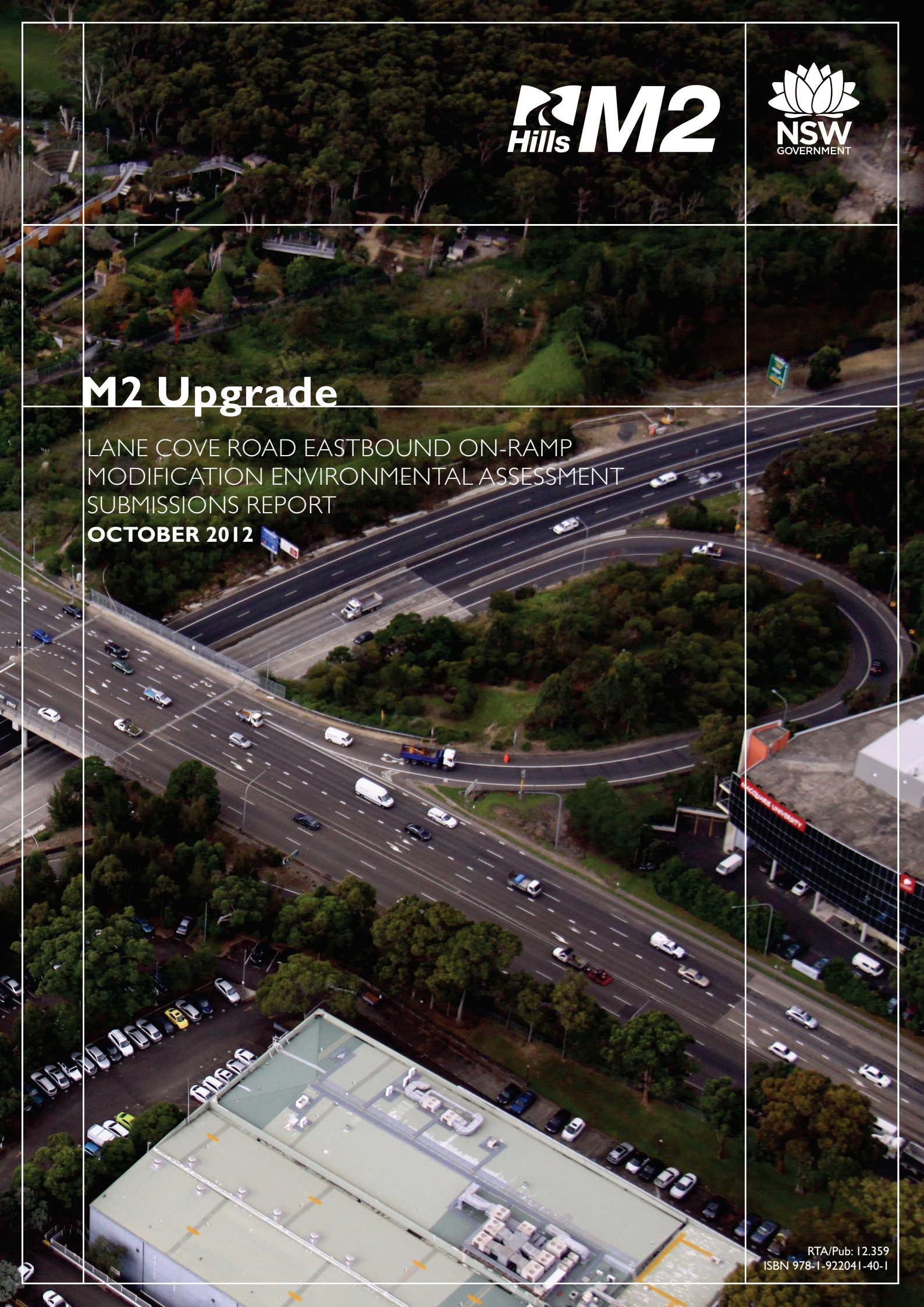

# M2 Upgrade

## LANE COVE ROAD EASTBOUND ON-RAMP MODIFICATION ENVIRONMENTAL ASSESSMENT SUBMISSIONS REPORT

**OCTOBER 2012**

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# Roads and Maritime Services

# M2 Upgrade Lane Cove Road Eastbound On-ramp Modification Environmental Assessment

Submissions Report

October 2012

Prepared by AECOM on behalf of Roads and Maritime Services
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# Executive summary

The M2 Upgrade Project (the approved project) was approved by the then Minister for Planning under the now repealed Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act) on 21 October 2010 and is currently under construction.

The Roads and Maritime Services (RMS – formerly the Roads and Traffic Authority – RTA) in conjunction with the M2 Motorway operator, The Hills Motorway Limited (Hills M2), is proposing to modify the M2 Upgrade Project approval. The proposed modification is for the provision of a new eastbound on-ramp from Lane Cove Road to the M2 Motorway at Macquarie Park and a new eastbound lane on the M2 Motorway, between the new on-ramp and the Delhi Road off-ramp.

A Modification environmental assessment was prepared and submitted to the Department of Planning and Infrastructure (DP&I) in August 2012.

### Exhibition of the Modification environmental assessment

The Modification environmental assessment was exhibited for 17 days from Wednesday 22 August 2012 to Friday 7 September 2012.

The exhibition was advertised on the Department of Planning and Infrastructure's website (www.planning.nsw.gov.au) and on the project website (www.lanecoveroadramp.com.au). The Modification environmental assessment was available for review and electronic download from these websites, as well as being exhibited at seven display locations.

Community consultation activities undertaken by Hills M2 during the exhibition period included a media release on 22 August 2012 and letters to key stakeholders, government agencies, members of parliament, local councils, local businesses and residents.

RMS and Hills M2 also held a face-to-face meeting during the public exhibition period on 28 August 2012 with the strata managers of the apartments at 1 Fontenoy Road, Macquarie Park.

### Submissions received to the exhibition of the Modification environmental assessment

A total of 22 submissions were received regarding the Modification environmental assessment. Three of these submissions were from government agencies, two were from local councils, two were from cyclist organisations, and 15 were from community members.

Most of the community submissions were related to tolling of the proposed on-ramp and consideration of alternatives and options. Other community submissions raised issues around project justification, on-ramp design and traffic impacts during operation.

The submissions from government agencies and local councils predominantly identified the issues of operational traffic, impacts to pedestrians, and general construction related impacts. Submissions from the two cyclist organisations were

about concerns of cyclists getting across the proposed on-ramp and to the M2 Motorway.

This Submissions Report responds to the issues raised in the submissions and provided revised environmental management measures.

# Contents

# 1 Introduction and background

## 1.1 Background and purpose

The M2 Upgrade Project (the approved project) was approved by the then Minister for Planning under the now repealed Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act) on 21 October 2010 and is currently under construction.

The Roads and Maritime Services (RMS – formerly the Roads and Traffic Authority – RTA) in conjunction with the M2 Motorway operator, The Hills Motorway Limited (Hills M2), is proposing to modify the M2 Upgrade Project approval. The proposed modification is for the provision of a new eastbound on-ramp from Lane Cove Road to the M2 Motorway at Macquarie Park and a new eastbound lane on the M2 Motorway, between the new on-ramp and the Delhi Road off-ramp (the proposal).

## 1.2 The approved project

The approved M2 Upgrade Project includes the construction and operation of a third lane on both the eastbound and westbound carriageways of the M2 Motorway for approximately 14.5 kilometres, from Windsor Road to Lane Cove Road and provision of new on / off-ramps.

The approved project includes:

- Widening and / or provision of a third lane along sections of the eastbound and westbound carriageways between Windsor Road and Lane Cove Road.
- Provision of new on and off-ramps at Windsor Road, a new on-ramp at Christie Road and a new off-ramp at Herring Road.
- Widening and provision of a third lane eastbound and westbound in the Norfolk Tunnel.
- Restoration of the westbound breakdown lane and provision of 3.5 metre wide traffic lanes between Lane Cove Road and Beecroft Road.
- Removal of the Beecroft Road bus on and off-ramp.
- Upgrade to the intersection of the M2 Motorway and Windsor Road, and the Christie Road and Herring Road intersections with Talavera Road.
- Upgrade to the M2 Motorway Intelligent Transport Systems (ITS).

For further details of the approved project, refer to the M2 Upgrade Environmental Assessment (AECOM, 2010a) and the M2 Upgrade Submissions and Preferred Project Report (AECOM, 2010b).

## 1.3 Proposed change

The proposed change would be undertaken within the Ryde Local Government Area in the RMS Sydney region.

Key features of the proposal are:

- A new on-ramp from the southbound carriageway of Lane Cove Road to the eastbound carriageway of the M2 Motorway.
- Widening of the eastbound carriageway of the M2 Motorway by one additional lane for around 600 metres from the new on-ramp extending to the beginning of the existing eastbound Delhi Road off-ramp.

- Widening of the Wicks Road Bridge to facilitate the additional east bound lane.
- A new toll point at the on-ramp.
- Additional traffic management systems (including an over-height detection system using existing Variable Message Signage and Closed Circuit Television (CCTV) coverage of the new on-ramp and alterations to the ITS).
- Finishing works including line marking, lighting, signposting, site clean up, restoration and landscaping and revegetation.

The need for the proposal was identified, during the public exhibition and submissions report process of the approved project, by residents and Ryde City Council as a measure to improve traffic flow and avoid traffic congestion through Macquarie Park. The key objectives of the proposal are to reduce traffic on the local and arterial road network, enhance accessibility to the Sydney Orbital road network and improve travel times for eastbound motorists.

The proposal would be fully funded by Hills M2 with tolling of the on-ramp to cover the capital cost of construction, and ongoing operational and maintenance costs. The amount of toll to be charged on the new on-ramp is expected to be in the order of $1.80 at the time of opening. The final toll price would be confirmed through negotiations with Hills M2 once the detailed construction costs have been determined.

A more detailed description of the proposal can be found in the *Lane Cove Road Eastbound On-ramp Modification Environmental Assessment* prepared by AECOM on behalf of RMS in August 2012 (Modification environmental assessment).

## 1.4 Statutory context

In 2011, Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act), under which this project was originally approved was repealed. However, the savings and transitional provisions enacted upon the repeal of Part 3A provide that approved Part 3A projects, such as the M2 Upgrade Project, are defined as 'transitional Part 3A projects' to which Part 3A continues to apply despite its repeal.

RMS seeks to modify the existing M2 Upgrade Project approval under section 75W of the EP&A Act because the construction and operation of the proposed Lane Cove on-ramp would not be consistent with the existing approval.

A Modification environmental assessment was prepared and submitted to the Department of Planning and Infrastructure (DP&I) in August 2012.

## 1.5 Environmental impact statement exhibition

The Modification environmental assessment was exhibited for 17 days from Wednesday 22 August 2012 to Friday 7 September 2012. The exhibition was advertised on the Department of Planning and Infrastructure's website (www.planning.nsw.gov.au) and on the project website (www.lanecoveroadramp.com.au). The Modification environmental assessment was also exhibited at:

- Department of Planning and Infrastructure, Information Centre, 23-33 Bridge Street, Sydney.
- Roads and Maritime Services, Customer Reception, Level 9, 101 Miller Street, North Sydney.

