Executive summary

The proposal

Transport for NSW (TfNSW), formerly Roads and Maritime Services proposes to stage the upgrade of four intersections and consider the introduction of clearways and right turn bans between the Euston Road/Maddox Street intersection in Alexandria and the Anzac Parade/Alison Road/Dacey Avenue intersection in Moore Park (the proposal). The proposal is located about three kilometres south of the central business district (CBD) in the suburbs of Alexandria, Waterloo and Moore Park within the City of Sydney local government area (LGA).

The proposal consists of:

- New clearways on both sides of Euston Road and McEvoy Street between Maddox Street and Bourke Street from 6:00am to 7:00pm Monday to Friday and 9:00am to 6:00pm on weekends
- New clearways at all times along Lachlan Street and Dacey Avenue between Bourke Street and Anzac Parade
- Right turn bans at most intersections without traffic signals and a right turn ban into Bunnings from McEvoy Street
- Improving intersection capacity at:
  - Fountain Street and McEvoy Street
  - Botany Road and McEvoy Street
  - Elizabeth Street and McEvoy Street
  - South Dowling Street, Lachlan Street and Dacey Avenue
- Minor kerb adjustments at:
  - Stokes Avenue and McEvoy Street
  - Kensington Lane and McEvoy Street
- Landscaping adjustments and replacement tree planting where works are undertaken
- Relocation of utilities and adjustments to traffic signals and street lights
- Property acquisitions, leases and adjustments
- Temporary construction facilities, including site compounds and stockpile sites at:
  - The car park on the south-west corner of the Stokes Avenue/McEvoy Street intersection, Alexandria (Site 1)
  - Road reserve at the southern end of Cope Street, Alexandria (Site 2)
  - Road reserve at the southern end of George Street, Alexandria (Site 3)
  - Vacant land (Lot 2 DP800705) at the corner of the Bourke Street/McEvoy Street intersection, Waterloo (Site 4)
  - Lot 1, 2 and 3 DP 76985, Lot 4 DP 86722 and Lot 14 DP80926 on the west corner of the Lachlan Street/Amelia Street intersection, Waterloo (Site 5).

Construction is expected to commence in early 2020 and expected to take around 36 months to complete Stage 1 of the proposal.

The Stage 1 proposal is a scaled down version of a previous larger proposal that would have included upgrades at other major intersections located along the Euston Road, McEvoy
Street, Lachlan Street and Dacey Avenue. These improvements would now be subject to future planning, funding and environmental impact assessment processes.

Stage 1 would improve traffic performance and can be implemented early with minimal property acquisitions.

Following display of the Review of Environmental Factors (REF), changes were made to the timing of construction of the works included in Stage 1 as described below.

**Display of the Review of Environmental Factors**

TfNSW prepared a REF to assess the potential environmental impacts of the proposed works. The REF was placed on public display for 22 days between Wednesday 27 November 2019 and Wednesday 18 December 2019.

During this period, the community, and key stakeholders (including local Councils, organisations and local businesses) were invited to make submissions on the REF.

Consultation activities carried out during the display of the REF included community information sessions, a series of briefings and meetings and distribution of a range of information materials. The REF is available on the TfNSW project website to view and download, and hardcopies were made available to the public at four locations across the proposal area. Two community information sessions were held to give the community a chance to learn more about the proposal, ask questions and make a submission on the REF.

An interactive online consultation map was also set to allow people to make contributions on the proposal.

**Issues raised in submissions**

A total of 198 submissions were received from the general community, including individuals, businesses and community groups. Two submissions were received from the local Council and one was received from a local Trust. Around 800 comments were received via the interactive online consultation map.

The five issue categories most commonly raised in the submissions (in order of total number of issues raised) relate to the following:

- Traffic and transport (362 comments), which were mostly associated with active and public transport options, pedestrian and road safety and opposition to the introduction of clearways
- Design (140 comments), which were mostly associated with the Bunnings right turn ban and the proposed scope of works compared to the Ultimate Concept Design
- Biodiversity (48 comments), which were mostly associated with the impact to trees, particularly fig trees
- Noise and vibration (36 comments) which were mostly associated with operational noise impacts and mitigation measures
- Urban design, landscape character and visual impacts (35 comments), which were mostly associated with the proposed landscaping and requests for additional green space and parks.

The remaining subjects raised in the submissions are listed below.

- Property, land use and socio-economic
- Proposal clarifications
- Air quality and climate change
- Community consultation
· Flooding
· Contamination
· Cumulative impacts
· Waste.

**Changes to the proposal since display of the Review of Environmental Factors**

City of Sydney raised objections to the proposal. Following further consultation with City of Sydney, TfNSW decided to initially proceed with the construction of a shortened right turn lane at Fountain and McEvoy Streets in 2020, and defer the remaining works described in the REF until an operational review is conducted in 2021 to assess the impacts of the opening of the new M5 and St Peters Interchange.

**Environmental mitigation measures**

A full list of the environmental management measures proposed for the proposal, including any additional measures to address issues raised in stakeholder and community submissions received on the REF, is provided in Chapter 5.

Should the proposal be determined, detailed investigations, planning and surveys will be undertaken by the appointed design and construction contractors(s). The design presented by the design and construction contractors(s) will need to satisfy all technical road design requirements and road functionality as described in the REF and this Submissions Report, and be consistent with the approved scope of the proposal, including the environmental management measures for the proposal.

**Ongoing consultation with community and stakeholders**

TfNSW, as the determining authority for the proposal, is committed to undertaking further consultation with communities and key stakeholders regarding detailed design of the proposal and opportunities to provide future input, prior to construction.

The Construction Environmental Management Plan and associated sub-plans will be prepared in consultation with relevant stakeholders as described in Chapter 5.

This includes a Communication Plan, which will be prepared and implemented as part of the CEMP which will outline consultation with stakeholders and the community during construction. This would include protocols for providing notifications and updates on construction activities and program, responding to enquiries and concerns in a timely manner and minimising potential impacts where possible.

These requirements for further consultation are also captured in the environmental management measures proposed for the proposal.

**Conclusion**

The issues raised during the public display of the REF have been adequately summarised and responded to in the submissions report. All potential environmental impacts have been assessed adequately with appropriate safeguards and management measures identified to avoid, minimise and mitigate impacts. The implementation of the safeguards and management measures identified in the Submissions Report would appropriately manage and mitigate the potential impacts.

TfNSW, as the determining authority, will consider the information in the REF and this Submissions Report and make a decision whether or not to proceed with the proposal.
TfNSW will inform the community and stakeholders of this decision. Where a decision is made to proceed with the proposal, TfNSW will continue to consult with the community and stakeholders before and during the construction phase.
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<td><strong>Document author:</strong></td>
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© Transport for NSW
1 Introduction and background

1.1 The Proposal

Transport for NSW (TfNSW, formerly Roads and Maritime Services NSW) proposes to stage the upgrade of four intersections and consider the introduction of clearways and right turn bans between the Euston Road/Maddox Street intersection in Alexandria and the Anzac Parade/Alison Road/Dacey Avenue intersection in Moore Park (the proposal). The proposal is located about three kilometres south of the central business district (CBD) in the suburbs of Alexandria, Waterloo and Moore Park within the City of Sydney local government area (LGA), as shown in Figure 1-1.

The proposal objectives align with the strategic objectives articulated in the Greater Sydney Region Plan (Greater Sydney Commission (GSC), 2018) and the Road Safety Plan 2021 (TfNSW, 2018b) and Future Transport Strategy 2056 (TfNSW, 2018a).

The proposal is shown in Figure 1-2 and consists of:

- New clearways on both sides of Euston Road and McEvoy Street between Maddox Street and Bourke Street from 6:00am to 7:00pm Monday to Friday and 9:00am to 6:00pm on weekends
- New clearways at all times along Lachlan Street and Dacey Avenue between Bourke Street and Anzac Parade
- Right turn bans at most intersections without traffic signals and a right turn ban into Bunnings from McEvoy Street
- Improving intersection capacity at:
  - Fountain Street and McEvoy Street
  - Botany Road and McEvoy Street
  - Elizabeth Street and McEvoy Street
  - South Dowling Street, Lachlan Street and Dacey Avenue
- Minor kerb adjustments at:
  - Stokes Avenue and McEvoy Street
  - Kensington Lane and McEvoy Street
- Landscaping adjustments and replacement tree planting where works are undertaken
- Relocation of utilities and adjustments to traffic signals and street lights
- Property acquisitions, leases and adjustments
- Temporary construction facilities, including site compounds and stockpile sites at:
  - The car park on the south-west corner of the Stokes Avenue/McEvoy Street intersection, Alexandria (Site 1)
  - Road reserve at the southern end of Cope Street, Alexandria (Site 2)
  - Road reserve at the southern end of George Street, Alexandria (Site 3)
  - Vacant land (Lot 2 DP800705) at the corner of the Bourke Street/McEvoy Street intersection, Waterloo (Site 4)
  - Lot 1, 2 and 3 DP 76985, Lot 4 DP 86722 and Lot 14 DP80926 on the west corner of the Lachlan Street/Amelia Street intersection, Waterloo (Site 5).
Figure 1-1 | Location of the proposal
Alexandria to Moore Park Stage 1
**Legend**

- Concept design
- Road

**Proposal area**

**Construction impacts:**
- Construction footprint
- Construction compounds

**Operational impacts:**
- Clearways and intersection upgrades
- Parking changes in side streets

**Data sources**
- Jacobs 2016
- LPI 2016
- Roads and Maritime 2016
- ARUP 2016

**Figure 1-2a** The proposal

Alexandria to Moore Park Stage 1
**Figure 1-2b** | The proposal
Alexandria to Moore Park Stage 1

**Legend**
- Concept design
- Road
- Railway line

**Proposal area**
- Construction impacts:
  - Construction footprint
  - Construction compounds

- Operational impacts:
  - Clearways and intersection upgrades
  - Parking changes in side streets

**Construction footprint**
- Concept design

**Data sources**
- Jacobs 2016
- LPI 2016
- Roads and Maritime 2016
- ARUP 2016
Figure 1-2c  |  The proposal
Alexandria to Moore Park Stage 1

**Legend**
- Concept design
- Road

**Proposal area**
- Construction impacts:
  - Construction footprint
  - Construction compounds
- Operational impacts:
  - Clearways and intersection upgrades
  - Parking changes in side streets

**Data sources**
- Jacobs 2016
- LPI 2016
- Roads and Maritime 2016
- ARUP 2016
Proposed clearways in both directions

Bourke Street to Anzac Parade

At all times

Legend

Concept design
Road

Proposal area

Construction impacts:
- Construction footprint
- Construction compounds

Operational impacts:
- Clearways and intersection upgrades
- Parking changes in side streets

Figure 1-2d | The proposal
Alexandria to Moore Park Stage 1

Data sources
Jacobs 2016
LPI 2016
Roads and Maritime 2016
ARUP 2016
Construction could commence in early 2020 and would take around 36 months to complete.

1.1.1 Definitions

The following terms are used in this submissions report:

- ‘The proposal’ refers to the concept design for the Stage 1 of the Alexandria to Moore Park Project, NSW
- ‘Ultimate Concept Design’ refers to the larger project displayed in the June 2017 Project Update (refer to Appendix A)
- ‘The proposal area’ refers to the area that would be directly impacted by the proposal during operation of the proposal, refer to Figure 1-2. It encompasses all of the components of the proposal and includes the concept road design and includes properties that would be acquired as well as any utility relocations
- The ‘construction footprint’ refers to the area that would be directly impacted by the proposal during construction of the proposal, refer to Figure 1-2. The construction footprint includes compound sites, stockpile sites and any other areas that would be temporarily disturbed and which are located within the four separate construction zones
- ‘The study area’ encompasses the proposal area and the area that may be indirectly impacted by the proposal and varies for specialist studies
- ‘The locality’ encompasses the area in a 10 kilometre radius of the proposal
- ‘Direct impacts’ occur through direct interaction of an activity with the environment. For biodiversity, direct impacts include the removal of trees/vegetation by the proposal
- ‘Indirect impacts’ on the environment are those that are not a direct result of the proposal and are often produced away from or as a result of a complex impact pathway. Indirect impacts are also known as secondary impacts. For biodiversity indirect impacts include construction machinery compacting soil over tree roots or accidental damage by construction machinery.

1.2 REF display

TfNSW prepared a Review of Environmental Factors (REF) to assess the potential environmental impacts of the proposed works. The REF was placed on public display for 22 days between Wednesday 27 November 2019 and Wednesday 18 December 2019 at the locations summarised in Table 1-1.

Table 1-1 Display locations

<table>
<thead>
<tr>
<th>Location</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>City of Sydney Council Office</td>
<td>Level 2, 456 Kent Street, Sydney NSW 2000</td>
</tr>
<tr>
<td>Roads and Maritime Ennis Road Office</td>
<td>20-44 Ennis Rd, Milsons Point NSW 2061</td>
</tr>
<tr>
<td>Green Square Library</td>
<td>355 Botany Rd, Zetland NSW 2017</td>
</tr>
<tr>
<td>Waterloo Library</td>
<td>770 Elizabeth St, Waterloo NSW 2017</td>
</tr>
</tbody>
</table>

The display locations and website link were advertised as follows:

- Inner West Courier on 3 December 2019
- Southern Courier on 4 December 2019
- Daily Telegraph (government notices) on 4 December 2019
- NSW Roads Facebook page.
The advertisements included information about the combined display and consultation period and featured a schematic map of the proposal.

The REF was also published on the TfNSW project website and made available for download. During this time, TfNSW invited the public to provide feedback on the proposal. About 5,500 community updates were letterbox dropped to Alexandria, Waterloo and Moore Park on the first day of the REF public display.

The community was invited to view the proposal design at the staffed information sessions summarised in Table 1-2 to give the community a chance to learn more about the project, ask questions and ‘have their say’.

Table 1-2 Location of staffed information sessions

<table>
<thead>
<tr>
<th>Location</th>
<th>Address</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moore Park Supa Centre</td>
<td>2A South Dowling Street, Moore Park</td>
<td>Friday 06 December 2019 11am to 1pm</td>
</tr>
<tr>
<td>Cliff Noble Community Centre</td>
<td>24 Suttor Street, Alexandria</td>
<td>Saturday 07 December 2019 10am to 1pm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Thursday 12 December 2019 5pm to 8 pm</td>
</tr>
</tbody>
</table>

During the development of the proposal concept design, TfNSW separately met with local Councils, the Centennial and Moore Park Trust, residents and businesses who would be directly affected by the proposal.

TfNSW carried out targeted consultation with affected residents and business owners in the week prior to the public display of the REF. TfNSW met with impacted property owners separately to discuss the design and anticipated level of individual impact. The meetings were organised by phone and were held in-person, with representatives from the Project Management and Stakeholder Engagement team to discuss the proposal and engage directly.

1.3 Purpose of this report

This submissions report relates to the REF prepared for the proposal and should be read in conjunction with that document.

The REF was placed on public display and submissions relating to the proposal and the REF were received by TfNSW. This submissions report summarises the issues raised and provides responses to each issue raised by the community (refer to Chapter 2) and government agencies (refer to Chapter 3). It details further environmental assessment and clarifications to submissions, carried out since finalisation of the REF (Chapter 4), identifies new or revised environmental management measures (Chapter 5) and provide a summary of licences and approvals required before construction commences (Chapter 6).
2 Response to issues

TfNSW received 198 submissions. About 400 comments were made via the online tool by 148 individuals and three submissions were provided at the information sessions (two being duplicates of submissions received via the project inbox). The remaining submissions were received via the project email address. The list of respondents and each respondent’s allocated submission number is provided in Appendix B. The table also indicates where the issues from each submission have been addressed in Chapter 2 and Chapter 3 of this Submissions Report.

2.1 Overview of issues raised

A total of 198 submissions were received in response to the display of the REF. This included 196 submissions from the community, and these are summarised in this chapter. Each submission has been examined individually to understand the issues being raised. The issues raised in each submission have been extracted and collated, and corresponding responses to the issues have been provided. Where similar issues have been raised in different submissions, only one response has been provided. The issues raised and TfNSW response to these issues forms the basis of this chapter. The main issues raised by the community are listed in Table 2-1. Responses to issues raised by the City of Sydney and the Botanical Gardens Centennial and Parklands Trust are provided in Chapter 3.

Table 2-1 Main issues raised by the community

<table>
<thead>
<tr>
<th>Category</th>
<th>Issues</th>
<th>Section in the report</th>
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<tbody>
<tr>
<td>The proposal</td>
<td>Environmental impact assessment</td>
<td>Section 2.2.1</td>
</tr>
<tr>
<td></td>
<td>Proposal need and consistency with government policy and strategic plans</td>
<td>Section 2.2.2</td>
</tr>
<tr>
<td></td>
<td>Construction duration and traffic impacts</td>
<td>Sections 2.2.3 and 2.2.4</td>
</tr>
<tr>
<td>Design</td>
<td>The staging of the Ultimate Concept Design</td>
<td>Section 2.3.1</td>
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<tr>
<td></td>
<td>Right turn ban at Bunnings</td>
<td>Section 2.3.1</td>
</tr>
<tr>
<td></td>
<td>The need for the upgrade of the McEvoy Street /Bourke Street and Bourke Street/Lachlan Street intersection</td>
<td>Section 2.3.3</td>
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<td></td>
<td>Alternate design options</td>
<td>Section 2.3.4</td>
</tr>
<tr>
<td></td>
<td>Closure of Maddox Street and Harley Street</td>
<td>Sections 2.3.7 and 2.3.8</td>
</tr>
<tr>
<td>Traffic and transport</td>
<td>Active transport</td>
<td>Section 2.5.1</td>
</tr>
<tr>
<td></td>
<td>Congestion</td>
<td>Section 2.5.2</td>
</tr>
<tr>
<td></td>
<td>Public transport</td>
<td>Section 2.5.3</td>
</tr>
<tr>
<td></td>
<td>Pedestrian and road safety</td>
<td>Section 2.5.4</td>
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<td></td>
<td>Parking and clearways</td>
<td>Section 2.5.5</td>
</tr>
<tr>
<td></td>
<td>Traffic speed limits and volumes</td>
<td>Sections 2.5.6 and 2.5.10</td>
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<tr>
<td></td>
<td>Right turn bans</td>
<td>Section 2.5.8</td>
</tr>
</tbody>
</table>
2.2 The proposal

2.2.1 Environmental impact assessment

Submission number(s)
62

Issue description
One respondent was concerned that the proposal had not undertaken a proper road plan assessment and had not considered the existing population.

Detailed response
The proposal was subject to assessment under Division 5.1 of the Environmental Planning and Assessment Act 1979 (EP&A Act). The REF has examined, and taken into account to the fullest extent possible, all environmental matters affecting or likely to be affected by the proposal. This included a Social Impact Assessment that was included as Appendix O of the REF and summarised in Section 6.8 of the REF and in which impacts to the existing population were considered.

The proposal is consistent with the objectives outlined in key policy documents such as Future Transport Strategy 2056 (TfNSW, 2018b) as per Section 2.1 of the REF.

2.2.2 Proposal need and strategic context

Submission number(s)
40, 64, 83, 89, 96, 152, 159, 183

Issue description
Eight respondents have raised concern about the proposal objectives and justification, issues raised include:

- The need for the proposal was queried as it would decrease liveability in the area
How the proposal would meet the proposal objectives, as these have changed from those presented at the project inception to those presented as part of the Stage 1 proposal. Respondents were particularly concerned about the lack of consideration of pedestrian and cycling movements, green infrastructure and the quality of the public domain.

Concerned that Stage 1 of the proposal is only improving traffic performance and active transport solutions included in the Ultimate Concept Design have since been removed.

The proposal does not present a long term solution.

The proposal does not provide value for money.

It is difficult to travel in the area without a car and the city cannot afford a car-based lifestyle.

Queried how long the proposal’s benefits would be relevant (increasing capacity and reducing travel times) as the road capacity would be utilised as soon as the proposal is completed, so the perceived benefits would not be justified.

The benefits of the proposal for residents and nearby road users have not been justified.

There are minimal increases in travel time, therefore not consistent with the objective of the proposal.

Queried the need for the proposal.

Two submissions received were regarding the strategic context of the proposal. One respondent enquired if the proposal is consistent with the following government documents:

- The Metropolis of Three Cities – the Greater Sydney Region Plan (GSC, 2018a)
- The Central District Plan (GSC, 2018b)
- The TfNSW Future Transport Strategy 2056 (TfNSW, 2018b)
- The Infrastructure NSW Infrastructure Strategy (Building Momentum State Infrastructure Strategy 2018-2038) (Infrastructure New South Wales, 2017) (State Infrastructure Strategy)
- The Movement and Place Framework (TfNSW, 2017)
- The Sydney Green Grid (Government Architect NSW (GANSW), 2019)
- The NSW Government’s Premiers Priorities (NSW Government, 2016)
- The Moore Park Masterplan 2040 (Centennial Park and Moore Park Trust, 2017)
- The NSW Government’s Towards Zero Road Safety Plan (TfNSW, 2018).

One respondent enquired if TfNSW has considered the Australia Infrastructure Audit (Infrastructure Australia, 2019).

**Detailed response**

**Strategic need**

The strategic need for the proposal is described in Section 2.1 of the REF and in Section 2.1 of the Traffic and Transport Assessment included as Appendix J of the REF and is also summarised below.

In terms of the actual improvements identified for the proposal, the main intersections with the north south arterial roads located along this east west corridor are already congested and long delays are common during peak periods at South Dowling Street and Botany Road which is an important bus route. The intersection at Elizabeth Street is also an important bus route and is also currently close to capacity. Congestion at these locations is expected to increase due to a substantial growth in residential population of more than 40,000 people.
within 1.5 kilometres of the corridor over the next 15 years and the opening of major transport projects.

If conditions remain as they are, average speeds on the local network are expected to decrease by 20 to 30 per cent in peak periods by 2021.

Road safety is already an issue on the corridor with crash rates much higher than would normally be expected for a road of this type in Sydney. The likelihood of congestion related crashes would increase as traffic grows.

Major bus routes cross the corridor at Elizabeth Street, Bourke Street and Botany Road and these already experience delays and incidents that affect performance and service reliability. The average speed for buses along the corridor is forecast to decrease by 15 per cent in peak periods by 2021 with bus routes along Botany Road and Elizabeth Street expected to experience an increase in delays and a drop in reliability.

The proposal would improve intersection performance, safety and trip reliability along the road corridor and at the intersections where the proposal is located.

**Strategic policies**

A review of how the proposal was consistent with the various Commonwealth, State and Local government strategic policies identified was carried out in Sections 2.1.1 – 2.17 of the REF. Strategic policies reviewed in the REF of the proposal included:

- **State Infrastructure Strategy 2018-2038** (Infrastructure New South Wales, 2017) (the State Infrastructure Strategy), refer to Section 2.1.1 of the REF
- **Future Transport Strategy 2056** (TfNSW, 2018), refer to Section 2.1.2 of the REF
- **Directions for a Greater Sydney 2017-2056** (GSC, 2017), refer to Section 2.1.4 of the REF
- **Metropolis of Three Cities – the Greater Sydney Region Plan** (GSC, 2018) is discussed in Section 2.1.4 of the REF and includes consideration of **The Central District Plan** (GSC, 2018)
- **Road Safety Plan 2021:Towards Zero** (TfNSW, 2018), refer to Section 2.1.5 of the REF
- **NSW Freight and Ports Strategy** (TfNSW, 2013), refer to Section 2.1.6 of the REF
- **Centennial Parklands Conservation Management Plan** (CMP) (Urbis, 2010), refer to Section 2.1.7 of the REF
- **Centennial Park Master Plan 2040** (BVN Donovan Hill, 2013a), refer to Section 2.1.7 of the REF
- **Green Square Master Plan** (City of Sydney, unpublished), refer to Section 2.1.7 of the REF
- **Connecting our City** (City of Sydney, 2012), refer to Section 2.1.7 of the REF.

Policies considered and reviewed in Section 2.1 of the Traffic and Transport Assessment and included as Appendix J of the REF included the following:

- The **NSW State Priorities: Making it Happen** (NSW Government, 2015)
- **Greater Sydney Region Plan: A Metropolis of Three Cities** (GSC, 2018a)
- **Future Transport Strategy 2056** (TfNSW, 2018a)
- **Road Safety Plan 2021:Towards Zero** (TfNSW, 2018b)
- **Greater Sydney Infrastructure and Services Plan** (TfNSW, 2018c)
- **East Sydney District Plan** (GSC, 2018c)
- **Sydney Green Grid - Central District** (GANSW, 2017)
• Sydney Development Control Plan (City of Sydney, 2012)
• Walking Strategy and Action Plan (City of Sydney, 2018a)
• Cycling Strategy and Action Plan (City of Sydney, 2018b)
• Alexandria Local Area Traffic Management Plan (City of Sydney, 2018c).

Strategic government policies identified by the submissions above and that were not reviewed by the REF and Traffic and Transport Assessment have been considered in Section 4.1. This includes:

• The new NSW Government’s Premiers Priorities (NSW Government, 2019), refer to Section 4.1.2
• Australian Infrastructure Audit, refer to Section 4.1.5
• The Moore Park Masterplan 2040 (Centennial Park and Moore Park Trust, 2017), refer to Section 4.1.8
• The Sydney Green Grid (GANSW, 2017), refer to Section 4.1.9.

In addition some strategic policies (not yet published) were identified by the City of Sydney in their submissions included in Section 3.2 and these have been considered in Section 4.1. These includes:

• The City of Sydney’s Draft Local Strategic Planning Statement (LSPS), refer to Section 4.1.6
• South East Sydney Transport Strategy (Draft, unpublished) (Developed by TfNSW in collaboration with the City of Sydney, refer to Section 4.1.7
• Green Square and Waterloo Transport Action Plan (Draft, unpublished) (Co-developed by TfNSW and City of Sydney), refer to Section 4.1.9.

The Stage 1 proposal forms one part of the overall integrated transport system response for the area which includes the new Waterloo Metro Station, better bus services to Green Square, better active transport facilities and intersection upgrades. The improvements would result in reduced crashes along the corridor as well as localised improvements in traffic conditions and are a low cost value for money investment.

