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The Prospect Highway upgrade

Reservoir Road, Prospect to St Martins Crescent, Blacktown

Submissions Report

OCTOBER 2014

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Roads and Maritime Services

Prospect Highway Upgrade

Submissions report
October 2014

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A	07/08/2014	A. Spinks	A. Spinks	07/08/2014	Practice Review
B	17/09/2014	V. Stanton	E. Davies	17/09/2014	Final Draft

Executive summary

Roads and Maritime Services (Roads and Maritime) proposes to upgrade Prospect Highway to a generally four lane corridor between Reservoir Road, Prospect and 200 metres north of St Martins Crescent, Blacktown – a length of about 3.6 kilometres (the proposal). Additional kerbside bus lanes are proposed between Lancelot Street and north of St Martins Crescent to provide a six lane corridor.

The main features of the proposal are as outlined in the Review of Environmental Factors (REF). Changes to the design are outlined in Section 1.2 of this report.

The REF was publicly displayed from 2 June 2014 to 30 June 2014 at two locations in Blacktown. The REF was placed on the Roads and Maritime website and two community information sessions were held at Shelley Public School Hall on Saturday 14 June 2014 and Wednesday 18 June 2014.

Roads and Maritime received 52 submissions in response to the REF including one submission from a government agency (Blacktown City Council). Members of the community indicated their general support for the proposal and the road safety improvements.

The main comments made by the respondents related to:

- Suggestions to provide a controlled right turn out of Stoddart Road
- Suggestions to provide a right turn out of Roger Place
- Concern about the difficult property access north of Lancelot Street
- Suggestions to develop the Seven Hills Road extension between Prospect Highway and Wall Park Avenue
- Requests for information about proposed noise and vibration mitigation measures
- Suggestions to provide on road parking in bus lanes during off peak periods
- Support for sub option seven as the preferred two way link road design.

In response to the comments made, six changes to the proposal described in the REF have been made. These are:

- A signalised right turn out of Stoddart Road
- A third southbound lane between the Stoddart Road intersection and the Great Western Highway eastbound entry ramp
- A new roundabout at the intersection of Keyworth Drive and Hadrian Avenue
- Extension of the right turn lane into St Martins Crescent
- New footpaths along:
    - The southern side of Blacktown Road between Hollydale Place and Prospect Highway
    - The eastern side of Prospect Highway between Lancelot Street and Blacktown Road.
- Three new sections of shared path between the upgraded pedestrian underpass and:
    - Old Church Lane
    - The shared path on western side of Prospect Highway
    - Keyne Street.

Contents

1 Introduction and background

1.1 Purpose

This submissions report relates to the Review of Environmental Factors (REF) prepared for Prospect Highway Upgrade between Reservoir Road and 200 metres north of St Martins Crescent, and should be read in conjunction with that document.

The REF was placed on public display and submissions about the proposal and the REF were received by Roads and Maritime. This submissions report summarises the comments made and provides responses to them (Section 2), details investigations carried out since finalisation of the review of environmental factors (Section 3), describes and assesses the environmental impact of changes to the proposal (Section 4), and identifies new or revised environmental management measures (Section 5).

1.2 The proposal

The proposal is described in Section 3 of the REF. It involves upgrading Prospect Highway between Reservoir Road at Prospect and 200 metres north of St Martins Crescent at Blacktown, a length of about 3.6 kilometres.

A generally four lane divided road (two lanes in each direction) with a variable width central median (up to 12 metres wide at one point). The section north of Lancelot Street would be six lanes, with the additional lanes being kerbside bus lanes. The upgrade occurs generally west of the existing carriageway.

In addition to the description in Section 3 of the REF, the proposal now includes:

- A signalised right turn out of Stoddart Road
- A third southbound traffic between the Stoddart Road intersection and the Great Western Highway eastbound entry ramp
- A new roundabout at the intersection of Keyworth Drive and Hadrian Avenue
- Extension of the right turn lane into St Martins Crescent
- New footpaths along:
  - The southern side of Blacktown Road between Hollydale Place and Prospect Highway
  - The eastern side of Prospect Highway between Lancelot Street and Blacktown Road.
- Three new sections of shared path between the upgraded pedestrian underpass and:
  - Old Church Lane
  - The shared path on western side of Prospect Highway
  - Keyne Street.

Figures 1-1 to 1-5 show the key features of the proposal including the changes made as a result of feedback received from the display of the REF and proposed concept design.

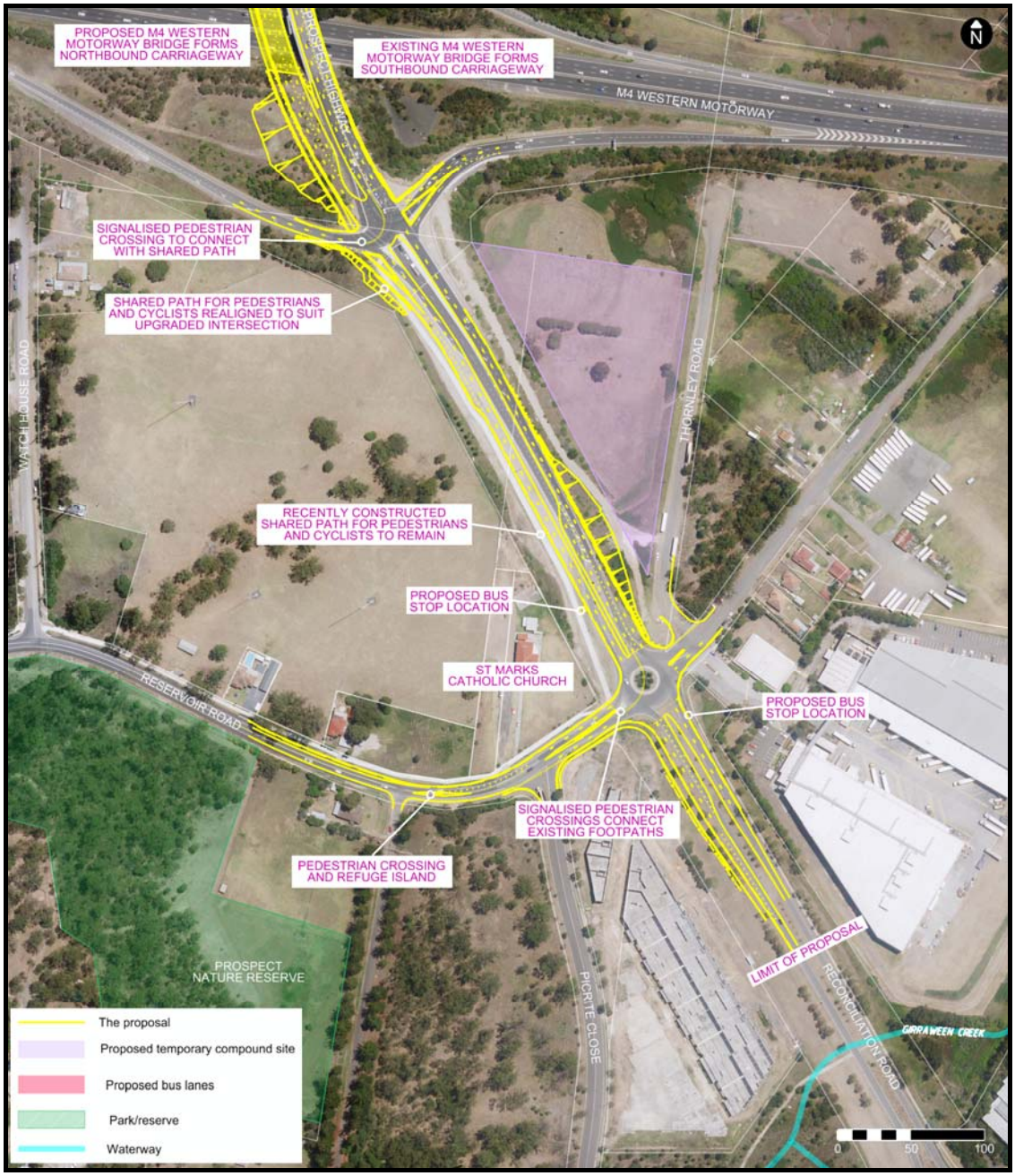

Figure 1-1 Key features of the proposal

Figure 1-2 Key features of the proposal

Figure 1-3 Key features of the proposal

Figure 1-4 Key features of the proposal

Figure 1-5 Key features of the proposal

REF display

Roads and Maritime prepared a REF to assess the environmental impacts of the proposed works. The REF was displayed for consultation between 2 June 2014 and 30 June 2014 at two locations, as detailed in Table 1-1. The REF was placed on the Roads and Maritime website and made available for download. The exhibition locations and website link were advertised in:

- The Blacktown City Sun on Wednesdays 11 and 18 June 2014
- The Blacktown Advocate on Tuesdays 10 and 17 June 2014.

The project team held community information sessions on:

- Saturday 14 June 2014
  Shelley Public School Hall
  Hadrian Avenue, Blacktown

- Wednesday 18 June 2014
  Shelley Public School Hall
  Hadrian Avenue, Blacktown

In addition to the above display locations and community sessions, an invitation to comment and a community update (newsletter) were delivered to 4000 households within the project area during the first week of June 2014. An email inviting community comment was sent to people registered on Tuesday 3 June 2014 on the project database.

Table 1-1 Display locations

Location	Address
Blacktown City Council	62 Flushcombe Road, Blacktown Monday to Friday 8:30am to 4:30pm
Max Webber Library	Corner Flushcombe Road and Alpha Street, Blacktown Monday to Friday 9:30am to 7:45pm Saturday 9:30am to 4pm Sunday 12pm to 4pm

2 Response to issues

Roads and Maritime received 52 submissions until Monday 30 June 2014. Table 2-1 lists the respondents and each respondent's allocated submission number. The table also indicates where the issues from each submission have been addressed in Section 3 of this report.

Table 2-1 Respondents

Respondent	Submission No.	Section number where issues are addressed
Individual	1	Sections 2.2.4, 2.3.1, 2.6.2
Individual	2	Section 2.6.2
Individual	3	Section 2.12, 2.3.1
Individual	4	Sections 2.3.1, 2.6.2, 2.8.1, 2.9.1, 2.10.3
Individual	5	Sections 2.6.1, 2.6.2, 2.8.2
Individual	6	Sections 2.2.4, 2.2.7, 2.2.10, 2.2.11
Individual	7	Section 2.12
Individual (Medlife Medical Centre)	8	Section 2.5.2
Individual	9	Sections 2.7.3, 2.9.5, 2.10.6
Individual	10	Section 2.4.2
Individual	11	Sections 2.2.4, 2.3.1
Individual	12	Section 2.2.3
Individual	13	Section 2.12
Individual	14	Section 2.4.2
Organisation (Camwest Bicycle User Group Inc.)	15	Section 2.2.8
Individual	16	Sections 2.2.1, 2.6.1
Individual	17	Section 2.2.7
Individual	18	Section 2.5.2
Individual	19	Sections 2.2.3, 2.2.6, 2.6.1, 2.9.1, 2.10.3, 2.10.4, 2.11.1
Individual	20	Section 2.2.2, 2.5.1
Individual	21	Section 2.4.1
Individual	22	Section 2.4.1
Individual	23	Sections 2.6.2, 2.9.1
Individual	24	Section 2.4.1
Individual	25	Section 2.4.1
Individual	26	Section 2.4.1
Individuals	27	Section 2.4.1
Individual	28	Section 2.4.1
Individual	29	Section 2.4.1
Individual	30	Sections 2.2.5, 2.6.2
Individual	31	Section 2.4.1
Individual	32	Section 2.2.7
Individual	33	Section 2.4.1
Individual	34	Section 2.12
Individual	35	Sections 2.6.2, 2.9.1
Individual	36	Sections 2.2.4, 2.2.5, 2.2.7
Individual	37	Sections 2.4.2, 2.2.7
Individual	38	Section 2.5.2
Individual	39	Section 2.7.1
Individual	40	Sections 2.2.1, 2.3.1, 2.10.7, 2.10.2
Individual	41	Section 2.2.8, 2.12
Individual	42	Section 2.4.2

Respondent	Submission No.	Section number where issues are addressed
Organisation (Residents of Blacktown and Seven Hills Against Further Traffic)	43	Sections 2.6.1, 2.10.5
Organisation (Blacktown and District Environment Group)	44	Sections 2.3.1, 2.7.1, 2.10.1, 2.12
Government Agency (Blacktown City Council)	45	Sections 2.2.2, 2.2.7, 2.3.2, 2.4.1, 2.4.2, 2.4.3, 2.6.2, 2.8.1, 2.10.7, 2.10.1, 2.12
Individual	46	Sections 2.2.5, 2.6.2, 2.8.1
Individual	47	Section 2.3.3
Individual	48	Section 2.4.1
Individual	49	Sections 2.2.1, 2.2.9, 2.6.2
Individual	50	Sections 2.11.1
Individual	51	Section 2.10.2
Individual	52	Section 2.4.1

2.1 Overview of issues raised

Roads and Maritime received 52 submissions in response to the display of the environmental assessment including one government agency (Blacktown City Council).

Each submission has been examined individually to understand the comments being made. These have been extracted and collated and responses to the comments have been provided. Where similar comments have been made in different submissions, only one response has been provided. The comments made and Roads and Maritime's response to these comments form the basis of this chapter.

About 20 per cent of submissions indicated support for the proposal or specific elements of the proposal. The remaining submissions did not oppose the proposal, however several points were raised, including:

- Suggestions to provide a controlled right turn out of Stoddart Road
- Suggestions to provide a right turn out of Roger Place
- Concern regarding the difficult property access north of Lancelot Street
- Suggestions to develop the Seven Hills Road extension between Prospect Highway and Wall Park Avenue
- Requests for information for proposed noise and vibration mitigation measures
- Suggestions to provide on road parking in bus lanes during off peak periods
- Support for sub option seven as the preferred two way link road design.

The submission from Blacktown City Council expressed support for the proposal and in particular for the proposed works to improve traffic flow at Shelley Public School, Tudor Avenue, Ponds Road and the two way link road. The submission provided a number of detailed comments for consideration, including:

- Local road access
- Construction staging
- Operational noise and potential noise barrier locations
- Design issues relating to the inclusion of Seven Hills Road Extension as part of the proposal and catering for Heavy Vehicle routes.