- City of Ryde Council, Customer Service Centre, 1 Devlin Street, Ryde.
- North Ryde Library, 201 Coxs Road, North Ryde.
- Ku-ring-gai Council, Customer Service Centre, 818 Pacific Highway, Gordon.
- Lindfield Library, 265 Pacific Highway, Lindfield.
- Nature Conservation Council of NSW, Level 2, 5 Wilson Street, Newtown.

In addition, Hills M2 provided the notification and advertising of the public exhibition period as follows:

- Letters to key stakeholders including government agencies, local councils, members of parliament, the NRMA, Australian Trucking Association of NSW, Bicycle NSW, local businesses and business forums.
- Letterbox drop to local business and residents of the apartments at 1 Fontenoy Road, Macquarie Park.
- A media release issued on 22 August 2012.

RMS and Hills M2 also held a face-to-face meeting during the public exhibition period on 28 August 2012 with the strata manager of the apartments at 1 Fontenoy Road, Macquarie Park. The strata manager was provided details of the project, including any potential direct impacts on the residents. Specifically, Hills M2 and RMS provided the strata manager with information relating to potential impacts of night work (light and noise), increased vehicle movements and other construction noise. The strata manager undertook to discuss the matter with the strata committee, advise the committee of our willingness to provide a briefing and to contact Hills M2 with any follow-up if required.

## 1.6 Purpose of the document

During the exhibition of the Modification environmental assessment, 22 submissions were made. The Director-General of the DP&I provided copies of the submissions to RMS. In accordance with section 75H of the EP&A Act, the Director-General required RMS to respond to the issues raised in these submissions in a Submissions Report.

This report identifies the issues raised during exhibition of the Modification environmental assessment and provides responses to those issues (Chapter 2). Revised environmental management measures for the project are also included (Chapter 3).

No project changes are proposed that would require the preparation of a preferred infrastructure report.

# 2 Response to issues

## 2.1 Respondents

During the exhibition of the Modification environmental assessment, 22 submissions were received by DP&I as detailed in Table 1, with the last submission accepted on 17 September 2012.

**Table 1 List of respondents**

| Respondent | Submission No. | Section number where issues are addressed |
|---|---|---|
| Ku-ring-gai Council | 18 | 2.3 |
| Ryde City Council | 19 | 2.3 |
| Office of Environment and Heritage | 20 | 2.3 |
| Environment Protection Authority | 21 | 2.3 |
| NSW Office of Water | 22 | 2.3 |
| Bike North | 12 | 2.4 |
| Bicycle NSW | 16 | 2.4 |
| Individual submissions (15) | 1-11, 13-15 and 17 | 2.5 |

No form letters were received.

## 2.2 Overview of the issues raised

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 RMS response to these issues forms the basis of this chapter.

The main issues raised by local councils and government agencies included:

- Impacts to surrounding roads, including increased delays and congestion as a result of traffic seeking to utilise the on-ramp.
- Impacts to pedestrians and pedestrian facilities on Lane Cove Road as a result of the on-ramp.
- Noise impacts to nearby residential receivers as a result of proposed construction works, and potential out of hours works.
- Management of water, erosion and sedimentation, particularly during construction.
- The regulation of construction and operation of the on-ramp via an EPL or other means.
- The monitoring of air quality and dust as a result of the project.

Ryde City Council also offered a statement of support for the project.

Responses to the issues raised by government agencies and local councils are provided in Section 2.3.

Issues regarding cycling in relation to the project were raised by two local community bike organisations – Bike North and Bicycle NSW. The main points of concern for these groups pertained to:

- Provision of cyclist access along the on-ramp to the M2 Motorway.

- Provision of cyclist crossing facilities across the on-ramp on the M2 Motorway.
- Provision of cyclist crossing facilities on Lane Cove Road across the on-ramp.

Bike North additionally raised concerns relating to the consultation process.

Responses to the issues raised by the organisations are provided in Section 2.4.

The main issues raised by community members included:

- Tolling of the proposed on-ramp.
- Consideration of project alternatives and other options, particularly the provision of a westbound off-ramp from the M2 Motorway to Lane Cove Road.
- The project justification.
- The design of the proposed on-ramp.
- Potential traffic impacts during operation.

Twelve of the individual submissions included statements of support for the project.

Responses to the issues raised by individual community members are detailed in Section 2.5.

## 2.3 Government and Agencies

Responses to the submissions received from local councils and government agencies are detailed in the below table.

**Table 2 Responses to Government and Agency submissions**

| No. | Issue | Response and section number where issues are addressed |
|---|---|---|
| **Ku-ring-gai Council** | | |
| 1 | Traffic volumes on Ryde Road, Yanko Road and Lady Game Drive are expected to increase as a result of this route becoming more attractive. This would result in increased delays and queue lengths for vehicles travelling on Yanko Road and Lady Game Drive, particularly in the AM peak. | Changes in traffic volumes arising from the addition the new on-ramp have been quantified in Sections 5.4.1 to 5.4.3 of the Traffic Impact Assessment (TIA) (Appendix D of the Modification environmental assessment).<br>As highlighted in Appendix D in the TIA, Linsig modelling showed that the worst increase in average delay at either the Lady Game Dive or Yanko Road approaches due to the new on-ramp would be five seconds in the 2011 AM and PM peaks. In 2021 the worst increase at the Yanko Road approach would be eight seconds in the AM peak. For Lady Game Drive, the AM peak increase would be in the order of two seconds. These changes to the surrounding road network are considered to be acceptable. |
| 2 | The Pacific Highway / Mona Vale Road / Ryde Road interchange is already heavily congested during peak periods and may not cope with additional traffic drawn through the right turn movement from the Pacific Highway into Ryde Road. Consideration may need to be given to increasing the right turn bay capacity. | There would be some redistribution of traffic at this interchange with an expected reduction in through volumes travelling south along the Pacific Highway and higher volumes turning right and heading south along Ryde Road to access the new on-ramp.<br>These redistribution effects are expected to offset each other to some extent and, following opening of the on-ramp to traffic, signal phasing operations would be optimised for the new distribution of traffic. This would minimise impacts on the interchange operations. |
| 3 | Increased delays on side roads to Ryde Road (i.e. Lady Game | Detailed traffic modelling undertaken as part of the Modification |

| No. | Issue | Response and section number where issues are addressed |
|---|---|---|
| | Drive and Yanko Road) are expected to further impact on the efficient operation of bus services which utilising these roads and Ryde Road. These bus services include routes 545, 562, 560, 572, 575, 196 and 197. | environmental assessment indicated that the proposal would not significantly change traffic volumes on side roads to Ryde Road (including Lady Game Drive and Yanko Road). This is shown in Table 13 of the Traffic Impact Assessment. Aside from a minor increase (2%) in daily traffic volumes on Yanko Road, it is not expected that the proposal would result in any changes to traffic volumes on local roads. This insignificant change in traffic volumes in not expected to have any major impact on bus operations.<br>The majority of the bus services listed travel along Lane Cove Road, north and south of the M2 Motorway. While there may be some minor additional delays along sections north of the M2 Motorway, benefits to these services would be realised south of the M2 Motorway. |
| 4 | While not forming part of this proposal, impacts to bus services should be considered and bus priority measures should be included on Ryde Road, at the intersections with Lady Game Drive and Yanko Road. | The project is not anticipated to have any major impact on bus operations. Bus priority measures on Ryde Road at its intersections with Lady Game Drive and Yanko Road are outside the scope of the project. The provision of the new on-ramp does not preclude the future implementation of bus priority measures at these intersections. |
| 5 | Ku-ring-gai Council strongly opposes closing pedestrian access on the southern / eastern side of Lane Cove Road (between Fontenoy Road and Talavera Road).<br>The alternative pedestrian access along the western side of Lane Cove Road is significant in terms of pedestrian travel times.<br>Pedestrian facilities could be accommodated in the same way as they are currently are across the westbound on-ramp to the M2 Motorway, or alternatively through traffic signal control. | Although the eastern side of Lane Cove Road is currently used by some pedestrians as an informal access path, there are no formal crossing facilities of the M2 Motorway westbound loop on-ramp. Formal signalised pedestrian crossing facilities are present on the western side of Lane Cove Road.<br>The absence of pedestrian crossing facilities on the eastern side of Lane Cove Road between Fontenoy Road and the M2 Motorway helps to maintain traffic flow and prevent queues back from the on-ramp that would otherwise block the through |

| No. | Issue | Response and section number where issues are addressed |
|---|---|---|
| | | movement of southbound traffic on Lane Cove Road.<br>The design of the westbound loop on-ramp (rather than a right turn to the M2 Motorway) is such that southbound traffic can enter and move unrestricted to the M2 Motorway without impacting on the Lane Cove Road through movement. Any introduction of pedestrian crossing facilities on the existing loop or new on-ramp would undermine this objective.<br>Pedestrians would be required to use the formal facilities (a complete path, zebra crossing and signalised crossings) on the western side of Lane Cove Road. These facilities provide pedestrians with a safe crossing.<br>Pedestrian counts were undertaken by GHD during the peak pedestrian use time (7am-9am, 12pm-1pm, 5pm-6pm). These counts showed the number of pedestrian using the eastern side of Lane Cove Road was relatively low (25 in total) compared to the formal facilities on the western side (128 in total).<br>The number of pedestrians that would be affected by directing them to the formal pedestrian facilities on the western side of Lane Cove Road is small compared to the number of vehicles that would be delayed from introducing a formalised crossing facility on the existing westbound loop on-ramp and the proposed eastbound on-ramp (500 vehicles on the M2 Motorway westbound loop on-ramp, 540 vehicles on the proposed on-ramp and 3,400 vehicles travelling southbound on Lane Cove Road in the AM peak hour).<br>There are also constructability, cost, program and traffic issues associated with providing a pedestrian link across the existing motorway westbound on-ramp loop and the new on-ramp as a pedestrian link. As part of the proposal, Lane Cove Road would |

| No. | Issue | Response and section number where issues are addressed |
|---|---|---|
| | | be widened between Fontenoy Road and the M2 Motorway. The widening of Lane Cove Road is necessary to provide adequate storage capacity for the new on-ramp and hence there is a need to remove the existing footpath on the eastern side of Lane Cove Road between Fontenoy Road and the M2 Motorway. To provide a footpath on the eastern side of Lane Cove Road between Fontenoy Road and the M2 Motorway would require acquisition of land from Eden Gardens and reconstruction of the retaining walls in front of Eden Gardens. This would have the potential to affect the existing car parking facilities in Eden Gardens, delay the overall project as well as adding significant cost to the project. |
| 6 | The proposal to close cycle access on the southern / eastern side of Lane Cove Road (between Fontenoy Road and Talavera Road) is strongly opposed by Ku-ring-gai Council. | Off road cycling facilities are not currently provided across the eastern side of Lane Cove Road. Cyclists are serviced by an existing on-road cycle facilities southbound on Lane Cove Road. This would be retained under the project. The detailed design of the crossing of the new on-ramp would be in accordance with the *NSW Bicycle Guidelines* (RTA 2003).<br>For off-road facilities the absence of cyclist crossing facilities on the eastern side of Lane Cove Road between Fontenoy Road and the M2 Motorway helps to maintain traffic flow and prevent queues back from the on-ramp that would otherwise block the through movement of southbound traffic on Lane Cove Road.<br>The design of the westbound loop on-ramp (rather than a right turn to the M2 Motorway) is such that southbound traffic can enter and move unrestricted to the M2 Motorway without impacting on the Lane Cove Road through movement. Any introduction of cyclist crossing facilities on the existing loop or new on-ramp would undermine this objective. |
| **City of Ryde Council** | | |

