

Heathcote Road Upgrade Infantry Parade to The Avenue Submissions report

January 2017



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Roads and Maritime Services

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January 2017

Prepared by WSP | Parsons Brinckerhoff and Roads and Maritime Services


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ABN: 80 078 004 798.
Level 27, Ernst & Young Centre
680 George Street.
SYDNEY NSW 2000.
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Approval and authorisation

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Accepted on behalf of Roads and Maritime NSW by	Ankur Arora Project Development Manager Greater Sydney Program Office
Signed	
Dated	January 2017

Document status

Document status	Date	Prepared by	Reviewed by
Rev A	December 2016	Jennifer Warren	Paul Greenhalgh
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Executive summary

Roads and Maritime Services (Roads and Maritime) is planning for an upgrade of a 2.2 kilometre section of Heathcote Road from two lanes to four lanes between Infantry Parade at Holsworthy and The Avenue at Voyager Point.

Key features of the proposal include:

- Widening the existing two lane road to a four lane divided road over a distance of 2.2 kilometres.
- Duplicating three existing road bridges over Harris Creek, Williams Creek and the T2 Airport Railway Line.
- Replacing two existing road bridges over Harris Creek and Williams Creek.
- Partially removing the existing pedestrian bridge over Harris Creek and conserving the remaining heritage elements.
- Building a new combined footpath and cycleway (called a shared path) along the majority of Heathcote Road that is being widened.
- Converting the existing roundabout at Macarthur Drive to a four way signalised intersection.
- Installing traffic lights at The Avenue and Heathcote Road intersection.
- Ancillary work to facilitate construction of the proposal including, but not limited to, temporary construction facilities, for example compound and stockpile sites, relocating utilities, installing storm water drainage systems, street lighting, road signs, landscaping, safety barriers and communications infrastructure.

A review of environmental factors (REF) was prepared for the proposal to assess the potential impacts on the environment and identify mitigation measures and safeguards. The REF was placed on public display for three weeks between Monday 24 October 2016 and Monday 14 November 2016 at two different locations, Liverpool City Council and Moorebank Library and available for download from the Roads and Maritime website. Local residents were also notified through a letterbox drop. Two local newspapers advertised the public display of the REF and a local government member issued a media release about the REF. In total 60 submissions were received until 18 November 2016, which included two from local government, 58 from individuals and community groups with two duplicate submissions.

A summary of the key issues raised by respondents include:

Heritage significance of the Holsworthy pedestrian bridge

The proposal includes the partial removal of the existing pedestrian bridge over Harris Creek referred to as the Holsworthy pedestrian bridge in the REF. Partial removal includes the removal of more recent addition of the Bailey bridge deck, utility pipes and removal of the bridge abutments. Over half of submissions raised concerns about the removal of the bridge abutments and requested the abutments to remain due to their significant heritage values. Respondents supported the removal of the Bailey bridge deck and recently added pipes to return the bridge to its original design and requested the installation of heritage interpretation signs and for the rail track to be reinstated across the bridge.

Roads and Maritime would aim to conserve all heritage values of the Holsworthy pedestrian bridge. In addition to the recommendations of the Statement of Heritage Impact (Appendix L of the REF) Roads and Maritime would also aim to preserve the bridge abutments that have been identified as an important heritage element to the community. The REF and flood assessment of the proposal has been based on the removal of the abutments to minimise flooding of Heathcote Road. During detailed design, Roads and Maritime would undertake additional flood modelling and hydrology assessment to explore options and investigate the retention of the bridge abutments. Detailed design would also consider factors of safety, constructability and cost in determining the retention of the abutments, whilst also meeting the proposal objective of minimising impacts on the environment and heritage. Consultation with the community and relevant stakeholders would be

undertaken during detailed design on the best way to preserve the heritage parts of the pedestrian bridge, including the abutments.

The detailed design would also further investigate relocation of existing pipework attached to the bridge piers, determine the extent of clearing (of weeds) in and around the bridge for construction and consider this in the flooding assessment. The superstructure of the pedestrian bridge would be removed as it is not heritage significant and this is described in the REF.

The Holsworthy pedestrian bridge is the responsibility of Liverpool City Council and any addition of rail tracks are not considered part of this proposed road upgrade.

The Urban Design Strategy for the proposal would consider interpretive heritage signs in consultation with relevant stakeholders.

Traffic and Safety

Eleven submissions requested the proposal be extended to Pleasure Point Road and Heathcote Road intersection due to concern for safety of road users at the intersection. This is outside of the proposed work and not taken into consideration as part of the proposal. Concerns for safety of road users have been provided to relevant Roads and Maritime officers for review.

Noise

Community submissions raised concern for potential increase of noise during construction as well as an increase of noise for local residents from the operation of the upgraded Heathcote Road.

Roads and Maritime has described noise attenuation measures for construction and operation of the upgrade in the REF. Detailed design would further consider noise mitigation measures, such as noise barriers, in accordance with Roads and Maritimes' Noise Mitigation Guideline (2016).

Other issues raised

The remaining submissions raised a variety of issues including:

- Surface water and drainage causing localised flooding.
- Traffic and safety concerns.
- Funding and program of the proposal.
- The adequacy of the biodiversity assessment.
- Requesting particular design style for street lighting.
- Provision of a welcome feature (town identification sign).
- Maintenance of proposed retaining walls.
- Request for additional shared paths and other modifications to the proposal.

Half of the submissions received included a supportive statement for the proposal. No objections were raised in any of the submissions. There were also three submissions that only provided support for the proposed road upgrade.

Additional assessment and environmental management

After consideration of all submissions, the environmental management measures for the proposal have been revised to capture:

- The additional investigations required during detailed design for the Holsworthy pedestrian bridge abutments.
- Inclusion of heritage interpretation signs for the Holsworthy pedestrian bridge.
- Consultation requirements with the community and stakeholders in regard to heritage and noise mitigation measures.
- The method and scope of additional flood modelling during detailed design.
- Consultation with Liverpool City Council on design elements of the proposal and future asset maintenance responsibilities.

Should the proposal be determined and proceed, these updated mitigation measures would be incorporated into the detailed design and applied during construction and operation of the proposal.

Changes to the proposal

Roads and Maritime acknowledge some of the issues raised in submissions would be further investigated during detailed design. An outcome of these investigations may result in some changes to the proposal. Roads and Maritime would evaluate these changes and follow the appropriate assessment and approval requirements under Part 5 of the *Environmental Planning and Assessment Act 1979*. However, at this stage no changes are proposed to the concept design.

Conclusion of this report

Considering all submissions together with the REF, the impacts of the proposal are not considered significant. The identified impacts in the REF and the submissions would be appropriately managed by implementing the safeguards and mitigation measures identified in this report. The proposal meets the project objectives as detailed in section 2.3 of the REF, while effectively minimising environmental impacts and considering community and stakeholder comments. Although, the proposal would still result in environmental impacts, on balance the proposal best meets the proposal objectives and is justified.

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1 Introduction and background

1.1 The proposal

Roads and Maritime Services (Roads and Maritime) is planning for an upgrade of a 2.2 kilometre section of Heathcote Road from two lanes to four lanes between Infantry Parade at Holsworthy and The Avenue at Voyager Point.

Key features of the proposal include:

- Widening the existing two lane road to a four lane divided road over a distance of 2.2 kilometres.
- Duplicating three existing road bridges over Harris Creek, Williams Creek and the T2 Airport Railway Line.
- Replacing two existing road bridges over Harris Creek and Williams Creek.
- Partially removing the existing pedestrian bridge over Harris Creek and conserving the remaining heritage elements.
- Building a new combined footpath and cycleway (called a shared path) along the majority of Heathcote Road that is being widened.
- Converting the existing roundabout at Macarthur Drive to a four way signalised intersection.
- Installing traffic lights at The Avenue and Heathcote Road intersection.
- Ancillary work to facilitate construction of the proposal including, but not limited to, temporary construction facilities, for example compound and stockpile sites, relocating utilities, installing storm water drainage systems, street lighting, road signs, landscaping, safety barriers and communications infrastructure.

A more detailed description of the Heathcote Road Upgrade is found in the Heathcote Road Upgrade Infantry Parade to The Avenue Review of Environmental Factors (REF) (Roads and Maritime, 2016).

The location and layout of the proposal is shown on Figures 1.1 and 1.2 respectively.

1.2 REF display

Roads and Maritime prepared an REF to assess the environmental impacts of the proposed works. The REF was publically displayed for three weeks between Monday 24 October 2016 and Monday 14 November 2016 at two different locations, as detailed in Table 1-1. The REF was placed on the Roads and Maritime project website and made available for download. The display locations and website link were advertised online at www.rms.nsw.gov.au/HeathcoteRoad.

Two community information sessions were also held on 3 November 2016 5pm–7pm and 5 November 2016 10am–12pm at St Christopher's Catholic Primary School Hall, 205 Heathcote Road, and Holsworthy.

In addition to the display of the REF:

- A Community Update Newsletter was sent to 5500 residents in Holsworthy, Hammondville, Wattle Grove, Voyager Point, Pleasure Point and Sandy Point.
- Door knocking was undertaken at approximately 50 local properties in Voyager Point and Holsworthy.
- Two newspapers, the Liverpool Champion and Liverpool Leader advertised the REF between 26 October 2016 and 2 November 2016.
- A media release by local government member for Holsworthy was published on 20 October 2016.

Table 1-1: Display locations

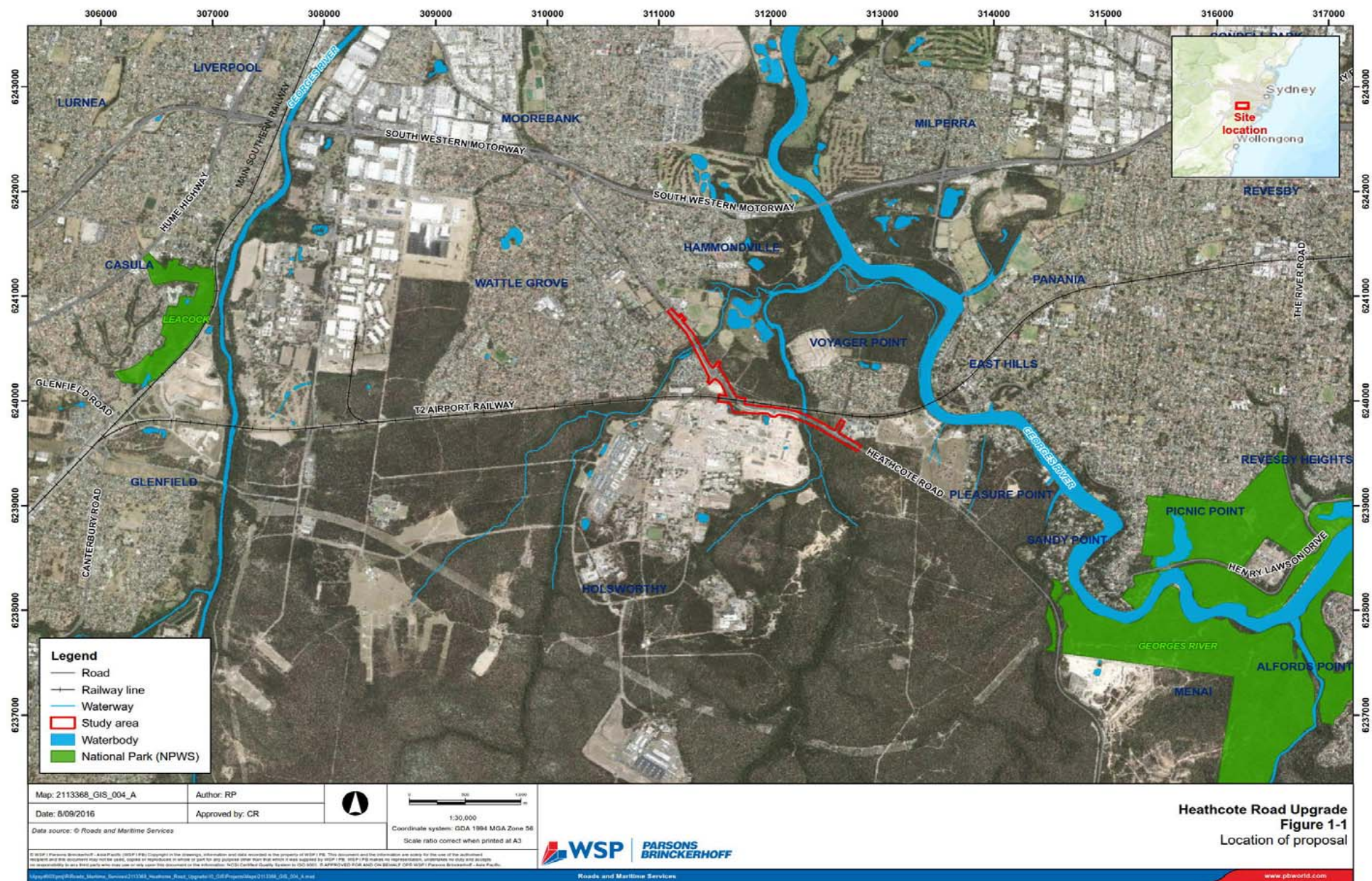
Location	Address
Liverpool City Council	33 Moore Street, Liverpool
Moorebank Library	Cnr Nuwarra Road & Maddecks Avenue, Moorebank

