management. The SWMP will also address the following:</p> <ul style="list-style-type: none"> • Roads and Maritime Services Code of Practice for Water Management, and Erosion and Sedimentation Procedure • The <i>NSW Soils and Construction – Managing Urban Stormwater Volume 1 “the Blue Book”</i> (Landcom 2004) and Volume 2 (DECC 2008) • <i>Roads and Maritime Services Technical Guideline: Temporary Stormwater Drainage for Road Construction, 2011</i> • <i>Roads and Maritime Services Technical Guideline: Environmental Management of Construction Site Dewatering, 2011</i> 	Construction contractor	Pre-construction
G2	Erosion and sedimentation	<p>The SWMP will detail the following as a minimum:</p> <ul style="list-style-type: none"> • Identification of catchment and sub-catchment areas, high risk areas and sensitive areas • Sizing of each of the above areas and catchment • The likely volume of run-off from each road sub-catchment • Direction of flow of on-site and off-site water • Separation of on-site and off-site water • The direction of run-off and drainage points during each stage of construction • Dewatering plan which includes process for monitoring, flocculating and dewatering water from site (ie sediment basin and sumps) • A mapped plan identifying the above • Include progressive site specific Erosion and Sedimentation Control Plans (ESCPs). The ESCP is to be updated at least fortnightly • A process to routinely monitor the BOM weather forecast • Preparation of a wet weather (rain event) plan which includes a process for monitoring potential wet weather and identification of controls to be implemented in the event of wet weather. These controls are to be shown on the ESCPs • Provision of an inspection and maintenance schedule for ongoing maintenance of temporary and permanent erosion and sedimentation controls 	Construction contractor	Pre-construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
G3	Erosion and sedimentation	Erosion and sediment controls will be implemented before any construction starts and inspected regularly, particularly prior to and after a rainfall event of 10.0 mm or greater (including clearing of sediment from behind barriers) and records kept and provided on request. Maintenance work will be undertaken as needed.	Construction contractor	Construction
G4	Erosion and sedimentation	Site stabilisation of disturbed areas will be undertaken progressively as stages are completed.	Construction contractor	Construction
G5	Erosion and sedimentation	All stockpiles will be designed, established, operated and decommissioned in accordance with Roads and Maritime Services' Stockpile Management Procedures (RTA 2011).	Construction contractor	Construction
G6	Erosion and sedimentation	Controls will be implemented at exit points to minimise the tracking of soil and particulates onto pavement surfaces.	Construction contractor	Construction
G7	Erosion and sedimentation	Any material transported onto pavement surfaces will be swept and removed at the end of each working shift.	Construction contractor	Construction
G8	Encountering unknown contamination	A Phase 2 Contamination Assessment will be completed prior to construction commencing and further assessment of potential asbestos containing material impact within the road corridor. If contaminated areas are encountered during construction, appropriate control measures will be implemented to manage the immediate risks of contamination. All other works that may impact on the contaminated area will cease until the nature and extent of the contamination has been confirmed and any necessary site-specific controls or further actions identified in consultation with the Roads and Maritime Environment Manager and/or EPA.	Roads and Maritime and pre-construction contractor	Detailed design, pre-construction and construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
G9	Contaminated land	<p>A Contaminated Land Management Plan will be prepared in accordance with the <i>Guideline for the Management of Contamination</i> (Roads and Maritime, 2013) and implemented as part of the CEMP. The plan will include, but not be limited to:</p> <ul style="list-style-type: none"> capture and management of any surface runoff contaminated by exposure to the contaminated land further investigations required to determine the extent, concentration and type of contamination, as identified in the detailed site investigation (Phase 2) management of the remediation and subsequent validation of the contaminated land, including any certification required measures to ensure the safety of site personnel and local communities during construction. be prepared in accordance with the <i>Contaminated Land Act 1997</i> and relevant EPA Guidelines. <p>This plan will be reviewed by Roads and Maritime Senior Environment Officer and Land Management Specialist prior to the commencement of works.</p>	Construction contractor and Roads and Maritime	Pre-construction and construction