| No. | Issue | Response and section number where issues are addressed |
|---|---|---|
| 1 | Noise impacts from construction activities needs to be managed to protect residential receivers in close proximity to the proposed works. | The NSW Government's *Interim Construction Noise Guidelines* (ICNG – DECC, 2009) sets out ways to deal with the impacts of construction noise on residences and other sensitive receivers. All works would be carried out in accordance with the ICNG.<br>Table 7-25 of the Modification environmental assessment outlines noise safeguards and management measures that would be implemented to minimise the potential construction noise impacts associated with the proposal.<br>A Construction Noise and Vibration Management Plan (CNVMP) would be prepared for the project and approved by DP&I (if required by the conditions of approval).<br>The CNVMP would outline scheduled hours of work, mitigation and monitoring requirements to minimise noise impacts to residential receivers potentially affected by the works.<br>The Modification environmental assessment noted that the land use in the vicinity of the project is dominated by commercial use. The only residential noise sensitive receivers likely to be affected by construction noise are located in an apartment block on the corner of Fontenoy Road and Lane Cove Road, Macquarie Park.<br>In addition to implementing best practice management measures (as identified in the ICNG), EPA approval would be sought for out of hours works that are predicted to affect sensitive noise receivers. |
| 2 | The proposal needs to assess the potential removal of critical habitat for threatened fauna species that may be used for either roosting or foraging. | Section 7.3 of the Modification environmental assessment provides a summary of the potential ecological impacts. A thorough ecological impact assessment is included as Appendix F of the Modification environmental assessment.<br>The site has been assessed as being in a highly degraded condition and considered to provide only marginal potential |

| No. | Issue | Response and section number where issues are addressed |
|---|---|---|
| | | foraging habitat for threatened fauna species. Very limited habitat for threatened fauna species was identified during the site survey. The project would only result in minor loss of marginal potential habitat for wide-ranging threatened fauna, primarily the Eastern Bent-wing Bat, though this species is considered highly unlikely to roost in the area.<br>Overall the assessment concluded that no impact on threatened fauna is anticipated as a result of the project. |
| 3 | The proposal should incorporate water-sensitive urban design and surface water management to treat stormwater runoff during and post-construction. | The proposal would result in an increase in impervious surface by introducing the on-ramp and an additional lane on the M2 Motorway between the proposed on-ramp and the existing Delhi Road off-ramp. Surface water from the additional impervious surface would be managed by upgrading the motorway's surface water system in this location.<br>Section 3.2.1 of the Modification environmental assessment details that the proposal would include modifications to the existing drainage infrastructure for the motorway in order to meet necessary design criteria, including potential augmentation of the existing water quality basins.<br>The final capacity of the basins would be determined during the detailed design process. The increased capacity of the basins would be calculated based on the increase in impervious pavement area, with all operational stormwater drainage basins being designed with a first-flush weir system that captures a 1 in 1 year ARI event.<br>Prior to construction an Erosion and Sediment Control Plan (ESCP) would be developed for implementation during the construction period. This document would pertain to water management during construction, and would be prepared in |

| No. | Issue | Response and section number where issues are addressed |
|---|---|---|
| | | accordance with Landcom's *Managing Urban Stormwater - Soil and Construction* 2004 (the Blue Book) and the DECC *Managing Urban Stormwater, Soils and Construction, Volume 2D Main Road Construction* 2008.<br>ESCPs are considered to be working documents that would be progressively updated as construction works progress. |
| 4 | The use of Council land for the siting of Construction Compounds will require approval beforehand. | The project would seek agreement with Ryde City Council before using Council owned land for the purposes of construction compounds. |
| 5 | Details on the proposed Wicks Road bridge widening, including any requirements for street lighting, are lacking from the Modification environmental assessment. | Table 3-1 of the Modification environmental assessment notes that two girders would be added to Wicks Road Bridge, resulting in the bridge being approximately six metres wider.<br>The design of the widening bridge would generally be consistent with the existing bridge elements. Specific details would be determined during the detailed design phase.<br>No street lighting is currently provided under the Wicks Road Bridge and the project does not intend to install lights. |
| **Office of Environment and Heritage (OEH)** | | |
| 1 | The operational water quality basins need to be modified and constructed in accordance with the *Guidelines for Developments Adjoining Department of Environment and Climate Change Land* to ensure that there are no impacts on the adjoining OEH estate. | The final capacity of the basin would be determined during the detailed design process. The *Guidelines for Developments Adjoining Department of Environment and Climate Change Land* would be considered, and implemented where feasible and reasonable, during the detailed design of the operational water quality basins.<br>The increased capacity of the basins would be calculated based on the increase in impervious pavement area, with all operational stormwater drainage basins being designed with a first-flush weir system that captures a 1 in 1 year ARI event. |

| No. | Issue | Response and section number where issues are addressed |
|---|---|---|
| 2 | As this is a state significant infrastructure project, Aboriginal Heritage Impact Permits are not required under the *National Parks and Wildlife Act 1974*. | Noted. |
| **Environment Protection Authority (EPA)** | | |
| 1 | An Environment Protection Licence will not be issued for the project, however the EPA will regulate the project under section 6(2)(c) of the *Protection of the Environment Operations Act 1997*. | Noted. All construction measures would be in accordance with best practice principles for this type of project. |
| 2 | The project would involve a substantial amount of work outside of standard construction hours with the potential to significantly impact nearby sensitive receivers. The EPA recommends that specific conditions for works outside of standard construction hours be included in the Conditions of Approval. | All works would be carried out in accordance with the NSW Government's *Interim Construction Noise Guidelines* (ICNG – DECC, 2009). The ICNG identifies categories of works that might need to be undertaken outside of standard hours, including public infrastructure work where disruption to essential services or safety do not allow for work within standard hours.<br>The only residential noise sensitive receivers likely to be affected by construction noise are located in an apartment block on the corner of Fontenoy Road and Lane Cove Road, Macquarie Park.<br>In addition to implementing best practice management measures (as identified in the ICNG), EPA approval would be sought for out of hours works that are predicted to result in sensitive noise receivers being exposed to construction noise levels above the relevant Noise Management Level. |
| 3 | EPA would appreciate the opportunity to comment on the draft conditions of the approval for the M2 Upgrade modification project. | Noted. |
| 4 | EPA supports the preparation and implementation of a specific Construction Noise and Vibration Management Plan (CNVMP). It should include all feasible and reasonable noise mitigation measures outlined in the Modification environmental assessment noise assessment recommendations (Appendix E), the *Interim* | A Construction Noise and Vibration Management Plan, including all feasible and reasonable noise mitigation measures outlined in the Modification environmental assessment and the ICNG would be prepared and implemented during construction. |

| No. | Issue | Response and section number where issues are addressed |
|---|---|---|
| | *Construction Noise Guidelines* (ICNG – DECC, 2009). | |
| 5 | Construction noise monitoring must be undertaken to confirm compliance with the construction noise levels predicted in the Modification environmental assessment. If the results of monitoring show that the predicted construction noise levels are exceeded then additional mitigation measures must be implemented. | The Construction Noise and Vibration Management Plan would include a construction noise monitoring program. If predicted construction noise levels are exceeded, additional mitigation measures would be investigated and implemented where feasible and reasonable. |
| 6 | Standard construction hours are:<br>a) restricted to between the hours of 7:00am and 6:00pm Monday to Friday;<br>b) restricted to between the hours of 8:00am and 1:00pm Saturday;<br>c) not to be undertaken on Sundays or Public Holidays. | Standard construction hours would comply with these requirements. |
| 7 | Any construction work generating high noise impact or works with tonal, intermittent or otherwise annoying characteristics must only be undertaken:<br>a) between the hours of 8:00am and 6:00pm Monday to Friday;<br>b) between the hours of 8:00am and 1:00pm Saturdays;<br>c) in continuous blocks of no more than 3 hours, with at least 1 hour respite between each block of work generating high noise impact, where the location of the work is likely to impact the same receivers; or<br>d) with specific approval of the EPA. | All works would be carried out in accordance with the NSW Government's *Interim Construction Noise Guidelines* (ICNG – DECC, 2009). The ICNG identifies categories of works that might need to be undertaken outside of standard hours, including public infrastructure work where disruption to essential services or safety do not allow for work with standard hours. Construction work generating high noise impact would generally be undertaken during standard construction hours.<br>In addition to implementing best practice management measures (as identified in the ICNG), EPA approval would be sought for out of hours works that are predicted to result in sensitive noise receivers being exposed to construction noise levels above the relevant Noise Management Level. |
| 8 | Where it is necessary to undertake construction works outside of standard construction hours every effort should be made to schedule works in the order of:<br>1) Saturday and Sunday daytime (before 6pm); | Where feasible and reasonable, works that are required to be undertaken outside of standard construction hours would be scheduled in accordance with the EPA submission. |

| No. | Issue | Response and section number where issues are addressed |
|---|---|---|
| | 2) Weekday evenings (before 10pm);<br>3) Weekend evenings (before 10pm);<br>4) Weekday nights; and<br>5) Weekend nights. | |
| 9 | The following points should be adhered to:<br>1) No works between 8pm Sunday - 7am Monday;<br>2) High impact noise activities should be scheduled where possible during construction hours and otherwise no later than 10pm at night;<br>3) Out of hours construction works that are likely to exceed the noise management levels in the ICNG should not occur for more than two nights during any single week in a location that affects the same receivers. | All works would be carried out in accordance with the NSW Government's *Interim Construction Noise Guidelines* (ICNG – DECC, 2009). Wherever feasible and reasonable, construction works would comply with the EPA submission.<br>Due to traffic management requirements on the M2 Motorway and to ensure the safety of construction workers, motorists and the general public, it may not be feasible to complete all high noise impact activities prior to 10pm at night.<br>In addition to implementing best practice management measures (as identified in the ICNG), EPA approval would be sought for out of hours works that are predicted to result in sensitive noise receivers being exposed to construction noise levels above the relevant Noise Management Level. |
| 10 | Three categories of activities that may be undertaken outside the standard construction hours are:<br>a) the delivery of oversized plant,<br>b) emergency construction works,<br>c) activities that do not exceed:<br>• 5dBA (LAeq, 15min) above the relevant rating background level, at all times, and<br>• 15dBA (LA1, 1min) above the relevant rating background level at night time. | These are the only categories of activities that would be undertaken outside the standard construction hours without further assessment and approval from EPA. |
| 11 | Construction works should be coordinated with other construction | Out of hours construction works would be coordinated with other |