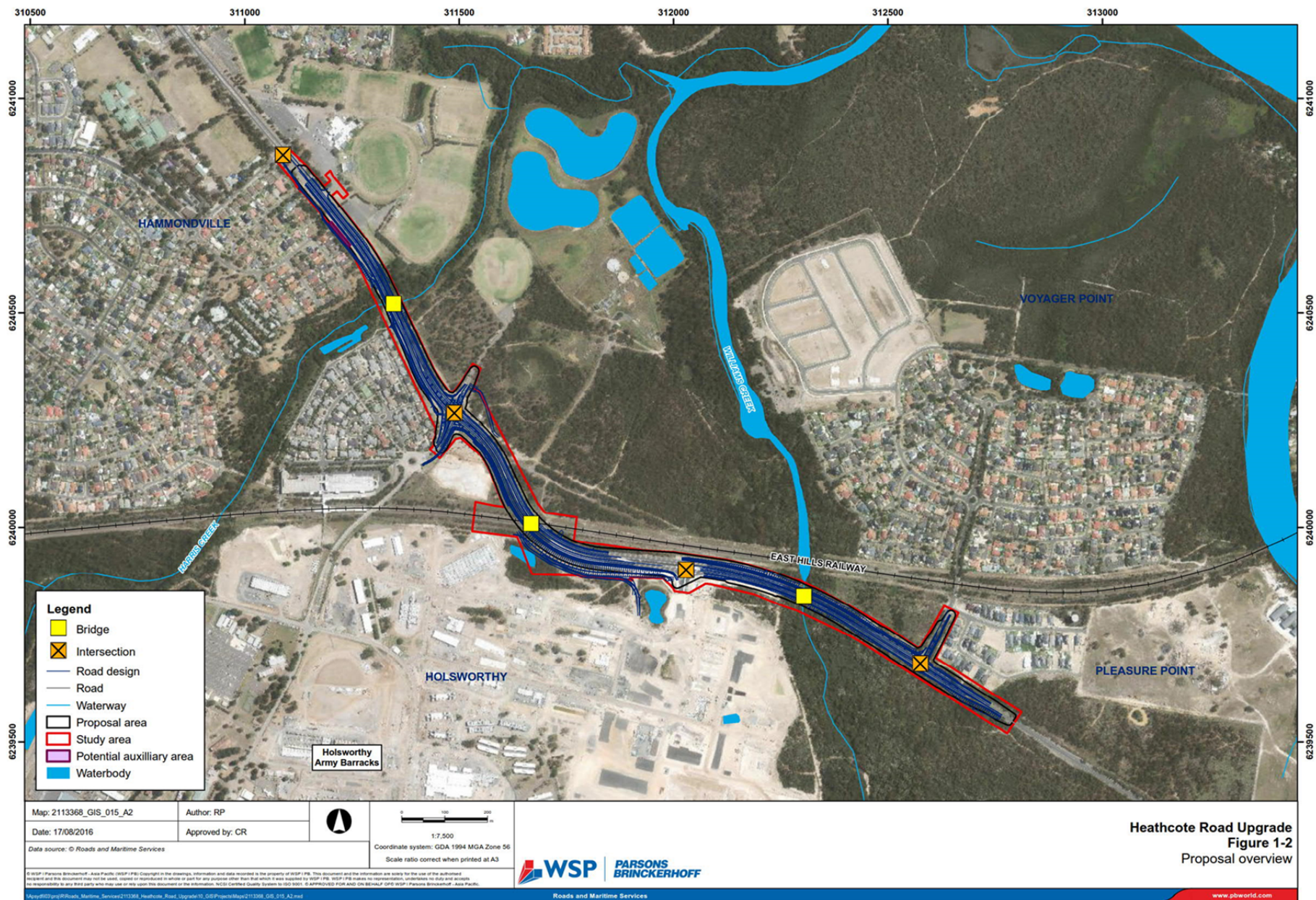
1.3 Purpose of this report

This submissions report relates to the REF prepared for the Heathcote Road Upgrade Infantry Parade to The Avenue, 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 submissions report summarises the issues raised and provides responses to each issue in chapter 2. Chapter 3 describes any changes to the proposal that are required as a result of issues raised in submissions. Chapter 4 details amendments to the safeguards and mitigation measures included in the REF to address issues raised in submissions.





2 Response to issues

Roads and Maritime Services received 60 submissions, accepted up until 18 November 2016, four days after the closing date of the submission period.

Table 2-1 and Table 2-2 detail the types of issues raised in the submissions, the number of submissions against each issue and where the issue has been addressed in chapter 2 of this report.

2.1 Overview of issues raised

A total of 60 submissions were received in response to the display of the REF. This included two from local government, 58 from individuals and community groups with two duplicate submissions.

Each submission has been examined individually to understand the issues being raised. These issues have been extracted and collated, and responses have been provided. Where similar issues have been raised in different submissions, a single co-ordinated response has been provided. The issues raised and Roads and Maritime's response to these issues forms the basis of this chapter.

The issues raised by the respondents include:

- Heritage significance of the Holsworthy pedestrian bridge.
- Extension of scope.
- Noise.
- Surface water and drainage causing localised flooding.
- Traffic and safety concerns.
- Funding and program of the proposal.
- Adequacy of the biodiversity assessment.
- Requesting particular design style for street lighting.
- Provision of a welcome feature (town identification sign).
- Maintenance of proposed retaining walls.
- Request for additional shared paths and other modifications to the proposal.

These issues are further described and responded to in sections 2.2 to 2.9 of this report.

Half of the submissions received included a supportive statement for the proposal. No objections were raised in any of the submissions. There were also three submissions that only provided support for the proposed road upgrade.

2.1.1 Main issues raised by individuals and community groups

Fifty-eight submissions were received from individuals and community groups during the display of the REF as detailed in Table 2-1. The community groups that provided responses are community heritage groups.

Table 2-1: Issues raised by individuals and community groups submissions

Issue raised	Submission reference numbers	No. of submissions	Section of report
Holsworthy pedestrian bridge: retention of heritage items	9, 15, 17, 21, 22, 24, 29, 30, 31, 32, 34, 38, 39, 42, 43, 44, 45, 46, 49, 50, 51, 55, 57, 58, 59, 60	26	2.2.1

Issue raised	Submission reference numbers	No. of submissions	Section of report
Holsworthy pedestrian bridge: reinstatement of original bridge	15, 17, 21, 22, 24, 29, 30, 31, 32, 34, 39, 42, 46, 49, 51, 57, 58, 59, 60	19	2.2.2
Holsworthy pedestrian bridge: reinstatement of rail track	29, 46	2	2.2.3
Holsworthy pedestrian bridge: heritage interpretation	29, 46, 51	3	2.2.4
Shared path extension	18, 23, 25	3	2.3.1
Other modifications and suggestions	3, 40, 41, 49	4	2.3.2
Drainage at The Avenue	14, 19, 33	3	2.4.1
Traffic and safety	3, 5, 6, 11, 12, 13, 18, 23, 25, 26, 35	11	2.6.1
Replacement of roundabout with traffic signals at Macarthur Drive	3, 4, 16, 39	4	2.5.2
Speeding and potential increase in traffic, safety of pedestrians on shared path	3, 8, 18, 33, 38, 47, 54	7	2.5.3
Noise	3, 8, 47, 48, 54	5	2.6
Funding and program	7, 8	2	2.7
Retaining walls	1	1	2.8.5
General support	1, 2, 10, 15, 17, 21, 22, 24, 29, 30, 31, 32, 34, 39, 42, 49, 57, 58, 59	19	2.10

Note: Submission number 27 is duplicate of 18

2.1.2 Main issues raised by local government

Liverpool City Council and a City Councillor provided submissions on various issues. Table 2-2 provides the issue description and section of this report which includes a response to the issues raised.

Table 2-2: Issues raised by local government

Issue raised	Submission reference numbers	No. of submissions	Section of report
Holsworthy pedestrian bridge: retention of heritage items	52, 53	2	2.2.1
Upgrade of disabled access to Holsworthy station	52	1	2.3.1
Traffic and safety	52	1	2.3.1

Issue raised	Submission reference numbers	No. of submissions	Section of report
Traffic and transport	53	1	2.5
Flooding and water quality treatment	52, 53	2	2.5.2
Traffic lights at Macarthur Drive	52	1	2.5.2
Construction and operational noise impacts	52, 53	2	2.6
Funding and program	53	1	2.7
Landscaping	53	1	2.8.1
Welcome feature	53	1	2.8.2
Street lighting	53	1	2.8.3
Asset and driveway access	53	1	2.8.4
Retaining wall	53	1	2.8.5
Biodiversity: impacts to threatened ecological communities	52	1	2.9
Support for the proposal	52, 53	2	2.10

Note: Submission number 56 is duplicate of 52

2.2 Holsworthy pedestrian bridge

Over half of received submissions related to the heritage component of the Holsworthy pedestrian bridge. The bridge is defined by some respondents as the Harris Creek Military Rail Bridge built during World War 1 by internees associated with the Holsworthy Internment Camp and also listed on the State Heritage Register. Further details are available in section 6.8 of the REF.

Of the 30 submissions received about heritage significance of the Holsworthy pedestrian bridge, 16 were form filled submissions. The form filled submissions stated support for the overall proposal; requested the retention of heritage elements of the bridge and the removal of added features to the bridge that are not part of the originally built bridge, including the Bailey bridge superstructure. As concluding remarks on the form filled submissions, the respondents included their reason for the submission and raised any other concerns.

2.2.1 Retention of heritage items

Submission number(s)

9, 15, 17, 21, 22, 24, 29, 30, 31, 32, 34, 38, 39, 42, 43, 44, 45, 46, 49, 50, 52, 51, 55, 57, 58, 59, 60

Issue description

In the REF, Roads and Maritime proposes to remove the existing superstructure (including the Bailey bridge) and abutments, as well as relocating existing pipes attached to the bridge. The proposal would leave the piers, iron fixings and bridge memorial plaque in place (refer Table 3.3. of the REF).

The REF notes in section 6.3 that the removal of the bridge abutments would be required to enable adequate flow of water under the bridge and prevent localised flooding. Two submissions indicated that by removal of the weeds and vegetation regrowth around the bridge area the water flow would improve allowing the bridge abutments to remain in place. As a result the heritage value of the bridge abutments would not be impacted.

