

# **M1 Pacific Motorway intersection upgrade at Weakleys Drive and John Renshaw Drive**

## **Submissions report**

**July 2017**



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**Roads and Maritime Services**

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**July 2017**

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# Executive summary

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This submissions report relates to the review of environmental factors (REF) prepared for the proposed M1 Pacific Motorway intersection upgrade at Weakleys Drive and John Renshaw Drive, and should be read in conjunction with that document.

Roads and Maritime Services proposes to upgrade the M1 Pacific Motorway at the intersection with Weakleys Drive and John Renshaw Drive at Beresfield (the proposal).

The proposal includes:

- replacing the existing roundabout with traffic lights
- two through lanes on all approaches
- additional turning lanes on all approaches, including provision of two right turn lanes from the M1 Pacific Motorway to John Renshaw Drive
- two northbound lanes on Weakleys Drive from the traffic lights to Enterprise Drive
- upgrading the existing left slip lane to the M1 Pacific Motorway (southbound)
- an additional left turn lane from John Renshaw Drive (westbound) to the M1 Pacific Motorway (southbound) to manage periods of peak holiday southbound traffic
- installing drainage, lighting, signage, barriers, fencing and Intelligent Traffic Systems (ITS)
- landscaping, utility relocations, and ancillary works such as stockpiling and construction works areas
- closing the informal car park in the south-western corner of the existing intersection which operates as a Driver Reviver site during peak holiday periods
- closing the oversize over mass truck stop bay on the M1 Pacific Motorway (southbound).

The REF was publicly displayed for 24 days between 14 November and 7 December 2016.

A total of nine submissions were received in response to the display of the REF. This report summarises the issues raised and provides responses to each issue. Of the submissions:

- three clearly stated support for the proposal
- two clearly stated an objection to the proposal.

Six suggested a change to one or more elements of the proposal.

The main issues raised in submissions related to:

- concern that traffic lights will not solve current congestion and may worsen congestion during peak times
- whether alternatives were considered, with suggestions a fly over or grade separated intersection would better address congestion
- concern about the closure of the right turn in and out of the former Boral facility to the M1 Pacific Motorway
- the closure of the informal car park in the south-western corner of the existing intersection.

During the development of the proposal, Roads and Maritime consulted with the operators of the Driver Reviver, the Morisset Lions Club. Preliminary feasibility investigations were carried out on about 20 potential alternative Driver Reviver sites. Following this review two potential sites were discussed with the Morisset Lions Club, including a long term option on the Hunter Expressway and a short term temporary lease area in Beresfield. The Morisset Lions Club declined an offer to carry out further feasibility investigations on the two potential driver reviver sites.

There are a number of existing facilities in close proximity to the Beresfield Driver Reviver accessible by motorists for fatigue management, including three 24 hour service stations.

Appropriate signage and information will be provided on the Roads and Maritime and Centre for Road Safety websites to notify road users of the closure of the Beresfield site and provide

information about alternative rest areas, service facilities and Driver Revivers at Ourimbah and Twelve Mile Creek. Roads and Maritime will continue to work with the Morisset Lions Club on the closure of the Beresfield Driver Reviver.

As part of an overarching strategy about fatigue management on the road network, separate investigations may be carried out for alternative driver reviver or rest area sites. Any new site would be considered under a separate proposal and environmental assessment.

A minor extension of the proposal area as assessed in the REF is required to accommodate an additional street light along the northern side of John Renshaw Drive east. This would not result in any new environmental impacts.

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# 1 Introduction and background

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## 1.1 The proposal

Roads and Maritime Services propose to upgrade the M1 Pacific Motorway intersection upgrade at Weakleys Drive and John Renshaw Drive (the proposal).

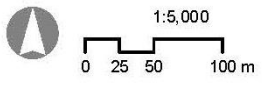
The proposal includes:

- replacing the existing roundabout with traffic lights
- two through lanes on all approaches
- additional turning lanes on all approaches including provision of two right turn lanes from the M1 Pacific Motorway to John Renshaw Drive
- two northbound lanes on Weakleys Drive from the traffic lights to Enterprise Drive
- upgrading the existing left slip lane to the M1 Pacific Motorway (southbound)
- an additional left turn lane from John Renshaw Drive (westbound) to the M1 Pacific Motorway (southbound) to manage periods of peak holiday southbound traffic
- installing drainage, lighting, signage, barriers, fencing and Intelligent Traffic Systems (ITS)
- landscaping, utility relocations, and ancillary works such as stockpiling and construction works areas
- closing the informal car park in the south-western corner of the existing intersection which operates as a Driver Reviver site during peak holiday periods
- closing the oversize over mass truck stop bay on the M1 Pacific Motorway (southbound).

The proposal is in the Newcastle local government area (LGA), in the Roads and Maritime Hunter Region. An overview of the proposal is provided in Figure 1-1.

The proposal is part of the Australian and New South Wales (NSW) Governments' M1 Pacific Motorway Productivity Package, which also includes upgrading the M1 Pacific Motorway between Tuggerah and Doyalson and between the Kariong and Somersby interchanges.

A more detailed description of the proposal is found in the M1 Pacific Motorway intersection upgrade at Weakleys Drive and John Renshaw Drive REF prepared by Roads and Maritime in November 2016.



M1 Pacific Motorway - John Renshaw Drive intersection upgrade  
**Review of Environmental Factors**

Projection: GDA 1994 MGA Zone 56 \*Subject to detailed design

**FIGURE 1-1: The Proposal Area**



## 1.2 REF display

Roads and Maritime prepared a REF to assess the environmental impacts of the proposed work. The REF was publicly displayed for 24 days between 14 November and 7 December 2016 at Roads and Maritime Services Regional Office (59 Darby Street, Newcastle NSW 2300).

The REF was placed on the Roads and Maritime project website and made available for download. The display location and website link were advertised in the Maitland Mercury, Newcastle Herald and Cessnock Advertiser (Appendix A).

In addition to the above public display, a project update (Appendix A) was sent directly to identified stakeholders and the project update was also distributed to 2300 businesses and residences in Tarro, Beresfield, Blackhill and Thornton. A media release was published on 24 November 2016 reminding the community to comment on the proposal (Appendix A).

Consultation with the Morisset Lions Club, operator of the Driver Reviver located at the informal car park in the south-western corner of the existing intersection, has been ongoing through the proposal's development and is documented in Chapter 5 of the REF. Since finalisation of the REF, Roads and Maritime held a meeting with the Morisset Lions Club on 7 October 2016 and sent a consultation letter on 26 November 2016. The content and outcomes are detailed in section 3.2.

## 1.3 Purpose of the report

This submissions report relates to the REF prepared for the M1 Pacific Motorway intersection upgrade at Weakleys Drive and John Renshaw Drive, 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 (Chapter 2). It describes and assesses the environmental impact of changes to the proposal (Chapter 3) and identifies revised environmental management measures (Chapter 4).

## 2 Response to issues

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Roads and Maritime received nine submissions, between 14 November and 7 December 2016. Table 2.1 lists the respondents and each respondent's allocated submission number. The table also indicates where the issues from each submission have been addressed in Chapter 2 of this report.

Table 2.1: Respondents

Respondent	Submission No.	Section number where issues are addressed
Business	1	Section 2.3.1
Fire and Rescue NSW	2	Section 2.3.2
Individual	3	Section 2.2
Individual	4	Section 2.3.1
Business	5	Section 2.3.1
Business	6	Sections 2.3.1, 2.4 and 2.5
Individual	7	Section 2.2
Business	8	Sections 2.3.1, 2.3.2 and 2.4
Individual	9	Noted: support of the proposal – no issues raised

### 2.1 Overview of issues raised

A total of nine submissions were received in response to the display of the REF. This included submissions from one government agency and eight from the community.

Each submission has been examined individually to understand the issues being raised. The issues raised in each submission have been extracted and collated, and corresponding responses to the issues have been provided. Where similar issues have been raised in different submissions, only one response has been provided. The issues raised and Roads and Maritime response to these issues forms the basis of this chapter.

Of the nine submissions:

- three clearly stated support for the proposal
- two clearly stated an objection to the proposal.

Six stated an objection or suggested some sort of change to one or more elements of the proposal. No issues relating to the proposal were raised by government agencies.

The main issues raised in submissions related to:

- concern traffic lights will not solve current congestion and may worsen congestion during peak times
- suggestion a flyover or grade separated intersection would be a more appropriate solution to address congestion

- concern about the closure of the right turn in and out of the former Boral facility to the M1 Pacific Motorway
- the closure of the informal car park in the south-western corner of the existing intersection.

No form letters were received during the exhibition period.