| No. | Issue | Response and section number where issues are addressed |
|---|---|---|
| | or maintenance works being undertaken in the same locality so that noise sensitive receivers are not impacted for more than two nights during any single week, except where there are low noise works. | construction works on the M2 Upgrade Project or other M2 Motorway maintenance works as a first priority. Coordination with local construction projects external to the M2 Upgrade Project would occur only if they are large enough to pose a significant cumulative noise impact on residential receivers. |
| 12 | The principal contractor must notify potentially affected noise sensitive receivers of activities proposed outside of standard construction hours not less than 5 days and no more than 14 days before those works are to be undertaken. The notification must be letterbox drop or detailed on the project website (if applicable). | Notification of potentially affected noise sensitive receivers would be undertaken in accordance with these requirements for out of hours works. |
| 13 | EPA recommends that construction works undertaken outside standard construction hours or exceeding the criteria stipulated above should be undertaken with approval of the EPA. | All works would be carried out in accordance with the NSW Government's *Interim Construction Noise Guidelines* (ICNG – DECC, 2009). The ICNG identifies categories of works that might need to be undertaken outside of standard hours, including public infrastructure work where disruption to essential services or safety do not allow for work with standard hours. Construction work generating high noise impact would generally be undertaken during standard construction hours.<br>In addition to implementing best practice management measures (as identified in the ICNG), EPA approval would be sought for out of hours works that are predicted to result in sensitive noise receivers being exposed to construction noise levels above the relevant Noise Management Level. |
| 14 | The Modification environmental assessment adequately identifies the impact of the proposed construction activities on air quality and dust in Section 8.2.2 and outlined the proposed mitigation measures in Table 8.2. | Noted. |
| 15 | EPA recommends the preparation of a specific Air Quality and Dust Assessment and Management Plan. | An Air Quality and Dust Management Plan would be prepared and implemented in accordance with the requirements of the |

| No. | Issue | Response and section number where issues are addressed |
|---|---|---|
| | | conditions of approval. |
| 16 | EPA recommends than an Erosion and Sediment Control Plan (ESCP) is prepared in accordance with Landcom's *Managing Urban Stormwater - Soil and Construction*, March 2004 (the Blue Book) and the DECC *Managing Urban Stormwater, Soils and Construction, Volume 2D Main Road Construction* 2008. The EPA recommends that the ESCP for the work area should be developed during the detailed design phase and prior to the commencement of construction. | An Erosion and Sediment Control Plan would be prepared in accordance with the Blue Book and the DECC *Managing Urban Stormwater, Soils and Construction, Volume 2D Main Road Construction* 2008.<br>Initial ESCPs would be developed during the detailed design phase and prior to the commencement of construction. ESCPs are considered to be working documents that would be progressively updated as construction works progress. |
| **NSW Office of Water (NOW)** | | |
| 1 | NOW recommends that a maintenance period be required following the completion of the project and that weed management be undertaken on an ongoing basis on the project site and downslope of the site. Bush regeneration is also recommended. | Ongoing weed management and bush revegetation adjacent to the project and within the lease boundary would be undertaken as per Hills M2's existing weed management and vegetation revegetation requirements. |
| 2 | NOW agrees that the compound sites should be located more than 40 metres from waterways. | Noted. |

## 2.4 Organisations

Responses to the submissions received from Bike North and Bicycle NSW are detailed in the below table.

**Table 3 Responses to Organisation submissions**

| No. | Issue | Response |
|---|---|---|
| **Bike North** | | |
| 1 | Bike North should have been consulted during the preparation of the Modification environmental assessment. Request for in-person consultation. | Consultation was undertaken as per the Director-General's Requirements for the Modification environmental assessment.<br>The consultation process is addressed in Section 5.0 of the Modification environmental assessment.<br>A meeting was held between Bike North, Bicycle NSW, Hills M2 and RMS on 19 September 2012, subsequent to formal exhibition period. The issues raised in the meeting are addressed in this submissions report (see issue 5 and the relevant responses below). |
| 2 | A bicycle lane should be provided along the slip lane on Lane Cove Road. | The existing on-road cycle facilities southbound on Lane Cove Road would be retained. The detailed design of the crossing on the new on-ramp would be in accordance with the *NSW Bicycle Guidelines* (RTA 2003). |
| 3 | Cyclist access should be included across the on-ramp lane from the breakdown / cycle lane on the eastbound carriageway of the M2 Motorway. Extra attention and warnings should be provided so motorists are aware of cyclists at this point, e.g. vibraline or similar. | Provisions for crossing of the on-ramp on the eastbound carriageway of the M2 Motorway by cyclists would be consistent with Austroads *Cycling on Higher Speed Roads* (2012), and measures in place on other on- and off-ramps to and from the M2 Motorway. |
| 4 | Bike North highly recommends the use of grade separation for cyclists. | Grade separation for cyclists is outside the scope of the project. |
| 5 | Additional issues raised at the 19 September 2012 meeting: | 1) Hills M2 would consider the interface for cyclists to the on-ramp southbound from Lane Cove Road in the detailed design |

| No. | Issue | Response |
|---|---|---|
| | 1) Interface for cyclists to the on-ramp southbound from Lane Cove Road.<br>2) Request for a shared user path on western side of Lane Cove Road.<br>3) Improvements to the transition arrangements from the footpath on eastern side of Lane Cove Road to the on-road bike land (adjacent to Eden Gardens).<br>4) Requested improvements to Delhi Road cycleway.<br>5) Construction of cyclist ramps from Wicks Road to the motorway.<br>6) Access for cyclists during construction. | and can confirm that the toll gantries would not block the path of cyclists.<br>2) A shared user path on the western side of Lane Cove Road is outside the scope of the project and would be considered as part of broader cycling infrastructure planning for the region.<br>3) The installation of a 3 metre shared user path would require the widening of the Lane Cove Road Bridge. This would require significant construction works and would result in significant traffic impacts during construction, thereby not meeting the project objective of minimising environmental and social impacts during construction.<br>This footpath is currently used by a small number of cyclists, however these arrangements would be considered by Hills M2 during the detailed design phase. Improvements would be implemented where feasible and reasonable<br>4) The Delhi Road cycleway is outside the scope of the project and would be considered as part of broader cycling infrastructure planning for the region.<br>5) Cycle ramps at Wicks Road are outside the scope of the project, however the project does not preclude the provision of these ramps in the future.<br>6) During construction, cyclists would detour around the construction area via the established path on Lane Cove Road. |
| **Bicycle NSW** | | |
| 1 | The proposal increases the danger faced by both pedestrians and bicycle users on the eastern side of Lane Cove Road who would be forced to cross the additional on-ramp. | Although the eastern side of Lane Cove Road is used by some pedestrians and cyclists as an informal access, there is not a formal crossing of the existing M2 Motorway westbound loop on-ramp. Formal signalised pedestrian crossing facilities are present |

| No. | Issue | Response |
|---|---|---|
| | | on the western side of Lane Cove Road.<br>Cyclists are serviced by an existing on-road cycle facilities southbound on Lane Cove Road. This would be retained under the project. The detailed design of the crossing of the new on-ramp would be in accordance with the *NSW Bicycle Guidelines* (RTA 2003).<br>The absence of pedestrian and cyclist crossing facilities on the eastern side of Lane Cove Road between Fontenoy Road and the M2 Motorway helps to maintain traffic flow and prevent queues back from the on-ramp that would otherwise block the through movement of southbound traffic on Lane Cove Road. The design of the westbound loop on-ramp (rather than a right turn to the M2 Motorway) is such that southbound traffic can enter and move unrestricted to the M2 Motorway without impacting on the Lane Cove Road through movement. Any introduction of pedestrian and cyclist crossing facilities on the existing loop or new on-ramp would undermine this objective.<br>Pedestrians would be required to use the formal facilities (a complete path, zebra crossing and signalised crossings) on the western side of Lane Cove Road. This would provide pedestrians with a safe crossing.<br>Pedestrian counts were undertaken by GHD during the peak pedestrian use time (7am-9am, 12pm-1pm, 5pm-6pm). These counts showed the number of pedestrian using the eastern side of Lane Cove Road was relatively low (25 in total) compared to the formal facilities on the western side (128 in total).<br>The number of pedestrians that would be affected by directing them to the formal pedestrian facilities on the western side of Lane |

| No. | Issue | Response |
|---|---|---|
| | | Cove Road is small compared to the number of vehicles that would be delayed from introducing a formalised crossing facility on the existing westbound loop on-ramp and the proposed eastbound on-ramp (500 vehicles on the M2 Motorway westbound loop on-ramp, 540 vehicles on the proposed on-ramp and 3,400 vehicles travelling southbound on Lane Cove Road in the AM peak hour).<br>There are also constructability, cost, program and traffic issues associated with providing a pedestrian link across the existing motorway westbound on-ramp loop and the new on-ramp as a pedestrian link. As part of the proposal, Lane Cove Road would be widened between Fontenoy Road and the M2 Motorway. The widening of Lane Cove Road is necessary to provide adequate storage capacity for the new on-ramp and hence there is a need to remove the existing footpath on the eastern side of Lane Cove Road between Fontenoy Road and the M2 Motorway. To provide a footpath on the eastern side of Lane Cove Road between Fontenoy Road and the M2 Motorway would require acquisition of land from Eden Gardens and reconstruction of the retaining walls in front of Eden Gardens. This would have the potential to affect the existing car parking facilities in Eden Gardens, delay the overall project as well as adding significant cost to the project.<br>On-road cyclist provisions southbound on Lane Cove Road would be retained. Access across the proposed on-ramp would be designed in accordance with the *NSW Bicycle Guidelines* (RTA 2003) to minimise cyclist safety risks. |
| 2 | Northbound bicycle users will continue to be forced to use Lane Cove Road which is a dangerous, high-speed, high-traffic environment without a bicycle facility. | The project would not result in any changes to the existing northbound cycle provisions on Lane Cove Road. This is considered to be outside the scope of the project and would be considered as part of broader cycling infrastructure planning for |

| No. | Issue | Response |
|---|---|---|
| | | the region. |
| 3 | The proposal needs to provide a safe and efficient alternative for southbound bicycle users who are impacted by the addition of the on-ramp. | The existing on-road cycle facilities southbound on Lane Cove Road would be retained. The detailed design on the crossing of the new on-ramp would be in accordance with the *NSW Bicycle Guidelines* (RTA 2003). |
| 4 | Bicycle NSW recommends the project include the construction of a bi-directional shared path on the western side of Lane Cove Road between Fontenoy Road and Talavera Road. | The inclusion of a bi-directional shared path on the western side of Lane Cove Road between Fontenoy Road and Talavera Road is outside the scope of the project. |
| 5 | It is not clear how cyclists travelling on Lane Cove Road would access the shoulder of the M2 Motorway carriageway. | Hills M2 is required by the original concession deed to provide access for cyclists to the motorway breakdown lane. The project would facilitate this commitment by providing access for cyclists to the 2.5 metre wide breakdown lane adjacent to the main carriageway between Lane Cove Road and Delhi Road and a 2 metre wide shoulder adjacent to the on-ramp lane. These shoulder widths are consistent with the recommendations of Austroads *Cycling on Higher Speed Roads* (2012). |

## 2.5 Individual Submissions

### 2.5.1 Tolling

**Submission numbers**

2, 6, 8 and 13

**Issue description**

In summary, the respondents raised the following issues:

1) The new ramp should be provided with no toll.