Further corridor improvements may include the improved features previously presented in the June 2017 Project Update (refer to Appendix D of the REF) and including pedestrian and cycling infrastructure ie active transport, landscaping and upgrades of other major intersections such as straightening the staggered McEvoy Street/Bourke Street and Bourke Street/Lachlan Street intersections, however this would depend upon future assessments. The Stage 1 proposal provides movement based features to improve intersection performance, safety and trip reliability within the Alexandria to Moore Park corridor.

New public transport infrastructure projects are currently being developed and constructed in the area including Sydney Metro and the CBD South East Light Rail (CSELR) projects. City of Sydney Cycling Strategy and Action Plan (City of Sydney, 2018b). Further improvements along the corridor would be considered in future project stages.
2.2.3 Construction duration

Submission number(s)
74, 83, 85

Issue description
Three respondents are concerned about the duration of construction being 36 months. As residents would have to endure inconvenience, noise, disruption, noise and amenity impacts for 36 months.

Detailed response
The construction of the proposal would take 36 months due to the implementation of construction staging requiring night works including respite periods. Alternative accommodation and construction respite periods would be identified in consultation with affected residents and where feasible and reasonable.

Detailed construction plans and staging plans would not be finalised until the detailed design phase and ultimate construction staging approach is confirmed.

Operational noise mitigation and acoustic treatments would be implemented where reasonable and feasible. Noise mitigation and acoustic building treatment are discussed further in Section 2.6.6 and Section 2.6.1 respectively.

2.2.4 Construction traffic

Submission number(s)
81

Issue description
One respondent is concerned about the estimation of construction traffic and considers the assessment has been based on assumptions with no real research, investigation and data of the impact the proposal would have on the surrounding road network, traffic and to local residents.

One respondent queried why assumptions about construction site access routes were made instead of establishing required routes that were restricted to Euston Road, McEvoy Street and South Dowling Street.

Detailed response
A Traffic and Transport Assessment was completed for the proposal as part of the REF. The assessment is summarised in the REF in Section 6.1 and the full report is provided in Appendix J of the REF. The Traffic and Transport Assessment assesses the impact of construction and operation of the proposal. Construction traffic numbers were based on a review of the materials required for the proposal identified during the development of the concept design as well as comparison against construction traffic numbers used on other recent road projects of a similar size.

While access to the proposal would be along roads that have been designed to accommodate heavy vehicle movements, construction site and compound access routes would ultimately be finalised with the contractor appointed to build the works. Use of local streets would be avoided unless there is no practical alternative.
2.2.5 Ancillary facility

Submission number(s)
81

Issue description
One respondent advised that page 57 of the REF notes that Compound 3 is located on George Street Alexandria however, there is no George Street in Alexandria. The compound location is to be clarified.

Detailed response
Site compound 3 is located in road reserve on George Street, Waterloo, on the northern side of McEvoy Street. Figure 1-2b illustrates the location of the site compound.

2.2.6 Utilities work

Submission number(s)
16

Issue description
Respondent notes that there is a discrepancy in literature provided on the proposal as the November 2019 Project Update states that the only work required at Elizabeth Street is road marking, while the REF states that in this location road widening, upgrade of utilities and line marking will be occurring. Further the majority of the work will be completed at night over months with estimates noise up to 120 dB(A). Respondent requests that the discrepancy be explained.

Detailed response
Construction of the proposed improvements at Fountain Street and Botany road would require changes to underground utility works to allow for road widening. The proposed works at South Dowling Street involve changes to utilities along Lachlan Street and the changes at Elizabeth Street are mainly line marking but may require minor changes to drainage due to minor works at corners. The exact changes to utility services would be finalised in detailed design.

2.3 Design

2.3.1 Ultimate Concept Design

Submission number(s)
55, 61, 64, 68, 73, 75, 77, 81, 83, 104, 146, 159, 165, 184

Issue description
Seven respondents did not provide any context but opposed the whole Stage 1 proposal and one respondent supports the traffic improvements.

Four respondents raised concerns about the Ultimate Concept Design. The issues and concerns included:

- Disappointed that the Ultimate Concept Design has been reduced in size and the Ultimate Concept Design is crucial for the area
Queried why the staged project is necessary and what are the further stages. The respondent notes that the implications and impacts of the wider project are unknown and have not been assessed at this stage.

Disappointed that right turn upgrades are no longer part of the proposal.

Two respondent opposes road widening and the introduction of clearways. The road is already difficult to cross with multiple lanes and the volume of traffic.

**Detailed response**

TfNSW notes the respondent’s comments. The staged approach to the project is due to feedback from stakeholders on the preliminary concept design of the Ultimate Concept Design displayed in June 2017. Future improvements on the corridor would depend on future consultation and environmental assessment and availability of funding. In response to feedback received from the display of the concept design in June 2017 (summarised in Section 5.2 of the REF), a series of design refinements were made to the concept design. These refinements were primarily associated with reducing property impacts and business impacts caused by the proposed work associated with the proposal. In addition, and in response to comments which included consultation with the City of Sydney and the community, the Ultimate Concept Design was reviewed to allow a staged approach and includes:

- The Stage 1 proposal which would improve traffic performance along the Euston Road, McEvoy Street, Lachlan Street and Dacey Avenue corridor and can be implemented early with minimal property acquisitions. The majority of work associated with the proposal would be deferred until after the opening of the New M5 and the St Peters Interchange to review the need for the improvements proposed. Stage 1 is described in **Section 1.1** and is shown **Figure 1-2**
- While further stages would consider the features previously presented in the June 2017 Project Update (refer to Appendix D of the REF) and includes pedestrian and cycling infrastructure ie active transport, landscaping and upgrades of other major intersections such as straightening the staggered McEvoy Street/Bourke Street and Bourke Street/Lachlan Street intersections, this would depend upon future assessments. Further discussion on the previous design is included in **Section 2.3.1**.

TfNSW notes the respondent’s suggestion regarding splitting traffic at Bourke Street and McEvoy Street, however the scope of the Stage 1 proposal is for upgrades at four intersections located along the Euston Road, McEvoy Street, Lachlan Street and Dacey Avenue corridor and the introduction of clearways. Upgrades to Bourke Street and right turn upgrades would be considered in future stages.

The Stage 1 proposal would allow time to see the effects of major projects such as CSELR, Sydney Metro and WestConnex while providing some performance improvement at critical intersections.

**2.3.2 Right turn ban at Bunnings**

**Submission number(s)**

10, 24, 42, 47, 57, 67, 69, 71, 75, 76, 81, 86, 88, 95, 103, 115, 118, 131, 177, 196
**Issue description**

Bunnings had the following concerns and comments regarding the right turn ban at Bunnings. Their issues and comments included:

- Bunnings are supportive of planning for infrastructure and understand the advantages the proposal would provide, but are concerned about the effects on their business and have put forward alternatives that would allow them to retain their right turn access.

- Bunnings completed a traffic and transport assessment to assess the impacts the removal of the right turn would have on Bunnings. Bunnings is concerned the removal of the right turn would increase safety concerns due to increased rat runs in surrounding streets and adding pressure to nearby key intersections as well as impacting economic profit for Bunnings.

- Bunnings is concerned the removal of the signalised right turn lane would impact the business for Bunnings. During consultation with TISW (formerly Roads and Maritime) for the Development Application in 2011 to construct the Bunnings facility it was not identified that the right turn into Bunnings would be removed in the future. The Development Application was approved with the right turn traffic light. The investment into this development would not have proceeded without the signalised intersection including the dedicated right turn lane.

- Bunnings is concerned that there is minimal alternatives for customers to turn right into their parking area for westbound traffic and indicate that a large proportion of their customers reside to the south-west and currently utilise the right turn lane. The removal of the right turn lane on Euston Road would encourage customers to use local streets as a rat run to enter Bunnings.

- Bunnings made the investment decision based on the traffic arrangements remaining the same for a substantial period of time. Bunnings is concerned that the ban of the right turn on McEvoy Street would not be consistent with the objectives of the proposal ‘to improve reliability and safety’ and it would negatively affect Bunnings business.

- Bunnings provided two alternative options to the proposal, including:
  - One option included the addition of a 48 metre long dedicated right turn lane resulting in additional acquisition to the north of Euston Road of 82 metres squared from property owned by Sydney Water and small area owned by Bunnings.
  - The second option is to maintain the right turn lane and increase the frequency of right turn signal to improve traffic flow. The option should be in conjunction with extending the no stopping on the western side of Euston Road.

Nineteen respondents had concerns and comments regarding the right turn ban at Bunnings. The issues, requests and comments included:

- Concerned that additional traffic through nearby residential streets and an increase in air pollution from vehicle emissions due to vehicles having to travel a longer distance to access Bunnings.

- Request to retain the right turn at Bunnings. If the right turn must be removed the respondent requested that traffic should be routed via Mitchell Road, Fountain Street and then Euston Road and cannot enter Lawrence Street and Belmont Street as it is a residential area.

- Requested additional traffic assessment on the impacts of re-routing traffic into residential streets and in consideration of WestConnex: traffic solutions for Alexandria, Erskineville and St Peters as per discussions held between Roads and Maritime Services and the City of Sydney and the resulting “Alexandria Local Area Traffic Management Plan” from the Council dated 14 November 2018.
• Concerned the additional traffic in the nearby residential streets would increase noise impacts and damage the nature of the local residential area
• Queried if a traffic assessment has been completed to assess utilisation of the right turn into Bunnings
• The forecast change in peak period traffic volumes at the Fountain Street intersection does not take into consideration the additional traffic that would be directed to Fountain Street due to the proposed right turn ban into Bunnings on Euston Road
• Queried if the traffic lights at Bunnings are being retained as part of the proposal
• Concerned that the right turn ban as an alternate access route, Bunnings would substantially increase traffic congestion on the local roads, particularly Maddox Street, Bourke Street, Bowden Street, Harley Street, Lawrence Street, Euston Lane, Lawrence Lane, Belmont Street, Belmont Lane, Fountain Street and Euston Road and there would be no respite for residents
• Concerned that the proposal is not consistent with previous discussions with Road and Maritime and City of Sydney about traffic solutions for Alexandria, Erskineville and St Peters for WestConnex and the report generated by City of Sydney Alexandria Local Area Traffic Management Plan from City of Sydney dated 14 November 2018
• The no right turn at Bunnings would decrease pedestrian safety as a result of increased traffic using nearby residential streets to access Bunnings, including Lawrence Street, Lawrence Lane, Belmont Street, Belmont Lane, Euston Lane
• Decreases safety for users of the children’s playground on the corner of Lawrence Street/Hartley Street intersection
• Request to consider a right turn lane into Bunnings or a sign posted safe route to Bunnings
• Opposed to the right turn ban to Bunnings due to traffic impacts
• The respondent was particularly concerned about the right turn ban into Bunnings off Euston Road and queried:
  o What route customers and delivery drivers would now take to enter Bunnings
  o If traffic exiting Bunnings would still be able to turn right onto Euston Road travelling eastbound
  o If traffic will still be able to veer slightly right and then left into Harley Street at the intersection.

Detailed response

TfNSW will consider options to stage implementation of right turn bans along the corridor to allow time for alternate proposals to be further considered in consultation with stakeholders. TfNSW recognise the concerns and would work with Bunnings on options for retaining the right turn.

TfNSW will review traffic operations and safety performance along the corridor during 2021.
2.3.3 McEvoy Street/Bourke Street and Bourke Street/Lachlan Street intersection

Submission number(s)
2, 4, 5, 7, 17, 26, 39, 55, 63, 98, 99, 104, 178, 195

Issue description
Fourteen respondents had concerns and comments on the McEvoy Street/Bourke Street and Bourke Street/Lachlan Street intersection layout. The issues, requests and comments included:

- Request to improve the intersections as both intersections are often congested in both directions
- Suggestion to include feeder lanes in each direction
- Concern that the intersections raise safety concerns due to near misses
- Request to combine the two intersections into one large intersection to improve road efficiency and safety
- Request for the intersection to be prioritised as part of Stage 1 of the proposal
- Queried why the intersection upgrades are not part of Stage 1 of the proposal. The original proposal included these intersections to be upgraded into one large intersection to address safety, pedestrian access and the existing dog leg
- Requested that the McEvoy Street/Bourke Street and Bourke Street/Lachlan Street intersections need straightening and that Lachlan Street needs two lanes in each direction to reduce future congestion associated with urban growth in the area
- Queried why traffic cannot be split between McEvoy Street and Bourke Street
- Concerned that traffic would use residential streets, including O’Dea Avenue and Gadigal Avenue, to avoid the McEvoy Street/Bourke Street and Bourke Street/Lachlan Street intersections.

Detailed response
The preliminary concept design of the Ultimate Concept Design displayed in 2017 included the McEvoy Street/Bourke Street and Lachlan Street/Bourke Street intersections upgraded to a single intersection. The upgrade to a single intersection may be considered again as part of future stages, refer further to Section 2.3.1.

The Stage 1 proposal would allow time to see the effects of major projects such as CSELR, Metro and WestConnex while providing some performance improvement at critical intersections.

2.3.4 Alternative design options

Submission number(s)
19, 20, 27, 28, 34, 81, 105, 147, 166, 177

Issue description
Ten respondents proposed/requested the following alternative design options:

- Suggested that traffic lights were required at the Powell Street/Bourke Street intersection in order to improve pedestrian safety for Taylors College students, slow traffic on Bourke Street and improve access for local residents
- Request for an overpass at Gadigal Street over Lachlan Street for the safe passage of pedestrians and cyclists to be considered
- Queried if underground tunnelling and building a road following the same route as the existing corridor was considered
- Suggested traffic should be encouraged to use the New M5/Southern Cross Drive/Eastern Distributor instead of McEvoy Street
- The best way to improve traffic flow at Botany Road would be to create dedicated left and right turn lanes or prohibit left and right turns
- Suggested that the only effective and cost efficient traffic solution is to reverse the toll on the Eastern Distributor and reduce the traffic flow through the outlying area by those seeking to avoid the toll costs
- A keep clear zone and an adjustment to the median to allow residents of 52-54 McEvoy Street to turn right out of their garage
- The McEvoy Street to be one way eastbound and redirect all westbound traffic from McEvoy Street from Bourke Street to go further down Bourke Street
- High priority should be given to traffic turning right out of Botany Road into McEvoy Street, so that traffic flows smoothly and to avoid cars making rat runs down neighbouring side streets.

Detailed response

The scope of this proposal is to provide minor upgrades at four intersections and introduce clearways between the Euston Road/Maddox Street intersection in Alexandria and the Anzac Parade/Alison Road/Dacey Avenue intersection in Moore Park (the proposal).

The broader approach to developing an integrated transport system for Sydney involving investment in public transport, active transport and policy changes such as to speed limits is outlined in the Future Transport Strategy 2056 (TfNSW, 2018a) and other planning documents being prepared for the local area. Proposals such as tunnels, one way systems, changes to toll arrangements and overpasses are outside the scope of this proposal.

The intersection of Bourke Street and Powell Street is not part of the proposal area.

2.3.5 Property access

Submission number(s)
11, 14, 103, 109, 155, 188

Issue description
Six respondents are concerned about access to properties, including:

- Impacting safe access to 147 McEvoy Street from the introduction of the new eastbound left turning lane at the Fountain Street/McEvoy Street intersection
- Request to review the new eastbound left turning lane at the Fountain Street/McEvoy Street intersection to ensure access is not impacted at 147 McEvoy Street. If appropriate access is not provided there would be an additional one kilometre of additional travel time
- Safe access to the carpark for road users and pedestrians at 15-17 Fountain Street from Lawrence Street.

Detailed response

Access to 147 McEvoy Street would be maintained during construction and reinstated when construction is complete within the proposal area. In response to submissions the right turn lane from McEvoy Street into Fountain Street has been reduced from 100 metres to 40 metres.

The proposal would not directly impact access to 15-17 Fountain Street.
2.3.6 Right turns

Submission number(s)
187

Issue description
One respondent supported the no right turn into Bowden Street. The same one respondent also supports the right turn onto McEvoy Street from Botany Road and queried if traffic travelling west through Botany Road would have an alternate diversion before McEvoy or Bourke Street. Respondent noted that Wyndham Street westbound lane seems under-utilised compared to Botany Road.

Detailed response
TfNSW notes the support for the no right turn into Bowden Street proposed as part of the Stage 1 proposal. TfNSW notes the support for the right turn into McEvoy Street from Botany Road that would be implemented as part of the Stage 1 proposal and notes the observation that the Wyndham Street westbound lane seems under-utilised compared to Botany Road.

In response to feedback received on Stage 1 of the proposal, the timing of the implementation of right turn bans along Euston Road and McEvoy Street would be staged and reviewed in 2021. The majority of work associated with the proposal would be deferred until after the opening of the New M5 and the St Peters Interchange to review the need for the improvements proposed.

2.3.7 Maddox Street closure

Submission number(s)
10, 15, 24, 25, 34, 111, 173, 177, 189

Issue description
Nine respondents queried the Maddox Street/Euston Road intersection, including:
- Request to close Maddox Street to Euston Road as it is used as a short cut for vehicles over three tonnes, would prevent traffic entering from WestConnex, because of speeding cars
- Request for Maddox Street to be one way or close it at Lawrence Lane
- Request for Maddox Street to remain open due to commercial and industrial buildings along Maddox Street that require heavy vehicle access. The closure of Maddox Street would reallocate traffic to Fountain Street and Mitchell Road which have schools located along them
- Request for Maddox Street to remain open. If it is closed, travel time for residents would increase.

Detailed response
No changes to Maddox Street are proposed as part of this proposal. TfNSW would continue to discuss the proposed local area traffic management proposal for this part of the corridor with the City of Sydney as part of the ongoing review and management of the network.

TfNSW has also committed to reviewing operations at Maddox Street after one year of operation of the St Peters interchange, this will include consideration of the closure of Maddox Street in consultation with the City of Sydney.
2.3.8 Harley Street closure

Submission number(s)
103, 113, 189, 190

Issue description
Two respondents requested for Harley Street to Euston Road to remain open for local traffic and emergency access.
Two respondents requested for Harley Street to be closed to Euston Road due to road safety from increased traffic and traffic travelling at higher speeds that is a danger to pedestrians.

Detailed response
The closure or adjustment to Harley Street does not form part of the scope of the REF. No changes to Harley Street would be made as part of the proposal.

2.3.9 Bowden Street

Submission number
9, 14, 34, 95, 100

Issue description
Five respondents raised concern about the Bowden Street right turn:
• One respondent noted that the City of Sydney had plans to make the corridor the primary east-west connection to Green Square and queried what the plan was for the Bowden Street/McEvoy Street intersection
• Requested that the eastbound right turn into Bowden Street be reinstated to avoid concentrating traffic onto roads in the Green Square area that are already congested
• Two respondents noted that the right turn is important for local residents
• Concerned about the implementation of the right turn ban at Bowden Street as it provides a direct route to the new Ashmore and Green Square connector road for residents. The next right turn would be at Botany Road which is the wrong direction if wanting to access Zetland/Green Square
• One respondent supported the no right turn into Bowden Street but suggested that access for bicycles be provided.

Detailed response
The Stage 1 proposal would not directly impact on Bowden Street however work would occur on McEvoy Street immediately next to the Bowden Street/McEvoy Street intersection as shown in Figure 2-1 and includes:
• Road widening on McEvoy Street to the east of the intersection to accommodate a left turn lane into Fountain Street for eastbound traffic
• Right turn ban into Bowden Street
• Construction of drainage infrastructure to manage stormwater
• Utility works.

TfNSW would stage implementation of right turn bans along the corridor and would review performance and operation of the corridor in 2021. The majority of work associated with the
proposal would be deferred until after the opening of the New M5 and the St Peters Interchange to review the need for the improvements proposed.

Figure 2-1 Work proposed near to the Bowden Street/McEvoy Street intersection as part of the Stage 1 proposal

2.3.10 Fountain Street/McEvoy Street Intersection

Submission number(s)
43, 74, 78, 84, 102, 115

Issue description
Two respondents queried the length of the left turning lane on McEvoy Street into Fountain Street. Three respondents opposed the proposed upgrades at the Fountain Street/McEvoy Street intersection. While another respondent opposes widening of McEvoy Street at the Fountain Street intersection and has suggested diminishing the need to go into Fountain Street by improving other routes to Erskineville via Mitchell Street.

Detailed response
In response to submissions the right turn lane from McEvoy Street into Fountain Street has been reduced from 100 metres to 40 metres. The construction of the right turn lane will be part of the initial works of the proposal.

The opposition to the widening of McEvoy Street at the Fountain Street intersection is noted however traffic the assessment has identified a need for Fountain Street to continue to serve as an important traffic route in the area.
2.3.11  Botany Road/McEvoy Street intersection

Submission number(s)
43, 84

Issue description
Two respondents were opposed to the proposal intersection upgrades at Botany Road/McEvoy Street intersection.

Detailed response
The opposition to the widening of McEvoy Street at the Botany Road intersection is noted however the traffic assessment has identified a need for Botany Road to continue to serve as an important traffic route in the area.

2.3.12  Cope Street

Submission number(s)
176

Issue description
The respondent requested for Cope Street to remain a cul-se-sac due to the street being quiet and lined with large trees and apartments. Opening the street to McEvoy Street would increase traffic on the quiet street that is home to elderly, disabled people and families.

Detailed response
No changes to the Cope Street cul-se-sac are proposed as part of the proposal.

2.3.13  Elizabeth Street/McEvoy Street intersection

Submission number(s)
4, 15

Issue description
One respondent requested to investigate the option and cost of grade separation at the Elizabeth Street/McEvoy Street intersection.

One respondent queried if the works at the Elizabeth Street/McEvoy Street intersection only required a change in line markings or was road widening required.

Detailed response
No overpasses or underpasses have been considered at the Elizabeth Street/McEvoy Street intersection due to the significant environmental impacts on the surrounding parkland.

As described in Section 3.2.3 and shown on Figure 3.4 of the REF, the intersection improvement at Elizabeth Street and McEvoy Street and McEvoy Street would include some minor kerb and footpath adjustments. The main features of the Elizabeth Street/McEvoy Street intersection following construction of the proposal includes:

- Two eastbound through lanes along McEvoy Street
- Two westbound through lanes along McEvoy Street
- Two northbound lanes along Elizabeth Street
- Two south bound lanes along Elizabeth Street
- Left turn ban for northbound turning movement from Elizabeth Street for vehicle over nine metres in length
- A 2.0 metre wide footpath on the northern side of McEvoy Street to the east of Elizabeth Street
- A 1.3 – 1.8 metre wide footpath on the northern side of McEvoy Street to the west of Elizabeth Street
- New line marking.

2.3.14 Hunter Street

Submission number(s)
184

Issue description
Respondent concerned that Hunter Street is often used to bypass the traffic signals at the Bourke Street and McEvoy Street intersection and often speed on this street. Request for Hunter Streets speed limit to be reduced to 40 km/h and speed humps installed.

Detailed response
Improvements to Hunter Street does not form part of the scope of the proposal.

2.3.15 Morehead Street

Submission number(s)
176

Issue description
One respondent requested for the right turn into Morehead Street to be retained. There are no right turn opportunities at Elizabeth Street or Botany Road. Morehead Street is an important access point for residents living north of McEvoy Street between Morehead Street and Wyndham Street.

Detailed response
The introduction of right turn bans at local streets along the proposal would be implemented to improve safety and reduce congestion. TfNSW understands that this would result in less direct local access.

TfNSW would stage implementation of right turn bans along the corridor and would review performance and operation of the corridor in 2021.

2.3.16 Lachlan Street

Submission number(s)
26, 51, 53

Issue description
Three respondents requested the following improvements to Lachlan Street:

- Queried the proposed adjustments to the eastbound lanes on Lachlan Street at the South Dowling Street as these are often impacted by congestion
• The second lane on Lachlan Street be extended along its length to avoid future traffic congestion
• Traffic signal phasing to be reviewed. The right lane on the eastbound side of Lachlan Street intersection with South Dowling Street should allow vehicles to turn right or go straight at the same time. Currently vehicles in the left lane can turn left/go straight at the same time and the right lane is a right turn only. Requested for both lanes to operate at the same time instead of staggering traffic flow (via traffic signals) so left turn vehicles do not block the through lanes.

**Detailed response**

The main features of the Lachlan Street/South Dowling Street/Dacey Avenue intersection that are proposed to manage congestion at this intersection as part of the proposal include:

- Two eastbound through lanes
- Two westbound through lanes, which would merge into one lane after 80 metres on the western exit of the Lachlan Street/South Dowling Street/Dacey Avenue intersection
- Two southbound right turning lanes along South Dowling Street
- A 2.5 metre wide footpath on the southern side of Lachlan Street
- Traffic light controlled pedestrian crossings on all sides of Lachlan Street, South Dowling Street and Dacey Avenue, including the crossings at traffic islands to improve pedestrian and cyclist safety.

While traffic signal phasing would be reviewed in detailed design and the suggestions taken into consideration, there is a trade-off at this location in terms of keeping traffic flowing on the main arterial road which is South Dowling Street and providing access into and out of Lachlan Street.

**2.4 Community consultation**

**2.4.1 Formal and ongoing consultation**

**Submission number(s)**

70, 72, 81, 85, 87

**Issue description**

Five respondents were unsatisfied with consultation carried out as part of the proposal. The issues and requests included:

- Not receiving any notifications about the proposal including requesting for submissions
- The project phone number provided was not able to be contacted
- Prior to the REF display, the consultation about out of hours geotechnical work in the area occurring in October and November 2019 was considered inaccurate
- A request for a specific contact person for live oversight and remediation of any noise issues and requested for a specific construction timeline and regular ongoing consultation
- A request for additional individual consultation as the respondent is concerned their building and business would be directly impacted by the proposal at 147 McEvoy Street. The respondent requested more information about the dual wide footways, construction noise and construction duration.
Detailed response

Chapter 5 of the REF details consultation that has occurred to date for the project since December 2016. A community update was issued to a catchment of 5,500 in November 2019 updating the community on the project and inviting the community to make submissions during the submissions period between 27 November to 18 December 2019. The community update also included contact details for the project team.