G10	Contamination	A site specific emergency spill plan will be developed, and include spill management measures in accordance with the Roads and Maritime Code of Practice for Water Management (RTA, 1999) and relevant EPA guidelines. The plan will address measures to be implemented in the event of a spill, including initial response and containment, notification of emergency services and relevant authorities (including Roads and Maritime and EPA officers)	Construction contractor	Pre-construction
G11	Contamination	Completion of a hazardous materials surveys and a soil contamination assessment for contaminants including lead paint and asbestos following building demolition.	Construction contractor	Pre-construction and construction
G12	Contamination	Procedure will be prepared and implemented to manage any lead paint or asbestos identified following building demolition.	Construction contractor	Pre-construction and construction
G13	Contamination	Upon closure of the site compound, site assessment will be undertaken to assess the risk posed by contamination (if any) introduced during use of the site compounds and remediation undertaken as required.	Construction contractor	Construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
G14	Contamination	Final waste classification is required once the volumes of waste requiring offsite disposal during construction are confirmed. Waste soils should be classified in accordance with the NSW EPA <i>Waste Classification Guidelines</i> (2014)	Construction contractor	Construction
G15	Contamination of soils	A fully equipped emergency spill kit will be kept on-site at all times.	Construction contractor	Construction
G16	Contamination of soils	If an incident (eg spill) occurs, the Roads and Maritime's Environmental Incident Classification and Management Procedure will be followed and the Roads and Maritime Services Contract Manager notified as soon as practicable.	Construction contractor	Construction
G17	Contamination of soils	All staff will be inducted about incident and emergency procedures and made aware of the location of emergency spill kits.	Construction contractor	Construction
G18	Contamination of soils	Machinery will be checked daily to ensure there is no oil, fuel or other liquid leaking from the machinery.	Construction contractor	Construction
G19	Contamination of soils	Any fuel, oils or other liquids stored on site will be stored in an appropriately sized impervious bund at least 120% larger than the greatest container and in an area at least 50 m away from water bodies.	Construction contractor	Construction
G20	Excess spoil	Excess spoil not required or able to be used for backfilling will be stockpiled in a suitable location before being reused, or removed from the site and disposed of at an appropriately licensed facility.	Construction contractor	Construction
Water quality, drainage and flooding				
W1	Flood impacts to private properties resulting from the proposal	<p>A floor level survey will be necessary to confirm the existing freeboard and mitigation options at impacted buildings.</p> <p>Flood immunity of access will be reviewed at the detailed design phase as part of the property adjustments, in consultation with property owners.</p>	Roads and Maritime and contractor	Detailed design
W2	Contamination of surface water	All fuels, chemicals, and liquids will be stored at least 50 metres away from the existing stormwater drainage system and the NSW Upper Canal and will be stored in an impervious bunded area within the compound site.	Construction contractor	Construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
W3	Contamination of surface water	The refuelling of plant and maintenance of machinery will be undertaken in impervious bunded areas in the designated compound area. All refuelling, oil changes and vehicle wash downs are conducted within the construction compounds and appropriate mitigation measures are adopted to prevent spills and leaks at all other operational locations.	Construction contractor	Construction
W4	Contamination of surface water	Vehicle wash downs and/or concrete truck washouts will be undertaken within a designated bunded area of an impervious surface or undertaken off-site. The refuelling of plant and maintenance of machinery will be undertaken in impervious bunded areas in the designated compound area.	Construction contractor	Construction
W5	Dewatering	Low lying areas of construction formations and excavations that collect stormwater will be dewatered in accordance with the Roads and Maritime Services' <i>Technical Guideline for Dewatering</i> .	Construction contractor	Construction
W6	Flooding	Work areas and construction compounds will be designed to minimise impact to flooding through locating structures and stockpiles outside of the existing flood zones and drainage lines.	Construction contractor	Construction
<u>W7</u>	<u>Contamination of surface water</u>	<u>Activities are to minimise generation of waste and prevention of rubbish from entering the canal during construction.</u>	<u>Construction contractor</u>	<u>Construction</u>

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
Biodiversity				