## 2.2 Issue 1 - need and options considered

### Submission numbers

3 and 7

### Issue description

These submissions raised issues about the options considered and the selected preferred option. They are summarised as follows:

- concern traffic lights will not solve current congestion and may worsen congestion during peak times
- suggested a flyover or grade separated intersection would be a more appropriate solution
- commented consideration should be given to other options.

### Response

The proposal includes traffic lights to control traffic movements and distribute traffic more evenly. This combined with additional traffic lanes to increase capacity at the intersection would ease traffic congestion and improve travel times.

Traffic modelling carried out on the existing and proposed intersection layout indicates the proposed traffic light controlled intersection performs considerably better in improving traffic flow, reducing delays and queue lengths compared to if the intersection were to remain a roundabout.

One of the alternative options considered included a flyover. Investigations showed a flyover and/or other major structures would constrain future upgrade options on the road network.

Roads and Maritime carried out extensive studies and investigations as part of the identification and development of options. The proposed design best meets the project objectives, improves existing traffic conditions and maintains future flexibility. The design achieves the best overall balance between environmental, technical, value for money and safety considerations. It would also be compatible with the proposed extension of the M1 Motorway to Raymond Terrace. The design also takes into account growth in the surrounding areas and future road and network upgrades.

Australian road design and road user safety standards have been applied to all aspects of the design and traffic management options.

## 2.3 Issue 2 - description of the proposal

### 2.3.1 Design

#### Submission numbers

1, 4, 5, 6 and 8

#### Issue description

The following issues were raised in relation to aspects of the design:

- concern about the closure of the right turn in and out of the former Boral facility to the M1 Pacific Motorway and the potential impact this closure would have on the Rural Fire Service's ability to access and control fire on the property

- suggested providing additional storage for traffic turning right from Weakleys Drive into John Renshaw Drive
- suggested increasing the merge length on the M1 Pacific Motorway southbound to minimise queuing through the intersection
- concern about potential traffic conflict between vehicles accessing the deceleration lane into Lenaghans Drive and the extended slip lane
- suggested providing a dual slip lane from John Renshaw Drive to the M1 Pacific Motorway
- concern about the removal of the oversize, over mass (OSOM) heavy vehicle stop bay.

## Response

The proposal would remove the right turn in and out of the former Boral facility on the M1 Pacific Motorway southbound carriageway and close the existing access across the median. The existing left turn in and out of the Boral facility on the M1 Pacific Motorway northbound carriageway would be maintained. This would improve road safety and is consistent with the project's safety objectives. The property owner has been consulted on the proposed changes throughout project development.

Roads and Maritime consulted with Fire and Rescue NSW and other emergency services during the environmental assessment. No issues were raised relating to the closure of the right turn access to the property. The closure will not prevent emergency service vehicles accessing the property. An emergency vehicles crossover point on the M1 Pacific Motorway will be provided opposite the Lenaghans Drive turn off about 250 metres to the south.

The proposed design provides sufficient vehicle storage for traffic turning right from Weakleys Drive into John Renshaw Drive. Future traffic light phasing will allow traffic from Weakleys Drive turning right to operate at the same time as traffic from the M1 Pacific Motorway turning right. Future traffic predictions indicate the traffic light phase time required for these coinciding movements will be driven by the high M1 Pacific Motorway right turn demands and, as such, sufficient traffic light phase time will be available for the right turn movements from Weakleys Drive. Predicted traffic volumes indicate the 100 metre long storage bay for the right turn from Weakleys Drive is likely to be sufficient to meet the 95 percentile peak queue lengths until around 2032. An additional right turn lane could be provided in the future if required.

The proposal has extended the merge length on the M1 Pacific Motorway southbound. The proposal extends the dual southbound departure lanes on the M1 Pacific Motorway by around 120 metres further than the existing layout and also provides an unmarked zip merge arrangement to allow both departure lanes equal right-of-way at the merge point. This will cater for projected traffic volumes and minimise the potential for queuing through the intersection.

The design of the extended slip lane from John Renshaw Drive east to the M1 Pacific Motorway southbound considered safe access into the Lenaghans Drive deceleration lane. The design provides adequate time for vehicles accessing the M1 Pacific Motorway southbound from the dual departure lanes, to move into the left lane before the beginning of the deceleration lane into Lenaghans Drive. This design meets Austroads design requirements for safe negotiation, lane change and deceleration before entering Lenaghans Drive.

A dual southbound slip lane from John Renshaw Drive to the M1 Pacific Motorway was considered during the concept design phase. The option was discounted as it did not perform favourably against project cost and environmental objectives. However the proposal provides for an additional 'offline' left turn from John Renshaw Drive westbound to the M1 Pacific Motorway southbound which would be used to manage peak holiday traffic and any incidents which result in closure of the southbound slip lane.

The removal of the OSOM stop bay is required to upgrade and improve the safety of the existing slip lane from John Renshaw Drive (westbound) to the M1 Pacific Motorway (southbound). Removal of the OSOM stop bay would remove safety risks associated between accelerating and merging vehicles on the slip lane with decelerating OSOM and heavy vehicles using the stop bay.

The removal of the OSOM stop bay would not impact on OSOM vehicles. The stop bay has not been required for its intended purpose of catering for OSOM vehicle curfews since the opening of the Hunter Expressway. The OSOM curfew restrictions requiring provision of the stop are no longer applicable. The removal of the stop bay would not impact heavy vehicles' ability to stop as other, safer, locations exist in the local area including the Beresfield service centre, the Twelve Mile Rest Area and the truck stop on Industrial Drive at Mayfield.

### 2.3.2 Public utility adjustment

#### Submission numbers

2 and 8

#### Issue description

The following issues were raised in relation to public utilities:

- recommended a fire hydrant be provided to enable Fire and Rescue NSW to respond more effectively to bushfires in the vicinity
- concern closure of the right hand turn to and from the former Boral facility from the M1 Pacific Motorway would impact on utility providers.

#### Response

Consultation has been carried out with Hunter Water Corporation as part of the design process. The proposal will not impact on existing Hunter Water Corporation assets.

Roads and Maritime has consulted with Transgrid, Telstra and other utilities potentially impacted due to the closure of the right turn from the former Boral facility to the M1 Pacific Motorway, on maintenance access requirements. These utility providers did not raise any issues in relation to the proposed right hand turn closure.

## 2.4 Issue 3 - land use and Socio-economic

#### Submission numbers

6 and 8

#### Issue description

The following issues were raised in relation to land use and socio-economic considerations:

- suggestion to replace Driver Reviver before closing current location to ensure there is somewhere for drivers to stop and/or for passengers to be picked up/dropped off
- commented that concept approval for the proposed Black Hill Industrial development considers using the existing access to the former Boral facility for a left in/left out arrangement as a secondary access for the development.

#### Response

Roads and Maritime has consulted with the operators of the Driver Reviver, Morisset Lions Club, and carried out investigations into potential alternative Driver Reviver sites. Based on the outcomes of the investigations and consultation, no alternative site would be provided as part of the proposal. The informal car park area used as a Driver Reviver would be accessible until construction starts.

There is an existing 24 hour service centre about 300 metres from the intersection on John Renshaw Drive which caters for northbound holiday traffic; and two 24 hour service stations on Weakleys Drive within 800 metres of the intersection that cater for north, south and west bound traffic. There are opportunities for motorists to stop at Heatherbrae (11 kilometres to the north), Raymond Terrace (18 kilometres to the north) and the Twelve Mile Creek rest area (about 30 kilometres to the north).

The greatest distance between stops from Sydney to Coffs Harbour is between the M1 Warnervale 24 hour service centre and the Beresfield service centre (49 kilometres). This distance between places to stop would not increase with the closure of the site due to the presence of the Beresfield 24 hour service centre. There are a range of locations in the Beresfield local area, including the three 24 hour service centres, which would provide safe meeting spots to exchange passengers.

Development of the Black Hill industrial development and approvals for access associated with the development would be subject to a separate Roads and Maritime approval process outside of the scope of this project.

## **2.5 Issue 4 - issues outside of the proposal area**

### **Submission number**

6

### **Issue description**

- questioned timing of the M1 extension to Raymond Terrace
- suggested extending the dual lane on Weakleys Drive to New England Highway.

### **Response**

The NSW Government has committed \$200 million under Rebuilding NSW to get the proposed M1 Pacific Motorway extension to Raymond Terrace ready for construction. The timing of construction is not confirmed and is dependent on planning approval, future traffic needs and funding availability.

Suggestions for road network improvements outside of the current scope of the project have been shared with appropriate staff at Roads and Maritime.

### **3 Changes to the proposal and investigations since preparation of the REF**

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This section details a minor change made to the proposal since the preparation of the REF and concept design and summarises the results of Roads and Maritime's investigations and consultation into alternative Driver Reviver sites.

