

Pitt Town Bypass

REF submissions report

Roads and Maritime Services | March 2019



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Approval and authorisation

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Signed:	
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Executive summary

The proposal

Roads and Maritime Services NSW (Roads and Maritime) proposes to build a bypass of Pitt Town, NSW (the proposal). The bypass would be one kilometre long, stretching between Pitt Town Road and Cattai Road, east of Pitt Town and a single lane in each direction. The main features of the proposal are:

- Extending Pitt Town Road past Bathurst Street onto Cattai Road, east of Eldon Street
- Installing a new roundabout at the intersection of Eldon Street and Old Pitt Town Road
- Closing a portion of Cattai Road to maintain access to Buckingham Street
- Providing new crossings of Hortons Creek at the southern and central sections of the proposal
- Installing a new roundabout at the intersection of Pitt Town Road/Bathurst Street and Glebe Road.

The proposal is required to provide a connection between Pitt Town Road in the west and Cattai Road in the east to bypass heavy freight from the township, improve road safety, reduce congestion and improve liveability for the local community.

REF display

The proposal is subject to the *Environmental Planning and Assessment Act 1979*. A Review of Environmental Factors (REF) was prepared and displayed publicly for 29 days between Monday 12 November and Monday 10 December 2018. During the public exhibition period, 22 submissions were received and three submissions after the public exhibition period.

Summary of submissions and responses

Of the total of 25 submissions received, 22 were from the community, interest groups or businesses and three submissions were received from government authorities. 7 submissions also stated clear support for the bypass proposal. A number of key issues raised in the submissions are summarised below.

Traffic and Access

A submission considered the *Traffic and Transport Assessment Report* contained in Appendix J of the REF, was inadequate. Another submission from Hawkesbury City Council stated there is no evidence contained within the REF that outlines how local traffic will be redirected in favour of the two main intersection treatments (along Cattai Road at Bathurst Street and Eldon Street) and its relative impact within the local road network and a lack of supporting information relating to traffic flow and traffic trends within the Pitt Town precinct.

The proposal responded that the traffic analysis was evidence based and is in line with industry practice and has considered the traffic impact to the existing road network in Pitt Town for post-bypass traffic conditions, which includes growth for future years and redistribution of traffic resulting from the proposed bypass. The modelling results indicate that the road network would operate at an acceptable level of service during the AM and PM peaks up to future year 2041.

The response also stated that Section 6.2 of the *Traffic and Transport Assessment Report* documents impact of the proposed bypass on Cattai Road, Pitt Town Road, Bathurst Street and Eldon Street for future years for 2021, 2031 and 2036. The analysis predicted traffic reduction on Eldon Street and Bathurst Street as a result of the bypass. A separate Technical Note (*Traffic assessment – potential impact on local intersection priority* (Arcadis, November 2018)) is provided in Appendix C, addressing the intersections of Bathurst Street/ Chatham Street and Eldon Street/ Chatham Street to determine any requirements to change the configuration, priority or controls as a result of the future traffic patterns with the proposed bypass.

Thirteen submissions included requests for the re-opening of Bootles Lane to Cattai Road, Pitt Town and 3 submissions including Hawkesbury Council also included requests to upgrade the Mitchell Street/Pitt Town Dural Road intersection. The submissions noted these would improve access to the bypass for the new development in the north of Pitt Town. Both these intersections are outside the scope of this proposal which has a key objective to improve the safety and amenity of the town centre by moving through traffic and heavy vehicles onto a bypass road to the east.

Seven submissions noted the proposal would restrict access to Buckingham Street from Cattai Road (left turn in and out of Buckingham Street only) which would require local traffic to travel on some streets before accessing the bypass, encouraging a rat run through the center of Pitt Town.

Right turn movements at this intersection have been highlighted during concept design as a high safety risk due to sight distances and proximity to property accesses and other intersections. However, Roads and Maritime will continue to explore in the detailed design phase, feasible and safe options to create and maintain a right turn in to and out of Buckingham Street from Cattai Road. Hawkesbury council and the community through council can apply separately to have this intersection considered for improvements under other Roads and Maritime programs such as Safer Roads and Blackspots managed in the Sydney region of Roads and Maritime.

Submissions from the NSW State Emergency Service and Hawkesbury Council noted the importance of the proposal fitting in or complementing the work being done on local road upgrades for flood evacuation as part of the Hawkesbury Nepean Valley Flood Strategy program. Roads and Maritime has committed to further engagement on this program and other flood evacuation issues with SES and Council during detailed design.

Noise

A submission from a resident in the Old Pitt Town Road area expressed concern about noise from heavy vehicle exhaust brakes when approaching the proposed Cattai Road, Old Pitt Town Road and Eldon Street roundabout and requested the installation of signs to control the use of exhaust brakes. The same submission also asked for consideration for at property noise treatment as the noise modelling in the REF predicted that the resident would be subject to the same noise levels as another property directly across the road which has been identified in the REF as requiring at property treatment.

The installation of signs advising motorists to limit the use of exhaust brakes may be ineffective for the proposal because these signs are advisory only without enforcement provisions.

A noise model was completed as part of the REF investigations to predict road traffic noise from the proposal. The model found that predicted noise levels at the resident's property who made the submission would be subject to a different noise assessment criteria, than the property across the road, known as the redeveloped zone criterion (refer to table in Appendix E of Appendix G of the REF) and not be eligible for noise treatment.

However, in response to the submission provided above, Roads and Maritime will further consider the provision of noise treatment for this residence under the overarching noise mitigation principles in Section 3 of the Roads and Maritime *Noise Mitigation Guideline*. Section 3 states that in considering noise treatment communities should receive reasonable and equitable outcomes and be responsive to community feedback.

Flooding and Hydrology

A submission from Council stated there is insufficient evidence as to how Roads and Maritime has determined the minimum level of flood immunity for the proposal design given this area is within an extreme flood risk area. The submission also stated there is an opportunity to undertake necessary improvements to the road levels to provide an improved level of flood immunity. Council submission noted culverts have been designed for the 20-year average recurrence interval (ARI) Local event and asked whether this is in

accordance with Roads and Maritime standards for a State Road as Austroads would require a 50-year ARI for an Arterial Road.

Roads and Maritime responded by stating the flooding assessment for the REF was conducted based on the local catchment flows with the view to improve existing local catchment flood immunity where practical.

Section 6.4.3 of the REF discussed the flood immunity at the proposed Pitt Town Bypass would be greatly improved over its current level to the 100 Year ARI local catchment flows, except at transitions to existing road and the causeway at Old Pitt Town Road. Further improvements require significant upgrades to roads and drainage crossings outside the scope and objectives of the proposal.

Non-Aboriginal heritage

A submission included a request that appropriate signs be installed as part of the proposal, depicting the historical significance of Pitt Town. Roads and Maritime has also developed a design for standard bypass signs that can also highlight historical interest which will be considered in detailed design. In addition, existing welcome signs on Cattai Road at the northern entry to Pitt Town, and on the southern approach at Pitt Town Road, already highlighting the town's history, will be kept and moved to remain at entry points to the town.

Business Impacts

A submission from Hawkesbury Council asked to consider the effect of the proposed bypass on the commercial precinct of Pitt Town and the main traffic connections in and out of the Township and how the change in traffic patterns will affect the overall viability of the business precinct.

A local business survey was conducted by Roads and Maritime to gain a better understanding of the main issues, perceptions and concerns of businesses with regard to the proposal. Refer to Section 4.1 and Appendix B of this report. The REF includes a safeguard to investigate further appropriate signs to direct travellers on the bypass to the commercial centre in Pitt Town.

Other community and stakeholder feedback received and responded to during the REF display included;

- A question over the proposed construction timing
- A request to improve the existing culverts on Hortons Creek in the south of the proposal, which are already included in proposal design
- A request for an additional property access off Pitt Town Road, which is out of the scope of this proposal to address
- Requests to fix existing flooding on parts of Cattai Road and Pitt Town Road. These are also outside the scope of the proposal to address
- A request to provide more pedestrian access along Old Pitt Town Road and Eldon Street to the town centre. Roads and Maritime will investigate further in detailed design, providing additional safe pedestrian access around the Eldon Street/Old Pitt Town Road roundabout. Enough space has been provided along the western side of the alignment from Bathurst Street to the Cattai Road for a future footpath
- Feedback on existing and proposed speed limits within the proposal which are already included in design, and on Cattai Road adjacent to the bypass but out of scope for the proposal to address
- Feedback from Hawkesbury City Council and Sydney Water over impacts on and proposed relocation of public utilities which are already being addressed in detailed design and contract development.

Several submissions also raised concern over the number of lanes on roundabouts and the use of roundabouts rather than other types of intersection design. These issues have been raised and addressed in earlier community consultation during strategic development phases, and the feedback received resulted

in the decision to provide roundabouts at key intersections. It was also clear that there was confusion from the description of the number of lanes at the roundabouts in the text of previous community updates, which have been clarified.

Changes to the REF proposal

There have been no changes to the proposal since the REF was prepared. Proposal design parameters and features, construction method and associated infrastructure and activities remain consistent with those documented in the REF.

Assessment updates

Roads and Maritime conducted a survey of Pitt Town local businesses in October 2018 to gain a better understanding of the main issues, perceptions and concerns of businesses with regard to the proposal. The survey results revealed:

- Some local businesses are highly dependent on passing trade
- The majority of local businesses customers are locally based or from the local government area
- Employees and customers travel to the local businesses mostly by vehicle
- Local businesses experience an increased proportion of customers passing through Pitt Town, during public holidays and school holidays.

Survey respondents voiced concern the proposal would negatively impact local businesses because of a reduction on passing trade which would choose making their purchases at the nearest competing businesses located in the Windsor / Mcgraths Hill areas. Survey respondents recommended installing signs on the bypass approaches showing what businesses are in Pitt Town as a way to mitigate impacts.

The proposal REF acknowledged the potential to reduce patronage on some businesses which is consistent with the impacts perceived by the survey respondents. The mitigation measures outlined in the REF propose the installation of appropriate signs to direct travelers on the bypass to the commercial centre in Pitt Town.

Revised environmental safeguards and management measures

The REF identified a range of environmental safeguards and management measures that would be adopted to further avoid or reduce environmental impacts. After consideration of the issues raised in the public submissions and local business surveys, the safeguard and management measures have been revised to:

- Examine potential options for a right turn from Buckingham Street onto Cattai Road, and for a right turn from Cattai Road into Buckingham Street, where these meet established road safety standards, including adequate visibility and stopping distances for approaching traffic
- Include appropriate signs to depict the historical significance of Pitt Town and to reduce impacts to local businesses during construction
- Ensure existing and proposed water supply assets are managed in line with Sydney Water requirements
- Continue consultation with NSW State Emergency Service about the proposal interaction with the Hawkesbury Nepean Resilience Valleys program and flood evacuation routes.

Next steps

Once approved for progression, Roads and Maritime will continue to consult with the community, government agencies and other stakeholders during the detailed design of this project.

Contents

Executive summary	i
Contents	v
1. Introduction and background	1
1.1 The proposal	1
1.2 REF display	1
1.3 Purpose of the report	2
2. Response to issues	3
2.1 Overview of issues raised	4
2.2 General feedback on the proposal	5
2.3 Traffic and access	5
2.4 Issue 2, Noise	16
2.5 Hydrology and Flooding	17
2.6 Issue 4, non-Aboriginal heritage	19
2.7 Issue 5, Business impacts	20
2.8 Issue 6, Public utilities	20
3. Changes to the proposal	22
4. Additional investigations	23
4.1 Local business surveys	23
5. Environmental management	27
5.1 Environmental management plans	27
5.2 Summary of safeguards and management measures	27
5.3 Licensing and approvals	45

Tables

Table 2-1: Addressing of respondents' issues	3
Table 4-1: Pitt Town local business survey coverage	23
Table 5-1: Summary of environmental safeguards and management measures	29
Table 5-2: Summary of licensing and approval required	45

Appendices

Appendix A	REF public display advertisement
Appendix B	Local businesses survey questionnaire
Appendix C	Technical Note: Traffic assessment – potential impact on local intersection priority

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1. Introduction and background

1.1 The proposal

Roads and Maritime Services NSW (Roads and Maritime) proposes to build a bypass of Pitt Town, NSW (the proposal). The bypass would be about one kilometre long, stretching between Pitt Town Road and Buckingham Street, east of Pitt Town. The proposal is located in the Hawkesbury local government area, in the Greater Sydney region, about 25 kilometres (km) northwest of Hornsby and 45km northwest of Sydney. The main features of the proposal are:

- Extending Pitt Town Road past Bathurst Street onto Cattai Road, east of Eldon Street
- Installing a new roundabout at the intersection of Pitt Town Road/Bathurst Street and Glebe Road
- Installing a new roundabout at Eldon Street and Old Pitt Town Road
- Closing a part of Cattai Road to maintain access to Buckingham Street
- Providing new road crossings of Hortons Creek at the southern and central parts of the proposal.

The proposed bypass provides a connection between Pitt Town Road in the west and Cattai Road in the east, reducing heavy traffic through the town centre and improving traffic flow and safety in the area for all road users.

A more detailed description of the proposal is found in the *Pitt Town Bypass Review of Environmental Factors* (REF) prepared by Roads and Maritime in November 2018.

1.2 REF display

Roads and Maritime prepared a REF to assess the potential environmental impacts of the proposal. The REF was publicly displayed for 29 days between Monday 12 November and Monday 10 December 2018 at the Hawkesbury Central Library and Pitt Town Post Office. The REF was also placed on the Roads and Maritime website (www.rms.nsw.gov.au/projects/sydney-west/pitt-town-bypass) and made available for download.

The display locations and website link were advertised on the 28 November 2018 in:

- The Hawkesbury Gazette
- The Sydney Morning Herald
- Daily Telegraph.

An invitation to comment and link to the REF was sent directly to several identified stakeholders. Affected property owners were also notified of the display of the REF.

Refer to Appendix A for a copy of the newspaper advertisements and notification flyer.

Stakeholders invited included the local utility authorities (Sydney Water, Telstra, NBN, Optus, Jemena, Endeavour Energy), NSW State Emergency Service and Hawkesbury City Council. A hard copy of the REF was also sent to the Pitt Town Progress Association.

Two community information sessions were held to allow community members to discuss the proposal with members of the project team. These sessions were held at the Lynwood Country Club, Pitt Town on:

- Wednesday 21 November 2018, 5:30pm – 7:30pm

- Saturday 1 December 2018, 11am – 1pm.

1.3 Purpose of the report

This submissions report relates to the REF prepared for the Pitt Town bypass, and should be read in conjunction with that document.

The REF was placed on public display and submissions relating to the proposal and the REF were received by Roads and Maritime. This report summarises the issues raised and provides responses to each issue (Chapter 2). It details any changes to the proposal since the REF was prepared (Chapter 3), describes additional surveys and assessments made for the proposal (Chapter 4) and identifies new or revised environmental management measures (Chapter 5).

2. Response to issues

Roads and Maritime received 22 submissions until Monday 10 December 2018 and three submissions after Monday 10 December 2018 which have been accepted. Table 2-1 lists the respondents, the respondent's allocated submission number and reference to the section in this report where the issues from each submission have been addressed.

Table 2-1: Addressing of respondents' issues

Respondent	Submission No.	Section number where issues are addressed
Individual	1	2.3.6
Individual	2	2.3.4, 2.3.5
Interest group	3	2.3.4, 2.3.5, 2.2.2
Individual	4	2.3.4, 2.3.5, 2.6.1
Individual	5	2.3.4, 2.2.2
Individual	6	2.3.4, 2.2.2
Individual	7	2.3.4, 2.2.2
Individual	8	2.3.5, 2.5.3
Individual	9	2.3.5
Individual	10	2.3.5
Individual	11	2.3.5
Individual	12	2.3.5
Individual	13	2.3.7
Individual	14	2.3.8
Individual	15	2.2.2
Individual	16	2.3.5, 2.2.2
Interests group	17	2.3.1, 2.3.4, 2.3.5, 2.3.6, 2.3.10, 2.3.11, 2.3.12, 2.5.3
Individual	18	2.2.1, 2.3.7, 2.3.11, 2.5.3
Individual	19	2.3.9, 2.3.12, 2.4.1

Respondent	Submission No.	Section number where issues are addressed
Individual	20	2.3.5
Individual	21	2.3.5
Individual	22	2.3.5
Sydney Water	23	2.8.1
Hawkesbury City Council	24	2.3.2, 2.3.3, 2.3.6, 2.3.9, 2.3.11, 2.5.1, 2.5.2, 2.7.1, 2.2.2
NSW State Emergency Service	25	2.3.10

2.1 Overview of issues raised

A total of 22 submissions from the community or interest groups and three submissions from Government authorities were received in response to the display of the REF.

Each submission has been examined individually to understand the issues being raised. 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 response to these issues forms the basis of this chapter.

Of the 25 submissions seven supported the proposal, one objected to the proposal, and 17 provided feedback but did not state a clear position on whether they supported or objected the proposal.

The main issues raised by the respondents were:

Traffic and access

- Adequacy of the traffic and transport assessment
- Intersections and turning arrangements to and from the bypass
- Changes to property access
- Increasing pedestrian access
- Impacts on and changes to the flood evacuation routes.

Hydrology and Flooding

- Insufficient flood immunity
- Fixing flooding on existing roads adjacent to the bypass

Noise

- Treatment of noise from the new road.

Non-Aboriginal heritage

- Inclusion of signs depicting historical significance of Pitt Town.

Business impacts

- Assessment of the Pitt Town business precinct viability.

General Feedback

- Proposal support
- Extending the proposal to adjacent intersections outside the proposal footprint
- Feedback on the design of proposed roundabouts, culverts and posted speed limits
- Construction timing
- Impacts on water and sewage assets

These issues and Roads and Maritime responses are documented in the following sections.

2.2 General feedback on the proposal

2.2.1 Construction timeline

Submission number(s)

18

Issue description

The submission asked when construction work will take place and when it will be completed.

Response

The start of construction is subject to final planning approval and funding availability. At present, there is no start date for construction. Should funding be approved to start construction of the bypass, it is anticipated that construction would take up to 24 months to complete, dependent on the weather.

2.2.2 Support for the proposal

Submission number(s)

3, 5, 6, 7, 15, 16 and 24.

Description

The submissions expressed support for the proposal.

Response

Roads and Maritime acknowledges the proposal support stated in the submissions.