Over half of submissions identified the bridge abutments are part of the original heritage significance of the bridge and the submissions requested the abutments not to be removed as part of this proposal.

Two submissions also identified that the bridge is celebrating its 100 year anniversary in 2017 and the heritage preservation of the bridge is important for the anniversary celebrations.

Response

Included as an appendix to the REF is a Statement of Heritage Impact (SOHI) assessment report prepared by Artefact and impact on the heritage value of the pedestrian bridge are detailed further in section 6.8 of the REF. The REF and SOHI recognises the heritage significance of this Holsworthy pedestrian bridge and its relevance to Australia's military history and local history.

Roads and Maritime would aim to conserve all heritage values of the Holsworthy pedestrian bridge. In addition to the recommendations of the Statement of Heritage Impact (Appendix L of the REF) Roads and Maritime would also aim to preserve the bridge abutments that have been identified as an important heritage element to the community. The REF and flood assessment of the proposal has been based on the removal of the abutments to minimise flooding of Heathcote Road. During detailed design, Roads and Maritime would undertake additional flood modelling and hydrology assessment to explore options and investigate the retention of the bridge abutments. Other factors such as safety, constructability and cost would also be considered during detailed design in determining the retention of the abutments, whilst also meeting the proposal objective of minimising impacts on the environment and heritage. Consultation with the community and relevant stakeholders would be undertaken during detailed design on the best way to preserve the heritage parts of the pedestrian bridge, including the abutments.

Clearing of riparian vegetation around the bridge is proposed during construction to build the proposal. This clearing may have the potential to improve water flow. Additional flood modelling and assessment would also consider the effect of proposed vegetation removal on flooding of Heathcote Road.

2.2.2 Reinstatement of original bridge, removal of pipework and Bailey bridge

Submission number(s)

15, 17, 21, 22, 24, 29, 30, 31, 32, 34, 39, 42, 46, 49, 51, 57, 58, 59, 60

Issue description

Nineteen submissions raised concern for the heritage of the Holsworthy pedestrian bridge and supported the re-instatement of the bridge back to its original design without the recent additions of the pipes and the Bailey bridge deck. The reinstatement of the bridge was raised by the respondents as these additions affect the heritage value of the bridge.

Response

Table 3.3 of the REF indicates the recent additions including the Bailey bridge deck would be removed as this does not form part of the heritage significance of the bridge. The detailed design of the proposal would further investigate relocation of existing pipework attached to the bridge piers. Roads and Maritime aim to preserve the bridge heritage significance, however further detailed design is required to investigate the potential reinstatement of the originally built railway bridge whilst also meeting the proposal objectives.

2.2.3 Reinstatement of rail track

Submission number(s)

29, 46

Issue description

Respondents have suggested that a rail track be reinstated to return the bridge to its original form when first built.

Response

The Holsworthy pedestrian bridge is the responsibility of Liverpool City Council. Any additional rail track installations onto the bridge are not part of the scope of this proposed road upgrade. Roads and Maritime would minimise the heritage impacts on the pedestrian bridge, as a result of the road upgrade, and would further investigate retaining heritage elements during detailed design. Potential impacts to the heritage value of the bridge would be re-evaluated during detailed design and consultation would be undertaken with local government, the community and community heritage groups.

2.2.4 Heritage interpretation

Submission number(s)

29, 46, 51

Issue description

Respondents requested the installation of interpretation signs at Holsworthy pedestrian bridge providing information about the heritage significance of the bridge.

Response

The Urban Design Strategy for the proposal would consider interpretive heritage signs in consultation with relevant stakeholders.

2.3 Scope extension of the proposal

2.3.1 Shared path extension

Submission number(s)

18, 23, 25

Issue description

Respondents requested further extension of the proposal's scope to improve the safe movement of pedestrians and cyclist in the area. Respondents suggested the following additions to the proposal's scope:

- Request for construction of a shared path at Pleasure Point Road to Holsworthy Train Station (extending the proposed shared path further south).
- Provide a shared path from Voyager Point to join the proposed walking track along Heathcote Road.

Response

Extension of the shared path to Pleasure Point is outside the proposed work.

A shared path would be provided along the length of the proposed upgrade to connect Voyager Point with Holsworthy Train Station and surrounding areas. This is the most cost effective solution to connect the Voyager Point community to Holsworthy Train Station.

2.3.2 Other modifications and suggestions

Submission number(s)

3, 40, 41, 49, 52

Issue Description

The following issues were raised by respondents suggesting additional improvements and modifications to the proposal:

- Design the bridge over Harris Creek to accommodate six lanes.
- Include construction of an additional shared path bridge over Williams Creek.
- Suggestion for no additional installation of traffic lights but construction of a looped road underneath the Heathcote Road.
- Request for disabled access to be upgraded at Holsworthy Train Station.

Response

The current design for the Harris Creek Bridge has not been finalised. Roads and Maritime would design the bridge to accommodate four lanes. Traffic modelling indicates that four lanes would be sufficient to cater for future traffic needs.

Other suggestions including additional shared pathway bridges similar to the pedestrian and cycle bridge from Voyager Point over the Georges River, are outside the proposed work and would require additional funding.

Looped roads would involve additional property acquisition, a larger impact on biodiversity and construction costs. For these reasons, a looped road was not considered as an option in this proposal.

Traffic lights are the most effective solution to reduce the impact on the environment by occupying less land area and reducing vegetation removal. Section 6.5 of the REF provides further details on the traffic and transport modelling undertaken for the proposal.

The proposal includes an upgraded shared path along Heathcote Road to Holsworthy Train Station. The proposed design has not been finalised, however the upgraded path would be designed in accordance with Australian Standards which would include access for people with a disability. Improvements to access the station is outside the proposed scope of the road upgrade. Access to the train station facility from the proposed shared path is the responsibility of Sydney Trains.

2.4 Surface water and drainage

2.4.1 Drainage at the Avenue

Submission number(s)

14, 19, 33

Issue description

The open drainage channel at the intersection of The Avenue and Heathcote Road has caused local flooding over the road in past rainfall events. Respondents questioned if the proposal includes measures to prevent flooding at this intersection.

Response

Drainage and maintenance of drainage channels at local roads is the responsibility of Liverpool City Council. The drainage along Heathcote Road would improve as a result of this proposal.

2.4.2 Flood mitigation and modelling

Submission number(s):

52, 53

Issue description

Respondents requested that the design for flood mitigation and assessment of flooding be undertaken as suggested below.

- Respondents requested the proposed culverts be designed to cater for 1 in 100 flood event instead of 1 in 40 flood event, as detailed in the REF.
- Respondents requested Roads and Maritime to use a specific numeric model, (TUFLOW 2D), for flood modelling as it was considered by respondents as a preferred model for flood modelling and to reference flood studies for Georges River and Harris Creek.
- Respondents requested to ensure there would be no downstream impact of flooding from the proposal.
- Respondents requested that water sensitive urban designs consider the potential increase of major flooding, especially the likely cumulative impact of developments nearby the proposal.

Response

The proposal was originally designed to cater for a 1 in 100 year flood event. However, due to local constraints, including low level residential properties adjacent to the road and a heavily vegetation creek, a 1 in 40 year flood design was adopted after several iterations of flood modelling. During detailed design, Roads and Maritime would further investigate flooding of Heathcote Road and refine the proposal, to meet all project objectives.

The recommendation to use the numeric model, TUFLOW 2D, for hydrology modelling would be considered during detailed design as well as reference to recent flood assessments for Georges River and Harris Creek. Further information from Liverpool City Council would be requested by Roads and Maritime during detailed design to assist with flood assessments.

2.4.3 Water quality treatment

Submission number(s):

52, 53

Issue description

Respondents requested water quality treatments be incorporated as part of the road upgrade to treat stormwater prior to discharge to creeks. Respondents suggested treatment facilities such as gross pollutant traps, bio-retention swales and raingardens should be considered during detailed design.

Response

Roads and Maritime aims to include water quality treatment measures, and flood mitigation (in relation to impacts on the proposal or impacts as a result of the proposal) as part of detailed design. The proposal as described in section 6.2.3 of the REF, details an existing grass swale which filters water from contaminants. No additional water quality treatment measures are proposed.

2.5 Traffic and safety

2.5.1 Pleasure Point Road intersection

Submission number(s)

3, 5, 6, 11, 12, 13, 18, 23, 25, 26, 35

Issue description

Eleven submissions raised issues about the safety of the intersection at Pleasure Point Road and Heathcote Road. Some requested that the road upgrade extend further south to the intersection, and requested provision of turning lanes to manage the safety concerns at the intersection. Others expressed concern for safety of the shared path upgrade.

Response

Pleasure Point Road is outside the scope of the Heathcote Road upgrade. Any issues in regards to safety have been forwarded to Roads and Maritime Network Safety officers for their review.

2.5.2 Replacement of roundabout with traffic signals at Macarthur Drive

Submission number(s)

3, 4, 16, 39, 52, 53

Issue description

Respondents raised issues including:

- The roundabout replacement to a signalised intersection may affect traffic flow and cause delays.
- Consideration for traffic light sequence to be triggered when vehicles approach the intersection.
- Support for the proposed traffic lights.

Response

Traffic modelling undertaken for the concept design is detailed in section 6.5 of the REF. Traffic light sequencing and phasing would be further looked into during detailed design. This would ensure consistent and optimal traffic flow at the new signalised intersection of Heathcote Road and Macarthur Drive.

2.5.3 Speeding and potential increase in traffic, safety of pedestrians on shared path

Submission number(s)

3, 8, 18, 33, 47, 54

Issue description

Six submissions raised the issue of traffic speeding along Heathcote Road and the impact on safety of other road users. A respondent suggested the installation of speed cameras be included as part of the traffic safety measures. Other submissions raised the issue of safety of the shared path design.

Response

The upgraded road and new traffic signal intersections is expected to improve safety conditions because of the divided road, slip lanes for left and right turns and new traffic signal intersections. The installation of speed cameras is not in the scope of this proposal.

The shared path design would meet current standards for safety and design. Final safety features including guardrails are yet to be designed but would be included where required according to Australian Standards.

Traffic safety concerns have been provided to Roads and Maritime staff for network safety.

2.6 Noise

Submission number(s)

3, 8, 47, 48, 52, 53, 54

Issue description

Seven submissions raised concerns about increased noise from construction or the potential for increased noise from additional traffic arising from the road upgrade. One submission also requested further information about Roads and Maritime's existing noise abatement program available for residents to mitigate traffic noise at their properties.

Respondents also requested detailed design to include noise attenuation measures to mitigate impacts on local residents.

Response

Section 3.4.2 and 6.6 of the REF details the potential impacts of noise on the surrounding residents. Safeguards and mitigation measures are included in section 6.6.5 of the REF.

The noise levels are not expected to increase significantly as a result of the proposed upgrade. The expected noise level increase is around 1 dB(A). As part of this proposal, twenty-four properties adjacent to Heathcote Road are eligible for noise mitigation because of existing noise conditions, as described in the REF and Noise Assessment Report (Appendix J of the REF). Detailed design would further consider noise mitigation measures, such as noise barriers, in accordance with Roads and Maritimes' Noise Mitigation Guideline (2016). Further consultation would also be held with residents and landowners of these 24 properties during detailed design about the noise mitigation measures.

Separate to this proposal is Roads and Maritime's noise abatement program. Further information on this program is available on the Roads and Maritime website

<http://www.rms.nsw.gov.au/about/environment/reducing-noise/noise-abatement-program.html>

2.7 Funding and program

Submission number(s)

7, 8, 52, 52, 53

Issue Description

Five respondents sought more information about when the proposal will be funded and progressed to construction. Respondents also requested that funding is allocated early to prevent delays in proposal completion.