B1	Habitat improvement	<p>During detailed design further options to improve habitat impacted by the proposal will be investigated. This will include considering the following around Eastern Creek:</p> <ul style="list-style-type: none"> • Opportunities for long term roosting and breeding habitat for threatened microbats • Dry passage connectivity including rope bridges and placement of logs and/or rocks in the dry culvert • Improving existing barriers will be investigated in consultation with NPSW and WSPT. 	Roads and Maritime	Detailed design
B2	Impacts to flora and fauna	<p>A Flora and Fauna Management Plan will be prepared in accordance with Roads and Maritime's Biodiversity Guidelines: Protecting and Managing Biodiversity on RTA Projects (RTA, 2011) and implemented as part of the CEMP. It will include, but not be limited to:</p> <ul style="list-style-type: none"> • plans showing areas to be cleared and areas to be protected, including exclusion zones, protected habitat features and revegetation areas • requirements set out in the Landscape Guideline (RTA, 2008) • pre-clearing survey requirements • procedures for unexpected threatened species finds and fauna handling • procedures addressing relevant matters specified in the Policy and guidelines for fish habitat conservation and management (DPI Fisheries, 2013) • Protocols to manage weeds and pathogens. 	Roads and Maritime and construction contractor	Detailed design, pre-construction and construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
B3	Vegetation clearance and habitat loss	<p>Measures to further avoid and minimise the construction footprint and native vegetation or habitat removal will be investigated during detailed design and implemented where practicable and feasible. This will include:</p> <ul style="list-style-type: none"> • Where possible, limit clearance and impacts to <i>Acacia pubescens</i> and the Derwent Place Reserve • Where possible, limit impacts to hollow-bearing trees during the detailed design stage • A suitably qualified ecologist must be engaged prior to any clearing works to clearly demarcate vegetation protection areas (including areas of <i>Acacia pubescens</i>), clearing limits, hollow-bearing trees, and complete a pre-clearing survey report for Roads and Maritime to summarise results and to guide clearing activities, in accordance with <i>Biodiversity Guidelines: Protecting and managing biodiversity on RMS projects</i> (RMS 2011). Clearing limits will be delineated with a physical barrier prior to any vegetation clearing. • Implement hygiene protocols to prevent the introduction and spread of such pathogens as specified in <i>Protecting and managing biodiversity on RMS projects</i> (RMS Environment Branch, 2011). This will include exclusion zones around retained areas of native vegetation. All machinery and plant should be cleaned prior to work on site. • Preparation of a nest box strategy in accordance with <i>Protecting and managing biodiversity on Roads and Maritime projects</i> (RMS Environment Branch, 2011). A variety of nest boxes will be installed that are designed to accommodate different fauna guilds including but not limited to microbats, small birds and small mammals. 	Roads and Maritime Construction contractor	Detailed design, pre-construction and construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
B4	Pre-clearance surveys for threatened species	<p>Pre-clearance surveys will be undertaken by a qualified ecologist and the required methodology will be developed for target species as part of the CEMP. Surveys should include:</p> <ul style="list-style-type: none"> • Further targeted surveys of <i>Acacia pubescens</i> to better delineate the location of stems • Targeted surveys for the Cumberland Plain Land Snail in areas of potential habitat (Cumberland Plain Woodland). If found, a s91 application will be required for the translocation • Survey of any culverts that need upgrading to search for roosting bats. Should roosting bats or evidence of roosting bats (e.g. guano) be found, a management plan should be prepared as a sub-plan to the CEMP to manage to exclusion of bats prior to removal of any culverts • A procedure for clearing potential habitat, including hollow-bearing trees will be prepared in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RMS projects (RMS Environment Branch 2011) • An experienced, licenced wildlife carer or ecologist will be present to supervise vegetation clearing and capture then relocate fauna if required, in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RMS projects (RMS Environment Branch 2011) • Fauna handling and vegetation removal will be in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RMS projects (RMS Environment Branch 2011). • Salvage and relocation of habitat features (eg hollow logs and branches) will be in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RMS projects (RMS Environment Branch 2011). 	Roads and Maritime Construction contractor	Pre-construction and construction
B5	Hollow trees and cleared vegetation	Investigate opportunities to relocate logs, potential habitat shelter and hollow bearing trees to be removed during construction, in consultation with WSPT and NPWS.	Roads and Maritime Construction contractor	Pre-construction and construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