#### **3.1 Minor extension of proposal area on John Renshaw Drive east**

##### **3.1.1 Description**

A minor extension of the proposal area as assessed in the REF is required to accommodate an additional street light along the northern side of John Renshaw Drive east. This minor extension would extend the proposal area by three metres to the north along a 45 metre section of John Renshaw Drive and an additional one metre to the east, resulting in a total additional area of about 150 square metres. The revised proposal area is shown in Figure 1-1. This street light is required in the proposed location outside of the original proposal area in accordance with the relevant Roads and Maritime road design standards and guidelines.

##### **3.1.2 Environmental assessment**

The minor extension in proposal area for the installation of the street light would not result in any new environmental impacts nor any other measureable changes in the assessment of impacts compared to those identified and assessed in the REF. No native vegetation or trees would be impacted by the installation of the street light.

##### **3.1.3 Revised management and mitigation measures**

No additional mitigation measures are required as a result of this change.

#### **3.2 Investigation of alternative Driver Reviver sites**

As noted in the REF, Roads and Maritime investigated a number of alternative options for a Driver Reviver site in consultation with the Morisset Lions Club.

Roads and Maritime advised the Morisset Lions Club the location of any future rest areas on the M1 Pacific Motorway, which may also accommodate a Driver Reviver, would not be known until a review of rest areas, service centre strategies and road corridor requirements is undertaken as part of broader network assessment outside of the project scope.

Roads and Maritime offered to continue investigating one of two short term options nearby the existing site, if the Morisset Lions Club considered them viable. These included the Buchanan rest area on the Hunter Expressway and a potential short term lease on vacant land on the corner of Kinta Drive and Babilla Close at Beresfield. The Morisset Lions Club did not consider either option suitable.

Roads and Maritime also offered the Morisset Lions Club additional financial assistance to operate the Beresfield Driver reviver until its closure at the end of December 2017.

As part of an overarching strategy about fatigue management on the road network, separate investigations may be carried out for alternative driver reviver or rest area sites. Any new site would be considered under a separate proposal and environmental assessment.

Appropriate signage and information will be provided on the Roads and Maritime and Centre for Road Safety websites notifying road users of the closure of the Beresfield site and provide information about alternative rest areas, service facilities and Driver Revivers at Ourimbah and

Twelve Mile Creek. Roads and Maritime will continue to work with the Morisset Lions Club on the closure of the Beresfield Driver Reviver.

Roads and Maritime will provide temporary advisory information on the M1 Pacific Motorway northbound during peak holiday conditions advising motorists of 24 hour service stations on John Renshaw Drive and Weakleys Drive.



## 4 Environmental management

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The REF for the M1 Pacific Motorway intersection upgrade at Weakleys Drive and John Renshaw Drive identified the framework for environmental management, including safeguards and management measures that would be adopted to avoid or reduce environmental impacts (section 7 of the review of environmental factors).

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

### 4.1 Environmental management plans (or system)

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

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

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

### 4.2 Summary of safeguards and management measures

The REF for the M1 Pacific Motorway intersection upgrade at Weakleys Drive and John Renshaw Drive identified a range of environmental outcomes and management measures that would be required to avoid or reduce the environmental impacts.

Consideration of the issues raised in the submissions (refer Chapter 2) and the minor change to the proposal area (refer Chapter 3) have not resulted in the need for any additional or revised environmental management measures for the project other than those outlined in Chapter 7 of the REF. Should the project proceed, the environmental management measures in Table 4.1 will guide the subsequent phases of the M1 Pacific Motorway intersection upgrade at Weakleys Drive and John Renshaw Drive development.

Minor revisions to the 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~~. These minor revisions mostly update the delegation of responsibility for one or two of the measures.

Management measure SE07 has been removed as Roads and Maritime has completed investigations into alternative sites for a Driver Reviver as part of the project and consultation with the Morisset Lions Club (refer Section 3.2). Management measure TT06 has been amended as the OSOM curfew is no longer applicable and heavy vehicles can stop at existing facilities in Beresfield, Industrial Drive (Mayfield) and the M1 Pacific Motorway Corridor. Management measure TT07 has been introduced to improve motorists awareness of existing 24 hour service stations to take rest stops at Beresfield.

Table 4.1: Summary of environmental safeguards and management measures

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
GEN1	General - minimise environmental impacts during construction	<p>A Construction Environmental Management Plan (CEMP) would be prepared and submitted for review and endorsement of the Roads and Maritime Environment Manager before the start of the activity.</p> <p>As a minimum, the CEMP would address:</p> <ul style="list-style-type: none"> <li>• any requirements associated with statutory approvals</li> <li>• details of how the project would implement the identified safeguards outlined in the REF</li> <li>• issue-specific environmental management plans</li> <li>• roles and responsibilities</li> <li>• communication requirements</li> <li>• induction and training requirements</li> <li>• procedures for monitoring and evaluating environmental performance, and for corrective action</li> <li>• reporting requirements and record-keeping</li> <li>• procedures for emergency and incident management</li> <li>• procedures for audit and review.</li> </ul> <p>The endorsed CEMP would be implemented during the undertaking of the activity.</p>	Construction contractor / Roads and Maritime project manager	Pre-construction
GEN2	General - notification	All businesses and other key stakeholders (eg local councils) affected by the activity would be notified at least five days before the start of the activity.	Construction contractor / Roads and Maritime project manager	Pre-construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
GEN3	General – environmental awareness	<p>All personnel working on site would receive training to ensure awareness of environment protection requirements to be implemented during the project. This would include up-front site induction and regular "toolbox" style briefings.</p> <p>Site-specific training would be provided to personnel engaged in activities or areas of higher risk. These include:</p> <ul style="list-style-type: none"> <li>• areas of Aboriginal heritage sensitivity</li> <li>• threatened species habitat.</li> </ul>	Construction contractor / Roads and Maritime project manager	Pre-construction
B01	General	<p>A Flora and Fauna Management Plan would 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 would include, but not be limited to:</p> <ul style="list-style-type: none"> <li>• plans showing areas to be cleared and areas to be protected, including exclusion zones, protected habitat features and revegetation areas</li> <li>• requirements set out in the <i>Landscape Guideline</i> (RTA, 2008)</li> <li>• pre-clearing survey requirements</li> <li>• procedures for unexpected threatened species finds and fauna handling;</li> <li>• procedures addressing relevant matters specified in the <i>Policy and guidelines for fish habitat conservation and management</i> (DPI Fisheries, 2013)</li> <li>• protocols to manage weeds and pathogens.</li> </ul>	Construction contractor	Pre-construction
B02	Reduce Vegetated Clearing Limits	Measures to further avoid and minimise the construction footprint and Vegetated Clearing Limits or hollow-bearing tree removal would be investigated during detailed design and implemented where practicable and feasible. The clearing of native vegetation must be minimised with the objective of reducing impacts to any threatened species, populations and ecological communities to the greatest extent practicable.	<u>Design contractor</u> Construction contractor	Detailed design / pre-construction
B03	Pre-clearing process	This would be carried out in accordance with the requirements of the Roads and Maritime's Biodiversity Guidelines (RTA, 2011) - <i>Guide 1: Pre-clearing process</i> . Including:	Construction contractor	Pre-construction/ construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
		<ul style="list-style-type: none"> <li>• Consult with an ecologist to determine the location of suitable nearby habitat for the release of fauna that may be encountered during the pre-clearing process or habitat removal. Mark the pre-determined habitat identified for fauna release on a map</li> <li>• Prior to clearing: <ul style="list-style-type: none"> <li>a. Confirm the locations of biodiversity features including: <ul style="list-style-type: none"> <li>▪ Hollow-bearing trees</li> <li>▪ Lower Hunter Spotted Gum - Ironbark Forest in the Sydney Basin Bioregion EEC</li> <li>▪ <i>Callistemon linearifolius</i> (Netted Bottle Brush)</li> </ul> </li> <li>b. Identify fauna that have the potential to be disturbed as a result of clearing activities</li> <li>c. Ensure an ecologist checks for the presence of threatened flora and fauna species that were identified in the environmental assessment as likely to occur, including: <ul style="list-style-type: none"> <li>▪ <i>Rutidosia heterogama</i> (Heath Wrinklewort)</li> <li>▪ <i>Tetraloche juncea</i> (Black-eyed Susan)</li> <li>▪ <i>Melaleuca biconvexa</i> (Biconvex Paperbark)</li> </ul> <p>Undertake these checks during optimal conditions for the target species where possible</p> </li> <li>d. Record the details for all hollow-bearing trees, trees containing threatened fauna and threatened flora</li> <li>e. Mark habitat features to be protected during construction</li> <li>f. Confirm the location of pre-determined habitat identified for the release of any fauna encountered on site</li> <li>g. Submit and updated maps/plans, habitat features and recommended clearing procedures to the project manager and/or environment manager (or equivalent)</li> </ul> </li> <li>• Twenty-four hours before clearing: <ul style="list-style-type: none"> <li>a. Licensed wildlife carers and/or ecologists should capture and/or remove fauna that have the potential to be disturbed as a result of clearing activities</li> <li>b. Relocate fauna into pre-determined habitat identified for fauna release.</li> </ul> </li> </ul>		