2.3 Traffic and access

2.3.1 Traffic and transport assessment adequacy

Submission number(s)

17

Issue description

The submission considered the *Traffic and Transport Assessment Report* contained in Appendix J of the REF, was inadequate for the reasons listed below:

- The traffic survey data used for the assessment is old (traffic survey data was undertaken in 2016) and traffic volumes from Friday were not deemed relevant

- It is unclear which data was used for the modelling (February 2017 or February 2018?). Traffic data for the assessment comes from two different dates and therefore is misleading. The SIDRA model validation used misleading data
- Traffic survey data should have been carried at all entry points to all the new development precincts and the Mitchell Road intersection to the north to obtain accurate and relevant traffic data
- The origin destination survey does not adequately deal with traffic flowing to and from the residential areas in Pitt Town
- The assessment uses different AM and PM periods. This is misleading and does not represent the facts
- The traffic and transport assessment study area was too small when compared to travel zones or population and employment growth figures. The assessment was not comprehensive throughout the residential precincts
- The commuter mode share and modes of travel information was sourced from the Bureau of Transport Statistics collected from 2011 Census information. The REF main report states 2016 Travel Behavior census data was not available. The submission noted the 2016 data is available hence the assessment has used out of date data
- The proposal fails to adequately deal with the traffic generated by recent and future residential development which will continue to travel through the Pitt Town centre after construction of the bypass
- There is inadequate level of transport Infrastructure spending appropriate to the degree of residential development.

Response

Traffic surveys were undertaken by Roads and Maritime in February 2017 and February 2018 for the study area as stated in the *Traffic and Transport Assessment Report* in Appendix J of the REF. The February 2018 data obtained from these surveys was verified by site investigations during the peak periods and reviewing the video footage collected in March 2018, which was carried out by experienced traffic modellers and considered suitable for use in the assessment. The latest February 2018 intersection survey data was used for the SIDRA traffic model. The February 2017 survey data included mid-block survey of four locations. This data was used to compare traffic volumes between the two survey periods to confirm the historical growth rate and inform the origin-destination data analysis.

The SIDRA traffic model was built with the traffic data from the February 2018 survey. Once built, the model was validated with extra data from the site visit conducted in March 2018. This data is suitable for model validation purposes.

Roads and Maritime reviewed the modelling approach and traffic models and confirmed, both the base assumptions and model development were appropriate for the purpose of this proposed bypass assessment. Detailed SIDRA model assumptions and validation outcomes are included in Section 4 Existing SIDRA Network Model Development, Appendix J of the REF.

The locations selected for the traffic survey (Figure 3-1 in Appendix J of the REF) have taken into consideration traffic flowing from new development precincts into Pitt Town. Traffic counts installed on Cattai Road, Bathurst Street and Buckingham Street have captured traffic from new developments travelling onto Pitt Town.

In addition, the origin and destination data from traffic surveys included in the assessment at Bathurst Street north of Buckingham Street, Bathurst Street south of Glebe Road and Cattai Road north of

Buckingham Street also identified traffic travelling from/to Pitt Town town centre which is the focus of the proposal.

With regard to peak traffic periods:

- For the purposes of conducting the traffic surveys, it was initially assumed the morning traffic peak was from 6AM to 10AM and the afternoon traffic peak was from 3PM to 7PM. These periods were chosen in line with local traffic conditions and industry guidelines.
- Once collected, traffic survey data revealed the local morning traffic peak occurs from 8AM to 9AM and the afternoon traffic peak from 3PM to 4PM at most locations (Figure 3-9 and Figure 3-10 in Appendix J of the REF). These were the peak periods adopted for the REF assessment.

The future background traffic growth has been estimated for the broader study area using Roads and Maritime's Sydney Traffic Forecasting Model (STFM). The STFM has considered population and employment growth for the broader study area, including planned new residential precincts. The STFM population and employment growth allows for planned developments in the area based on the latest Department of Planning and Environment forecasts.

The purpose of commuter mode share analysis was to identify current travel patterns using the Bureau of Transport Statistics (BTS) Journey to Work data. Although 2016 Census data is publicly available, the current version of the BTS Journey to Work still uses the same Journey to Work data as the 2011 Census. This was reconfirmed at the time this response was written. Any updated to the Journey to Work data in the 2016 Census data is unlikely to have a substantial impact on the mode choice for trips within this study area and therefore unlikely to impact the outcome of the modelling results.

The *Traffic and Transport Assessment Report* shown in Appendix J of the REF has considered the traffic impact to the existing road network in Pitt Town for post-bypass traffic conditions, which includes growth for future years and redistribution of traffic resulting from the proposed bypass. The traffic analysis is based on assumptions agreed with Roads and Maritime, using the latest endorsed residential and employment forecasts for the area. The modelling results indicate that the road network would operate at an acceptable level of service during the AM and PM peaks up to future year 2041. The traffic analysis was evidence based and is in line with industry practice.

The amount of infrastructure contributions from recent and future residential development and the allocation of such contributions are a Council matter. Roads and Maritime has no direct control over the way contributions are calculated or the allocation given to council road infrastructure.

2.3.2 Local traffic flows

Submission number(s)

24

Issue description

The submission from council stated there is no evidence contained within the REF that outlines how local traffic will be redirected in favour of the two main intersection treatments (along Cattai Road at Bathurst Street and Eldon Street) and its relative impact within the local road network.

The REF/consultation document does not make reference or give supporting information relating to traffic flow and traffic trends within the Pitt Town precinct. In particular, traffic movements in and out of the township which needs to be taken into account with the current development and future growth of the area.

The council submission stated the information below is yet to be established:

- Current traffic trends in and around the Pitt Town precinct
- Projected traffic trends resulting from the development to the north of Pitt Town
- Effects of internal road movements and connections to the State road network and in particular preferred road connections to the proposed bypass work.

Response

Section 3.3 of the *Traffic and Transport Assessment Report* (Appendix J of the REF), documents the current traffic volume and trends on key roads in and around Pitt Town, including Cattai Road, Pitt Town Road, Bathurst Street and Eldon Street. The current traffic volumes were sourced from 2018 survey and reported in weekly, weekday and weekend daily traffic volumes, heavy vehicle volumes, hourly traffic variation, and morning and afternoon peak hour traffic volumes by direction. The current origin-destination travel pattern was sourced from 2017 survey. Origin-destination traffic distributions were reported on Pitt Town Road (separately by northbound and southbound direction) and Cattai Road (separately by northbound and southbound direction).

Section 5 of the *Traffic and Transport Assessment Report* (Appendix J of the REF), documents future traffic growth and trends based on Roads and Maritime's strategic traffic using 2016 land use projections (the most recent land use assumptions available at the time of project was undertaken).

Section 5.2 *Traffic and Transport Assessment Report* (Appendix J of the REF), documents forecast future traffic volumes and trends on Cattai Road, Pitt Town Road, Bathurst Street and Eldon Street for future years 2021, 2031 and 2036 without the proposed bypass.

Eldon Street and Bathurst Street would provide direct connection between Pitt Town and the bypass via two new roundabouts at Eldon Street and Bathurst Street. Section 6.2 of the *Traffic and Transport Assessment Report* documents impact of the proposed bypass on Cattai Road, Pitt Town Road, Bathurst Street and Eldon Street for future years for 2021, 2031 and 2036. The analysis predicted traffic reduction on Eldon Street and Bathurst Street as a result of the bypass.

The *Traffic and Transport Assessment Report* (Appendix J of the REF) considers the impact of the proposed bypass on the local and State Road network and its tie-ins within the study area in accordance with the project scope. In a separate Technical Note (*Traffic assessment – potential impact on local intersection priority* (Arcadis, November 2018)) the intersections of Bathurst Street/ Chatham Street and Eldon Street/ Chatham Street were assessed to determine any requirements to change the configuration, priority or controls as a result of the future traffic patterns with the proposed bypass. This analysis was based on a comparison of the existing and forecast traffic turning volumes to identify the dominant traffic movements at each location. The conclusion and recommendation of this assessment were:

- The intersections of Bathurst Street/ Chatham Street and Eldon Street/ Chatham Street would operate at good levels of service of A, with minimal delays and queue lengths with the proposed bypass
- Both intersections have enough spare capacity to accommodate the forecast traffic growth in the area up to 2041
- The recommended intersection priorities based on the future dominant traffic flows with the proposed bypass are:
 - Bathurst Street/ Chatham Street: Priority implemented for traffic travelling along Bathurst, which requires installation of give-way signage and delineation on the Chatham Street approach and removal of the splitter island and chevron
 - Eldon Street/ Chatham Street: Priority implemented for traffic travelling along Eldon Street, which requires installation of give-way signage and delineation on the southern approach of Chatham

Street and removal of the give-way signage and delineation on the western approach of Eldon Street.

The Technical Note: *Traffic assessment – potential impact on local intersection priority* (Arcadis, November 2018) is provided in Appendix C.

2.3.3 Closure of a section of Cattai Road

Submission number(s)

24

Issue description

Council's submission noted the proposal will result in the closure of a section of Cattai Road between Eldon Street and Buckingham Street. As a result of this closure, the movement of traffic along Eldon Street would change considerably with impacts to the intersections of Chatham Street, Grenville Street and Bathurst Street. Currently there are traffic priority issues at the intersection of Eldon Street and Chatham Street. With Eldon Street being one of the main connectors into the Pitt Town area, it is likely this intersection may experience further compounding problems to the current existing issues.

Response

The closure of Cattai Road between Eldon Street and Buckingham Street would affect the access to two properties. All other traffic currently using this connection would be redirected to the proposed bypass, with minimal impact on the existing travel time and distance. The two properties affected by the proposed closure of the section of Cattai Road, have agreed upon individual access arrangements that have been incorporated within the proposal. These revised arrangements would have minimal impact on travel time and distance, with a reduced travel distance expected for vehicles to access the State Road network. The proposed access arrangements have been designed in accordance with the relevant standards and safety considerations.

The existing and future operation of the intersections within the study area were modelled and determined to have acceptable levels of service. This analysis is presented in the *Traffic and Transport Assessment Report* appended to the REF and considers all distribution of traffic and travel patterns with the proposed bypass. In addition to the findings of the *Traffic and Transport Assessment Report* (Appendix J of the REF), a Technical Note was prepared (Arcadis, 9 November 2018) to provide recommendations on the configuration and priority of key local intersections that may be impacted by the proposed bypass. Refer to response to issue in Section 2.3.2 for the outcome of this assessment.

2.3.4 Buckingham Street and Cattai Road intersection arrangements

Submission number(s)

2, 3, 4, 5, 6, 7, 17

Issue description

The submissions noted the proposal would restrict access to Buckingham Street from Cattai Road (left turn in and out of Buckingham Street only) which would require local traffic to travel on some streets before accessing the bypass, encouraging a rat run through the center of Pitt Town.

The submissions included a request for a right turn from Buckingham Street onto Cattai Road and a right turn from Cattai Road into Buckingham Street, both with dedicated turning lanes so as not to impede the flow of traffic. The proposed arrangement would allow local traffic from new development areas in the northern side to have direct access to the bypass without going through many of the streets in the township.

Response

Roads and Maritime assessed various options for enabling a right turn out of Buckingham Street to Cattai Road in the new design. These included right turn lanes and changes to the median. All these options required evaluation against *Austroads* design standards, including safe stopping distances, distances to other intersections and accesses, and sight distances for approaching traffic.

Although a right turn is currently allowed at this location, the new road alignments and changed traffic flows due to the proposed bypass, will make the right turn movement a high safety risk to drivers.

Without a right turn out of Buckingham Street the bypass would still meet its objectives of removing truck traffic from the town centre and improving pedestrian safety along with local traffic access and amenity, as a significant portion of this traffic does not currently use Buckingham Street and would travel through on Cattai and Pitt Town Roads. Based on the ongoing feedback from the local community, and with additional and more accurate road information becoming available in the detailed design phase, Roads and Maritime will continue to look further at all potential options for a right turn and assess these against road design and safety standards.

The options for a right turn into Buckingham Street were also assessed against road design standards and safety standards with respect to stopping and sight distances, distances to nearby intersections and accesses and traffic volumes. The right turn into Buckingham was also considered to affect the safety of other intersections along the bypass.

It was also noted an alternative route using a U-turn at the new roundabout on Old Pitt Town Road/Eldon Street, would still allow for entry for vehicles from the north to Buckingham Street, with only a short detour required from the current location.

However, given the ongoing feedback from the community, Roads and Maritime will continue to explore in the detailed design phase, feasible and safe options to create and maintain a right turn into Buckingham Street from Cattai Road.

A new environmental safeguard (safeguard TT6) has been added in Section 5.2 to reflect the above commitments.

2.3.5 Bootles Lane and Cattai Road intersection arrangements

Submission number(s)

2, 3, 4, 8, 9, 10, 11, 12, 16, 17, 20, 21, 22

Issue description

Three submissions stated most local traffic would need to pass through the town centre to access the proposal and also stated that this would result in high traffic through already congested areas with narrow streets, limited parking and pedestrian traffic.

The submissions also included requests for the re-opening of Bootles Lane to Cattai Road, Pitt Town as a standard T-intersection with dedicated turning lanes so as not to impede the flow of traffic along Cattai

Road. The submissions noted this would reduce congestion through the town centre and give better traffic flow with the future playing fields/sports oval.

Response

The existing and future operation of the intersections within the study area were modelled and determined to have acceptable levels of service. This analysis is presented in the *Traffic and Transport Assessment Report* (Appendix J of the REF) and considers all distribution of traffic and travel patterns with the proposed bypass.

The proposed bypass would decrease traffic within the Pitt Town town centre by removing through traffic and in particular, heavy vehicles currently travelling through the town centre. This will improve pedestrian safety and amenity in the town centre and improve access for local traffic still needing to visit shops, schools and businesses.

The re-opening of Bootles Lane to Cattai Road is a matter outside the scope and objectives of the proposal which aims to improve the amenity and safety of the town centre and will achieve this by removing through traffic on Cattai Road and Pitt Town Road including trucks and other heavy vehicles to a new road to the east of the township. Roads and Maritime understands that the local community with the Pitt Town Progress Association has made submissions to Hawkesbury Council to re-open Bootles Lane to Cattai Road and if found to be safe and feasible, this will require Roads and Maritime support and approval, separately from the bypass proposal.

2.3.6 Mitchell Road, Pitt Town Dural Road and Cattai Road intersection arrangements

Submission number(s)

1, 17, 24

Issue description

A submission noted Mitchell Road and Pitt Town Dural Road are currently misaligned at the intersection with Cattai Road (dogleg type of intersection). This intersection gives direct connection to the recent and future residential development north of Pitt Town.

Submissions 1 and 17 reported some near misses at this intersection and there is concern the proposed posted 80km/h speed at Cattai Road would be a risk for traffic attempting to cross.

A submission also included a request to either upgrade the intersection to a roundabout or align Mitchell Road and Pitt Town Dural Road (ie remove the dogleg intersection).

Council's submission noted the development at the northern end of the Pitt Town residential area will add a considerable number of motorists needing to connect to Cattai Road, with the majority travelling south or east. The connection of Mitchell Road at Cattai Road is not only a critical part of the Flood Evacuation Route for the area but will also provide some means of future proofing these works to ensure an overall traffic management improvement for the area. Project should have been extended to the north to include the intersection of Mitchell Road at Cattai Road.

Response

The Mitchell Road, Pitt Town Dural Road and Cattai Road intersection is a matter outside the scope and objectives of the proposal which aims to improve the amenity and safety of the town centre by removing through traffic and heavy vehicles to a new bypass to the east.

The future background traffic growth has been estimated for the broader study area using Roads and Maritime's Sydney Traffic Forecasting Model (STFM). The STFM has considered population and employment growth for the broader study area, including planned new residential precincts. The STFM population and employment growth allows for planned developments in the area based on the latest NSW Department of Planning and Environment forecasts. Future proofing beyond the latest population and employment forecasts is beyond the scope of this project, which focuses on reducing through traffic and in particular, heavy vehicle movements within the Pitt Town town centre. Future development applications will need to consider the impact on the broader road network, which is separate to this project.

The proposed bypass is designed with flood immunity of 1 in 100-year local flood levels for local catchment except at transitions to existing road and the causeway at Old Pitt Town Road. This allows for a higher flood immunity in a local flood event than existing condition within the study area. Therefore, flood evacuation as result of the proposed bypass is not impacted. Upgrading of the flood evacuation routes beyond the study area is a broader issue being addressed by Roads and Maritime, council and the SES through the Hawkesbury Nepean Flood Strategy. Similarly flood immunity issues for future development areas is also a matter to be considered for future development applications through council. Refer to Section 2.3.10 for NSW State Emergency Service input to flood resilience for the area.

2.3.7 Lagoon Road and Pitt Town Road / Bathurst Street intersection arrangements

Submission number(s)

13, 18

Issue description

Submission 13 raised the issue of visibility when turning right from Lagoon Road into Bathurst Street / Pitt Town Road due to the overgrowth of reeds at the bottom of the street. It also queried whether the proposal allows all turn movements at the Lagoon Road and Pitt Town Road / Bathurst Street intersection.

Submission 18 suggested Bathurst Street, where it adjoins Lagoon Road be a dead end with all traffic coming into and out of Pitt Town at the Eldon Street intersection to remove traffic through Bathurst Street.

Response

Bathurst Street alignment is proposed to be straightened approaching the proposed roundabout at the intersection with the Pitt Town Road and Glebe Road. The proposed roundabout would remove the current tight bend on the approach to Lagoon Road and would help to control traffic speeds approaching the intersection.

The new location and higher road at the roundabout would also improve visibility of approaching vehicles from Lagoon Road. Some of the reeds in the creek would be removed to install new culverts and re-align the creek for the roundabout.

A dead end of Bathurst Street at Lagoon Road with all the traffic to use Eldon Street to enter and exit Pitt Town would cause further delays to the Pitt Town community daily trips and is not a sustainable option for the achievement of the project objectives. Improved geometry and intersection conditions at both Bathurst Street and Eldon road would improve the traffic and safety condition of both roads.

The alignment of Lagoon road would be extended a short distance to connect with a new Bathurst Street connection onto the bypass at a proposed roundabout. However, the proposal keeps the existing turning arrangements to and from Lagoon Road at Bathurst Street.

2.3.8 Property access

Submission number(s)

14

Issue description

Submission asked whether 397 Pitt Town Road would get an individual property access off Pitt Town Road. Existing property access is off Lagoon Road.

Response

Roads and Maritime will not be providing individual access for 397 Pitt Town Road as the proposal will not be directly impacting on the location of this existing access or significantly changing the alignment of Lagoon Road.