B6	<i>Acacia pubescens</i> translocation plan	It is recommended that Roads and Maritime consider the translocation and/or propagation and planting of <i>Acacia pubescens</i> from the impacted population into appropriate nearby habitat areas (e.g. Western Sydney Parklands). These works will require a licence under section 2.11 of the <i>Biodiversity Conservation Act 2016</i> for the propagation/translocation of <i>Acacia pubescens</i> from the proposal site. A propagation/translocation plan will be prepared as part of a licence application and will form part of the CEMP. Any planting/translocation of <i>A. pubescens</i> will be undertaken in consultation within the land-owner of the recipient site and OEH.	Roads and Maritime Construction contractor	Pre-construction and construction
B7	Fauna relocation plan	A licence will be required under section 2.11 of the <i>Biodiversity Conservation Act 2016</i> for the relocation/translocation of the Cumberland Plain Land Snail from the proposal site if found during pre-clearing surveys. A relocation/translocation plan will be prepared as part of this licence application and will form part of the CEMP.	Roads and Maritime Construction contractor	Pre-construction
B8	Aquatic habitats and water quality	<p>During the detailed design, the proposed bridge over the Eastern Creek will be designed in accordance with policy and <i>guidelines for fish habitat conservation and management</i> (DPI 2013). This will include:</p> <ul style="list-style-type: none"> Options to maintain fish passage during construction will be investigated in consultation with Fisheries. Options to minimise duration and magnitude of impact on key fish habitat will be investigated in consultation with Fisheries. <p>The following measures should be incorporated into the CEMP to manage impacts on aquatic habitats and water quality:</p> <ul style="list-style-type: none"> Any large woody debris should be relocated rather than removed Monitoring of local water quality to identify any potential spills or deficient erosion and sediment controls will be undertaken Implement reasonable and feasible water quality control measures to prevent pollution of waterways and drainage lines in the area downstream of the proposed works. 	Roads and Maritime Construction contractor	Detailed design and construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
B9	Potential for spread of exotic or invasive species, or spread of pathogens that may be harmful to native biota.	Declared noxious weeds are to be managed according to requirements under the <i>Noxious Weeds Act 1993</i> and <i>Guide 6 (Weed Management) of the RTA Biodiversity Guidelines 2011</i> . Particular consideration will be taken where the <i>Acacia pubescens</i> population is located.	Construction contractor	Pre-construction and construction
B10	Impacts to threatened fauna	If unexpected threatened fauna or flora species are discovered, stop works immediately and follow the <i>RTA Unexpected Threatened Species Find Procedure in the RTA Biodiversity Guidelines 2011 – Guide 1 (Pre-clearing process)</i> .	Construction contractor	Construction
B11	Erosion and sedimentation impacts	Erosion and sedimentation mitigation measures will be implemented to minimise any erosion and sedimentation impacts.	Construction contractor	Construction
B12	Weeds	Ongoing weed management and control in accordance with the <i>Roads and Maritime Biodiversity Guidelines (RMS 2011)</i> .	Roads and Maritime	Operation
B13	Vegetation restoration	Weed and bushland restoration at Eastern Creek will only be undertaken in areas disturbed by the proposal.	Roads and Maritime	Operation
B14	Impacts to fish	Fisheries NSW (1800 043 536) and the Environment Protection Authority (131 555) is to be notified immediately if any fish kills occur in the vicinity of the works. In such cases, all works other than emergency response procedures are to cease until the issue is rectified and approval is given by Fisheries NSW and/or the Environment Protection authority for the works to proceed.	Construction contractor	Construction
B15	Vegetation restoration	Establishment of appropriate landscaping on batters and throughout the proposal in consultation with WSPT and NPWS.	Roads and Maritime	Operation

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
Aboriginal cultural heritage				
AH1	Aboriginal heritage	An Aboriginal Heritage Management Plan (AHMP) will be prepared in accordance with the Procedure for Aboriginal cultural heritage consultation and investigation (Roads and Maritime, 2012) and Standard Management Procedure - Unexpected Heritage Items (Roads and Maritime, 2015) and implemented as part of the CEMP. It will provide specific guidance on measures and controls to be implemented for managing impacts on Aboriginal heritage. The AHMP will be prepared in consultation with all relevant Aboriginal groups.	Contractor	Detailed design and pre-construction