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
		<ul style="list-style-type: none"> <li>c. All fauna handling should be carried out by licensed wildlife carers and/or ecologists and in accordance with Guide 9: fauna handling</li> <li>d. Inform clearing contractors of any changes to the sequence of clearing if required</li> <li>e. Carry out staged habitat removal as outlined in <i>Guide 4: Clearing of vegetation and removal of bushrock</i> where fauna habitat features have been identified and marked.</li> </ul>		
B04	Exclusion Zones	<p>Locations of the Lower Hunter Spotted Gum - Ironbark Forest in the Sydney Basin Bioregion EEC, <i>Callistemon linearifolius</i> (Netted Bottle Brush) and hollow-bearing trees that are outside of the Vegetation Clearing Limit would be clearly marked and/or fenced to exclude access during construction. This would be carried out in accordance with the requirements of the Roads and Maritime's Biodiversity Guidelines (RTA, 2011) - <i>Guide 2: Exclusion Zones</i>; Including as a minimum:</p> <ul style="list-style-type: none"> <li>• mark exclusion zones on a suitable plan</li> <li>• select a suitable exclusion fence type</li> <li>• allow enough lead time to establish exclusion zones before clearing</li> <li>• mark out exclusion zones with temporary markings such as pegs or paint and where possible use a qualified surveyor</li> <li>• place exclusion zone fencing outside tree protection zones</li> <li>• erect signs to inform personnel of the purpose of exclusion zone fencing</li> <li>• ensure all exclusion zones are regularly inspected and repairs to fencing are made where required</li> <li>• communicate the importance of exclusion zones, and any changes to the zones, to all site staff and visitors (eg in toolbox talks and inductions)</li> <li>• ensure that any breaches of the exclusion zone are reported through the Roads and Maritime environmental incident reporting procedure.</li> </ul>	Construction contractor	Pre-construction/ construction
B05	Vegetation Clearing	<p>Trees and vegetation would be removed in accordance with the Roads and Maritime's Biodiversity Guidelines - <i>Guide 4 – Clearing of Vegetation and Removal of Bushrock</i>. Vegetation clearing would include as a minimum:</p> <ul style="list-style-type: none"> <li>• develop a clearing and grubbing plan with reference to the Vegetation</li> </ul>	Construction contractor	Pre-construction/ construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
		<p>Clearing Limit <u>of the REF</u> and Biodiversity Guidelines and communicate the requirements of the plan to site staff regularly</p> <ul style="list-style-type: none"> <li>document the selection of suitable work methods in a clearing and grubbing plan</li> <li>ensure clearing of vegetation and/or removal of bushrock does not go beyond the approved Vegetated Clearing Limits for the project</li> <li>a staged habitat removal process is to be used when identified hollow-bearing trees, or bushrock is to be removed</li> <li>carefully clear vegetation so as not to mix topsoil with debris and to avoid impacts to surrounding native vegetation</li> <li>keep stockpiles of cleared vegetation under two metres high in accordance with the RTA's Stockpile Site Management Guideline</li> <li>non-woody vegetation (typically grasses and groundcover species) should be incorporated into the stripping of topsoil to retain any organic materials and nutrients within the topsoil layer.</li> </ul>		
B06	Weed and Pathogen Management	<p>Weed and Pathogen management would be done in accordance with the Roads and Maritime's Biodiversity Guidelines – Guide 6 and Guide 7. Including as a minimum:</p> <ul style="list-style-type: none"> <li>develop and implemented a weed management plan for the site</li> <li>Separate weeds from native vegetation where native vegetation is to be used for mulch. Do not use weeds for mulch</li> <li>all weed plant material and topsoil containing weed plant material should be disposed of to an appropriate waste management facility</li> <li>check the Department of Primary Industries (DPI) website (<a href="http://www.industry.nsw.gov.au">www.industry.nsw.gov.au</a>) for the most up-to-date hygiene protocols for each pathogen and for the most recent locations of contamination.</li> </ul>	Construction contractor	Pre-construction/ construction
B07	Nest boxes	<p>Installation of nest boxes is to be undertaken in accordance with Roads and Maritime <i>Biodiversity Guidelines - Guide 8: Nest boxes</i>. Including as a minimum:</p> <ul style="list-style-type: none"> <li>nest boxes are to replace the loss of hollows at a ratio of at least 1:1 (one nest boxes installed for each hollow removed)</li> </ul>	Construction contractor	Pre-construction/ construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
		<ul style="list-style-type: none"> <li>• where nest boxes are required, an ecologist should be engaged to develop a nest box strategy</li> <li>• consult with an ecologist to assist in the implementation of the nest box strategy including installation and monitoring of nest boxes</li> <li>• nest boxes should be supplied for the following species, in line with Table 8.1 and Table 8.2 of Guide 8:               <ol style="list-style-type: none"> <li>a. Microbats</li> <li>b. Squirrel Gliders</li> <li>c. Yellow-bellied Gliders</li> </ol> </li> <li>• the nest box lid should overhang the front and sides of the nest box by at least 25 millimetres to prevent water damage. For monitoring and maintenance purposes, consider using a hinged lid. Do not use metal lids or plates on the roof of the nest box lid</li> <li>• paint the outside of the nest box with non-toxic, dark-coloured, outdoor, water-based acrylic paint. Avoid toxic substances</li> <li>• to assist with drainage, drill three small holes in the base of the nest box</li> <li>• non-toxic woodchips, wood shavings or sawdust could be placed into possum, glider and bird nest boxes to provide extra insulation in cold climates.</li> <li>• an ecologist should be on site during the installation of nest boxes</li> <li>• the preferred method of attaching nest boxes to trees is the Habisure© system. Bolting nest boxes to trees is not recommended.</li> <li>• the density and quantity of each nest box type should reflect the proportion of tree hollow types being removed, the proportion of tree hollow types to be retained in adjacent habitat, the availability of adjacent food resources and the assemblage of hollow-dependant fauna known or likely to occur in the project locality</li> <li>• the location of nest boxes should be as close as possible to the original hollow-bearing tree, consider the type of bark preferred by the target species, be in close proximity to food or other resources, not be installed on trees with existing hollows or where there is a high density of Common Mynas (<i>Acridotheres tristis</i>)</li> </ul>		

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
		<ul style="list-style-type: none"> <li>• orientate nest boxes between north–west and east and so they are not facing lights from adjacent development</li> <li>• install approximately 70 per cent of nest boxes up to one month before the start of any clearing. The remainder of nest boxes would be installed before completion of the project</li> <li>• record the nest box identification number, nest box type, GPS location, species and diameter at breast height of the host tree, nest box height and orientation</li> <li>• undertake ongoing monitoring and maintenance of nest boxes in accordance with the nest box management strategy for the project.</li> </ul>		
B08	Fauna Protection	<p>Any fauna handling would be undertaken by an appropriately licenced ecologist in accordance with the Roads and Maritime’s Biodiversity Guidelines - <i>Guide 9 – Fauna handling</i>. Including as a minimum:</p> <ul style="list-style-type: none"> <li>• if unexpected threatened fauna or flora species are discovered, stop works immediately and follow the Roads and Maritime <i>Unexpected Threatened Species Find Procedure</i> in the RTA Biodiversity Guidelines 2011 – Guide 1 (Pre-clearing process)</li> <li>• allow fauna to leave an area without intervention as much as possible</li> <li>• contact an animal rescue agency/wildlife care group or vet before works start to ensure they are willing and available to be involved in fauna rescue and assist with injured animals</li> <li>• never deliberately kill a snake as all snakes are protected under the National Parks and Wildlife Act 1974 (NSW). If a snake must be handled to remove the risk of harm to the snake or people then handling should only be done by a licensed fauna ecologist or wildlife carer with skills and experience in snake handling.</li> <li>• follow the Hygiene Protocol for the control of disease in frogs (Wellington and Haering 2008) for all frog handling</li> <li>• if handling bats, the handler must be vaccinated against the Australian Bat Lyssavirus (ABL) which is a form of rabies</li> <li>• release fauna into pre-determined habitat identified for fauna release</li> </ul>	Construction contractor	Pre-construction/ construction