2.2 Design

2.2.1 Access

Submission number(s)

16, 40, 49

Issue description

- Respondents living north of St Martins Crescent suggested right turns be permitted from bus lanes (for example, 'hook turns') to improve the ability of residents to access St Martins Crescent, since there would be more lanes to cross to enter the right turn bay.
- A respondent requested a roundabout be provided in Keyworth Drive to assist with the proposed access strategy.
- Respondents requested the proposal consider property adjustment work to help with safer entry/exit from driveways.

Response

NSW Road Rules (2008) mandate that right turn movements are only to occur left of the centre of a road, unless line marked otherwise. The proposal would not include any right turn movements from the bus lanes since this would create driver confusion, additional delays at traffic lights and road safety issues.

Keyworth Drive is under the care and control of Blacktown City Council, although Roads and Maritime has outlined a proposal for a roundabout within Keyworth Drive. The roundabout would assist traffic required to turn around in Keyworth Drive and re-enter Prospect Highway. The roundabout would be located at the Keyworth Drive / Hadrian Avenue intersection and design of the roundabout would be determined during detailed design in consultation with Blacktown City Council.

The proposed roundabout is discussed further in Section 4.6 of this report.

The proposal has been developed to maintain driveway access to existing properties. Access would be restricted to left-in/left-out due to the central median which provides a safe design by physically separating the opposing traffic lanes.

Roads and Maritime acknowledges that accessing the corridor may be more difficult for residents living along Prospect Highway. The detailed design would include scope to consider fronting properties and potential private property adjustment works to improve vehicle storage and turning capability. This would be subject to a reasonable and feasible assessment with property owners during the detailed design stage. Affected residents would be kept informed during the detailed design.

2.2.2 Heavy vehicle routes

Submission number(s)

20, 45 (Blacktown City Council)

Issue description

Blacktown City Council suggested the proposal should be designed to cater for B-triples. Another respondent requested the upgrade should consider attracting heavy vehicles away from Blacktown Road.

Response

The NSW Freight and Ports Strategy (TfNSW 2012) recognises Prospect Highway as

a key freight access corridor between Wetherill Park and Prospect. Accordingly, the proposed upgrade is designed to cater for existing heavy vehicle access requirements, including 26m B-doubles. B-triples are currently not permitted to operate in the Sydney region. If permitted to operate, they are not expected to have extensive access to the Sydney road network. For this reason, the proposed design does not formally consider B-triples.

The proposed upgrade would improve existing traffic flow and road safety along Prospect Highway. Blacktown Road is an existing heavy vehicle route. The proposal is expected to attract heavy vehicles away from Blacktown Road as there would be improved access to Prospect Highway at Stoddart Road, the two way link road and the Great Western Highway eastbound entry ramp. These improvements are expected to reduce the volume of heavy vehicles using Blacktown Road to access Prospect Highway.

2.2.3 Informal service road

Submission number(s)

12, 19

Issue description

Respondents raised concerns removal of the informal service road area between Lancelot Street and St Martins Crescent would create difficulties for property access in this area. It was suggested the service road facility be retained and a four lane upgrade be provided without bus lanes.

Response

The proposal includes the upgrade of Prospect Highway to provide four general traffic lanes as well as kerbside bus lanes between Lancelot Street and St Martins Crescent. Bus lanes are provided for the section of Prospect Highway north of the Blacktown Road intersection as part of the Long Term Transport Master Plan (TfNSW 2012) under Strategic Bus Corridor 43. This corridor is intended to provide improved public transport connection to Blacktown central business district (CBD).

Kerbside bus lanes are required to provide public transport improvements and road safety benefits to residents fronting Prospect Highway. The kerbside bus lanes provide improved access to fronting properties as residents would be able to use the bus lanes on approach and departure from their driveways, similar to the use of the existing informal service road.

On road parking in the bus lanes would not be permitted for road safety and traffic flow reasons. As outlined in Section 2.2.1 of this report, detailed design would further consider the ability of residents along Prospect Highway to enter and exit their properties. This would be assessed during the development of the detailed design in consultation with affected property owners.

2.2.4 Two way link road (road between Prospect Highway and Great Western Highway)

Submission number(s)

1, 6, 11, 36

Issue description

Respondents expressed their support for the two way link road design sub option seven as the preferred design. A respondent was opposed to the signalised left turn movement at the bottom of the two way link road. Another suggested that the two way link road / Great Western Highway intersection should be relocated west towards the original preliminary concept design area to avoid impacts to Timbertop Reserve.

Response

As discussed in Section 2.4.2 of the REF, sub option seven was one of the design options considered for the two way link road. It is shown in Figure 2-1.

Figure 2-1 Sub Option seven for two way Link Road

Sub option seven includes constructing the link road on the southern side of the Great Western Highway and providing a right turn into Ponds Road for eastbound traffic on the Great Western Highway. Under this option, two new sets of traffic lights would be provided on the Great Western Highway. The existing eastbound exit ramp would not be impacted.

Although this option would provide some environmental benefits, and may reduce potential construction impacts experienced by Hampton Crescent residences, it did not meet required traffic performance and road safety criteria.

Sub option seven would increase traffic volumes on Ponds Road due to right turn in traffic. The intersection at Prospect Highway / Ponds Road would operate as a priority controlled intersection (give way) and the ability of traffic to enter Prospect Highway from Ponds Road would be dependent on gaps in the southbound traffic on Prospect Highway. Under sub option seven, there would be no signalised intersection of the two way link road and Prospect Highway (about 100 metres north of Ponds Road). This reduces the opportunity for Ponds Road traffic to turn left onto Prospect Highway while southbound traffic was stopped at the two way link road / Prospect Highway traffic lights.

Modelled traffic investigations of this option resulted in extensive traffic queuing along Ponds Road causing substantial delays, and creating potential for queuing onto the Great Western Highway.

If sub option seven was selected, additional future works and traffic lights would be required to stop the queuing and delay along Ponds Road. This would limit the benefit of the proposed upgrade works in this area. For these reasons, Roads and Maritime decided not to go ahead with sub option seven.

During detailed design, the location of the two way link road/Great Western Highway intersection would be reviewed to further minimise impacts to Hampton Crescent residences.

2.2.5 Pedestrians and cyclists

Submission number(s)

30, 36, 46

Issue description

Some respondents requested a footpath along Blacktown Road to connect with the proposed Prospect Highway / Blacktown Road intersection crossing. One respondent was opposed to the pedestrian crossing at Stoddart Road intersection suggesting pedestrians have no access beyond the western side of the road due to the wire fencing along the road corridor.

Response

A 1.2 metre wide footpath would be provided on the southern side of Blacktown Road between View Park Street and the Prospect Highway / Blacktown Road intersection as part of the proposed upgrade. This footpath is discussed in Section 4.5.

The pedestrian crossing at the Stoddart Road traffic lights is proposed for pedestrians crossing Prospect Highway. Although there is currently no pedestrian crossing at this location, traffic lights at the Prospect Highway / Stoddart Road intersection allows a pedestrian crossing to be included. The pedestrian crossing would operate during the right turn out phase of Stoddart Road. It would provide an improved connection for pedestrians between residential areas, nearby bus stops, commercial centres and the shared path on the western side of Prospect Highway.

2.2.6 Road safety

Submission number(s)

19

Issue description

Respondents raised concerns about the safety of shared path users adjacent to the road and the lack of protection for properties from errant vehicles.

Response

A road safety barrier to protect shared path users and properties is not a feasible option due to the limited width between the road and properties. The number of driveways along Prospect Highway means a continuous road safety barrier can not be provided. For this reason, it is not possible to provide road safety barriers to protect properties along Prospect Highway.

A road safety audit has been completed as part of the concept design for the proposal. The risk of errant vehicles colliding with shared path users or property was reviewed and is considered to be very low. The road upgrade is designed for safe vehicle movements, and meets road safety requirements. The audit found the proposed design and level of risk to be consistent with other urban road environments.

2.2.7 Seven Hills Road extension

Submission number(s)

6, 17, 32, 36, 37, 45 (Blacktown City Council), 50

Issue description

Respondents suggested an extension to Seven Hills Road be included in the proposed upgrade or a justification be provided as to why this was not possible.

Response

As discussed in Section 2.1 of the REF, the proposal has been developed to address the following specific needs, within the existing road corridor:

- Reduce traffic congestion and improve traffic flow
- Support public transport
- Support freight movement
- Support growth areas
- Improve safety.

The existing Prospect Highway corridor operates at capacity and has several road safety issues between Reservoir Road and St Martins Crescent. This section of Prospect Highway connects to arterial road corridors and is currently not capable of supporting the objectives. As a result the existing corridor was identified as a priority for upgrade and improvement works. This project would only include the existing Prospect Highway corridor to address the network constraints and problems along the corridor.

Extending Seven Hills Road would not properly address these objectives without the upgrade of Prospect Highway. Roads and Maritime acknowledges community support for a connection between Prospect Highway and Seven Hills Road which may provide further improvements to travel times and journeys. This design proposal considers potential future integration of the Seven Hills Road extension.

The vacant Seven Hills Road extension corridor may be investigated in the future as a separate project to this proposal to deliver further travel time and journey benefits. A separate environmental assessment and consultation process would be undertaken at that time.

2.2.8 Shared path

Submission number(s)

15 (Camwest Bicycle User Group Inc.), 41

Issue description

Respondents suggested modifications to the shared paths, including:

- Providing grade separated crossings of the shared path at the M4 Motorway and the Great Western Highway intersections
- Phasing the shared path crossings at traffic lights to allow shared path users right of way
- Extending the shared path south of Reservoir Road intersection to connect with existing shared path along Clunies Ross Street
- Upgrading the footpaths between Old Church Lane, Keyne Street and the underpass to shared paths.

Response

The proposed shared path along the western side of the corridor at the Great Western Highway and the M4 Motorway is constrained by the surrounding terrain and major electrical infrastructure. Grade separation of the shared path crossings at these corridors would require extensive structures and lengths of approach work to comply with the required grades. Building this infrastructure would add significant

cost and additional environmental impact. Roads and Maritime assessed the existing shared path use, and based on current and proposed use, grade separation of the shared path is not warranted at this time. For these reasons, grade separation of the shared path would not be provided as part of the proposal.

Priority shared path phasing would create additional traffic delays along Prospect Highway as left turning traffic would be required to queue in the bus lanes for the green signal to turn left. This queuing would disrupt the level of service for buses using the bus lanes and wishing to travel straight. Queuing would also create access delays for residents with driveways on approach to traffic lights. For these reasons, priority phasing of the shared path would not be provided along Prospect Highway. However, given the one way traffic direction on the M4 Motorway eastbound exit ramp, a priority crossing for the shared path could be provided at this intersection.

Reconciliation Road is a council road under the care and control of Holroyd City Council. The road recently opened providing connection to Wetherill Park. A corridor study would be prepared for Reconciliation Road and Prospect Highway to examine the impact of the connection to Wetherill Park. Subject to the findings of the corridor study, development of Reconciliation Road may proceed under the control of Holroyd City Council which could include a shared path upgrade.

The current proposal includes upgrading existing footpaths between Keyne Street and Old Church Lane. This would provide a continuous shared path connection from Keyne Street to Old Church Lane including through the upgraded underpass. A shared path connection from the underpass to the western side of Prospect Highway would also be provided. These shared path connections are outlined in Section 4.3 of this report. The final layout would be determined during detailed design.

2.2.9 Stoddart Road traffic lights

Submission number(s)

6

Issue description

A respondent indicated their opposition to traffic lights at the Stoddart Road intersection.

Response

Traffic lights at Stoddart Road would be required for road safety and to control movements at this intersection. Existing crash rates indicate a high proportion of crashes occurring at Stoddart Road due to poor gap selection by right turning vehicles. The signalised right turn is required to provide a safe and controlled right turn into Stoddart Road. In response to feedback received during display of the REF, the right turn out of Stoddart Road would also be incorporated as part of the proposed upgrade.

2.2.10 Other design suggestions

Submission number(s)

6

Issue description

Respondents made a number of other design proposals or requests, including:

- Directly connect the Great Western Highway and the M4 Motorway eastbound
- Connecting Blacktown Road and Lancelot Street

Response

Connecting the Great Western Highway and M4 Motorway eastbound entry ramp would require extensive structures and create major environmental impacts, especially to St Bartholomew's state heritage listed church. The benefit of a connecting ramp would be reduced by the existing indirect connection provided by Ponds Road, Prospect Highway and the M4 Motorway eastbound entry ramp. This existing route services the same traffic movement without the environmental impacts. For this reason, a direct loop ramp connection between the Great Western Highway and the M4 Motorway would not be provided as part of this proposal.

Connecting Blacktown Road and Lancelot Street would consolidate two major intersections within the road corridor. While this may provide an improvement in travel time along Prospect Highway, a suitable road alignment to safely connect these intersections would require substantial property acquisition increasing social and environmental impact. The Prospect Highway between Blacktown Road and Lancelot Street is already four lanes due to previous upgrade work. Traffic lights at Blacktown Road and Lancelot Street are currently coordinated to reduce delays to traffic along Prospect Highway. For these reasons, realignment of Blacktown Road and Lancelot Street to a single intersection would not be adopted as part of the proposed upgrade.

2.3 Construction

2.3.1 Construction work methodology

Submission number(s)

1, 4, 11, 44 (Blacktown and District Environment Group), 45 (Blacktown City Council)

Issue description

Respondents raised a number of points about the construction approach, including:

- Extended periods of construction near the two way link road and potential effects to nearby properties
- The timeframe for noise mitigation treatments, and the need for these to be implemented before construction
- The need to inspect dwellings prior to construction of the two way link road
- The need for vegetation removal to be considerate to the time of year in order to minimise impacts to wildlife habitats.

Response

Building of the two way link road is expected to occur during the first stage of construction, as outlined in Section 3.3 of the REF. Construction staging has been developed to minimise the number of stages and time spent building the two way link road. Construction would be managed in accordance with the environmental safeguards outlined in Section 5 of this report to minimise and avoid impacts to residents during this period. Construction staging would be further refined during detailed design.

As outlined in Sections 3.3.1 and 6.2.4 of the REF, where possible, noise mitigation treatments would be planned to occur as an early stage of building to provide benefits during construction. Regular consultation would occur with affected property owners to ensure they are kept updated about proposed noise mitigation treatments.

Building condition surveys will be undertaken for any building or structure identified

as having the potential to be affected by vibration impacts during construction, before the onset of these activities. The condition survey would be provided to each property owner for review at least two weeks before the start of construction. This would include a condition survey of the properties along Hampton Crescent that are adjacent to the two way link road construction area.