Response

Funding has only been approved for the planning and environmental assessment of this proposal. Upon the completion of the planning phase, including the community consultation undertaken as part of the REF process, Roads and Maritime would seek further funding for detailed design and construction. If the proposal is approved and funded, it could be constructed between 2019 and 2021.

Every effort is being made by Roads and Maritime to expedite the delivery of this proposal once funding commitments have been confirmed. The expected construction program is not yet finalised.

2.8 Design and proposal features

2.8.1 Landscaping

Submission number(s):

53

Issue description

One respondent requested that the landscaping be designed using similar plant species to those used on recent local Roads and Maritime projects and Liverpool City Council be consulted during detailed design.

Response

Landscaping would be specified during detailed design to be consistent with other local Roads and Maritime projects. Consultation with Council would also be undertaken during detailed design.

2.8.2 Welcome feature

Submission number(s):

53

Issue description

One respondent requested a welcome feature (town identification signs) along Heathcote Road entrance to Liverpool and Sutherland Shire Local Government boundary to be included in the proposal.

Response

A welcome feature or sign is not funded as part of the proposal. However, Roads and Maritime would discuss with Liverpool City Council during detailed design.

2.8.3 Street lighting

Submission number(s):

53

Issue description

One respondent requested for street lighting poles between Macarthur Drive and Infantry Parade to use the style of poles known as multi-function poles. These poles were recommended to be the same design of street poles currently installed along local streets.

Response

Street lighting and the pole design would be further considered during detailed design of the proposal. Consultation with Liverpool City Council would be held during detailed design to identify type of street lighting poles to be incorporated into the project. The street lighting design would be in compliance with Roads and Maritimes lighting design standards.

2.8.4 Asset and driveway access

Submission number(s)

53

Issue description

One respondent requested vehicle accesses to private properties should meet Liverpool City Council driveway specifications and if required, heavy duty access be provided to access driveways for utilities including rail or energy supply substations.

Response

Asset maintenance responsibilities would be formalised with Liverpool City Council during detailed design. The design would ensure Council and Roads and Maritime specifications are included for driveways to private properties and also for heavy duty driveways for utilities.

2.8.5 Retaining walls

Submission number(s)

53

Issue description

The proposal includes construction of new retaining walls as detailed in section 3.3.7 of the REF where space is limited and to reduce the proposal's potential impacts on private property. The respondent requests the proposed retaining wall is maintained by Roads and Maritime upon completion.

Response

The asset maintenance responsibilities would be formalised with Liverpool City Council during the detailed design process.

2.9 Biodiversity

Submission number(s)

52

Issue description

A respondent raised concerns about insufficient assessment and mitigation measures for biodiversity impacts. The submission was concerned about the impact on biodiversity during construction and the proposal in general and that there was extensive clearing of threatened ecological communities.

Response

A full biodiversity assessment has been completed and is presented in section 6.1 of the REF. The biodiversity assessment was completed in accordance with relevant guidelines, as detailed in sections 2.4.2 and 2.4.3; and Tables 2.7 and 2.8 of the Biodiversity Assessment (Appendix G of the REF). The assessment concluded that the proposal would not result in a significant impact on biodiversity provided all mitigation measures are incorporated. The impact on biodiversity would be offset by 145 ecosystem credits as detailed in the mitigation measures (Table 6.1.4 of the REF). Further refinement of the footprint would be undertaken in detailed design to minimise impacts on biodiversity.

2.10 General support

Submission number(s)

1, 2, 10 including all form submissions (15, 17, 21, 22, 24, 29, 30, 31, 32, 34, 39, 42, 49, 57, 58, 59)

Issue description

General support for the proposal.

Response

Roads and Maritime appreciates the community support for the proposal.

3 Changes to the proposal

No changes to the concept design of the proposal, as described in the REF, have been made in response to submissions received during the REF public display. Roads and Maritime acknowledge some of the issues raised in submissions would be further investigated during detailed design. An outcome of these investigations may result in some changes to the proposal. Roads and Maritime would evaluate these changes and follow the appropriate assessment and approval requirements under Part 5 of the *Environmental Planning and Assessment Act 1979*. However, at this stage no changes are proposed to the concept design.

For the issues raised in submissions that would be subject to further investigation, the management and mitigation measures described in the REF have been modified to capture these issues. These modifications are described in section 4 and would be implemented during detailed design.

4 Environmental management

The REF for the Heathcote Road upgrade identified the framework for environmental management, including safeguards and management measures to be adopted to avoid or reduce environmental impacts.

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

4.1 Environmental management plans

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

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

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

4.2 Summary of safeguards and management measures

The REF identified a range of environmental outcomes and management measures required to avoid or reduce the environmental impacts.

After consideration of the issues raised in the submissions, the environmental management measures for the proposal in chapter 7 of the REF have been revised to capture:

- The additional investigations required during detailed design for the Holsworthy pedestrian bridge abutments.
- Inclusion of heritage interpretation signs for the Holsworthy pedestrian bridge.
- Consultation requirements with the community and stakeholders in regard to heritage and noise mitigation measures.
- The method and scope of additional flood modelling during detailed design
- Consultation with Liverpool City Council on design elements of the proposal and future asset maintenance responsibilities.

Should the proposal proceed, the environmental management measures in Table 4-1 will guide the subsequent phases of the Heathcote Road upgrade. Additional and 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.

Table 4-1: Summary of environmental safeguards and management measures

No.	Impact	Environmental safeguards	Responsibility	Timing	Standard / additional safeguard
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 proposal 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 project manager	Pre-construction / detailed design	Core standard safeguard
GEN2	General – notification	All businesses, residential properties and other key stakeholders (e.g. schools, local councils) affected by the activity will be notified at least five days prior to commencement of the activity.	Contractor / Roads and Maritime project manager	Pre-construction	Core standard safeguard

No.	Impact	Environmental safeguards	Responsibility	Timing	Standard / additional safeguard
GEN3	General – environmental awareness	<p>All personnel working on site will receive training to ensure awareness of environment protection requirements to be implemented during the proposal. This will include up-front site induction and regular "toolbox" style briefings.</p> <p>Site-specific training will be provided to personnel engaged in activities or areas of higher risk. These include</p> <ul style="list-style-type: none"> • Areas of Aboriginal heritage sensitivity • Threatened species habitat • Adjoining residential areas requiring particular noise management measures 	Contractor / Roads and Maritime project manager	Pre-construction / detailed design	Core standard safeguard
B1	Biodiversity	<p>A Flora and Fauna Management Plan will be prepared in accordance with Roads and Maritime's <i>Biodiversity Guidelines: Protecting and Managing Biodiversity on RTA Projects</i> (RTA, 2011) and implemented as part of the CEMP. It will include, but not be limited to:</p> <ul style="list-style-type: none"> • Plans showing areas to be cleared and areas to be protected, including exclusion zones, protected habitat features and revegetation areas • Requirements set out in the <i>Landscape Guideline</i> (RTA, 2008) • 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. 	Contractor	Detailed design / pre-construction	Core standard safeguard Section 4.8 of QA G36 Environment Protection
B2	Biodiversity	Investigate measures to further avoid and minimise the construction footprint and native vegetation or habitat removal.	Contacto	Detailed design / pre-construction	Core standard safeguard

No.	Impact	Environmental safeguards	Responsibility	Timing	Standard / additional safeguard
B3	Native vegetation removal and re-establishment	Minimise native vegetation and habitat removal through detailed design. Harris Creek and Williams Creek to retain fauna passage and connectivity to areas south of Heathcote Road to enable movement for fauna south.	Roads and Maritime	Detailed design	Additional safeguard
B4	Native vegetation removal and re-establishment	A Biodiversity Offset Strategy would be prepared during the detailed design phase to provide offsets equivalent to 145 ecosystem credits. This strategy would be prepared in accordance with the Guidelines for Biodiversity Offsets (Roads and Maritime, 2011h) and the NSW BioBanking Assessment Methodology 2014.	Roads and Maritime	Detailed design	Additional safeguard
B5	General ecological mitigation	Ensure any fauna encountered onsite would be managed in accordance with Biodiversity Guidelines, Guide 9 (fauna handling) (Roads and Maritime, 2016b)	Contractor	Pre-construction	Additional safeguard
B6	General ecological mitigation	In addition to the requirements of Core standard safeguard B1, the Flora and Fauna Management Plan would also include: <ul style="list-style-type: none"> • A site walkover to confirm clearing boundaries and sensitive location before starting work • Identify, in toolbox talks, where biodiversity controls would be included. 	Contractor	Pre-construction	Additional safeguard

No.	Impact	Environmental safeguards	Responsibility	Timing	Standard / additional safeguard
B7	Invasive and noxious weed management	<p>Develop a weed management plan (WMP) in accordance with Biodiversity Guidelines, Guide 6 (Roads and Maritime, 2016b) to include:</p> <ul style="list-style-type: none"> • Identification of the weeds on site (confirm during ecologist pre-clearing inspection) • Weed management priorities and objectives • Sensitive environmental areas within or adjacent to the site • The location of weed infested areas • Weed control methods • Measures to prevent the spread of weeds, including machinery hygiene procedures and disposal requirements • A monitoring program to measure the success of weed management • Communication with local Council noxious weed representative. 	Contractor	Pre-construction	Additional safeguard
B8	Vegetation management	Develop a vegetation management plan for undertaking the work across Harris and Williams Creek in accordance with Greater Metropolitan Regional Environmental Plan No. 2 – Georges River Catchment	Contractor	Pre-construction	Additional safeguard
B9	Risk of pathogen and pest species	If hygiene procedures are required onsite, ensure the Flora and Fauna Management Plan includes hygiene protocols to prevent the introduction and spread of such pathogens as specified in Biodiversity Guidelines: (Roads and Maritime, 2016b). Manage all pathogens (e.g. Chytrid, myrtle rust and phytophthora) in accordance with the Biodiversity Guidelines, Guide 7 (Roads and Maritime, 2016b).	Contractor	Pre-construction	Additional safeguard

No.	Impact	Environmental safeguards	Responsibility	Timing	Standard / additional safeguard
B10	Unexpected blockage of fish passage	<p>A detailed Environmental Work Method Statement (EWMS) will be prepared and implemented for all works undertaken within waterways. The EWMS will detail measures to avoid or minimise risks from erosion and sedimentation to water quality and biodiversity. It will be prepared in accordance with relevant guidelines including, but not limited to:</p> <ul style="list-style-type: none"> • Roads and Maritime <i>Biodiversity Guidelines - Protecting and managing biodiversity on RTA projects</i> (Roads and Traffic Authority, 2011). • NSW DPI (Fisheries) guidelines <i>Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings</i> (NSW Fisheries, 2003). • Standard precautions and mitigation measures of the <i>Policy and guidelines for fish habitat conservation and management Update 2013</i> (Department of Primary Industries 2013). 	Contractor	Construction	Additional safeguard
B11	Unexpected discovery of threatened species	<p>If unexpected flora or fauna are discovered stop work immediately and implement the Roads and Maritime <i>Unexpected Threatened Species Find Procedure in the Biodiversity Guidelines, Guide 1</i> (Roads and Maritime, 2016b).</p>	Contractor	Construction	Additional safeguard
B12	Injury and mortality impacts while building the proposal	<p>Implement the following controls: under the Flora and Fauna Management Plan:</p> <ul style="list-style-type: none"> • Manage fauna in accordance with <i>Biodiversity Guidelines, Guide 9</i> (Roads and Maritime, 2016b) • Remove any habitat in accordance with <i>Biodiversity Guidelines, Guide 4</i> (Roads and Maritime, 2016b). 	Contractor	Construction	Additional safeguard