2) The toll price for the new ramp is too high.

3) It is inequitable that there is no toll for the two existing westbound on-ramps at Lane Cove Road.

**Response**

1) The M2 motorway is privately financed through a user-pays toll system. The tolls facilitate the recovery of the costs of constructing, financing, operating and maintaining the motorway over the period of private sector operation.

   Additional toll charges would be charged on the new on- and off-ramps being constructed as part of the approved M2 Upgrade Project. Existing motorway users would pay for the upgrade through a one-off 8% toll increase and a four year concession period extension.

   The new on-ramp is being fully funded by the motorway operator as an additional motorway enhancement. The toll is set at a level that makes the project commercially viable and the costs of constructing, financing, operating and maintaining the new on-ramp can be recovered over the period of private sector operation.

2) Sydney's motorways are operated under different concession deeds that define the duration and terms (including toll pricing) under which the operator can collect tolls. Under these agreements, the operator funds the initial construction and ongoing maintenance costs and recoups the money on its investment by collecting the toll revenue. The estimated toll level assumed to date is based on the expected level of project funding. Final costs for the project would be determined following confirmation of the cost impacts of any planning conditions.

   The estimated toll amounts in the Modification environmental assessment are consistent with the price that will be charged on the new Christie Road eastbound on-ramp on a price per kilometre basis (based on length of the motorway to the east of the entry point).

3) Users of the existing westbound on-ramps at Lane Cove Road currently pay a toll at the existing Main Toll Plaza. This is a higher toll and reflects the use of a longer section of the motorway than users of the proposed Lane Cove Road eastbound on-ramp would pay.

### 2.5.2 Project alternatives / options considered

**Submission numbers**

3, 5, 7, 8, 9, 13 and 17

**Issue description**

In summary, the respondents raised the following issues:

1) A project alternative would be to provide feeder buses from Lane Cove Road to Macquarie Park Station.

2) The project should include provision of a westbound off-ramp to Lane Cove Road.

3) The project should be expanded to allow a full interchange at the Lane Cove Road / M2 Motorway intersection.

**Response**

1) Section 5.10 of the detailed Traffic and Transport Impact Assessment (Appendix D of the Modification environmental assessment) identifies existing bus routes in the vicinity of the proposal. A number of these bus routes utilise Lane Cove Road and travel past Macquarie Park Station. The provision of the new on-ramp would not result in any changes being required to existing bus routes on Lane Cove Road or preclude future bus services to Macquarie Park Station via Lane Cove Road.

2) Section 2.4 of the Modification environmental assessment identifies the alternatives and options considered for the proposal. The inclusion of a westbound off-ramp to Lane Cove Road in addition to the proposed eastbound on-ramp would require significant construction works and would result in significant traffic impacts to widen the Lane Cove Road Bridge, thereby not meeting the project objective of minimising environmental and social impacts during construction. As such this option was not deemed reasonable.

   Adding a westbound off-ramp would require an additional intersection to be added to Lane Cove Road to allow users to make a right hand turn from the off-ramp. The new intersection would be likely to cause additional delay on Lane Cove Road to both northbound and southbound motorists from restricting the north and south movements, which are high volume flows.

3) Section 2.4 of the Modification environmental assessment identifies the alternatives and options considered for the proposal. The option to reconfigure the interchange to provide an eastbound on-ramp and a westbound off-ramp was included as Option 5. This option would require significant construction works and would result in significant traffic impacts to widen the Lane Cove Road Bridge. This option would not meet the project objective of minimising environmental and social impacts during construction.

   Adding a westbound off-ramp would require an additional intersection to be added to Lane Cove Road to allow users to make a right hand turn from the off-ramp. The new intersection would be likely to cause additional delay on Lane Cove Road to both northbound and southbound motorists from restricting the north and south movements, which are high volume flows.

The traffic impacts of the additional intersection would offset some of the benefits to the south of the M2 Motorway that is generated by the reduction of southbound traffic on this section of Lane Cove Road from only providing the proposed on-ramp.

Allowing a right turn for northbound traffic on Lane Cove Road to the enter via the proposed on-ramp would also require widening of the bridge over the M2 Motorway to mitigate traffic impacts on Lane Cove Road from introducing an additional right turn movement. The resultant additional cost would require higher tolls to recoup the cost of construction and, as such, has not been proposed.

### 2.5.3 Project justification

**Submission numbers**

4, 8 and 17

**Issue description**

In summary, the respondents raised the following issues:

1) Is the project justified if there are no time savings in the AM peak?

2) The respondent notes that whilst vehicle kilometres travelled is forecast to increase by 13.4%, vehicle hours travelled are forecast to increase by 27.8%.

3) The project does not meet the test of intergenerational equity by incurring the debt (both financial and environmental) to them.

4) Why was the proposed on-ramp not part of the original scope of the M2 Upgrade?

**Response**

1) The main objectives of the project are to:
   - Reduce traffic congestion.
   - Enhance accessibility.
   - Improve travel times

   Section 10.2 of the Modification environmental assessment concludes that the proposal would meet these project objectives by improving access to and the capacity of the Sydney Orbital road network, improving travel times and reducing traffic congestion on sections of the surrounding arterial roads. By fulfilling the project objectives, the project is considered justified.

   AM peak travel times are documented within the Traffic Impact Assessment (refer Table 16 in Section 5.6 of Appendix D) and Table 7-4 of the Modification environmental assessment.

   It was determined that AM peak travel time savings would occur as a result of the proposed on-ramp. There would be a 4.5 minute time saving for Route 1 (the proposal) versus Route 2 (Lane Cove Road and Epping Road) and the avoidance of six traffic signals.

Whilst there would be no time saving between Route 1 (the proposal) and Route 3 (Pacific Highway) during the AM peak, there would be an expected 2.5 minute time saving and a 4 minute time saving during the interpeak and PM peak respectively. In addition to these travel time savings, motorists using the proposal would avoid 20 traffic signals.

2) The forecast that Vehicle Hours Travelled (VHT) is growing faster than Vehicle Kilometres Travelled (VKT), indicates that over time congestion is becoming worse as average network speed is declining (i.e. demand for road space is increasing faster than supply), demonstrating the need for additional capacity across the Sydney network.

   Furthermore, the difference in VHT for adding a new on-ramp is typical of what is expected for a project of this size. Whilst not a large number in the context of the overall Sydney wide transport statistics, the benefits to users of the proposed on-ramp and congestion relief to alternative routes in the area are considered significant.

3) The project would be funded now with the costs recouped through tolls by users of the on-ramp both now and in the future, who would all receive benefits from the provision of the on-ramp.

   Section 10.3.2 of the Modification environmental assessment considers the proposal in terms of intergenerational equity. The assessment notes that, while there would be some impacts, they are not of a nature or extent that would result in disadvantage to any specific section of the community or to future generations.

4) Although the public desire for the proposed Lane Cove Road on-ramp was identified as part of the M2 Upgrade Environmental Assessment process, detailed viability investigations and subsequent assessments had not been advanced to a point for inclusion as part of the M2 Upgrade Project at that time. This would have resulted in unnecessary delays to the M2 Upgrade works. Planning work on the project has continued since the approval of the M2 Upgrade Project.

### 2.5.4 Design

**Submission numbers**

11 and 17

**Issue description**

In summary, the respondents raised the following issues:

1) Design of the intersection at Lane Cove Road should be amended to a tight left turn.

2) Concerns the drainage design will not account for heavier rainfall events resulting from future climate change.

**Response**

1) The concept design of the proposed Lane Cove Road eastbound on-ramp has

been developed in accordance with the relevant road design guidelines to minimise traffic disruptions on Lane Cove Road and the M2 Motorway. The concept design provides vehicles the opportunity to reach travel speed that enables safe merging with vehicles on the M2 Motorway. Opportunities to further refine the on-ramp design would be investigated during the detailed design stage.

2) Section 8.4.3 of the Modification environmental assessment addresses potential climate change implications including heavier rainfall events.

   The impact of future climate change induced heavier rainfall is not considered in the drainage design for the M2 Motorway. The existing drainage infrastructure was designed and constructed as part of the original motorway construction. Any new drainage infrastructure associated with the upgrade is required to tie into this existing infrastructure. Due to these constraints, the drainage design for the proposed on-ramp would be consistent with the existing M2 Motorway drainage design standards.

   During the detailed design stage, design standards would be reviewed in light of projected changes over the design life of the modification and more stringent standards considered where it does not affect the ability to tie into existing drainage infrastructure.

### 2.5.5 Traffic

**Submission numbers**

15 and 17

**Issue description**

In summary, the respondents raised the following issues:

1) Operational traffic impacts from motorists travelling from Macquarie Park via Khartoum Road and Fontenoy Road to access the new on-ramp has been underestimated. Suggests a solution of more left turn lanes at Fontenoy Road / Lane Cove Road.

2) Concerns the on-ramp would not result in improved motorway levels of service.

3) Concerns with the reliability of the traffic modelling.

**Response**

1) As highlighted in Section 5.4.3.1 of the Traffic Impact Assessment (refer Appendix D) and Section 7.0 of the Modification environmental assessment, traffic investigations and modelling predicted that the proposal would not result in an increase in vehicles leaving Macquarie Park via Khartoum Road and Fontenoy Road to use the Lane Cove Road eastbound on-ramp. The additional travel time to reach the on-ramp would provide a disincentive for such traffic to use the on-ramp especially given the improved intersection conditions along Epping Road and Lane Cove Road. Furthermore, vehicles leaving Macquarie Park would have an alternative access point at the Christie Road eastbound on-ramp that is being constructed as a part of the approved M2 Upgrade Project.

   In conjunction with the construction of the Christie Road on-ramp, Talavera Road

is also being widened, which would provide a more attractive access point to the M2 Motorway than via the single lane Fontenoy Road, which is prone to long queues and delays from vehicles turning left at Fontenoy Road / Lane Cove Road intersection in the peak periods.

2) The key project objectives identified in section 2.3 of the Modification environmental assessment are to reduce traffic congestion, enhance accessibility and improve travel times. Table 7.6 of the Modification environmental assessment predicts that the only section of the M2 Motorway that would experience a deterioration in the level of service in 2021 would be from Delhi Road to the Epping Road merge. This change would result from the increase in traffic along this section in the project case. All other locations along the Motorway would either maintain or improve their level of service as a result of the proposal.

3) The Transurban Sydney Strategic Traffic Model (TUSTM) is continually being updated with a significant level of resources dedicated to utilising the latest available data. Transurban have access to historical M2 Motorway travel volumes which have been used for this study.

   TUSTM has been validated against 2006 traffic volumes and travel times conditions and annual transaction data as well as various network events, such as the Lane Cove Tunnel opening in 2007 to ensure that the model is forecasting demands across Sydney in an appropriate manner.