Where possible, pre-clearing surveys for plants and wildlife would be conducted during optimal season, and under conditions that would provide the greatest chance of detection. These surveys would be undertaken by an ecologist prior to vegetation removal. Appropriate wildlife relocation would occur where required and before vegetation removal. An additional construction safeguard for pre clearing surveys has since been included in section 5 of this report.

2.3.2 Construction staging

Submission number(s)

45 (Blacktown City Council)

Issue description

Blacktown City Council suggested that construction of the entire corridor should occur simultaneously to reduce the duration of construction work.

Response

As outlined in Section 3.3.1 of the REF, construction would be undertaken in five stages, with some stages able to occur simultaneously. The proposed staging has been developed to maximise construction efficiency while allowing for the continued flow of traffic along Prospect Highway. Given the complexity and extent of the proposal, it is not feasible to undertake construction of the entire length as a single stage.

Final construction staging would be determined during detailed design, and subject to the allocation of funding.

2.3.3 Proposed construction dates

Submission number(s)

47

Issue description

Respondent requested further information regarding the anticipated construction timeframe.

Response

Funding to build the proposal has not yet been determined. The 2014/2015 NSW Budget allocated $4 million towards planning for the Prospect Highway Upgrade. This funding enables detailed design and property acquisition to be completed, allowing the project to be construction ready.

Roads and Maritime will continue to keep residents, stakeholders and the community updated on the progress of the proposal.

2.4 Local road intersections

2.4.1 Roger Place

Submission number(s)

21, 22, 24, 25, 26, 27, 28, 29 31, 33, 45 (Blacktown City Council), 48, 52

Issue description

Respondents raised the following points about access for Roger Place:

- The upgrade should include a right turn out of Roger Place
- The proposed access route that would replace the existing right turn out of Roger Place would be illegal for heavy vehicles
- Increased local traffic along Keyworth Drive, Tudor Avenue and Beaufort Road would increase the time taken to travel along the detour route
- A median break should be provided to facilitate a two stage right turn out of Roger Place
- The right turn out of Roger Place should be facilitated via a roundabout or traffic lights.
- A time restricted right turn out should be considered

Response

The right turn movement out of Roger Place was reassessed following the display of the REF. Figure 6-2 of the REF shows the existing hourly traffic volumes along Prospect Highway just south of Roger Place. An intersection assessment was carried out to review the ability of traffic in Roger Place to safely turn northbound onto Prospect Highway. The results indicated this movement could not be safely completed for the majority of the week.

Hourly traffic volumes along Prospect Highway confirm there would be limited safe opportunities for vehicles to turn right out of Roger Place across both carriageways. This difficulty is compounded by the increased number of lanes on Prospect Highway. Figure 2-2 shows the proposed Roger Place access that would be established as part of the proposal.

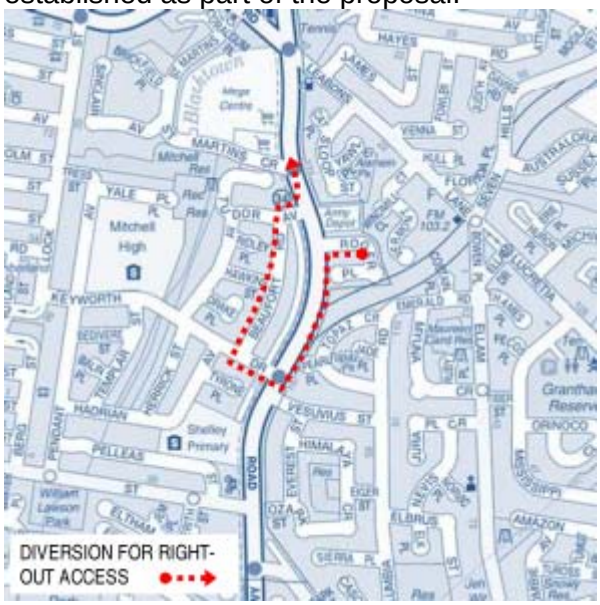

Figure 2-2 Roger Place access

A time restricted right turn movement out of Roger Place was considered as a compromise, however the safety risks associated with the operation of this restriction

could not be effectively managed. Analysis of the existing time restricted right turn movements into Vesuvius Street found four of the five crashes at this intersection were during restricted time periods. The crashes at Vesuvius Street show time restricted right turn movements cannot be effectively managed and they are often ignored. As a result the intended traffic flow and safety benefits of the time restriction are not achieved.

Traffic lights at the Prospect Highway / Roger Place intersection are not considered a suitable alternative as the number of vehicles entering and exiting Roger Place does not meet the warrant for them. In addition, traffic light phasing delay for vehicles wishing to make right turn movements out of Roger Place would result in a waiting time comparable to the travel time expected from the alternative route via Keyworth Drive, Beaufort Road and Tudor Avenue, negating any benefit.

Keyworth Drive, Beaufort Road and Tudor Avenue are under the care and control of Blacktown City Council. Council has confirmed the proposed alternate access route for Roger Place residents does not include any load limits or travel restrictions. Heavy vehicles are permitted to use this route to access Prospect Highway.

For these reasons, the median would not be modified to permit a right turn out from Roger Place as part of this proposal.

2.4.2 Stoddart Road

Submission number(s)

10, 14, 37, 42, 45 (Blacktown City Council)

Issue description

Respondents requested a right turn out of Stoddart Road be included as part of proposed upgrade.

Response

In response to submissions received and as part of the proposal design refinement, a right turn out movement at Stoddart Road was assessed. Results of the additional traffic investigation and traffic modelling are presented and discussed in Section 3.1.

The proposal has been modified to include the right out turn from Stoddart Road as shown in Section 4.1.

2.4.3 Vesuvius Street

Submission number(s)

45 (Blacktown City Council)

Issue description

Respondents requested that a right turn in and out of Vesuvius Street be included as part of the proposed upgrade.

Response

The Vesuvius Street intersection with Prospect Highway currently includes a right turn in movement which is restricted during peak periods. The proposed upgrade involves widening this section of the road and would result in a more difficult right turn in manoeuvre due to the additional southbound lanes. The right turn out movement cannot be accommodated within the proposal because of its proximity to

the Keyworth Drive intersection. Northbound intersection queue lengths would prevent Vesuvius Street traffic safely merging with the northbound traffic flow. Alternate and reasonable access routes are described in Section 6.1.4 of the REF. For these reasons, right turn movements in to and out of Vesuvius Street would not be provided as part of the proposal.

2.4.4 St Martins Crescent

Submission number(s)

49

Issue description

A respondent suggested that right turn lane into St Martins Crescent be extended due to existing queue lengths restricting traffic flow along Prospect Highway.

Response

In response to this submission, the length of the right turn lane into St Martins Crescent has been investigated further. It has been determined that an extension would improve storage for the right turn traffic into Blacktown Mega Centre, which has been incorporated into the proposal.

This extension is discussed further in Section 4.4 of this report.

2.5 Traffic

2.5.1 Congestion

Submission number(s)

20

Issue description

A respondent expressed concern the proposal would lead to increased traffic in the area rather than reduce traffic in the area.

Response

Although the proposal would provide increased capacity along Prospect Highway, it does not directly generate any additional trips. Traffic volume growth along the corridor is expected to occur and the proposal would provide improvements to the road corridor to accommodate this growth while enabling more efficient and safe journeys. Without the proposal, the congestion experienced along Prospect Highway is expected to increase the amount of traffic using alternate local roads.

2.5.2 Parking

Submission number(s)

8 (Medlife Medical Centre), 18, 38

Issue description

Respondents expressed concern about the loss of on road parking and requested additional on road parking to compensate for the loss of service road parking in particular.

Response

As described in Section 2.4.2 and 2.5.3 of the REF, various options for the allocation of the kerbside area were considered as part of the proposal. Accommodation of kerbside parking would have provided up to 20 car spaces between Keyworth Drive and Tudor Avenue. No parking spaces could be provided between Lancelot Street and Keyworth Drive or Tudor Avenue and St Martins Crescent as the length of road between these intersections was insufficient to provide bus stops and left turn lanes into side streets. Cars attempting to park may be required to stop and reverse into the parallel kerbside parking spaces. This movement would impact through traffic in the kerbside and centre lanes of Prospect Highway. Pedestrians attempting to enter and exit their parked cars would be at risk of being struck by passing traffic. For these reasons, it was decided that it would be inappropriate to permit or provide for on road parking as part of the proposal.

2.6 Noise

2.6.1 Operational noise

Submission number(s)

5, 16, 19, 43 (Residents of Blacktown and Seven Hills Against Further Traffic)

Issue description

Respondents expressed concern there would be an increase in noise associated with the proposed upgrade, noting that previous noise increases from the Abbott Road upgrade would compound noise impacts associated with this proposal. Respondents question the adequacy of the proposed noise mitigation treatment since some treatment had already been performed at an earlier date.

Response

The noise assessment summarised in the Section 6.2 of the REF included monitoring existing road noise in various locations and developing a noise model to understand the existing noise environment as well as determine the distribution of traffic noise along the corridor. The development of other corridors prior to October 2013 (assessment period) would be reflected in the noise assessment results that were recorded along the corridor. The results of the noise assessment were included in Appendix E of the REF. When assessed using the Road Noise Policy 2011 (DECCW, 2011) it was identified that all residential receivers along Prospect Highway and within the proposal area are already receiving acute road noise during the night and the majority of receivers experience acute noise during the day. This study identified about 230 acute receivers that require reasonable and feasible noise mitigation treatment subject to further assessment during detailed design.

Roads and Maritime acknowledges some dwellings along the corridor received noise mitigation treatments during 2010. Despite prior treatment, additional noise mitigation measures would be provided for these dwellings, where reasonable and feasible. The level of treatment would be complementary to previous treatments.

2.6.2 Potential mitigation and treatment

Submission number(s)

1, 2, 4, 5, 23, 30, 35, 45 (Blacktown City Council), 46, 49

Issue description

Respondents expressed support for a variety of potential noise barriers along the two

way link road, but questioned the nature of the proposed noise mitigation treatment along the two way link road.

A respondent requested the proposed noise mitigation include post installation evaluation to ensure predicted noise reduction is achieved.

Response

The proposed noise barriers are discussed in Section 6.2.3 of the REF and are included in Figure 2-3 to Figure 2-6 of this report. Roads and Maritime acknowledges support for these potential noise barriers and their locations. The exact location, extent and size of any potential noise barriers would be determined following a noise barrier assessment during the detailed design stage. Affected residents would be kept informed during the detailed design process.

As outlined in Section 6.2.4 of the REF, a post construction noise monitoring program would be performed to assess the operational noise from the proposed upgrade. The operational noise monitoring program would be established within 6 to 12 months of the opening of the proposal to allow traffic flows to stabilise and the noise assessment to be verified. Results of the post upgrade operational noise assessment would be available to treated property owners, although the purpose of the assessment is only to verify the noise assessment already undertaken. Any receivers identified as above the noise criteria that were not identified previously would have a reasonable and feasible assessment for noise mitigation treatments. The post construction assessment would not lead to additional treatment for properties that have already received noise mitigation treatment.

Figure 2-3 Potential noise barrier 1

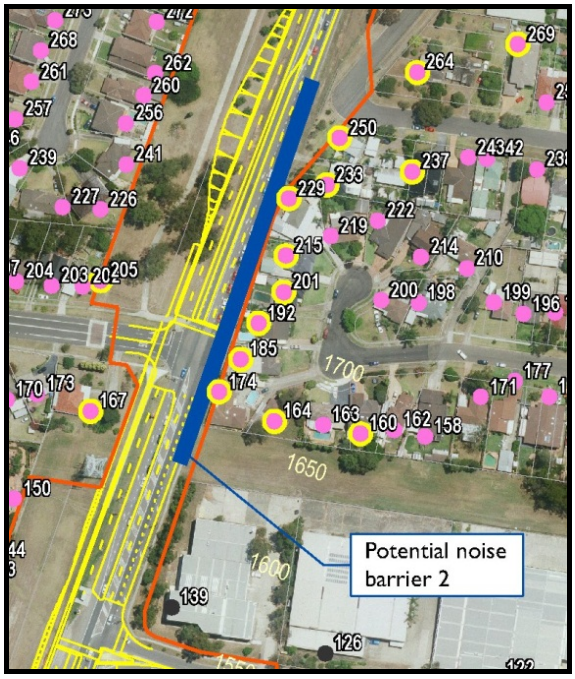

Figure 2-4 Potential noise barrier 2

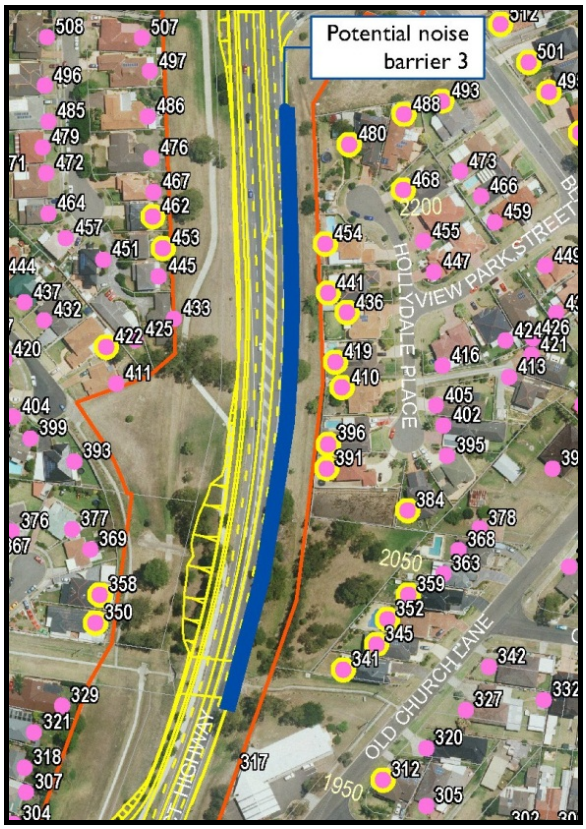

Figure 2-5 Potential noise barrier 3

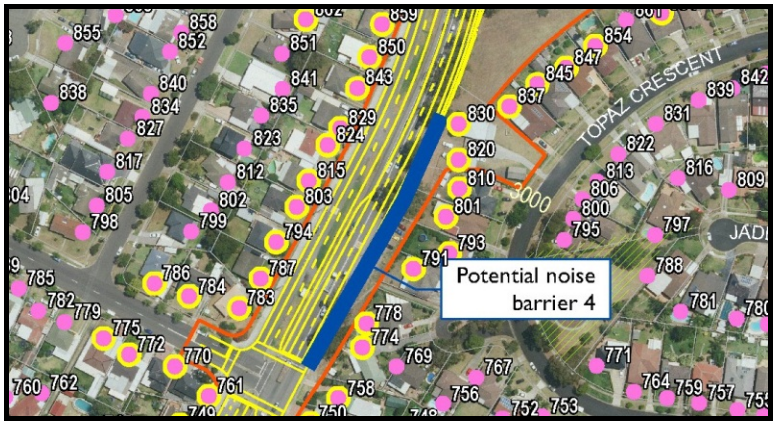

Figure 2-6 Potential noise barrier 4

2.7 Biodiversity

2.7.1 Vegetation loss

Submission number(s)

39, 44 (Blacktown and District Environment Group)

Issue description

Respondents raised concern regarding the following impacts on vegetation:

- Loss of various eucalyptus trees along road corridor
- Loss of some vegetation in Cumberland Plain Woodland patch south west of the Great Western Highway crossing
- Clearing associated with potential compound site three.