AH2	Impact to Aboriginal cultural heritage items	All relevant Roads and Maritime staff, contractors and subcontractors should be made aware of their statutory obligations for heritage under the <i>National Parks and Wildlife Act 1974</i> and the <i>Heritage Act 1977</i> , which may be implemented as a cultural heritage induction prior to any construction works taking place.	Roads and Maritime Construction contractor	Pre-construction and construction
AH3	Impact to Aboriginal cultural heritage items	An AHIP application will be made for the proposal site during the construction work as described in the Cultural Heritage Assessment Report (RPS 2017). This should: <ul style="list-style-type: none"> Propose community collection at sites #45-5-4677 and #45-5-4678. Propose community collection and salvage excavations for sites #45-5-4682, #45-5-4679, #45-5-4684, #45-5-4685 and #45-5-4680. 	Roads and Maritime Construction contractor	Detailed design and pre-construction
AH4	Unexpected Aboriginal cultural heritage item encountered during work	The <i>Standard Management Procedure - Unexpected Heritage Items</i> (Roads and Maritime, 2015) will be followed in the event that an unknown or potential Aboriginal object/s, including skeletal remains, is found during construction. This applies where Roads and Maritime does not have approval to disturb the object/s or where a specific safeguard for managing the disturbance (apart from the Procedure) is not in place. Work will only re-commence once the requirements of that Procedure have been satisfied.	Roads and Maritime and construction contractor	Construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
Non-Aboriginal cultural heritage				
H1	Avoiding impacts on heritage items	During design development, impacts on heritage items are to be avoided where practicable. The proposal will conform to the WaterNSW document Requirements for protection of Upper Canal Draft (2015).	Roads and Maritime and contractor	Detailed design
H2	Avoiding impacts on heritage items	<p>A Non-Aboriginal Heritage Management Plan (NAHMP) will be prepared and implemented as part of the CEMP. It will provide specific guidance on measures and controls to be implemented to avoid and mitigate impacts to Non-Aboriginal heritage. The NAHMP will be prepared in consultation with the Office of Environment and Heritage. This plan will include:</p> <ul style="list-style-type: none"> • A map identifying locations of items/sites in the vicinity of the proposal site • Identification of potential environmental risks/impacts due to the work/activities • Mitigation measures for the identified risks • A procedure to report any damage to heritage items compliant with the Roads and Maritime Incident Classification and Reporting Procedure • Identify in toolbox talks where management of non-Aboriginal heritage is required such as identification of no go zones and statutory obligations under the Heritage Act 1977. 	Construction contractor	Pre-construction
H3	Direct impacts on heritage items	If the final design of the proposal changes considerably from that currently proposed or a temporary basin is proposed within the curtilage of the Upper Canal heritage item, additional assessment may be required.	Roads and Maritime	Detailed design
H4	Direct impacts on heritage items	Remnant plantings and reinforced concrete gate posts will be recorded as part of the archival recording required by WaterNSW prior to the commencement of works.	Construction contractor	Construction
H5	Direct impacts on heritage items	The location of a proposed temporary sedimentation basin will be negotiated with WaterNSW. At a minimum this will follow best practice and be five metres from the curtilage boundary of the Upper Canal system.	Roads and Maritime and Contractor	Detailed design and construction
H6	Direct impacts on heritage items	An application will be made to the Heritage Division for a permit under s60 of the <i>Heritage Act 1977</i> .	Roads and Maritime	Detailed design

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
H7	Direct impacts on heritage items	Archival Recording of Weston's Tunnel and the associated section of the Upper Canal System will be undertaken prior to any works. Such recording should be done in line with the Photographic Recording of Heritage Items Using Film or Digital Capture published by the Heritage Division. The recording should also include a photographic record taken from within WaterNSW land looking to the north and south of the existing road, as well as the stand of crepe myrtles at the south of The Horsley Drive and the concrete gate posts to the north of The Horsley Drive.	Roads and Maritime and Contractor	Pre-construction
H8	Direct impacts on heritage items	Protective fencing will be placed around the foot of the Bunya Pine to avoid accidental damage to the tree through vehicle and plant movement.	Contractor	Detailed design and Construction
H9	Vibration impacts on heritage items	<p>A construction noise and vibration management plan will be prepared as part of the construction environmental management plan to determine what construction methods will be used in the vicinity of heritage listed items. This will include measures to minimise the likelihood of vibration impacts and completion of a dilapidation survey of Westons Tunnel be prepared to assess its condition prior to construction.</p> <p>Vibration management measures (N15 to N21) will be implemented to minimise structural vibration impacts to heritage items.</p>	Construction contractor	Pre-construction