No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
		<ul style="list-style-type: none"> <li>keep records of fauna captured and relocated.</li> </ul>		
B09	Revegetation works	<p>Revegetation of areas disturbed by the proposed works would be undertaken in accordance with Roads and Maritime Landscape Plantings QA Specification R179 and the Roads and Maritime Biodiversity Guidelines - <i>Guide 3: Re-establishment of native vegetation</i>. Including as a minimum:</p> <ul style="list-style-type: none"> <li>locally indigenous species would be included as part of landscaping and rehabilitation works to promote native fauna habitat. Species identified on site that are suitable for revegetation works are detailed in Appendix F of the REF.</li> <li>collect local native topsoils and leaf litter and store for use in revegetation works</li> <li>soils in areas to be revegetated should match surrounding soil conditions as closely as possible unless adjacent areas are weedy or contaminated</li> <li>consider appropriate shade and drainage conditions when planting. Provide mulching around plants for dry or potentially weedy sites to help retain moisture and suppress weeds.</li> </ul>	Construction contractor	Pre-construction/ construction
TT01	Traffic and transport	<p>A Traffic Management Plan (TMP) would be prepared and implemented as part of the CEMP. The TMP would be prepared in accordance with the Roads and Maritime <i>Traffic Control at Work Sites Manual</i> (RTA, 2010) and <i>QA Specification G10 Control of Traffic</i> (Roads and Maritime, 2008). The TMP would include:</p> <ul style="list-style-type: none"> <li>confirmation of haulage routes</li> <li>measures to maintain access to local roads and properties</li> <li>site specific traffic control measures (including signage) to manage and regulate traffic movement</li> <li>measures to maintain cyclist access where safe and practicable to do so</li> <li>requirements and methods to consult and inform the local community of impacts on the local road network</li> <li>access to construction sites including entry and exit locations and measures to prevent construction vehicles queuing on public roads.</li> <li>a response plan for any construction traffic incident</li> </ul>	Construction contractor	Pre-construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
		<ul style="list-style-type: none"> <li>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</li> <li>monitoring, review and amendment mechanisms.</li> </ul>		
TT02	Impacts of oversized loads	Roads and Maritime to liaise with industry and Roads and Maritime permits section, on determining an agreement on the management of oversize loads through the site during construction.	Roads and Maritime	Pre-construction/ Construction
TT03	Peak holiday traffic	The TMP would detail provisions to manage peak holiday traffic. This would include no online works to be carried out at this time to maintain the full capacity of the intersection.	Construction contractor	Pre-construction/ construction
TT04	Impact on existing bus route on John Renshaw Drive eastbound	Rovers Coaches would be kept informed of construction activities affecting bus route 160.	Construction contractor	Pre-construction/ construction
TT05	Removal of Driver Reviver site	Roads and Maritime to provide appropriate signage and information on the Roads and Maritime and Driver Reviver websites notifying road users of the closure of the Beresfield site and provide information of alternative rest areas, service facilities and Driver Reviver sites at Ourimbah and Twelve Mile Creek.	Roads and Maritime	Pre- construction, construction and operation
TT06	Removal of M1 Pacific Motorway southbound OSOM vehicle stop bay	Roads and Maritime to provide appropriate signage and information on the Roads and Maritime website notifying heavy vehicle operators of the closure of the stop bay and provide signage to direct heavy vehicle operators to other appropriate facilities.	Roads and Maritime	Pre-construction, construction and operation
TT07		RMS will provide temporary advisory information on the M1 (northbound) during peak holiday conditions advising motorists of 24 hour service stations	Roads and Maritime	Operation

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
		on John Renshaw and Weakleys Drive.		
NV01	Noise and vibration	<p>A Noise and Vibration Management Plan (NVMP) would be prepared and implemented as part of the CEMP. The NVMP would generally follow the approach in the Interim Construction Noise Guideline (ICNG) (DECC, 2009) and identify:</p> <ul style="list-style-type: none"> <li>• all potential significant noise and vibration generating activities associated with the activity</li> <li>• feasible and reasonable mitigation measures to be implemented, taking into account Beyond the Pavement: urban design policy, process and principles (Roads and Maritime, 2014)</li> <li>• a monitoring program to assess performance against relevant noise and vibration criteria.</li> <li>• arrangements for consultation with affected neighbours and sensitive receivers, including notification and complaint handling procedures</li> <li>• contingency measures to be implemented in the event of non-compliance with noise and vibration criteria.</li> </ul>	Construction contractor	<del>Detailed design</del> / Pre-construction
NV02	Impacts on sensitive receivers – Path controls	Stationary noise sources should be enclosed or shielded where feasible and reasonable whilst ensuring that the occupational health and safety of workers is maintained. Appendix D of AS 2436:2010 lists materials suitable for shielding	Construction contractor	Construction
NV03	Site induction	<p>All employees, contractors and subcontractors are to receive an environmental induction. The induction must at least include:</p> <ul style="list-style-type: none"> <li>• all project specific and relevant standard noise and vibration mitigation measures</li> <li>• relevant licence and approval conditions</li> <li>• permissible hours of work</li> <li>• any limitations on high noise generating activities</li> <li>• location of nearest sensitive receivers</li> <li>• construction employee parking areas</li> <li>• designated loading/unloading areas and procedures</li> </ul>	Construction contractor	Construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
		<ul style="list-style-type: none"> <li>• site opening/closing times (including deliveries)</li> <li>• environmental incident procedures.</li> </ul>		
NV04	Behavioural practices	<ul style="list-style-type: none"> <li>• No swearing or unnecessary shouting or loud stereos/radios on site</li> <li>• No dropping of materials from height, throwing of metal items and slamming of doors.</li> </ul>	Construction contractor	Construction
NV05	Equipment Selection	<ul style="list-style-type: none"> <li>• Use only the necessary size and power</li> <li>• Use quieter and less vibration emitting construction methods where feasible and reasonable. For example, when piling is required, bored piles rather than impact-driven piles would minimise noise and vibration impacts</li> <li>• Ensure vehicles are fitted with a maintained Original Equipment Manufacturer exhaust silencer or a silencer that complies with the National Transport Commission's 'In-service test procedure' and standard</li> <li>• Ensure plant including the silencer is well maintained.</li> </ul>	Construction contractor	Pre-construction/ Construction
NV06	Plant noise levels	<ul style="list-style-type: none"> <li>• The noise levels of plant and equipment must have operating Sound Power or Sound Pressure Levels compliant with the criteria in Appendix H of the <i>RMS Construction Noise and Vibration Guideline (2016)</i></li> <li>• Implement a noise monitoring audit program to ensure equipment remains within the more stringent of the manufacturers specifications or Appendix H.</li> </ul>	Construction contractor	Construction
NV07	Rental plant and equipment.	The noise levels of plant and equipment items are to be considered in rental decisions and in any case cannot be used on site unless compliant with the criteria in Table 2 of the <i>RMS Construction Noise and Vibration Guideline (2016)</i> .	Construction contractor	Construction
NV08	Use and siting of plant.	<ul style="list-style-type: none"> <li>• The offset distance between noisy plant and adjacent sensitive receivers is to be maximised.</li> <li>• Plant used intermittently to be throttled down or shut down</li> <li>• Noise-emitting plant to be directed away from sensitive receivers</li> <li>• Only have necessary equipment on site.</li> </ul>	Construction contractor	Construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
NV09	Plan worksites and activities to minimise noise and vibration.	<ul style="list-style-type: none"> <li>Plan traffic flow, parking and loading/unloading areas to minimise reversing movements within the site</li> <li>Where additional activities or plant may only result in a marginal noise increase and speed up works, consider limiting duration of impact by concentrating noisy activities at one location and move to another as quickly as possible.</li> </ul>	Construction contractor	Construction
NV10	Non-tonal and ambient sensitive reversing alarms	<ul style="list-style-type: none"> <li>Non-tonal reversing beepers (or an equivalent mechanism) must be fitted and used on all construction vehicles and mobile plant regularly used on site and for any out of hours work</li> <li>Consider the use of ambient sensitive alarms that adjust output relative to the ambient noise level.</li> </ul>	Construction contractor	Construction
NV11	Minimise disturbance arising from delivery of goods to construction sites.	<ul style="list-style-type: none"> <li>Loading and unloading of materials/deliveries is to occur as far as possible from sensitive receivers</li> <li>Select site access points and roads as far as possible away from sensitive receivers</li> <li>Dedicated loading/unloading areas to be shielded if close to sensitive receivers</li> <li>Delivery vehicles to be fitted with straps rather than chains for unloading, wherever possible</li> <li>Avoid or minimise these movements during the day where possible.</li> </ul>	Construction contractor	Construction
NV12	Plan worksites and activities to minimise noise and vibration.	Very noisy activities should be scheduled for night working hours. If the activities cannot be undertaken during the night, if feasible the activities should be started after 4pm.	Construction contractor	Construction
NV13	Impacts on sensitive receivers – Notification	All noise sensitive receivers likely to be affected would be notified at least five (5) days prior to commencement of any works associated with the activity that may have an adverse noise impact. The notification could be provided as a letterbox drop, phone call or individual briefing. The notification would provide	Construction contractor	Construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
		<p>details of:</p> <ul style="list-style-type: none"> <li>the project</li> <li>the construction period and construction hours</li> <li>contact information for project management staff</li> <li>complaint and incident reporting</li> <li>how to obtain further information.</li> </ul> <p>Have a documented complaints process, including an escalation procedure so that if a complainant is not satisfied there is a clear path to follow.</p>		
AQ01	General air quality impacts	In accordance with <i>G36 Environmental Protection Section 4.4</i> management strategies to minimise the impact of dust and other emissions on the surrounding environment would be included in the CEMP.	Construction contractor	Pre-construction and construction
AQ02	Excessive dust from stockpiles	Stockpile management would be in accordance with the Landcom <i>Managing Urban Stormwater, Soils and Construction Guidelines</i> including covering stockpiles and storage areas where possible.	Construction contractor	Pre-construction and construction
AQ03	Excessive dust from non-vegetated area	Stage work to ensure progressive vegetation clearing and revegetation can occur. Revegetate as soon as possible.	Construction contractor	Pre-construction and construction
AQ04	Dust from haulage of materials and movement of vehicles	<ul style="list-style-type: none"> <li>Ensure that loads are always covered</li> <li>Manage unsealed roads and areas to avoid the generation of dust</li> <li>Impose speed limits along unsealed routes</li> </ul> <p>Where possible, restrict movements along unsealed routes.</p>	Construction contractor	Construction
AQ05	Excessive exhaust emissions from construction plant and	<ul style="list-style-type: none"> <li>Inspect plant/equipment before the start of construction on site to ensure efficient operation and compliance with manufacturers specifications</li> <li>Carry out routine servicing, maintenance and visual inspections to ensure that equipment continues to operate efficiently.</li> </ul>	Construction contractor	Pre-construction and regularly during construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
	equipment			
UD01	Landscape character and visual impact.	<p>An Urban Design Plan would be prepared to support the final detailed project design. The Urban Design Plan would be prepared in accordance with relevant guidelines, including:</p> <ul style="list-style-type: none"> <li>• Beyond the Pavement urban design policy, process and principles (Roads and Maritime, 2014)</li> <li>• Landscape Guideline (RTA, 2008 – or later update).</li> </ul> <p>The Plan would include design treatments for:</p> <ul style="list-style-type: none"> <li>• location and identification of existing vegetation and proposed landscaped areas, including species to be used</li> <li>• built elements including retaining walls, bridges and noise walls</li> <li>• cyclist elements and consideration of future provision for pedestrians</li> <li>• fixtures such as lighting, fencing and signs</li> <li>• details of the staging of landscape works taking account of related environmental controls such as erosion and sedimentation controls and drainage</li> <li>• procedures for monitoring and maintaining landscaped or rehabilitated areas.</li> </ul>	Design Contractor and Roads and Maritime	Detailed design
UD02	Visual impact of altered road character from clearance of vegetation including EECs.	Landscaping would be carried out in accordance with <i>Roads and Maritime Landscape Guidelines</i> (RTA, 2008) as detailed in the Urban Design report (KI Studios, 2016).	Construction contractor	Construction
SE01	Socio-economic	A Community and Stakeholder Consultation Sub Plan (CSCP) would be prepared and implemented as part of the CEMP to help provide timely and accurate information to the community during construction. The CSCP would include (as a minimum):	Construction contractor	Pre-construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
		<ul style="list-style-type: none"> <li>mechanisms to provide details and timing of proposed activities to affected businesses and social infrastructure, including changed traffic and access conditions</li> <li>contact name and number for complaints.</li> </ul> <p>The CSCP would be prepared in accordance with the <i>Roads and Maritime's Community Engagement and Communications: A resource manual for staff</i> (2012).</p>		
SE02	Impacts on businesses and the community during construction	At least two weeks prior to the start of work, businesses and social infrastructure in the Weakleys Drive industrial precinct would be notified of the nature and likely duration of the proposal and provided with a 24 hour phone hotline that would be established for the construction duration.	Construction contractor	Construction
SE03	Impacts on businesses and the community during construction	Ongoing community consultation would be carried out in accordance with the <i>Roads and Maritime's Community Engagement and Communications: A resource manual for staff</i> (2012) and the proposal's consultation strategy.	Roads and Maritime Construction contractor	Pre-construction
SE04	Impacts on businesses and the community during construction	A complaint handling procedure and register would be included in the CEMP.	Construction contractor	Construction
SE05	Interruptions to utility services	Businesses and social infrastructure in the Beresfield industrial estate would be informed before any interruptions to utility services that may be experienced as a result of utilities relocation.	Construction contractor	Construction