No.	Impact	Environmental safeguards	Responsibility	Timing	Standard / additional safeguard
B13	Native vegetation removal and re-establishment Threatened species habitat and habitat features	Implement the following controls under the Flora and Fauna Management Plan: <ul style="list-style-type: none"> • Undertake pre-clearance checks in accordance with Biodiversity Guidelines, Guide 1 (Roads and Maritime, 2016b) • Create exclusions zones in accordance with Biodiversity Guidelines, Guide 2 (Roads and Maritime, 2016b) • Re-establish native vegetation in accordance with Biodiversity Guidelines, Guide 3 (Roads and Maritime, 2016b) • Reinstate habitat in accordance with Biodiversity Guidelines, Guide 5 and Guide 8 (Roads and Maritime, 2016b). 	Contractor	Construction	Additional safeguard
B14	Aquatic impacts	Protect aquatic habitat in accordance with Biodiversity Guidelines, Guide 10 Aquatic habitats and riparian zones of the <i>Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects</i> (Roads and Traffic Authority, 2011) and section 3.3.2 standard precautions and measures of the <i>Policy Guidelines for Fish Habitat Conservation and Management</i> (NSW Department of Primary Industry (Fisheries), 2013).	Contractor	Construction	Additional safeguard
B15	Aquatic impacts	Watercourse crossings will be designed to ensure that they meet the minimum requirements for fish passage recommended for the classes of 'fish habitat' found at the stream crossings.	Contractor	Construction	Additional safeguard
B16	Wildlife connectivity impacts	Implement connectivity controls in accordance with the <i>Wildlife Connectivity Guidelines for Road Projects</i> (Roads and Maritime, 2016c).	Contractor	Construction	Additional safeguard
SW1	Soil and water	A Soil and Water Management Plan (SWMP) will be prepared and implemented as part of the CEMP. The SWMP will identify all reasonably foreseeable risks relating to soil erosion and water pollution and describe how these risks will be addressed during construction.	Contractor	Detailed design / Pre-construction	Core standard safeguard Section 2.1 of QA G38 Soil and Water Management

No.	Impact	Environmental safeguards	Responsibility	Timing	Standard / additional safeguard
SW2	Soil and water	<p>A site specific Erosion and Sediment Control Plan/s (ESCP) will be prepared and implemented as part of the Soil and Water Management Plan.</p> <p>The Plan will include arrangements for managing wet weather events, including monitoring of potential high risk events (such as storms) and specific controls and follow-up measures to be applied in the event of wet weather.</p>	Contractor	Detailed design / Pre-construction	Core standard safeguard Section 2.2 of QA G38 Soil and Water Management
SW3	Water Quality	<p>A detailed Environmental Work Method Statement (EWMS) will be prepared and implemented for all works undertaken within waterways. The EWMS will detail measures to avoid or minimise risks from erosion and sedimentation to water quality and biodiversity. It will be prepared in accordance with relevant guidelines including, but not limited to:</p> <ul style="list-style-type: none"> • RMS <i>Biodiversity Guidelines - Protecting and managing biodiversity on RTA projects</i> (Roads and Traffic Authority, 2011) • The Blue Book: <i>Managing Urban Stormwater (MUS): Soils and Construction, Volume 2</i> (Landcom, 2008). 	Construction contractor	Pre-construction	Additional safeguard

No.	Impact	Environmental safeguards	Responsibility	Timing	Standard / additional safeguard
SW4	Water Quality	<p>Consistent with any specific requirements of the approved SWMP and ESCP, control measures will be implemented to minimise risks associated with erosion and sedimentation and entry of materials to drainage lines and waterways. That will include, but not necessarily be limited to:</p> <ul style="list-style-type: none"> • Sediment management devices, such as fencing, hay bales or sand bags • Measures to divert or capture and filter water prior to discharge, such as drainage channels and first flush and sediment basins • Scour protection and energy dissipaters at locations of high erosion risk • Installation of measures at work entry and exit points to minimise movement of material onto adjoining roads, such as rumble grids or wheel wash bays • Appropriate location and storage of construction materials, fuels and chemicals, including bunding where appropriate. 	Construction contractor	Pre-construction	Additional safeguard
SW5	Water Quality	<p>The ESCP will also address the following regarding water quality:</p> <ul style="list-style-type: none"> • Identification of catchment areas and the direction of on-site and off-site water flow • The likely run-off from each road sub-catchment • Separation of on-site and off-site water • The direction of run-off and drainage points during each stage of construction • Location and staging of scour protection • Process for monitoring and preparing for wet weather. 	Construction contractor	Pre-construction	Additional safeguard
SW6	Water Quality	<p>Instream works would be suspended following high rainfall events. Work would recommence once the work area and ground conditions are stabilised and potential for erosion and sedimentation is minimised.</p>	Contractor	Construction	Additional safeguard

No.	Impact	Environmental safeguards	Responsibility	Timing	Standard / additional safeguard
SW7	Water Quality	During concreting, cement slurry and other contaminants will be prevented from entering waterways or any drainage lines.	Contractor	Construction	Additional safeguard
SW8	Water Quality	If concreting works are required onsite, concrete washout bays located in bridge work zones would be positioned as far as reasonably practicable from waterways and be emptied on a regular basis. Any washout of the lines or chute will be in an impervious bunded area.	Contractor	Construction	Additional safeguard
SW9	Flooding/ Hydrology	<ul style="list-style-type: none"> • Prior to construction commencing, final flood and hydrology assessments would be undertaken to inform detail design measures to minimise risks to the environment. • <u>Roads and Maritime would consult with Liverpool City Council for flood modelling information and consider using the TUFLOW 2D modelling.</u> • <u>The detailed design would investigate the retention of the Holsworthy bridge abutments.</u> 	Roads and Maritime	Detailed Design/ Pre-construction	Additional safeguard
SW10	Flooding	Scour protection measures will be identified and refined during detailed design.	Roads and Maritime	Detailed Design	Additional safeguard
SW11	Spills	Emergency wet and dry spill kits would be kept onsite at all times. All staff would be made aware of the location of the spill kit and trained in its use.	Contractor	Construction	Additional safeguard
SW12	Spills	All refuelling of vehicles and equipment on site would be undertaken a minimum of 50 metres away from water bodies and surface drains, wherever possible. The refuelling of vehicles would be monitored at all times and spill kits would be available within refuelling vehicles.	Contractor	Construction	Additional safeguard
SW13	Spills	Any fuel, oil or other liquids stored onsite would be stored in an appropriately sized impervious bunded area away from water bodies.	Contractor	Construction	Additional safeguard

No.	Impact	Environmental safeguards	Responsibility	Timing	Standard / additional safeguard
GW1	Groundwater	Additional site investigation including the installation and subsequent monitoring of groundwater wells at approximate 500 metres intervals along the proposal alignment and near Harris and Williams Creeks would be undertaken.	Roads and Maritime	Detailed design / Pre-construction	Additional safeguard
GW2	Groundwater	A dewatering strategy and groundwater management plan for any excavations below the groundwater table will be developed, with a focus on the construction of the pier foundations in Harris Creek. Any dewatering activities will be undertaken in accordance with the RTA Technical Guideline: <i>Environmental Management of Construction Site Dewatering</i> in a manner that prevents pollution of waters.	Roads and Maritime Contractor	Pre-construction Construction	Additional safeguard
GW3	Groundwater	Shoring and water-tight requirements to be implemented for foundation excavations.	Roads and Maritime	Detailed design / Pre-construction	Additional safeguard
GW4	Groundwater	Concreting methods that reduce the likelihood of groundwater ingress will be employed for construction of bridge piles and foundations. This will also reduce the likelihood of washing out the cement content.	Contractor	Construction	Additional safeguard

No.	Impact	Environmental safeguards	Responsibility	Timing	Standard / additional safeguard
C1	Contaminated land	<p>A Contaminated Land Management Plan will be prepared in accordance with the <i>Guideline for the Management of Contamination</i> (Roads and Maritime, 2013f) and the <i>Contaminated Land Management Act 1997</i> and implemented as part of the CEMP. The plan will include, but not be limited to:</p> <ul style="list-style-type: none"> • Capture and management of any surface runoff contaminated by exposure to the contaminated land • Further investigations required to determine the extent, concentration and type of contamination, as identified in the detailed site investigation (Phase 2) • Management of the remediation and subsequent validation of the contaminated land, including any certification required • Relevant licenses and approvals to be obtained and relevant notifications to be given under the <i>Contaminated Land Management Act 1997</i> • Measures to ensure the safety of site personnel and local communities during construction. 	Contractor	Detailed design / Pre-construction	Core standard safeguard Section 4.2 of QA G36 Environment Protection
C2	Contaminated land	<p>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. Waste classification and reuse procedures will also be included in the Contaminated Land Management Plan.</p>	Contractor	Detailed design / Pre-construction	Core standard safeguard Section 4.2 of QA G36 Environment Protection

No.	Impact	Environmental safeguards	Responsibility	Timing	Standard / additional safeguard
C3	Accidental spill	A site specific emergency spill plan will be developed, and include spill management measures in accordance with the Roads and Maritime <i>Code of Practice for Water Management</i> (RTA, 1999) and Environmental Guidelines: Preparation of pollution incident response management plans (NSW EPA 2012). 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).	Contractor	Detailed design / Pre-construction	Core standard safeguard Section 4.3 of QA G36 Environment Protection
C4	Exposure of acid sulfate soils	<ul style="list-style-type: none"> Design of drainage lines and infrastructure to minimise the need for deep excavations. Minimise the need for extended dewatering of sediments around drainage lines for construction. 	Roads and Maritime	Detailed Design	Additional Safeguard
C5	Exposure of acid sulfate soils	ASS testing (field screening and chromium reducible sulfur suite) in soils around Harris Creek and Williams Creek to be undertaken. Other areas of the alignment as required. If ASS are identified, an ASS investigation report to be prepared that identifies areas of ASS, chemistry and liming rates for treatment. The ASS investigation to be undertaken and report verified by a suitably qualified and experienced environmental consultant.	Roads and Maritime	Detailed design/ Pre-construction,	Additional Safeguard
C6	Exposure of acid sulfate soils	An ASS Management Plan (ASSMP) is to be prepared for any excavation of material in the vicinity of Harris Creek and Williams Creek. The plan is to include methods for onsite treatment or offsite disposal of excavated ASS. The plan will make reference to the ASS investigation report findings and be in accordance with the NSW ASSMAC Guidelines (1998).	Construction Contractor	Pre-construction, construction.	Additional Safeguard

No.	Impact	Environmental safeguards	Responsibility	Timing	Standard / additional safeguard
C7	Identification of contaminated land	Preliminary site sampling and where necessary a detailed (phase two) site investigation is to be undertaken along the alignment. Assessments are to be undertaken in accordance with guidance made or endorsed by the NSW EPA. The contaminated land investigations are to be undertaken and report verified by a suitably qualified and experienced environmental consultant.	Roads and Maritime	Detailed Design, Pre-construction	Additional Safeguard
C8	Identification of contaminated land	Consult with and request information from Department of Defence to determine the presence of any known contamination issues within 100 metres of the proposal alignment.	Roads and Maritime	Detailed Design, Pre-construction, construction.	Additional Safeguard
C9	Human and ecological exposure to contaminated land	The Contaminated Land Management Plan will also include awareness training for construction staff to include the procedures for identification, reporting and management of contaminated land.	Contractor	Pre-construction, construction.	Additional Safeguard
C10	Handling and disposal of contaminated materials	<p>The SWMP will include measures to minimise accidental spills and associated potential impacts such as:</p> <ul style="list-style-type: none"> • Storage of chemicals within an impervious bunded area • All refuelling of vehicles and equipment would be undertaken off site or within an impervious bunded area at the compound site at least 40 metres from drainage lines. Where this cannot occur, mobile fuel trucks should be equipped with a self bunded tank, spill prevention equipment and spill kits • Requirement for an emergency spill kit to be kept on site at all times and be easily accessible and staff awareness and training in its use • Removal of contaminated material (soils, water, clean up materials) offsite by a licensed contractor and disposed of at an appropriately licensed facility. 	Contractor	Construction	Additional Safeguard