H10	Visual impact to the Upper Canal	Trees will be planted along the verge of The Horsley Drive, providing a visual buffer between the Upper Canal and the new road alignment in consultation with WaterNSW and WSPT.	Roads and Maritime and Contractor	Detailed design and construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
H11	Consultation	Consultation will continue throughout the design, construction and operational phase with WaterNSW regarding the Upper Canal.	Roads and Maritime and Contractor	Detailed design, Pre-construction and construction
H12	Potential archaeological deposits	The significance of any archaeological material discovered during construction will need to be assessed by a qualified archaeologist.	Roads and Maritime and Construction contractor	Construction
H13	Unexpected archaeological finds	The Standard Management Procedure - Unexpected Heritage Items (Roads and Maritime, 2015) will be followed in the event that any unexpected heritage items, archaeological remains or potential relics of Non-Aboriginal origin are encountered. Work will only re-commence once the requirements of that Procedure have been satisfied	Roads and Maritime Construction contractor	Construction
H14	<u>Asset protection</u>	<u>Deep rooted species with invasive moisture seeking root systems will not be used in the landscape buffer proposed between the Upper Canal and The Horsley Drive.</u>	<u>Contractor/Roads and Maritime Project Manager</u>	<u>Detailed design, Pre-construction and Construction</u>
H15	<u>Consultation</u>	<u>In the event that there are amendments to the project arising from further assessment that result in implications for WaterNSW, Roads and Maritime will consult with WaterNSW regarding the outcomes of any such amendments.</u>	<u>Contractor/Roads and Maritime Project Manager</u>	<u>Detailed design, Pre-construction and Construction</u>
Resource use and waste management				
R1	Demand on resources	Procurement will endeavour to use materials and products with a recycled content where that material or product is cost and performance effective.	Construction contractor	Pre-construction and construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
R2	Waste management	<p>A resource and waste management plan will be prepared and included in the construction environmental management plan. The plan will include the following (as a minimum):</p> <ul style="list-style-type: none"> • The type, classification and volume of all materials to be generated and used on-site including identification of recyclable and non-recyclable waste in accordance with <i>Waste Classification Guidelines</i> • Quantity and classification of excavated material generated as a result of the proposal (refer Roads and Maritime Service's <i>Waste Management Fact sheets 1-6, 2012</i>) • Interface strategies for cut and fill on-site to ensure re-use where possible • Strategies to 'avoid', 'reduce', 'reuse' and 'recycle' materials • Classification and disposal strategies for each type of material • Destinations for each resource/waste type either for on-site reuse or recycling, offsite reuse or recycling, or disposal at a licensed waste facility • Details of how material will be stored and treated on-site • Identification of available recycling facilities on and off-site • Identification of suitable methods and routes to transport waste • Procedures and disposal arrangements for unsuitable excavated material or contaminated material including asbestos waste • The types of waste collected, amounts, date/time and details of disposal are to be recorded in a waste register. • Site clean-up for each construction stage. 	Construction contractor	Pre-construction and construction
R3	Demand on resources	Excavated material will be reused on-site for fill where feasible to reduce demand on resources.	Construction contractor	Construction
R4	Demand on resources	Any additional fill material required will be sourced from appropriately licensed facilities and/or other Roads and Maritime projects, wherever possible.	Construction contractor	Construction
R5	Waste minimisation	<p>The following resource management hierarchy principles will be followed:</p> <ul style="list-style-type: none"> • Avoid unnecessary resource consumption as a priority • Avoidance will be followed by resource recovery (including reuse of materials, reprocessing, and recycling and energy recovery) • Disposal will be undertaken as a last resort (in accordance with the Waste Avoidance and Resource Recovery Act 2001). 	Construction contractor	Construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
R6	Management of green waste	Cleared weed-free vegetation will be chipped and reused on-site as part of the proposed landscaping and to stabilise disturbed soils where possible.	Construction contractor	Construction
R7	Spoil management	Excess excavated material will be disposed of at an appropriate facility or reused appropriately for fill on the proposal site.	Construction contractor	Construction