Roads and Maritime would change access for properties where they have been affected by the proposal or they need to be shifted for safety and wherever possible keep these on the same roads. Providing brand new or additional property accesses off different roads and where they would not be affected by new construction are outside the scope of the proposal.

2.3.9 Pedestrian and cyclist access

Submission number(s)

19, 24

Issue description

Submission 19 included a request for a safe pedestrian crossing at Cattai Road for people walking from Old Pitt Town Road to Pitt Town shopping precinct.

Council's submission noted the main thoroughfare along Cattai Road does not provide for an off-road shared path facility and asked whether this has been assessed and approved from an active transport point of view.

Response

There is currently no formalised pedestrian crossing at Cattai Road. The proposal in its current form does not include a formalised pedestrian crossing at Cattai Road because of the low numbers of pedestrian movements across this road.

However, given the ongoing feedback from the community, Roads and Maritime will further explore options for pedestrian crossings on Old Pitt Town Road and Cattai Road in the detailed design of the proposal. Refer to safeguard TT8 in Section 5.2.

The proposal does not include shared path facilities along Cattai Road, but a two-metre wide shoulder is provided for on road cycling. Enough space has been provided along the western side of the alignment from Bathurst Street to the Cattai Road should a footpath is built in the future. Currently, there are no existing shared path facilities along Cattai Road and there is limited pedestrian and cyclist activity in the proposal area.

2.3.10 Flood evacuation route

Submission number(s)

17, 25

Issue description

Submission 17 noted the Pitt Town Flood Evacuation Route through the new development precincts has been changed (according to Hawkesbury City Council's *Hawkesbury City Council's Development Control Plan 2008*) and does not correspond to the route referenced in the REF.

Submission 25 from NSW State Emergency Service stated a response to Roads and Maritime *State Environmental Planning Policy (Infrastructure) 2007* letter for the proposal will be provided. The submission noted the importance of the proposal fitting in or complementing the work being done on local road upgrades as part of the Hawkesbury Nepean Resilience Valleys program.

Response

The route referenced in the REF is the current designated regional road evacuation route for the Pitt Town Sector as outlined in the *Hawkesbury Nepean Flood Plan* (SES, September 2015) which is to be used by residents within Pitt Town Bottoms and Pitt Town North, Central, East, South and South East. The *Hawkesbury Nepean Flood Plan* identifies Mitchell Road and Pitt Town Dural Road as the flood evacuation route, which is north of the proposal. The proposal would not impact these roads.

Under the *State Environmental Planning Policy (Infrastructure) 2007*, Roads and Maritime is required to consult with NSW State Emergency Service under clause 15AA due to work on flood liable land. Roads and Maritime sent outline of the proposal to NSW, SES in late October 2018 and followed up with a further request in mid-December 2018 to provide comments on the proposal for inclusion in the submissions report. NSW State Emergency Service indicated they would give a delayed response by late January 2018, and this was too late to include these in the Submissions Report, but a new safeguard has been included (refer to safeguard TT7 in Section 5.2) acknowledging Roads and Maritime will continue to engage with SES over any impact on flood evacuation operations and routes during the development of the detailed design.

2.3.11 Proposed roundabouts

Submission number(s)

17, 18, 19, 24

Issue description

Submissions 17 and 18 do not support the single lane roundabouts shown in the REF and request two-lane roundabouts as outlined in previous community updates and consultation reports. Additionally, the submission stated:

'The proposed single lane roundabout at the Bathurst Street and the Eldon Street intersection is not future proof.'

'The intersection of Windsor Road and Seven Hills Road, a very much scaled down version of this would be a better idea than the roundabouts' (ie intersection with traffic lights).

Hawkesbury City Council's submission sought clarification on whether the roundabouts are single or two lanes. Council also noted two intersection options by way of roundabout or traffic lights have been indicated for the Bathurst Street intersection in the consultation document. The option of traffic lights would be preferred on the basis it provides a definite method of joining the state road traffic from Bathurst Street. At present, there is insufficient information provided to determine if a roundabout will allow sufficient gaps for the minor road to enter the State Road.

Response

The proposal currently includes roundabouts with one-lane. The December 2016 community consultation report and the March 2017 community update referred to a two-lane roundabout. Although there is potential for misunderstanding from what a two-lane roundabout means, the consultation report and community update design sketches clearly show the roundabouts with one-lane. The June 2018 community update design sketch also shows the one-lane roundabout.

The proposed roundabout was analysed using *SIDRA Intersection* (a road network model) and determined to operate at a good level of service (level of service A) with minimal delays and queue lengths for all approaches in the AM and PM peaks for forecast traffic volumes up to and including year 2041. This indicates that there would be sufficient gaps in traffic travelling along the proposed bypass to allow traffic approaching from the minor local roads (Bathurst Street and Glebe Road) to enter the roundabout.

The results of the intersection modelling are provided at Appendix B of the *Traffic and Transport Assessment Report* in Appendix J of the REF.

The installation of traffic lights at a given intersection is subject to future assessment, which considers traffic demand, pedestrian safety and crash history. Based on the forecast turning movements at the Bathurst Street intersection a warrant assessment has been carried out. With forecast traffic turning movements and likely pedestrian crossing volumes, the warrants are unlikely to be met for the forecast demand up to future year 2041.

An option for intersections with traffic lights was considered by Roads and Maritime at earlier stages of the proposal, however, community and stakeholder feedback provided during formal consultation on a preferred option for the bypass, expressed preference for roundabouts over traffic lights. This feedback has since been adopted and remains in the current proposal.

Therefore, a roundabout remains the preferred option at the Bathurst Street intersection.

2.3.12 Road speed limit

Submission number(s)

17, 19

Issue description

The submissions requested:

'Set the bypass speed limit at 60 kilometre per hour (km/h) for road safety reasons and investigate a speed reduction on Cattai Road near the existing Preschool.'

'Reduce the speed limit to 70km/h in the north on Cattai Road to improve road safety. An 80km/h speed limit should operate further north of the bends and emergency entry / exit to the new residential precinct on Cattai Road.'

Response

The bypass would have a posted speed of 70km/h which is lower than the bypass design speed (80km/h) and represents a safe outcome.

Changing sign-posted speed limits on the road outside the Milestones Early Learning preschool, on the remainder of Cattai Road beyond the limits of the new bypass, or other local roads is a matter outside the scope and objectives of the proposal which aims to improve the amenity and safety of the town centre by removing through traffic and heavy vehicles to a new bypass to the east. Roads and Maritime also periodically and separately to this Bypass proposal, assesses and reviews speed limits on the regional state road network and makes changes where road and pedestrian safety risks may have changed due to urban development and other local and state road development.

2.4 Issue 2, Noise

2.4.1 Operational road traffic noise impacts

Submission number(s)

19

Issue description

Submission expressed concern about noise from heavy vehicles exhaust brakes when approaching the proposed Cattai Road, Old Pitt Town Road and Eldon Street roundabout.

The submission included a request to install signs to control the use of exhaust brakes on all approaches to the wider Pitt Town precinct, in particular the two roundabouts.

The submission also included a suggestion to have Cattai Road traffic flow uninterrupted by putting Eldon Street and Old Pitt Town Road on a give way or stop sign (no roundabout).

A Submission from the Old Pitt Town Road area requested that they be considered for at-property noise treatment as they consider that their property will be affected at the same level of noise as another property across the road which is proposed for noise treatment. Submission also requested low noise pavement along Old Pitt Town Road past the respondent's property.

Response

Noise from heavy vehicle exhaust brakes and other noisy vehicles was considered in the noise and vibration assessment (referred as LA_{max} in Section 3.3 of Appendix G of the REF). 23 Old Pitt Town Road was identified as a location with potential increases in LA_{max} noise levels due to occasional/intermittent noisy events, such as truck using exhaust breaks. Under the current Roads and Maritime guidelines, such isolated and short LA_{max} increases do not qualify for consideration for at property treatment.

The installation of signs advising motorists to limit the use of exhaust brakes may be ineffective for the proposal because these signs are advisory only without enforcement provisions.

The suggestion to have Cattai Road traffic flow uninterrupted by replacing the proposed roundabout with a give way or stop sign at Eldon Street and Old Pitt Town Road is not supported by Roads and Maritime because it would not achieve the project objectives of maintaining acceptable operation of intersections with sufficient separation or storage of turning traffic from through traffic and improving connectivity and safety for road users and the local community.

The Roads and Maritime *Noise Mitigation Guideline* gives guidance on how to determine whether a property qualifies for the consideration of mitigation for road traffic noise and the type of mitigation that would be suitable. Generally, a residence may qualify for consideration of noise mitigation if the predicted operational road traffic noise level exceeds the *Noise Criteria Guideline* noise criteria by more than 2dB.

A noise model was completed as part of the REF investigations to predict road traffic noise from the proposal and predicted an exceedance of the Roads and Maritime noise criteria guideline at one property in the Old Pitt Town Road area following opening of the new bypass and treatment would be required. The same model found that predicted noise levels at the Old Pitt Town resident's property who made the submission, would be subject to a correctly calculated but different noise assessment criteria (refer to table in Appendix E of Appendix G of the REF), and not be eligible for noise treatment.

However, in response to the submission provided above and the very small differences in predicted noise levels and the criteria for properties in this area, Roads and Maritime can further consider the provision of additional noise treatment under the overarching noise mitigation principles in Section 3 of the Roads and Maritime *Noise Mitigation Guideline*.

Section 3 states that in considering noise treatment communities should receive reasonable and equitable outcomes and be responsive to community feedback, such as in this case where one property, qualifies under Roads and Maritime criteria for treatment for noise impacts and it is feasible and reasonable to also treat a neighbouring property where they have a similar exposure to the new road and predicted noise levels only slightly outside the mitigation criteria.

As stated in Appendix G of the REF, the need for additional mitigation measures including low noise pavements and at-property treatments will be confirmed during detailed design.

Once the proposal is operational, a noise review will be conducted to compare actual noise performance against noise performance predicted by the operational road traffic noise model. Additional feasible and reasonable measures to treat noise will be implemented as required by the criteria. Refer to safeguard NV5 and safeguard NV6 in Section 5.2.

2.5 Hydrology and Flooding

2.5.1 Proposal flood immunity

Submission number(s)

24

Issue description

Council submission stated there is insufficient evidence as to how Roads and Maritime has determined the allowable flood immunity given this area is within an extreme flood risk area. Pitt Town Road should be considered as part of the Regional Flood Evacuation route and there is an opportunity to undertake necessary improvements to the road levels to provide an improved level of flood immunity. There is no mention of consultation or concurrence from the SES about this matter. Further to this was a benefit cost analysis undertaken as part of assessing if the Bypass and its lead in roads should be flood free.

Response

The flooding assessment for the REF was conducted based on the local catchment flows with the view to improve existing local catchment flood immunity where practical.

Section 6.4.3 of the REF discussed the flood immunity at the proposed Pitt Town Bypass would be greatly improved over its current level to the 100 Year ARI local catchment flows, except at transitions to existing road and the causeway at Old Pitt Town Road. Appendix H of the REF includes a detailed discussion to support this conclusion.

The current designated regional road evacuation route for the Pitt Town Sector as outlined in the *Hawkesbury Nepean Flood Plan* (SES, September 2015) identifies Mitchell Road and Pitt Town Dural Road as the flood evacuation route, which is north of the proposal. The proposal would not impact these roads. Current consultation status between Roads and Maritime and NSW State Emergency Service is summarised in Section 2.3.10 of this submission report. A new safeguard has been included (refer to safeguard TT7 in Section 5.2) acknowledging Roads and Maritime will continue to engage with SES during the development of the detailed design.

2.5.2 Culvert design

Submission number(s)

24

Issue description

Council submission noted culverts have been designed for the 20-year average recurrence interval (ARI) Local event and asked whether this is in accordance with Roads and Maritime standards for a State Road as Austroads would require a 50-year ARI for an Arterial Road.

With the closure of a section of Cattai Road between Eldon Street and Buckingham Street, there is a culvert which will be contained with this section of road to be closed by Roads and Maritime. There does not appear to be any commentary as to what is proposed for this culvert and its potential impact on the adjoining properties should this culvert be blocked.

Response

The proposed cross-drainage structures were initially sized for the 20-year ARI local catchment in line with Pitt Town Road Bypass strategic design flood assessment criteria. However, the current proposed cross-drainage sizes and configurations have enough hydraulic capacity for the 100-year ARI local catchment flows for all locations except at transitions to existing road and the causeway at Old Pitt Town Road.

The section of road closure of Cattai Road between Eldon Street and Buckingham Street contains an existing culvert that is outside the project boundary. The proposal would not impact the existing culvert at this location. There is no temporary diversion required for this culvert and flows will continue as existing. Proposal works for this tributary starts at the causeway on Old Pitt Town Road within the proposal boundary.

Further consultation with Hawkesbury City Council will be carried out during detailed design regarding the culvert located beneath Cattai Road, at the section that would be closed between Eldon Street and Buckingham Street. Refer to safeguard H6 in Section 5.2.

2.5.3 Flooding on existing roads

Submission number(s)

8, 17, 18

Issue description

The submissions included requests to address road flooding occurring after heavy local rainfall events at the unnamed drainage line that travels through Redfern Place, 77 Cattai Road and Cattai Road.

A submission included a request to assess the effectiveness of the stormwater detention device associated with the residential development in the Fernadell Precinct that has been constructed nearby Buckingham Street.

The submissions also included requests to address road flooding occurring after heavy local rainfall events at the Hortons Creek bridge near Lagoon Road.

Submission also suggested that volume of stormwater traveling through the culverts under Old Pitt Town Road should be properly evaluated.

Response

Addressing any flooding issues on Cattai Road in front of property 77 Cattai Road and the assessment of the effectiveness of the Fernadell Precinct stormwater detention device are beyond the bypass boundaries and outside the proposal scope and objectives.

The existing Hortons Creek bridge (culvert) located between Lagoon Road and Glebe Road is proposed to be removed and replaced with a five-cell culvert underneath the proposed southern roundabout.

The southern roundabout would have an increased flood immunity for the 100-year local catchment flow, which would be an improvement on the current flood situation.

The hydraulic assessments to evaluate the local catchment flow combinations for the proposed culvert in the causeway on Old Pitt Town Road were completed and the afflux results are presented in Section 4.5, Appendix H of the REF. Safeguard H5 in Section 5.2 acknowledges Roads and Maritime will further investigate drainage arrangement at this location during detailed design.

2.6 Issue 4, non-Aboriginal heritage

2.6.1 Historical significance of Pitt Town

Submission number(s)

4

Issue description

The submission included a request that appropriate signs be installed as part of the proposal, depicting the historical significance of Pitt Town.

Response

The REF includes a safeguard to investigate further appropriate signs to direct travellers on the bypass to the commercial centre in Pitt Town. Roads and Maritime has also developed a design for standard bypass signs that can also highlight historical interest. This and other signs options will be considered by Roads and Maritime when the design phase progresses.

In addition, existing welcome signs on Cattai Road at the northern entry to Pitt Town, and on the southern approach at Pitt Town Road, already highlighting the town's history, will be kept and moved to remain at

entry points to the town. Hawkesbury City Council will be further consulted over these sign relocations during the final bypass design.

A new environmental safeguard (safeguard NA6) has been added in Section 5.2 to reflect the above commitments.

2.7 Issue 5, Business impacts

2.7.1 Pitt Town business precinct viability

Submission number(s)

24

Issue description

Council submission asked to consider the effect of the proposed bypass on the commercial precinct of Pitt Town and the main traffic connections in and out of the Township and how the change in traffic patterns will affect the overall viability of the business precinct. This can be further extended to the residential areas and how the established and future developed areas will connect to the proposed road network.

Response

A local business survey was conducted by Roads and Maritime to gain a better understanding of the main issues, perceptions and concerns of businesses with regard to the proposal. Refer to Section 4.1 and Appendix B of this report.

Section 6.10.3 of the REF considered the effects of the proposal operation on businesses located along the Pitt Town commercial precinct. A number of businesses located at the Pitt Town commercial precinct have the potential to be impacted by the proposal operation as traffic would be bypassed from this precinct which may reduce patronage. The businesses in Pitt Town commercial precinct are however only partially dependent on passing trade as they have a local market. While there may be a drop in passing trade, the proximity of the proposal to the town centre and parts of the township still visible from the bypass link reduces the potential impacts caused by this. Provision of appropriate signs to direct travellers on the bypass to the Pitt Town commercial precinct could help to lessen the potential impact. Refer to safeguard SE3 and safeguard SE4 in Section 5.2.

2.8 Issue 6, Public utilities

2.8.1 Water and sewerage assets

Submission number(s)

23

Issue description

Submission 23 from Sydney Water noted there are existing drinking water mains and proposed Sydney Water assets within and nearby the proposal area. It notes approval requirements for adjustment and

protection of Sydney Water assets and for building over or nearby a Sydney Water asset. There are no impacts to Sydney Water heritage sites.

The submission also noted existing wastewater assets are under Hawkesbury City Council control.

Any future environmental approval will need to consider the discharge protocols of chlorinated water due to shutdown and reconnection of live Sydney Water assets that require adjustment.

Response

The specific requirements of Sydney Water for the adjustment and protection of their current and future assets, have been noted. An accredited Water Servicing Coordinator will be engaged during detailed design to ensure Sydney Water requirements and approval processes are followed as required. Consultation with Hawkesbury City Council will be undertaken during detailed design about potential impacts to council wastewater assets.

Any required shutdown and reconnection of live Sydney Water assets that require adjustment will be done following the relevant protocols.

New environmental safeguards (safeguard GEN4 and safeguard WQ6) has been added in Section 5.2 to reflect the above commitments.

3. Changes to the proposal

There have been no changes to the proposal since the REF was prepared. Proposal design parameters and features, construction method and associated infrastructure and activities remain consistent with those documented in the REF.

4. Additional investigations

This chapter documents additional investigations or assessments carried out by Roads and Maritime during, and after, the REF public display.

4.1 Local business surveys

Roads and Maritime conducted a survey of Pitt Town local businesses in October 2018 to gain a better understanding of the issues, perceptions and concerns of local businesses with regard to the proposal.

The methodology applied for the survey is described below.

4.1.1 Methodology

A survey questionnaire was designed to gather information on local business characteristics, operating environment and level of dependency on passing trade, and perception of the proposal impacts and benefits.

A copy of the survey questionnaire is presented in Appendix B.

The survey questionnaire was distributed to the businesses listed in Table 4-1 with the request to fill and return the survey form. Roads and Maritime undertook a follow up of the survey invitation by visits and encouraged businesses to complete the survey. Two businesses were visited twice in normal business hours but could not be contacted as they were closed. Survey responses were collated and analysed by Roads and Maritime.