No.	Impact	Environmental safeguards	Responsibility	Timing	Standard / additional safeguard
C11	Erosion and Sediment	<p>An ESCP shall be developed for the works. The ESCP shall provide for:</p> <ul style="list-style-type: none"> • Preventing sediment moving off-site and sediment laden water entering any water course, drainage lines, or drain inlets • Reducing water velocity and capture sediment on site. • Minimising the amount of material transported from site to surrounding pavement surfaces • Erosion and sedimentation controls – these are to be checked and maintained on a regular basis and records kept and provided on request • Erosion and sediment control measures – these are not to be removed until the works are complete or areas are stabilised • Work areas are to be stabilised progressively during the works • Diversion of clean water around the site (in accordance with the Landcom/Department of Housing <i>Managing Urban Stormwater, Soils and Construction Guidelines</i> (the Blue Book). 	Construction contractor	Pre-construction, construction.	Additional Safeguard
C12	Erosion and Sediment	The maintenance of established stockpile sites during construction is to be in accordance with the Roads and Maritime <i>Stockpile Site Management Procedures</i> , 2001.	Construction contractor	Pre-construction, construction.	Additional Safeguard

No.	Impact	Environmental safeguards	Responsibility	Timing	Standard / additional safeguard
TT1	Traffic and transport	<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 Traffic Control at Work Sites Manual (Roads and Maritime, 2010) and QA Specification G10 Control of Traffic (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 signs) to manage and regulate traffic movement • Measures to maintain pedestrian and cyclist access • Requirements and methods to consult and inform the local community of impacts on the local road network • 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 conflict 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 standard safeguard Section 4.8 of QA G36 Environment Protection

No.	Impact	Environmental safeguards	Responsibility	Timing	Standard / additional safeguard
TT2	Construction traffic	<p>The TMP will also include:</p> <ul style="list-style-type: none"> • Scheduling the delivery of plant, equipment and construction materials to generally occur out of peak traffic periods • Consideration of methods to minimise peak period traffic disruptions during each stage of construction • Roads and Maritime to liaise with utilities providers and Sydney Trains to maintain service accesses to their facilities during construction and following completion of the proposal. <p>The TMP is to ensure the work site and site compound:</p> <ul style="list-style-type: none"> • Includes safe 'sight distances' to allow traffic to leave and enter the given areas • Uses temporary painted road lines to provide delineation • Provides suitable intersection layouts where required • Includes traffic management controls to allow for safe entry and exit. 	Contractor	Pre-construction/ construction	Additional safeguard
TT3	Intersection Signalisation	Signal phasing arrangements and timings be reviewed as part of the commissioning of the proposal to determine the coordination arrangements as an extension to the existing conditions.	Roads and Maritime	Construction/ Pre-operation	Additional safeguard
TT4	Operation of Macarthur Drive intersection	<u>The signal phasing of the traffic lights intersection of Heathcote Road and Macarthur Drive would be periodically reviewed. The review is required to ensure traffic demands are not affecting signal operations and localised congestion. Appropriate signal timing plans to be adopted if needed.</u>	Roads and Maritime	Operation	Additional safeguard
TT5	Operational Monitoring	Monitoring of the queuing and congestion impacts along Macarthur Drive to the Morningside Parade intersection will be undertaken to manage any residual queueing impacts at this location and associated safety impacts.	Roads and Maritime	Operation	Additional safeguard

No.	Impact	Environmental safeguards	Responsibility	Timing	Standard / additional safeguard
NV1	Noise and vibration	<p>A Noise and Vibration Management Plan (NVMP) will be prepared and implemented as part of the CEMP. The NVMP will generally follow the approach in the <i>Interim Construction Noise Guideline</i> (ICNG) (DECC, 2009) and identify:</p> <ul style="list-style-type: none"> • All potential significant noise and vibration generating activities associated with the activity • Feasible and reasonable mitigation measures to be implemented, taking into account <i>Beyond the Pavement: urban design policy, process and principles</i> (Roads and Maritime, 2014e). • A monitoring program to assess performance against relevant noise and vibration criteria • Arrangements for consultation with affected neighbours and sensitive receivers, including notification and complaint handling procedures • Contingency measures to be implemented in the event of non-compliance with noise and vibration criteria. 	Contractor	Detailed design / pre-construction	Core standard safeguard Section 4.6 of QA G36 Environment Protection
NV2	Noise and vibration	<p>All sensitive receivers (e.g. schools, local residents) likely to be affected will be notified at least five days prior to commencement of any works associated with the activity that may have an adverse noise or vibration impact. The notification will provide details of:</p> <ul style="list-style-type: none"> • The proposal • The construction period and construction hours • Contact information for proposal management staff • Complaint and incident reporting how to obtain further information. 	Contractor	Detailed design / pre-construction	Core standard safeguard

No.	Impact	Environmental safeguards	Responsibility	Timing	Standard / additional safeguard
NV3	Noise impacts	<ul style="list-style-type: none"> • Work will be undertaken in accordance with the Construction Noise and Vibration Guideline (Roads and Maritime, 2016f) • Stationary and directional noise sources will be orientated away from sensitive receivers • Utilise vehicles, obstacles and stockpiles on site to provide shielding to receivers, especially for static noise sources • Use equipment that has noise levels equal to or less than the sound power levels in Table 6-2 of Appendix J of the REF. 	Contractor	Pre-construction, Construction	Additional Safeguard
NV4	Vibration	<ul style="list-style-type: none"> • Condition surveys of areas where vibration intensive equipment is to be used will be undertaken prior to the commencement of construction within the safe working distances. • Where possible, the use of less vibration intensive methods of construction or equipment should be considered where possible to reduce the potential for cosmetic damage. • All equipment should be maintained and operated in an efficient manner, in accordance with manufacturer's specifications, to reduce the potential for adverse vibration impacts. • Site-specific safe working distances are to be established on site prior to the vibration generating works commencing. • Ensure that safe working distances established on site are complied with. • If vibration intensive equipment is to be used within the safe working distances, attended vibration measurements are to be undertaken when work commences to determine site specific safe working distances. • Vibration intensive work should not proceed within the safe working distances unless a permanent vibration monitoring system is installed approximately one metre from the building footprint, to warn operators (via flashing light, audible alarm, SMS etc.) when vibration levels are approaching the peak particle velocity trigger levels. 	Contractor	Pre-construction, Construction	Additional Safeguard

No.	Impact	Environmental safeguards	Responsibility	Timing	Standard / additional safeguard
NV5	Potential noise and vibration nuisance and amenity impacts	A community information program will be developed before starting work. This would involve identification of a nominated community liaison officer and informing affected community members in advance of starting work through advertisements, flyers and community consultation sessions. A 24-hour community hotline for complaints and queries concerning construction will be provided and will be advertised ahead of starting any work. A complaints handling procedure will be developed including ensuring a timely response to complaints. Actions and progress towards resolving concerns will be provided. The work program will be made available to the community and will be routinely updated as work progresses.	Contractor	Pre-construction	Additional safeguard
NV6	Construction out of hours work	The Contractor would be required to justify the requirement for out-of-hours work and suitably demonstrate why the work cannot be reasonably undertaken during normal working hours. The Contractor would be required to assess proposed out-of-hours work and take reasonable and feasible steps to mitigate construction noise. The Contractor should seek approval from the Principal to undertake out-of-hours work. Out of hours work will be undertaken to comply with quality assurance specification G36: Environmental Management (Roads and Maritime, 2014b) and the Construction Noise and Vibration Guideline (Roads and Maritime, 2016f).	Contractors	Construction	Additional safeguard
NV7	Noise and vibration complaints while building the proposal	Attended noise and/or vibration monitoring will be undertaken following a complaint. The monitoring results will be reported as soon as possible. Where exceedances of the management levels are recorded, the situation will be reviewed and means to reduce the impacts to noise and vibration sensitive receivers identified. This is to include revision to the CNVMP where required.	Contractors	Construction	Additional safeguard

No.	Impact	Environmental safeguards	Responsibility	Timing	Standard / additional safeguard
NV8	The potential for exceedance of the NMLs	<p>Ensure toolbox talks and environmental induction training is provided to include specific noise and vibration management including, but not limited to:</p> <ul style="list-style-type: none"> • Avoiding the use of radios outside of standard working hours • Avoiding shouting and slamming doors • Operating machinery at low speeds or powers and switch off equipment when it is not being used • Minimising reversing • Avoiding dropping material from height. 	Contractors	Construction	Additional safeguard
NV9	Operational noise mitigation	<p>Investigate mitigation measures including:</p> <ul style="list-style-type: none"> • Quieter pavement surfaces and suitability of such pavement types for through lanes and areas of acceleration, deceleration and turning movements • Noise barriers • At property treatments for residually affected receivers where feasible and reasonable. • Consideration of existing noise mitigation and any specified mitigation in development applications for acute receivers in NCAs A, B and D (both barriers and architectural) when determining reasonable and feasible mitigation. 	Roads and Maritime	Detailed Design	Additional Safeguard
NV10	Property read in treatments	Where at property treatments are identified, these would be implemented at the commencement of construction. These treatments would alleviate any noise concerns/ complaints during the construction period.	Contractors	Construction	Additional Safeguard

No.	Impact	Environmental safeguards	Responsibility	Timing	Standard / additional safeguard
AH1	Aboriginal heritage	An Aboriginal Heritage Management Plan (AHMP) will be prepared in accordance with the Procedure for Aboriginal cultural heritage consultation and investigation (Roads and Maritime, 2011f) and Standard Management Procedure - Unexpected Heritage Items (Roads and Maritime, 2015d) and implemented as part of the CEMP. It will provide specific guidance on measures and controls to be implemented for managing impacts on Aboriginal heritage. The AHMP will be prepared in consultation with all relevant Aboriginal groups.	Contractor	Detailed design / pre-construction	Core standard safeguard Section 4.9 of QA G36 Environment Protection
AH2	Aboriginal heritage	The <i>Standard Management Procedure - Unexpected Heritage Items</i> (Roads and Maritime, 2015d) will be followed in the event that an unknown or potential Aboriginal object/s, including skeletal remains, is found during construction. This applies where Roads and Maritime does not have approval to disturb the object/s or where a specific safeguard for managing the disturbance (apart from the Procedure) is not in place. Work will only re-commence once the requirements of that Procedure have been satisfied.	Contractor	Detailed design / pre-construction	Core standard safeguard Section 4.9 of QA G36 Environment Protection
H1	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 to Non-Aboriginal heritage. The NAHMP will be prepared in consultation with the Office of Environment and Heritage.	Contractor	Detailed design / pre-construction	Core standard safeguard Section 4.10 of QA G36 Environment Protection
H2	Non-Aboriginal heritage	<ul style="list-style-type: none"> The <i>Standard Management Procedure - Unexpected Heritage Items</i> (Roads and Maritime, 2015d) will be followed in the event that any unexpected heritage items, archaeological remains or potential relics of Non-Aboriginal origin are encountered. Work will only re-commence once the requirements of that Procedure have been satisfied. 	Contractor	Detailed design / pre-construction	Core standard safeguard Section 4.10 of QA G36 Environment Protection