R8	Spoil management	Excess soil requiring waste disposal will first be assessed against the <i>Waste Classification Guidelines- Part 1: Classifying Waste</i> (EPA 2014). Soil samples will be taken from stockpiled material and analysed. Transportation will be undertaken by a licensed contractor capable of transporting the waste and waste will be disposed of to an appropriately licensed waste facility with supporting waste classification documentation.	Construction contractor	Construction
R9	Contaminated spoil	<p>A Contamination Management Plan (CMP) will be prepared in accordance with the <i>Contaminated Land Act 1997</i> and relevant EPA Guidelines. This plan will be form part of the CEMP and will include at a minimum:</p> <ul style="list-style-type: none"> • Contaminated Land Legislation and guidelines including any relevant licences and approvals to be obtained. • Identification of locations of known or potential contamination and preparation of a map showing these locations • Identification of rehabilitation requirements, classification, transport and disposal requirements of any contaminated land within the construction footprint • Contamination management measures including waste classification and reuse procedures and unexpected finds procedures • A procedure for dewatering and disposal of potentially contaminated liquid waste • In the event that indications of contamination are encountered (known and unexpected, including odorous or visual indicators), work in the area will immediately cease until a contamination assessment can be prepared to advise on the need for remediation or other action, as deemed appropriate. • A process for reviewing and updating the plan • The CMP will be reviewed by Roads and Maritime Senior Environment Officer and Land Management Specialist prior to the commencement of works. 	Construction contractor Roads and Maritime	Pre-construction and construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
R10	Waste management	Garbage receptacles will be provided and recycling of materials encouraged. Rubbish will be transported to an appropriate waste disposal facility.	Construction contractor	Construction
R11	Waste management	All wastes will be managed in accordance with the POEO Act.	Construction contractor	Construction
R12	Waste management	Portable toilets will be provided for construction workers and will be managed by the service provider to ensure the appropriate disposal of sewage.	Construction contractor	Construction
R13	Waste management	Noxious weeds removed during work will be managed in accordance with the Department of Primary Industries' requirements that relate to its classification status.	Construction contractor	Construction
R14	Waste management	Site inductions will occur and be recorded by a Site Supervisor to ensure staff are aware of waste disposal protocols.	Construction contractor	Construction
R15	Wastewater contamination of soils and water	A dedicated concrete washout facility will be provided during construction so that run-off from the washing of concrete machinery and equipment can be collected and disposed of at an appropriate waste facility.	Construction contractor	Construction
Hazards and risks				
Z1	Risk Management	Emergency response plans will be incorporated into the construction environmental management plan.	Construction contractor	Pre-construction and construction
Z2	Management of demolition activities	Prior to commencement of any demolition activities a pre-demolition hazardous materials survey will be carried out of the building to be demolished to establish the presence of any contaminated materials or hazardous substances which may be impacted by the works and require safe removal and disposal in accordance with relevant Safe Work Australia Codes of Practice and National Standards.	Construction contractor	Pre-construction and construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
Z3	Management of contaminated materials or hazardous substances	Any contaminated materials or hazardous substances encountered will be classified first and then stored, transported by an appropriately licenced operator and disposed of in accordance with OEH requirements at an OEH licensed waste facility.	Construction contractor	Pre-construction and construction
Z4	Management of contaminated materials or hazardous substances	The handling of asbestos and asbestos work will be carried out in accordance with the following documents published by the Safe Work Australia: <ul style="list-style-type: none"> • 'Guide to the Control of Asbestos Hazards in Buildings and Structures' • 'Code of Practice for the Safe Removal of Asbestos'. 	Construction contractor	Pre-construction and construction
Z5	Management of contaminated materials or hazardous substances	The handling and removal of any synthetic mineral fibres will be carried out in accordance with the <i>National Standard for Synthetic Mineral Fibres (Safe Work Australia 1990)</i> .	Construction contractor	Pre-construction and construction
Climate change and greenhouse gases				