TfNSW notes that an individual respondent was not able to access anyone on the project number and left a message. TfNSW followed up with this respondent as soon as possible after the call was logged using the contact details provided.

Request for additional individual consultation with residents and business owners is noted. TfNSW will continue consultation with affected residents and business owners as the detailed design progresses. In addition the delivery construction manager and community manager will maintain consultation with affected landowners and businesses prior to and throughout construction.

A 24 hour phone line would be developed for the project during construction and would be managed by the construction contractor.

One of the mitigation measures for at-property treatments included additional acoustic design survey to confirm if the level of acoustic treatment within newly-developed buildings identified as being potentially affected by the proposal is equivalent to the acoustic treatments offered by the Noise Mitigation Guideline (NMG) and the Roads and Maritime At-Receiver Noise Treatment Guideline before committing to offering additional at-property treatment. Once this survey is completed TfNSW would review reasonable and feasible mitigation measures in consultation with affected residents and business owners impacted by the proposal. This would include consultation with the resident at 147 McEvoy Street.

Active transport design, construction noise and construction duration is discussed further in Sections 2.5.1, 2.6.3 and 2.2.3 respectively.

2.4.2 Online tool

Submission number(s)

17, 31, 74

Issue description

Three respondents raised the following issues about the online tool:

- The 200 character limit was not sufficient for submissions
- The map was difficult to zoom, therefore being difficult to see the icons and place them in the correct location
- Comments from Canberra were not permitted.

Detailed response

TfNSW notes the concerns with the online tool and issues raised would be considered in future displays.

The issue related to the ‘zoom’ feature was immediately rectified when reported to the digital team and subsequently people using the online tool were immediately able to zoom in more closely.

While the online tool currently does not have capability for comments from interstate residents, the submission process still accepts and considers email submission regardless of location.
2.4.3 Map detail

Submission number(s)
12

Issue description
One respondent noted that the buildings on the maps for the projects are not accurate and queried if a site inspection had been done.

Detailed response
Planning for the proposal began in 2016, TfNSW notes that some maps use aerial imagery that may not accurately represent buildings in the area as there has been substantial development that has occurred and is continuing to occur within the proposal area.
Numerous site inspections have been completed during the development of the concept design.

2.4.4 Submissions period

Submission number(s)
79

Issue description
One respondent was unsatisfied with the length of the submissions period. The respondent requested additional time and noted that the community update outlining the submissions period is misleading. It implies the display period was over two months. The respondent noted that December is a busy period and difficult for businesses to provide feedback.

Detailed response
The REF was on display for comment between 27 November 2019 and 18 December 2019 providing three weeks for the community to make a submission. During the submissions period three staffed displays were carried out for the community to ask questions and raise their concerns. The staffed displays included:

- Moore Park Supa Centre (ground floor) – 2A South Dowling Street, Moore Park
  - Friday 06 December 2019 11am to 2pm
- Cliff Noble Community Centre – 24 Suttor Street, Alexandria
  - Saturday 07 December 2019 10am to 1pm
  - Thursday 12 December 2019 5pm to 8 pm.

Additionally, extensions were given upon request to allow for the Christmas period and it being a busy time for retailers.

2.5 Traffic and transport

2.5.1 Active transport

Submission number(s)
1, 4, 7, 8, 12, 16, 17, 20, 21, 22, 27, 30, 32, 33, 35, 43, 50, 53, 58, 63, 64, 65, 68, 72, 73, 77, 78, 82, 83, 84, 85, 89, 92, 93, 95, 96, 97, 101, 107, 108, 115, 120, 121, 128, 131, 132, 135,
Seventy-four respondents had concerns and comments regarding active transport in and around the proposal area:

The issues, request and comments raised by respondents that are within the proposal area included:

- A query asking why the proposal does not include improvements for active transport. Active transport capacity should be increased within the proposal area with the anticipated population growth in the area. The Green Square and Waterloo Transport Action Plan (Draft, unpublished) (Co-developed by TfNSW and City of Sydney) and the South East Sydney Transport Strategy (Draft, unpublished) (developed by TfNSW in collaboration with the City of Sydney) identify the need for increase active transport.
- Requests for additional pedestrian crossings to avoid long waits at cross roads with multiple lanes.
- Requests for wider footpaths and more pedestrian crossings within the proposal area.
- Requests for continuous cycle ways within the proposal area.
- Confirmation of cycle routes within the proposal area. The REF states there is cycling facilities available next to or across the proposal. However the respondent notes the statement is inaccurate as there is currently no direct, safe cycle connection from Alexandria to Moore Park.
- Requests for the proposal to be reviewed to be a transport corridor to provide multiple modes of transport, including dedicated bus lanes, cycle lanes and pedestrian paths.
- Requests for TfNSW to focus on active transport solutions rather than road upgrades to increase capacity. The proposal area should be made more attractive for active transport users and less attractive for cars.
- Requests for medians to be wider to accommodate cyclists.
- Concerns that the proposal would attract additional traffic and would further deter people to use active transport. Increased capacity would result in increased demand.
- Since 2016 Roads and Maritime have made commitments to residents in St Peters and Alexandria that active transport would be planned and delivered.
- The introduction of clearways would be unsafe for active transport users and would lead to deaths.
- Concerns about traffic light phasing for pedestrians across many intersections in the area and requested that priority is given to pedestrians rather than cars.
- Request for more integrated active transport to better connect to the light rail.
- Request for additional pedestrian crossings where traffic signals prioritise pedestrians over cars.
- Request for more attention to be given to the enforcement of cycle paths so that bike riders do not use footpaths.
- Queried the agreement to manage increased traffic with the Local Pedestrian Cycling and Traffic Calming Committee.
- Queried what the impacts of the proposal would be to people including pedestrians, cyclists, parents with prams, shoppers, restaurant users, and park users in what is predicted to be one of the densest suburbs in Sydney.
- Euston Road is an important cycling thoroughfare for residents to get to Sydney Park and suburbs beyond. If the road is widened and the speed limit increased, this will make it dangerous to ride here.
- Cycle lanes are a state government initiative and therefore should be proposed and prioritised.
- The proposal does not include an assessment of pedestrian impacts and safety has not been improved for pedestrians.
- Concern that the impact of a freeway-like environment would reduce the use of the suburbs as lively, active, pedestrian friendly green corridors.
- Request for cycling on McEvoy Street to not be encouraged as there is a cyclist route on Lawrence Street and Buckland Street to travel east and Euston Road and Mandible Street to travel to Green Square.
- Request for the cycle route on Wyndham Street and McEvoy Street intersection to be retained as part of Stage 1.
- Concerns that the cycleway switching sides of the road at the McEvoy Street and George Street intersection is indirect, inconvenient and inexperienced riders may choose to use the footpath while experienced riders would use the road lane.
- A request for active transport to be safe, direct, convenient and consistent in terms of travel times and distance with existing routes at the Fountain Street/McEvoy Street intersection, the Botany Road/McEvoy Street intersection, the Elizabeth Street/McEvoy Street intersection, and the Lachlan Street/South Dowling Street/Dacey Avenue intersection.
- A request for footpath in front of the building at 147-161 McEvoy Street be retained.
- The preference for a single footpath rather than a dual footpath.
- Concerns that the proposal would decrease pedestrian safety along Fountain Street, specifically the Belmont Lane and Mitchell Street intersections.
- A request for a pedestrian crossing to be provided near the bus stop on McEvoy Street near the Loveridge Street intersection.
- Concerns that additional traffic would make the cycle route on Wyndham Street and McEvoy Street intersection more dangerous.
- Request for the footpaths in the Elizabeth Street/McEvoy Street intersection area to be widened and have more garden strips to separate pedestrians from road traffic to increase pedestrian safety.
- A request for a bike lane at the Elizabeth Street/McEvoy Street intersection to be included in future stages of the proposal.
- A request for the width of the footpaths around the Elizabeth Street/McEvoy Street intersection not to be reduced.
- A request for the cycleways on Elizabeth Street south of McEvoy Street to be widened.
- Concerns about pedestrian crossing opportunities on McEvoy Street, Bourke Street and Elizabeth Street as a result of the increased residential area on Hunter Street and Powell Street so requests appropriate pedestrian crossing facilities to facilitate residents to walk to nearby facilities.
- A request for a pedestrian crossing or traffic signals at the Lachlan Street/Gadigal Street intersection.
- A request to increase the duration that traffic lights are green at the Gadigal Street/Lachlan Street intersection to ensure the safety of cyclists accessing this intersection.
- A request to connect the cycleway to existing cycleways at Gadigal Avenue and the shared path along to the Eastern Distributor.
The Gadigal Avenue/Lachlan Street intersection is a major crossing for the off road cycle path link to Green Square. The new section of Gadigal Avenue cycleway built by City of Sydney north of O’Dea Avenue is missing from Figure 2-3 of the REF

Active transport should be specifically prioritised at the Bourke Street/Lachlan Street intersection

The footpaths along Lachlan Street flood during wet weather and become inaccessible

A request for the footpaths along Lachlan Street to be upgraded to improve pedestrian safety and experience

Concerns about pedestrian and cyclist safety along Lachlan Street as the road effectively divides the community spaces to the north and south

A comment, noting that following recent development, there is now enough space along the southern side of Lachlan Street to provide a separated cycleway between Bourke Street and South Dowling Street

Requests for a dedicated cycleway connecting Bourke Street to Anzac Parade along Lachlan Street and Dacey Avenue

There are two possibilities for cycle links at the Lachlan Street/South Dowling Street/Dacey Avenue intersection:
  o Separate signals for cyclists
  o A segregated path on Dacey Avenue, connecting with the Anzac Parade/Alison Road cycleway

Requests for the pedestrian crossing light at the Lachlan Street/South Dowling Street/Dacey Avenue intersection to stay green longer

Concerns that pedestrians need better options for crossing the Lachlan Street/South Dowling Street/Dacey Avenue intersection

Requests for pedestrian access on all sides and directions of the South Dowling Street and Dacey Avenue intersection

There is an opportunity to provide a segregated cycleway along Dacey Avenue which is currently only narrow footpaths

Dacey Avenue is wide enough and has priority for cars, however there is no room for cyclists or pedestrians

Requests for the footpath on Davey Avenue to be widened to accommodate more people walking to and from Centennial Park

Requests that a bike lane or shared bike path be installed along the southern side of Dacey Avenue as the footpath is currently quite narrow and should have garden beds along its length providing some separation between pedestrians and road traffic

Concerns about the lack of segregated space for cyclists at the Anzac Parade/Alison Road/Dacey Avenue intersection

Requests for active transport facilities on all sides and directions of the Anzac Parade/Alison Road/Dacey Avenue intersection

Active transport has increased and should be encouraged

Concerns about the lack of connectivity of the existing bike paths

Queried when Roads and Maritime Services would be absorbed by TfNSW so all transport improvements can be considered and not just vehicle focused.

A number of requests, comments, concerns were made about transport elements outside the proposal area including:

A request to increase active transport connections between Green Square and the inner west
- Request for a cover to be constructed over the Alexandria Canal for use as a bicycle lane
- Request for more and better connected bike paths in the Waterloo/Zetland/Alexandria area to encourage active transport
- Request for a cycle path between Bowden Street/Bourke Street and O’Riordan Street and Botany Road to allow easier cycling from Erskineville to Zetland/Green Square
- Request for a good cycle path with good traffic light timings for bikes to enable cycle connection between Erskineville and Bowden Street/Bourke Street cycle paths
- While it is not marked on the map, there is access to Mandible Street via a private road between Hiles Street and Mandible Street. Access for bikes/pedestrians could be negotiated which would get bikes off Mandible Street/Bowden Street
- Request for active transport opportunities to be included in the proposal for the Euston Road, Sydney Park Road and Huntley Street intersection as it connects residential and commercial area to green space
- Request for active transport facilities to continue on Wyndham Street as an alternative to Botany Road. The Redfern Metro Station would require integrated connectivity to these facilities including to the George Street cycleway (north)
- Request for crossing improvements for pedestrians and cyclists at the Maddox Street/Euston Road intersection
- Request for a separated bike path along Fountain Street to encourage active transport
- Request for the cycle route at the intersection of George Street and Allen Street to be retained
- Request that a bike lane be included along Elizabeth Street between Cleveland Street and Bourke Street to improve access between Green Square and the city
- Request for better bicycle infrastructure and connectivity between the Phillip Street/Bourke Street intersection and the bike infrastructure located to the south-west of Green Square Train Station
- Request for better cyclist connections between the Bourke Street bike lane, the George Street bike lane, and Green Square
- Request that the proposal connect the bike lines in the Lachlan Street and Bourke Street area with those already present on Bourke Street for cyclist safety
- The existing cycle path located along Gadigal Road stops at Lachlan Street and does not include a cycle pedestrian crossing to enable riding to continue to the south of Lachlan Street.

**Detailed response**

The proposal area currently has a range of cycle and pedestrian facilities, refer to **Figure 2-2**. With pedestrian footpaths along almost all roads, those travelling by foot are well served by connections although paths are narrow at some pinch points. Cycle facilities are available next to or across the proposal area but not along the proposal other than as part of general on road traffic.

The scope of active transport improvements for the Stage 1 proposal is limited to localised improvements to footpaths and crossings at the four intersections where works are proposed. This includes work at:

- Fountain Street/McEvoy Street intersection
- Botany Road/McEvoy Street intersection
- Elizabeth Street/McEvoy Street intersection
- Lachlan Street/South Dowling Street/Dacey Avenue intersection.
All footpaths and pedestrian crossings impacted during construction of the proposal would be reinstated at completion of the proposal.

More expansive active transport solutions were identified in the previously displayed Ultimate Concept Design in 2017, and these would be reconsidered as part of future works. Cycle facilities identified for the local area and within the Cycling Strategy and Action Plan (City of Sydney, 2018b) and are shown on Figure 2-2 and Figure 2-3 respectively. TfNSW and the City of Sydney will continue to implement this plan as part of investment in the area on major projects such as the work done as part of the St Peters interchange, WestConnex, Metro and the CSELR. The majority of work associated with the proposal would be deferred until after the opening of the New M5 later and the St Peters Interchange to review the need for the improvements proposed.

Future active transport works on the corridor would be subject to future planning and assessment processes and would consider active transport suggestions provided in submissions summarised above as well as objectives of the Moore Park Masterplan 2040 (Centennial Park and Moore Park Trust, 2017). In addition, TfNSW would continue to consult with the City of Sydney, the community and stakeholders such as the Local Pedestrian Cycling and Traffic Calming Committee on these active transport solutions.

The not yet published Green Square Transport Action Plan (co-developed by TfNSW and City of Sydney) and the South East Sydney Transport Strategy (developed by TfNSW in collaboration with the City of Sydney) and are considered in Section 4.1.

Roads and Maritime have already been incorporated into TfNSW and will continue to undertake improvements to transport infrastructure including active transport as part of future projects.

TfNSW acknowledge that a number of submissions on active transport were received that are outside the scope of the current proposal.
Figure 2-2 | Pedestrian and cycle networks near the proposal
Alexandria to Moore Park Stage 1
Figure 2-3 Cycling Strategy and Action Plan (City of Sydney, 2018b)
2.5.2 Congestion

Submission number(s)
7, 11, 12, 15, 20, 26, 34, 36, 38, 40, 55, 59, 69, 73, 77, 81, 83, 89, 92, 95, 99, 100, 114, 123, 131, 136, 139, 141, 142, 145, 147, 148, 151, 153, 158, 161, 164, 168, 171, 174, 175, 176, 177, 180, 184, 186, 191, 192, 193, 194

Issue description
Fifty-two respondents had concerns and comments regarding congestion within the proposal area, including:

- The proposal does not resolve congestion on McEvoy Street, Fountain Street, Bourke Street or Lachlan Street
- The introduction of clearways will not reduce traffic congestion
- The proposal would attract more traffic into the corridor without increasing capacity
- A request for additional widening and increased speed limits
- The traffic modelling and assessment has not considered induced demand
- The area does not need faster travel times for traffic and increased travel speed should be discouraged in the area
- Concern about the lack of dedicated right and left turning lanes along McEvoy Street and considered that traffic would continue to be congested as a result. The respondent queried whether the signal timings would allow sufficient time for turning traffic such as simultaneous green lights for turning and through traffic
- The proposal would funnel traffic straight into the highly populated area of Green Square Renewal Area, Australian Technology Park, Ashmore and Waterloo areas. The respondent requested for traffic to be diverted away from the renewal areas
- Congestion can only be alleviated by providing alternative travel options
- Project funding should be used to deter car use
- Nearby residential streets would experience additional traffic as the proposal would not address congestion
- A request for information on additional traffic that will flow onto Mitchell Road between Sydney Park Road and Henderson Road, including the streets that run off Mitchell Road, such as Coulson, Huntley, Maddox, Copeland, Ashmore, Fountain, Anderson and Renwick streets
- Query how queueing traffic on McEvoy Street across intersections would be managed
- Right turns into side streets would add delays. Requested for traffic signals to be added at each intersection
- The proposal would create a freeway like environment
- Concerned about the congestion that the light rail is causing the area
- Botany Road/McEvoy Street intersection is already congested. To alleviate congestion at Botany Road, traffic needs options to turn right at Bowden Street
- A request for the traffic signal phasing to be reviewed at Elizabeth Street/McEvoy Street intersection to give more priority to the east-west direction rather than north-south due to the expected increase in traffic on McEvoy Street as a result of WestConnex
- A request for a roundabout or traffic signals at Powell Street/Elizabeth Street intersection to reduce congestion
- Query how the introduction of the left turning lane at the Fountain Street/McEvoy Street intersection would help traffic flow when there are also a large number of people turning left from McEvoy into Botany Road that are also blocking traffic flow. The respondent
enquired if the introduction of a no left turn during peak hours could achieve the same result

- Fountain Street is already congested and does not have the capacity for additional traffic
- A request for a signalised intersection at Lachlan Street and Gadigal Avenue
- Lachlan Street congestion blocks access into a unit block for 300 residents on Gadigal Street
- The Ultimate Concept Design sought to improve traffic flow in all directions and queried how the current proposal seeks to achieve this given the existing congestion in Lachlan Street associated with traffic heading east. The respondent noted that the proposal seems like a missed opportunity
- Concerned about cars turning left from Lachlan Street into South Dowling Street and having to wait for pedestrians on the northern side of the intersection as this slowed traffic flow and caused congestion
- South Dowling Street is already congested, and the proposal could make it worse by attracting additional traffic to use the road
- Concerned about residential streets being used as rat runs to avoid congested intersections such as the Lachlan Street/South Dowling Street/Dacey Avenue intersection
- The proposal would increase congestion on Dacey Avenue and into Anzac Parade/Alison Road/Dacey Avenue intersection
- The proposal would force traffic onto local roads such as Mitchell Road that are already congested
- The proposal and the opening of WestConnex in conjunction with closing Qantas Drive would increase traffic congestion
- The proposal area would be used as a detour between WestConnex and Moore Park
- Query how the area could cope with an additional 50,000 cars per day from WestConnex
- Opposed the proposal as it does not support the introduction of more traffic through the area resulting from residential and small business hub developments.

Submissions received that are outside the proposal area included:

- The right turn from Huntley Street to McEvoy Street should be reinstated
- Tolls on nearby roads encourages road users to use the proposal area to avoid paying for tolls, adding to congestion
- Construct a new section of road from the junction of Young Street to the junction of Lachlan Street and Bourke Street through to the existing water board property.

**Detailed response**

TfNSW notes that there were a large number of concerns about existing and future congestion raised. The intersection improvements proposed as part of the Stage 1 proposal are one part of the overall integrated transport system response for the area which includes investment in developments such as Sydney Metro City and Southwest: Chatswood to Sydenham, WestConnex, CSELR and the St Peters Interchange development amongst others. The Stage 1 proposal is seeking to address the issue associated with existing congestion and safety issues in the area and provide some alleviation against further deterioration in performance of the corridor with the expected increase in traffic volumes.

A *Traffic and Transport Assessment* was completed for the Stage 1 proposal and is included in Appendix J of the REF and summarised in Section 6.1 of the REF. The Traffic and Transport Assessment considered road safety and movement and place functions along the proposal corridor in accordance with relevant government policies such as the *Road Safety*...
Plan 2021: Towards Zero ( TfNSW, 2018b) and the Future Transport Strategy 2056 ( TfNSW, 2018a).

The methodology used for the traffic and transport assessment included:

- A review of the existing traffic and transport conditions in the proposal area including the local road network, traffic flows, public transport services, pedestrian and cycle facilities, road safety and an assessment against the Movement and Place Framework ( TfNSW, 2017) which underpins the Future Transport Strategy 2056 ( TfNSW, 2018a).
- Modelling of existing and forecast traffic scenarios at 2021 and 2031 to evaluate impacts.
- An assessment of the impacts of the construction and operation of the proposal on existing road, pedestrian, cycling and public transport infrastructure, road safety, movement and place.
- The identification of mitigation measures required to minimise these impacts.

Average daily traffic profiles within the local road network were derived from data collected from traffic surveys carried out between 23 February 2016 and 3 May 2016 for the Moore Park and Alexandria areas respectively. Intersection turning movement counts (TMC) were carried out in 2014, 2015, and 2016.

The traffic and transport modelling for the proposal was based on a 2014 version of Roads and Maritime’s Sydney Traffic Forecasting Model (STFM), originally developed by WSP-PB. The STFM is a link-based traffic assignment model that covers the entire Sydney Greater Metropolitan Area and was used to supply estimates of future changes in traffic patterns and demands in the study area.

The operational performance of intersections within the proposal area was assessed using the standard Level of Service (LoS) measure defined by Roads and Maritime within the Guide to Traffic Generating Developments (RTA, 2002) and future traffic volumes were calculated.

The Traffic and Transport Assessment assessed impacts during construction and operation of the proposal. The impacts relating to operation of the proposal were assessed based on traffic modelling for the following assessment scenarios:

- 2016 (Base year)
- 2021 and 2031 ‘without the proposal’
- 2021 and 2031 ‘with the proposal’.

Each scenario includes a series of assumptions regarding future transport and land use across the network. Most relevant to the study area, the model includes assumptions regarding the delivery of the planned motorway network in the area, which were consistent with NSW Government planning at the time of initial project development. The 2021 scenarios considers WestConnex Stage 1 and 2. The 2031 scenarios consider the following network projects:

- WestConnex Stage 1 and 2
- WestConnex Stage 3
- Sydney Harbour Gateway
- Western Harbour Tunnel
- Beaches Link
- F6 extension (Section A).

The Traffic and Transport Assessment found that if the Stage 1 proposal was not constructed, corridor performance would deteriorate under all future year scenarios, which
would result in increased queue lengths and travel times. The improvements to the corridor as a result of the proposal are anticipated to attract a degree of additional traffic demand. The forecast changes in peak period traffic volumes at key intersections as a result of the proposal for 2031 is provided in Table 6-9 of the REF. As shown in this table, the forecasts indicate that demand at intersections may increase by an additional six to up to 46 per cent with the proposal (depending on location and peak period).

The summary of performance of the intersections located along the proposal across the three modelled years (existing year (2016), future year ‘without project’ and ‘with project’) is included in Table 6-12 of the REF. This table shows that the proposal would increase the capacity of the network and reduce east-west travel times. It would be expected that east-west travel times in future would be largely better than those observed today, even though the volume of traffic would increase.

The Traffic and Transport Assessment also found that the proposal would result in:

- Improved average speed of buses by about 12 per cent in the morning peak and three per cent in the afternoon peak in 2021
- Improved average travel speeds by 33 per cent and 15 per cent in the 2021 morning and afternoon peak hours respectively
- A better performing route that would attract additional traffic, of which some would be removed from surrounding local streets
- The introduction of further right turn bans into local streets along the corridor. This would improve safety, but would result in less direct local access
- Reduce risk of right turn related crashes at minor intersections and reduced congestion related crashes along the proposal.

TfNSW will consider the suggestions for improvements at the four intersections along the proposal corridor as part of detailed design and the suggestions for improvements at other intersections along the corridor will be reviewed and considered as part of any future stages. The upgrade of the signalised intersection at Lachlan Street and Gadigal Avenue is planned to be implemented by the City of Sydney.

2.5.3 Public transport

Submission number

1, 11, 17, 18, 20, 43, 49, 52, 59, 65, 66, 68, 73, 75, 82, 83, 95, 96, 101, 103, 121, 122, 130, 131, 132, 133, 135, 143, 146, 149, 151, 152, 162, 167, 170, 171, 176, 186, 193, 194

Issue description

Forty respondents raised concerns, requests and comments about public transport, including:

- Focus on public transport improvements instead of road upgrades for traffic
- The proposal does not improve public transport options
- A request to redirect funds to improve and provide additional public transport
- A request to increase public transport frequency, reliability, cleanliness
- There is no bus from Bourke Street to Green Square Train Station
- A request to provide bus bays so buses do not have to stop along the road corridor holding up traffic
- Justification why the proposal does not include public transport options and why the proposal area is not being used as a public transport route
- Query if there is a separate design for public transport as the proposal does not include any bus lanes or transit lanes
- The introduction of bus lanes and bus priority at traffic lights would encourage the use of public transport
- Congestion will continue and the reliability of buses will deteriorate and discourage use
- Suggestion to introduce dedicated peak hour bus lane to increase bus reliability and efficiency
- A request for more parking to make the use of public transport more convenient
- A request for a right-turn dedicated bus lane and signalised turn at the Botany Road/McEvoy Street intersection to increase bus efficiencies
- The REF does not assess how the proposal area could be used as a public transport corridor
- The REF does not consider the expected decrease in local traffic as a result of the proposed light rail to Green Square
- TfNSW should consider the Australia Infrastructure Audit (Infrastructure Australia, 2019), which recommends public transport over car use, which is inefficient and unsustainable
- There is limited public transport in the area and queries the public transport considerations as part of the proposal. The newly constructed CSELR or Sydney Metro lines do not extend to Alexandria
- Suggestion to remove parking and create dedicated bus lanes rather than an extra lane for vehicle traffic
- Clarification of the impacts to the bus stop on the northern side of McEvoy Street to the west of the Fountain Street/McEvoy Street intersection
- A request for more money to be invested in public transport.