Response

The proposal includes removal of isolated eucalyptus trees along the corridor. The loss of these trees relates to the clearing required to facilitate construction and the road safety requirements. The removal of these trees has been assessed in the REF and is considered to not be a significant impact.

A biodiversity assessment was carried out as part of the REF and found that even if these trees were retained and not directly impacted by the proposal, they are unlikely to survive due to ongoing edge effects and weed invasion. In addition, retention of this vegetation would create ongoing road and public safety issues. For these reasons the vegetation adjacent to the road must be removed. The proposed upgrade does provide for replanting and replacement of native vegetation as part of the Landscape Character / Visual Impact Assessment and Urban Design Study. Refer to Section 6.4 and Appendix G of the REF.

The proposal aims to reduce the impact to the area of Cumberland Plain Woodland on the southern side of the Great Western Highway by containing the western extent of work as much as practicable. The potential biodiversity impacts associated with the proposal, including the proposed compound sites, were assessed within section 6.3.3 of the REF. The proposed design near this area of vegetation would require the removal of about three mature trees that are within the design footprint. Further review of the proposed construction footprint for the Great Western Highway Bridge and road formation, has confirmed it would not be possible to retain these trees without severely impacting their ability to survive given that they are isolated from the larger Cumberland Plain Woodland community to the west. In addition, if these trees were retained, they would be exposed to ongoing fringe effects. For this reason,

these trees would require removal during construction of the proposal.

Potential compound site three has been selected to support construction of the Great Western Highway Bridge and the section of Prospect Highway between the M4 Motorway and the Great Western Highway. A small area at the western side of the potential compound site has been identified as Cumberland Plan Woodland vegetation. This vegetation is unlikely to be directly impacted during construction of the proposal due to the steep terrain of this area. In addition, the small area of Cumberland Plan Woodland is of reduced quality due to the presence of exotic vegetation and grasses surrounding the area. No formal protection measures would be introduced for this area.

2.8 Visual impact and landscaping

2.8.1 Landscaping strategy

Submission number(s)

4, 45 (Blacktown City Council), 46

Issue description

Respondents made various suggestions relating to the landscaping strategy, including:

- The planting of additional vegetation along the two way link road to reduce the visual impact
- Designing the road verge to reduce maintenance work required for the corridor
- The use of native species for revegetation
- Maximising vegetation and landscaping between the highway and potential noise barriers to help reduce the visual impact, noise and air quality concerns
- Avoiding the proposed planting of large gum trees in the vicinity of properties.

Response

The proposal would include increased vegetation along the two way link road. The proposed vegetation species would be consistent with the current landscaping and visual assessment report included as Appendix G of the REF and finalised in consultation with Blacktown City Council. The amount of roadside vegetation planting would be determined during detailed design.

The urban design strategy would be finalised in consultation with council and would take into consideration maintenance, property and other impacts. The mature growth and spread of any planted trees would be considered as part of this process.

The proposed upgrade would include increased vegetation in the area between the road and potential noise barriers. The extent of the increased planting would be determined during detailed design in consultation with council, although consideration would be given to maintenance requirements near the Blacktown Road intersection, as well as the road safety requirements.

2.8.2 Two way link road visual impact

Submission number(s)

5

Issue description

A respondent asked what the extent of the visual impact would be from the proposed retaining wall along the two way link road.

Response

The magnitude of the visual impact associated with the retaining wall along the two way link road has been minimised by reducing the length and height of the retaining wall. The landscape, visual amenity and urban design assessment summarised in Section 6.4 of the REF includes an image illustrating the expected visual impact of the wall profile (included in Figure 2-7 and Figure 2-8 of this report). The REF assessed the visual impact of the retaining wall as moderate to high. The visual impact would be further reduced by planting native vegetation screening and via the inclusion of urban design principles in the design of the wall facade.

Figure 2-7 Indicative visual impact from proposed retaining wall from two way link road

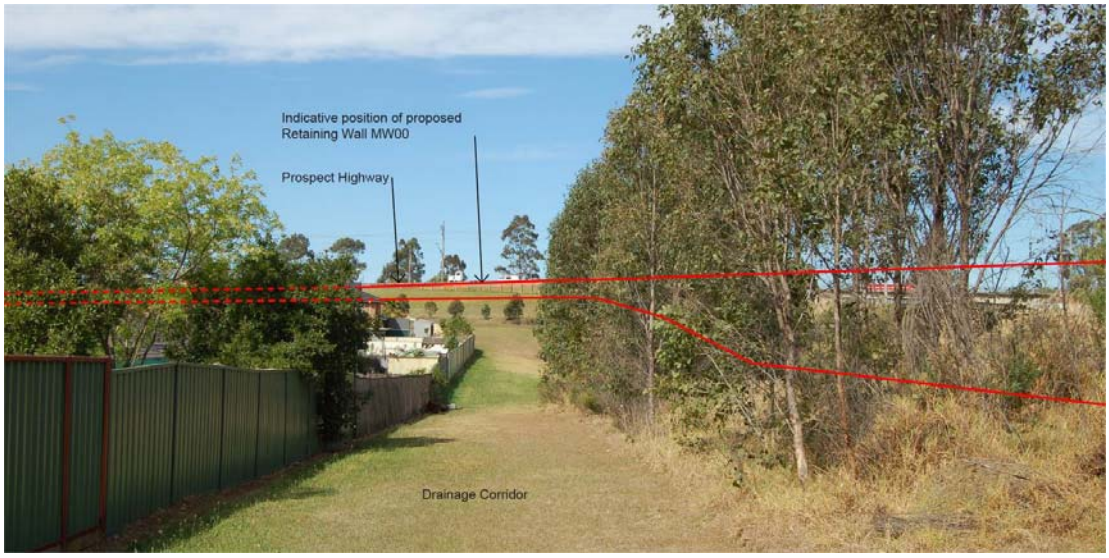

Figure 2-8 Indicative visual impact from proposed retaining wall next to two way link road

2.9 Air Quality

2.9.1 Operational air quality

Submission number(s)

4, 19, 23, 35, 40

Issue description

Respondents raised concern about the existing levels of air pollutants being generated by the operation of Prospect Highway, and the potential for this to increase during the operation of the proposal.

Response

A review of the daily air quality monitoring data collected from the Prospect air quality monitoring station for July 2014 against EPA assessment criteria showed the existing air quality within the vicinity of the proposal is generally classified as very good or good. The data showed that air pollutant levels recorded were not dangerous to human health.

Traffic intersection modelling presented in Section 6.1.4 of the REF shows the predicted AM and PM peak intersection performance for the year 2038 with and without the proposal. The results of this analysis demonstrate without the proposal intersection congestion along Prospect Highway in 2038 would be significantly worse than with the proposed upgrade.

Since the proposal would increase capacity along Prospect Highway, it would facilitate an increase in traffic volumes along the corridor. However, the proposal would also provide improved traffic flows and reduce traffic congestion along the corridor and would therefore help reduce existing air quality impacts generated by vehicle emissions.

The proposal also includes infrastructure to promote and improve other travel modes such as additional public transport and shared paths, helping to minimise any potential air quality impacts from private vehicles.

2.10 Other

2.10.1 Financial allocation to vegetation

Submission number(s)

44 (Blacktown and District Environment Group), 45 (Blacktown City Council)

Issue description

Blacktown City Council requested an allocation of funds to assist with the operational maintenance of corridor vegetation. The Blacktown District Environment Group requested funds to revegetate areas along the corridor with native species.

Response

The proposed urban design strategy would include a detailed landscaping plan for the corridor and would be developed with consideration given to the existing environmental setting and the findings of the biodiversity assessment. The landscaping proposal would be further developed during detailed design to maximise the planting of suitable vegetation, including native vegetation where appropriate. Blacktown City Council would provide input into the landscaping plan during the detailed design stage to complement their visual character and maintenance requirements.

Maintenance of the corridor's vegetation is part of Blacktown City Council's normal responsibilities. Landscaping provided as part of the proposal would be under the care and control of Blacktown City Council. The landscaping strategy for the corridor would be developed during detailed design in consultation with Blacktown City Council.

Roads and Maritime would not provide funding to Blacktown and District Environment Group for additional vegetation planting or vegetation management.

2.10.2 Local road proposal

Submission number(s)

40

Issue description

The following suggestions were made about changes to local roads surrounding the proposal:

- A respondent suggested converting Hadrian Avenue to one way traffic flow to allow for more efficient traffic movements around Shelley Public School.
- A request that the Tudor Avenue connection to St Martins Crescent be developed to improve residential area access.

Response

Hadrian Avenue provides access to Shelley Public School and services many residences. It is a two way road under the care and control of Blacktown City Council. During development of the detailed design, Roads and Maritime would work with Shelley Public School and Blacktown City Council regarding any future improvements to parking and access to Shelley Public School.

Tudor Avenue is under the care and control of Blacktown City Council. Roads and Maritime acknowledges the proposed connection of Tudor Avenue and St Martins Crescent may provide local traffic benefits. However, the reserve separating Tudor Avenue and St Martins Crescent provides an important drainage control and flood attenuation function. Development of this land would create flooding problems for neighbouring properties. For this reason, the reserve between Tudor Avenue and St Martins Crescent would not be developed as a road corridor.

2.10.3 Property values

Submission number(s)

4, 19

Issue description

Respondents requested some level of financial compensation be paid to owners of properties where value of property would potentially decline due to approaching road development and associated visual impacts.

Response

Where a property is adjacent to a new or upgraded road but is not directly impacted by the proposal, Roads and Maritime does not provide financial compensation for any potential decrease in property value. However, Roads and Maritime has considered potential impacts to private properties during the design of the proposal and impacts have been avoided and minimised where possible.

2.10.4 Road lighting

Submission number(s)

19

Issue description

A respondent expressed concern that the proposed road lighting would create sleep disturbance issues.

Response

The proposed road upgrade would require lighting in accordance with Australian Standards road lighting requirements. Placement of lighting columns and distribution of light and lantern types would be determined during detail design. The environmental impacts of light distribution near properties would be considered as part of the detailed design.

2.10.5 Vehicle enforcement

Submission number(s)

43

Issue description

A respondent requested an increase in the level of enforcement for non-compliant vehicles using Prospect Highway

Response

The proposal does not include provision for a permanent heavy vehicle inspection bay or any other vehicle enforcement checking facility. However, Roads and Maritime Heavy Vehicle Regulations have identified the Prospect Highway corridor as a key freight corridor and accordingly heavy vehicle regulations would be actively enforced along the corridor.

2.10.6 Grade separated crossing

Submission number(s)

9

Issue description

A respondent requested a grade separated pedestrian crossing (bridge or underpass) across Prospect Highway near Shelley Public School.

Response

The proposal includes measures to improve pedestrian safety north of Lancelot Street, particularly at Shelley Public School. These include:

- Upgraded pedestrian crossings at the Keyworth Drive and Lancelot Street traffic lights.
- A 1.2 metre wide footpath on the eastern side of Prospect Highway between Roger Place and Keyworth Drive. This would provide a new footpath connection to the crossings at the Keyworth Drive traffic lights.
- Pedestrian fencing in front of Shelley Public School. It would provide a barrier for people during the event of an emergency evacuation. Direct access

between Shelley Public School and Prospect Highway would be removed as part of the proposal to reduce the number of school children directly accessing the rear of the school grounds from Prospect Highway
- Additional traffic management work that would be determined during detailed design in consultation with Shelley Public School, Department of Education and Blacktown City Council. This is discussed further in section 2.10.7 of this report.

Based on the crash rate near Shelley Public School, particularly the lack of recorded pedestrian incidents, a grade separated crossing does not appear to be warranted. With the close proximity of Lancelot Street and Keyworth Drive pedestrian crossings, the likelihood of pedestrians using the grade separated crossing would be very low and therefore it would fail to deliver improvements to safety.

Furthermore, a grade separated crossing near Shelley Public School would require extensive civil structures and space to satisfy the design standards for a bridge crossing. The construction of an underpass would create severe drainage issues in the area. For these reasons, a grade separated crossing of Prospect Highway would not be included in this proposal.

2.10.7 Shelley Public School

Submission number(s)

40, 45 (Blacktown City Council)

Issue description

Respondents, including the Blacktown City Council, supported work at and around Shelley Public School to improve traffic flow and access to the school.

Response

During detailed design Roads and Maritime would discuss additional traffic proposals for Shelley Public School with Blacktown City Council, in collaboration with the Department of Education. The project team would continue to consult these stakeholders to deliver a traffic management solution that improves the safety of school children, access to the school and reduces school zone traffic impacts for residents in the vicinity of Shelley Public School.

2.11 Outside of scope

2.11.1 Litter

Submission number(s)

19

Issue description

A respondent suggested that the proposal would create increased litter and loitering.

Response

No assessment of litter or loitering was performed since the existing levels of each activity are not expected to change as a result of the proposed upgrade.

2.11.2 Wall Park Avenue intersection

Submission number(s)

50

Issue description

A respondent requested the proposal should look at the Wall Park Avenue intersection and corridor given the existing crash rate and school zone inefficiency

Response

Roads and Maritime acknowledges that the Wall Park Avenue intersection and corridor currently operates at capacity resulting in delays and queuing of traffic. As discussed in Section 2.1 of the REF, the proposal has been developed to address the specific needs of a section of the Prospect Highway corridor. The Wall Park Avenue intersection is therefore outside the scope of the current proposal although this comment would be referred to Transport for New South Wales for its consideration.