### 2.5.6 Environmental assessment process

**Submission number**

17

**Issue description**

The respondent sought clarification on who had prepared the environmental assessment.

**Response**

As detailed in Section 1.0 of the Modification environmental assessment, RMS in conjunction with the M2 Motorway operator, The Hills Motorway Limited (Hills M2), is proposing to modify the M2 Upgrade Project approval.

The Modification environmental assessment has been prepared by AECOM on behalf of Hills M2 and RMS in accordance with the environmental assessment requirements issued by the Director-General of the NSW Department of Planning and Infrastructure on 25 May 2012 (refer Appendix A of the Modification environmental assessment).

### 2.5.7 Funding

**Submission numbers**

17

**Issue description**

The respondent sought clarification on the funding for the project.

**Response**

Hills M2 would finance the project through private means, including the costs of project development as well as the capital cost of construction, and ongoing operational and maintenance costs. An agreement has been reached with the NSW Government to collect tolls to recoup this debt and to operate and maintain the proposed on-ramp (refer to Section 1.3 of the Modification environmental assessment).

### 2.5.8 Biodiversity

**Submission number**

17

**Issue description**

The respondent raised concerns regarding impacts to vegetation from motorway construction.

**Response**

Section 7.3 of the Modification environmental assessment provides a summary of the potential ecological impacts. A thorough ecological impact assessment is included as Appendix F of the Modification environmental assessment.

The site has been assessed as being in a highly degraded condition and considered to provide only marginal potential foraging habitat for threatened fauna species. Very limited habitat for threatened fauna species was identified during the site survey. The project would only result in minor loss of marginal potential habitat for wide-ranging threatened fauna, primarily the Eastern Bent-wing Bat, though this species is considered highly unlikely to roost in the area. In addition, it was determined that the proposal would not result in the loss of any Endangered Ecological Communities.

Overall the assessment concluded that no impact on threatened fauna, threatened flora or Endangered Ecological Communities is anticipated as a result of the project.

### 2.5.9 Climate Change

**Submission number**

17

**Issue description**

In summary, the respondent raised the following issues:

1) Concerns the climate change impacts have been underestimated, and that already observed changes will worsen, not just continue.

2) The project does not meet the Commonwealth Government target to reduce greenhouse gas emissions by 5% by 2020.

3) Concerned about the cumulative impact of $CO_2$ emissions from construction.

**Response**

1) Section 8.4.1 of the Modification environmental assessment states that Australia and NSW are expected to continue to experience observable climate changes. This does not impact on the assessment of climate change presented in the Modification environmental assessment.

2) It is an objective of the M2 Upgrade Project to reduce travel times and reduce congestion, which would both result in a reduction in greenhouse gas emissions. The proposal would result in reduced vehicle kilometres travelled, thereby helping to reduce greenhouse gas emissions (refer to Section 7.1 of the Modification environmental assessment).

   The provision of the ramp is not forecast to greatly increase emissions of $CO_2$. As explained in Section 8.4.3 of the Modification environmental assessment, during construction the greenhouse gases generated would be approximately equivalent to 0.001% of the national annual greenhouse gas emissions and 0.003% of NSW's annual greenhouse gas emissions (in 2010). Although these are fractions of a percentage, mitigation measures would be implemented to minimise these emissions as far as feasible and reasonable.

   It is also noted that greenhouse gases would be emitted during the operation of the proposal from road users and maintenance activities. However, whilst the proposal is forecast to result in increased vehicle kilometres travelled on the motorway network it is also forecast to reduce vehicle kilometres travelled on the arterial and local road network. Overall it was determined that the proposal would not result in a significant change to operational greenhouse gas emissions.

3) The percentages outlined in the Modification environmental assessment regarding the emissions of greenhouse gases during construction were provided to give context to the scale of the works. Regardless of this small predicted increase, measures have still been proposed to further reduce greenhouse gas emissions during the construction phase (refer to Section 8.4 of the Modification environmental assessment).

### 2.5.10 Strategic justification

**Submission number**

17

**Issue description**

The respondent raised concerns that the project is not consistent with the NSW transport plan to increase use of public transport and the North-West Rail Link.

**Response**

The provision of the proposed on-ramp is not in conflict with the North-West Rail Link as they would attract commuters from differing catchments.

The NSW Government Long Term Transport Discussion Paper includes goals to

reduce travel times on Sydney's Roads, which would be a result of the project (refer to Section 7.1 of the Modification environmental assessment).

The project does not preclude an increase in the use of public transport. The on-ramp has been designed to accommodate buses and therefore provides an opportunity for future bus routes to utilise the on-ramp.

# 3 Revised environmental management measures

The Modification environmental assessment identified a range of environmental outcomes and management measures that would be required to avoid or reduce the environmental impacts.

After consideration of the issues raised in the submissions, a number of additional environmental management measures for the project have been identified (refer to Chapter 9 of the Modification environmental assessment). These are shown in italicised and bold text, whilst deleted mitigation measures are shown struck out. Should the project be approved, the environmental management measures in Table 4 would guide the subsequent phases of the Lane Cove Road eastbound on-ramp development.

**Table 4 Summary of revised environmental management measures**

| No. | Impact | Environmental safeguards | Responsibility | Timing |
|---|---|---|---|---|
| **Traffic and transport** | | | | |
| 1 | M2 Motorway functionality during construction | Two lanes would be maintained on the eastbound carriageway of M2 Motorway during the AM peak period. | Construction contractor | Construction |
| 2 | | Two lanes would be maintained on the westbound carriageway of the M2 Motorway during the PM peak period. | Construction contractor | Construction |
| 3 | | Closure of trafficable lanes on the M2 Motorway would be coordinated with the Hills M2 Motorway Control Room. | Construction contractor Hills M2 | Construction |
| 4 | Lane Cove Road functionality during construction | Closure of trafficable lanes on Lane Cove Road would not occur during peak periods and would be subject to approval from the NSW Transport Management Centre. | Construction contractor | Construction |
| 5 | Construction related traffic | Access to the worksites would be gained off Lane Cove Road, the M2 Motorway or Wicks Road. | Construction contractor | Construction |
| 6 | | Traffic Management Plans would be developed and implemented for all construction site access points and alterations to the existing traffic environment. | Construction contractor | Pre-construction and construction |
| 7 | ***Cyclist facilities*** | ***Hills M2 would consider the interface for cyclists to the on-ramp southbound from Lane Cove Road in the detailed design.*** | ***Construction contractor Hills M2*** | ***Detailed design*** |
| 8 | | ***Improvements to the transition arrangements from the footpath on eastern side of Lane Cove Road to the on-road bike lane (adjacent to Eden Gardens) would be considered, and implemented where feasible and reasonable, by Hills M2 during the detailed design phase.*** | ***Construction contractor Hills M2*** | ***Detailed design*** |
| 9 | | ***The existing on-road cycle facilities southbound on Lane Cove Road would be retained. The detailed design of the crossing of the new on-ramp would be in accordance with the NSW Bicycle Guidelines* (RTA 2003).** | ***Construction contractor Hills M2*** | ***Detailed design*** |

| No. | Impact | Environmental safeguards | Responsibility | Timing |
|---|---|---|---|---|
| **Noise and vibration** | | | | |
| 10 | Construction airborne noise | A Construction Noise and Vibration Management Plan would be developed for the proposed works. | Construction contractor | Pre- construction |
| 11 | | Use of localised acoustic hoarding around all significant noise generating items of plant where feasible and reasonable. This would be expected to provide between 5 dB(A) and 10 dB(A) of additional noise attenuation, if adequately constructed to ensure line-of-sight between all receivers and the construction equipment is broken. | Construction contractor | Construction |
| 12 | | Planning of the higher NML exceedance activities / locations to be undertaken predominantly during the daytime and evening periods, where feasible. | Construction contractor | Pre-construction and construction |
| ~~13~~ | | ~~All out of hours works, where predictions indicate exceedances of the NMLs, are likely to be undertaken in accordance with the conditions of the relevant Environment Protection Licence issued by the EPA.~~ | ~~Construction contractor~~ | ~~Construction~~ |
| 14 | | Respite periods would be implemented for noise intensive works, e.g. jackhammering and rock breaking. | Construction contractor | Construction |
| 15 | | Briefing of the work team to create awareness of the locality of sensitive receivers and the importance of minimising noise emissions, especially during night-time periods. | Construction contractor | Construction |
| 16 | | Ensuring spoil is placed and not dropped into awaiting trucks. | Construction contractor | Construction |
| 17 | | Use of less noise-intensive equipment, where feasible and reasonable. | Construction contractor | Construction |
| 18 | | Non-tonal reversing alarms fitted on construction vehicles. | Construction contractor | Construction |
| 19 | | Additionally, the construction contractor would develop activity specific Construction Noise Impact Statements (CNIS) for all proposed out of hours works once detailed construction methodologies are determined. CNISs would provide more accurate construction noise predictions and detail appropriate safeguards and management measures. | Construction contractor | Pre-construction and construction |

| No. | Impact | Environmental safeguards | Responsibility | Timing |
|---|---|---|---|---|
| 20 | | ***Approval would be sought through EPA for out of hours works which are predicted to affect sensitive noise receivers.*** | ***Construction contractor EPA*** | ***Construction*** |
| 21 | | ***Where feasible and reasonable, works required to be undertaken outside of standard construction hours would be preferentially scheduled as follows:***<br>• ***Saturday and Sunday daytime (before 6pm).***<br>• ***Weekday evenings (before 10pm).***<br>• ***Weekend evenings (before 10pm).***<br>• ***Weekday nights.***<br>• ***Weekend nights.*** | ***Construction contractor*** | ***Construction*** |
| **Ecology** | | | | |
| 22 | Vegetation clearing | Final clearing limits would be marked off to further reduce clearing extents and to retain potential habitat and other ecologically significant features at the edges of the clearing limits wherever practicable. | Construction contractor<br>Ecologist | Pre-construction |
| 23 | | Fencing would be installed to mark the limits of clearing and "no-go" areas surrounding the footprint to ensure vehicles and other associated machinery and equipment minimise disturbances and do not enter adjacent areas of vegetation. This would also include construction compounds and stockpile sites. | Construction contractor | Pre-construction |
| 24 | | As construction methodologies are developed for the proposed modification, attention would be given to opportunities to further reduce the need for clearing native vegetation where feasible and reasonable. | Construction contractor | Construction |
| 25 | Threatened species | Construction staff would be informed with regards to the status and location of protected areas during site induction and / or tool box talks. | Construction contractor | Pre-construction and construction |
| 26 | Impact to micro-bats | An inspection prior to construction and regular monitoring during construction of the two culverts would be undertaken to ensure that they are not being utilised by micro-bats. Should micro-bats be detected | Construction contractor<br>Ecologist | Construction |