A number of requests, comments and concerns were made about public transport elements outside the proposal area including:

- A request for a light rail to connect with the inner west and increase public transport options in the area
- A request to build a train station on the T8 airport line rather than spend so much money on the Waterloo Metro Station around the corner
- A request to link the new Sydney Metro lines to the Green Square Train Station
- Increase rail capacity at Green Square Train Station
- Additional public transport in Zetland, Green Square and Waterloo areas as it is so densely populated
- A request for a Sydney Metro line to Zetland and a light rail to Green Square
- Lack of east west bus connections from Kensington to Newtown

**Detailed response**

**Existing bus network**

The existing public transport facilities within the study area include buses and one train line. As described in Section 2.2.1 of the REF, there are number of bus routes that pass though the study area. The McEvoy Street corridor is less used by bus travel due to the proximity of the Green Square Train Station servicing the T2 Airport Line. There is no bus route that travels along the full extent east-west extent of the proposal area.
Existing rail network

Green Square is located at the O’Riordan Street/Bourke Street/Botany Road intersection, about 500 metres south-east of the Botany Road/McEvoy Street intersection and services the T2 Airport, Inner West and South Lines travelling from the City to Macarthur and Macarthur to the City via the Airport or Sydenham. During the morning peak, 10 trains depart per hour towards the City from Green Square and during the afternoon peak, eight trains arrive per hour at Green Square from the City. The proximity of the Green Square Train Station impacts the frequency and volume of buses through the western end of the proposal area.

Public transport improvements in the area

As detailed in Section 2.5.2, the intersection improvements proposed as part of the Stage 1 proposal are one part of the overall integrated transport system response for the area which includes developments such as Sydney Metro City and Southwest: Chatswood to Sydenham, WestConnex, CSELR, and the St Peters Interchange development amongst others. A light rail to Green Square is not currently in planning and hence any local traffic impacts were not considered as part of the REF.

The Stage 1 proposal is seeking to mitigate issues associated with existing road congestion in the area, including for buses, at key intersections. This would assist in ensuring improved reliability of the public transport network along the corridor in the future.

The City of Sydney have proposed a dedicated public transport corridor along Gadigal Avenue (known as the Eastern Transit Corridor) that would connect into the proposal corridor.

While not in the scope of this proposal, reallocation of road space for public transport priority at key intersections along the corridor would be considered as part of the planning for new major transport projects including the Waterloo Metro Station and the Eastern Transit Corridor.

2.5.4 Pedestrian and road safety

Submission number

3, 15, 20, 27, 29, 31, 50, 59, 62, 74, 75, 82, 84, 89, 100, 102, 109, 112, 125, 129, 130, 141, 144, 146, 155, 156, 159, 160, 176, 184, 185, 191

Issue description

Thirty-two respondents raised the following concerns and requests about pedestrian and road safety, including:

- Additional traffic within the proposal area would make it more unsafe for pedestrians
- Footpaths within the proposal area are already narrow and concerned that road widening would impact the footpaths and safety of pedestrians, especially near schools
- Widening the road results in pedestrians needing to walk further to cross the widened road, causing safety concerns for pedestrians
- Request for buffers between pedestrians and traffic to be implemented such as parking, public spaces, cycle lanes or street trees to improve safety for pedestrians
- The proposal will decrease pedestrian safety as more cyclists would move onto the footpaths as vehicle speed increases on the road way
- The proposal is counterproductive to a safe road environment. Increasing traffic decreases road safety
- Widening the road and introducing clearways means traffic would be closer to pedestrians
- An increase in heavy vehicles and industrial traffic would be hazardous for pedestrians
- Traffic is already a concern in this area for pedestrians as traffic does not follow the speed limits or drive safely. Increased traffic and speed limits would decrease road safety
- Crossing McEvoy Street is already dangerous and introducing clearways and more traffic will make it more dangerous for pedestrians
- The proposal does not include any safety measures improvements for local residents, specifically on Harley Street where there is a children’s playground
- Concerned about the safety of families accessing the children's playground on Harley Street due to increased traffic on residential streets
- The proposal would make the existing congestion on Belmont Street and Mitchell Street worse and result in decreased pedestrian safety
- Concerned that encouraging traffic into a left-hand slip lane at the Fountain Street/McEvoy Street intersection will be to the detriment of better pedestrian safety
- Concerned about high speeds and poor visibility for pedestrians crossing side streets around Fountain Street
- Concerned about pedestrians and cyclists dodging between cars to cross the road and worried that the proposal would increase the risk of accident with more motorist turning into Fountain Street
- Opposes road widening, particularly given Fountain Street is a short street with a large number of pedestrians.
- George Street/McEvoy Street has slow lights for cyclists and pedestrians. This intersection is dangerous with traffic travelling at high speeds. The proposal would increase the safety risk
- Request to improve road safety by introducing traffic calming infrastructure and reducing the speed limit to 40 km/h on Elizabeth Street to improve road safety as there are large number of new apartments, community facilities and a school in the area that are all used by children, as well as families and pets
- Requested the installation of speed cameras at the Elizabeth Street/McEvoy Street intersection to increase road safety by enforcing a decreased speed of 40 km/h as there are schools and families in the area
- Request for a speed hump closer to the intersection of Pitt Street/McEvoy Street intersection to reduce the speed of turning traffic
- Pedestrian safety at Fountain Street and Lawrence Street
- Request for safe pedestrian crossings on O’Dea Street as a lot of children cross this road
- Requested a pedestrian crossing on Lachlan Street near to Gadigal Avenue to allow safer crossing
- Concerned about electric bikes using the footpaths
- The area is dangerous for children walking to school
- Concerned about increased traffic speed without additional road safety improvements for pedestrians and cyclists.

**Detailed response**

A *Traffic and Transport Assessment* was completed for the Stage 1 proposal and is included Appendix J of the REF and summarised in Section 6.1 of the REF. The *Traffic and Transport*
Assessment considered road safety, movement and place functions along the proposal corridor in accordance with relevant government policies such as the Road Safety Plan 2021: Towards Zero (TfNSW, 2018b) and the Future Transport Strategy 2056 (TfNSW, 2018a). As part of the road safety assessment a review of the crash history along the corridor was completed. The review identified road safety is a substantial issue for the proposal corridor and found that:

- The rate of crash occurrences between Maddox Street and South Dowling Street are multitudes higher than the Sydney benchmark for roads of the same classification
- Almost two thirds of all crashes occurred at intersections with some of the highest numbers occurring at South Dowling Street, Elizabeth Street, Botany Road, and Fountain Street
- Twenty-three crashes involved pedestrians, 11 of which were located between Fountain Street and Botany Road
- Congestion is forecast to substantially increase, increasing the likelihood of congestion-related crash types (rear-ends etc).

The Traffic and Transport Assessment undertook a review of road and pedestrian safety with the proposal in place and found the proposal would improve road safety and reduce risk of serious injuries particularly through:

- Reducing congestion and ensuring pedestrian protection at upgraded intersections
- Reducing the number of priority-controlled right turns.

The implementation of the clearways would assist in reducing interactions with pedestrians accessing parked cars along the proposal corridor during busy traffic periods and will assist in improving road and pedestrian safety, refer further to Section 2.5.5. The landscaping plan also includes plans to separate pedestrians from the roadway through the planting of trees and vegetated verges.

TfNSW undertakes ongoing and regular road safety audits and reviews of road and pedestrian safety as one of the primary aims of the department is the development of safe, efficient and integrated transport systems. This includes consideration of the Road Safety Plan 2021: Towards Zero (Transport for NSW, 2018b) target to move Towards Zero fatalities and serious injuries on the NSW road network by 2026.

TfNSW would continue to review the left-hand slip lane at the Fountain Street/McEvoy Street intersection in detailed design, this would include a review of road and pedestrian safety in the areas impacted by the proposal.

The speed limit along the proposal is now 50 km/h speed and was recently reduced from a 60 km/h speed limit in 2019 following a review by TfNSW to improve road safety in the area. TfNSW will carry out a review to reduce the speed limit to 40 km/h after the opening of the New M5 and the St Peters Interchange to support the government’s commitment to Vision Zero, refer further to Section 2.5.6.

The requests for speed cameras, pedestrian crossing, speed humps and reduced speed limits and other traffic calming infrastructure along O’Dea Street, Pit Street and Elizabeth Street respectively are out of scope as the proposal is for the upgrade of four intersections and clearways along the proposal corridor. However, these suggestions may be considered for future upgrades.
2.5.5 Clearways and parking

Submission number(s)
20, 37, 45, 54, 60, 70, 72, 81, 83, 95, 102, 117, 119, 124, 126, 140, 147, 150, 153, 155, 176, 177, 179, 187

Issue description
Twenty-four respondents had concerns and requests and opposition to clearways and parking impacts from the proposal including:

- A request for the parking of cars on Elizabeth Street between Bourke Street and Phillip Street to be allowed at all times as it has become a residential street and would assist in offsetting the loss of parking along McEvoy Street from the introduction of clearways
- A request for clearways to operate only during peak times rather than all day
- Concern about the way in which the clearway information was presented in the Project Newsletter, particularly because it did not clearly identify in words or figures that clearways would be located along McEvoy Street
- City of Sydney have proposed road closures on both the corner of Brennan Street/McEvoy Street and the corner of Loveridge Street/McEvoy Street which would compound the negative impacts to customer parking from the proposed clearways
- Concern about the clearways proposed along McEvoy Street resulting in additional traffic, cars travelling at higher speeds and removal of on-street parking
- The recommendation to impose clearways between 6:00am and 6:00pm, seven days a week, to ease traffic congestion in place of road upgrades as this would not solve the issue
- Request for the clearways to be amended to allow for parking from 10:00am until 3:00pm on the western side of Euston Road and then implement the clearway again from 3:00pm to 7:00pm
- Opposition to the change in clearway times as this would impact the ability of local residents to receive large deliveries
- Concerns that the change in clearway times would bring traffic closer to pedestrians and the front room of their house. Requests that if the clearway times are to be changed that consideration be given to the following:
  - Creation of two x 30 minute loading zone carparks in Kensington Street
  - Creation of four x two hour carparks (with no permit holder exemptions) in Kensington Street
  - Remaining carparks in Kensington Street (or at least 70 per cent) to be for permit holders only
- Queried where workers would park during construction as they are concerned about workers parking in residential parking areas
- Queried where the drivers who park along the corridor between 10:00am and 3:00pm would park their vehicles once the extended clearway times are introduced
- Also concerned that the Ashmore Estate development does not provide parking and impacts to available parking would be increased due to the removal of parking for clearways
- Opposes the widening of the road into the public car park at Stokes Avenue/McEvoy Street intersection
- The impact of parking in local streets due to the extended clearway times has not been addressed
- Recommendation that parking meters be introduced on Park Road to manage parking demands
- Request for parking to be retained on Park Road for the use of the park, sports amenities and schools
- There is free parking available at Woolworths and at The Fountain
- Concern that there is no advantage to clearways being extended as the congestion occurs at the intersections
- Support for on-street parking to be returned on Euston Road south of Maddox Street once construction is complete
- Concern about the impact of clearways on local residents by reducing parking spaces, increasing road noise and increasing pollution
- Parking needs to be retained for Alexandria Park and sports facility users
- Concern that off-street parking is only for Woolworths and Dan Murphy’s and that other local businesses would suffer from the loss of this on-street parking
- The parking on Euston Road between Sydney Park Road and Maddox Street is being reinstated with off peak parking once WestConnex is complete. The Westside clearway will operate from 6:00am to 10:00am and the east side clearway will operate from 3pm to 7pm. Traffic flow would be affected if different clearways are proposed to the east of Maddox Street
- Objection to a permanent clearway as it is already difficult to park on McEvoy Street between Elizabeth Street and Bourke Street
- Concern that clearways create a freeway-like environment
- Concern about clearways removing the buffer of parked cars between moving vehicles and pedestrians.

**Detailed response**

**Clearways**

Clearways are proposed as part of the proposal in order to improve journey times and reliability along the corridor, enabling the most efficient use of road space for movement of people and goods including bus, freight and private vehicles. TfNSW are aware of the potential impacts of clearways on the accessibility of local places and businesses by private vehicle, as well as to some degree the pedestrian amenity of removing kerbside parking (which can serve as a buffer to general traffic lanes), and that they need to ensure appropriate consideration of impacts and potential mitigation measures.

The clearways that would be implemented as part of the proposal are shown in Figure 1-2 of this report and the REF and include:

- New clearways on both sides of Euston Road and McEvoy Street between Maddox Street and Bourke Street from 6:00am to 7:00pm Monday to Friday and 9:00am to 6:00pm on weekends
- New clearways at all times along Lachlan Street and Dacey Avenue between Bourke Street and Anzac Parade.

A *Traffic and Transport Assessment* was completed for the Stage 1 proposal and is included Appendix J of the REF and summarised in Section 6.1 of the REF. The *Traffic and Transport Assessment* has found that the implementation of clearways is critical to reducing existing congestion along the corridor and will address future growth in the area from residential developments such as Green Square.

The implementation of clearways supports existing strategic government policies such as Recommendation 49 of the State Infrastructure Strategy which recommends that the NSW
Government continue the Easing Sydney’s Congestion program over the next 10 years with further progressive investment in targeted, small scale, high impact network management programs (such as pinch points, clearways and bus priority programs). It also makes use of existing areas of road space for transport solutions to cater for population growth and is consistent with treatments on other State Roads, refer further to the TfNSW Sydney Clearway Strategy https://www.transport.nsw.gov.au/sites/default/files/media/documents/2017/sydney-clearways-strategy.pdf.

The introduction of clearways would also assist in improving safety as it would remove the interactions of pedestrians seeking to access parked cars along the corridor during peak traffic periods.

Parking

A Parking Assessment was completed for the Stage 1 proposal and is included in Appendix C of the REF and summarised in Section 6.1 of the REF. The Parking Assessment found that the proposal would result in a change in the availability of the 252 on-street parking spaces in the proposal of which 228 already operate under No Parking restrictions during morning or afternoon peaks. This includes some loading zones and other dedicated parking spaces, located along Euston Road and McEvoy Street.

The Parking Assessment determined that local side streets in the study area would generally have capacity to accommodate any on-street parking places displaced by the clearway operation, with the exception of three locations that are expected to experience ‘moderate’ or ‘substantial’ impacts on parking availability. ‘Moderate’ impacts are defined as between five and 10 vehicles displaced from parking on downstream local streets, while ‘substantial’ impacts are defined as between 10 to 15 vehicles displaced from parking on downstream local streets. The three locations where moderate to substantial impacts are expected are:

- On the northern side of McEvoy Road between Harley Street and Fountain Street
- On the northern side of McEvoy Road between Fountain Street and Loveridge Street
- On the northern side of McEvoy Road between Botany Road and Elizabeth Street.

The proposal would also result in the loss of off-street parking including up to:

- Twenty-six public parking spaces at 102-112 McEvoy Street, Alexandria
- Two customer parking spaces at 35 Lachlan Street, Waterloo.

The Parking Assessment found that there was capacity to accommodate off-street parking lost at Lachlan Street, Alexandria as a result of the proposal. There would however be limited capacity to accommodate off-street parking lost at 102-112 McEvoy Street, Alexandria due to impacts to side streets in the area specifically McCauley Street, Stokes Avenue and Bowden Street, from the loss of on-street parking from the proposal. The loss of off-street parking in this location would increase the severity of impacts to substantial at these side streets. These impacts may be ameliorated through the use of commercial car parks for those with business located at:

- Fountain Street Car Park, which offers casual drive up parking from 6:00am to 6:00pm daily
- Bowden Street, which offers drive up parking from 6:00am to 7:00pm weekdays.

Mitigation measures, such as providing more localised timed parking on nearby side streets and investigating options to re-instate some of the public parking spaces at 102-112 McEvoy Street, Alexandria would be considered to minimise the loss of on-street parking from clearways. These options would be considered during detailed design and in consultation with surrounding property owners and in consultation with City of Sydney.
TfNSW would also stage improvements to the right turn lane at Fountain Street so that most of the public parking spaces at 102-112 McEvoy Street, Alexandria would be retained as part of the Stage 1 works.

During construction, the construction tenderer would require parking for construction workers. Some capacity will be available in construction compound areas, but some parking would be in residential parking areas.

The streets mentioned for parking meters (such as Park Street) are not included in the scope of the proposal. The request to street parking to be returned on Euston Road south of Maddox Street is also out of the project scope.

2.5.6 Traffic speed limit

Submission number(s)
12, 20, 43, 49, 52, 59, 61, 72, 83, 89, 102, 107, 120, 137, 141, 146, 159, 166

Issue description
Eighteen respondents raised concerns and requests about traffic speed limits including:

- Fewer cars on the roads and for those cars to travel more slowly
- Reduce the speed limit to 40 km/h in accordance with the NSW Government Road Safety Plan 2021-2021: Towards Zero (Transport for NSW, 2018b) commitments to reduce crashes and protect pedestrians
- Road widening and clearways would encourage additional traffic travelling at dangerous speeds
- The proposal would promote increased traffic speeds
- Traffic speeds should be reduced by using tools such as speed limits, speed humps, stop signs and reducing the clearways
- Increased vehicle speeds would be a danger to the many pedestrians in the area
- McEvoy Street should be narrowed and the footpaths should be widened to help ensure vehicle speeds are maintained at safe levels
- The area is heavily impacted by construction, car pollution and noise and noted the need for fewer and slower cars
- Concern about vehicles speeding on the residential roads such as Harley Street
- Request for the speed limit on McEvoy Street to be reduced to 40 km/h as the current road speed is not safe for children and there are three schools within a one kilometre radius
- Request to reduce speed limits to reduce crash impacts
- Concern about the traffic speed along Bourke Street and the noise pollution that results.
- One respondent requested that a 40 km/h speed limit is implemented as area is becoming more residential.

Detailed response
The speed limit along the proposal is 50 km/h and this was reduced from a 60 km/h limit in 2019 following a review by TfNSW. TfNSW will carry out a review to reduce the speed limit to 40 km/h after the opening of the New M5 later and the St Peters Interchange to support the government’s commitment to Vision Zero. A Traffic and Transport Assessment was completed for the Stage 1 proposal and is included as Appendix J of the REF and summarised in Section 6.1 of the REF. The Traffic and Transport Assessment considered road safety, movement and place functions along the proposal corridor in accordance with
relevant government policies such as the *Road Safety Plan 2021: Towards Zero* (Transport for NSW, 2018b) and the *Future Transport Strategy 2056* (TfNSW, 2018a).

Impacts from the proposal associated with changes in speed limit and their impacts to operational noise and air quality are discussed respectively in Section 6.2 of the REF and Section 4.2 of this report.

Traffic calming infrastructure such as speed humps are not in the scope of the Stage 1 proposal.

### 2.5.7 Heavy vehicles

**Submission number**

13, 23, 136, 183

**Issue description**

Four respondents raised the following concerns and requests about heavy vehicles impacts along the proposal corridor including:

- The business at 119 McEvoy Street requires heavy vehicle accessibility from the existing entrance on Loveridge Street. The respondent indicated that truck access to/from McEvoy Street to Loveridge Street needs to be maintained, otherwise heavy vehicles would be diverted to Power Avenue which is already restricted to less than eight tonnes.
- Suggestion that freight should not be able to access this area.
- Heavy freight should be removed from residential streets in this area. Freight should be moved to rail to reduce congestion.
- Request for a three tonne limit on Maddox Street be enforced.

**Detailed response**

There would be no direct impact from the proposal to the entrance of 119 McEvoy Street that is located via Loveridge Street, and truck access to/from McEvoy Street to Loveridge Street will be maintained.

The area is still industrial and would require heavy vehicle access to be maintained for delivery trucks servicing businesses in the area. It is however not a B-double route.

Enforcement of the three tonne limit on Maddox Street is outside the scope of this project and is the responsibility the City of Sydney not TfNSW.

### 2.5.8 Right turn bans along the road corridor

**Submission number(s)**

81, 83, 131

**Issue description**

Three respondents raised concerns about right turn bans within the proposal. The concerns and requests include:

- Request for information on traffic flows in a westerly direction on Euston Road and the impact of right turn bans. The respondent is concerned that the right turn bans would increase travel distances for drivers and direct additional traffic onto residential streets.
- Concern that restricting right turns would reinforce the freeway concept and reduces the functionality of the road for residential traffic rather than remove traffic from residential streets.
Detailed response

A *Traffic and Transport Assessment* was completed for the Stage 1 proposal and is included Appendix J of the REF and summarised in Section 6.1 of the REF. The *Traffic and Transport Assessment* has found that the implementation of the right turn bans would reduce existing congestion along the corridor and assist with managing future growth. The implementation of the right turn bans would however increase travel distances for some drivers and would require the use of alternate routes to access local streets. The location of right turn bans was detailed in Figure 6-2 of the REF and are shown in Figure 2-4.
Figure 2-4 Proposed right turn bans and alternative local access routes (Arup, 2019b)
Right turn bans implemented as part of Stage 1 proposal include:

- Eastbound from Euston Road into:
  - Bunnings
  - Bowden Street southbound
- Eastbound from McEvoy Street into:
  - Stokes Avenue southbound
  - Young Street southbound
- Northbound from Young Street into McEvoy Street eastbound
- Northbound from Hiles Street into McEvoy Street eastbound
- Northbound from Stokes Avenue into McEvoy Street eastbound
- Northbound from Bowden Street into McEvoy Street eastbound.

Feedback from affected businesses located along these streets reflected the importance of the right turn access to their operations and feedback from local residents reflected their concerns about traffic detours increasing traffic in their streets.

In light of this feedback during display of the REF the implementation of right turn bans would be staged and reviewed in 2021.

2.5.9 Traffic calming measures

Submission number(s)
12, 27, 29, 150

Issue description

Three respondents requested additional traffic calming measures including:

- Traffic calming infrastructure to be considered along the western end of McEvoy Street to reduce vehicle speed as drivers currently speed along this section of the street
- Additional traffic calming measures to be installed on Euston Road between Maddox Street and Bowden Street to decrease traffic speeds. There are too many businesses and residential properties for this road to a high volume of cars and fast-moving traffic
- Traffic calming infrastructure and residential only parking to be installed along Kensington Street due to the anticipated increase in traffic along this street
- Adding two traffic calming road humps between McEvoy Street and O’Dea Street to reduce traffic speed.

Detailed response

The streets mentioned are not included in the scope of the proposal, with the exception of McEvoy Street and traffic calming measures are not part of the scope of the proposal.

2.5.10 Traffic volumes

Submission number(s)
81

Issue description

One respondent queried the daily traffic profiles and why the traffic numbers for the Sydney Park Road/Huntley Street intersection were not included.
Detailed response

A Traffic and Transport Assessment was completed for the Stage 1 proposal and is included as Appendix J of the REF and summarised in Section 6.1 of the REF. The Traffic and Transport Assessment considered the average daily traffic volumes for profiles for each segment of the corridor as well as for key interfacing roads and these are provided below in Table 2-2. The Traffic and Transport Assessment did not consider Sydney Park Road/Huntley Street traffic numbers as the proposal did not extend this far west.

Table 2-2 Average daily traffic profiles at the survey locations (2017)

<table>
<thead>
<tr>
<th>Segment</th>
<th>Vehicles per day (VPD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alexandria to Moore Park Corridor</td>
<td></td>
</tr>
<tr>
<td>Maddox Street to Fountain Street</td>
<td>25,900</td>
</tr>
<tr>
<td>Fountain Street to Botany Road</td>
<td>26,900</td>
</tr>
<tr>
<td>Botany Road to Elizabeth Street</td>
<td>18,400</td>
</tr>
<tr>
<td>Elizabeth Street to South Dowling Street</td>
<td>16,200</td>
</tr>
<tr>
<td>South Dowling Street to Anzac Parade</td>
<td>32,600</td>
</tr>
<tr>
<td><strong>Primary interfacing corridors</strong></td>
<td></td>
</tr>
<tr>
<td>Anzac Parade (south of Dacey Avenue)</td>
<td>41,300</td>
</tr>
<tr>
<td>Alison Road (east of Anzac Parade)</td>
<td>50,700</td>
</tr>
<tr>
<td>South Dowling Street (north of Dacey Avenue)</td>
<td>47,200</td>
</tr>
<tr>
<td>Botany Road (south of McEvoy Street)</td>
<td>27,300</td>
</tr>
</tbody>
</table>

2.6 Noise and vibration

2.6.1 Operational noise impacts

Submission number(s)

7, 59, 62, 63, 64, 65, 66, 75, 77, 81, 84, 86, 136, 194

Detailed response

Fourteen respondents raised concerns and requests about operational traffic noise, including:

- The proposal would increase traffic congestion, resulting in increased traffic noise impacts for residents and the neighbourhood near the proposal
- Introducing clearways would increase traffic resulting in increased traffic noise
- Increased traffic noise once operational would deter the community utilising and visiting shops and cafés/ restaurants in the area
- The proposal would encourage road users to use residential streets instead of the Euston Road, McEvoy Street and Lachlan Street and would increase traffic noise in residential areas
- Concern about increase in traffic noise on Mitchell Road
- Concern about noise impacts from trucks accessing the area during operation of the proposal
- Request for more trees to be planted to mitigate traffic noise
Query about what measures would be put in place at 147 McEvoy Street, Alexandria to mitigate noise impacts.

**Detailed response**

A *Noise and Vibration Assessment* was completed for the proposal and is included as Appendix M of the REF and summarised in Section 6.2 of the REF. The assessment included an operational noise assessment and the creation of a model that was based on existing background noise levels, and existing and forecast traffic volumes that were identified in the *Traffic and Transport Assessment*, included as Appendix J of the REF and summarised in Section 6.1 of the REF. The operational noise assessment considered all of the proposal elements including the introduction of clearways, the concept design and areas where road widening and right turn bans are proposed, and side roads where traffic would potentially be re-routed.

The results of the operational noise modelling completed for the proposal included noise contour maps of where impacts are predicted based on the topography of the area and building profiles.

The *Noise and Vibration Assessment* identified buildings eligible for at-property treatment, refer further to Section 2.6.1. Some impacts would extend into residential areas, however impacts are not substantial.