2.12 Proposal support

Submission number(s)

3, 7, 13, 34, 41, 44 (Blacktown and District Environment Group), 45 (Blacktown City Council)

Issue description

A number of respondents expressed their overall support for the proposal, or for specific elements of the proposal, for example support for sub option four and the reduction in biodiversity impacts to Timbertop Reserve and support for the Tudor Avenue and Ponds Road intersection layouts.

Response

Roads and Maritime acknowledges this support.

3 Additional assessment

Following the public display of the REF, Roads and Maritime commissioned additional assessment and sought specialist advice about traffic at the Stoddart Road intersection.

The additional assessment and advice has assisted responses to the submissions about the REF. The outcome of the investigations are described below. The proposed changes adopted are described in Section 4 of this report.

3.1 Traffic study – Stoddart Road intersection

3.1.1 Summary

A traffic assessment was undertaken by consulting engineers SMEC for the proposal and included as Appendix D of the REF. After considering the submissions to include a right turn out of Stoddart Road, Roads and Maritime developed a traffic model of the Stoddart Road intersection to assess the impact.

The right turn out of Stoddart Road was modelled with the forecast 2038 traffic volumes to determine the potential impact to Prospect Highway.

The right turn out movement is currently not permitted although it is complemented by existing network routes and movements, which include:

- Right turns at Blacktown Road intersection
- Left turns at Stoddart Road and U-turns at Prospect Highway / M4 Motorway eastbound ramp roundabout.

These existing movements were used to estimate a reasonable volume for the right turn out of Stoddart Road.

The results of this traffic assessment indicated an additional delay of up to 25 seconds along Prospect Highway in the 2038 PM peak. The additional delay is expected to be absorbed by the reduction in green traffic light time for the right turn movement out of Blacktown Road. Therefore the right turn movement out of Stoddart Road onto Prospect Highway has been considered to be suitable for inclusion in the proposal.

The resulting design change at the Stoddart Road intersection is discussed in Section 4.1 of this report.

Refer to Figure 4-1 for the updated Stoddart Road intersection design.

4 Changes to the proposal

4.1 Provision of right turn out movement at Stoddart Road

4.1.1 Description

The proposed concept design change includes a right turn lane to allow controlled movements from Stoddart Road onto Prospect Highway. The updated intersection design for Stoddart Road is shown in Figure 4-1.

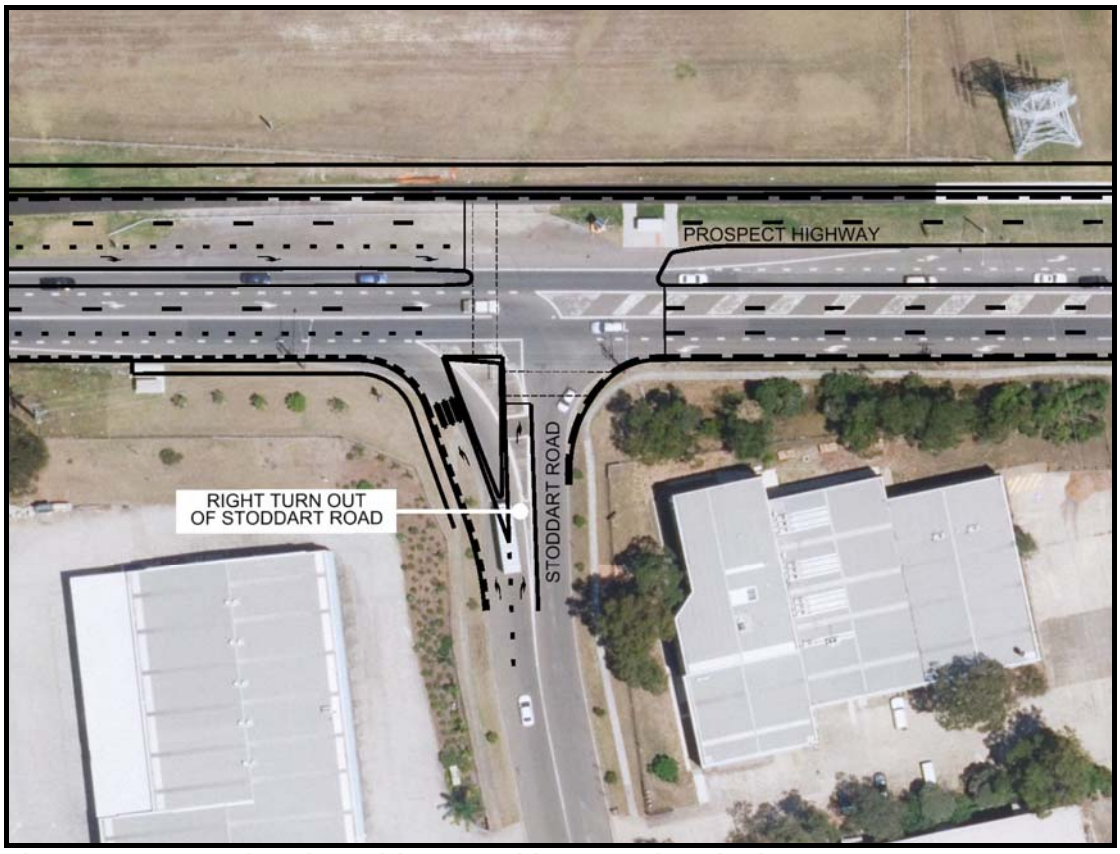

Figure 4-1 Updated Stoddart Road intersection design

4.1.2 Environmental assessment

Only those environmental impacts relevant to the proposed changes to the proposal are outlined below.

Traffic impacts

The proposed change includes a controlled right turn out of Stoddart Road. This results in an additional delay of up to 25 seconds during the 2038 peak period. This is considered minor and would be managed with the coordination of surrounding traffic lights to minimise this delay.

The right turn out from Stoddart Road would result in improved access onto Prospect Highway. It may lead to reduced trips along Blacktown Road and reduce the environmental and social impacts associated with heavy vehicle travel along Blacktown Road. A reduction in trips along Blacktown Road would offset the delay at Stoddart Road as there would be less traffic turning right at Blacktown Road onto Prospect Highway.

Socio-economic impacts

The right turn out of Stoddart Road would improve access between the Stoddart Road commercial precinct and the northbound carriageway of Prospect Highway. The improved access is expected to reduce the amount of traffic using Blacktown Road to travel north and access Prospect Highway by allowing an alternate right turn onto the Prospect Highway northbound carriageway. This could improve road safety at the Blacktown Road / Prospect Highway intersection and along Blacktown Road.

4.2 Provision of additional southbound lane between Stoddart Road and the Great Western Highway

4.2.1 Description

The proposed design change includes an additional general traffic lane in the southbound direction between Stoddart Road and the Great Western Highway. The additional lane would be provided to improve capacity for southbound traffic along Prospect Highway.

The additional lane would convert the proposed left turn auxiliary lane into Stoddart Road to a general traffic lane. This lane would then continue southbound to the Great Western Highway eastbound entry ramp.

The additional lane would be provided kerbside and utilise the existing road pavement area. It is also expected to resolve a number of road safety issues associated with the bus stop location south of Stoddart Road. The increased southbound capacity would contribute towards offsetting the delay of the right turn out of Stoddart Road.

The updated design between Stoddart Road and the Great Western Highway is shown in Figure 4-2.

Figure 4-2 Additional southbound traffic lane between Stoddart Road and Great Western Highway

4.2.2 Environmental assessment

Only those environmental impacts relevant to the proposed changes to the proposal are outlined below.

Traffic impacts

The addition of a third southbound lane between Stoddart Road and the Great Western Highway eastbound entry ramp would improve the capacity and flow of southbound traffic along this section of Prospect Highway.

Noise impacts

The additional lane does not result in any additional operational noise from Prospect Highway. It is provided within the existing road pavement area and is not located near any acute noise receivers.

Biodiversity impacts

The additional lane is provided within the existing road pavement area and there are no additional impacts to plants and/or wildlife.

Hydrology impacts

The additional lane would lead to a minor increase in impervious surfaces which would increase runoff into the adjacent gutter. The increased flows into the drainage pits and pipes from this additional area would be minor and are not expected to lead to an increased risk of flooding in adjacent development or an increased risk of scour in connecting watercourses.

The detailed design of the road drainage network would consider the increased flow in this area.

4.3 Provision of shared paths between Old Church Lane and Keyne Street

4.3.1 Description

The proposed concept design change would include three additional shared paths of about three metres width near the Old Church Lane to Keyne Street underpass. The shared paths would connect the upgraded underpass to:

- Old Church Lane
- Keyne Street
- The shared path on the western side of Prospect Highway.

The design of the shared paths would generally follow the alignment of the existing footpaths at the underpass. The alignment of these shared paths is shown in Figure 4-3.

Figure 4-3 Additional shared path connections at the Old Church Lane to Keyne Street pedestrian underpass

4.3.2 Environmental assessment

Only those environmental impacts relevant to the proposed changes to the proposal are outlined below.

Pedestrian and cyclist access

The proposed change includes additional shared path infrastructure connecting the upgraded Old Church Lane to Keyne Street pedestrian underpass, to the shared path along Prospect Highway, Old Church Lane and Keyne Street. These shared path connections would improve pedestrian and cyclist access along these routes and extends the shared paths to the existing local road network on both sides of the corridor.

These additional shared path connections improve the proposal design and would encourage greater uptake in the usage of pedestrian and cyclist facilities.

Socio-economic impacts

The additional shared paths would provide an improved connection between both sides of Prospect Highway and the shared path along Prospect Highway. These connections would improve pedestrian access between areas to the east and west of Prospect Highway and along the road corridor, as well as improving the safety of users along these routes.

4.4 Extension of right turn lane into St Martins Crescent

4.4.1 Description

The proposed concept design change includes extension of the right turn lane into St Martins Crescent. The extension of the lane would provide increased storage capacity for traffic entering St Martins Crescent.

The right turn lane would be extended to maximise storage within the median area. The extended right turn lane is shown in Figure 4-4.

Figure 4-4 Extended right turn lane at St Martins Crescent intersection

4.4.2 Environmental assessment

Only those environmental impacts relevant to the proposed changes to the proposal are outlined below.

Traffic impacts

The proposed change includes an extended right turn lane into St Martins Crescent. The extended length would improve storage capacity for vehicles turning right into St Martins Crescent. This would prevent right turning vehicles queuing into the southbound general traffic lanes on approach to this intersection.

Hydrology impacts

The design change would lead to a small increase in impervious surfaces and runoff into the kerbside gutter. This would have a minor effect on the flow into the drainage pits and pipes and is not expected to increase the risk of flooding in adjacent development or scour in connecting watercourses.

The detailed design of the road drainage network would consider the flow changes in this area.

4.5 Provision of footpaths on eastern side of Blacktown Road intersection

4.5.1 Description

The proposed concept design change includes two new sections of footpath. A new 1.2 metre wide footpath would be provided along the southern side of Blacktown Road between View Park Street and Prospect Highway, and a new 1.2 metre wide footpath would be provided along the eastern side of Prospect Highway between Lancelot Street and Blacktown Road.

The footpaths would generally follow the alignment of the existing verge area along Blacktown Road and Prospect Highway respectively. The final design of each of the footpaths would be determined during the detailed design process. An indicative alignment of the footpaths is shown in Figure 4-5.

Figure 4-5 New footpath connections at Blacktown Road intersection

4.5.2 Environmental assessment

Only those environmental impacts relevant to the proposed changes to the proposal are outlined below.

Access impacts

The proposed change would provide improved access for pedestrians along the southern side of Blacktown Road and the eastern side of Prospect Highway to the new crossing at the Blacktown Road intersection. The footpaths would complement the proposed signalised crossing of Prospect Highway at the Blacktown Road intersection.

Biodiversity impacts

The proposed footpaths would be located entirely within the Blacktown Road verge area, and would coincide with the existing informal walking track formed by pedestrians traversing the existing grassed verge. The inclusion of the footpaths would not require the removal of any native vegetation.

Socio-economic impacts

The footpath would provide an improved and formal connection to the Blacktown Road intersection with Prospect Highway. These connections would improve links with pedestrian infrastructure to the east of Prospect Highway.

4.6 Provision of roundabout along Keyworth Drive

4.6.1 Description

The proposed concept design includes a roundabout in Keyworth Drive to improve local resident access routes to and from their properties. The proposed roundabout would be provided at the intersection with Hadrian Avenue. The existing intersection is currently an uncontrolled T intersection.

Design of the roundabout would comply with Blacktown City Council requirements and Austroads Guidelines. The design of the roundabout would be determined during the detailed design process including ongoing discussion with surrounding property owners. Introduction of the roundabout would not require property acquisition or remove property accesses.

An indicative roundabout design for the Keyworth Drive/Hadrian Avenue intersection is shown in Figure 4-6.

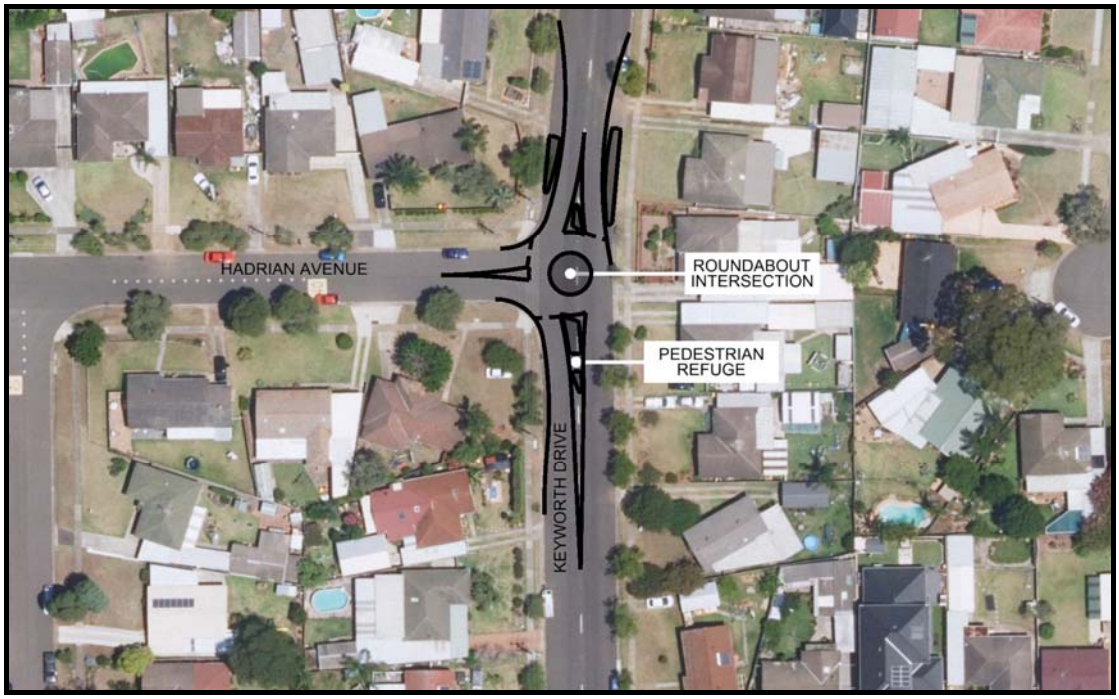

Figure 4-6 Indicative roundabout at Keyworth Dr/Hadrian Ave intersection

4.6.2 Environmental assessment

Only those environmental impacts relevant to the proposed changes to the proposal are outlined below.