No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
SE06	Closure of Driver Reviver	Roads and Maritime would provide appropriate signage and information on the Roads and Maritime and Driver Reviver websites notifying road users of the closure of the Beresfield site and provide information of alternative rest areas, service facilities and Driver Revivers at Ourimbah and Twelve Mile Creek.	Roads and Maritime	Construction
SW01	Soil and water	A site specific Erosion and Sediment Control Plan (ESCP) would be prepared and implemented as part of the CEMP that would demonstrate how the requirements of the REF and legislation would be implemented. <ul style="list-style-type: none"> <li>The Plan would 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.</li> </ul>	Construction contractor	Pre-construction
SW02	Erosion and sedimentation	The ESCP would specify measures to be implemented and maintained in accordance with the Landcom <i>Managing Urban Stormwater, Soils and Construction Guidelines</i> and G38, R178 and the RTA Biodiversity Guidelines. The controls should: <ul style="list-style-type: none"> <li>prevent onsite erosion and sediment moving off-site and sediment laden water entering any water course, drainage lines, or drain inlets</li> <li>minimise the area of exposed soils with work areas to be stabilised progressively during works</li> <li>plan and deliver drainage works to avoid impacts to receiving water quality.</li> </ul>	Construction contractor	Construction
SW03	Erosion and sedimentation from stockpiles	The maintenance of established stockpile sites during construction is to be in accordance with the RTA <i>Stockpile Site Management Guideline (2011)</i> .	Construction contractor	Construction
SW04	Contamination of surface water	All fuels, chemicals, and liquids would be stored at least 50 metres away from the existing stormwater drainage system and would be stored in an impervious bunded area within the compound site. <ul style="list-style-type: none"> <li>the refuelling of plant and maintenance of machinery would be undertaken in designated areas.</li> </ul>	Construction contractor	Construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
C01	Contaminated land	If contaminated areas are encountered during construction, appropriate control measures would be implemented to manage the immediate risks of contamination. All other works that may impact on the contaminated area would 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.	Construction contractor	<del>Detailed design/</del> Pre-construction
C02	Accidental spill	A site specific emergency spill plan would 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 relevant EPA guidelines. The plan would address measures to be implemented in the event of a spill, including initial response and containment, notification of emergency services and relevant authorities (including Roads and Maritime and EPA officers).	Construction contractor	<del>Detailed design/</del> Pre-construction
C03	Environment incident	All incidents would be classified in terms of Roads and Maritime Services Incident Classification Procedure (February 2016).	Construction contractor	Construction
C04	Potential or actual acid sulphate soils	Potential or actual acid sulphate soils are to be managed in accordance with the RTA's <i>Guidance for the Management of Acid Sulphate Materials 2005</i> .	Construction contractor	Construction
C05	Coal Tar	Coal tar encountered is to be managed in accordance with Roads and Maritime's Technical Direction Environment ETD 2015/021 Coal tar asphalt handling and disposal. Including the disposal of all excavated coal tar at a licenced landfill.	Construction contractor	Construction
AH01	Aboriginal heritage	An Aboriginal Heritage Management Plan (AHMP) would be prepared in accordance with the Procedure for Aboriginal cultural heritage consultation and investigation (Roads and Maritime, 2012) and implemented as part of the CEMP. It would effectively control the risk to known and unknown artefacts on site and in the adjacent areas.	Construction contractor	Pre-construction
AH02	Impacts on	Protect the AHIMS registered isolated artefact (#38-4-0551) located just to the	Construction contractor	Pre-construction/