No.	Impact	Environmental safeguards	Responsibility	Timing	Standard / additional safeguard
H3	Non-Aboriginal heritage	<p>A heritage induction will be prepared and implemented as part of the project's general induction to raise awareness to construction personnel. The induction will include:</p> <ul style="list-style-type: none"> • An outline of the history and heritage values of the study area • The relevant requirements of the Heritage Act • Description and explanation of the unexpected finds procedure. 	Contractor	Pre-construction/ construction	Additional safeguard
H4	Impacts to Holsworthy Pedestrian Bridge	<ul style="list-style-type: none"> • Undertake archival recording and heritage interpretation of the Holsworthy Pedestrian Bridge prior to removal of superstructure (including the Bailey bridge and pipework). This should be combined with detailed historical research • Conservation of elements of the bridge, such as the piers, iron fixings and plaque • <u>Roads and Maritime would aim to conserve the heritage elements of the Holsworthy pedestrian bridge abutments. The preservation of the abutments depends on detailed flood modelling and the abutments impact on localised flooding.</u> • Site protection measures for piers, iron fixings and plaque to be included during construction Construction of a new footbridge in the same or similar location, with associated footpaths following the original alignment of the former rail line, so far as is possible • Inclusion of a heritage interpretation to be <u>part of the Urban Design Strategy considered.</u> • Consultation with the community to be undertaken 	Roads and Maritime	Detailed design / pre-construction	Additional safeguard
H5	Impacts to Harris Creek Bridge and Williams Creek Bridge	<ul style="list-style-type: none"> • Consultation with the Office of Environment and Heritage should be undertaken prior to impacts to the bridge. This would be in accordance with s170A of the <i>Heritage Act 1977</i> • Archival recording of bridges prior to removal including archival photography and measured drawings • Design of replacement bridges to a similar unobtrusive style. 	Roads and Maritime	Detailed design / pre-construction	Additional safeguard

No.	Impact	Environmental safeguards	Responsibility	Timing	Standard / additional safeguard
UD1	Landscape character and visual impact	<p>An Urban Design Plan <u>in consultation with Liverpool City Council</u> will be prepared to support the final detailed design and implemented as part of the CEMP.</p> <p>The Urban Design Plan will present an integrated urban design for the proposal, providing practical detail on the application of design principles and objectives identified in the environmental assessment. The Plan will include design treatments for:</p> <ul style="list-style-type: none"> • Location and identification of existing vegetation and proposed landscaped areas, including species to be used • Built elements including retaining walls and bridges • Pedestrian and cyclist elements including footpath location, paving types and pedestrian crossings • Fixtures such as seating, lighting, fencing and signs • Details of the staging of landscape works taking account of related environmental controls such as erosion and sedimentation controls and drainage • Procedures for monitoring and maintaining landscaped or rehabilitated areas. • <u>Interpretation signage for the Holsworthy pedestrian bridge</u> <p>The Urban Design Plan will be prepared in accordance with relevant guidelines, including:</p> <ul style="list-style-type: none"> • <i>Beyond the Pavement urban design policy, process and principles</i> (Roads and Maritime, 2014e) • <i>Landscape Guideline</i> (Roads and Maritime, 2008) • <i>Bridge Aesthetics</i> (Roads and Maritime 2012e) • <i>Shotcrete Design Guideline</i> (Maritime, 2005). 	Contractor	Detailed design / pre-construction	Core standard safeguard

No.	Impact	Environmental safeguards	Responsibility	Timing	Standard / additional safeguard
SE1	Socio-economic	<p>A Communication Plan (CP) will be prepared and implemented as part of the CEMP to help provide timely and accurate information to the community during construction. The CP will include (as a minimum):</p> <ul style="list-style-type: none"> • Mechanisms to provide details and timing of proposed activities to affected residents, including changed traffic and access conditions • Contact name and number for complaints. <p>The CP will be prepared in accordance with the <i>Community Involvement and Communications Resource Manual</i> (RTA, 2008).</p>	Contractor	Detailed design / pre-construction	Core standard safeguard SE1
SE2	Impacts on businesses and the community during construction	Road users will be informed of changed conditions, including likely disruptions to access during construction.	Construction contractor	Pre-construction and construction	Additional safeguard
SE3	Community impacts during construction across the proposal footprint	Consultation will be undertaken with potentially affected residences prior to the commencement of and during works in accordance with the RMS's Community Involvement and Communications Resource Manual. Consultation will include but not limited to door knocks, newsletters or letter box drops providing information on the proposed works, working hours and a contact name and number for more information or to register complaints.	Roads and Maritime	Pre-construction and construction	Additional safeguard
SE4	Community impacts during construction across the proposal footprint	A complaint handling procedure and register will be included in the CEMP. The complaints register will be maintained throughout construction.	Roads and Maritime	Pre-construction, construction	Additional safeguard
SE5	Emergency Access	Access for emergency vehicles will be maintained at all times during construction. Any site-specific requirements will be determined in consultation with the relevant emergency services agency.	Roads and Maritime	Construction	Additional safeguard

No.	Impact	Environmental safeguards	Responsibility	Timing	Standard / additional safeguard
SE6	Impacts to properties	Consultation will be undertaken with all affected property owners during detailed design and construction to develop and implement measures to mitigate impacts on land use viability, infrastructure and severance.	Roads and Maritime	Detailed Design	Additional safeguard
BF1	Bushfire	<p>A Bushfire Risk Management Plan (BRMP) will be prepared and implemented as part of the CEMP. The BRMP will include but not be limited to:</p> <ul style="list-style-type: none"> • Fire response equipment such as fire extinguisher and fire blanket to be kept on vehicles at the works and compound sites • The fire rating will be checked at the start of each day • Hot works will not be permitted on total fire ban days • An evacuation plan will be kept onsite and staff will be made aware of this and their responsibilities in the event of a fire • A site for smoking will be established at least 40 metres away from dense vegetation and butt disposal bins will be made available. 	Contractor	Construction	Additional safeguard
AQ1	Air quality emissions and dust propagation across the proposal footprint	<p>An Air Quality Management Plan (AQMP) would be prepared as part of the CEMP. The plan would include but not be limited to the following:</p> <ul style="list-style-type: none"> • A procedure for monitoring dust on site and weather conditions • Identification of dust generating activities and associated mitigation measures • Limits on the area that can be opened-up or distributed at any one time • Stabilising temporary stockpiles and spoil set down locations • Compliance with Stockpile Site Management Guidelines (Roads and Maritime, 2008a) • Progressive stabilisation plans • Imposing speed limits throughout the proposal footprint and in the site compound • Implementation of additional dust control measures in exposed areas where the wind speed is excessive (including periodic gusts) or 	Contractor	Pre-construction	Additional safeguard

No.	Impact	Environmental safeguards	Responsibility	Timing	Standard / additional safeguard
		<p>produces visible dust</p> <ul style="list-style-type: none"> • Implementation of a vehicle, plant and machinery maintenance program to comply with manufacturer's specifications and ensure compliance with the NSW <i>Protection of Environment Operations Act 1997</i> • Prevention of equipment idling for an excessive period of time while ideally locating machinery away from adjacent receivers • Prohibition of any burning onsite or in the construction compounds • Visual inspection of local conditions to ensure management measures are implemented and effective • Routine sweeping of areas (at least once a day) to minimise surface dust notwithstanding the requirement to prevent sediment-laden runoff • Covering and sheeting of all trucks leaving site and ensure methods to remove sediment from truck wheels are implemented • Revision of work activities should the dust control measures prove ineffective • Avoiding emissions-generating activities (i.e. paint spraying, grout, concrete mixing) during high winds and employ methods to minimise dust dispersion • Not stockpiling fine construction materials in exposed areas • Monitoring wind conditions and schedule activities to avoid high-wind periods to avoid impacting on adjacent receivers. 			
AQ2	Dust deposition impacts	Ensure that the consultation strategy (refer to chapter 5) includes provision for managing dust nuisance complaints during the work.	Contractor	Construction	Additional safeguard
AQ3	Improving energy efficiency and sustainability	Machinery onsite would be required to run efficiently to ensure optimal performance, minimise down time and improve fuel efficiency.	Contractor	Construction	Additional safeguard
AQ4	Dust deposition impacts	Stabilisation would be undertaken within the proposal as each section of work is completed or in areas that are inactive for more 20 days.	Contractor	Construction	Additional safeguard

No.	Impact	Environmental safeguards	Responsibility	Timing	Standard / additional safeguard
GGCC1	Manage and reduce fuel consumption	Consider using biofuels, lower emission fuels (e.g. e10) or fuels that allow the plant to run more efficiently during construction. Vehicles, plant and machinery would be appropriately sized for the task and properly maintained so as to achieve optimum fuel efficiency.	Construction contractor	Construction	Additional safeguard
GGCC2	Use low embodied energy materials	Consider using recycled or locally sourced materials (where readily available, economic, and fit for purpose) to reduce impacts from transportation emissions, reduce fuel costs and support local economies. Deliveries would be programmed so that the minimum amount of trips are made without compromising site requirements.	Construction contractor	Construction	Additional safeguard
GGCC3	Use low embodied energy materials	Ensure the detailed design considers opportunities to reduce construction material quantities.	Roads and Maritime	Detailed design	Additional safeguard
GGCC4	Maintain and reduce vehicle emissions for the whole proposal	The Roads and Maritime <i>Resource Recovery Exemptions</i> , will be followed to maximise opportunities to reuse construction and demolitions materials where feasible and permissible.	Construction contractor	Construction	Additional safeguard
GGCC5	Manage the design to accommodate the climate change factors of increased temperature and rainfall events across the whole proposal	Consider options in adopting the latest pavement design to ensure resilience against extreme temperature and rainfall events. Detailed design for rainfall, runoff and waterways to take into consideration the effects of sea level rise, changes to rainfall frequency and/or intensity as a result of climate change as per the Roads and Maritime <i>Technical Guide: Climate Change Adaptation for the State Road Network</i>	Roads and Maritime	Detailed design	Additional safeguard

No.	Impact	Environmental safeguards	Responsibility	Timing	Standard / additional safeguard
GGCC6	Manage the design to accommodate the climate change factors of increased temperature and rainfall events across the whole proposal	Detailed design would be required to consider adaptation and resilience of the proposed road design to better respond to potential climate change impacts (temperature and rainfall).	Roads and Maritime	Detailed design	Additional safeguard
W1	Waste	<p>A Waste Management Plan (WMP) will be prepared and implemented as part of the CEMP. The WMP will include but not be limited to:</p> <ul style="list-style-type: none"> • Measures to avoid and minimise waste associated with the proposal • Classification of wastes and management options (re-use, recycle, stockpile, disposal) • Statutory approvals required for managing both on and off-site waste, or application of any relevant resource recovery exemptions • Procedures for storage, transport and disposal • Monitoring, record keeping and reporting. <p>The WMP will be prepared taking into account the <i>Environmental Procedure - Management of Wastes on Roads and Maritime Services Land</i> (Roads and Maritime, 2014f) and relevant Roads and Maritime Waste Fact Sheets.</p>	Contractor	Detailed design / pre-construction	Core standard safeguard

No.	Impact	Environmental safeguards	Responsibility	Timing	Standard / additional safeguard
CI1	Cumulative traffic impacts when building the proposal	<p>If required, modify the proposal's construction traffic management plan on account of any identified cumulative impacts to:</p> <ul style="list-style-type: none"> Implement traffic management controls to respect critical timing requirements of these other projects Carefully select appropriate work site access and egress locations. <p>Monitor traffic levels and network performance across the proposal footprint and wider area to consider cumulative effects from other projects.</p>	Roads and Maritime/ contractor	Pre-construction/c onstruction	Additional safeguard
CI2	Cumulative impacts	Consult with other developers to obtain information about project timeframes and impacts. Identify and implement appropriate safeguards and management measures to minimise cumulative impacts.	Roads and Maritime Contractor	Pre-construction Construction	Additional safeguard
CI3	Cumulative impacts	Consult with other developers before starting work to manage the interfaces of the proposal's staging and programming in combination with the other projects occurring in the area.	Roads and Maritime	Pre-construction	Additional safeguard
CI4	Cumulative impacts	Prepare all environmental management plans (including but not limited to the Construction Noise and Vibration Management Plan and Traffic Management Plan) to consider other developments in the area.	Contractor	Pre-construction	Additional safeguard