CG1	Greenhouse gas emissions	The use of alternative fuels and power sources for construction plant and equipment will be investigated and implemented, where appropriate.	Construction contractor	Pre-construction and construction
CG2	Greenhouse gas emissions	The energy efficiency and related carbon emissions will be considered in the selection of vehicle and plant equipment.	Construction contractor	Pre-construction and Construction
CG3	Greenhouse gas emissions	Materials will be delivered as full loads and local suppliers will be used where possible.	Construction contractor	Construction
CG4	Greenhouse gas emissions	Construction equipment, plant and vehicles will be appropriately sized for the task.	Construction contractor	Construction
CG5	Greenhouse gas emissions	Equipment will be serviced frequently to ensure they are operating efficiently.	Construction contractor	Construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
CG6	Greenhouse gas emissions	Vehicles and machinery will not be left idling when not in use.	Construction contractor	Construction
CG7	Greenhouse gas emissions	Clearing of vegetation will be minimised where possible.	Construction contractor	Construction
Cumulative impacts				
C1	Cumulative impacts	Consultation with relevant stakeholders and landowners will be undertaken during construction planning to ensure that potential cumulative impacts are minimised.	Roads and Maritime Contractor	Detailed design pre-construction and construction
C2	Cumulative impacts	The construction environmental management plan will be revised to consider potential cumulative impacts from surrounding development activities as they become known.	Construction contractor	Pre-construction and construction
C3	Consultation	A Consultation Plan will include consultation with proponents of projects identified to: <ul style="list-style-type: none"> • Increase awareness of construction timeframes and impacts • Coordinate impact mitigation and management (eg. respite periods). 	Construction contractor	Pre-construction and construction
C4	Cumulative traffic and access impacts	The traffic management plan will be prepared in consultation with TfNSW and Fairfield City Council.	Roads and Maritime and construction contractor	Pre-construction and construction
C5	Night work	An 'out of hours work procedure' will be prepared as part of the construction noise and vibration management plan for the proposal in accordance with the requirements of the <i>Interim Construction Noise Guideline</i> (DECC, 2009) and the Roads and Maritime Services' <i>Environmental Noise Management Manual Practice</i> (RTA, 2001a) and will consider the cumulative impact from other construction activities occurring in the vicinity of the proposal.	Construction contractor	Construction

6.3 Licensing and approvals

A summary of the licencing and approvals required for the proposal is provided below.

Table 6-2: Summary of licensing and approval required

Instrument	Requirement	Timing
<i>Protection of the Environment Operations Act 1997</i> (s43)	Environment protection licence (EPL) for scheduled activities (extractive activities resulting in the excavation of more than 30,000 tonnes) from the Environment Protection Authority.	Prior to works commencing
<i>Protection of the Environment Operations Act 1997</i>	All wastes will be managed in accordance with the POEO Act.	Prior to works commencing
<i>Fisheries Management Act 1994</i> (s199)	A permit for dredging activities may be required by the contractor for works to Eastern Creek culverts and new bridge.	A minimum of 28 days prior to the start of work.
<i>Heritage Act 1977</i> (s60)	An application for a permit under section 60 of the <i>Heritage Act 1977</i> must be accompanied by final plans for the upgrade of The Horsley Drive, including plans for the tunnel crossing and this Statement of Heritage Impact.	Prior to works commencing
<i>Biodiversity Conservation Act 2016</i> (s2.11)	A licence would be required under section 2.11 of the BC Act for the relocation/translocation of the Cumberland Plain Land Snail from the proposal site if found during pre-clearing surveys. A relocation/translocation plan would be prepared as part of this licence application.	Prior to works commencing
<i>Biodiversity Conservation Act 2016</i> (s2.11)	A licence would be required under section 2.11 of the BC Act for the relocation/translocation of <i>Acacia pubescens</i> from the proposal site. A relocation/translocation plan would be prepared as part of this licence application and would form part of the CEMP. Any planting/translocation of <i>A. pubescens</i> would be undertaken in consultation within the land-owner of the recipient site and OEH.	Late winter/ spring, prior to works commencing
<i>National Parks and Wildlife Act 1974</i> (s90)	Aboriginal heritage impact permit from the Chief Executive of Office of Environment and Heritage.	Prior to works commencing

7. References

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Appendix A

Public display notices

Appendix B

Business Impact Assessment



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Customer feedback
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