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
	identified isolated artefact	north of the proposal area boundary on John Renshaw Drive by: <ul style="list-style-type: none"> <li>• Installation of a five metre fenced buffer zone around the artefact</li> <li>• Site induction for all staff, contractors and others should include identification of exclusion zones and statutory requirements.</li> </ul>	Roads and Maritime	Construction
AH03	Aboriginal heritage	The <i>Standard Management Procedure - Unexpected Heritage Items</i> (Roads and Maritime, 2015) would be followed in the event that an unknown or potential Aboriginal object/s, including skeletal remains, is found during construction.	Construction contractor	Construction
NAH01	Non-Aboriginal heritage	The <i>Standard Management Procedure - Unexpected Heritage Items</i> (Roads and Maritime, 2015) would be followed in the event that any unexpected heritage items, archaeological remains or potential relics of Non-Aboriginal origin are encountered.	Construction contractor	Construction
W01	Generation of construction waste	The construction contractor would prepare a waste management plan and a waste management register in accordance with the requirements of Roads and Maritime's <i>QA Specification G36 – Environmental Protection (Management System)</i> . The plan would include the process for managing excess material.	Construction contractor	Construction
W02	Generation of construction waste	The generation and management of construction waste is to be managed in accordance with the WARR Act.	Construction contractor	Construction
W03	Re-use of Construction materials	The potential to reuse materials in accordance with <i>Roads and Maritime Waste Fact Sheet 9: Re-use of waste off site</i> would be investigated during detailed design and construction.	<u>Design contractor/</u> Roads and Maritime/ Construction contractor	Detailed design/ Construction
W04	Management of construction waste	All waste would be classified in accordance with the NSW EPA Waste Classification Guidelines 2014 and disposed of accordingly with supporting documentation.	Construction contractor	Construction
W05	Management of construction	Working areas are to be kept free of rubbish and cleaned up at the end of each working day/night.	Construction contractor	Construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
	waste			
W06	Generation of green waste during operation	The generation of green waste would be managed in accordance with the Roads and Maritime <i>Technical Procedure: Mulch management, Controlling the risk of weeds, pest, and disease</i>	Roads and Maritime	Operation
CC01	Greenhouse gas emissions	<ul style="list-style-type: none"> <li>• Effective staging of works and site planning to minimise the resources used.</li> <li>• Minimise vegetation clearing and maximise on site reuse of green waste in accordance with RTA Biodiversity Guidelines Guide 5 – Re-use of woody debris and bushrock</li> <li>• Use low embodied energy products where possible</li> <li>• Energy (fuel/electrical) efficiency would be considered when selecting equipment</li> <li>• Equipment would be regularly maintained to retain fuel efficiency</li> <li>• Where feasible, biofuels would be used (biodiesel, ethanol, or blends such as E10 and B80), to reduce greenhouse gas emissions from construction plant and equipment</li> <li>• Plant and office-based equipment (including lights and computers) would be operated in an efficient manner</li> <li>• Locally-sourced materials and staff would be used wherever possible, to reduce transport related emissions.</li> </ul>	Construction contractor	Construction
D01	Demand on resources	Procurement would endeavour to use materials and products with a recycled content where that material or product is cost and performance effective.	Construction contractor	Construction
D02	Demand on resources	Any additional fill material required would be sourced from appropriate sources and/or other Roads and Maritime projects.	Construction contractor	Construction
CI01	Cumulative construction impacts	The Consultation Plan would include consultation with the Project Managers of the M1 Pacific Motorway Productivity Package Projects and the M1 extension to Raymond Terrace Project.	Roads and Maritime/ Construction contractor	Pre-construction construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
		<ul style="list-style-type: none"> <li>• The Consultation Plan would also include consultation with Newcastle City Council and the land owner of the proposed Black Hill industrial estate.</li> </ul>		

### 4.3 Licensing and approvals

Determination of the M1 Pacific Motorway intersection upgrade at Weakleys Drive and John Renshaw Drive REF under the provision of Part 5 of the EP&A Act is the only approval required for this proposal. With the exception of a Road Occupancy Licence (ROL), no further approvals or licences are required.

## 5 References

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Roads and Maritime 2016. *M1 Pacific Motorway intersection upgrade at Weakleys Drive and John Renshaw Drive review of environmental factors. November 2016.*

# Appendix A

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Consultation materials





Transport  
**Roads & Maritime  
Services**

## **Have your say**

### M1 Pacific Motorway upgrade at the Weakleys Drive and John Renshaw Drive intersection at Beresfield

Roads and Maritime Services is planning to upgrade the M1 Pacific Motorway, Weakleys Drive and John Renshaw Drive intersection at Beresfield. The proposal involves replacing the existing roundabout with traffic lights to improve traffic flow, travel times and safety for motorists.

An environmental assessment has been carried out to identify potential impacts of the proposal and mitigation activities.

The concept design and environmental assessment are available to view at **rms.nsw.gov.au** or at the Roads and Maritime Services Regional Office, 59 Darby Street, Newcastle. Opening hours are Monday to Friday 9am to 4pm.

We invite you to provide feedback by **7 December 2016**. Feedback will be considered in finalising the proposal.

**For more information or to provide  
feedback please contact Project  
Development Manager  
Damien Grace on (02) 4924 0616 or  
via [damien.p.grace@rms.nsw.gov.au](mailto:damien.p.grace@rms.nsw.gov.au)**



Australian Government

**BUILDING OUR FUTURE**



# M1 Pacific Motorway upgrade at the Weakleys Drive and John Renshaw Drive intersection at Beresfield

## Concept design and environmental assessment

November 2016

Roads and Maritime Services is planning to upgrade the M1 Pacific Motorway, Weakleys Drive and John Renshaw Drive intersection at Beresfield. The proposal involves replacing the existing roundabout with traffic lights to improve traffic flow, travel times and safety for motorists.

An environmental assessment has been carried out to identify potential impacts of the proposal and mitigation activities.

Comments from stakeholders and the community are invited by **7 December 2016**. We welcome your feedback and will consider it as part of finalising the proposal.

### Background

The M1 Pacific Motorway is an important link in the National Land Transport Network and is part of the Sydney to Brisbane corridor, which is one of the busiest transport corridors in Australia.

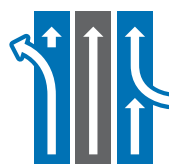
This intersection is the critical connection between the M1, Pacific Highway, New England Highway and local industrial and commercial precincts.

The existing two lane roundabout is used by about 4000 vehicles per hour in peak periods and can't effectively cater for the current level of demand.

The NSW Government has allocated \$1.5 million this financial year to continue planning. This project is part of the Australian and NSW Governments' jointly funded \$400 million M1 Productivity Package which also includes upgrading the M1 between the Tuggerah and Doyalson interchanges and between the Kariong and Somersby interchanges. More information about these projects is available at [rms.nsw.gov.au](http://rms.nsw.gov.au).

Planning is also underway for a future extension of the M1 Pacific Motorway to Raymond Terrace.

The intersection proposal considers the potential impact of this future extension.



**Improving  
traffic flow**

## Benefits

Key benefits of the proposal include:

- Improved traffic capacity and safety at the intersection
- Improved freight and traffic flow and more reliable travel times through the intersection
- Compatibility with future upgrades across the road network, including the proposed extension of the M1 to Raymond Terrace.

## The project

The proposed upgrade provides the best overall balance between environmental, social, and technical considerations.

Key features include:

- Replacing the roundabout with traffic lights
- Two through lanes on all approaches
- Additional turning lanes on all approaches, including two right turn lanes from the motorway to John Renshaw Drive
- Extending the two northbound lanes on Weakleys Drive from the traffic lights to Enterprise Drive
- Upgrading the existing left turn slip lane from John Renshaw Drive to the motorway to improve safety
- An additional left turn lane from John Renshaw Drive to the motorway to manage times of peak holiday southbound traffic
- On-road provisions for cyclists
- Permanently closing the informal car park located in the south-western corner of the existing intersection which operates as a Driver Reviver during peak holiday times
- Permanently closing the southbound oversize overmass truck stop bay on the motorway.

## Environmental assessment

Roads and Maritime has carried out an environmental assessment to identify the potential environmental and social impacts of the proposal and identify activities to manage and mitigate the impacts.

The assessment was carried out in consultation with a range of key stakeholders and considered feedback received from the community.

The investigations found the proposal is unlikely to have a significant impact on the environment with the application of a range of environmental mitigation and management measures.

## Key considerations for assessment

The following key areas of potential impact have been identified in the environmental investigations. The environmental assessment describes these impacts and measures to reduce them.

### *Traffic, transport and access*

During construction there would be some delays impacting on all road users. We would build the upgrade in stages and work with road users to ensure any adverse impacts or delays are minimised.

To reduce impacts leading up to and during peak hours, work would be carried out away from traffic and behind safety barriers. The intersection would be fully operational with a speed limit of 60km/h during these times. This arrangement would also be in place during peak holiday times.