Traffic impacts

The roundabout would improve traffic control at the intersection of Keyworth Drive and Hadrian Avenue. This would improve traffic flow and road safety particularly during school drop-off and pick-up hours when traffic volumes are increased.

The roundabout would remove existing areas of parking on approach to the roundabout. Adjacent unrestricted parking would remain available. Loss of parking near the roundabout is considered minor and acceptable.

Access impacts

The proposed roundabout would provide improved access for residents accessing properties affected by the proposed median along Prospect Highway. With the introduction of the proposed median along Prospect Highway, northbound and southbound vehicles that currently make right turns to access private property on Prospect Highway will be unable to do so. Inclusion of a new roundabout on Keyworth Drive provides an opportunity for vehicles to safely turn around and re-enter Prospect Highway at the Keyworth Drive intersection. The new access arrangement is shown in Figure 4-7.

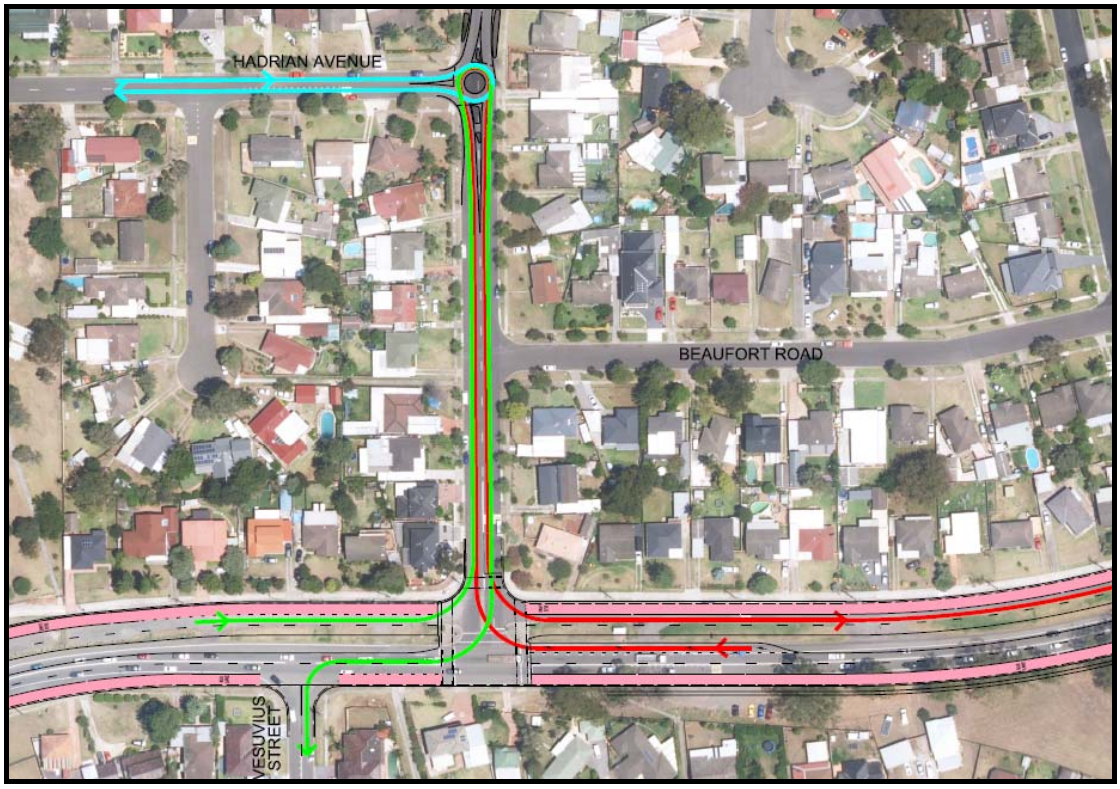

Figure 4-7 New access routes with proposed roundabout

The roundabout design would consider and retain all existing driveway accesses in the vicinity of the intersection.

5 Environmental management

The REF for the Prospect Highway Upgrade identified the framework for environmental management, including management and mitigation measures that would be adopted to avoid or reduce environmental impacts (Section 7.2 of the REF).

After consideration of the issues raised in the public submissions and changes to the proposal, the management and mitigation measures have been revised. Should the proposal proceed, environmental management will be guided by the framework and measures outlined below.

5.1 Environmental management plans (or system)

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

A Project Environmental Management Plan (PEMP) and a Contractors Environmental Management Plan (CEMP) would be prepared to describe safeguards and management measures identified. These plans would provide a framework for establishing how these measures would be implemented and who would be responsible for their implementation.

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

5.2 Summary of safeguards and management measures

Environmental safeguards outlined in this document would be incorporated into the detailed design phase of the proposal and during construction and operation of the proposal. These safeguards would minimise any potential adverse impacts arising from the proposed works on the surrounding environment. Measures from the REF (as revised) as well as additional measures are presented in Table 5-1 below. All safeguards presented in this submissions report would be incorporated into the CEMP.

Table 5-1 Summary of proposed safeguards and mitigation measures

No.	Impact	Environmental safeguards New or revised measure shown in red bold	Responsibility	Timing
1.	**General**	**All environmental safeguards must be incorporated within the following:** • **Project Environmental Management Plan** • **Detailed design** • **Contract specifications for the proposal** • **Contractor's Environmental Management Plan**	**Project manager**	**Pre-construction**
2.	**General**	• **A risk assessment would be carried out on the proposal in accordance with Roads and Maritime Project Pack and PMS risk assessment procedures to determine an audit and inspection program for the works. The recommendations of the risk assessment are to be implemented.** • **A review of the risk assessment must be undertaken after the initial audit or inspection to evaluate is the level of risk chosen for the project is appropriate.** • **Any works resulting from the proposal and as covered by the REF may be subject to environmental audit(s) and/or inspection(s) at any time during their duration.**	**Project manager and regional environmental staff**	**Pre-construction** **After first audit**
3.	**General**	• **The environmental contract specification Roads and Maritime *QA Specification G36 – Environmental Protection (Management System)* would be forwarded to the Roads and Maritime Senior Environmental Officer for review at least 10 working days prior to the tender stage.** • **A contractual hold point must be maintained until the CEMP is reviewed by the Roads and Maritime Senior Environmental Officer.**	**Project manager**	**Pre-construction**
4.	**General**	**The Project Manager must notify the Roads and Maritime**	**Project manager**	**Pre-construction**

No.	Impact	Environmental safeguards	Responsibility	Timing
		New or revised measure shown in red **bold**		
		Environment Officer Sydney region at least 5 days prior to work commencing.		
5.	**General**	**All businesses and residences likely to be affected by the proposed works must be notified at least 5 working days prior to the commencement of the proposed activities.**	**Project manager**	**Pre-construction**
6.	**General**	**Environmental awareness training must be provided, by the contractor, to all field personnel and subcontractors.**	**Contractor**	**Pre-construction and during construction as required.**
7.	**Consultation**	**Roads and Maritime would continue to provide updates regarding the progression of the proposal to stakeholders and the community via the Roads and Maritime website, emails and regular mail.**	**Roads and Maritime**	**Detailed design, pre-construction and construction**
8.	Traffic management	A construction traffic management plan would be prepared and implemented in accordance with the *Traffic Control and Worksites*, version 4.0 (Roads and Maritime, June 2010). The construction traffic management plan would enable the safe management of traffic, provide for the safety of construction personnel and minimise impacts on the local community.	Construction contractor	Pre-construction
9.	Emergency services	Consultation with emergency service authorities would be undertaken during development of the detailed design.	Roads and Maritime	Detailed Design
10.	Property access	Vehicular property access would be maintained where possible including pre-schools, places of worship and all commercial premises. Consultation with property owners would be undertaken prior to any changes to property accesses.	Roads and Maritime Construction contractor	Construction
11.	**Property access**	• **Potential private property adjustment works for fronting properties would be considered during detailed design, where required, to improve vehicle storage and turning capability** • **This would be subject to a reasonable and feasible assessment with property owners**	**Roads and Maritime**	**Detailed Design**

No.	Impact	Environmental safeguards New or revised measure shown in red **bold**	Responsibility	Timing
		• **Affected residents would be kept informed during detailed design.**		
12.	Shelley Public School	Temporarily relocate maintenance access and garbage collection at Shelley Public School in consultation with the school	Roads and Maritime Construction contractor	Construction Operation
13.	**Shelley Public School**	• **Roads and Maritime will investigate measures to improve traffic flow and access to Shelley Public School as part of the proposal in consultation with the school and Blacktown City Council** • **Pedestrian fencing and controlled access to Shelley Public School via Hadrian Avenue and Pelleas Streets would be introduced to remove access to Shelley Public School from Prospect Highway.**	**Roads and Maritime**	**Detailed design** **Construction**
14.	Pedestrians and cyclists	Pedestrian and cyclist access is to be maintained throughout construction. Provision of signposting outlining the pedestrians and cyclists diversion routes would be displayed during construction. There will be advance notification of any construction works that affect pedestrians and cyclists.	Construction contractor	Construction
15.	Bus services	Access to appropriate bus stop locations would be maintained during construction in consultation with bus operators.	Construction contractor	Construction
16.	Bus services	Ongoing updates on locations and access to bus stops would be provided to the community during construction period to ensure that disruption is minimised.	Construction contractor	Construction
17.	Operational noise	• During the detailed design stage of the proposal, further investigations would be undertaken to consider all feasible and reasonable mitigation options for affected receivers, in line with the Roads and Maritime Environmental Noise Management Manual (RTA, 2001) and NSW Road Noise Policy (DECCW, 2011) • **A noise barrier assessment would be undertaken to determine the extent and design of any potential noise barriers. Affected**	Roads and Maritime	Detailed design

No.	Impact	Environmental safeguards New or revised measure shown in red **bold**	Responsibility	Timing
		residents would be kept informed during the detailed design process.		
18.	Operational noise	Any mitigation measures provided to control operational noise impacts shall be implemented as early as practicable to also provide a benefit during some of the construction phase. **Where possible, noise mitigation treatment would be planned to occur as preliminary works of the construction phase.**	Roads and Maritime	Construction
19.	Operational noise	A post-construction noise monitoring program (including simultaneous traffic counts) would be undertaken in accordance with the Roads and Maritime Environmental Noise Management Manual within 6 to 12 months of opening once traffic flows have stabilised in order to verify the noise assessment. **The assessment would be used to identify treatment required for receivers who were not identified during concept design and REF. It would lead to additional treatment for already treated dwellings. Results of this assessment would be available to the community.**	Roads and Maritime	Post construction
20.	Construction noise	A Construction Noise and Vibration Management Plan (CNVMP) would be prepared This plan would include but not be limited to: • A map indicating the locations of sensitive receivers including residential properties • A quantitative noise assessment in accordance with the EPA Interim Construction Noise Guidelines (DECCW, 2009) • Management measures to minimise the potential noise impacts from the quantitative noise assessment and for potential works outside of standard working hours (including implementation of EPA Interim Construction Noise Guidelines (DECCW, 2009) • A risk assessment to determine potential risk for activities likely to affect receivers (for activities undertaken during and outside of standard working hours) • Mitigation measures to avoid noise and vibration impacts during	Contractor	Pre-construction, construction

No.	Impact	Environmental safeguards New or revised measure shown in red **bold**	Responsibility	Timing
		construction activities including those associated with truck movements • A process for assessing the performance of the implemented mitigation measures • A process for documenting and resolving issues and complaints • A construction staging program incorporating a program of noise and vibration monitoring for sensitive receivers • A process for updating the plan when activities affecting construction noise and vibration change • Identify in toolbox talks where noise and vibration management is required • Consider construction compound layout so that primary noise sources are at a maximum distance from sensitive receivers (primarily residential receivers) • Locate compressors, generators, pumps and any other fixed plant as far from residences as possible and behind site structures • Vehicle delivery times will be scheduled where feasible to the recommended construction hours to minimise noise impacts from heavy vehicle movements and deliveries • The environmental induction program will include specific noise and vibration issues awareness training including, but not limited to, the following: - Avoiding use of radios during work outside normal hours - Avoiding shouting and slamming doors - Where practical, operating machines at low speed or power and switching off when not being used rather than left idling for prolonged periods - Minimising reversing - Avoiding dropping materials from height and avoiding metal to metal contact on material • Any out of hours works would comply with the Roads and Maritime		