A *Social Impact Assessment* was completed for the proposal and is included as Appendix O of the REF and summarised in Section 6.8 of the REF. Impacts would potentially occur to businesses and shops along the proposal however these would be moderate to minor in nature and not expected to deter the community utilising and visiting shops and cafés/restaurants in the area once the proposal is operational.

While trees offer limited noise mitigation, the landscaping plans include plans to replant more trees than what is being removed by the proposal.

The *Traffic and Transport Assessment* completed for the Stage 1 proposal and included as Appendix J of the REF and summarised in Section 6.1 of the REF, identified that without the proposal there would be increase pressure on the western end of the proposal area. It is acknowledged that certain turn closures included in the proposal, such as the right turns into Bunnings and Bowden Street, are likely to impact on local access movements being undertaken via Mitchell Road. However, modelling shows that the proposal helps to alleviate issues at key pinch points along the western section of the corridor, including at the intersections of Fountain Street and Botany Road. This will improve traffic flow along the east-west corridor, increasing the attractiveness of this route relative to Mitchell Road. By reducing pressure at the western end of the corridor, the proposal is therefore expected to reduce the likeliness of traffic dispersing to Mitchell Road.

The predicted operational traffic noise contours are shown in Appendix D of the *Noise and Vibration Assessment*, which is provided as Appendix M of the REF. For operation, the contours show the dB(A) levels along Maddox Street and Fountain Street range between 45 and 65 dB(A). Mitchel Road has not been identified as having noise exceedance during operation nor have any buildings been identified as been eligible for operational noise mitigations, such as acoustic treatments.
2.6.2 Acoustic building treatment

Submission number(s)
15, 27, 72, 78, 103, 155, 163, 188, 189

Issue description
Nine respondents raised concerns, requests and queries about acoustic treatment including:

- Acoustic impacts during construction and operation being a major concern for residents. The respondent requested for suitable mitigation measures and acoustic treatment to be implemented
- A request for acoustic treatment at 23 Lachlan Street
- A request for mandatory acoustic treatment at 31 McEvoy Street as it is stated as being required in the REF. The respondent requested to be involved in the detailed design assessment and be consulted with in regard to proposed acoustic treatment
- The building at 147-161 and 163 McEvoy Street were constructed before 2004, prior to the requirement of buildings to have acoustic treatment. A request for further consultation in regard to impacts of noise and options and eligibility for acoustic treatment during construction and operation. Queried further information about acoustic treatments that the building would be eligible for
- Concerns about noise impacts from the proposal and enquired about what noise mitigation would be implemented to the buildings to mitigate noise during construction and operation. The buildings identified include:
  - The building at the Bowden Street/Euston Street intersection
  - The building on the north-east corner of Euston Road and Harley Street intersection
- No community consultation in regard to acoustic treatment has occurred for the proposal
- A request for green walls to be installed to reduce noise impacts and provide a barrier for pedestrians to traffic from the implementation of 24 hour clearways along Lachlan Street.

Detailed response
A Noise and Vibration Assessment was completed for the proposal and is included as Appendix M of the REF and summarised in Section 6.2 of the REF.

Noise monitoring was carried out to identify background noise levels for the proposal at 12 representative locations (locations shown in Figure 6-3 of the REF). Noise modelling was carried out to predict the levels of construction noise at sensitive receivers. Predicted noise impacts are outlined in Section 6.2.4 of the REF (Noise and vibration – potential impacts).

Table 6-37 and Figure 6-6 of the REF identifies that 389 receivers within 48 residential, educational, hotel and child care buildings were identified as potentially requiring additional noise mitigation treatment due to them exceeding the NCG noise criteria and/or exceeding the cumulative/acute noise limits.

TfNSW has carried out a survey identifying developments approved over the last 10 years to identify which of the 48 impacted buildings have likely already been treated for high existing noise levels from existing traffic as a result of their consented building approval. Thirty buildings have been identified as newly developed buildings of which TfNSW would carry out additional acoustic design survey to confirm if the level of acoustic treatment within buildings is already equivalent to the acoustic treatments that would be offered by the NMG and the Roads and Maritime At-Receiver Noise Treatment Guideline before committing to offering additional at-property treatment.

The remaining 18 properties (refer to Figure 6-6 of the REF) that are eligible for at-property treatment are subject to site inspections confirming that it is feasible and reasonable to apply
those treatments. In particular, this relates to whether the existing building facade already provides a level of noise attenuation equal to that which would be provided by TfNSW in response to the proposal’s operational noise impacts.

Receivers do not qualify for noise mitigation treatment(s) automatically where NCG criteria exceedances are predicted. The provision of these mitigation measures depends whether it is “feasible and reasonable” to provide these treatments. For example, it is not cost-effective (and therefore not reasonable) to provide a quieter road pavement surface where future traffic speeds are expected to be lower than 70 km/h, as in this case vehicle motor noise would dominate over tyre/road noise. In this example, it may be more cost-effective to provide at-property treatments to dwellings. An assessment of reasonable and feasible noise mitigation measures for the proposal is summarised below.

The preferred operational noise mitigation option for the receivers that qualify for noise mitigation would be at-property architectural treatment, rather than by implementing low noise road pavements or roadside noise barriers (ie green walls), as these latter measures would not be feasible and reasonable.

Any feasible and reasonable acoustic treatments proposed would be considered in consultation with the landowners.

In accordance with the relevant guidelines, the following treatments would be considered at impacted receivers:

- The installation of courtyard screen walls
- Fresh air ventilation systems that meet Building Code of Australia requirements with the windows and doors shut
- Upgraded windows and glazing and solid core doors on the exposed facades of masonry structures only (these techniques would be unlikely to produce any noticeable benefit for light frame structures with no acoustic insulation in the walls)
- Upgrading window and door seals and treatment of sub floor ventilation
- The sealing of wall vents
- The sealing of the underfloor below the bearers
- The sealing of eaves.

During the detailed design stage of the proposal, further investigation of all reasonable and feasible noise control options would be required as a result of any exceedances of the applicable NCG noise criteria. All reasonable and feasible noise mitigation treatments would be considered for the affected receivers as part of the proposal to reduce traffic noise levels at residences to within the applicable noise limits.

Further assessment of individual receivers requiring treatment and consultation with affected property owners would be carried out during detailed design.

A Construction Noise and Vibration Management Plan (CNVMP) will be prepared and implemented as part of the Construction Environmental Management Plan (CEMP). The CNVMP will generally follow the approach in the Interim Construction Noise Guideline (ICNG) (DECC, 2009).

As discussed in Section 6.2.4 of the REF, the use of noise mounds or barriers (including green walls) would not be a feasible mitigation option for this proposal due to visual impact, security, the presence of significant trees, state heritage considerations, space constraints and access requirements. Therefore, noise barriers were not considered a viable mitigation measure during operation of the proposal.
2.6.3 Construction noise

Submission number(s)
11, 35, 66, 85

Issue description
Four respondents raised concern about ongoing construction noise as part of this proposal and previous construction noise as part of WestConnex, including:

- Ongoing impacts from the proposal to the property at 147 McEvoy Street, Alexandria as this location has already been subject to substantial impacts from the WestConnex project
- Overnight noise impacts have already occurred as a result of the design for the proposal and the nearby WestConnex project. The respondent is further concerned about the cumulative impacts of ongoing overnight noise resulting from the construction of the proposal itself.

Detailed response
TfNSW notes that properties at the western end of the project have potentially been impacted by construction of the WestConnex project and that there would be ongoing construction noise associated with the proposal once construction commences.

As part of the REF, a Noise and Vibration Assessment was completed which assessed impacts to sensitive receivers during construction and operation of the proposal and is summarised in Section 6.2 of the REF and included as Appendix M of the REF. Noise contours and NML exceedance at each receiver for the loudest proposed standard hours and out of hours construction works for the worst case scenario (utility relocation, civil works and operation of construction compound site occurring concurrently) are shown in Figure 6-4 and Figure 6-5 of the REF respectively.

Construction work would be undertaken during standard hours but it is acknowledged that a large amount of work would also occur out of hours. The Noise and Vibration Assessment identifies appropriate management and mitigation measures to reduce any potential impacts during construction of the proposal.

A CNVMP will be prepared and implemented as part of the CEMP. The CNVMP will generally follow the approach in the ICNG and the Construction Noise and Vibration Guideline (CNVG) (Roads and Maritime, 2016). This includes guidelines for duration and respite of high noise generating activities. As a guide, high noise generating activities near receivers will be carried out in blocks that do not exceed three hours each, with a minimum respite period of one hour between each block. The duration of each block of work and respite will be flexible to accommodate the usage and amenity at nearby receivers. TfNSW will maintain ongoing consultation with the community in regard to noise impacts during construction.

Some properties will also be eligible for acoustic treatments and these treatments will be implemented at eligible buildings prior to construction commencing, refer to Section 2.6.2.

2.6.4 Night works

Submission number(s)
65, 92, 120

Issue description
Three respondents are concerned about construction occurring at night.
Detailed response

Where possible the proposal would be constructed during standard construction hours. However, activities such as utility relocation works and civil works would be required to be carried out outside of standard construction hours due to safety and traffic disruption reasons.

The work would be carried out in accordance with the ICNG, CNVG and the Noise Criteria Guidelines. The contractor would give the community prior notice of any work planned to be carried out outside normal construction hours.

As described in Section 6.2.4 of the REF, construction noise impacts were predicted to the receiver locations surrounding the proposal by modelling the noise sources, receiver locations and construction activities. The predicted construction noise impacts noise levels and contours for each individual activity and the ancillary facilities associated with the construction phase and for activities expected to occur concurrently are provided in detail in Appendix B and Appendix C respectively of the noise and vibration assessment (Appendix M of the REF).

Based on the predicted construction noise levels presented in Appendix B of the Noise and Vibration Assessment (Appendix M of the REF), the day, evening and night construction NMLs would generally be exceeded at most residential receivers in each NCA. Residential receivers closest to the proposal and directly next to the construction works are also predicted to be highly noise affected, that is noise levels over 75dB(A) during the day period.

For sensitive land uses and commercial premises, construction noise levels exceed the relevant NMLs at some receiver locations and also exceed the highly noise affected level of 75dB(A).

It is noted that in most cases the exceedances of the NMLs and highly noise affected level of 75dB(A) are based on the activity occurring at a point nearest to the receiver and with all plant and equipment operating concurrently. However, not all plant and equipment would typically operate concurrently and this is considered to be a worst case scenario.

Noise contours and NML exceedance at each receiver for the loudest proposed standard hours and out of hours construction works for the worst case scenario (utility relocation, civil works and operation of construction compound site occurring concurrently) are shown in Figure 6-4 and Figure 6-5 of the REF respectively.

Noise impacts will be managed in accordance with a CNVMP which will be prepared during detailed design stage when the final construction scheduling is identified. Potential mitigation measures to reduce these noise impacts during construction will be implemented. This includes measures such as deploying acoustic screening around noisy plant and programming construction work to avoid out of hours work where possible.

2.6.5 Noise impacts during geotechnical works

Submission number(s)

72

Issue description

One respondent made a complaint about noise impacts during geotechnical work for the proposal. The respondent noted a letter was received in September 2019 notifying residents of investigations into intersection improvements, that would commence Monday 23 September 2019. The proposed works would involve lighting and noise disturbance with noisier tasks to be completed by midnight. However, the respondent notes that work did not commence until 20, 21 and 22 of November. The work consisted of three consecutive nights
of excessive noise, until 3am, within four meters of the respondents bedroom. During these works there were no noise control measures employed.

**Detailed response**

Sensitive receivers were notified of geotechnical works that were proposed to start on the 23 September 2019 and would operate intermittently including respite periods until the end of November. The bulk of the work occurred in October and November 2019, however some works extended into early December due to delays in commencing work September 2019.

Work commenced in October, however as the work spread along the corridor at four different locations, the work may not have been audible to all residents. Work at Fountain Street did not commence until November.

Night work commenced as part of geotechnical investigations required to inform the detailed design of the proposal. A minor works REF was prepared to assess environmental impacts and a CEMP was prepared to manage impacts. The CEMP included mitigation measures to manage noise impacts occurring during standard hours and out of hours and in accordance with Practice Note VII in the Roads and Maritime Services *Environmental Noise Management Manual* and Roads and Maritime Services *Environmental fact sheet No. 2 - Noise Management and Night Works*.

### 2.6.6 Noise mitigation

**Submission number(s)**

72, 147

**Issue description**

One respondent raised concern that respite periods and proposed noise mitigation measures will not sufficiently reduce the construction noise to a level conducive for sleep. The respondent requests that:

- Alternative accommodation is provided for when the works are scheduled close to their property
- Construction work scheduling is blocked to allow for the least disruption
- Road closures are considered for completion of works during the day, or over a block at Christmas time/January 2021 school holidays
- Detailed construction plans and programs are shared
- Implementation of any operational noise mitigations, pre-construction.

One respondent requested established trees to be planted as a noise mitigation to absorb additional noise from the proposal prior to construction commencing.

**Detailed response**

Alternative accommodation and construction respite periods would be offered to highly impacted residents in accordance with the CNVG.

TfNSW have endeavoured to block construction work where possible to allow for the least interruption and work will be undertaken in accordance with the ICNG, CNVG and the *Noise Criteria Guidelines*. This includes guidelines for duration and respite. Consideration for a longer block of work during the Christmas / School holiday period would need to consider these guidelines and would be considered in consultation with the community.

Detailed construction plans and staging plans would not be available until the detailed design phase and updated during construction. Due to their changing nature (e.g. wet
weather delays) TfNSW do not generally make these available, however will consult with the affected respondents on upcoming works.

Operational noise mitigation and acoustic treatments would be implemented where reasonable and feasible and prior to construction occurring. Acoustic treatment is discussed further in Section 2.6.1.

Trees provide limited noise mitigation. The options and application of noise mitigation measures is discussed in Section 6.24 of the REF.

2.6.7 Vibration

Submission number(s)
72

Issue description
One respondent notes their property is within three metres from the construction boundary and six metres of the road. The respondent is concerned about the impact vibratory works would have on human comfort and the structural integrity of their 1900s brick and mortar building. The respondent requested mitigation options to be outlined.

Detailed response
Section 5.3 of the Noise and Vibration Assessment assesses of the REF assesses vibration impacts as a result of the proposal and Section 6.2 of the REF summarises the vibration impacts as a result of the proposal.

Where vibration intensive plant is used, vibration would need to be managed to minimise disturbance to building occupants and avoid damage to buildings and other structures. In relation to human response, the safe working distances relate to continuous vibration. For most construction activities, vibration emissions are intermittent and higher vibration levels over shorter periods are considered acceptable. Additional assessment would be carried out where the human response criteria have been exceeded.

Dilapidation surveys will also be conducted prior to construction at all residential and other sensitive receivers identified to be impacted by vibration from construction of the proposal. For heritage items, the risk of damage would be dependent on the condition and construction of the item. Dilapidation studies of heritage items will help inform of the level of risk from construction vibration impacts. Potential vibration impacts will be managed with the CNVMP and mitigation measures will include using construction methods with reduced levels of vibration and monitoring of vibration levels in accordance with the noise and vibration assessment.

2.7 Flooding

2.7.1 Road drainage

Submission number(s)
78, 134, 155, 189

Issue description
Four respondents raised concern about the adequacy of the road design in mitigating flood impacts. Respondents requested the following:

- The drainage design to be reviewed to consider the proposal increasing flooding levels by up to 0.25 millimetres
The road drainage design to be reviewed to address future flood impacts affecting access to properties and insurance premiums

The flood impacts created by the proposal to be mitigated

The road drainage design to be changed, further consultation and a site visit to 147-161 McEvoy Street to address flood impacts associated with the proposed left turning lane on McEvoy Street into Fountain Street.

**Detailed response**

The flood modelling completed for the proposal is included as Appendix L of the REF and summarised in Section 6.5 of the REF. The results of the assessment show that flood level increases of up to 0.25 metres would be expected at McEvoy Street near the Fountain Street intersection in all events up to the one per cent annual exceedance probabilities (AEP) (one in 100 year flood event). This increase could potentially cause substantial impacts to existing buildings and properties, while, the high flood hazard areas are expected to be localised and limited to the road corridor.

A number of mitigation measures are provided in the REF to ameliorate flooding impacts during detail design and include:

- Flooding impacts will be reassessed for both the construction and operation of the proposal as refinements to the road and drainage designs are expected to change the flooding impacts
- The flood risk to vehicles will also be reassessed and the design adjusted to provide safe flow conditions for vehicles, if possible
- Flood impacts of the proposal on the probable maximum flood event will be carried out to ensure no adverse flood impacts due to the proposal
- Any residual flood impacts to properties after implementing feasible mitigation works will be quantified. Floor level survey data will be collected to quantify impacts to above-floor flooding of properties located along the proposal that may be impacted.

The review of flood impacts during detailed design will include a review of the drainage design and a review of any residual flood impacts to properties after the floor level survey is completed. TfNSW will carry out site inspections and consultation with affected landowners to address any potential impacts and will maintain ongoing consultation with the property owner at 147-161 McEvoy Street flood impacts are identified.

**2.8 Urban design, landscape character and visual impacts**

**2.8.1 Landscaping**

**Submission number(s)**

11, 20, 43, 53, 72, 89, 93, 118, 150, 152, 154, 155, 165

**Issue description**

Thirteen respondents raised concern, comments and requests about landscaping issues resulting from the proposal including:

- Clarification about which trees at the Fountain Street/McEvoy Street intersection are being planted and which are being removed as it was unclear in the November 2019 Project Update
- Queried what the large number of trees being removed along the northern side of McEvoy Street between Harley Street and Fountain Street would be replaced with
- More trees to be planted on Euston Road to distance pedestrians from the road
- Request for the existing garden outside of 147 McEvoy Street to be retained and/or replanted
- Request for garden beds to be installed on Elizabeth Street to the north of McEvoy Street, the southern side of McEvoy Street between George Street and Botany Road, and McEvoy Street between Pitt Street and George Street to provide shade and separate pedestrians from traffic
- Plant larger street trees to improve the visual amenity of the area
- A request for increased landscaping to shield residents and pedestrians and cyclists from traffic, provide shade and air quality benefits
- A request for landscaping to be installed on the southern side of Lachlan Street to separate pedestrians from traffic and provide shade
- Waterloo Oval to be upgraded to better insulate it from increased traffic. This could be achieved by planting more plants and trees
- The Lachlan Street/South Dowling Street/Dacey Avenue intersection upgrade would require significant improvements and additional green space along Lachlan Street to be acceptable
- There are generally not enough trees in the area
- Creation of a natural barrier in the form of hedges, trees or plant boxes within 30 metres of the McEvoy Street/Elizabeth Street intersection.

**Detailed response**

An *Urban Design, Landscaping Strategy and Visual Impact Assessment* was completed for the Stage 1 proposal and is included in Appendix E of the REF and summarised in Section 6.6 of the REF. The REF found that the proposal would remove 49 planted trees, comprised of 25 mature trees and 24 immature trees as well as some shrubs and exotic groundcovers. Table 2-3 in Section 2.11.1 summarises the impacts to trees at each of the four intersections. The trees that are being removed at the Fountain Street/McEvoy Street intersection are shown in maps attached as Appendix P of the REF.

The landscaping strategy includes the draft plans for replanting in areas of existing vegetation that are impacted by the proposal, refer to Figures 3-2 to Figure 3-5 of the Urban Design, Landscaping Strategy and Visual Impact Assessment included as Appendix E of the REF. The landscaping strategy will replant more trees than what are removed for the proposal as well as replanting shrubs and groundcovers in gardens and vegetated verges that are impacted by the proposal.

The nine mature and six immature trees being removed as part of the proposal along the northern side of McEvoy Street between Harley Street and Fountain Street would be replaced with tree species identified in the Urban Design, Landscape Strategy and Visual Impact Assessment included as Appendix E of the REF which includes:

- *Ficus microcarpa var. himii* (Hill’s Fig)
- *Waterhousea floribunda* ‘Green Avenue’ (Weeping Lilly Pilly)
- *Lophostemon confertus* (Brush Box)
- *Platanus acerifolia* (London Plane).

Once these trees are established, they will be large trees that provide visual amenity and shade for pedestrians along the corridor. In addition, these trees will also separate pedestrians and cyclists from the road traffic. More landscaping and active transport options will be provided in the Ultimate Concept Design if future stages of the proposal are constructed.
Landscaping will be undertaken to replace the areas of the gardens impacted by the road widening and landscaping will replace the existing shrubs and groundcovers species with similar species that are also drought tolerant.

The Ultimate Concept Design includes detailed landscaping plans that included garden beds or landscaping that separate pedestrians and cyclists from traffic and provided shade and these would be reviewed and potentially implemented if future stages proceed. This includes the following locations:

- The southern side of McEvoy Street between George Street and Botany Road
- Along McEvoy Street between Pitt Street and George Street
- Along Waterloo Park and Oval
- Elizabeth Street to the north of McEvoy Street
- On the southern side of Lachlan Street, except near to the South Dowling Street intersection where four new trees would be planted to replace two that are removed as part of the Stage 1 proposal and these will separate the footpath from the road.

The impacts associated with the upgrade of the Lachlan Street/South Dowling Street/Dacey Avenue intersection have been reduced in response to comments received as part of the display of the Ultimate Concept design. Impacts have now been minimised and impacts would only occur to two immature trees located on Lachlan Street.

TfNSW will review the landscaping plans further in detailed design to ensure that there are more trees planted than that removed during construction of the Stage 1 proposal. This will include small gardens containing shrubs and groundcovers that separate pedestrians and cyclists from the road where appropriate and where impacts occur. This commitment has been included as a mitigation measure in Section 5.2.

2.8.2 Green space

Submission number(s)
15, 29, 59, 91, 103, 170

Issue description
Six respondents raised concerns, requests and queries about green space within the proposal including:

- Request for more landscaping along the proposal corridor (particularly between Botany Road and Maddox Street) to provide more shade and to offset vehicle emissions
- Request for more green space and parks
- Request for Waterloo Park and Oval to be protected and improved like Redfern Park
- The Moore Park Golf Course should be converted to publicly used green space as it is underutilised
- The location of Construction Compound 4 is perfect for a community space/park which would help to make Alexandria and Waterloo a destination, not just a thoroughfare
- The implementation of clearways would result in a reduction in green space
- It is important to preserve green spaces along the proposal
- Queried opportunities to increase green space to offset the increased traffic in the area.
Detailed response

TfNSW notes the request for more landscaping along the proposal for shade and for offsetting vehicle emissions and options to provide increased landscaping will be further considered during detailed design.

The request for more green space and parks is outside the scope of this proposal although it is noted that a number of parks are already located along the proposal including:

- Moore Park, Moore Park Golf Course and E.S. Marks Athletics Field
- Centennial Park which includes the Kensington Ponds
- Tay Street Reserve
- Waterloo Oval and Waterloo Park.

These parklands including Waterloo Park and Oval are already afforded protection under the City of Sydney and the State government as they are listed as heritage items under local and State legislation. The suggestions to improve Waterloo Park and Oval like Redfern Park and that the Moore Park Golf Course should be converted to publicly used green space as it is underutilised is out of the scope of this proposal.

TfNSW notes the location of construction compound site 4 located at 903-921 Bourke Street Waterloo may be suitable for use as a community space/park, however the future use of the area would be at the discretion of the existing owner (Sydney Water) and future development of the site will be the subject of an environmental impact assessment under the EP&A Act.

The proposal requires limited property acquisition and establishing more green space is limited and restricted to replacing trees removed by the proposal, refer to Section 2.11.1. Opportunities for including more green space may be considered in the Ultimate Design Concept where and if residual land is available.

TfNSW notes the concern raised about the implementation of clearways reducing green space, however the clearways themselves would not result in a reduction of greenspace, some of the road widening works would result in a small loss in landscaped areas including the loss of 25 mature trees and 24 immature trees however these would be replaced as part of the landscaping strategy in order to provide an offset for the loss of trees along the corridor, refer further to Section 2.8 and Section 2.11.1.

2.8.3 Landscape character and visual impact

Submission number(s)
14, 29, 63, 68, 83, 89, 184, 191

Issue description

Eight respondents raised concerns about the landscape character and visual impacts of the proposal including:

- The visual impact that would result from increased traffic
- The removal of trees would impact on the environment (air and visual amenity) and that the area was used by young families who enjoy the existing parks
- The visual impact from the loss of seven to eight trees along McEvoy Street for the new eastbound left turning lane at the Fountain Street/McEvoy Street intersection
- The amenity of the street would be ruined
• Visual impact of idling traffic would be unattractive and result in less use of the park on Wyndham Street
• The proposal would create undesirable suburbs by encouraging additional traffic
• The proposal is inconsistent with urban planning as there is no active transport proposed
• The proposal would not support opportunities to create quality public spaces needed in high density areas
• The impact of increased traffic on the urban environment reducing the opportunity of McEvoy Street to become a vibrant community centric place for residents.

Detailed response
The extent and magnitude of the proposal on landscape character and visual amenity is assessed in the Urban Design, Landscape Strategy and Visual Impact Assessment included as Appendix E of the REF and summarised in Section 6.6 of the REF. The potential visual impacts of the proposal were assessed according to the impact of the proposal at 15 separate viewpoints (VPs) that were centered around the four main construction zones. The assessment found that the following viewpoints would be impacted:

• Four VPs located at the Elizabeth Street/McEvoy Street intersection would have a moderate to high visual impact
• Three VPs located at the Fountain Street/McEvoy Street intersection would have a moderate visual impact
• Eight VPs located at the Botany Road/McEvoy Street intersection and the Lachlan Street/South Dowling Street/Dacey Avenue intersection would have negligible visual impact.

Visual and landscape impacts would also occur during the proposal’s construction and operation. Temporary construction impacts would result from construction plant, equipment, temporary compounds and stockpiles. Impacts would be managed through the implementation of mitigation measures during the construction period.

Permanent visual and landscape changes would result from the removal of street trees. In order to mitigate these impacts and help reinstate the character of the area, new street trees would be planted in accordance with the City of Sydney’s Street Tree Masterplan where possible and in consultation with the City of Sydney.