Table 4-1: Pitt Town local business survey coverage

Address	Business name
Corner of Bathurst Street and Chatham Street	BP Petrol Station
69 Bathurst Street	M&C Turner Automotive Services
1/71 Bathurst Street	Pitt Town Pizza
2/71 Bathurst Street	Wilde Wolfe (homewares and gift store)
3/71 Bathurst Street	Harcourts Advance (real estate)
4/71 Bathurst Street	The Pitt Town Dentist
5/71 Bathurst Street	Jeanas Country Spa, Hair and Beauty
7/71 Bathurst Street	Pitt Town Pharmacy
8/77 Bathurst Street	Vintage Pantry (Café restaurant)
9/77 Bathurst Street	Pitt Town Quality Meats

Address	Business name
81 Bathurst Street	Bird in Hand Inn (restaurant)
82 Bathurst Street	Australia Post
85 Bathurst Street	Pitt Town Hardware
1A/29 Eldon Street	Pitt Town Bottle Shop
1 Eldon Street	IGA
29 Eldon Street	Pitt Town Country Bakehouse
1/29 Eldon Street	Lawyer
2/29 Eldon Street	33 Degrees Real Estate
5/29 Eldon Street	Advance Medical Practice
2/29a Eldon Street	Spritz Hair Designers

4.1.2 Survey results

Four businesses responded to the survey despite Roads and Maritime invitation and follow up visits. The sections below present the business survey findings.

Employee and customer access

Impacts to employee and customer access may be experienced due to traffic constraints, congestion, alterations to travel routes and parking accessibility/availability.

Survey respondents stated most employees and customers travel to the local businesses by vehicle. One respondent mentioned customers travel via walk/cycle as well.

Most respondents (75 per cent) indicated majority of their customers were locally based or from the local government area. One respondent indicated customers also travel from Western Sydney region.

Dependency on passing trade and business visibility

Passing trade are those pedestrians, cyclists and motorists who choose to patronise a business because they see it when walking, riding or driving past, and they had not previously planned to go there. A change in traffic volumes may affect the exposure of businesses to potential clients. Businesses that rely on storefront exposure to attract customers may be affected by reduced visibility of business advertising. A change in vehicle routes and traffic volumes may also affect the exposure of businesses to potential clients.

In relation to dependency on passing trade and business visibility:

- Two of the respondents perceived their businesses to be highly dependent on vehicle-based passing trade and business visibility. The other two perceived their businesses to be slightly or not dependent on passing trade or business visibility
- Three of the four respondents perceived an increase proportion of customers passing through Pitt Town during public holidays and school holidays.

Perceived construction impacts

The survey sought information on perceptions of changes during the construction phase that may influence the level of passing trade. The business survey results show:

- All respondents were aware of the Pitt Town Bypass proposal
- Two of the respondents perceived the proposed construction would negatively impact businesses because construction work would direct customers away from the business area
- Respondents suggested signs to let passing traffic and locals know local businesses are still open, would be a way to mitigate impacts during construction.

Perceived operational impacts

Local businesses were asked about the potential for changes which may influence the level of passing trade once the proposal is operational. The business survey found:

- Three of the four respondents perceived the proposal operation would negatively impact businesses because of a reduction in passing trade
- Respondents suggested multiple signs along the bypass showing what businesses are in Pitt Town, may be a way to mitigate impacts on local businesses.

4.1.3 Revised impacts on local businesses

Construction

The survey respondents identified a potential reduction in passing trade and visibility during construction.

The REF noted all construction activities would be completed while maintaining through traffic on existing roads. There would be however:

- Temporary traffic speed reduction where road conditions are adversely modified by construction work
- Lane width modifications to facilitate the safe entry, exit and movement of plant and materials
- Road shoulder narrowing so that road tie ins can be completed allow construction staging close to existing roads.

Any reduction on local businesses passing trade and visibility would be temporary and confined to the stages where the above local road traffic changes would take place.

As suggested by the survey respondents, Roads and Maritime would install appropriate temporary signs to let passing and local traffic know Pitt Town local businesses are still open during construction. Refer to additional safeguard SE5 in Section 5.2.

Operation

The REF noted the proposal operation has the potential to reduce patronage on some businesses which is consistent with the impacts perceived by some of the business survey respondents. While there may be a drop in passing trade, the proximity of the proposal to the town centre and parts of the township still visible from the bypass link reduces the potential impacts caused by the proposal. The REF commits to the installation of signs to direct travellers on the bypass to the commercial centre in Pitt Town. Refer to safeguard SE4 in Section 5.2.

4.1.4 Revised safeguards and management measures

Roads and Maritime has committed (in the REF) to implement appropriate signs to direct travellers on the bypass to the commercial centre in Pitt Town. Roads and Maritime has also committed to consult with local business owners, Hawkesbury City Council and Hawkesbury Chamber of Commerce to manage potential impacts associated with bypassing traffic from the town centre. Besides the new safeguard SE5, no additional or revised mitigation measures are proposed to manage local business impacts.

5. Environmental management

The Review of Environmental Factors (REF) for the Pitt Town Bypass identified the framework for environmental management, including safeguards and management measures that would be adopted to further avoid or reduce environmental impacts (Chapter 7 of the REF).

After consideration of the issues raised in the public submissions and local business surveys, the safeguard and management measures have been revised to:

- Examine potential options for a right turn from Buckingham Street onto Cattai Road, and for a right turn from Cattai Road into Buckingham Street, where these meet established road safety standards, including adequate visibility and stopping distances for approaching traffic
- Include appropriate signs to depict the historical significance of Pitt Town and to reduce impacts to local businesses during construction
- Ensure existing and proposed water supply assets are managed in line with Sydney Water requirements
- Continue consultation with NSW State Emergency Service about the proposal interaction with the Hawkesbury Nepean Resilience Valleys program and flood evacuation routes.

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

5.1 Environmental management plans

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

A Project Environment Management Plan (PEMP) and Construction Environmental Management Plan (CEMP) will be prepared to incorporate all the safeguards and management measures. The PEMP and CEMP will provide a framework for establishing how these measures will be implemented and who would be responsible for their implementation.

The PEMP and CEMP will be prepared before construction of the proposal and must be reviewed and certified by the Roads and Maritime Environment Officer, Greater Sydney, before the start of any on-site work. It would be a working document, subject to ongoing change and updated as necessary to respond to specific requirements. The PEMP and CEMP would be developed in line 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*, QA Specification G10 – *Traffic Management*.

5.2 Summary of safeguards and management measures

The Pitt Town Bypass REF 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 proposal (refer to Chapter 7 of the REF) have been revised. Should the project proceed, the environmental management measures in Table 5-1 will guide the subsequent phases of the proposal.

Additional and/or modified environmental safeguards and management measures to those presented in the REF have been underlined and deleted measures, or parts of measures, have been struck out.

Safeguards in bold italic underlined font in Table 5-1 are safeguards responding to the issues raised in the submissions received during the public display of the REF.

Table 5-1: Summary of environmental safeguards and management measures

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
GEN1	General - minimise environmental impacts during construction	<p>A CEMP will be prepared and submitted for review and endorsement of the Roads and Maritime Environment Manager prior to commencement of the activity.</p> <p>As a minimum, the CEMP will address the following:</p> <ul style="list-style-type: none"> any requirements associated with statutory approvals details of how the project will implement the identified safeguards outlined in the REF issue-specific environmental management plans roles and responsibilities communication requirements induction and training requirements procedures for monitoring and evaluating environmental performance, and for corrective action reporting requirements and record-keeping procedures for emergency and incident management procedures for audit and review. <p>The endorsed CEMP will be implemented during the undertaking of the activity.</p>	Contractor / Roads and Maritime	Pre-construction / Detailed design	Core safeguard
GEN2	General - notification	All businesses, residential properties and other key stakeholders (eg schools, local councils) affected by the activity will be notified at least five days prior to commencement of the activity.	Contractor / Roads and Maritime	Pre-construction	Core safeguard
GEN3	General – environmental awareness	All personnel working on site will receive training to ensure awareness of environment protection requirements to be implemented during the project. This will include up-front site induction and regular "toolbox" style briefings.	Contractor / Roads and Maritime	Pre-construction / Detailed design	Core safeguard
<u>GEN4</u>	<u>Utilities</u>	<u>An accredited water servicing coordinator will be engaged to ensure Sydney Water and Hawkesbury City Council water and sewerage asset requirements and approval processes are followed as required.</u>	<u>Roads and Maritime</u>	<u>Detailed design</u>	<u>Submissions Report</u>
Biodiversity					
B1	Biodiversity impacts	A Flora and Fauna Management Plan will be prepared in accordance with <i>Biodiversity Guidelines: Protecting and Managing Biodiversity on RTA Projects</i> (RTA, 2011b) and	Contractor	Detailed design /	Section 4.8 of QA G36

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
	during construction	<p>implemented as part of the CEMP. It would 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 <i>Landscape Guideline</i> (RTA, 2008a) Pre-clearing survey requirements Procedures for unexpected threatened species finds and fauna handling Procedures addressing relevant matters specified in the <i>Policy and Guidelines for Fish Habitat Conservation and Management</i> (DPI Fisheries, 2013) Protocols to manage weeds and pathogens. 		Pre-construction	<i>Environment Protection</i>
B2	Biodiversity	Measures to further minimise the construction boundary and avoid native vegetation or habitat removal will be investigated during detailed design and implemented where practicable and feasible.	Contractor	Detailed design / Pre-construction	Additional safeguard / Appendix E
B3	Removal of native vegetation and habitat	Pre-clearing surveys will be undertaken in accordance with Guide 1: Pre-clearing Process of the <i>Biodiversity Guidelines: Protecting and Managing Biodiversity on RTA Projects</i> (RTA, 2011b).	Contractor	Pre- construction	Additional safeguard / Appendix E
B4		Vegetation and habitat removal will be undertaken in accordance with Guide 4: Clearing of Vegetation and Removal of Bushrock of the <i>Biodiversity Guidelines: Protecting and Managing Biodiversity on RTA Projects</i> (RTA, 2011b).	Contractor	Construction	Additional safeguard / Appendix E
B5		Where feasible, and where it does not substantially affect maintenance and safe operation of the proposal, native vegetation will be re-established in accordance with <i>Guide 3: Re-establishment of Native Vegetation of the Biodiversity Guidelines: Protecting and Managing Biodiversity on RTA Projects</i> (RTA, 2011b).	Contractor	Post construction	Additional safeguard / Appendix E
B6		Investigation will occur during detailed design for opportunities to replace or reinstate habitat where practical and feasible in accordance with Guide 5: Re-use of Woody Debris and Bushrock and Guide 8: Nest Boxes of the <i>Biodiversity Guidelines: Protecting and Managing Biodiversity on RTA Projects</i> (RTA, 2011b).	Contractor	Detailed design / Construction	Additional safeguard / Appendix E
B7		The unexpected species find procedure will be followed under <i>Biodiversity Guidelines: Protecting and Managing Biodiversity on RTA Projects</i> (RTA, 2011b) if threatened ecological communities, flora or fauna not assessed in the biodiversity assessment are identified within	Contractor	Construction	Additional safeguard /

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		the construction boundary.			Appendix E
B8	Aquatic habitat	Aquatic habitat will be protected in accordance with Guide 10: Aquatic Habitats and Riparian Zones of the (RTA, 2011b) and Section 3.3.2 Standard Precautions and Mitigation Measures of the <i>Policy and Guidelines for Fish Habitat Conservation and Management Update 2013</i> (DPI (Fisheries NSW), 2013).	Contractor	Construction	Additional safeguard / Appendix E
B9	Water flows	Changes to existing surface water flows would mimic surface water flows during construction stage and re-established during operation.	Contractor	Detailed design / Construction	Additional safeguard / Appendix E
B10	Edge effects on nearby native vegetation and habitat	Exclusion zones will be set up at the limit of clearing in accordance with Guide 2: Exclusion Zones of the <i>Biodiversity Guidelines: Protecting and Managing Biodiversity on RTA Projects</i> (RTA, 2011b). The limit of clearing will be confirmed within the construction footprint during the detailed design process.	Contractor	Detailed design / Construction	Additional safeguard / Appendix E
B11	Injury and mortality of fauna	Fauna will be managed in accordance with Guide 9: Fauna Handling of the <i>Biodiversity Guidelines: Protecting and Managing Biodiversity on RTA Projects</i> (RTA, 2011b).	Contractor	Construction	Additional safeguard / Appendix E
B12	Invasion and spread of weeds	Weed species will be managed in accordance with Guide 6: Weed Management of the <i>Biodiversity Guidelines: Protecting and Managing Biodiversity on RTA Projects</i> (RTA, 2011b).	Contractor	Construction	Additional safeguard / Appendix E
B13	Invasion and spread of pests	Pest species will be managed within the construction boundary.	Contractor	Construction	Additional safeguard / Appendix E
B14	Invasion and spread of pathogens and disease	Pathogens will be managed in accordance with Guide 2: Exclusion Zones of the <i>Biodiversity Guidelines: Protecting and Managing Biodiversity on RTA Projects</i> (RTA, 2011b).	Contractor	Construction	Additional safeguard / Appendix E
B15	Noise, light and	Shading and artificial light impacts will be minimised through detailed design feasible and	Contractor	Detailed design	Additional safeguard /

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
	vibration	reasonable.			Appendix E
Noise and vibration					
NV1	Construction noise and vibration	<p>A Construction Noise and Vibration Management Plan will be prepared for the project. The Plan will provide details of noise and vibration management measures and procedures to be carried out during construction to minimise and manage noise impacts on sensitive receivers, including:</p> <ul style="list-style-type: none"> Noise and vibration monitoring and reporting requirements A map showing the location of all sensitive receivers Specific mitigation treatments, management methods and procedures to be implemented to control noise and vibration during construction Construction timetabling to minimise noise impacts including time and duration restrictions, respite periods and frequency Procedures for notifying residents, business owners, and other sensitive receivers of construction activities likely to affect their amenity through noise and vibration Contingency procedures to be implemented in the event of non-compliances and / or noise complaints. <p>Noise mitigation measures that will be adopted in the Plan include:</p> <ul style="list-style-type: none"> Selection of less noisy plant and equipment, where feasible Avoiding simultaneous operation of noisy plant, where feasible Maintaining plant and equipment so as to ensure optimum operating conditions Maximising the offset distance between noisy plant and adjacent sensitive receivers Planning construction traffic flow to minimise reversing and noise from reversing alarms) Selecting site access points and delivery locations as far as possible from sensitive receivers Using temporary structures to shield receivers from noise sources, where reasonable and feasible. <p>Vibration mitigation measures that will be adopted in the Plan include:</p> <ul style="list-style-type: none"> Undertaking a pre-construction building dilapidation surveys for buildings that could be impacted by vibration including the LEP heritage listed item, the "Cottage", located at 22 Bathurst Street Conducting vibration monitoring during construction, applying the revised vibration 	Contractor	Construction	Additional safeguard / Appendix G

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		<p>targets determined as part of the pre-construction assessment</p> <ul style="list-style-type: none"> Consideration of feasible alternative construction methodologies or equipment where vibration intensive equipment is expected to exceed the criteria. 			
NV2		Detailed construction noise and vibration impact assessments will be prepared during the construction phase based on detailed programming information. The detailed assessments will identify the specific additional mitigation measures required for the work in question based on the requirements of the CNVG.	Contractor	Construction	Additional safeguard / Appendix G
NV3	Construction vibration	<p>A pre-construction assessment of the local heritage listed item, 'the Cottage' will be conducted to determine the sensitivity of the structure to ground-borne vibration. This will include:</p> <ul style="list-style-type: none"> A preconstruction dilapidation survey Monitoring the condition of the structure during construction. 	Roads and Maritime / Contractor	Pre-construction	Additional safeguard / Appendix G
NV4	Construction hours	Where feasible and reasonable, construction will be carried out during the standard daytime working hours. Where work is to be carried out outside of recommended working hours, all affected receivers will be notified of all relevant details of the proposed activities.	Contractor	Construction	Additional safeguard / Appendix G
NV5	Operational noise impact	The need for operational phase noise mitigation measures, including low noise pavement, noise walls or architectural treatments, will be confirmed during detailed design. The mitigation measures will be provided as early as practicable in the construction program to reduce potential noise impacts associated with construction.	Roads and Maritime / Contractor	Detailed design	Additional safeguard / Appendix G
NV6		<p>Within 12 months of project opening an operational noise review will be carried out. This will include:</p> <ul style="list-style-type: none"> Monitoring to compare actual noise performance against predicted noise performance An assessment of the performance and effectiveness of the applied mitigation measures together with a review and, if necessary, reassessment of all feasible and reasonable mitigation measures Identification of any additional feasible and reasonable measures that will be implemented with the objective of meeting the criteria in the NCG (Roads and Maritime, 2015b), when these measures will be implemented and how their effectiveness will be measured and reported. 	Roads and Maritime	Operation	Additional safeguard / Appendix G

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
Aboriginal heritage					
AH1	Impacts to land and identified sites/	An application for an Aboriginal Heritage Impact Permit (AHIP) will be made under section 90A of the <i>National Parks and Wildlife Act 1974</i> for an area that will include sites PTBP 1, PTBP AFT 1, PTBP AFT 2, and PTBP AFT 3 prior to commencement of works affecting the site	Roads and Maritime	Pre-construction	Additional safeguard / Appendix F
AH2		Archaeological salvage excavation of site PTBP AFT 3 will be required prior to starting works affecting the site	Roads and Maritime	Pre-construction	Additional safeguard / Appendix F
AH3	Unexpected archaeological finds	A heritage induction will be provided to workers before construction begins. It will inform them of exclusion zones and guidelines to follow if unexpected heritage items or deposits are located during the work.	Roads and Maritime	Pre-construction / Construction	Additional safeguard / Appendix F
AH4		If unexpected archaeological finds are discovered, Roads and Maritime's Standard Management Procedure for Unexpected Heritage Items (2015) will be followed. In addition, the NSW Heritage Division will be notified of the discovery of a relic, in accordance with Section 146 of the NSW Heritage Act 1977.	Roads and Maritime	Construction	Additional safeguard / Appendix F
Hydrology					
H1	Hydrology	A wet weather plan will be developed and implemented to ensure hydrological performance is maintained during the construction of the proposal and flood impacts are controlled.	Contractor	Construction	Additional safeguard / Appendix H
H2	Flooding	Contractors would monitor the weather for predicted heavy rainfall and potential flooding events. Flow paths would be maintained during flood events.	Contractor	Construction	Additional safeguard / Appendix H
H3		Ancillary and stockpile locations would be selected to avoid flood zones where possible.	Contractor	Construction	Additional safeguard / Appendix H
H4		Landowners potentially affected by afflux would be consulted during detailed design.	Roads and	Detailed design /	Additional safeguard /