No.	Impact	Environmental safeguards New or revised measure shown in red **bold**	Responsibility	Timing
		Noise Management Manual – Practice Note VII • All noise complaints will be investigated and appropriate mitigation measures implemented where practicable to minimise further impacts • If deemed necessary, attended compliance noise and vibration monitoring would be undertaken upon receipt of a complaint. Monitoring would be reported as soon as possible. In the case that exceedances are detected, the situation would be reviewed in order to identify means to minimise the impacts to residences.		
21.	Vibration management	• A vibration assessment is to be prepared and included in the NVMP. The vibration assessment is to include (as a minimum): - Identification of potentially affected properties/receivers - A risk assessment to determine the potential for discrete work activities to affect receivers - A map indicating the locations considered likely to be impacted and those requiring building condition surveys - Outline a monitoring program - A process for assessing the performance of the implemented mitigation measures - A process for resolving issues and conflicts • Where construction activities may cause damage through vibration a Building Condition Inspection of these items must be undertaken • Select alternative, lower-impact equipment or methods where possible, particularly in the vicinity of dwellings and heritage structures.	Contractor	Pre-construction, construction
22.	Vibration management	• Sensitivity testing for vibration generated by construction equipment will be undertaken in the vicinity of, but not immediately adjacent to, the St Bartholomew's Church • The sensitivity testing will identify targets and safe buffer distances for the use of vibration producing equipment around St Bartholomew's church • The results of the sensitivity testing and any targets or buffer	Contractor	Pre-construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		New or revised measure shown in red bold		
		distances identified will be documented in a Management Plan for works adjacent to St Bartholomew's Church • A program of monitoring vibration will be included in the Management Plan, which will form part of the CEMP.		
23.	**Vibration management**	• **Building condition surveys will be undertaken for any building or structure identified as having the potential to be affected by vibration impacts during construction works** • **A condition survey of the properties along Hampton Crescent that are adjacent to the two way link road construction area will be undertaken along with any other areas likely to be adjacent to construction** • **The condition surveys would be provided to each property owner at least two weeks prior to the commencement of construction.**	**Contractor**	**Pre-construction**
24.	Removal or modification of native vegetation	A Biodiversity Management Plan (BMP) is to be prepared and included within the CEMP. The BMP is to include (but not be limited to) the following: • A site walk with appropriate site personnel including Roads and Maritime representatives to confirm clearing boundaries and sensitive location prior to commencement of works • Identification (marking) of the clearing boundary and identification (marking) of habitat features to be protected. Eg. – use of flagging tape • A map which clearly shows vegetation clearing boundaries and sensitive areas/no go zones • Incorporation of management measures identified as a result of the pre-clearing survey report, completed by an ecologist, (G40, section 2.4) and nomination of actions to respond to the recommendations made. This should include details of measures to be implemented to protect clearing limits and no go areas. A detailed clearing process in accordance with Roads and Maritime Biodiversity Guidelines (2011) including requirements of Guide 1,2, 4 & 9	Construction contractor	Pre-construction

No.	Impact	Environmental safeguards New or revised measure shown in red **bold**	Responsibility	Timing
		• Identify in toolbox talks where biodiversity would be included such as vegetation clearing or works in or adjacent to sensitive locations • Identify control/mitigations measures to prevent impacts on sensitive locations or no go zones • The management measures required if threatened flora and fauna species such as the Spiked Rice flower, Juniper-leaved Grevillea and/or Cumberland Plain Land Snail are found during the pre-clearance surveys • A stop works procedure in the event of identification of unidentified species, habitats or populations.		
25.	**Pre-clearing surveys**	• **Where possible, pre-clearing surveys would be conducted during the optimal season and climatic condition. These surveys would be undertaken by an ecologist prior to vegetation removal.**	**Construction contractor**	**Pre-construction**
26.	Spread of weeds	A weed management plan would be prepared in accordance with Roads and Maritime Biodiversity Guidelines (Guide 6) and incorporated into the BMP and would address: • Identification of the weeds on site (confirm during ecologist pre-clearing inspection) • Weed management priorities and objectives • Sensitive environmental areas within or adjacent to the site • Location of weed infested areas. • Weed control methods • Measures to prevent the spread of weeds, including machinery hygiene procedures and disposal requirements • A monitoring program to measure the success of weed management • Communication with local Council noxious weed representative.	Construction contractor	Pre-construction
27.	Introduction or spread of pests and diseases	If the detailed design risk assessment determines that hygiene procedures are required on site, the BMP is to include hygiene protocols to prevent the introduction and spread of such pathogens as specified in Biodiversity Guidelines: *Protecting and managing biodiversity on Roads*	Construction contractor	Pre-construction

No.	Impact	Environmental safeguards New or revised measure shown in red **bold**	Responsibility	Timing
		and Maritime projects (Roads and Maritime, 2011). All pathogens (eg Chytid, Myrtle Rust and Phytophthora) are to be managed in accordance with the RTA Biodiversity Guidelines - Guide 7 (Pathogen Management) and DECC Statement of Intent 1: Infection of native plants by Phytophthora cinnamomi (for Phytophthora).		
28.	General impacts on threatened species and ecological communities	If unexpected threatened flora or fauna are discovered, works would stop immediately and the Roads and Maritime Unexpected Threatened Species Find Procedure in the Roads and Maritime Biodiversity Guideline 2011 implemented.	Construction contractor	Construction
29.	Re-establishment of native vegetation	Offsets would be considered where reasonable and feasible for the impact to 0.69 hectares of Cumberland Plain Woodland in accordance with the Roads and Maritime offset policy (2011).	Construction contractor	Pre-construction
30.	Removal or modification of native vegetation	An exclusion zone would be established around the Freshwater Wetland adjacent to the proposed compound site on Thornley Road.	Construction contractor	Pre-construction
31.	Removal or modification of native vegetation	Identify known Cumberland Plain Woodland areas and exclusion zones during induction of all site personnel.	Construction contractor	Pre-construction
32.	Removal or modification of native vegetation outside the construction	The construction footprint would be identified and marked before construction and exclusion zones established in retained areas of habitat particularly in remnant vegetation areas.	Construction contractor	Pre-construction

No.	Impact	Environmental safeguards	Responsibility	Timing
	New or revised measure shown in red **bold**			
	footprint			
33.	Accidental removal or modification of native vegetation not within the proposal area	Permanent fencing would be established along the edges of the high condition Cumberland Plain Woodland remnant next to Timbertop Reserve before construction. This would help to avoid impacts to this area during construction and operation.	Construction contractor	Pre-construction
34.	Minimising fauna injury and mortality	In circumstances where the handling of fauna is completely unavoidable, best practice methods would be followed as outlined in the Roads and Maritime Biodiversity Guidelines – Guide 9: Fauna Handling (RTA 2011).	Construction contractor	Construction
35.	Landscape character and visual impacts	During detailed design, the landscape design principles and streetscape (planting) would be reviewed to ensure that they are consistent with the **following factors:** • **The** outcomes of the biodiversity assessment • **The requirement to maintain the function of the drainage easement corridor,** • **Maintenance requirements in the vicinity of the Blacktown Road intersection** • **Maintenance requirements for potential noise barriers** • **Road safety requirements** • **Blacktown City Council's visual character and maintenance requirements.** This would be done in consultation with Roads and Maritime environment staff **and Blacktown City Council.**	Roads and Maritime, design contractor	Detailed design
36.	Landscape character and visual impacts	During detailed design, the design including landscape plans are to incorporate the design principles outlined in the Landscape Character, Visual Impact Assessment and Urban Design Report. These include: • To ensure that the design reinforces the identity and functionality of	Roads and Maritime, design contractor	Detailed design

No.	Impact	Environmental safeguards New or revised measure shown in red **bold**	Responsibility	Timing
		an arterial road type • To ensure that existing land uses is considered and integrated in to the design of the road alignment • To contribute to the future urban planning of the adjoining development precincts including its transport and access needs • To respond to natural patterns including creek lines and drainage corridors and vegetation communities. This includes the use of local plants consistent with the existing communities either side of the alignment in order to unify the crossing with the existing corridor, and, use of advance stock to escalate the revegetation where appropriate • To provide a unified and consistent approach to the design of bridges along the corridor • The consideration of landscaping treatment to reduce the incidence of graffiti • To achieve an integrated, safe and minimal maintenance design.		
37.	Landscape character and visual impacts	An urban design contractor from the Roads and Maritime panel would be engaged for the detailed design phase to ensure adequate consideration of urban design principles and objectives, and to ensure appropriate mitigation of identified impacts.	Roads and Maritime, design contractor	Detailed design
38.	Landscape character and visual impacts	The design of vegetative screening would occur in consultation with adjoining land owners.	Roads and Maritime, design contractor	Detailed design
39.	Landscape character and visual impacts	The footprint for construction work would be kept to a minimum to ensure existing stands of vegetation remain intact wherever possible and to screen adjoining sensitive receivers.	Roads and Maritime, design contractor	Detailed design
40.	Landscape character and visual impacts	The design of potential noise barriers will be undertaken during detailed design and will take into consideration the Roads and Maritime *Noise Wall Design Guidelines* (RTA 2007). The following principles will be considered during the design of the noise barriers: • Materials, colours and textures will be selected to break up the dominant nature of the noise barrier	Roads and Maritime, design contractor	Detailed design

No.	Impact	Environmental safeguards	Responsibility	Timing
		New or revised measure shown in red **bold**		
		• Transparent panels will be incorporated into sections of the noise barrier where it has potential to block solar access to adjacent residential properties.		
41.	**Landscape character and visual impacts**	**The visual impact of the retaining wall along the two way link road would be reduced by the establishment of native vegetation screening and the inclusion of urban design principles into the design of the wall façade.**	**Roads and Maritime, design contractor**	**Detailed design**
42.	Construction related visual impacts	Fencing with material attached (for example, shade cloth) would be provided around the construction compounds and other areas to screen views of the construction compounds from adjoining properties.	Construction contractor	Construction
43.	Flood and drainage design	Final layout and detail of the drainage system including swale design and scour protection will be refined during detailed design in consultation with the Roads and Maritime Senior Environmental Officer.	Roads and Maritime and designers	Detailed design
44.	Flood and drainage design	Further flood modelling including a detailed afflux assessment would be undertaken during detailed design to confirm impacts to surrounding land uses.	Roads and Maritime and designers	Detailed design
45.	Water quality management	A Soil and Water Management Plan (SWMP) will be prepared as part of the CEMP in accordance with the requirements of Roads and Maritime contract specification G38 prior to the commencement of construction. The SWMP will also address the following: • Roads and Maritime Technical Guideline: Temporary Stormwater Drainage for Road Construction, 2011 • Roads and Maritime Technical Guideline: Environmental Management of Construction Site Dewatering, 2011. The SWMP would detail the following as a minimum: • Identification of catchment and sub-catchment areas, high risk areas and sensitive areas • Sizing of each of the above areas and catchment • The likely volume of run-off from each road sub-catchment • Direction of flow of on-site and off-site water	Construction contractor	Pre-construction

No.	Impact	Environmental safeguards New or revised measure shown in red **bold**	Responsibility	Timing
		• Separation of on-site and off-site water • The direction of run-off and drainage points during each stage of construction • The locations and sizing of sediment traps such as sump or basin as well as associated drainage • Dewatering plan which includes process for monitoring, flocculating and dewatering water from site (ie sediment basin and sumps) • The staging plans, location, sizing and details of creek alignment and realignment controls for scour protection and bank and bed stabilisation including those used during construction and long term • A mapped plan identifying the above • A process to routinely monitor the BOM weather forecast • Preparation of a wet weather (rain event) plan which includes a process for monitoring potential wet weather and identification of controls to be implemented in the event of wet weather. These controls are to be shown on the ESCPs • Provision of an inspection and maintenance schedule for ongoing maintenance of temporary and permanent erosion and sedimentation controls.		
46.	Spills	Emergency wet and dry spill kits would be kept on site at all times and all staff would be made aware of the location of the spill kit and trained in its use.	Construction contractor	Construction
47.	Spills	The vehicles refuelling process will include a person attending the refuelling facility / vehicle and a spill kit on the vehicle.	Construction contractor	Construction
48.	Water quality management	Vehicle wash down and/or cement truck washout is to occur in a designated bunded area and least 50 metres away from water bodies and surface water drains.	Construction contractor	Construction
49.	Spills	Any fuel, oils or other liquids stored on site would be stored in an appropriately sized impervious bunded at least 120% larger than the greatest container and in an area least 50 metres away from water bodies.	Construction contractor	Construction

No.	Impact	Environmental safeguards New or revised measure shown in red **bold**	Responsibility	Timing
50.	Spills	If a spill or incident occurs, the Roads and Maritime Environmental Incident Classification and Management Procedure is to be followed and the Roads and Maritime Contract Manager notified immediately.	Construction contractor	Construction
51.	Potential physical impact on non-Aboriginal heritage items during construction.	A Non-Aboriginal Heritage Management plan would be prepared and included in the CEMP. This plan would include but not be limited to the following: • A map identifying locations of items or sites (including curtilages) which are to be protected and those which are to be destroyed/impacted and no-go zones • Identification of potential environmental risks/impacts due to the works/activities • Management measures to minimise the potential risk • Mitigation measures to avoid risk of harm and the interface with work activities on site • Implementation of mitigation measures to protect identified heritage items or areas • Identify in toolbox talks where management of non-aboriginal heritage is required such as identification of no go zones and responsibilities under the *Heritage Act 1977* and any obtained permits or exemptions • A stop works procedure in the event of actual or suspected potential harm to a heritage feature/place • Requirement to comply with Roads and Maritime *Standard Management Procedure -Unexpected Archaeological Finds, 2012*.	Roads and Maritime and construction contractor	Pre-construction, construction
52.	Potential physical impact on non-Aboriginal heritage items during construction.	A condition survey would be undertaken before the start of work by a qualified contractor and a building condition report prepared for heritage structures.	Roads and Maritime and construction contractor	Pre-construction, construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		New or revised measure shown in red bold		
53.	Potential vibration impacts to St Bartholomew's Church and Cemetery and the house at 29 Old Church Lane, Prospect	Vibration management procedures would be developed and implemented where works resulting in vibration are undertaken within the vicinity of identified heritage items.	Construction contractor	Pre-construction
54.	Unexpected heritage find during construction.	If unexpected heritage item/s, archaeological remains or potential relics are uncovered during the works, all works would cease in the vicinity of the material/find and the Roads and Maritime Standard *Management Procedure - Unexpected Archaeological Finds 2012* would be followed.	Roads and Maritime and construction contractor	Pre-construction, construction
55.	Physical impacts to the Former Great Western Road, Prospect.	Direct physical impacts to the Former Great Western Road would be avoided, if possible, and dependent on the status of the heritage listing, an exemption from approval under Section 57(2) of the *Heritage Act 1977* would be requested and/or the Heritage Division would be consulted before work start.	Roads and Maritime	Pre-construction
56.	Unexpected heritage find during construction.	If unexpected Aboriginal heritage item/s, archaeological remains or potential relics are uncovered during the works, all works would cease in the vicinity of the material/find and the Roads and Maritime *Standard Management Procedure - Unexpected Archaeological Finds 2012* would be followed.	Roads and Maritime and construction contractor	Pre-construction, construction
57.	Property acquisition	All land acquisitions would be conducted in line with the Roads and Maritime *Land Acquisition Policy* and the requirements of the *Land Acquisition (Just Terms) Compensation Act 1991*.	Roads and Maritime	Pre-construction
58.	Community	A Communication Plan would be prepared and included in the Construction Environmental Management Plan (CEMP). The Communication Plan would include: • Requirements to provide details and timing of proposed activities to	Construction contractor	Pre-construction and construction