The Urban Design, Landscape Strategy and Visual Impact Assessment concluded that the scale of the proposal would be consistent with the existing street environment. This includes the movement of traffic along the main alignment and the introduction of clearways.

Implementation of the proposal will allow access into the area including public space areas and aims to reduce congestion. The Ultimate Concept Design provides active transport solutions that would be implemented in future stages.

2.9 Property, land use and socio-economic

2.9.1 Business impacts

Submission number(s)
6, 18, 44, 45, 64, 68, 69, 70, 87, 110, 143, 157, 181

Issue description
One respondent opposed the introduction of clearways as this destroys local businesses due to decreased parking opportunities. One respondent queried the impacts to Victoria’s Basement located on the corner of the Harley Street and Euston Road intersection. While 11
respondents were concerned about impacts to businesses that would result from the proposal including:

- Introducing clearways on McEvoy Street would affect businesses located on the corner of Brennan Street and McEvoy Street
- Businesses along the corridor would become less attractive to visit
- The proposal would make the area less conducive to locals using it, particularly for local businesses
- Introducing clearways on McEvoy Street would negatively impact businesses by removing currently available on-street parking. It is noted that businesses opening hours would be during the same time that the clearways are imposed. The respondent queried if there were plans to build a parking facility in the area to compensate for the loss of on-street parking and requests that a commercial sustainability report be completed which outlines the impact the proposal would have on local businesses
- The viability of a wholesale textile business would be impacted by the proposal. The respondent is particularly concerned about the introduction of the clearway conditions and considers that it would substantially reduce the viability of their business
- The introduction of clearways would deter customers from visiting local businesses
- The implementation of a median strip at McEvoy Street and the banning of right hand turns from McCauley Street would impact the local businesses and freight deliveries
- Businesses on the south west corner of McEvoy Street and Stokes Avenue rely on the current available parking which would be impacted by the proposal
- The proposed median strip on McEvoy Street would prevent right hand turns from McCauley Street onto McEvoy Street. This would impact freight vehicle access to and from businesses on McCauley Street.

Detailed response

A Traffic and Transport Assessment and a Parking Assessment completed for the Stage 1 proposal and included as Appendix J and Appendix C of the REF respectively and summarised in Section 6.1 of the REF. A business impact assessment was also completed and is part of the Social Impact Assessment and summarised in Section 6.8 of the REF. Table 6-14 of the REF summarise the impacts from changes in parking conditions from the proposal and Table 6-51 of the REF summarises impacts to businesses from the changed parking conditions and clearways.

As described in Section 2.5.5, clearways are proposed as part of the proposal in order to improve journey times and reliability along the corridor, enabling the most efficient use of road space for movement of people and goods including bus, freight and private vehicles.

The Parking Assessment found that the proposal would result in a change in the availability of the 252 on-street parking spaces in the proposal of which 228 already operate under No Parking restrictions during morning or afternoon peaks. This includes some loading zones and other dedicated parking spaces, located along Euston Road and McEvoy Street.

The clearways would operate as follows:

- New clearways on both sides of Euston Road and McEvoy Street between Maddox Street and Bourke Street from 6:00am to 7:00pm Monday to Friday and 9:00am to 6:00pm on weekends
- New clearways at all times along Lachlan Street and Dacey Avenue between Bourke Street and Anzac Parade.

The Parking Assessment determined that local side streets in the study area would generally have capacity to accommodate any on-street parking places displaced by the clearway
operation, with the exception of three locations that are expected to experience ‘moderate’ or ‘substantial’ impacts on parking availability. ‘Moderate’ impacts are defined as between five and 10 vehicles displaced from parking on downstream local streets, while ‘substantial’ impacts are defined as between 10 to 15 vehicles displaced from parking on downstream local streets. The three locations where moderate to substantial impacts are expected are:

- On the northern side of McEvoy Road between Harley Street and Fountain Street
- On the northern side of McEvoy Road between Fountain Street and Loveridge Street
- On the northern side of McEvoy Road between Botany Road and Elizabeth Street.

The proposal would also result in the loss of off-street parking including up to:

- Twenty-six public parking spaces at 102-112 McEvoy Street, Alexandria
- Two customer parking spaces at 35 Lachlan Street, Waterloo.

The Parking Assessment found that there was capacity to accommodate off-street parking lost at Lachlan Street, Alexandria as a result of the proposal. There would however be limited capacity to accommodate off-street parking lost at 102-112 McEvoy Street, Alexandria due to the severity of impacts from the loss of on-street parking from the proposal at these side streets.

An assessment of the impacts on businesses due to the loss of on-street and off-street parking determined that overall, there is expected to be a low impact to businesses located along Euston Road and McEvoy Street from proposed changes in parking conditions, with businesses in many locations along the proposal likely to experience either no or negligible impacts to customer or staff parking due to the proposal. The exception to this includes four locations where moderate to high impacts on businesses are expected. This includes businesses:

- On the northern side of Euston Road between Maddox Street and Harley Street where there is potential for a high impact on customer and staff parking for one news agency, one real estate, one convenience store and five retail outlets during the individual businesses operating hours
- On the northern side of McEvoy Road between Harley Street and Fountain Street where there is potential for a moderate-high impact on customer and staff parking for one professional services business (architect) located on McEvoy Street during business hours and a number of additional businesses on Fountain Street, although it is noted that some businesses have off-street parking for customers and staff
- On the northern side of McEvoy Road between Fountain Street and Loveridge Street where there is potential for high impact on customer and staff parking for two cafés/ restaurants, five retail outlets and one engineering business during the week and on the weekend
- On the southern side of McEvoy Road between Stokes Avenue and Bowden Street where there is potential for a high impact to customer and staff parking for one light industrial (automotive repair) business, three food outlets such as cafes, and five retail outlets during the week and on the weekend, as well as the head office and distribution centre for an eyewear company, particularly when the loss of on-street parking is combined with the loss of off-street public parking from the proposal.

Reduced on-street and off-street public parking from construction of the proposal and introduction of clearways, may make finding a convenient car park more difficult for some customers, staff and delivery drivers of businesses near to the proposal, possibly requiring some people to walk further to the business. This impact is likely to already be occurring due to the level of development activity currently being undertaken in the study area and is most likely to affect those businesses that do not have dedicated off-street parking.
The need to walk further for parking or take longer to search for a convenient car park may deter some customers from accessing some businesses, particularly where visits are for a short duration (for example, to pick up takeaway food or drinks or to buy ‘convenience’ goods such as bread, milk or newspapers) or where goods or services are readily available from other nearby locations with easier and more convenient parking access.

These impacts may be ameliorated through the use of commercial car parks located at:
- Fountain Street, which offers casual drive up parking from 6:00am to 6:00pm daily
- Bowden Street, which offers drive up parking from 6:00am to 7:00pm weekdays.

Mitigation measures, such as providing more localised timed parking on nearby side streets, would be considered to minimise the loss of on-street parking from clearways. TfNSW would also investigate options to stage the impact or re-instate some of the public parking spaces at 102-112 McEvoy Street, Alexandria as part of detailed design. TfNSW would stage implementation of right turn bans along the corridor to allow time for alternate proposals to be further considered in consultation with stakeholders.

2.9.2 Amenity impacts

Submission number(s)
48, 83, 136, 146, 149, 182

Issue description
Six respondents raised concern about the impact of the proposal on amenities including:
- The proposal encroaching on the Moore Park Golf Course
- A resident located near the Lachlan Street/South Dowling Street/Dacey Avenue intersection and indicated that they are currently impacted by traffic noise and traffic congestion and would be further impacted as a result of the proposal
- The proposal would make the Elizabeth Street area noisier and would reduce safety for park users and pedestrians. Concern that the proposal would affect the liveability of the area for residents
- Reduced safety and amenity around Waterloo Oval area such as Elizabeth Street in terms of increased traffic, noise and air pollution
- Discouraging street activity, shopping, outdoor dining and future developments would be built to face back streets rather than McEvoy Street
- The proposal will undo the amenity improvements made by residential development, café and shop renovations
- The proposal is flawed, as it is limited to road based solutions and has not considered the impacts of a two lane roadway on the residential nature of the surrounding area.

Detailed response
No impacts currently as part of this proposal to the Moore Park Golf Course.

A Noise and Vibration Assessment was completed for the proposal and is included as Appendix M of the REF and summarised in Section 6.2 of the REF. This includes consideration of noise and sensitive receivers located within 600 metres of the proposal corridor and extends from the Maddox Street/Euston Street intersection and extends east along McEvoy Street to Bourke Street then Lachlan Street and Dacey Avenue through to the Anzac Parade/Alison Road/Dacey Avenue intersection and includes sections of Elizabeth Street, Waterloo Park and South Dowling Street. Mitigation measures to reduce construction
and operation noise impacts from the proposal are detailed in Table 5-1 and further discussion on noise impacts are included in Section 2.6.

A Traffic and Transport Assessment (refer to Appendix J of the REF) was completed as part of the proposal. Section 6.1 of the REF includes a summary of the traffic and transport impacts. The Traffic and Transport Assessment considers the road and pedestrian safety aspects of the proposal. The safety of road users and pedestrians is one of the primary aims of the Road Safety Plan 2021: Towards Zero (TfNSW, 2018a) that TfNSW operates under, refer to Section 2.5.4 and Section 4.1. Mitigation measures to manage safety impacts to pedestrian and road users are included in Table 5-1.

A Social Impact Assessment and is included as Appendix O of the REF and Section 6.8 of the REF assesses property, land use and socio-economic impacts. Impacts to landscape character and visual amenity are assessed in the Landscape Character and Visual Impact Assessment included as Appendix E of the REF and summarised in Section 6.6 of the REF.

A qualitative air quality assessment was included in Section 6.10 of the REF and a quantitative air quality assessment is included in Section 4.2 of this report. The results of the air quality assessment considered impacts from vehicle emissions and impacts to nearby sensitive receivers.

The assessment undertaken for the proposal including all the assessments detailed above have considered the impacts of a two lane roadway on the surrounding environment which includes residential areas. Mitigation measures to ameliorate impacts from the proposal to amenity (including noise, vibration, visual and air quality impacts) are identified and included in Table 5-1.

2.9.3 Resident health

Submission number(s)
15, 66, 66, 152

Issue description
Four respondents were concerned about the impact of the proposal to resident health including:

- The health and safety of local residents is a low priority for TfNSW
- The proposal would result in a higher risk of health issues for residents
- The health of residents would be impacted by vehicle emissions and fumes from increased traffic.

Detailed response
The safety of road users and pedestrians is one of the primary aims of the Road Safety Plan 2021: Towards Zero that TfNSW operates under, refer to Section 2.5.4 and Section 4.1.

The proposal has been designed to improve road safety for road users and for pedestrians, this includes upgrades to four main intersections and the introduction of clearways which will remove the use of Euston Road and McEvoy Street for parking therefore reducing potential conflict of pedestrians on the road as they seek to access parked cars.

Impacts to amenity are considered in the Social Impact Assessment included as Appendix O of the REF and summarised in Section 6.8 of the REF. A qualitative air quality assessment was included in Section 6.10 of the REF and a quantitative air quality assessment is included in Section 4.2 of this report. The results of the air quality assessment considered impacts from vehicle emissions and impacts to nearby sensitive receivers. Mitigation measures to ameliorate impacts are identified and included in Table 5-1.
2.9.4 Property acquisition

Submission number(s)
68

Issue description
The respondent is concerned about property acquisition in an inner city location for roadways and the introduction of clearways when the area is so densely populated.

Detailed response
Property acquisition is described in Section 3.6 of the REF. Properties impacted by acquisition or adjustments are listed in Table 3-6 of the REF and illustrated in Appendix G of the REF.

Three privately owned lots and 11 publicly owned parcels of land would be required for the proposal. These would mainly be affected by partial acquisition for landscape and walkway adjustments.

Strip acquisition for the proposal would generally impact on landscaped areas that have been set back from the existing road to allow for future road widening works. The proposal would consequently require landscape adjustments, although some off-street car park areas would also be removed. Where partial acquisition of properties would occur, impacted infrastructure such as fencing and driveways would be rebuilt and relocated as part of the proposal.

The proposal boundary has been developed to maximise the design functionality, take into account the existing road affectation along the corridor and meet the proposal brief as well as minimise the property acquisitions required.

All acquisitions would be conducted in accordance with the Roads and Maritime Land Acquisition Policy, and compensation would be based on the requirements of the Land Acquisition (Just Terms) Compensation Act 1991.

2.9.5 Disconnecting communities

Submission number(s)
50, 64

Issue description
Two respondents were concerned that the proposal would disconnect communities including:

- The proposal is focused on better connections for road users but would disconnect the local suburbs and communities
- Concern about the severing of communities either side of the corridor.

Detailed response
The proposal does not seek to disconnect communities either side of the proposal or between local suburbs and communities. The proposal will continue to provide access to all suburbs and communities but some drivers would need to use alternate routes to access businesses and side roads. In addition, pedestrian access will still be maintained at every intersection along the corridor.
In response to comments which included extensive consultation with the City of Sydney and the community, the Ultimate Concept Design was reviewed to allow a staged approach and includes:

- The Stage 1 proposal which would improve traffic performance along the Euston Road, McEvoy Street, Lachlan Street and Dacey Avenue corridor and can be implemented early with minimal property acquisitions. The Stage 1 proposal will also allow time to see the effects of major projects such as CSELR, Metro and WestConnex. The majority of work associated with the proposal would be deferred until after the opening of the New M5 and the St Peters Interchange to review the need for the improvements proposed. Stage 1 is described in Section 1.1 and is shown Figure 1-2

- While further stages would consider features previously presented in the June 2017 Project Update (refer to Appendix D of the REF) and looks further at place functionality including pedestrian and cycling infrastructure ie active transport, landscaping and upgrades of other major intersections such as straightening the staggered McEvoy Street/Bourke Street and Bourke Street/Lachlan Street intersections, this would depend upon future assessments.

2.9.6 Building control

Submission number(s)
89

Issue description
One respondent recommended building controls for the design of new buildings to promote visual interest and vitality.

Detailed response
The recommendation that building controls for the design of new buildings include features to promote visual interest and vitality is outside the scope of projects that TfNSW manages.

2.9.7 Abandoned land

Submission number(s)
184

Issue description
One respondent noted that the Young Street and McEvoy Street intersection has been an area of abandoned industrial land for years and has the potential to be a desirable place in Waterloo/Zetland. The respondent noted that plans have been proposed that this area would be transform the area into another concrete and asphalt development.

Detailed response
TfNSW notes that the area of land near Young Street and McEvoy Street at 903-921 Bourke Street Waterloo would be leasing the area from Sydney Water during construction of the proposal. The future use of the area would be at the discretion of the existing owner and future development of the site will be the subject of an environmental impact assessment under the EP&A Act and may include open space. The heritage item (Former Sydney Water Pumping Station & Valve House Incl. Interiors & Associated Add pump station retained by Sydney water) would not be impacted by the proposal and would be retained by Sydney Water.
2.10 Contaminated land

2.10.1 Asbestos

Submission number(s)
127

Issue description
One respondent was concerned about asbestos exposure from the excavations at the car park located on 102-110 McEvoy Street.

Detailed response
A Contaminated Land Management Plan will be prepared in accordance with the Guideline for the Management of Contamination (Roads and Maritime, 2013) and implemented as part of the CEMP to manage the potential for contamination risks from all construction activity associated with the proposal and will consider risks at this location.

2.11 Biodiversity

2.11.1 Tree impacts

Submission number(s)
19, 21, 39, 41, 46, 50, 52, 56, 68, 73, 74, 78, 80, 82, 83, 85, 90, 94, 103, 106, 107, 115, 116, 133, 141, 143, 145, 149, 155, 158, 169, 176, 177, 180, 183, 185, 188, 189, 192

Issue description
Thirty-eight respondents had concerns and queries about tree impacts as a result of the proposal as well as requests. The concerns raised were around:

- The removal of trees, including mature trees as a result of the proposal
- The damage to or removal of trees at Waterloo Park or Oval
- Road widening would result in loss of street trees impacting the footpath user experience
- Removal of trees to allow for a centre median on McEvoy Street
- Impacts to fauna as a result of the removal of trees
- The location of trees is inaccurate and requests that trees to be removed are replaced with like for like mature trees
- No trees are proposed around the proposed footpath on the southern side of McEvoy Street between Bowden Street and Harley Street. The footpath would be undesirable in high temperatures as there is no shade
- The REF does not discuss transplanting of trees
- As per recommendation 13 of the CSELR the loss of mature trees should be protected, and the design and development of state infrastructure prioritises their retention.

There were also requests for:

- To retain all trees within the proposal area
- More green open space for passive recreation and more trees for shade
- More compensation for the removal of trees
- Trees to be protected
- Mature trees that would develop a large canopy to be planted where trees are removed as a result of the proposal, rather than seedlings or immature trees to ensure that there is adequate shade.

- Trees to be retained in numerous locations including:
  - Euston Road/Huntley Street intersection
  - Young Street/McEvoy Street intersection
  - Gardens located at 147 McEvoy Street
  - Botany Road/McEvoy Street intersection
  - George Street/McEvoy Street intersection
  - Bourke Street, Lachlan Street and Sam Sing Street
  - Northern side of Dacey Avenue and the eastern side of South Dowling Street (Eastern Distributor) in Moore Park.

- Queried why trees were planted within the past five to ten years only to be removed for the road, while another queried why so many trees are being removed as part of the proposal and suggested that that length of the Fountain Street turning lane could be reduced as it is not a well-used turning lane to reduce impacts to trees at this intersection

- Supports the reduced scope of the proposal as it reduces impacts to trees in response to public comments.

Detailed response

A biodiversity assessment was carried out and included in Section 6.9 of the REF and assessed impacts to trees and threatened flora and fauna. The assessment found that the proposal would remove 49 planted trees, comprised of 25 mature trees and 24 immature trees as well as some shrubs and exotic groundcovers. All of the 25 mature trees being removed are native trees and are considered to be foraging resources that provide potential habitat for threatened fauna species. Specifically the 25 mature planted trees are flowering trees that provide suitable foraging habitat for the Powerful Owl (*Ninox strenua*) and Grey-headed Flying Fox. This is generally limited to foraging habitat. The proposal would not impact any flying fox camps or hollow-bearing trees suitable for nesting by the Powerful Owl (*Ninox strenua*) (none of these are located within the study area). The clearing of habitat would impact native fauna through loss of foraging resources, reduction in habitat size and increasing barriers to fauna movement. No State significant or regionally significant biodiversity links occur in the study area.

No trees listed of the City of Sydney Register of Significant Trees would be directly impacted by the proposal. However, there is potential for indirect impacts to the roots of some of the trees in Waterloo Park from utility relocations. These impacts would be managed by an arborist and are not expected to affect the overall health of the trees.

During development of the concept design and in response to feedback received from the display of the concept design in June 2017 (summarised in Section 5.2 of the REF) a series of design refinements were made to the concept design. These refinements included reducing the overall number of trees impacted, however this does not reduce the impact to trees associated with Stage 1 of the proposal.

Impacts to trees from the proposal is shown in Appendix P of the REF. Tree surveys were completed for the proposal in 2016 and as such the location of trees may be subject to minor changes. Impacts to trees at each of the four intersections is summarised in Table 2-3. No fig trees would be removed as part of the proposal. Impacts to trees would be further reviewed in detailed design and where possible impacts would be reduced. The landscaping plans would also be further reviewed in detailed design and would include plans to replant more trees than what is being removed by the proposal.
Table 2-3 Summary of impacts to trees at each of the four intersections impacted by the proposal

<table>
<thead>
<tr>
<th>Location</th>
<th>Mature trees directly impacted</th>
<th>Immature trees indirectly impacted</th>
<th>Total trees impacted</th>
<th>Trees to remain and be protected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fountain Street/ McEvoy Street intersection</td>
<td>21</td>
<td>16</td>
<td>37</td>
<td>3</td>
</tr>
<tr>
<td>Botany Road/McEvoy Street intersection</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>14</td>
</tr>
<tr>
<td>Elizabeth Street/ McEvoy Street intersection</td>
<td>1</td>
<td>7</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Lachlan Street/ South Dowling Street/ Dacey Avenue intersection</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>25</strong></td>
<td><strong>24</strong></td>
<td><strong>49</strong></td>
<td><strong>22</strong></td>
</tr>
</tbody>
</table>

A construction compound is located on the northern side of McEvoy Street on George Street. Three trees are located within the construction compound, however these would be retained and protected during construction.

New street trees would be planted in accordance with:
- The Landscaping Plan completed for the proposal (refer to Appendix E of the REF)
- The City of Sydney’s Street Tree Masterplan and in consultation with the City of Sydney.

Mature trees would be planted if reasonable and feasible and tree species to be used include:
- *Ficus microcarpa var. hillii* (Hill’s Fig)
- *Waterhousea floribunda* ‘Green Avenue’ (Weeping Lilly Pilly)
- *Lophostemon confertus* (Brush Box)
- *Platanus acerifolia* (London Plane).

Transplanting of trees would not be undertaken as part of this proposal as it has been identified that the mortality rate of transplanting trees is high and there is a better success rate associated with planting seedlings and immature plants.

No impacts to trees would occur at the following locations as they are outside the construction footprint area of the Stage 1 proposal area:
- Euston Road/Huntley Street intersection
- Young Street/McEvoy Street intersection
- Bourke Street, Lachlan Street and Sam Sing Street are not within the proposal area and would not be directly impacted by the proposal.
- Northern side of Dacey Avenue.
2.12 Air quality and climate change

2.12.1 Vehicle emissions

Submission number(s)
1, 7, 9, 50, 59, 61, 62, 63, 65, 66, 77, 81, 84, 86, 136, 159, 194

Issue description
Seventeen respondents raised concerns, requests and comments about the impact the proposal would have on air quality. Issues and requests include:

- The proposal would increase carbon dioxide (CO\textsubscript{2}) emissions from additional traffic
- Road widening and extended clearway hours would produce vehicle emissions and fumes
- Expanding urban roads would encourage additional traffic within the proposal area, resulting in additional vehicle emissions and increased air pollution
- The proposal resulting in emissions above acceptable air quality criteria
- Increased air pollution from vehicle emissions deterring people from using shops, cafes/restaurants and socialising within the proposal area
- Residents on Lachlan Street would continue to be subjected to poor air quality due to traffic congestion not being addressed
- Retain trees in the area in order to offset the CO\textsubscript{2} emissions from cars along the proposal
- Request for more trees to be replaced than are being removed on McEvoy Street to offset and mitigate air quality and vehicle pollution impacts
- Request for mitigation measures to manage operational impacts.

Detailed response
Air quality was assessed in Section 6.10 of the REF and it identified that local air quality at the proposal would be influenced by many sources but the main sources relevant to the proposal would be associated with motor vehicles. The main air pollutants from motor vehicles are carbon monoxide (CO), nitrogen dioxide (NO\textsubscript{2}) and fine particles (PM\textsubscript{10}, ie particulate matter with equivalent aerodynamic diameters of less than 10 microns) and Volatile organic compounds (VOCs). The primary pollutants of concern during construction and operations of the proposal would include total suspended solids (TSP), deposited dust, particulate matter, CO, NOx (as NO\textsubscript{2}) and VOCs.

A qualitative air quality assessment was completed as part of the REF, and it found that:

- During construction reduced air quality would potentially occur in the vicinity of the proposal and would be dependent upon atmospheric conditions such as wind and rain. The proposal would have potential to generate dust from earthworks, stockpiles and the use of imported fill. Levels of air borne dust would be expected to be low level and unlikely to cause concern to sensitive receivers provided the mitigation measures provided in Section 7.2 of the REF are implemented. Construction equipment and plant would emit exhaust fumes and would contribute to local air quality. However, in the context of the existing vehicular movements within the proposal area, this is considered to be negligible.
- During operation the potential air quality impacts would be similar to those currently experienced.

In response to comments received TfNSW have carried out a quantitative air quality assessment (refer to Section 4.2.4 and Table 5-1) of the operational impacts from the
Mitigation measures included in Section 7.2 of the REF have been reviewed as part of the quantitative air quality assessment however it is noted that planting additional trees would only assist in removing CO, VOC and some particulates. The proposal would replant a larger number of trees than that removed which would help mitigate the loss of trees from the proposal area and would assist in air quality and visual impacts, refer further to Section 2.8.1 and Section 2.11.1.

2.12.2 Climate change

Submission number(s)
143

Issue description
The respondent is concerned about the proposal contributing to climate change.

Detailed response
In response to this comment, TfNSW has included an assessment of impacts on climate change in Section 4.2.

2.13 Waste

2.13.1 Waste from surrounding business

Submission number(s)
91

Issue description
The respondent is concerned about impacts to the environment from balloons and plastic from the Base Warehouse.

Detailed response
TfNSW has no control over the business operations around the proposal area.

2.14 Cumulative impact

2.14.1 Cumulative impacts

Submission number(s)
83

Issue description
One respondent is concerned that the cumulative impact of the proposal as a whole is a major impact to the community not a minor impact as concluded in the Project REF.

Detailed response
TfNSW notes that the respondent does not agree with the conclusions of the cumulative assessment completed for the Project REF. The REF has assessed all relevant
environmental constraints and has concluded that the proposal would be unlikely to cause a significant impacts on the environment and mitigation measures have been included to minimise impacts.

A cumulative impact assessment was completed as part of the Project REF (refer to Section 6.11). As a result of the impact specific mitigation measures were developed.
3 Response to government agency issues

In addition to the 196 community submissions addressed in Chapter 2 of this Submissions Report, TfNSW received three government agency submissions.

3.1 Overview of the issues raised and advice provided

A total of three government agency submissions were received in response to the display of the REF. The City of Sydney and BGCP provided formal submissions through the submission process. In addition, the City of Sydney Lord Mayor wrote a letter to the Secretary of the Great Sydney Division of TfNSW. While this letter did not come through the formal submission pathway it is still being considered as submission.

Each submission has been examined individually to understand the issues being raised. The issues raised in each submission have been extracted and collated, and corresponding responses to the issues have been provided. The issues raised by government agencies and TfNSW’s response to these issues forms the basis of this chapter.