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
			Maritime	Pre-construction	Appendix H
H5	Drainage at Old Pitt Town Road	Drainage arrangements at the causeway at Old Pitt Town Road (OTB5) would be investigated further during detailed design.	<u>Roads and Maritime Contractor</u>	Detailed design	Additional safeguard / Appendix H
<u>H6</u>	<u>Culvert design</u>	<u>Further consultation with Hawkesbury City Council will be carried out regarding the culvert located beneath Cattai Road, at the section that would be closed between Eldon Street and Buckingham Street</u>	<u>Roads and Maritime</u>	<u>Detailed design</u>	<u>Submissions Report</u>
Water Quality					
WQ1	Soil and water	A Soil and Water Management Plan (SWMP) would be prepared and implemented in accordance with the <i>Blue Book</i> as part of the CEMP. The SWMP would identify all reasonably foreseeable risks relating to soil erosion and water pollution, describe how these risks would be addressed during construction and include monitoring of water quality both upstream and downstream of waterways and drainage lines to assess any changes in water quality from construction activities.	Contractor	Detailed design / Pre-construction	Core safeguard Section 2.1 of QA G38 <i>Soil and Water Management</i>
WQ2	Sediment loaded runoff	Progressive Erosion and Sediment Control Plans (PESCPs) will be developed at each section and stage of the project as a part of the Soil and Water Management Plan. The plans would include arrangements for managing wet weather events, including monitoring potential high risk events (such as storms) and specific controls and follow-up measures to be applied in the event of wet weather	Contractor	Pre-construction / Construction	Core safeguard Section 2.2 of QA G38 <i>Soil and Water Management</i>
WQ3		Where practical, the proposed operational water quality measures (eg vegetated swales and bio-retention basins) would also be used with the temporary measures during the construction phase to assist with runoff re-direction and sediment trapping.	Roads and Maritime	Detailed design	Additional safeguard / Appendix H
WQ4	Surface water quality	A site-specific emergency spill plan will be developed and include spill management measures in accordance with the <i>Roads and Maritime Code of Practice for Water Management</i> (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) and will be in accordance with the Roads	Contractor	Detailed design / Pre-construction	Core safeguard Section 4.3 of QA G36 <i>Environment Protection</i>

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		and Maritime <i>Environmental Incident Classification and Reporting Procedure</i> (Roads and Maritime 2018).			
WQ4	Contamination	Plant, equipment and supplies will be managed to prevent spills and leaks.	Construction contractor	Construction	Additional safeguard / Appendix H
WQ5		Refuelling will not take place within 50m of waterways, and will occur in a suitably located and bunded area.	Contractor	Construction	Additional safeguard / Appendix H
<u>WQ6</u>	<u>Surface water quality</u>	<u>Chlorinated water discharge protocols will be followed in the event of shutdown and reconnection of live water supply assets that require adjustment</u>	<u>Contractor</u>	<u>Construction</u>	<u>Submissions Report</u>
Soils and contamination					
SC1	Acid sulfate soils	Geotechnical investigations would be undertaken during detailed design to determine the extent of ASS within the proposal area.	Contractor	Detailed design	Additional safeguard
SC2		An ASS management plan will be prepared for the proposal and will include measures to manage impacts on soils and water quality from acid sulfate soils and discharges from acid sulfate soil treatment areas.	Contractor	Detailed design / Pre-construction	Additional safeguard
SC3	Contaminated land	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.	Contractor	Detailed design / Pre-construction	Core standard safeguard: / Section 4.2 of QA G36 <i>Environment Protection</i>
SC4	Unexpected finds	An unexpected finds and hazardous materials procedure will be implemented to manage any potentially contaminated materials that may be encountered during site preparation and/or construction.	Construction contractor	Pre-construction	Additional safeguard

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
SC5		Should unexpected contamination be encountered (eg by observation of offensive odours, soil discoloration, buried waste or potential asbestos containing materials) during construction, work in the area will cease until an appropriately qualified environmental consultant can advise on the need for further assessment, remediation or other action, as deemed appropriate. Further assessment and management of contamination, if required, will be carried out in accordance with section 105 of the <i>Contaminated Land Management Act 1997</i> .	Construction contractor	Construction	Additional safeguard
SC6	Contamination	Plant, equipment and supplies will be managed to prevent spills and leaks.	Construction contractor	Construction	Additional safeguard
Non-Aboriginal heritage					
NA1	Non-Aboriginal heritage	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 on Non-Aboriginal heritage.	Contractor	Detailed design / Pre-construction	Core standard safeguard / Section 4.10 of QA G36 <i>Environment Protection</i>
NA2	Unidentified heritage items	<i>The Standard Management Procedure – Unexpected Heritage Items</i> (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	Contractor	Detailed design / Pre-construction	Core standard safeguard / Section 4.10 of QA G36 <i>Environment Protection</i>
NA3	Potential archaeological relics	Should excavation be required within the areas assessed as having moderate potential to contain archaeological relics, an Archaeological Research Design will be prepared. Depending on the assessed level of impact in the Archaeological Research Design, this may necessitate application for an excavation permit, or Exception Notification under either Section 140 or Section 139(4) of the <i>Heritage Act 1977</i> respectively, to the Heritage Division of the Office of Environment and Heritage. An Archaeological Research Design and Methodology will be required to support any application.	Roads and Maritime	Detailed design / Pre-construction / Construction	Additional safeguard / Appendix I

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
NA4	Impact on the "Cottage"	As the proposed construction boundary is within 25m of the 'Cottage' heritage item, there is potential risk for impacts from vibration during construction, depending on the nature of equipment used. Vibration generating works within a 25m range of the locally listed 'Cottage' heritage that are likely to result in cosmetic or structural damage will require monitoring and will be subject to approval by Roads and Maritime prior to the start of works in this area.	Contractor	Construction	Additional safeguard / Appendix I
NA5		A heritage induction will be presented to workers before the start of construction of works in the vicinity of the 'Cottage' heritage item (LEP 2012 Item No. I277) and include values of the place, avoidance procedure, and contacts (site manager, Roads and Maritime heritage officer) for reporting unexpected archaeological finds or inadvertent impacts on the heritage item.	Contractor	Pre-construction / Construction	Additional safeguard / Appendix I
<u>NA6</u>	<u>Non-Aboriginal Heritage</u>	<u>Appropriate signs to depict the historical significance of Pitt Town will be investigated and where feasible included in the detailed design of the bypass. Consultation with Hawkesbury City Council will be carried out over the relocation of existing town signs onto new approaches to Pitt Town.</u>	<u>Roads and Maritime</u>	<u>Detailed design</u>	<u>Submissions Report</u>
Landscape character and visual					
LV1	Landscape character and visual impact	<p>An Urban Design Plan will be prepared to support the final detailed proposal design.</p> <p>The Urban Design and Landscaping Plan will present an integrated urban design for the proposal, providing practical detail on the application of design principles and objectives identified in the Urban Design and Visual Assessment technical paper and concept Urban Design Strategy.</p> <p>The Plan will include design treatments for:</p> <ul style="list-style-type: none"> The location and identification of existing vegetation and proposed landscaped areas, including species to be used (<u>refer to biodiversity safeguards B1, B2, B5 and B10 Section 6.1.5 of the REF</u>) Built elements including retaining walls and bridges Pedestrian and cyclist elements including footpath location, paving types and pedestrian crossings Fixtures such as lighting, fencing and signs Details of the staging of landscape works taking account of related environmental controls such as erosion and sediment controls and drainage Procedures for monitoring and maintaining landscaped or rehabilitated areas. 	Contractor	Detailed design / Pre-construction	Additional safeguard / Appendix D

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		<p>The Urban Design Plan will be prepared in accordance with relevant guidelines, including:</p> <p><i>Beyond the Pavement: Urban Design Policy, Process and Principles</i> (Roads and Maritime, 2014)</p> <p><i>Landscape Guideline</i> (RTA, 2008)</p> <p><i>Bridge Aesthetics</i> (Roads and Maritime, 2012)</p> <p><i>Noise Wall Design Guidelines</i> (RTA, 2006)</p> <p><i>Shotcrete Design Guideline</i> (RTA, 2005).</p>			
LV2	Construction impact	<p>The layout of ancillary facility sites will be designed to limit impact. The design will would consider:</p> <ul style="list-style-type: none"> Screening of boundaries facing sensitive receivers or views Careful placement of structures and buildings to maintain viewpoints or provide additional screening of site activities 	Contractor	Detailed design	Additional safeguard / Appendix D
LV3		Ancillary facilities will be maintained, kept tidy and well-presented including sorting regular removal of excess materials to reduce visual impact.	Contractor	Construction	Additional safeguard / Appendix D
LV4		Ancillary facility sites and temporary construction areas will be progressively restored to at least their -pre-construction conditions when no longer required.	Contractor	Construction	Additional safeguard / Appendix D
LV5	Visual impacts of built elements	All structures, especially Hortons Creek bridge, will be designed as simple and refined, and structures integrated within the landscape and in accordance with the Roads and Maritime <i>Bridge Aesthetic Design Guidelines</i>	Roads and Maritime	Detailed design	Additional safeguard / Appendix D
LV6	Visual impacts caused by clearing of vegetation	Screen planting will be incorporated, where appropriate, and space and access is available within the road corridor to limit visibility of the proposal from adjoining residential properties.	Contractor	Detailed design	Additional safeguard / Appendix D
Property and land use					

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
PL1	Property acquisition	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> .	Roads and Maritime	Pre-construction / Construction	Core standard safeguard
PL2	Lands disturbed during construction	Land used for construction activities would be rehabilitated to the same or better condition at the end of the construction period.	Roads and Maritime	Construction	Additional safeguard
PL3	Residual land	Roads and Maritime will consult with nearby owners/council for future land use opportunities for residual land.	Roads and Maritime	Operation	Additional safeguard
Socio-economic					
SE1	Community impacts	Roads and Maritime will carry out regular and ongoing engagement with the community in accordance with a project stakeholder consultation plan. The plan will include information on who will be consulted, the means of consultation and a complaints management procedure. Local residents, potentially affected businesses, schools and road users (including emergency service providers) would be notified before work starts and would be kept regularly informed of construction activities, timing and progress during the construction process.	Roads and Maritime	Pre-construction / Construction	Additional safeguard
SE2	Changes to road access and/or conditions during work	A Communication Plan (CP) will be prepared and implemented as part of the CEMP to provide timely and accurate information to the community during construction. The CP will include (as a minimum): mechanisms to provide detail and timing of the proposed activities to affected residents, including changed traffic and access conditions. The CP will be prepared in accordance with Roads and Maritime's Community Involvement and Communications Resource Manual.	Contractor	Pre-construction / Construction	Additional safeguard
SE3	Impacts to local businesses	Roads and Maritime will carry out ongoing consultation with local business owners, Hawkesbury City Council and Hawkesbury Chamber of Commerce to manage potential impacts associated with bypassing traffic from the town centre.	Roads and Maritime	Pre-construction / Construction	Additional safeguard
SE4		Appropriate signage to direct travellers on the bypass to the commercial centre in Pitt Town will be developed at detailed design.	Roads and Maritime	Detailed design	Additional safeguard
<u>SE5</u>		<u>Appropriate temporary signs to let passing and local traffic know Pitt Town local</u>	<u>Roads and</u>	<u>Construction</u>	<u>Submissions</u>

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		<u>businesses are still open will be investigated and installed during construction.</u>	<u>Maritime</u>		<u>report</u>
Traffic and transport					
TT1	Impact to traffic during construction	<p>A Traffic Management Plan (TMP) will be prepared and implemented as part of the CEMP. The TMP will be prepared in accordance with the Roads and Maritime <i>Traffic Control at Work Sites Manual</i> (RTA, 2010) and <i>QA Specification G10 Control of Traffic</i> (Roads and Maritime, 2008). The TMP will include:</p> <ul style="list-style-type: none"> • Confirmation of haulage routes • Measures to maintain access to local roads and properties • Site-specific traffic control measures (including signage) to manage and regulate traffic movements • Measures to maintain pedestrian and cyclist access • Requirements and methods to consult and inform the local community of impacts on the local road network • Details on access to construction sites, including entry and exit locations and measures to prevent construction vehicles queuing on public roads • A response plan for any construction traffic incident • Consideration of other developments that may be under construction to minimise traffic conflicts and congestion that may occur due to the cumulative increase in construction vehicle traffic • Monitoring, review and amendment mechanisms. 	Contractor	Detailed design / Pre-construction	Core safeguard / Section 4.8 of QA G36 <i>Environment Protection</i>
TT2	Property access	Before impacts on access occurs, alternative arrangements will be negotiated with property owners to enable continued access and minimise disruption.	Roads and Maritime	Construction	Additional safeguard / Appendix J
TT3		Affected property owners and community facilities will be provided with advanced notice of relevant project schedules, construction works and changes to access arrangements.	Roads and Maritime	Construction	Additional safeguard / Appendix J
TT4		Property accesses that are affected because of the proposal will be reinstated in consultation with the affected landowners, or relocated if required.	Roads and Maritime	Construction	Additional safeguard / Appendix J
TT5	Evacuation routes	Emergency services will be notified of changes to traffic condition along the road evacuation route for Pitt Town at least one week before these changes take place.	Roads and Maritime	Construction	Additional safeguard /

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
					Appendix J
<u>TT6</u>	<u>Intersection arrangements</u>	<u>Roads and Maritime will examine potential options for a right turn from Buckingham Street onto Cattai Road, and for a right turn from Cattai Road into Buckingham Street, where these can be designed to meet established road safety standards including adequate visibility and stopping distances for approaching traffic.</u>	<u>Roads and Maritime</u>	<u>Detailed Design</u>	<u>Submissions Report</u>
<u>TT7</u>	<u>Flood evacuation routes</u>	<u>Consultation with NSW State Emergency Service will continue during detailed design about the proposal interaction with the Hawkesbury Nepean Resilience Valleys program and current and desired flood evacuation routes.</u>	<u>Roads and Maritime</u>	<u>Detailed Design</u>	<u>Submissions report</u>
<u>TT8</u>	<u>Pedestrian access</u>	<u>Investigate options for safe pedestrian crossing on the re-aligned Cattai Road at the Old Pitt Town Road intersection.</u>	<u>Roads and Maritime</u>	<u>Detailed Design</u>	<u>Submissions report</u>
Air Quality					
AQ1	Particulate matter and emissions	<p>Air quality management measures will be prepared and implemented as part of the CEMP. The measures will include:</p> <ul style="list-style-type: none"> • Preparing a local air quality monitoring program to be implemented during construction • Mitigation and suppression measures to be implemented, such as spraying or covering exposed surfaces, providing vehicle clean-down areas, covering loads, street cleaning, using dust screens, maintaining plant in accordance with manufacturers' instructions • Controls in material storage areas, access roads and hardstands to prevent windblown dust during windy conditions, including spraying temporary cover, restrictions on vehicle movements, sealing. • Methods to manage earthwork activities during strong winds or other adverse weather conditions, including progressive restrictions on earthwork activities if conditions are ongoing • Contingency plans to be implemented in the event of non-compliances and / or complaints about dust. 	Contractor	Pre-construction / Construction	Additional safeguard
Greenhouse gas and climate change					
GG1	Greenhouse gas	The procurement strategy developed for the construction phase will demonstrate value for	Construction	Construction	Additional

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
	emissions	money and consideration for opportunities to procure goods and services: <ul style="list-style-type: none"> • From local suppliers • That are energy efficient or have low embodied energy • That minimise the generation of waste • That make use of recycled materials. 	Contractor		safeguard
Waste					
W1	Inappropriate handling and/or disposal of waste	A resource and waste management plan will be prepared to identify the hierarchy for sourcing and the use of resources. The plan will adopt the waste management hierarchy principles of: <ul style="list-style-type: none"> • <i>The Waste Avoidance and Resource Recovery Act 2001</i> • <i>Waste Classification Guidelines Part 1: Classifying Waste</i> (DECCW, 2009) • Roads and Maritime's waste management procedures (2014) • Roads and Maritime's Environmental Management System. 	Construction contractor	Pre-construction / Construction	Additional safeguard
W2	Generation of waste from construction	Waste management plans, as part of the Construction Environmental Management Plan, will include procedures for separating, securing, handling and storing potentially contaminated spoil and carrying out waste assessment and classification for off-site disposal to appropriately licensed waste facilities.	Construction contractor	Construction	Additional safeguard
W3		Millable timber will be harvested for off-site reuse where feasible and reasonable. All other felled timber will be re-used on site to create habitat or mulch in landscaping and erosion and sedimentation controls. Where mulch cannot be re-used on site, consideration will be given to making the mulch available to the public in accordance with Roads and Maritime's Environmental Direction 25 (2012) and the <i>Raw Mulch Exemption</i> (EPA, 2008).	Construction contractor	Construction	Additional safeguard
W4		Chemical, fuel and lubricant containers, and solid and liquid wastes, will be disposed of in accordance with the requirements of <i>Waste Classification Guidelines Part 1: Classifying Waste</i> (DECCW, 2009).	Construction contractor	Construction	Additional safeguard
W5		Sediment removed from sedimentation basins will, where appropriate, be used on site in landscaping and/or flattening batters.	Construction contractor	Construction	Additional safeguard
W6		Site inductions and on-site training will include modules on waste minimisation principles and measures.	Construction contractor	Construction	Additional safeguard

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
W7		Recycling facilities will be provided at site compounds for recycling paper, plastic, glass and other re-useable materials. Liquid wastes, such as paints and solvents, will be disposed of in accordance with the <i>Waste Classification Guidelines Part 1: Classifying Waste</i> (DECCW, 2009) and the POEO Act.	Construction contractor	Construction	Additional safeguard
W8		Regular visual inspections will be conducted to ensure work sites are kept tidy and to identify opportunities for reuse and recycling.	Construction contractor	Construction	Additional safeguard
Cumulative impact					
C1	Cumulative construction impacts	Ongoing coordination and consultation will be carried out with other proponents to ensure potential cumulative impacts are appropriately assessed and managed.	Roads and Maritime and construction contractor	Pre-construction / Construction	Additional safeguard
C2		All environmental management plans (including but not limited to the TMP and NVMP) will be prepared to consider other developments in the area.	Contractor	Pre-construction	Additional safeguard

5.3 Licensing and approvals

Table 5-2 summarises any licences and further approvals required for the proposal.