4.3 Licensing and approvals

The submissions do not alter the already proposed licence requirements detail in Table 7.2 of the REF, a copy of the table is below for information (Table 4-2):

Table 4-2: Summary of licensing and approval required

Instrument	Requirement	Timing
Fisheries Management Act 1994 (s199)	Pursuant to <i>Code Of Practice for Minor works in NSW waterways</i> (RMS 2014) and in accordance with Section 199 of the FM Act, RMS is required to consult with the Minister for Primary Industries regarding dredging or reclamation works within Harris Creek and Williams Creek. Pursuant to Section 199(b), RMS must consider any matters concerning the proposed work that are raised by the Minister within 21 days after the giving of the notice. [Note exemption pursuant to s263A of the <i>Fisheries Management (General) Regulation 2010</i>]	Consultation with the Minister for Primary Industries shall be carried out prior to the commencement of any work within Harris Creek and Williams Creek.
<i>Fisheries Management Act 1994 (s218)</i>	Notification to the Minister for Primary Industries prior to any activities to construct, alter or modify a dam, weir or reservoir on a waterway.	Prior to start of the activity
Fisheries Management Act 1994 (s219)	Permit to obstruct the free passage of fish (temporary or permanent) from the Minister for Primary Industries.	Prior to start of the activity.
Heritage Act 1977 (s60)	Permit to carry out activities to an item listed on the State Heritage Register or to which an interim heritage order applies from the Heritage Council of NSW.	Prior to start of the activity.
Roads Act 1993 (s138)	Road occupancy licence to dig up, erect a structure or carry out work in, on or over a road	Prior to start of the activity

5 References

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Appendix A

Project update community newsletter

Media release

Key benefits and features

The main benefits of the proposal include:

- Reduced traffic congestion
- Increased road capacity catering for current and predicted traffic volumes
- Improved road safety
- More reliable travel times
- Improved pedestrian and cyclist connectivity to Holsworthy Train Station and Hammondville Park
- Improved freight access and efficiency.

The key features of the proposal include:

- Widening and upgrading Heathcote Road between Infantry Parade and The Avenue to a four lane divided road
- Upgrading the Macarthur Drive and The Avenue intersections to traffic light intersections
- Duplication of the bridges over Harris Creek, Williams Creek and the T2 Airport railway line
- Replacement of the existing bridges at Harris Creek and Williams Creek
- Providing a pedestrian and cyclist shared path along the road, connecting Voyager Point to Holsworthy Train Station and towards Hammondville.



The existing intersection at The Avenue, looking south

Community information drop in sessions

We will host two community information sessions where you can view the Review of Environmental Factors and speak to members of the project team.

A formal presentation will not be provided but please feel free to drop in at any time:

Thursday 3 November, 5pm to 7pm
St Christopher’s Catholic Primary School Hall
205 Heathcote Road, Holsworthy

Saturday 5 November, 10am to midday
St Christopher’s Catholic Primary School Hall
205 Heathcote Road, Holsworthy

Display locations

The Review of Environmental Factors is available to view in person at:

Liverpool City Council
33 Moore Street, Liverpool

Moorebank Library
Cnr Nuwarra Road & Maddecks Avenue, Moorebank

You can also view or download it online at rms.nsw.gov.au/heathcoteroad.



The existing Harris Creek Bridge

Have your say

Roads and Maritime is seeking community and stakeholder feedback on the concept design and Review of Environmental Factors for the proposed Heathcote Road upgrade by **Monday 14 November**.

Written comments should be sent to:

Email: heathcoteroad@rms.nsw.gov.au

Mail: Heathcote Road upgrade
Roads and Maritime Services
PO Box 973, Parramatta CBD NSW 2124



Th existing Heathcote Road near Hammondville Park

Contact Us

For more information or to provide feedback, please contact the project team:

1800 749 119

heathcoteroad@rms.nsw.gov.au

Heathcote Road upgrade
Roads and Maritime Services
PO Box 973, Parramatta CBD NSW 2124

Visit www.rms.nsw.gov.au/heathcoteroad



October 2016
RMS 16.464

Privacy Roads and Maritime Services (“RMS”) is subject to the Privacy and Personal Information Protection Act 1998 (“PIIP Act”) which requires that we comply with the Information Privacy Principles set out in the PIIP Act. All information in correspondence is collected for the sole purpose of delivering this project. The information received, including names and addresses of respondents, may be published in subsequent documents unless a clear indication is given in the correspondence that all or part of that information is not to be published. Otherwise RMS will only disclose your personal information, without your consent, if authorised by the law. Your personal information will be held by RMS at 27 Argyle Street, Parramatta NSW 2150. You have the right to access and correct the information if you believe that it is incorrect.

What happens next?

Roads and Maritime will prepare a submissions report outlining the feedback received and our responses. We will consider all comments in finalising the proposal and continue to keep the community informed as the project progresses.

Consultation on strategic design – 2015/2016

Investigations to develop concept design and Review of Environmental Factors – 2015/2016

Consultation report – 2016

Consultation on concept design and Review of Environmental Factors – 2016

Submissions report – 2016

Approval to proceed – 2017

Finalise detailed design*

Award construction tender*

Start construction*

Open to traffic*

*Subject to project approval and funding availability

This document contains important information about road projects in your area. If you require the services of an interpreter, please contact the Translating and Interpreting Service on **131 450** and ask them to call the project team on **1300 706 232**. The interpreter will then assist you with translation.



Macarthur Drive intersection looking towards Harris Creek Bridge

Heathcote Road upgrade Between Infantry Parade, Holsworthy and The Avenue, Voyager Point

October 2016

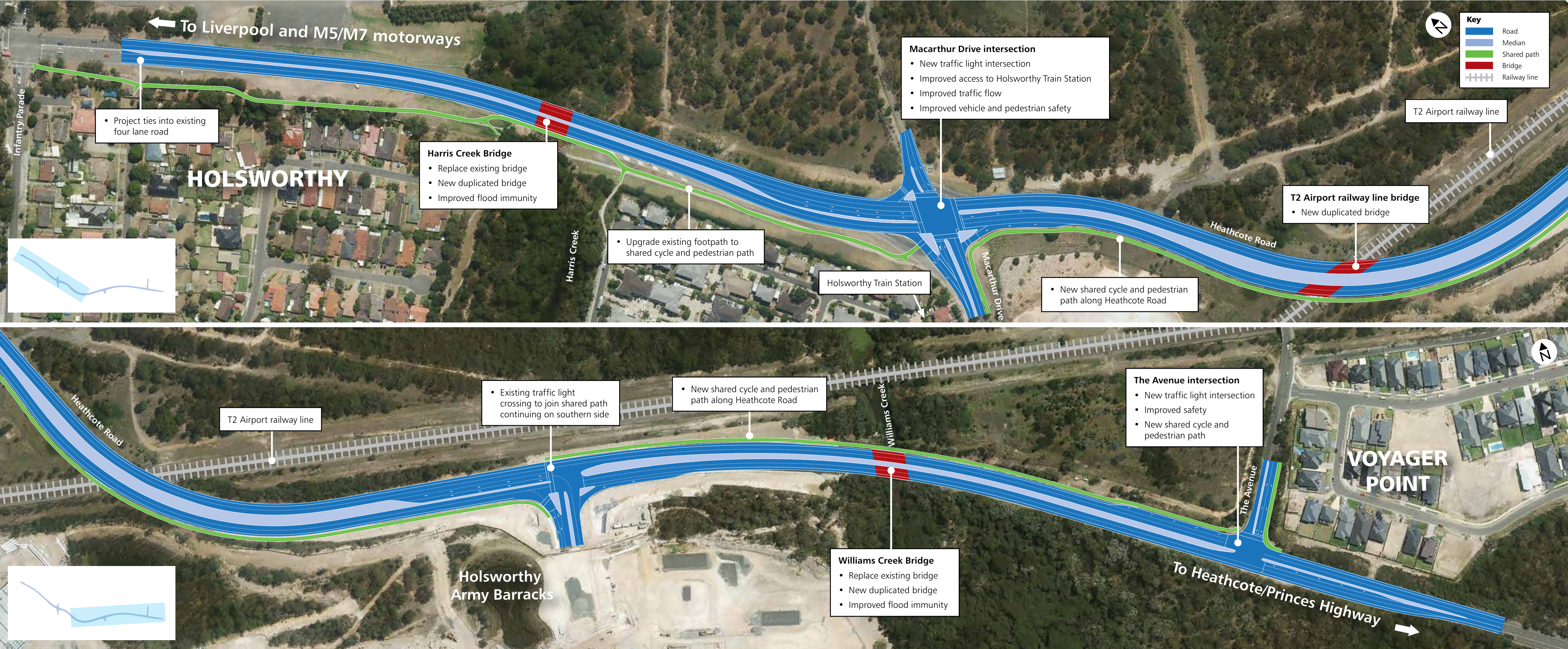
The NSW Government is proposing a two kilometre upgrade of Heathcote Road. The upgrade would reduce traffic congestion, improve safety, meet future traffic volumes and improve pedestrian and cyclist connectivity to Holsworthy Train Station and surrounding areas.

Heathcote Road is a major arterial road that runs between Liverpool and Heathcote, connecting Sydney’s southern suburbs to the motorway network in the south-west including the M5 and M7 motorways. It is also a key link for commuters who drive, walk or cycle to Holsworthy Train Station and the Holsworthy Army Barracks.

The existing road between Infantry Parade and The Avenue is generally a two lane road and contains three bridges across Williams Creek, the T2 Airport railway line and Harris Creek. Congestion is often experienced along these sections of the road, particularly near the Macarthur Drive roundabout.

Roads and Maritime Services has prepared a Review of Environmental Factors to examine the potential impact of the Heathcote Road upgrade proposal and outline measures to reduce and manage this impact. The Review of Environmental Factors and concept design for the proposal are on display for community and stakeholder feedback by **Monday 14 November 2016**.

Heathcote Road upgrade





Melanie Gibbons MP
MEMBER FOR HOLSWORTHY
Your voice in State Parliament

MEDIA RELEASE

Thursday, 20 October 2016

HAVE A SAY ON THE HEATHCOTE ROAD UPGRADE REVIEW OF ENVIRONMENTAL FACTORS

Community members are invited to provide feedback on the Review of Environmental Factors for the proposed upgrade of Heathcote Road between Holsworthy and Voyager Point.

State Member for Holsworthy, Melanie Gibbons MP said the NSW Government has proposed to upgrade a two kilometre section of Heathcote Road to reduce congestion, improve safety and meet future traffic demand.

“Carrying more than 30,000 motorists every day, it is also a key link for commuters accessing Holsworthy Train Station and the Holsworthy Army Barracks.” Ms Gibbons said.

“Roads and Maritime Services proposes to widen Heathcote Road to four lanes between Infantry Parade and The Avenue which would also include upgrading the Macarthur Drive and The Avenue intersections to traffic lights.

“The three bridges across Harris Creek, Williams Creek and the railway line would be duplicated, and a pedestrian and cyclist path would be built to connect Voyager Point to Holsworthy Train Station.

“This is the next step in meeting our election commitment of providing two lanes in each direction - it is expected that this duplication would increase vehicle capacity and travel speeds, and reduce travel times, queue lengths and crash rates,” Ms Gibbons said.

Feedback is invited on the Review of Environmental Factors which explains measures to be used to reduce the impact of the project.

Community members can attend one of two information drop in sessions with the project team to ask questions and learn more about the proposal.

Both drop in sessions will be held at St Christopher’s Catholic Primary School Hall at 205 Heathcote Road at Holsworthy on Thursday 3 November from 5pm to 7pm and Saturday 5 November from 10am to 12pm.

Feedback can be provided by Monday 14 November to heathcoteroad@rms.nsw.gov.au or PO Box 973 Parramatta CBD NSW 2124.

MEDIA: Daniel Nicholls 02 9825 3653