The most common issues raised by government agencies are listed in Table 3-1.

Table 3-1 summary of government agency issues

<table>
<thead>
<tr>
<th>Respondent</th>
<th>Submission number</th>
<th>Issues raised</th>
<th>Section addressed</th>
</tr>
</thead>
<tbody>
<tr>
<td>City of Sydney</td>
<td>CoS1</td>
<td>Project justification and purpose</td>
<td>Section 3.2.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reduced proposal scope</td>
<td>Section 3.2.2</td>
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<td></td>
<td></td>
<td>Future stages</td>
<td>Section 3.2.3</td>
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<td></td>
<td></td>
<td>NSW government strategic agenda</td>
<td>Section 3.2.4</td>
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<td></td>
<td></td>
<td>Movement and place framework</td>
<td>Section 3.2.5</td>
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<td></td>
<td></td>
<td>Congestion along the corridor</td>
<td>Section 3.2.6</td>
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<td></td>
<td></td>
<td>Traffic demand</td>
<td>Section 3.2.7</td>
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<tr>
<td></td>
<td></td>
<td>REF specific issues:</td>
<td>Section 3.2.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Environmental impact assessment</td>
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<td></td>
<td></td>
<td>• Consultation</td>
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<td>• Option analysis</td>
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<td>• Multimodal solutions</td>
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<td></td>
<td>WestConnex link and interface</td>
<td>Section 3.2.9</td>
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<td></td>
<td></td>
<td>Fountain Street/McEvoy Street intersection</td>
<td>Section 3.2.11</td>
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<td></td>
<td></td>
<td>Botany Road/McEvoy Street intersection</td>
<td>Section 3.2.12</td>
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<td></td>
<td>Lachlan Street/South Dowling Street/Dacey Avenue</td>
<td>Section 3.2.13</td>
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<td></td>
<td></td>
<td>intersection</td>
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<tr>
<td></td>
<td></td>
<td>Traffic speed limit</td>
<td>Section 3.2.15</td>
</tr>
</tbody>
</table>
### 3.2 City of Sydney

#### 3.2.1 Project purpose and justification

**Issue description**

The City of Sydney was concerned about the proposal justification and the poor place outcomes the proposal was delivering in the Green Square urban environment.

The City of Sydney considered that the REF contained a poor justification for the proposal.

The City of Sydney enquired as to who the proposal was serving. They questioned the proposal objectives and noted that these had changed since the project inception. They queried how these were linked to the proposal justification and the consistency of the proposal objectives with the Future Transport customer objectives.

The concept of induced demand was raised by the City of Sydney, and it was suggested that improving road capacity will only improve travel speeds for a short period until additional traffic is attracted to the route causing congestion, delays and the performance level returns...
to its current state. It is well known that the Sydney road network has a significant amount of latent / suppressed demand and that increasing capacity will only improve vehicle travel times for a short period. The City of Sydney made the following recommendation:

- The REF be withdrawn and any future version of the REF should provide (as a minimum):
  - A clear and transparent set of objectives aligned to the *Future Transport Strategy 2056* (TfNSW, 2018b) customer outcomes
  - Identify a series of multimodal place-based options that the proposal can be assessed against.

**Response**

TfNSW notes City of Sydney’s concern about the proposal justification and additional review of strategies identified by the City of Sydney submissions has been carried out and is detailed in Section 4.1 of this report.

Subsequent meetings with the City of Sydney were held to further discuss their concerns and resulted in the following approach for managing concerns:

- The majority of work associated with the proposal will be deferred till after the opening of the St Peters Interchange to determine the need to proceed with any further improvements
- Operations of the proposal will be reviewed after the opening of WestConnex prior to any further works
- Work at Fountain Street, specifically the right turn lane from McEvoy Street into Fountain Street will be progressed but the length of the right turn will be reduced from 100 metres to around 40 metres
- Review of the corridor to reduce the speed limit to 40 km/hr will be undertaken after the St Peters Interchange and WestConnex opens to support the government’s commitment to Vision Zero

TfNSW will work with the City of Sydney further to investigate the closure of Maddox Street at McEvoy Street.

The need for the proposal was identified due to existing congestion at the main north south intersections located along this east west corridor. Long delays are common during peak periods at South Dowling Street and Botany Road. The intersections at Bourke Street and Elizabeth Street are also currently close to capacity. The opening of major transport projects as well as planned urban renewal developments at Green Square, Waterloo and Redfern would contribute to increases in traffic volumes and delays. If conditions remain as they are, average speeds on the local network are expected to decrease by 20 to 30 per cent in peak periods by 2021.

During operation, the Stage 1 proposal and adjoining road upgrades are expected to have a positive cumulative impact on access within the study area by reducing travel times and congestion, improving road safety and supporting nearby urban renewal. This would help manage the anticipated increase in traffic volumes along the corridor including through better performance at key intersections used by bus routes.

The proposal objectives as detailed in Section 2.3 of the REF align with the strategic objectives articulated in *Metropolis of Three Cities – the Greater Sydney Region Plan* (GSC, 2018a) and the *Future Transport Strategy 2056* (TfNSW, 2018b). It is noted that the primary objectives of the Stage 1 proposal are to:

- Improve intersection performance, safety and trip reliability within the Alexandria to Moore Park corridor
- Provide value for money
• Minimise the social and environmental impact of the development
• Maintain existing flood immunity.

Clearways are part of the current proposal and consistent with similar facilities being implemented along many state controlled roads in Sydney. While they do have impacts, they are a low cost way of improving road safety and increasing operational reliability along the corridor.

An assessment of the strategic need for the proposal was included in Section 2.1 of the REF and in Section 2.1 of the Traffic and Transport Assessment included as Appendix J of the REF. A review of how the proposal was consistent with the various Commonwealth, State and Local government strategic policies identified was undertaken. Strategic policies reviewed in the REF of the proposal included:

• The State Infrastructure Strategy, refer to Section 2.1.1 of the REF
• Future Transport Strategy 2056 (TfNSW, 2018a), refer to Section 2.1.2 of the REF which includes consideration of the Movement and Place Framework
• Directions for a Greater Sydney 2017-2056, refer to Section 2.1.4 of the REF
• Metropolis of Three Cities – the Greater Sydney Region Plan (GSC, 2018a) is discussed in Section 2.1.4 of the REF and includes consideration of The Central District Plan (GSC, 2018b) which is the district level guide for implementing the Greater Sydney Region Plan (GSC, 2018a)
• Road Safety Plan 2021: Towards Zero (TfNSW, 2018b) refer to Section 2.1.5 of the REF
• NSW Freight and Ports Strategy (TfNSW, 2013), refer to Section 2.1.6 of the REF
• Centennial Parklands Conservation Management Plan (Urbis, 2010), refer to Section 2.1.7 of the REF
• Centennial Park Master Plan 2040 (BVN Donovan Hill, 2013a), refer to Section 2.1.7 of the REF
• Green Square Master Plan, refer to Section 2.1.7 of the REF
• Connecting our City (City of Sydney, 2012), refer to Section 2.1.7 of the REF

Policies considered and reviewed in Section 2.1 of the Traffic and Transport Assessment and included as Appendix J of the REF included the following:

• NSW State Priorities: Making it Happen (NSW Government, 2015)
• Greater Sydney Region Plan: A Metropolis of Three Cities (GSC, 2018a)
• Future Transport Strategy 2056 (TfNSW, 2018b)
• Road Safety Plan 2021: Towards Zero (TfNSW, 2018b)
• Greater Sydney Infrastructure and Services Plan (TfNSW, 2018c)
• East Sydney District Plan (GSC, 2018c)
• Sydney Green Grid -Central District (GANSW, 2017)
• Sydney Development Control Plan (City of Sydney, 2012)
• Walking Strategy and Action Plan (City of Sydney, 2018a)
• Cycling Strategy and Action Plan (City of Sydney, 2018b)
• Alexandria Local Area Traffic Management Plan (City of Sydney, 2018c).

The proposal is consistent with elements of many of these policy documents, but it is noted that some of the primary objectives vary in each policy document, consequently the proposal better meets the objectives of some of the policies over others.
Strategic government policies identified in Section 2.2.2 and that were not reviewed by the REF and Traffic and Transport Assessment have been considered in Section 4.1. This includes:

- The NSW Government's Premiers Priorities, refer to Section 4.1.2
- Australian Infrastructure Audit, refer to Section 4.1.5
- City of Sydney's Draft Local Strategic Planning Statement, refer to Section 4.1.6
- South East Sydney Transport Strategy (Draft, unpublished) (Draft, unpublished) (developed by TfNSW in collaboration with the City of Sydney), refer to Section 4.1.5
- The Moore Park Masterplan 2040 (Centennial Park and Moore Park Trust, 2017), refer to Section 4.1.8
- Green Square and Waterloo Transport Action Plan (Draft, unpublished) (co-developed by TfNSW and City of Sydney), refer to Section 4.1.10
- The Sydney Green Grid (GANSW, 2017), refer to Section 4.1.9.

Further discussion has also been included on the following:

- The NSW Government State Priorities 2015-2019, refer to Section 4.1.2
- The State Infrastructure Strategy (Infrastructure NSW, 2017), refer to Section 4.1.3
- Future Transport Strategy 2056 (TfNSW, 2018a) and includes consideration of the Customer Outcomes, refer to Section 4.1.4.

3.2.2 Reduced proposal scope

**Issue description**

The City of Sydney acknowledged that the Stage 1 proposal was a less extreme proposal than the previous A2MP design proposal but was still of the view that the REF and design failed to address key concerns and requests additional review of the entire project.

The City of Sydney supports the reduced scope in response to community comments but does not support projects that introduce traffic into densely populated areas.

**Response**

TfNSW acknowledges that the City of Sydney does not support the proposal. Section 2.1 of the REF discusses the strategic need for the proposal and notes that the main intersections with the north south arterial roads located along this east west corridor are already congested and long delays are common during peak periods at South Dowling Street and Botany Road. The intersections at Bourke Street and Elizabeth Street are also currently close to capacity. While there is major public transport investment planned for the area in terms of the Metro, CSELR and ultimately the Eastern Transit Corridor, the corridor will still have an important role in moving a substantial growth in residential population of more than 40,000 people within 1.5 kilometres of the corridor over the next 15 years. The opening of major transport projects as well as planned urban renewal developments at Green Square, Waterloo and Redfern would also contribute to increases in traffic and congestion along the corridor.

3.2.3 Future stages

**Issue description**

The City of Sydney asked for a clear explanation as to why the project was being broken down into stages and what the future stages were. If future stages are still being considered by the NSW Government, then they need to be clearly represented and their impacts assessed. The City of Sydney made the following recommendation:
Any future version of the REF should provide (as a minimum):
  - A clear description of all current and future stages of the project so all stakeholders and the community can understand the full impacts of the proposal. Staged delivery should not mean multiple REF’s.

Response

The Ultimate Concept Design was presented to the community and the City of Sydney in December 2016 and June 2017 Community Updates and again in the ISEPP consultation letter provided to the City of Sydney on the 29 September 2017. TfNSW have maintained ongoing consultation with the community and government agencies. The introduction of staging of the Ultimate Concept Design was in response to the City of Sydney and community comments on the scale of the project and the staged process will now allow additional review of the corridor in response to growth in population and the opening of the major transport projects along it. Should TfNSW proceed with future works along the corridor, a separate environmental impact assessment under the EP&A Act will be undertaken and the City of Sydney comments on the assessment approach would be considered.

The intersection improvements proposed as part of the Stage 1 proposal are one part of an overall integrated transport system response for the area which includes developments such as Sydney Metro City and Southwest: Chatswood to Sydenham, WestConnex, CSELR, and the St Peters Interchange development amongst others. These projects such as WestConnex would also deliver active transport improvements into the locality. The majority of work associated with the proposal would be deferred until after the opening of the New M5 and the St Peters Interchange to review the need for the improvements proposed.

The Stage 1 proposal specifically responds to traffic growth stemming from an increased population, other major transport projects and existing traffic congestion in the area, refer to the Traffic and Transport Assessment included as Appendix J of the REF. The Stage 1 proposal mitigates congestion and improves safety at key intersections in the area.

3.2.4 NSW Government Strategic agenda

Issue description

The City of Sydney considered that the proposal was not part of the NSW Government Strategic Agenda as the REF fails to demonstrate strategic alignment to a single current NSW Strategy or government policy. For example, the proposal is not mentioned in the State Infrastructure Strategy and Future Transport Strategy 2056 (TfNSW, 2018a) even though both Strategies were developed and endorsed during the period during which the A2MP proposal was developed.

The City of Sydney considered that the proposal was not consistent with the GSC District Plan and noted that the REF did not reference the City of Sydney’s draft LSPS which covers the proposal area and must be considered in determining movement and place characteristics in the area.

The City of Sydney considered that the REF was flawed and should be withdrawn as it does not provide the full project details. The City of Sydney was specifically concerned that:

- The proposal has poor strategic alignment with the Future Transport Strategy 2056 (TfNSW, 2018a) and other key relevant NSW Government Strategies such as the South East Sydney Transport Strategy (Draft, unpublished) (developed by TfNSW in collaboration with the City of Sydney)
- There was poor alignment with the Future Transport Strategy 2056 (TfNSW, 2018a) Customer Outcomes and the proposal objectives.
Response
As detailed above in Section 3.2.1, an assessment of the strategic need for the proposal was included in Section 2.1 of the REF and in Section 2.1 of the Traffic and Transport Assessment included as Appendix J of the REF. Further discussion on how the proposal is consistent with NSW Government strategic agenda and documents identified by the City of Sydney is included in Section 4.1.

3.2.5 Movement and Place Framework

Issue description
The City of Sydney were concerned that the A2MP proposal is inconsistent with the ‘Movement and Place’ framework embedded in the NSW Government’s Future Strategy 2056. The Future Transport Strategy 2056 (TfNSW, 2018a) describes the Movement and Place Framework as “a tool to manage the road network in a way that supports safe, efficient and reliable journeys for people and freight while enhancing the liveability and amenity of places.” The A2MP corridor has not been identified as a fast movement corridor in any government strategy documents. It is being treated as one despite the surrounding land use having significant place needs.

The City of Sydney made the following recommendation:

- Any future version of the REF should provide (as a minimum):
  - A clear description of all current and agreed description of the future movement and place function of the corridor. This should be developed in collaboration with the City of Sydney, which is currently responsible for the delivery of place outcomes in this area
  - A design for this proposal that responds to the needs of both movement and place customers and strikes the best balance.

Response
As detailed above in Section 3.2.1, an assessment of the strategic need for the proposal was included in Section 2.1 of the REF and in Section 2.1 of the Traffic and Transport Assessment included as Appendix J of the REF. The Future Transport Strategy 2056 (TfNSW, 2018a) was reviewed in Section 2.1.2 of the REF and includes consideration of the Movement and Place Framework. TfNSW considered Movement and Place functions along the corridor carefully during the development of the concept design and incorporated elements of each into the proposal where possible. The Stage 1 proposal is focused on minor improvements at key intersections.

The proposal has been developed with the teams responsible for South East Sydney Transport Strategy (Draft, unpublished) (developed by TfNSW in collaboration with the City of Sydney) and the Green Square/Waterloo Action Plan (Draft, unpublished) (co-developed by TfNSW and City of Sydney) and is considerate of Future Transport Strategy 2056 (TfNSW, 2018a) and the GSC’s District Plans.

3.2.6 Congestion along the corridor

Issue description
The City of Sydney was concerned about congestion along the corridor from WestConnex and asked that WestConnex be a fully “Smart Motorway” network with ramp metering at all ramps to the M4, M5 and M4/M5 link. TfNSW must take a network approach using ramp metering on entry ramps in western Sydney to ensure that traffic existing onto A2MP does not create the need for inappropriate changes to the surface road environment. The City of Sydney made the following recommendation:
The results of the WestConnex Stage 2 Road Network Performance Review Plan be incorporated into any future investigation and any future version of the REF should provide (as a minimum) details on how smart motorway initiatives on WestConnex (and broader motorway network) ensures that traffic impacts are managed within the motorway network.

**Response**

WestConnex is outside the scope of this project. However, the comments are noted and would be fed into the WestConnex Road Network Performance Review at the appropriate time. The relevant finding and actions of the WestConnex Road Network Performance Review Plan would also be considered as the proposal design develops.

### 3.2.7 Traffic demand

**Issue description**

The City of Sydney noted that one of the proposal objectives/justifications was to manage increases in traffic demand as a result of development within Green Square. The assumption that development always increases traffic demand is incorrect based on two recent pieces of work, one undertaken by the City of Sydney and one by TfNSW.

The *South East Sydney Transport Strategy* (Draft, unpublished) (Developed by TfNSW in collaboration with the City of Sydney), found that as the area is transformed from lower density employment uses to higher density residential uses the number of car trips in the weekday morning and evening peak is reducing in the area, however the demand for public transport is increasing. This is backed up by information presented to the City as part of a collaborative place-based plan in the area.

The City of Sydney and TfNSW recently completed a draft GSWTAP (co-developed by TfNSW and City of Sydney, 2018) area to address transport capacity issues facing people commuting in precinct. The GSWTAP has actions to improve walkability, riding and public transport. The GSWTAP identified no need for road improvements along the A2MP. The City of Sydney submission notes that the proposal may actually hinder the objectives of the GSWTAP by increasing the severance along Lachlan Street and decreasing the priority of north south bus movements at three intersections.

**Response**

It is noted that both the draft GSWTAP (co-developed by TfNSW and City of Sydney, 2018) and draft *South East Sydney Transport Strategy* (Draft, unpublished) (Developed by TfNSW in collaboration with the City of Sydney), are yet to be finalised and is not yet available for publication.

The objectives of draft GSWTAP (is to support the current and planned development in Green Square and Waterloo, by improving transport system capacity and performance in the period before 2024. While the draft GSWTAP does not specifically identify a need for road improvements, the draft GSWTAP does highlight that buses operate slowly and are unreliable and that bus service operating speed is a key determinant of customer travel time. The proposal would support the draft GSWTAP, by helping to improve average speed of buses, refer to Section 6.1.4 of the REF.

### 3.2.8 REF assessment process

**Issue description**

The City of Sydney requested that the REF be withdrawn and raised the following specific issues that they suggest need to be considered by the REF for the A2MP proposal:
The REF failed to address concerns raised in previous submissions made by the City of Sydney, specifically:

- The environmental impact assessment process
- Rushing consultation
- Option analysis and selection of a road based traffic capacity enhancement solution
- Consideration of integrated multimodal solutions.

**Response**

**Environmental impact assessment**

As identified in the REF and summarised in Section 2.2.1, the proposal was subject to assessment under Division 5.1 of the EP&A Act and a REF was placed on public display for 22 days between Wednesday 27 November 2019 and Wednesday 18 December 2019. The REF has examined, and taken into account to the fullest extent possible, all environmental matters affecting or likely to be affected by the proposal.

The assessment completed for the REF found that the proposal’s environmental impacts are not considered significant and an environmental impact statement is not required. Therefore, approval is not required from the Minister for Planning under Division 5.2 of the EP&A Act. The proposal is unlikely to significantly affect threatened species, populations or ecological communities or their habitats, within the meaning of the *Biodiversity Conservation Act 2016* (BC Act) or *Fisheries Management Act 1994* and a Species Impact Statement or entry into the Biodiversity Offset Scheme is not required. The proposal is unlikely to affect Commonwealth land or have a significant impact on any matters of national environmental significance.

The proposal would improve intersection performance, safety and trip reliability within the Alexandria to Moore Park corridor as well as support substantial nearby urban renewal and transport projects with better amenity and safety for customers.

On balance, the proposal’s long-term benefits outweigh its impacts, and the proposal is considered to be justified.

**Consultation**

TfNSW have maintained ongoing consultation with the community and government agencies and provided community project reports since 2016. The full project considers comments received during the preliminary display in June 2017. However, in response to submissions received regarding the scale of the project it was reduced to consider key aspects. Some comments received only apply to aspects of the Ultimate Concept Design that is not part of the Stage 1 proposal.

**Option analysis**

Section 2.4 of the REF provides a high-level discussion of the alternatives and options considered for proposal. Stage 1 of the project (the proposal) evolved from a number of options and considerations of the broader road network.

The initial planning of the project consisted of a corridor assessment which considered route options for main connecting routes for the inner west suburbs to the eastern suburbs and including investigations of the Cleveland Street, and the Alexandria to Moore Park corridor. The corridor assessment which identified that there was scope for improvements at priority intersections and Route Option 2 was selected for further investigation and assessment.

With the Alexandria to Moore Park corridor chosen as the preferred route for intersection improvements, two options were identified for further assessment. Both options assumed that the CSELR, motorway interchange at St Peters and the Green Square projects would be in place by 2021.
Various sub-options were also investigated at main intersections before display of the preliminary concept design. In addition, a series of Value Management Workshops, technical workshops, field investigations and internal investigations were completed in the development of the concept design. The concept design was initially displayed to the community and key stakeholders in the June 2016 Project Update. In response to feedback from submissions received, some additional design refinements were identified. The design refinements post the concept design displayed took consideration of further urban renewal areas at Waterloo and Ashfield and the effects of the new WestConnex M5 interchange at St Peters.

The preferred option for the concept design display was confirmed following the options development and assessment process. It was shown in the Project Update issued in June 2017. The preferred option consisted of intersection improvements at:

- Anzac Parade and Alison Road
- South Dowling Street and Dacey Avenue
- Gadigal Avenue and Lachlan Street
- Bourke Street and McEvoy Street / Lachlan Street
- Elizabeth Street and McEvoy Street
- Botany Road and McEvoy Street
- Wyndham Street and McEvoy Street
- Euston Road and Fountain Street.

It also included improved active transport facilities along the length of the corridor and a new road pavement.

In response to feedback received from the display of the concept design in June 2017 a series of design refinements were made to the concept design. These refinements were primarily associated with reducing property impacts and business impacts caused by changes in availability of parking.

The ultimate project concept design was reviewed to allow a staged approach and includes:

- Stage 1 (the proposal) which is the subject of the REF
- Further stages may include the improved features previously presented in the June 2017 Project Update (refer to Appendix D of the REF) however this would depend upon future assessments.

**Multimodal solutions**

The intersection improvements proposed as part of the Stage 1 proposal are one part of an overall integrated transport system response for the area which includes developments such as Sydney Metro City and Southwest: Chatswood to Sydenham, WestConnex, CSELR, and the St Peters Interchange development amongst others.

The proposal also specifically responds to traffic growth stemming from an increased population, other major transport projects and existing traffic congestion in the area, refer to the Traffic and Transport Assessment included as Appendix J of the REF.

### 3.2.9 WestConnex link and interface

**Issue description**

The City of Sydney are concerned about how the A2MP project interfaces with the WestConnex project, specifically the interface at Maddox Street.
Concerned that the proposal is linked to WestConnex and the proposal should be postponed until Stage 2 opens in order to address the issue of regional traffic in the area as people travelling between the South West and Eastern Sydney should use the freed up capacity on the existing M5 / Southern Cross Drive / Eastern Distributor - not St Peters interchange and the A2MP corridor.

Response

The proposal does interface with Maddox Street which is part of the WestConnex development, however as discussed above the proposal is required based on existing congestion along the Alexandria to Moore Park corridor.

Our Traffic and Transport Assessment (as detailed in Appendix J of the REF) shows that future demands from the Green Square/Waterloo area generate significantly more trips such that with WestConnex fully operating in 2031 there would be about 50 percent more traffic then compared to current volumes along the corridor mainly as a result of mass urban renewal. As such the proposal is unlikely to be postponed until after completion of WestConnex as there is already a need for the proposal to manage existing congestion.

The timing of construction would depend upon consideration of community feedback and staging options for the works. Depending on the timing of opening of the interchange, works likely to be completed by that time, should the project be approved, are clearways and right turn bans. The majority of work associated with the proposal would be deferred until after the opening of the New M5 later and the St Peters Interchange to review the need for the improvements proposed. Construction works would be carried out in accordance with mitigation measures as detailed in the REF.

3.2.10 Proposal support and design modifications

Issue description

The City of Sydney would support two of the four proposed intersection upgrades (Lachlan Street/South Dowling Street/Dacey Avenue intersection and Fountain Street/McEvoy Street intersection - eastbound), if modifications are made, and opposes two outright (Botany Road/McEvoy Street intersection and Fountain Street/McEvoy Street intersection - westbound).

The highest priority of the City of Sydney is to have a 40km/hr speed limit.

The City of Sydney requests additional review and further scope reductions of the proposal.

Response

TfNSW notes the City of Sydney’s support of two of the four proposed intersection upgrades (Lachlan Street/South Dowling Street/Dacey Avenue intersection and Fountain Street/McEvoy Street intersection - eastbound), if modifications are made, and opposes two outright (Botany Road/McEvoy Street intersection and Fountain Street/McEvoy Street intersection - westbound). These design considerations will be reviewed and considered further in detailed design in consultation with the City of Sydney.

TfNSW will review reducing the speed limit along the corridor to 40 km/h to support the government’s commitment to Vision Zero, following the opening of the New M5 and the St Peters Interchange.

TfNSW notes the City of Sydney request to review and consider further reductions in the proposal scope and will consider this as part of the detailed design process.
3.2.11 Fountain Street/McEvoy Street intersection

**Issue description**
The City of Sydney supports the eastbound works but request that the proposed widening of McEvoy Street (eastbound) west of Fountain Street left turn lane must:

- Be reduced in length to approximately 3 – 6 car lengths;
- The new kerb radii must match the existing situation kerb radii. The proposed radii is not suitable for a dense urban environment.
- That all trees removed are replaced with mature trees and maximise verge planting.

The proposed works at the intersection of Fountain Street and McEvoy Street creates a duplication of the left turn arrangement at Maddox Street. This proposal must include the closure of the left turn lane from McEvoy Street (eastbound) into Maddox Street (built as part of WestConnex) and the re-instatement of the verge and planting.

The City of Sydney does not support the widening of McEvoy Street (westbound) east of Fountain Street as it is disproportionate to the likely future demand. A no stopping zone east of Fountain Street effectively provides a right turn bay of around 25 metres. To increase the right turn bay to 100 metres and provide two through lanes is unnecessary and would induce traffic movements into Fountain Street.