Table 5-2: Summary of licensing and approval required

Instrument	Requirement	Timing
<i>National Parks and Wildlife Act 1974</i>	Aboriginal heritage impact permit(s)	Prior to commencement of works affecting sites PTBP 1, PTBP AFT 1, PTBP AFT 2, and PTBP AFT 3

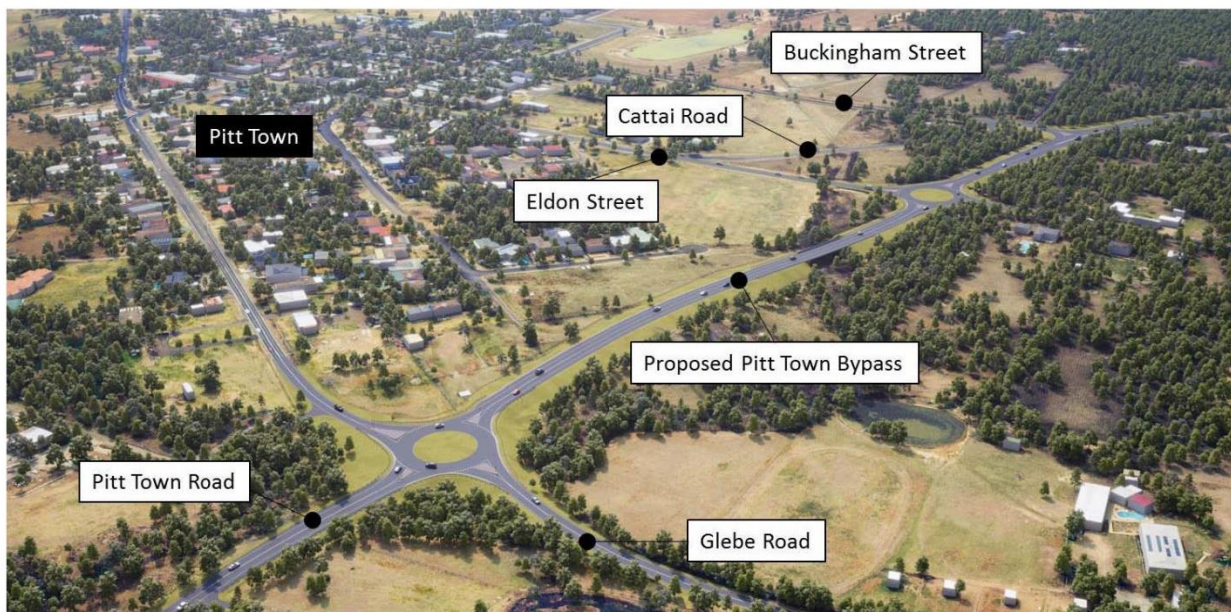
Appendix A

REF public display notification flyer and newspaper advertisements

Pitt Town Bypass

Have Your Say

The NSW Government is planning a bypass of Pitt Town to reduce traffic through the town centre and improve traffic flow and safety for road users.



Artist's impression of Pitt Town Bypass

Community Consultation

The community has a chance to comment on the **Review of Environmental Factors (REF)** and the concept design for the project. The REF and concept design will be on display between Monday 12 November and Monday 10 December 2018.

Documents can be viewed on the website at rms.nsw.gov.au/pitttownbypass or at the Hawkesbury Central Library and Pitt Town Post Office.

All submissions must be received by 5pm on Monday 10 December.

Community Information Session

Saturday 1 December

11am – 1pm

Lynwood Country Club

4 Pitt Town Bottoms Road, Pitt Town

There will not be a formal presentation, so please drop in at any time during the session to discuss the project with the team.

Please submit your feedback in writing to pitttownbypass@rms.nsw.gov.au or send to:
Roads and Maritime Services
Pitt Town Bypass Project
27 Argyle Street
Parramatta NSW 2150



New South Wales Government

NOTICEBOARD

Independent Pricing and Regulatory Tribunal

Aquacell Pty Ltd's network operator and retail supplier licence applications

Invitation for submissions

The Independent Pricing and Regulatory Tribunal (IPART) invites submissions from interested parties on Aquacell Pty Ltd's application for a network operator's licence and a variation of its existing retail supplier's licence for the proposed sewerage scheme at 67 Kurrajong Road, Kurrajong, NSW, made under the *Water Industry Competition Act 2006* (NSW).

Aquacell Pty Ltd's application along with information regarding the process for lodging a submission is available on the IPART website: http://www.ipart.nsw.gov.au/Home/Industries/Water/Private_Sector/Licensing/WICA/WICA_Licence_Applicants

Submissions from interested parties are due by 5pm on 23 January 2019. Enquiries should be directed to: Erin Cini on (02) 9113 7778 or Jessica Hanna on (02) 9113 7715 or compliance@ipart.nsw.gov.au.

Review of recycled water and related services for public water utilities

Public hearing

The Independent Pricing and Regulatory Tribunal (IPART) is reviewing its pricing arrangements for recycled water and related services for Sydney Water, Hunter Water, the Central Coast Council and Essential Energy (in Broken Hill).

IPART is conducting a public hearing on Tuesday 4 December 2018. The hearing will commence at 10:00am (registration from 9:30am). The venue for the hearing is:

SMC Conference & Function Centre
66 Goulburn Street
Sydney, NSW

The agenda for the hearing and a fact sheet, which provides relevant background information and identifies key issues, may be obtained from IPART's website www.ipart.nsw.gov.au. The Issues Paper for this review is also available on the IPART website.

If you wish to attend, please register by 5pm on Friday, 30 November 2018 on our website www.ipart.nsw.gov.au.

Alternatively, contact Maria Tortura on (02) 9290 8478 or maria_tortura@ipart.nsw.gov.au. Enquiries directed to Jean-Marc Kutschukan on (02) 9290 8453.

Hugo Harmstorf, Chief Executive Officer, Independent Pricing and Regulatory Tribunal
PO Box K35, Haymarket Post Shop NSW 1240

Roads and Maritime Services

Pitt Town Bypass Project – Have your say

The NSW Government is funding planning work and community consultation for the proposed bypass at Pitt Town. The community has the chance to comment on the Review of Environmental Factors (REF) and the concept design for the project.

The REF and concept design is on display between Monday 12 November and Monday 10 December 2018.

The REF outlines the key features of the proposal, the key objectives and the options considered by Roads and Maritime along with the proposal's environmental impact.

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There will not be a formal presentation, so please drop in at any time.

You can also email a submission to pitttownbypass@rms.nsw.gov.au. All submissions must be received by 5pm on Monday 10 December 2018.

Contact: If you have any questions, or would like further information, please contact the Roads and Maritime project team on 1800 793 862 or at pitttownbypass@rms.nsw.gov.au or visit the website rms.nsw.gov.au/pitttownbypass

Department of Planning and Environment

Notice of intent to grant a lease under section 151F of the *National Parks and Wildlife Act 1974*.

Lane Cove River Tourist Park – Lane Cove National Park

Pursuant to Section 151 of the *National Parks and Wildlife Act 1974* the Minister for the Environment proposes to grant Delaware North Companies Australia Pty Ltd ABN 92 003 435 345 a lease of Lane Cove River Tourist Park, Plassey Road, Lane Cove National Park. Submissions are called for from persons who wish to comment on the proposal.

Identification of land: Lots 413-418 in Deposited Plan 752035 being the area known as Lane Cove River Tourist Park, Lane Cove National Park.

Purposes for which the land and any building and structure is proposed to be used:

- Visitor short stay accommodation and tourist park facilities.

Term of proposed lease: 10 years with 2 x 10 year options (30 years altogether).

Closing date for submissions: Submissions must be received before the close of business on 28 December 2018.

Additional Information: The proposal includes modification of an existing building and upgrade of Tourist Park facilities. All works will be subject to appropriate environmental approvals.

Submissions: Anyone wishing to make a comment on the proposal may do so in writing to:

Director, Property and Commercial
PO Box A290 Sydney South NSW 1232

Contact: npps.propertyandcommercial@environment.nsw.gov.au

Roads and Maritime Services

Compulsory Acquisition of Land – *Roads Act 1993*

Attention is invited to the notice published in Government Gazette No 122 of Friday, 16 November 2018 Page 8567 regarding the compulsory acquisition of land for road purposes at Luddenham in the Penrith City Council area and said to be in the possession of Christies Pty Limited.

(RMS Papers: **SF2017/164702**)

K Durie
Manager, Compulsory Acquisition & Road Dedication
Roads and Maritime Services

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(RMS Papers: **SF2017/164574**)

K Durie
Manager, Compulsory Acquisition & Road Dedication
Roads and Maritime Services

Contact: For full details call Roads and Maritime Services on (02) 8843 3125.

NSW Department of Industry

Aboriginal Fishing Trust Fund – Applications Invited

Applications for grants and loans from the Aboriginal Fishing Trust Fund are invited for projects that will:

- enhance, maintain and protect Aboriginal cultural fishing, or
- promote economic opportunities for Aboriginal communities associated with the fisheries resource.

\$538,000 is available this funding round.

For information on eligibility, funding categories, the assessment process and how to apply, please visit the NSW Department of Primary Industries website: <https://www.dpi.nsw.gov.au/fishing/aboriginal-fishing/AFTF>.

Applications close 27 February 2019.

For more information go to: <https://www.dpi.nsw.gov.au/fishing/aboriginal-fishing/AFTF>

Promote your school

The Sydney Morning Herald and Sun Herald are the ideal environments to promote your school or Education institute, and reach your core demographic.

For more information, contact Falena Georgiou on:

E: falena.georgiou@fairfaxmedia.com.au

P: (02) 9282 1299

The Sydney Morning Herald





New South Wales Government

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(RMS Papers: **SF2017/164792**)

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Manufacturing, Transport & Logistics

TRUCK DRIVERS

Leading meat wholesaler based in Greenacre, Sydney requires 3 - 4 truck drivers.
Full Time Monday - Friday

Job requirements:

- HR or MR license as a minimum.
- Experience and knowledge of metro area.
- Current RTA print out.

Duties include:

- Carton Meat delivery.
- Multi drop deliveries.
- Delivery to metropolitan Sydney.

Package includes:

- \$28 per hour plus Super.
- Regular Overtime paid.
- Use of company truck to and from home.
- Mobile Phone.

Please Contact **Paul 0412 242 478** or **Craig 0477 008 736**

TRUCK DRIVERS WANTED

Single and B-Double Drivers wanted for Country & or Interstate (Syd-Mel, Syd-Bris)

- Minimum 2 years experience.
- Based in Moorebank.
- 1 Truck 1 Driver
- Plenty of easy work
- Weekday and Weekend Shifts Available with flexible hours
- Excellent wages and conditions.

0448 001 103 or 02 9737 0011

DRIVER - CSR

MR Licence. Multi Drop / Multi Pick Up. Sydney Local. Face to Face Customer Interaction. Submitted To Full Police Check. Full Time / Full Training. Onsite Parking - Rydalmere Depot. 4 x 10 hrs Weekly RDO \$28 per hour

Matt Cashmore 0419 731 812

DRIVERS DRIVERS DRIVERS

*** Ongoing to perm positions***

- MR DRIVERS
- HR DRIVERS
- HC DRIVERS

Required for positions in Alexandria, Belfield, Chullora, Eastern Creek, Granville and Prestons

Call: 0447 805 872

DRIVERS HC/MC

JAS Transport required HC/MC Drivers with or without MSIC, container cartage and side loader experience.

Will train HC drivers to MC \$\$\$ GREAT RATES \$\$\$

O/t time avail. Great working conditions.

Please contact: 0411 178 850 anthony@jastransport.com

HC DRIVER SOUTH WINDSOR

CASUAL & FULL TIME POSITIONS

Competitive Salary, Benefits and Training provided

Call Josh on 0419 760 139 or send your CV to: joshua.merline@moits.com.au

HC & SIDE LOADERS DRIVERS

PM & AM Positions Available
Lots of hours available
MSIC Card Required
Great conditions & Good rates
For CTC Transport
Western Suburbs in New Yard

Call James on 02 9721 3022 or email james@ctclogistics.com.au

Warehouse Staff

URGENT URGENT URGENT

- * Ongoing to perm positions for Forklift Drivers + Pick Packers in Moorebank, Eastern Creek and Chullora
- * Casual warehouse labourers required in Sydney's West

Call: 0447 805 872

DELIVERY DRIVER

4 DAYS PER WEEK

Across Sydney with heavy lifting.
Need a fit, strong, reliable driver for a small truck.
Standard NSW license is ok. Pref HR/MR.
Mainly start & finish Mon - Thurs around 8.5+ hours.
\$25 - \$27 per hour. 6 month min. contract.
\$500 bonus!!!

Phone: 9907 6444

DRIVER

HR or MR driver needed for a Car Carrying company in Villawood.

- ✓ Must have knowledge of Sydney metro & suburbs.
- ✓ Must have good driving history.
- ✓ Must have Truck and Trailer Experience.

Email resume to info@carcarrier.com.au

DRIVERS

Dangerous Good Licences & Basic Fatigue Management.
Load Restraint Systems.
Other Industry Transport.
Training Available.

Phone (02) 9834 1391

Front End Loader/ Plant Operator

\$33.48p/h Casual rate
Multiple positions available in Lower North Shore + Southern Sydney locations
Waste Recycling
Immediate Starts

Please call 02 8767 2633

Deaths & Funerals

Obituary



Fook Kong Lim (English name Thomas Lim) was born on 14th October 1944 in Kuching, Sarawak. He departed this life in Kuching on holidays on 9th November 2018 at 1.30 am, due to medical illness. He worked as a Station Manager for EVA Airlines. He was married to Lim Tiong Hua and now has embarked on his next journey with his beloved wife. Leaving his three children Yuh Ing Lim, Pang Sing Lim, Yuh Chian Lim and two grandchildren Thoren Hendrik Ng and Lotus Tan. Thomas Lim enjoyed his life full of adventures, travel and happiness. He will be missed by family, friend's an colleagues. Death Certificate number SK272724 (Kuching Memorial Services BHD) No 6, Jalan Petanak, 93100 Kuching, Sarawak.

You treasured so hard for those you loved.
You said goodbye to none,
your spirit flew where we knew,
your work on earth was done.
We miss you now, our hearts are sore,
as time goes by we miss you more.
Your loving smile, your gentle face:
no one can fill your vacant place.
Your life was love and labour,
Your love for your family true.
You did the best for all of us.
We will always remember you.

SHAW
Andrew

Andrew passed away peacefully on Friday 23/11/2018.
Beloved husband of Jeanne (Lyn) Deceased.
Loving father of Larry, Rod, Mark, Brad and Colleen.
Proud Farfar, Pa Shaw, and Great-grandfather.
Forever in our Hearts
Aged 90 Years
Andrew's family and friends are warmly invited to attend his Funeral Mass to be held at St John's Catholic Church, Garfield Road, Riverstone. On Thursday 29/11/2018. Commencing at 12:30pm.
Following the service, cortege will proceed to Castlebrook Cemetery, Windsor Road, Rouse Hill Committal 1:45pm.

JW CHANDLER
A GUERARD FUNERAL PROVIDER
Honouring Lives
Richmond (02) 4578 5022

Return Thanks

VOLLER

Aubrey James (Aub)

20.02.1928 - 19.10.2018

The family of the late Aub Voller would like to thank you all for your best wishes and kindness in his passing. He will be sadly missed.

Garage Sales

VISIT VISITED

TENNYSON
245 Tennyson Rd. 8am, Sat/Sun, December 8th & 9th, 60 Year Cleanout sale. Many items - new & old, collectables, something for everyone, great Christmas presents, freebies.

VISIT VISITED

NORTH Richmond, 52 Mullens Rd. Shed sale. Old tools, building mat, incubator & much more. 1st Dec, from 8am.

VISIT VISITED

SOUTH WINDSOR ACR CVAN REPAIRS CLEARANCE SALE. Factory 2nds, New and Used Caravan Awnings, Fridges, Windows, Roof A/Con, Building Materials plus more. Pay less for cash. Street parking. SAT, 1 DEC 8am-2pm U4, 20 WALKER ST, SOUTH WINDSOR.

VISIT VISITED

GROSE WOLD 273 Grose Wold Rd 9am - 3pm Sat 1st Dec. Old antique tools and machinery, irrigation pipes and fittings, indoor & outdoor furn h/hold items, handmade glassware & new leather rugs, wooden display ladders and much more. Moving all must go!

VISIT VISITED

HOBBARTVILLE 11 Cornwell Ave. Sat. 1/12, 7:30am. No early birds. Massive garage sale, everything must go. Lots of new items. Toys, plants, xmas decs, furniture, kitchen items, back to school stuff, clothes, bric-a-brac, heaps more.

VISIT VISITED

PITT TOWN 18 Eldon Street Sat 1/12, 8am. Toys, tools, bric-a-brac, shoes, DVDs, new work clothing. Lots more.

Garage Sales

VISIT VISITED

PITT TOWN 66 Wells Street Sat 1/12, 8am. Huge range of unbelievable things, bric-a-brac, kitchenware, furniture, antiques. Treasures.

For Rent

Windsor Area Riverfront

Great Location!

Vane, Cabine & self contained units. On site laundry, bus at door - From \$220 - \$420 P/W
02 4575 1571

Windsor Area Riverfront

Waterfront Location!

2BR Double storey town house \$440pw, private parking, fully furnished, bus at door. Contact: 02 4575 1571

E KURRAJONG, 2BR sep. granny flat. Sep. water tank, electricity, septic & small yard. New paint, carpet & 4yo kitchen. C/port, a/c, & solar h.w. Must be clean, green, non smoker, no pets. \$350PW. Phone: 4576 3260.

Cattle

ANGUS X LOWLINE, 2 cows + calf, 2 young bulls, 2 heifers, quiet nature. Phone Windsor: 0418 697 181

Motor Vehicles

A1 CASH for cars, vans, trucks & c/vans. Min paid \$210. Locally owned & operated. M3 52027. Ph: 0413 439 091

Motor Vehicles

AAA Abandoned/ Damaged/ Unwanted Cars, Vans, Trucks, etc.