| No. | Impact | Environmental safeguards | Responsibility | Timing |
|---|---|---|---|---|
| | | during surveys, suitable safeguards would be employed to minimise disturbance to the bats during the construction period would be developed in consultation with a suitably qualified ecologist. | | |
| 27 | Impact to fauna | Prior to any works within the existing water quality basins, a pre-clearance survey would be undertaken by an ecologist to remove and relocate fauna from the basins into another suitable basin nearby. | Construction contractor<br>Ecologist | Pre-construction |
| 28 | | Prior to any clearing of native trees of habitat importance, a suitably qualified and experienced ecologist would conduct a pre-clearing fauna survey. A two-stage clearing and tree felling process would be implemented to reduce the risk of injury to any nesting fauna from clearing. An ecologist would be present to supervise the felling of any habitat features. | Construction contractor<br>Ecologist | Pre-construction |
| 29 | Vegetation clearing | Native vegetation would be retained where possible. Areas of vegetation to be retained would be clearly marked in order to reduce the risk of over-clearing. | Construction contractor | Pre-construction and construction |
| 30 | | Clearing for construction compounds would be minimised by retaining mature trees where feasible within compound sites. | Construction contractor | Construction |
| 31 | Indirect impacts | Erosion and sedimentation control measures would be in place in accordance with an erosion and sedimentation control plan both during and after construction. | Construction contractor | Construction |
| 32 | Weed infestation | Weed management would occur throughout the extent and duration of the proposed modification works. | Construction contractor | Construction |
| 33 | | ***Ongoing weed management and bush revegetation adjacent to the project and within the lease boundary would be undertaken as per Hills M2's existing weed management and vegetation revegetation requirements.*** | ***Construction contractor Hills M2*** | ***Construction*** |
| **Aboriginal Heritage** | | | | |
| 34 | Unanticipated | Should unanticipated Aboriginal archaeological objects be uncovered | Construction | Construction |

| No. | Impact | Environmental safeguards | Responsibility | Timing |
|---|---|---|---|---|
| | discovery of Aboriginal objects | during the proposed activities, the following procedures would be followed in accordance with RMS unexpected finds procedure:<br>• All works would cease immediately in the area to prevent any further impacts to the object(s).<br>• A suitably qualified archaeologist and the Office of Environment and Heritage (OEH) would be contacted to determine the significance of the object(s).<br>• The site would be registered in the AHIMS database and the management outcome for the site would be included in the information provided to AHIMS. Some works may not be able to resume until an Aboriginal Heritage Impact Permit (AHIP) has been granted and the conditions of the AHIP are followed.<br>• Further investigation may be required depending on the type of Aboriginal object(s) that is found. | contractor | |
| 35 | | If a person finds an Aboriginal object(s) which is not recorded on AHIMS, they would contact OEH as soon as practicable. | Construction contractor | Construction |
| 36 | Discovery of human remains | If human remains are uncovered during the proposed works, the following procedures would be followed:<br>• All works would cease immediately in the area and the area would be secured to prevent any unauthorised access and potential further impacts to the find(s).<br>• The NSW Police and OEH would be notified.<br>• If the remains are found to be of Aboriginal origin and the police consider the site does not warrant investigation for criminal activities, OEH would be notified of the situation and works would not resume in the designated area until approval is received from OEH.<br>• In the event that a criminal investigation ensues, works would not resume in the designated area until approval is received from the NSW Police. | Construction contractor | Construction |
| **Non-Aboriginal Heritage** | | | | |

| No. | Impact | Environmental safeguards | Responsibility | Timing |
|---|---|---|---|---|
| 37 | Unanticipated discovery non-Aboriginal heritage objects | Any relics discovered during works must be reported to the Heritage Branch, Office of Environment and Heritage, on (02) 9873 8500. All works must cease until the relics have been assessed by the Heritage Branch or a qualified heritage professional on their behalf, in accordance with RMS unexpected finds procedure. | Construction contractor | Construction |
| 38 | Inadvertent impact on the Northern Suburbs Cemetery | The construction site boundary would be fenced when located in proximity to the Northern Suburbs Cemetery. | Construction contractor | Construction |
| **Urban design and visual amenity** | | | | |
| 39 | Widened Wicks Road Bridge | Bridge abutment walls, bridge girders and parapets would be designed to present a slim consistent profile that relates to the existing structure. | Construction contractor | Pre-construction and construction |
| 40 | | ***The design of the widened Wicks Road Bridge would generally be consistent with the existing bridge elements. Specific details would be determined during the detailed design phase.*** | ***Construction contractor Hills M2*** | ***Detailed design*** |
| 41 | New retaining walls | Where new retaining walls are visible from public areas, they would be built with an emphasis on high quality urban design and sensitivity towards the existing retaining walls. | Construction contractor | Pre-construction and construction |
| 42 | | Vegetation would be planted in front of retaining walls visible from public areas wherever possible to soften their appearance and create a greener road corridor. | Construction contractor | Pre-construction and construction |
| 43 | | Walls facing the motorway would be precast concrete with a narrow vertical ribbed pattern similar to the ribbing used on existing sections of the motorway. | Construction contractor | Pre-construction and construction |
| 44 | | Walls facing away from the motorway would be precast concrete panels with a textured stripe 'waterfall' pattern to match the pattern used on existing bridge abutments. | Construction contractor | Pre-construction and construction |
| 45 | New toll gantry | The style of toll gantry would be similar to that of the existing gantries used on the motorway with a galvanised steel structure and mesh sided walkway access on top. The toll gantry location would be carefully co-ordinated with retaining walls, safety lighting and other built elements and | Construction contractor | Pre-construction and construction |

| No. | Impact | Environmental safeguards | Responsibility | Timing |
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| | | road furniture. | | |
| 46 | Landscape design | A Landscape Plan would be developed by the construction contractor. The plan would focus on the interchange with Lane Cove Road. The plan would be developed in consultation with Eden Gardens Nursery. | Construction contractor | Construction |
| 47 | | Landscape areas would focus on achieving vegetated buffers between the M2 Motorway structures and overlooking commercial and residential properties. | Construction contractor | Pre-construction and construction |
| 48 | | Use of a landscape palette responsive to the adjoining vegetation communities. | Construction contractor | Pre-construction and construction |
| 49 | | Strengthening of the bushland character to reinforce the perception of the M2 Motorway being within a bushland corridor and provide a sense of separation from adjacent properties. | Construction contractor | Pre-construction and construction |
| 50 | | Screening of retaining walls where practicable. | Construction contractor | Pre-construction and construction |
| 51 | | Use of landscaping only in zones where it can be established, maintained and make a meaningful contribution to the visual presentation of the corridor. | Construction contractor | Pre-construction and construction |
| 52 | | Use of vegetation to enhance environmental outcomes of the proposed modification. | Construction contractor | Pre-construction and construction |
| 53 | Visual impact during construction | Compound sites would be kept tidy and rubbish free. | Construction contractor | Construction |
| 54 | | Planting at the perimeter of the proposed compound sites would be preserved, where possible, to maintain a level of screening from the adjoining land uses. Where this is not possible, the re-establishment of vegetation cover would be prioritised. | Construction contractor | Construction |
| 55 | | Work areas disturbed during site establishment would be restored progressively and maintained. | Construction contractor | Construction |
| 56 | | Outdoor lighting on the site would comply with AS4282 – 1997 *Control of the Obtrusive Effects of Outdoor Lighting*. | Construction contractor | Construction |

| No. | Impact | Environmental safeguards | Responsibility | Timing |
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| **Geology, soils and water** | | | | |
| 57 | Pollution of waterways | The footprint of disturbance would be minimised to the greatest extent practical. | Construction contractor | Pre-construction and construction |
| 58 | | Stabilisation and rehabilitation of disturbed areas would occur progressively and as soon as practical after the completion of works. | Construction contractor | Construction |
| 59 | | Site specific erosion and sediment control plans would be developed prior to any ground disturbance occurring. | Construction contractor | Construction |
| 60 | | Erosion and sediment controls would be installed prior to or concurrently with any ground disturbance activities in accordance with Landcom / Department of Housing *Managing Urban Stormwater – Soils and Construction Volumes 1 and 2* (often referred to as The Blue Book – Landcom 2004 and 2008). | Construction contractor | Construction |
| 61 | | Erosion and sedimentation controls would be checked and maintained on a regular basis (including clearing of sediment from behind barriers) and records kept and provided on request. | Construction contractor | Construction |
| 62 | | ***The Guidelines for Developments Adjoining Department of Environment and Climate Change Land would be considered, and implemented where feasible and reasonable, during the detailed design of the operational water quality basins.*** | ***Construction contractor Hills M2*** | ***Detailed design*** |
| 63 | Generation of concrete slurry | A vacuum would be used during any concrete drilling or cutting works to collect concrete dust and slurry. | Construction contractor | Construction |
| 64 | Vehicle wash down and maintenance | Vehicle washdown and / or concrete truck washout would occur within a designated bunded area or offsite. | Construction contractor | Construction |
| 65 | | Vehicles and plant would be properly maintained and regularly inspected for fluid leaks. | Construction contractor | Construction |
| 66 | Pollution from release of hazardous | All fuels, chemicals and other hazardous liquids would be stored in an impervious bunded area a minimum of 40 m away from: | Construction | Construction |

| No. | Impact | Environmental safeguards | Responsibility | Timing |
|---|---|---|---|---|
| | liquids | • Flooded or poorly drained areas.<br>• Any areas of concentrated water flow.<br>• Slopes above 10%. | contractor | |
| 67 | | Refuelling of plant and equipment would be undertaken using drip trays and be located a minimum of 40 m from drainage areas. | Construction contractor | Construction |
| 68 | | An emergency spill kit would be kept on site at all times. All staff would be made aware of the location of the spill kit and trained in its use. | Construction contractor | Construction |
| 69 | | If a spill occurs, RMS *Environmental Incident Classification and Management Procedure* would be followed and RMS Contract Manager notified as soon as practicable. | Construction contractor | Construction |
| 70 | Disturbance and release of contaminated material | Unexpected Contamination Find Procedures would be developed prior to commencement of construction. | Construction contractor | Construction |
| 71 | | Visual and olfactory observations would be undertaken during excavation works for evidence of contamination. Should evidence of contamination be encountered, works would cease in the vicinity and the Unexpected Find Procedure implemented. | Construction contractor | Construction |
| 72 | | Sediments in the existing water quality basins would be collected and tested / classified prior to disposal off-site. Appropriate management strategies would be developed prior to works in water quality basins to mitigate potential adverse risks to the environment. | Construction contractor | Construction |
| 73 | | Contaminated spoil would be treated onsite or removed to an appropriately licensed landfill. Management would be in accordance with the following guidelines and would include options for disposal or treatment of contaminated material:<br>• *Managing Contaminated Land Planning Guidelines SEPP 55 – Remediation of Land* (DUAP and EPA, 1998)<br>• *Waste Classification Guidelines – Part 1: Classifying Waste and Part 2: Immobilisation of Waste* (DECCW, 2008). | Construction contractor | Construction |