No.	Impact	Environmental safeguards New or revised measure shown in red **bold**	Responsibility	Timing
		affected residents and businesses including St Martins Shopping Village/Blacktown Mega Centre, Medlife Medical Centre, Army cadet base (Safe Base Bravo Shelley Pubic School, Blacktown Road Children's Centre, Mitchell High School, St Mark's Coptic Catholic Church, Homebase Prospect, Blacktown City Council and Holroyd City Council • Contact name and number for complaints • Procedure to notify adjacent land users for changed conditions during the construction period such as traffic, pedestrian or driveway access • The communications plan would be prepared in line with G36 requirements and Roads and Maritime *Community Engagement and Communications Manual (2012)*. The communications plan would include a complaint handling procedure and register and maintained for the duration of the proposal.		
59.	Community	Residents would be informed prior to any interruptions to utility services that may be experienced as a result of utilities relocation.	Construction contractor	Pre-construction, construction
60.	Erosion and sedimentation	During detailed design an Erosion and Sedimentation Management Report is to be prepared. The report is to include (as a minimum): • Identify site catchment and sub-catchments, high risk areas and sensitive areas • Sizing of each of the above areas and catchments • Proposed staging plans for the project to ensure appropriate erosion and sediment controls measures are possible • The likely volume of run-off from each catchment and sub-catchment in accordance with the Managing Urban Stormwater: Soils and Construction, Volume 1 and 2 (Landcom, 2004) • Direction of water flow, both off and on site • Diversion of off-site water around or through the site or details of separation of on-site and off-site water • The direction of runoff and drainage points during each stage of	Roads and Maritime, construction contractor	Detailed design

No.	Impact	Environmental safeguards New or revised measure shown in red **bold**	Responsibility	Timing
		construction • The locations and sizing of sediment basins / sumps as well as associated drainage to direct site water to the basin or sumps • A mapped plan identifying the above at all major construction stages • A review process by a soil conservationist and a process for updating the report to address any recommendations.		
61.	Erosion and sedimentation	The Erosion and Sedimentation Management Report would be provided to Roads and Maritime Environment Manager for review and verification prior to the construction tender.	Roads and Maritime	Detailed design, pre-construction
62.	Erosion and sedimentation	A soil conservationist from the Roads and Maritime Erosion, Sedimentation and Soil Conservation Consultancy Services Register is to be engaged to review the Erosion and Sedimentation Management Report and conduct routine inspections of the construction works.	Roads and Maritime	Pre-construction, construction
63.	Erosion and sedimentation	An Erosion and Sedimentation Control Plan (ESCP) would be prepared prior to construction and is to include as a minimum: • Identify site catchment and sub-catchments, high risk areas and sensitive areas • Sizing of each of the above areas and catchments • The likely run-off from each sub-catchment • Separation of on-site and off-site water • The direction of run-off and drainage points during each stage of construction • Direction of flow of on-site and off-site water • The locations and sizing of sediment basins or sumps and associated catch drains and/or bunds • The locations of other erosion and sediment control measures (eg rock check dams, swales and sediment fences) • Controls/measures to be implemented on wet weather events • A mapped plan identifying the above • A dewatering procedure for onsite water and basins • A process for reviewing and updating the plan on a fortnightly basis	Construction contractor	Pre-construction

No.	Impact	Environmental safeguards New or revised measure shown in red **bold**	Responsibility	Timing
		and/or when works alter.		
64.	Erosion and sedimentation	Erosion and sediment control measures are to be implemented and maintained to: • Prevent sediment moving off-site and sediment laden water entering any water course, drainage lines, or drain inlets • Reduce water velocity and capture sediment on site • Minimise the amount of material transported from site to surrounding pavement surfaces • Divert clean water around the site. (in accordance with the Landcom / Department of Housing *Managing Urban Stormwater, Soils and Construction Guidelines* (the Blue Book)).	Construction contractor	Construction
65.	Erosion and sedimentation	All stockpiles will be designed, established, operated and decommissioned in accordance with the Roads and Maritime Stockpile Site Management Guideline, 2011.	Construction contractor	Construction
66.	Erosion and sedimentation	A Stabilisation Plan is to be prepared and included in the SWMP. The stabilisation plan is to include but not be limited to the following: • Identification and methodology of techniques for stabilisation of site • Identification of area on site for progressive stabilisation • Stabilisation is to be undertaken of areas, including stockpiles and batters, exposed for a duration of 2 weeks or greater. For example covering with geotextile fabric, stabilised mulch, soil binder or spray grass • Identification of areas on site for progressive permanent stabilisation such as implementation of landscaping.	Construction contractor	Construction
67.	Erosion and sedimentation	Erosion and sedimentation controls are to be checked and maintained on a regular basis and after a rain event of 10mm or greater (including clearing of sediment from behind barriers) and records kept and provided on request.	Construction contractor	Construction
68.	Erosion and sedimentation	Disturbed surfaces would be compacted and stabilised in anticipation of a rain event to reduce the potential for erosion.	Construction contractor	Construction

No.	Impact	Environmental safeguards New or revised measure shown in red **bold**	Responsibility	Timing
69.	Erosion and sedimentation	Controls would be implemented at exit points to minimise the tracking of soil and particulates onto pavement surfaces Any material transported onto pavement surfaces would be swept and removed at the end of each working day and prior to rainfall.	Construction contractor	Construction
70.	Erosion and sedimentation	The Soil and Water Management Plan would include a contingency plan for any acid sulphate soils or salinity identified during the construction phase.	Construction contractor	Construction
71.	Contamination management	A Contamination Management Plan (CMP) will be prepared in accordance with the *Contaminated Land Act 1997* and relevant EPA Guidelines. This plan will be form part of the CEMP and will include at a minimum: • Contaminated Land Legislation and guidelines including any relevant licences and approvals to be obtained • Identification of locations of known or potential contamination and preparation of a map showing these locations • Identification of rehabilitation requirements, classification, transport and disposal requirements of any contaminated land within the construction footprint • Contamination management measures including waste classification and reuse procedures and unexpected finds procedures • Monitoring and sampling procedure for landfill seepage (leachate) • A procedure for dewatering and disposal of potentially contaminated liquid waste • In the event that indications of contamination are encountered (known and unexpected, including odorous or visual indicators), work in the area will immediately cease until a contamination assessment can be prepared to advise on the need for remediation or other action, as deemed appropriate • A process for reviewing and updating the plan. The CMP would be reviewed by Roads and Maritime Senior Environment Officer and Roads and Maritime Land Management Specialist prior to the	Construction contractor	Pre-construction

No.	Impact	Environmental safeguards New or revised measure shown in red **bold**	Responsibility	Timing
		commencement of works.		
72.	Hazardous materials	A hazardous materials assessment would also be carried out before demolishing structures within the proposal area.	Roads and Maritime/ demolition contractor	Pre-demolition
73.	Hazardous materials	In the event that indications of contamination are encountered (known and unexpected, such as odorous or visually contaminated materials), work in the area would cease until an contamination assessment can be prepared to advise on the need for remediation or other action, as deemed appropriate.	Construction contractor	Construction
74.	General air quality management	An Air Quality Management plan (AQMP) would be prepared as part of the CEMP. The plan would include but not be limited to: • A map identifying locations of sensitive receivers • Identification of potential risks/impacts due to the work/activities as dust generation activities • Management measures to minimise risk including a progressive stabilisation plan • A process for monitoring dust on site and weather conditions • A process for altering management measures as required.	Construction contractor	Pre-construction
75.	Air quality during construction	The management measures within the AQMP would include but not limited to the following: • Vehicles transporting waste or other materials that have a potential to produce odours or dust are to be covered during transportation • Dust will be suppressed on stockpiles and unsealed or exposed areas using methods such as water trucks, temporary stabilisation methods, soil binders or other appropriate practices • Disturbed areas will be minimised in extent and rehabilitated progressively • Speed limits will be imposed on unsealed surfaces • Stockpiles will be located as far away from residences and other sensitive receivers	Construction contractor	Pre-construction

No.	Impact	Environmental safeguards New or revised measure shown in red **bold**	Responsibility	Timing
		• Works (including the spraying of paint and other materials) will not be carried out during strong winds or in weather conditions where high levels of dust or air borne particulates are likely • Plant, vehicles and equipment will be maintained in good condition and in accordance with manufacturer's specifications • Plant and machinery will be turned off when not in use • No burning of any timbers or other combustible materials will occur on site • Visual monitoring of air quality will be undertaken to verify the effectiveness of controls and enable early intervention • Work activities will be reprogrammed if the management measures are not adequately restricting dust generation.		
76.	Dust from construction activities	An air quality management plan would be prepared before any construction or clearing activities, and would provide guidance on the use of appropriate dust suppression methods which would include, but not be limited to: • Stabilising of areas with the capacity to cause dust, with water spraying, compaction or progressive revegetation • Covering of stockpile and storage areas • Cessation of dust generating activities in high wind situations where dust cannot be controlled. In addition, local residents and other sensitive receivers (such as schools, churches and local businesses) would be advised of hours of operation and provided with contact details for queries regarding air quality.	Construction contractor	Pre-construction
77.	Impacts on climate change from construction activities	Detailed design would take into consideration the potential effect of climate change on the proposal, including drainage requirements.	Roads and Maritime designers and construction contractor	Detailed design

No.	Impact	Environmental safeguards New or revised measure shown in red **bold**	Responsibility	Timing
78.	Impacts on climate change from construction activities	Establishing operating procedures for site vehicles to increase efficiency of vehicle fuel use. Reducing clearing of vegetation as much as practicable and re-establish vegetation in suitable areas when construction is completed. Reducing site wastage by reusing and recycling wasted material as a preference before disposing to landfill.	Construction contractor	Construction
79.	Generation of construction waste	A Resource and Waste Management Plan (RWMP) would be prepared, which will include the following (as a minimum): • The type, classification and volume of all materials to be generated and used on site including identification of recyclable and non-recyclable waste in accordance with EPA Waste Classification Guidelines • Quantity and classification of excavated material generated as a result of the proposal (Refer Roads and Maritime Waste Management Fact sheets 1-6, 2012) • Interface strategies for cut and fill on site to ensure re-use where possible • Strategies to 'avoid', 'reduce', 'reuse' and 'recycle' materials • Classification and disposal strategies for each type of material • Destinations for each resource/waste type either for on-site reuse or recycling, offsite reuse or recycling, or disposal at a licensed waste facility • Details of how material would be stored and treated on-site • Identification of available recycling facilities on and off site • Identification of suitable methods and routes to transport waste • Procedures and disposal arrangements for unsuitable excavated material or contaminated material • Site clean-up for each construction stage.	Construction contractor	Pre-construction and Construction
80.	Generation of	Procurement will endeavour to use materials and products with a recycled	Construction contractor	Detailed design and Pre-

No.	Impact	Environmental safeguards New or revised measure shown in red **bold**	Responsibility	Timing
	construction waste	content where that material or product is cost and performance effective.		construction
81.	Generation of construction waste	Cleared weed free vegetation will be chipped and reused onsite as part of the proposed landscaping and to stabilise disturbed soils where possible.	Construction contractor	Construction
82.	Generation of construction waste	A dedicated concrete washout facility that is impervious would be provided during construction so that runoff from the washing of concrete machinery, equipment and concrete trucks can be collected and disposed of at an appropriate waste facility.	Construction contractor	Construction
83.	Generation of construction waste	All wastes will be managed in accordance with the *Protection of the Environment Operations Act 1997*.	Construction contractor	Pre-construction and Construction
84.	Generation of construction waste	Types of waste collected, amounts, date/time and details of disposal are to be recorded in a waste register.	Construction contractor	Construction
85.	Generation of construction waste	Works sites would be maintained, kept free of rubbish and cleaned up at the end of each working day.	Construction contractor	Construction
86.	Generation of construction waste	Suitable waste disposal locations would be identified and used to dispose of litter and other wastes on-site. Suitable containers would be provided for waste collection.	Construction contractor	Pre-construction and Construction
87.	Generation of construction waste	Resource management hierarchy principles would be followed and are: • Avoid unnecessary resource consumption as a priority • Avoidance is followed by resource recovery (including reuse of materials, reprocessing, and recycling and energy recovery) • Disposal is undertaken as a last resort (in line with the *Waste Avoidance and Resource Recovery Act 2001*).	Detailed design contractor and Construction contractor	Detailed design, Pre-construction and Construction

No.	Impact	Environmental safeguards New or revised measure shown in red **bold**	Responsibility	Timing
88.	Generation of construction waste	A Waste Management Plan would be completed in line with the requirements of the Roads and Maritime's *QA Specification G36 – Environmental Protection (Management System)*.	Construction contractor	Construction
89.	Generation of construction waste	Housekeeping at construction sites would be addressed regularly. This would include collection and sorting of recycling, general waste and green waste. Waste would be disposed regularly at a licensed waste facility or recycling where available.	Construction contractor	Construction
90.	Cumulative impacts due to concurrent construction of multiple road projects	The contractor's environmental management plan would be revised to consider potential cumulative impacts from surrounding developments as they become known.	Roads and Maritime, construction contractor	Detailed design, pre-construction, construction

5.3 Licensing and approvals

Table 5-2 identifies licensing and / or approval requirements that are relevant to the proposal

Table 5-2 Summary of licensing and approval required

Requirement	Timing
Road occupancy licence	Prior to the commencement of construction works.
The proposal is a scheduled activity "road construction" under the *Protection of the Environment Operations (POEO) Act 1997*. Therefore an environment protection licence is required.	Prior to the commencement of construction works.
The proposal has the potential to affect the Former Great Western Road, Prospect – Reservoir Road which has been nominated for listing on the State Heritage Register. If direct physical impacts to the Former Great Western Road, Prospect, cannot be avoided, and if the item is listed on the State Heritage Register before construction starts, an exemption from approval under Section 57(2) of the Heritage Act 1977 should be requested from the Heritage Council. If the item is not listed on the State Heritage Register before construction starts, the Heritage Council would be consulted prior to any impacts taking place and they would provide advice on how to proceed.	Prior to the commencement of construction works.

6 References

Department of Environment Climate Change and Water 2011, *Road Noise Policy*.

NSW Roads and Maritime 2014. *The Prospect Highway Upgrade: Reservoir Road, Prospect to St Martins Crescent, Blacktown. Review of Environmental Factors.* Sydney, NSW