Top cash on the spot 1 hour pick up
\$250 - 25000* Call Jim now
100% Free towing 0404 714 714
We are local
*conditions apply



\$\$\$A CASH 4 CARS

Damaged & unwanted cars, vans, utes, 4x4s, etc

\$200 \$20,000
100% free removals
1-hr pickup / 7 days
We are local
Call Mark on 0481 997 963
*conditions apply

Businesses For Sale & Wanted

RESTAURANT CAFE

Existing Asian Restaurant for sale in beautiful Kurrajong (Hawkesbury area) in the foothills of the Blue Mountains. Well positioned in the village on main road with good visibility. Fully equipped kitchen, 75+ seater inside & outside dining area, can be converted to cuisine of choice. Very popular area for tourists and day trippers, weekenders and locals alike. Attractive premises with nice scenic views and low rent. Long term lease. Price \$1.29k negotiable. For more information, please call
Nash 0470 695 165 or email
itenareshrana@gmail.com

To Let & Wanted

SOUTH WINDSOR, space to store caravan or RV. Secure off street, reasonable rates, call Jeff: 0421 288 945

TENNYSON Room to rent on acres. 10kms from Richmond, must have trans. must have ref. This house has so much to offer, first to view will take. 5 b/r and 3 bathrooms, modern home. \$195 pw. incl. internet and power bill. One month's rent as bond required. Call Monique on 0414 987 051.

Public Notices

WATERNSW SYDNEY BASIN CENTRAL GROUNDWATER SOURCE
An application for a WATER SUPPLY WORK APPROVAL has been received from HELEN ELIZABETH DIXON and MICHAEL JOHN CAMILLERI for a groundwater excavation on Lots 1 & 2 DP 558045, Parish of Frederick, County of Cumberland for industrial purposes (A015892).
Objections to the granting of this approval must be registered in writing to WaterNSW, PO Box 398, Parramatta NSW 2124 or Customer.Helpdesk@waterNSW.com.au within 28 days of this notice. The objection must include your name and address to specify the grounds of objection. Any queries should be directed to 1300 662 077 or the above email. Salim Vhora, Manager Dealings, Verification and Water Regulation Coastal.

WATERNSW
HAWKESBURY AND LOWER NEPEAN RIVERS WATER SOURCE
GROSE RIVER MANAGEMENT ZONE

An application for an amended WATER SUPPLY WORK AND USE APPROVAL has been received from CHARLIE & CARMEN GALEA for an 80mm pump on Part Lot 3 DP1059691, Parish Kurrajong, County Cook to irrigate Lot 16 DP250448 (A015663) (Amending 10CA117059).

Objections to the granting of this approval must be registered in writing to WaterNSW, PO Box 398, Parramatta NSW 2124 or Customer.Helpdesk@waterNSW.com.au within 28 days of this notice. The objection must include your name and address to specify the grounds of objection. Any queries should be directed to 1300 662 077 or the above email. Salim Vhora, Manager Dealings, Verification and Water Regulation Coastal.

Public Notices



Roads and Maritime Services

Pitt Town Bypass Project - Have your say

The NSW Government is funding planning work and community consultation for the proposed bypass at Pitt Town.

The community has the chance to comment on the Review of Environmental Factors (REF) and the concept design for the project.

The REF and concept design is on display between Monday 12 November and Monday 10 December 2018.

The REF outlines the key features of the proposal, the key objectives and the options considered by Roads and Maritime along with the proposal's environmental impact.

Documents can be viewed on the project website at rms.nsw.gov.au/pitttownbypass or at the Hawkesbury Central Library or Pitt Town Post Office.

Community Information session

Saturday 1 December: 11am - 1pm

Lynwood Country Club, 4 Pitt Town Bottoms Road

There will not be a formal presentation, so please drop in at any time.

You can also email a submission to pitttownbypass@rms.nsw.gov.au. All submissions must be received by 5pm on Monday 10 December 2018.

If you have any questions, or would like further information, please contact the Roads and Maritime project team on 1800 793 862 or at pitttownbypass@rms.nsw.gov.au or visit the website rms.nsw.gov.au/pitttownbypass

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ZADRO CONSTRUCTIONS

Subcontractors and suppliers are invited to submit quotations for the Kurrajong Nursing Home Additions and Alterations, to our Senior Estimator, Michael Symons, michaelsymons@zadro.com.au 0407 822 324. Quotations are required by Friday 30th November 2018.

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Appendix B

Local businesses survey questionnaire

Business questionnaire

Date due: 10 October 2018

Surveyor to fill out

1. Date and time

2. Contact name

3. Business name

4. Business address

5. Business trading hours

4. Business type

☐ Automotive

☐ Accommodation

☐ Customer service

☐ Food services

☐ Health services

☐ Personal care service

☐ Professional service

☐ Retail trade

☐ Other (please specify): _____

Pitt Town Bypass - Business survey

Due date: 10 October 2018

1. How long have you been operating this business?

- ☐ Less than one year
- ☐ One to three years
- ☐ Three to five years
- ☐ Five to ten years
- ☐ More than ten years

2. Are you an owner occupier or a tenant?

- ☐ Owner occupier
- ☐ Tennant
- ☐ Unsure

3. How many employees do you have

Full time: _____

Part time: _____

Casual: _____

4. How do your staff usually travel to your business?

- ☐ Walk/Cycle
- ☐ Car
- ☐ Bus
- ☐ Other (please specify): _____

5. Where is the closest competing business?

6. Where do the majority of your customers travel from?

- ☐ Pitt Town (Suburb)
- ☐ City of Hawkesbury (Local Government Area)
- ☐ Western Sydney
- ☐ Greater Sydney (or wider)

7. Is there any seasonal variation in the proportion of customers you receive who are passing through town?

- ☐ Yes
- ☐ No

8. If yes, when do you receive more highway passing trade? (eg school holidays)

9. How dependent is your business on passing trade? (customers who go into a shop/business because they see it when passing, not because they planned to go there)

- ☐ Not dependent
- ☐ Slightly dependent
- ☐ Moderately dependent
- ☐ Highly dependent

Any further comments: _____

10. How dependent is your business on exposure (visibility)?

- ☐ Not dependent
- ☐ Slightly dependent
- ☐ Moderately dependent
- ☐ Highly dependent

Any further comments: _____

11. How do your customers usually travel to your business?

- ☐ Walk/Cycle
- ☐ Car
- ☐ Bus
- ☐ Other (please specify): _____

12. Approximate number of customers per day?

13. Are you aware of the Pitt Town Bypass project?

- ☐ Yes
- ☐ No

14. During construction, would the Pitt Town Bypass project be positive for businesses within the area?

- ☐ Strongly agree
- ☐ Agree somewhat
- ☐ About the same
- ☐ Disagree somewhat
- ☐ Strongly disagree
- ☐ Not Sure / Don't know

15. Why/ how do you think your business may be impacted?

16. Once the Pitt Town Bypass is operating, would it be positive for businesses within the area?

- ☐ Strongly agree
- ☐ Agree somewhat
- ☐ About the same
- ☐ Disagree somewhat
- ☐ Strongly disagree
- ☐ Not Sure / Don't know

17. Why/how do you think your business may be impacted?

18. What strategies should RMS consider to minimise negative impacts on businesses?

(prompt to discuss strategies beyond road design)

19. What kind of strategies would you consider to minimise negative impacts on your business?

20. Are there any other matters related to potential project impacts on your business that you would like to discuss?

Appendix C

Technical Note: Traffic assessment – potential impact on local intersection priority

Technical Note 3

Date 9/11/2018
To Roads and Maritime Services (Roads and Maritime)
From Arcadis Australia Pacific Pty Ltd (Arcadis)
Project Name Pitt Town Bypass
Subject Traffic Assessment – Potential impact on local intersection priority

1 Introduction

Roads and Maritime Services (Roads and Maritime) has developed a concept design for the bypass of Pitt Town, between Pitt Town Road and Buckingham Street with the City of Hawkesbury local government area. To support the concept design and Review of Environmental Factors (REF) for the proposed bypass, Arcadis prepared a *Traffic and Transport Impact Assessment* (24 September 2018). This assessment identified the impact of the proposed bypass developed mitigation and management measures to ameliorate the impact. The assessment included detailed SIDRA Network (version 7.0) modelling to determine the operation of the surrounding road network with and without the proposed bypass for forecast traffic in the year of opening (2021), 10 years after opening (2031) and 20 years after opening (2041).

2 Report purpose

The purpose of this Technical Note 3 is to provide an assessment of the potential changes required to the arrangements at the following intersections:

- Bathurst Street/ Chatham Street
- Eldon Street/ Chatham Street.

This Technical Note will assist in the identification of appropriate intersection configurations and controls at each of the intersections and inform the consultation process with City of Hawkesbury Council. No additional traffic modelling has been carried out to inform this Technical Note and all results are based on the *Traffic and Transport Impact Assessment*.

3 The proposed bypass

The proposed bypass of Pitt Town aims to reduce travel time for traffic passing through Pitt Town and local traffic and reduce traffic volumes (including heavy vehicles) travelling through the town centre, which is aimed to improve safety and amenity for the local community. The proposed bypass is about one kilometre and comprises a single carriageway with one lane in each direction. Key features of the proposed bypass include:

- Extending Pitt Town Road past Bathurst Street onto Cattai Road, east of Eldon Street
- Installing a new roundabout at the intersection of Pitt Town Road/ Bathurst Street and Glebe Road (the southern roundabout)
- Installing a new roundabout at Eldon Street and Old Pitt Town Road (the northern roundabout)
- Closing a portion of Cattai Road to maintain access to Buckingham Street
- Providing new crossings of Hortons Creek at the southern and central sections of the proposal.

Figure 1 illustrates the concept design for the proposed Pitt Town bypass.

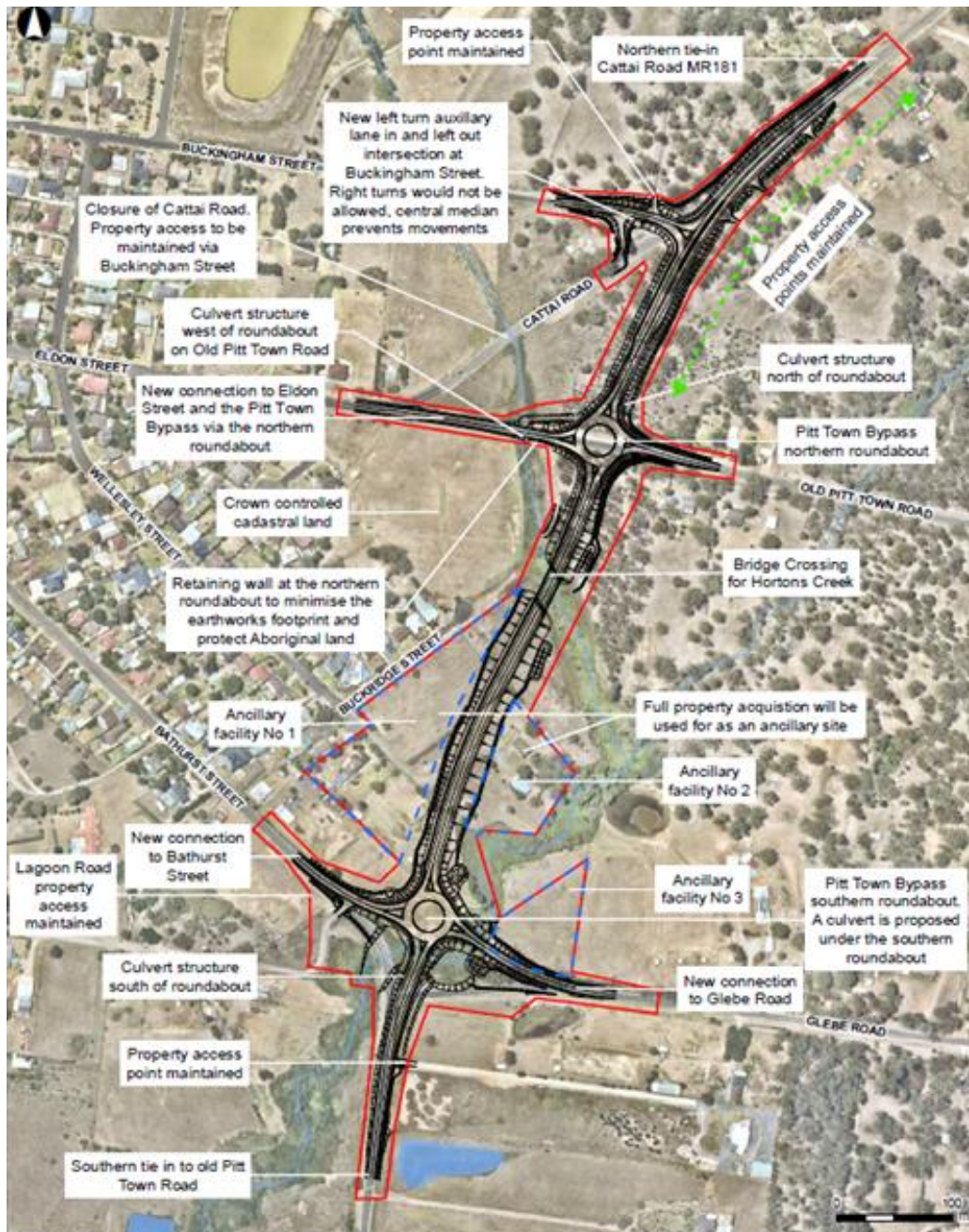


Figure 1: Proposed bypass concept design

4 Existing traffic conditions

Traffic volumes

Traffic surveys were carried out by Roads and Maritime in February 2017 and February 2018 to determine the existing traffic volumes and distribution on the road network surrounding the proposed bypass. Based on these traffic surveys, the following traffic volumes were recorded on the key roads:

- Cattai Road carries about 4,400 vehicles per day
- Eldon Street, west of Liverpool Street carries about 5,400 vehicles per day
- Bathurst Street, east of Chatham Road) and Pitt Town Road, south of Glebe Road carry about 9,600 to 9,700 vehicles per day.

Through traffic and local traffic

Traffic on Pitt Town Road, Bathurst Street, Eldon Street and Cattai Road through Pitt Town is a mixture of through (passing) and local traffic. The daily proportion of through traffic on Pitt Town Road and Cattai Road was found to be about 31 per cent in the northbound direction and about 61 per cent in the southbound direction.

Performance of the road network

The existing traffic performance of the study area road network is generally a result of the capacity and traffic performance at key intersection along Pitt Town Road, Bathurst Street, Eldon Street and Cattai Road. Arcadis carried out SIDRA Network modelling to determine the performance of the road network. The SIDRA Network modelling included the following intersections (all priority control):

- Cattai Road/ Buckingham Street
- Cattai Road/ Eldon Street/ Old Pitt Town Road
- Eldon Street/ Liverpool Street/ Wellesley Street
- Eldon Street/ Chatham Street
- Chatham Street/ Bathurst Street
- Bathurst Street/ Pitt Town Road/ Glebe Road.

The SIDRA Network modelling results indicate that under existing (2018) traffic turning movements, the six intersections are operating at level of service B or better, with acceptable delays, minimal queue lengths and available spare capacity.

Dominant traffic movements existing conditions

The traffic turning movements at the intersection of Eldon Street/ Chatham Street and under existing conditions indicate that the dominant traffic flows occur to and from the southern approach of Chatham Street and eastern approach of Eldon Street in the AM and PM peak periods. The dominant traffic flows at the intersection of Bathurst Street/ Chatham Street is less defined, with flows along Bathurst Street (northwest-southeast) being slightly higher than the flows between Bathurst Street and Chatham. The existing arrangement at the intersection of Bathurst Street/ Chatham Street appears to be aligned to deter right turn movements into and out of the north-western approach of Bathurst Street. However, traffic surveys indicate that right turn movements at this intersection form the dominant flow, with vehicles observed to be turning over the painted chevron.

Figure 2 indicates the dominant traffic flows at the two intersections for light vehicles during existing 2018 AM and PM peak periods.

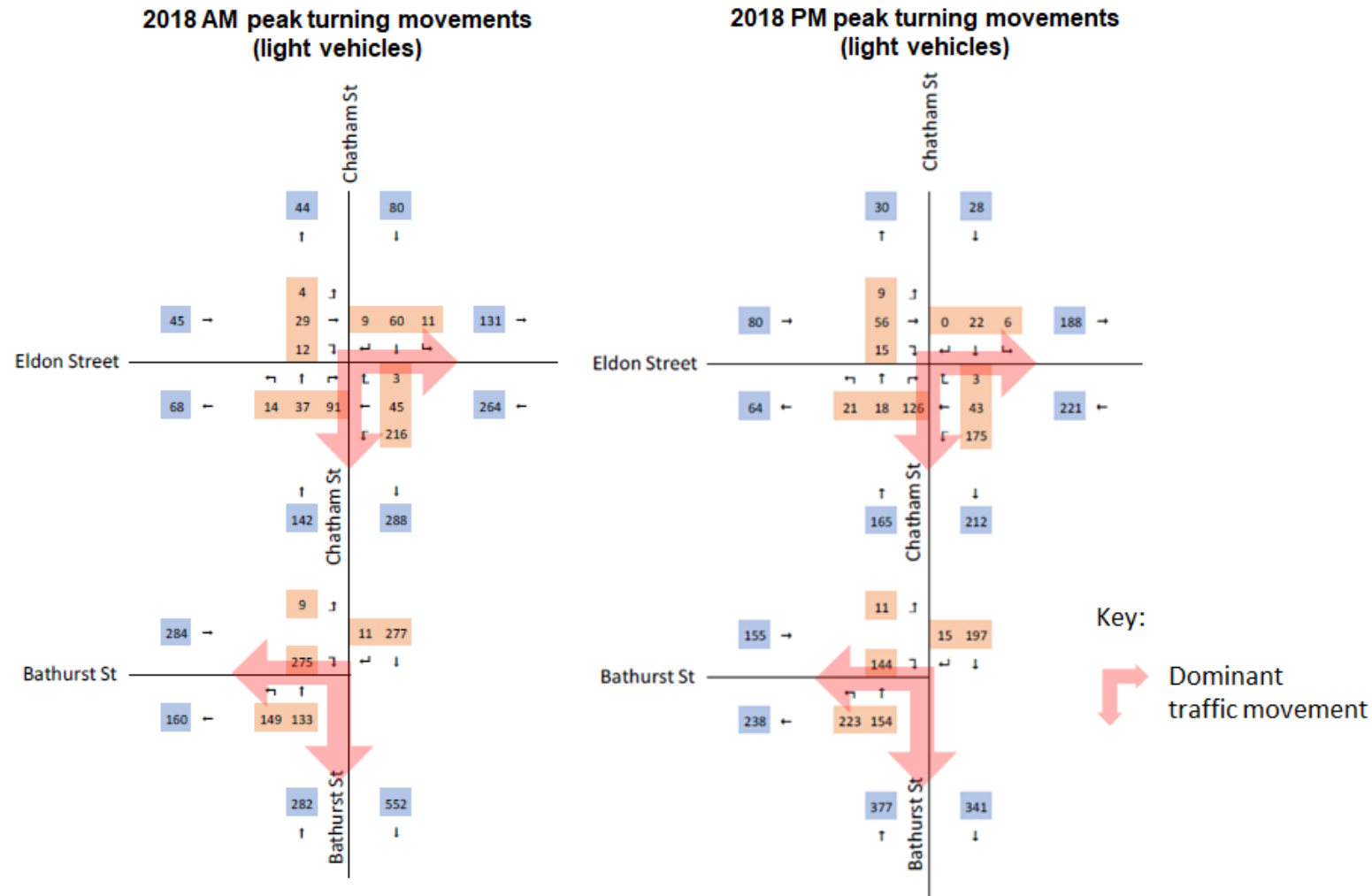


Figure 2: 2018 dominant intersection turning movements

5 Future traffic conditions

Traffic growth assumptions

The future background traffic growth within the Pitt Town study network was estimated using Roads and Maritime's Sydney Traffic Forecasting Model (STFM, built in EMME software). The STFM has used 2016 land use projections (LU2016V1.3). For the purposes of traffic modelling, a linear growth rate of 2.5 per cent per annum was assumed between 2018 and 2041 for all vehicles (including light and heavy vehicle classes) for the study area road network including Cattai Road, Eldon Street, Chatham Street, Bathurst Street and Pitt Town Road.