| No. | Impact | Environmental safeguards | Responsibility | Timing |
|---|---|---|---|---|
| **Air quality and dust** | | | | |
| 74 | Dust generation | The area of exposed surfaces would be minimised as far as practical. | Construction contractor | Pre-construction and construction |
| 75 | | Stabilisation and rehabilitation of disturbed areas would occur progressively and as soon as practical after the completion of works. | Construction contractor | Construction |
| 76 | | Exposed areas would be watered down as required to minimise the potential for dust generation. | Construction contractor | Construction |
| 77 | | Stockpiles or areas that may generate dust would be managed to suppress dust emissions in accordance with the *Stockpile Management Procedures* (RTA, 2005). | Construction contractor | Construction |
| 78 | | Site access points would be limited in number and stabilised as far as practical. | Construction contractor | Pre-construction and construction |
| 79 | | Vehicles transporting waste or other materials that may produce odours or dust would be covered during transportation. | Construction contractor | Construction |
| 80 | | Any soil or mud deposited on public roads by construction activities and vehicle movements would be removed immediately and disposed of appropriately. | Construction contractor | Construction |
| 81 | Identification of contamination | Visual and olfactory observations would be undertaken for evidence of contamination prior to any watering down. Should any potential contamination be identified, appropriate contamination management measures would be followed, refer Section 8.1 (of the Modification environmental assessment). | Construction contractor | Construction |
| 82 | Exhaust emissions | Vehicles, plant and machinery would be maintained in good working order. | Construction contractor | Construction |
| 83 | | Equipment would be properly maintained to ensure exhaust emissions comply with the requirements of the POEO Act. | Construction contractor | Construction |

| No. | Impact | Environmental safeguards | Responsibility | Timing |
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| 84 | Release of airborne contaminants | Works (including the spraying of paint and other materials) are not to be carried out during strong winds or in weather conditions where high levels of dust or air borne particulates are likely. | Construction contractor | Pre-construction and construction |
| 85 | | Vegetation or other materials would not be burnt on site. | Construction contractor | Construction |
| **Socio-economic** | | | | |
| 86 | Eden Gardens Nursery | The construction site along Lane Cove Road would be kept clean and tidy at all times. | Construction contractor | Construction |
| 87 | | Plant and machinery parking on Lane Cove Road in front of Eden Gardens would be restricted. | Construction contractor | Construction |
| 88 | | The project would investigate options to include Eden Gardens signage on any visible hoarding or fencing around the construction site | Construction contractor | Construction |
| 89 | Wicks Road businesses | Closure of Wicks Road would occur in consultation with the affected businesses. | Construction contractor | Construction |
| 90 | ***Temporary land lease*** | ***The project would seek agreement with Ryde City Council before using Council owned land for the purposes of construction compounds.*** | ***Hills M2 RMS*** | ***Pre-construction*** |
| **Climate change and greenhouse gas** | | | | |
| 91 | Construction Greenhouse gas emissions | Greenhouse gas mitigation measures for the construction works, which would be considered, and implemented where feasible and readonable, during the development of the design include:<br>- Investigate opportunities to optimise the cut to fill ratio to minimise the amount of fill required/spoil unused onsite (thereby reducing quantities of fuel consumption associated with the transportation of fill/excess spoil).<br>- Design to prioritise the use of pre-cast elements where possible. In | Construction contractor | Design process |

| No. | Impact | Environmental safeguards | Responsibility | Timing |
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| | | general there is less waste of materials (with embodied emissions) and energy expended in construction when pre-cast elements are used, when compared to those cast in-situ.<br>The utilisation of materials with lower embodied greenhouse gas emissions would be considered, and implemented where feasible and reasonable, by the project, including the use of:<br>- Low carbon concrete (where Portland cement is substituted with waste products including granulated blast furnace slag and fly ash).<br>- Geopolymer concrete for non load bearing applications (for example, noise walls, footpaths).<br>- Recycled glass fines instead of sand.<br>- Recycled steel in reinforcing.<br>- Demolition waste as fill material.<br>- Asphalt with recycled content. | | |
| 92 | | Waste material preferentially reused onsite in accordance with the waste management hierarchy. | Construction contractor | Pre-construction and construction |
| 93 | | Plan construction works to avoid double handling of materials where possible. | Construction contractor | Pre-construction and construction |
| 94 | | Preferential use of locally sourced goods and services. | Construction contractor | Pre-construction and construction |
| 95 | | Consider fuel efficiency when selecting construction plant and equipment and procure fuel efficient plant and equipment where feasible. | Construction contractor | Pre-construction |
| 96 | | Where feasible and reasonable low greenhouse gas intensive alternative fuels (for example biofuels) used in construction equipment and vehicles. | Construction contractor | Pre-construction and construction |
| 97 | | Construction equipment and vehicle operators trained in driving practices | Construction | Pre-construction |

| No. | Impact | Environmental safeguards | Responsibility | Timing |
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| | | which reduce fuel consumption. | contractor | and construction |
| 98 | | Ensure construction equipment and vehicles used are maintained to reduce energy efficiency losses and maximise fuel efficiency associated with damaged or poorly maintained equipment. | Construction contractor | Construction |
| 99 | | Assess the emissions intensity of the construction materials specified in the design of the project. | Construction contractor | Pre-construction |
| 100 | | Where practical, preferentially use / specify materials with lower embodied emissions. | Construction contractor | Pre-construction |
| 101 | | Use recycled aggregates in road pavement and surfacing (including crushed concrete, granulated blast furnace slag, glass, slate waste and fly ash). | Construction contractor | Pre-construction |
| 102 | | Consider purchasing Green Power. | Construction contractor<br>Hills M2 / RMS | Pre-construction |
| 103 | | Management of the energy consumption by design and construction teams. Specifically energy used to power operations including site offices' power and vehicle fleets' fuel. | Construction contractor | Pre-construction and construction |
| 104 | Operational Greenhouse gas emissions | Implementation of equipment with improved energy efficiency, e.g. installation of energy efficient lighting. | Hills M2 / RMS | Pre-construction |
| 105 | | Management of electricity consumption at tolling stations. | Hills M2 / RMS | Pre-construction |
| 106 | Climate change adaptation | Design standards would be reviewed in light of projected changes over the design life of the modification and more stringent standards considered, e.g. standards related to flooding and drainage, material selection and foundation materials. This has the potential to reduce infrastructure degradation and the cost of maintenance requirements and emergency repairs. | Construction contractor<br>Hills M2 / RMS | Pre-construction |
| 107 | | A value for money assessment would be undertaken on the project to determine whether each adaptation measure is worthwhile implementing | Construction contractor | Pre-construction |

| No. | Impact | Environmental safeguards | Responsibility | Timing |
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| | | at the design stage or whether it would be more beneficial to undertake ad-hoc repairs. | Hills M2 / RMS | |
| **Waste minimisation and management** | | | | |
| 108 | Waste generation and incorrect disposal | All waste would be classified in accordance with the *Waste classification guidelines: Parts 1 and 2* (DECC, 2008) and would be disposed of to a suitably licensed disposal facility or used in construction as appropriate. | Construction contractor | Construction |
| 109 | | The waste hierarchy of avoid, reduce, re-use, recycle and dispose would be adopted on the project. | Construction contractor | Pre-construction and Construction |
| 110 | | Demolished concrete and steel waste would be sent to appropriately licensed concrete and steel recycling facilities. | Construction contractor | Construction |
| 111 | | All waste removed from site would be transported by a suitably licensed waste transporter to a suitably licensed waste facility. | Construction contractor | Construction |
| 112 | | Waste tracking would be undertaken for all waste removed from the site. This would include time and date, waste transporter, volume of waste removed, and waste disposal facility. | Construction contractor | Construction |
| 113 | | All working areas would be maintained, kept free of rubbish and cleaned up at the end of each working day. | Construction contractor | Construction |
| 114 | Release of hazardous wastes | Any hazardous waste generated would be stored so as to prevent or control accidental releases to air, soil or water prior to appropriate disposal. | Construction contractor | Construction |
| 115 | Release of contamination | Should any localised areas of contamination be encountered during construction, reporting to the EPA in accordance with the '*Duty to Report Guidelines*' (2009) under the *Contaminated Land Management Act 1997* (CLM Act) would be required. | Construction contractor | Construction |
| 116 | Spread of weeds from green waste | All noxious weeds and exotic plant species removed would be bagged and disposed of at a licensed landfill facility. | Construction contractor | Construction |
| **Hazards and risk** | | | | |
| 117 | Pollution of waterways or land | Hazardous goods storage areas would:<br>• Be subject to a risk assessment. | Construction contractor | Pre-construction and construction |

| No. | Impact | Environmental safeguards | Responsibility | Timing |
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| | | • Be designed to comply with the requirements of AS1940-2004 *The Storage and Handling of Dangerous Goods* where relevant.<br>• Be bunded to contain spills and isolated to contain fire to a localised area.<br>• Have fire extinguishers and spill clean-up kits, including personal protective equipment, available nearby. Personnel would be trained in the use of this equipment.<br>• Be subject to regular inspections and audits. | | |
| 118 | | Spill response personnel would be included in the incident response team. | Construction contractor | Pre-construction and construction |
| 119 | | Vehicles transporting dangerous goods to site would contain the appropriate emergency response provisions (required under the Australian Dangerous Goods Code). | Construction contractor | Construction |
| 120 | | Quantities of dangerous goods transported for minor stores would be low (both in total volume and package size). | Construction contractor | Construction |
| 121 | | Drivers would be trained in emergency incident response. | Construction contractor | Construction |
| 122 | Public and worker safety | Lift areas, excavations and areas under bridgeworks would be barricaded off to prevent access to hazardous areas. | Construction contractor | Pre-construction and construction |
| 123 | | Equipment would be inspected in accordance with regulatory requirements. | Construction contractor | Construction |
| 124 | | Loads would not be lifted over operating carriageways. | Construction contractor | Construction |
| 125 | | Personnel would be required to wear appropriate personal protective equipment. | Construction contractor | Construction |
| 126 | | Job safety analysis, safe work method statements and safety management plans would be developed and implemented. | Construction contractor | Pre-construction and construction |
| 127 | | Traffic management measures would be undertaken to separate construction zones from operating carriageways and to control speed limits in the vicinity of the construction site. | Construction contractor | Pre-construction and construction |

| No. | Impact | Environmental safeguards | Responsibility | Timing |
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| 128 | | Relevant on-site personnel would be required to undertake an induction providing awareness of the key hazards associated with construction activities. | Construction contractor | Pre-construction and construction |

# 4 Proposed amendments to conditions of approval

As the proposed modification would be undertaken by a separate construction contractor to the approved M2 Upgrade Project, RMS and Hills M2 suggest the modification is provided with separate conditions of approval conditions based on the existing M2 Upgrade Project conditions of approval. This could also be achieved by an addendum to the M2 Upgrade Project conditions of approval.

RMS and Hills M2 would like to discuss the feasibility of these options and the content of the conditions of approval with DP&I.

# 5 References


AECOM (2010a) *M2 Upgrade Project Environmental Assessment*.

AECOM (2010b) *M2 Upgrade Submissions and Preferred Project Report*.

AECOM (2012) *M2 Upgrade Lane Cove Road Eastbound On-ramp Modification Environmental Assessment*.

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Department of Environment and Climate Change (2009) *Interim Construction Noise Guidelines.*

Landcom (2004) *Managing Urban Stormwater: Soils and Construction.*

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