Work involving lane or shoulder closures would be carried out in non-peak times with a reduced speed limit of 40km/h. Traffic control would be in place to minimise traffic disruptions and ensure the safety of both road workers and road users.

Temporary cyclist routes would be provided during construction except during any construction activities which may be unsafe for cyclists. These activities would be carried out overnight wherever possible.

The proposal involves permanently limiting access to the old Boral asphalt facility on the western side of the motorway to left in/left out movements only.

The oversize overmass vehicle stopping bay on the motorway will be permanently removed to accommodate the upgraded southbound slip lane.

Another left turn lane from John Renshaw Drive to the motorway will be provided to manage times of peak holiday southbound traffic.

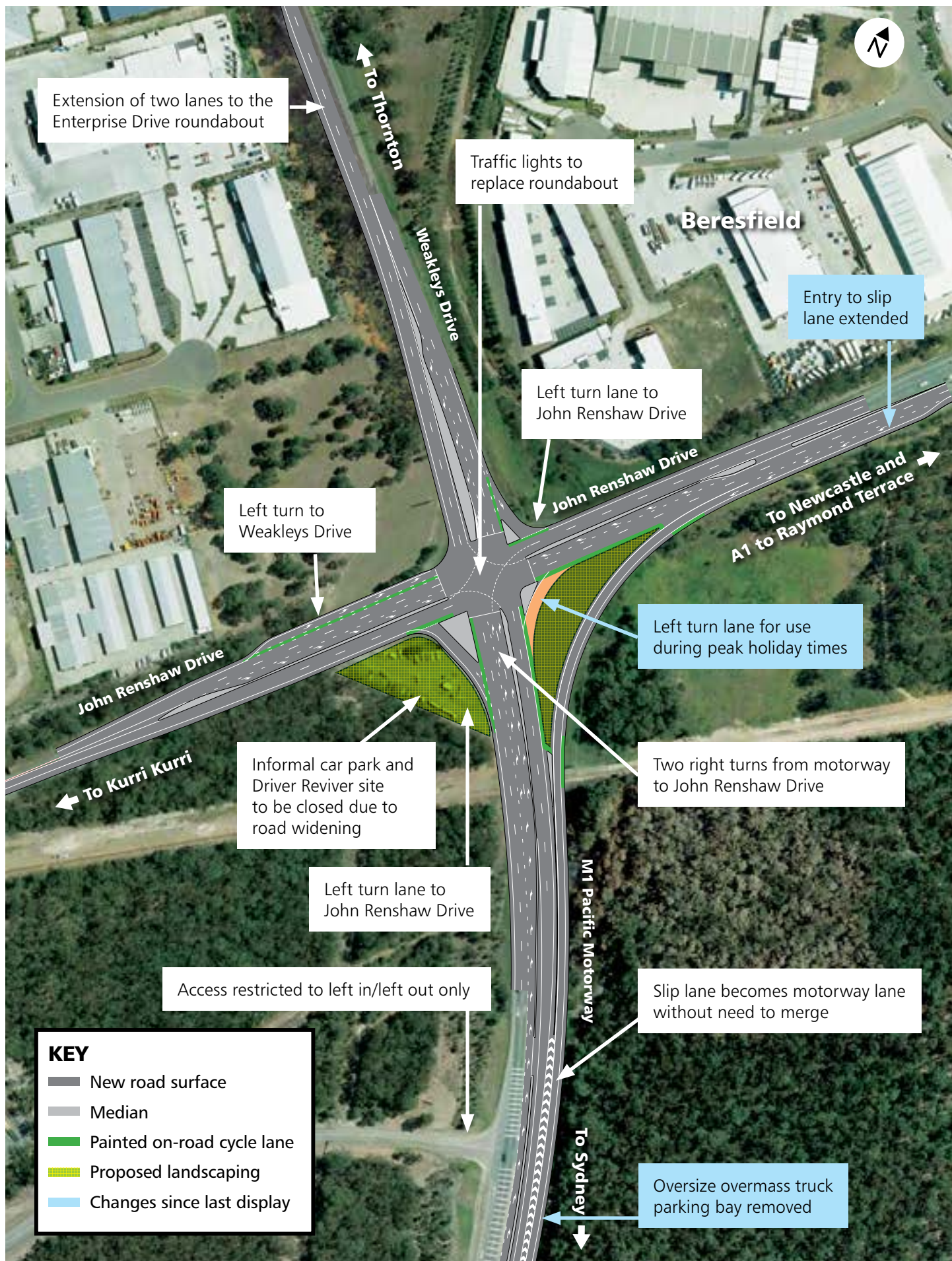
### *Socio-economic*

The proposal requires road widening into the informal car park on the south-western corner of the intersection, which operates as a Driver Reviver during peak holiday times. This site will be permanently closed as part of the upgrade.

We are investigating alternative sites for a Driver Reviver. Any new site would be considered under a separate proposal and environmental assessment.

On street parking opportunities exist within the Beresfield industrial estate.

# M1 Pacific Motorway upgrade at the Weakleys Drive and John Renshaw Drive intersection



## Noise and vibration

Work would be carried out 24 hours a day seven days a week, separated into peak times and non-peak times to reduce traffic impacts.

Peak times are between **4.30am and 9.30am** and **2.30pm and 7pm**.

Non-peak times are between **7pm and 4.30am** and **9.30am and 2.30pm**.

Due to the location of the proposal, construction noise and vibration impacts would have a low impact on nearby businesses. Management measures to reduce noise and vibration impacts would include limiting high level noise related work and minimising noise generated by machinery wherever possible.

## Biodiversity

This project would involve removal of native vegetation including several vulnerable bottle brush plants, hollow bearing trees and a small amount of an endangered bushland.

Where possible, impacts would be minimised by protecting areas from over clearing during construction. Hollow-bearing trees will be replaced with nest boxes.

The environmental assessment identified there would not likely be any significant impact on flora and fauna if all mitigation measures are adopted. A species impact statement is not required for this proposal.

## Involving the community and stakeholders


We are working with the community and stakeholders during planning to identify issues and minimise potential impacts of the proposed upgrade and construction activities.

### Have your say

Comments on the proposal are invited until 7 December 2016.

 4924 0616

 [damien.p.grace@rms.nsw.gov.au](mailto:damien.p.grace@rms.nsw.gov.au)

 Damien Grace  
Project Development Manager  
Roads and Maritime Services  
Locked Bag 2030  
Newcastle NSW 2300

## Next steps

You are invited to comment on the environmental assessment by **7 December 2016**.

Roads and Maritime will consider the feedback received when finalising the proposal.

The timing of construction is not yet confirmed.



## Visit a display

The environmental assessment is now on display. You may collect a project update or view the display until **7 December 2016** at the Roads and Maritime Services Regional Office, 59 Darby Street, Newcastle. Opening hours are Monday to Friday from 9am to 4pm.

The environmental assessment and more information are also available at [www.rms.nsw.gov.au/projects](http://www.rms.nsw.gov.au/projects)



131 450

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 **4924 0616**. The interpreter will then assist you with translation.



November 2016  
RMS 16.537



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15 NOVEMBER 2016

## HAVE A SAY ON PROPOSED M1 PACIFIC MOTORWAY INTERSECTION UPGRADE

Roads and Maritime Services is inviting stakeholders and the community to have a say on the concept design and environmental assessment for the proposed M1 Pacific Motorway intersection upgrade at Weakleys Drive and John Renshaw Drive at Beresfield.

A Roads and Maritime spokesperson said the proposal is part of the Australian and NSW Government's jointly funded \$400 million M1 Pacific Motorway Productivity Package.

"This project would involve replacing the existing roundabout with traffic lights to improve traffic flow, travel times and safety for all road users," the spokesperson said.

"The two lane roundabout is used by around 4000 vehicles per hour in peak times and struggles with the current level of demand.

"This intersection forms a critical connection between the M1 Pacific Motorway, the Pacific and New England highways and local industrial and commercial precincts."

The Roads and Maritime spokesperson said an environmental assessment was carried out to identify potential impacts of the proposal and mitigation activities.

These investigations found the proposal is not likely to have a significant impact on the environment with the appropriate environmental mitigation and management measures put in place," the spokesperson said.

Roads and Maritime will continue to keep the community and stakeholders informed during planning to identify issues and minimise potential impacts of the proposed upgrade.

Feedback on the concept design and environmental assessment is invited by Wednesday 7 December and will be considered as part of finalising the proposal.

The environmental assessment can be viewed weekdays from 9am to 4pm at the Roads and Maritime Services Regional Office at 59 Darby Street Newcastle.

The environmental assessment and concept design can also be viewed or downloaded on the Roads and Maritime website at [www.rms.nsw.gov.au](http://www.rms.nsw.gov.au).



[rms.nsw.gov.au](https://rms.nsw.gov.au)



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