Traffic redistribution

The proposed bypass will result in the redirection of existing through traffic (primarily traffic currently using Bathurst Street and Eldon Road). Based on detailed origin-destination survey data the future traffic volumes on the proposed Pitt Town bypass were estimated. Assuming all existing through traffic would use the proposed bypass, the following traffic volume reductions would be expected on the existing roads through Pitt Town:

- Opening year (2021):
 - Eldon Street traffic volumes reduce by 62 percent, from 5,800 vehicles per day (without bypass) to 2,200 vehicles per day (with bypass)
 - Bathurst Street traffic volumes reduce by 35 percent, from 10,300 vehicles per day (without bypass) to 6,800 vehicles per day (with bypass)
- 10 years after opening (2031):
 - Eldon Street traffic volumes reduce by 61 percent, from 7,200 vehicles per day (without bypass) to 2,800 vehicles per day (with bypass)
 - Bathurst Street traffic volumes reduce by 34 percent, from 12,700 vehicles per day (without bypass) to 8,300 vehicles per day (with bypass)
- 20 years after opening (2041):
 - Eldon Street traffic volumes reduce by 60 percent, from 8,600 vehicles per day (without bypass) to 3,400 vehicles per day (with bypass)
 - Bathurst Street traffic volumes reduce by 34 percent, from 15,100 vehicles per day (without bypass) to 9,900 vehicles per day (with bypass).

Performance of the road network

The intersections of Bathurst Street/ Chatham Street and Eldon Street/ Chatham Street, with the construction of the proposed bypass and forecast traffic volumes operate at acceptable levels of service of A, with minimal delays, negligible queue lengths and spare capacity for all future years assessed.

Dominant traffic movements with bypass

The forecast traffic movements for the intersections of Bathurst Street/ Chatham Street and Eldon Street/ Chatham Street were assessed to identify the dominant flows with the proposed Pitt Town bypass.

Figure 3 to Figure 5 indicate the dominant traffic movements during the AM and PM peaks for future years 2021, 2031 and 2041 with the construction of the proposed bypass.

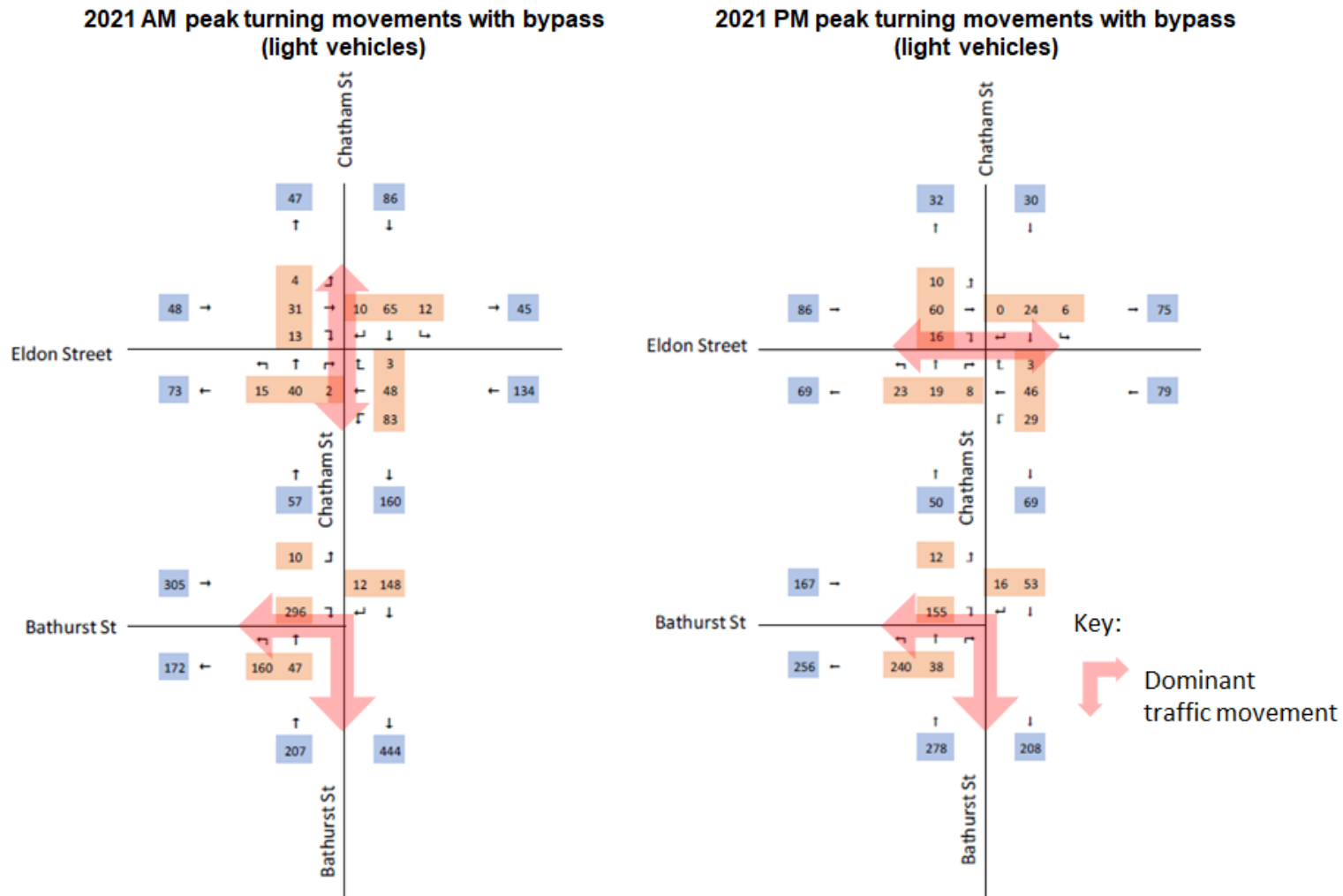


Figure 3: 2021 dominant intersection turning movements with Pitt Town bypass

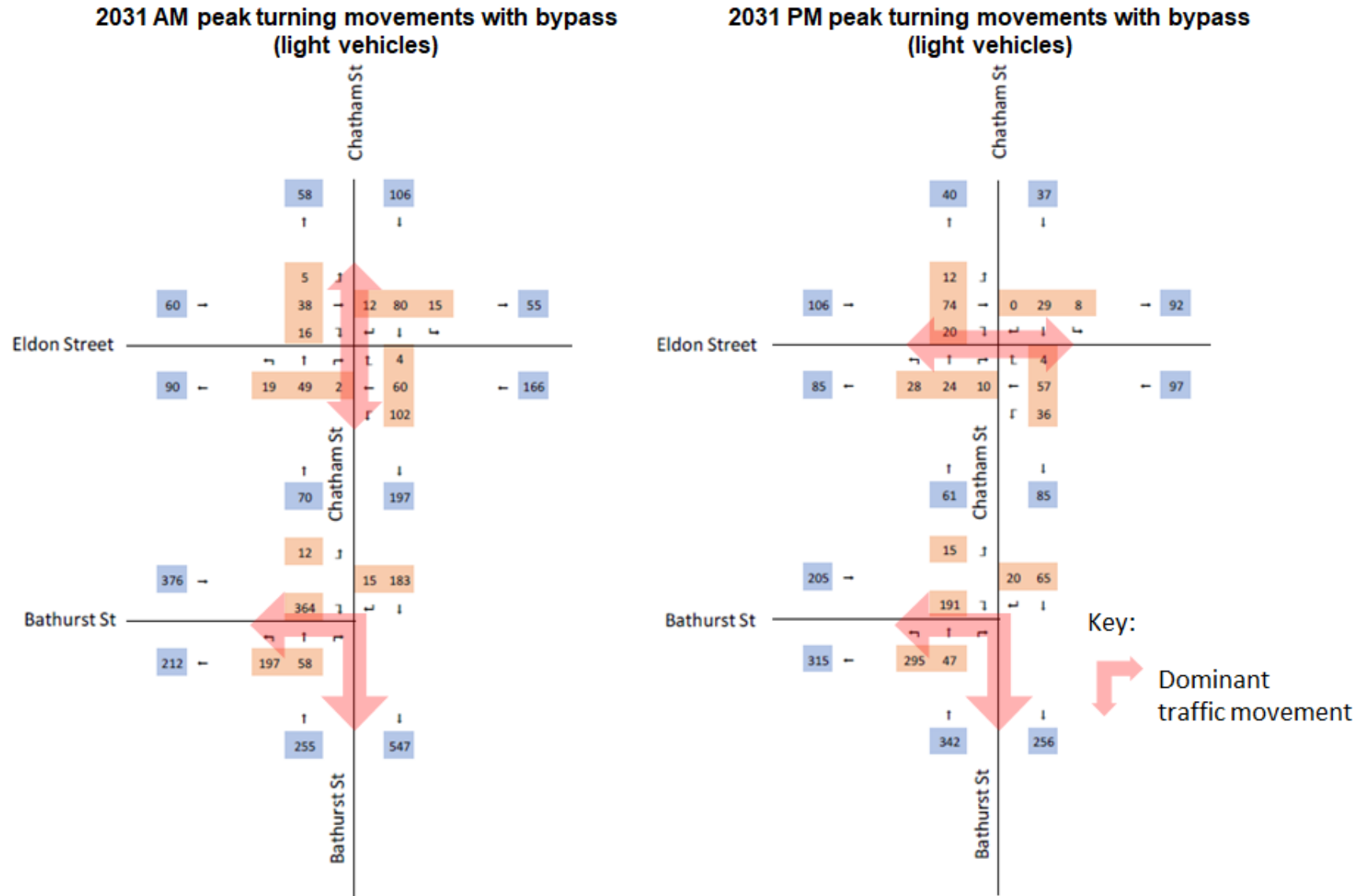


Figure 4: 2031 dominant intersection turning movements with Pitt Town bypass

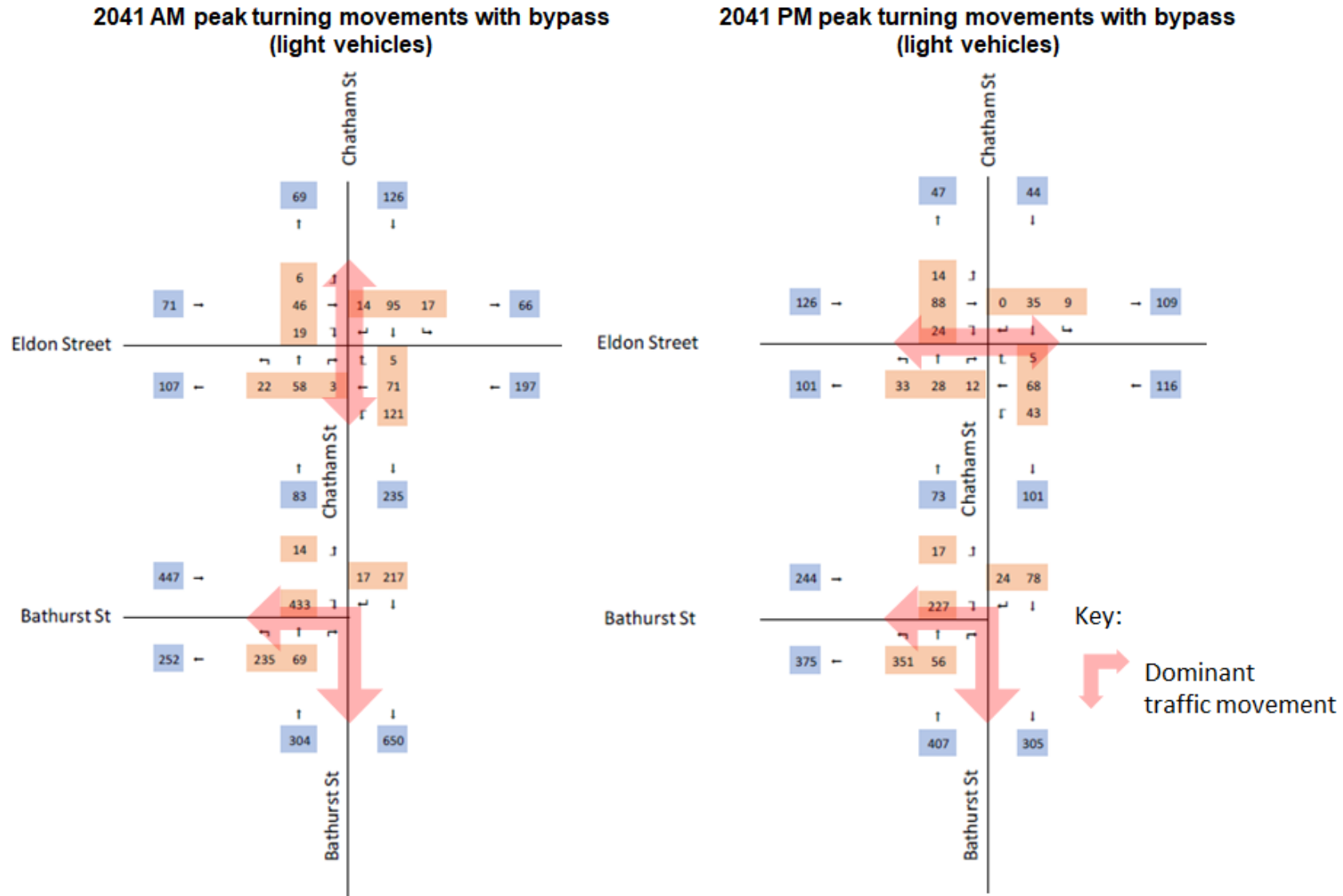


Figure 5: 2041 dominant intersection turning movements with Pitt Town bypass

The future dominant movements at the intersection of Eldon Street/ Chatham Street appear to be in the north-south direction in the AM peaks and east-west in the PM peaks. The future dominant movements at the intersection of Bathurst Street/ Chatham Street are along Bathurst Street in the northwest-southeast direction.

6 Review of intersection arrangements and controls

Bathurst Street/ Chatham Street

The existing intersection configuration prioritises the movements between the south-eastern approach of Bathurst Street and Chatham Street. In the future with the construction of the proposed Pitt Town bypass, the dominant movements at this location will be along Bathurst Street in the northwest-southeast direction, with the volumes travelling along Chatham Street reducing substantially.

The splitter island at this intersection appears to be aligned to deter right turn movements from the north-western approach of Bathurst Street into the south-eastern departure of Bathurst Street. Additionally, the painted chevron at the nose of the splitter island at this intersection does not appear to accommodate swept paths for right turn movements from Chatham Street into Bathurst Street, with vehicles observed to turn over the painted chevron.

Based on the traffic modelling results, the intersection is estimated to operate a good level of service of A with enough spare capacity to accommodate traffic growth. However, given the dominant traffic flows to be along Bathurst Street with the construction of the bypass and the poor alignment of the splitter island to prioritise this future dominant traffic flow, it is recommended that the priority at this intersection is modified. This would involve removal of the splitter island and chevron and installing give-way signage and delineation for the Chatham Street approach. The kerb alignment of the intersection would need to be appropriately designed to ensure safety for all road users.

Eldon Street/ Chatham Street

The existing intersection control prioritises the movements between the Chatham Street and the eastern approach of Eldon Street. In the future with the construction of the proposed Pitt Town bypass, the dominant movements at this location will be in the north-south direction along Chatham Street in the AM peak and east-west direction along Eldon Street in the PM peak. In the future the traffic volumes travelling along Chatham Street are likely to reduce substantially.

Based on the traffic modelling results, the intersection is estimated to operate a good level of service of A with enough spare capacity to accommodate traffic growth.

To encourage use of the proposed Pitt Town bypass, reducing through traffic through the town centre and to create a slower speed environment for the traffic travelling along the residential street on the northern approach of Chatham Street, it is recommended that the priority is given to Eldon Street traffic at this intersection. This requires installation of give-way signage and delineation on the southern approach of Chatham Street and removal of the give-way signage and delineation on the western approach of Eldon Street.

7 Conclusion and recommendations

From an intersection performance perspective, the intersections of Bathurst Street/ Chatham Street and Eldon Street/ Chatham Street operate at good levels of service of A, with minimal delays and queue lengths. Both intersections have enough spare capacity to accommodate the forecast traffic growth in the area. Therefore, the recommendations for priority and intersection control are based on the future dominant traffic flows following the construction of the proposed bypass.

The recommended priority and configuration for each intersection is as follows:

- Bathurst Street/ Chatham Street: Priority implemented for traffic travelling along Bathurst, which requires installation of give-way signage and delineation on the Chatham Street approach and removal of the splitter island and chevron
- Eldon Street/ Chatham Street: Priority implemented for traffic travelling along Eldon Street, which requires installation of give-way signage and delineation on the southern approach of Chatham Street and removal of the give-way signage and delineation on the western approach of Eldon Street.

These recommendations are subject to appropriate design to ensure alignment is suitable and safety is considered for all road users.



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Customer feedback
Roads and Maritime
Locked Bag 928,
North Sydney NSW 2059

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