**Response**
The design considerations proposed by the City of Sydney at the Fountain Street/McEvoy Street intersection have been considered. The length of the right turning lane has been reduced from 100 metres to 40 metres.

3.2.12 Botany Road/McEvoy Street intersection

**Issue description**
The City of Sydney does not support the widening of Botany Road (southbound) north of McEvoy Street as it would encourage additional movement between the City Centre and WestConnex via surface streets through an intensely developed urban area. There are more appropriate access routes to the motorway network that will bring lower impact on the place qualities of this area.

The City of Sydney does not support any increase in private vehicular traffic along Botany Road north of McEvoy Street. The opening of Waterloo Metro station in 2024, the over station development at Waterloo and the redevelopment of the Waterloo Quarter will result in more than 7000 additional people in the peak hour period walking along and across Botany Road.

**Response**
TfNSW notes the City of Sydney’s objection to the proposed upgrade at this intersection. TfNSW will continue to work with the City of Sydney and other stakeholders as the design progresses.

The work along the corridor would be staged and reviewed and to allow further consideration of the impacts of the opening of Waterloo Metro station, the redevelopment of the Waterloo Quarter and other local transport projects.
3.2.13 Lachlan Street/South Dowling Street/Dacey Avenue intersection

**Issue description**

The proposed works on Lachlan Street between South Dowling Street and Amelia Street must be amended to retain the footpath space at the end of the merge lane rather than providing as hatched road space. This could be maintained as either a footpath or a planted verge.

A ‘Gateway’ treatment must be provided at the eastern end of Lachlan Street so that drivers entering Lachlan Street (westbound) from Dacey Ave and South Dowling Street are given strong cues to slow down and drive in a way that is appropriate for a dense urbanised and pedestrian environment. The City can provide a design for this gateway, it could include some or multiple of the following features:

- Large trees planted along kerb lines
- A median treatment
- A surface pavement treatment
- Design components such as street furniture and flag poles.

The City could also progress design work for more extensive public domain and street scaping upgrades along the corridor between South Dowling and Lachlan Street. These would be discussed with TfNSW to determine responsibilities for approving, funding and constructing. This would include consideration of:

- Planting
- Realignment of road to provide additional verge / footpath on northern side of Lachlan Street
- The need and value of cycleway provision along this corridor (network perspective).

**Response**

While the redesign of Lachlan Street is outside of the proposal scope, the landscaping and urban design treatments the City of Sydney suggests, including reducing the length of the Lachlan Street merge lane, will be considered further in detailed design and in consultation with the City of Sydney.

3.2.14 Clearways

**Issue description**

The City of Sydney does not support the blanket approach of clearways proposed with the proposal. A more nuanced consideration as part of the recommended movement and place assessment is required.

Concerned that widening roads and introducing clearways will induce more traffic onto the streets and encourage drivers to speed up. City of Sydney wants no clearways introduced.

**Response**

TfNSW notes that the City of Sydney does not want clearways however the *Traffic and Transport Assessment* as detailed in Appendix J and summarised in Section 6.1 of the REF has identified that clearways are required to ease existing congestion in the area. Clearways are part of the current proposal and this is consistent with similar facilities being implemented along many State controlled roads in Sydney. While they do have impacts, they are a low cost way of improving road safety and increasing operational reliability along the corridor.
The implementation of clearways and right turn bans would be implemented in stages based on community feedback. The operational performance of the corridor will be reviewed in 2021 as new transport projects start to operate.

3.2.15 Traffic speed limit

Issue description
The corridor had a 60km/h speed limit which has recently been the subject of a Roads and Maritime Services speed zone review and has reduced to 50km/hr. Any works on this corridor must be undertaken to support both the movement and place functions. Areas of this street are likely to be classified as a vibrant street and the City believes this should trigger a design speed limit of 40km/hr.

Table 5.4 in the REF states another speed zone review is proposed within the next 12 months. The City would welcome a 40km/hr speed limit along the route.

The highest priority of the City of Sydney is to have a 40km/hr speed limit.

Response
The traffic speed limit has recently been reduced from 60km/hr to 50km/hr along the corridor. TfNSW will review reducing the speed limit along the corridor to 40 km/h to support the government’s commitment to Vision Zero, following the opening of the New M5 and the St Peters Interchange.

3.2.16 Sustainable Sydney 2050 process

Issue description
Through our Sustainable Sydney 2050 consultation process, the community is telling us clearly that they want fewer cars on the roads, and for those cars to travel more slowly. The Minister has stated his intention to make Sydney a ‘train city’, and TfNSW has published strategies committing to ‘movement and place’. The REF does not discuss the South East Sydney Transport Strategy (Draft, unpublished) (Developed by TfNSW in collaboration with the City of Sydney) and City of Sydney concerned that the proposal is not consistent with this policy.

Response
Additional discussion on strategic documentation and how the proposal meets these strategic plans is presented in Section 4.1. TfNSW and the City of Sydney have been working together to ensure ongoing alignment with strategic planning documents and policies. The proposal aligns with the strategic objectives articulated in the Greater Sydney Region Plan (GSC, 2018a), Road Safety Plan 2021 (TfNSW, 2018a), the Movement and Place Framework (TfNSW, 2017) and Future Transport Strategy 2056 (TfNSW, 2018a). Movement and Place considerations will be addressed in future stages of the proposal as part of the construction of the Ultimate Concept Design.

3.2.17 Public and active transport

Issue description
Need for more public transport and active transport options as identified in the unpublished draft Green Square Transport Action Plan (co-developed by TfNSW and City of Sydney), and the South East Sydney Transport Strategy (developed by TfNSW in collaboration with the City of Sydney).
Response

TiNSW notes the need for active and public transport options in Sydney. New public transport infrastructure projects are currently being developed and constructed in the area including Metro and the CSELR projects. While it is noted that the City of Sydney Cycle plan does not show a dedicated active transport route along the proposal corridor, active transport facilities in the area aimed at improving existing facilities would be considered and implemented in future stages of the proposal.

3.2.18 Trees

Issue description

Mature trees are essential urban assets, providing numerous environmental, social and economic benefits to the community. Their retention and protection should be prioritised as part of this proposal.

The NSW Legislative Council inquiry into the Impact of the CSELR project recommends:

- Recommendation 13 - That the NSW Government ensure significant trees are adequately protected and that the design and development of State infrastructure prioritises their retention.

Tree planting along the corridor is required to maintain and increase canopy cover. It is critical that design standards include mature tree planting and ensure sufficient resources (such as soils) and impacts (such as utilities) are minimised to deliver healthy long term canopy cover.

Response

As discussed in Section 2.11, a biodiversity assessment was carried out and included in Section 6.9 of the REF and assessed impacts to trees and threatened flora and fauna. The assessment found that the proposal would remove 49 planted trees, comprised of 25 mature trees and 24 immature trees as well as some shrubs and exotic groundcovers. All of the 25 mature trees being removed are native trees and are considered to be foraging resources that provide potential habitat for threatened fauna species. Specifically the 25 mature planted trees are flowering trees that provide suitable foraging habitat for the Powerful Owl (Ninox strenua) and Grey-headed Flying Fox. This is generally limited to foraging habitat. The proposal would not impact any flying fox camps or hollow-bearing trees suitable for nesting by the Powerful Owl (Ninox strenua) (none of these are located within the study area). The clearing of habitat would impact native fauna through loss of foraging resources, reduction in habitat size and increasing barriers to fauna movement. No State significant or regionally significant biodiversity links occur in the study area.

No trees listed of the City of Sydney Register of Significant Trees would be directly impacted by the proposal. However, there is potential for indirect impacts to the roots of some of the trees in Waterloo Park from utility relocations. These impacts would be managed by an arborist and are not expected to affect the overall health of the trees.

During development of the concept design and in response to feedback received from the display of the concept design in June 2017 (summarised in Section 5.2 of the REF) a series of design refinements were made to the concept design. These refinements were primarily associated with reducing property impacts and business impacts caused by changes in availability of parking as well as reducing the number of trees impacted, however some impacts to trees as part of the Stage 1 proposal would still result.

Impacts to trees from the proposal is shown in Appendix P of the REF. Tree surveys were completed for the proposal in 2016 and as such the location of trees may be inaccurate. Impacts to trees at each of the four intersections is summarised in Table 2-3. No fig trees would be removed as part of the proposal. Impacts to trees would be further reviewed in
detailed design and where possible impacts would be reduced. The landscaping plans would also be further reviewed in detailed design and would include plans to replant more trees than what is being removed by the proposal.

Mature tree planting will be considered where it is feasible and reasonable and in consideration of interaction with existing infrastructure including utilities and road safety requirements.

Further discussion on tree impacts is included in Section 2.11.1.

3.2.19 Noise complaints

Issue description
The City of Sydney is already receiving submissions from residents concerned about noisy night works.

Response
As discussed in Section 2.6.5, night work has commenced as part of geotechnical investigations required to inform the detailed design of the proposal. A minor works REF was prepared to assess environmental impacts and a CEMP was prepared to manage impacts. The CEMP included mitigation measures to manage noise impacts occurring during standard hours and out of hours and in accordance with Practice Note VII in the Roads and Maritime Services Environmental Noise Management Manual and Roads and Maritime Services Environmental fact sheet No. 2- Noise Management and Night Works.

As described in Section 2.6.3, a CNVMP will be prepared and implemented as part of the CEMP. The CNVMP will generally follow the approach in the ICNG (DECC, 2009) and the CNVG (Roads and Maritime, 2016). This includes guidelines for duration and respite of high noise generating activities.

3.2.20 Ongoing consultation

Issue description
The City of Sydney requests ongoing consultation.

Response
TfNSW will continue to consult with the City of Sydney as required.

3.3 Botanic Gardens Centennial Parklands

Submission number(s)
G003

3.3.1 Impacts from the proposal

Issue description
The BGCP note they are responsible for the land next to South Dowling Street and Dacey Avenue, Moore Park that occupies the Moore Park Golf Course. BGCP manages the land on behalf of the owner, the Centennial park and Moore Park Trust (Trust).

BGCP noted consultation with TfNSW was carried out during development of the initial proposal and supported elements of the proposal, in particular the separated pedestrian and bike paths on either side of Dacey Avenue. Other elements were concerning, including the proposed intersection upgrades at Lachlan Avenue/South Dowling Street/Dacey Avenue and
Anzac Parade/Alison Road/Dacey Avenue which would have resulted in substantial encroachment on Trust land and the loss of many mature trees.

BGCP notes Stage 1 of the proposal includes minor road widening and kerb realignment at the northeast corner of South Dowling Street and Dacey Avenue and there is no encroachment on Trust land or any tree removal.

BGCP are concerned about the indirect impacts on the health of the trees in the vicinity of the proposal.

**Detailed response**

TfNSW notes BGCP submission specifically the concern the BGCP trust has in regard to indirect impacts that may result to the health of the trees in the vicinity of the proposal. Further response to how these impacts would be managed are provided in **Section 3.3.2**.

### 3.3.2 Proposed mitigation

**Issue description**

BGCP requested for the following mitigation measures to be conditional if the proposal proceeds:

- No root damage to the Hills Figs along South Dowling Street and the mixed planting on Dacey Avenue is sustained as a result of the minor road widening and kerb realignment at the slip lane at this corner and any trenching required for relocation/ installation of services including drainage, power, etc.
- Clarification for BGCP of any canopy pruning that would be required as a result of the proposed works at the South Dowling Street and Dacey Avenue.
- All works (including canopy pruning) to be supervised by a project arborist and conform to BGCP's Tree Protection Policy.
- A fenced tree exclusion zone and/or tree armour to protect trees during construction.

**Detailed response**

TfNSW notes BGCP’s requested mitigation measures and would be implemented where reasonable and feasible.

Temporary impacts may occur to the roots of some of the trees located within the curtilage of Moore Park during kerb readjustments and utility relocations (Hills Figs). Impacts to the roots will be minimised where possible.

No tree canopies would be required to be pruned on South Dowling Street or Dacey Avenue, however the following mitigation measure has been included in **Section 5.2** of the Submissions Report:

- Consult with BGCP for any tree canopy pruning that would be required as a result of the proposal on South Dowling Street and Dacey Avenue.
- All tree removal and pruning will be supervised by an Arborist and BGCP’s Tree Protection Policy would be followed.

The following mitigation measures are already proposed for tree protection during construction:

- Tree Protection Zones (TPZ) would be established around trees within the construction footprint to prevent inadvertent impacts to these items during construction. This would require advice from a qualified arborist.
- In order to prevent inadvertent impacts to trees listed on the City of Sydney Register of Significant Trees (2013) and those located within the SHR curtilage for the Centennial
Stage 1 Alexandria to Moore Park
Submissions Report

Park, Moore Park, Queens Park and Moore Park Heritage Conservation Area located closed to the proposal, TPZ would be established while construction of the proposal is in progress. This would require advice and management from a qualified arborist

- A Flora and Fauna Management Plan will be prepared in accordance with Roads and Maritime’s *Biodiversity Guidelines: Protecting and Managing Biodiversity on RTA Projects* (RTA, 2011b) and implemented as part of the CEMP. It will include, but not be limited to:
  - Plans showing areas to be cleared and areas to be protected, including exclusion zones, protected habitat features and revegetation areas
  - Requirements set out in the *Landscape Guideline* (RTA, 2008)
  - Pre-clearing survey requirements
  - Procedures for unexpected threatened species finds and fauna handling
  - Protocols to manage weeds and pathogens.

### 3.3.3 Additional information

#### Issue description

BGCP requested more detail on the proposed works along South Dowling Street to be sent to BGCP to assess any potential impacts. This information should include any signage that is proposed. Large signs (and possibly variable message signs) are usually required at major intersections on arterial roads such as this but there appears to be no reference to signage in the REF.

#### Detailed response


The location of signage has not been identified at this stage in the design. Signage design would be completed at the detailed design phase of the project. TfNSW would continue to consult with BGCP in regard to impacts to their land.

### 3.3.4 Construction compounds

#### Issue description

BGCP requested information about the locations of construction compounds for the proposal and if they are located on Trust land. BGCP noted that approval must be sought if construction compounds are located on Trust land. BGCP notes there is no reference to construction compounds in the REF.

#### Detailed response

Ancillary facilities would be required throughout construction of the proposal and are described in Section 3.4 of the REF and shown on the proposal figure (refer to Figure 1-2). Ancillary facilities for the Stage 1 proposal consist of five construction compound/stockpile locations including:

- Site 1 located at the car park on the south-west corner of the Stokes Avenue/McEvoy Street intersection, Alexandria
- Site 2 located within the road reserve at the southern end of Cope Street, Alexandria
- Site 3 located at the road reserve at the southern end of George Street, Alexandria
- Site 4 located within the vacant land (Lot 2 DP 800705) at the corner of Bourke Street/McEvoy Street intersection, Waterloo. Lot 1 DP 800705 is in the middle of the site has a heritage listed building on it which is protected with a 10 metre buffer.
- Site 5 located at Lot 1, 2 and 3 DP 76985, Lot 4 DP 86722 and Lot 14 DP 80926 Lot 2 on the west corner of the Lachlan Street/Amelia Street intersection, Waterloo.

No ancillary facilities are proposed to be located on Trust land as part of the Stage 1 proposal but may be required during future stages if the Ultimate Concept Design proceeds. Property owners will be consulted with, if ancillary facilities are located on their land.
4 Environmental assessment

TfNSW are undertaking some additional assessment in response to comments received. This includes further consideration of the following:

- Strategic policies in accordance with issues raised by an individual in Section 2.2.2 and the City of Sydney in Section 3.2.
- Operational air quality assessment in accordance with submissions received and summarised in Section 2.12.1.

4.1 Strategic policies

4.1.1 Strategic need for the proposal

The strategic need for the proposal was discussed in Section 2.1 of the REF. Section 2.1 of the REF and Section 2.1 of the Traffic and Transport Report included as Appendix J of the REF discusses a number of Commonwealth, State and Local government strategic plans and how the proposal is consistent with these strategic plans. Strategic documents considered in the REF of the proposal included:

- The NSW Government’s State Priorities 2015-2019 (Department of Premier and Cabinet, 2016), refer to Section 2.1 of the Traffic and Transport Assessment included as Appendix J of the REF. Further discussion of the NSW Government’s State Priorities 2015-2019 and the latest NSW Government’s Premier’s Priorities is provided below in Section 4.1.2
- The State Infrastructure Strategy 2018-2038 (Infrastructure New South Wales, 2017) (the State Infrastructure Strategy), refer to Section 2.1.1 of the REF. Further discussion is provided below in Section 4.1.3
- The Future Transport Strategy 2056 (TfNSW, 2018a) along with a discussion on how the proposal is consistent with the Movement and Place Framework (TfNSW, 2017) is included in Section 2.12 of the REF. Further discussion on how the proposal is consistent with the Greater Sydney Customer Outcomes of the Future Transport Strategy is provided in Section 4.1.4 below
- Directions for a Greater Sydney 2017-2056 (GSC, 2017), refer to Section 2.1.3 of the REF
- Metropolis of Three Cities – the Greater Sydney Region Plan (GSC, 2018a) is discussed in Section 2.1.4 of the REF and includes consideration of The Central District Plan (GSC, 2018b) which is the district level guide for implementing the Greater Sydney Region Plan (GSC, 2018a)
- The Road Safety Plan 2021: Towards Zero (TfNSW, 2018b), refer to Section 2.1.5 of the REF and Section 2.1 of the Traffic and Transport Report included as Appendix J of the REF
- The NSW Freight and Ports Strategy (TfNSW, 2013b), refer to Section 2.1.6 of the REF
- Centennial Parklands Conservation Management Plan (Urbis, 2010), refer to Section 2.17 of the REF
- Centennial Park Master Plan 2040 (BVN Donovan Hill, 2013a), refer to Section 2.17 of the REF
- Green Square Master Plan (City of Sydney, Unpublished), refer to Section 2.17 of the REF
- Connecting our City (City of Sydney, 2012), refer to Section 2.17 of the REF.
Policies considered and reviewed in Section 2.1 of the Traffic and Transport Assessment and included as Appendix J of the REF included the following:

- **The NSW State Priorities: Making it Happen** (NSW Government, 2015)
- **Greater Sydney Region Plan: A Metropolis of Three Cities** (Greater Sydney Commission, 2018a)
- **Future Transport Strategy 2056** (TfNSW, 2018a)
- **The Road Safety Plan 2021: Towards Zero** (TfNSW, 2018b)
- **Greater Sydney Infrastructure and Services Plan** (TfNSW, 2018c)
- **East Sydney District Plan** (Greater Sydney Commission, 2018c)
- **Sydney Green Grid - Central District** (Government Architect NSW, 2019)
- **Sydney Development Control Plan** (City of Sydney, 2012)
- **Walking Strategy and Action Plan** (City of Sydney, 2018a)
- **Cycling Strategy and Action Plan** (City of Sydney, 2018b)
- **Alexandria Local Area Traffic Management Plan** (City of Sydney, 2018c).

The proposal is consistent with elements of many of these policy documents but it is noted that some of the primary objectives vary in each policy document, consequently the proposal better meets the objectives of some of the policies over others.

Several submissions received during the display of the REF enquired about how the proposal was consistent with a number of other strategic documents and additional discussion is provided in **Section 4.1.2** to **Section 4.1.10** below.

### 4.1.2 NSW Government’s Premier’s Priorities

At the time of preparing the concept design for the proposal, the 2015 - 2019 Premier’s Priorities (Department of Premier and Cabinet, 2016) were still in effect however these have now been replaced with the new Premiers priorities.

The Premiers priorities at the time of the design development were to grow the economy, deliver infrastructure, protect the vulnerable, and improve health, education and public services across NSW. One of main objective of the proposal is to improve intersection performance, safety and trip reliability within the Alexandria to Moore Park corridor which is consistent with the Premier’s Priorities at the time of delivering infrastructure.

The new 14 Premier’s Priorities (NSW Government, 2019) which represent the NSW Government’s commitment to making a significant difference to enhance the quality of life of the people of NSW were unveiled in June 2019. The government’s key priorities are:

- A strong economy
- Highest quality education
- Well-connected communities with quality local environments
- Putting customer at the centre of everything we do
- Breaking the cycle of disadvantage.

The proposal would help to addressing the well-connected communities by providing improvements to the performance of corridor and supporting the movement and access needs of public transport.
4.1.3 Building Momentum: The State Infrastructure Strategy 2018-2038

The State Infrastructure Strategy sets out the government’s priorities for the next 20 years, and combined with the Future Transport Strategy 2056 (TfNSW, 2018a), the Greater Sydney Region Plan: A Metropolis of Three Cities (GSC, 2018a) and the Regional Development Framework (NSW Government, 2017), brings together infrastructure investment and land-use planning for our cities and regions.

The State Infrastructure Strategy outlines Infrastructure NSW’s recommendations for priority infrastructure projects and initiatives for Sydney and NSW to 2038. In particular the strategy identifies the need to:

- Cater for population growth by making better use of scarce road space
- Plan and deliver critical links in Sydney’s road network
- Remove network bottlenecks and upgrade operational systems and infrastructure
- Develop and protect freight and service networks by improving road and rail access for goods and services
- Build and upgrade roads to enable Sydney’s growth and provide access to new dwellings and residential areas over the next 20 years.

In addition, Recommendation 49 of the State Infrastructure Strategy recommends that the NSW Government continue the Easing Sydney’s Congestion program over the next 10 years with further progressive investment in targeted, small scale, high impact network management programs (such as pinch points, clearways and bus priority programs).

The proposal would assist in meeting the strategic needs and recommendations of the State Infrastructure Strategy identified above as it would reduce congestion and improve traffic and passenger flows along the proposal as well as protect service networks by improving road access.

4.1.4 Future Transport Strategy 2056

The Future Transport Strategy 2056 (TfNSW, 2018a) underpins and supports the State Infrastructure Strategy and sets the 40-year vision, strategic directions and outcomes for customer mobility in NSW. The Future Transport Strategy 2056 along with a discussion on the Movement and Place Framework (TfNSW, 2017) and how the proposal is consistent with this strategy and framework is summarised in Section 2.1.1 of the REF and Section 2.1 of the Traffic and Transport Assessment included as Appendix J of the REF. A discussion the customer objectives of the Future Transport Strategy 2056 (TfNSW, 2018a) is provided below.

The Greater Sydney Customer Outcomes section of the Future Transport Strategy 2056 (TfNSW, 2018a) outlines the economic, social and environmental benefits which customers can expect from the transport system. Greater Sydney transport Customer Outcome 9 is targeted at creating a safe transport system for every customer with the aim for zero deaths or serious injuries on the network by 2056. As one of the main proposal objectives is to improve road safety within the Alexandria to Moore Park corridor, it would assist in meeting the Greater Sydney Transport Customer Outcome 9.

The Stage 1 proposal focuses more on movement elements while the Ultimate Concept Design addresses movement and place elements of the framework. Consequently, the place aspects such as inclusion of active transport infrastructure will be addressed in future stages.
4.1.5  **Australian Infrastructure Audit**

The *Australian Infrastructure Audit* (Infrastructure Australia, 2019) aims to draw out the most important issues facing Australia’s infrastructure over the next fifteen years. The audit analyses transport, energy, water, telecommunications and social infrastructure in order to identify the challenges and opportunities facing each sector and to establish a platform for change. The proposal would assist in addressing the challenge identified in the audit that population growth impacts are being felt as existing infrastructure is placed under pressure and the community wants continued access. This includes impacts to the road network and is resulting in increased congestion on the roads. One of the main proposal objectives is to improve intersection performance, safety and trip reliability within the Alexandria to Moore Park corridor which is consistent with Challenges 62 and 77 of the Australian Infrastructure Audit. This includes addressing road safety concerns identified in Challenge 62 and providing ongoing access for urban transport supply in the fast growing area around Green Square to ensure that costs associated with urban supply are minimised as identified in Challenge 77.

4.1.6  **City of Sydney’s Draft Local Strategic Planning Statement (LSPS)**

*The City of Sydney’s Draft Local Strategic Planning Statement* seeks to guide change towards a green, global and connected city. It sets out the land use planning context, a 20-year vision, planning priorities and actions to achieve the vision, and monitoring measures. This planning statement was prepared to give effect to the Greater Sydney Commission’s Eastern City District Plan and Greater Sydney Regional Plan. The proposal would address the issue of streets reaching their capacity which was identified in the LSPS through the Proposal objective of reducing congestion on the roads.

4.1.7  **South East Sydney Transport Strategy**

The draft unpublished *South East Sydney Transport Strategy* (Developed by TfNSW in collaboration with the City of Sydney has been prepared by TfNSW in collaboration with the City of Sydney. While this document was not available for review, the proposal has been developed to align with *Future Transport Strategy 2056* (TfNSW, 2018a), *the Our Greater Sydney 2056*, the *Eastern City District Plan* (GSC, 2018) and the *Connecting to the Future: Our 10 Year Blueprint* (TfNSW, undated).

4.1.8  **Moore Park Masterplan 2040**

It is noted that the REF considered the *Centennial Park Master Plan and Centennial Parklands Conservation Management Plan* as Moore Park is managed by the same trust that manages Centennial Park, refer to Section 2.1.7 of the REF. These two documents have similar objectives to the *Moore Park Masterplan 2040* which is discussed further below.

*The Moore Park Masterplan 2040* (Centennial Park and Moore Park Trust, 2017) provides a framework for the sustainable future use, management and renewal of the Park to ensure its long term viability and aims to establish Moore Park as a local, national and international sporting and recreation destination. Two main objectives of this Masterplan are to create improved access and permeability to Moore Park, and to respond to population growth and the needs of Sydney moving toward 2040, particularly around neighbouring localities of Green Square, East Redfern, Surry Hills, Randwick and Paddington. *The Moore Park Masterplan 2040* also identifies the aim of improving and strengthening pedestrian, cycle, car, bus and light rail connections to better serve the future. The proposal would assist in meeting these objectives, as it would improve the road connection between Alexandria, Moore Park and the surrounding suburbs, by reducing the impact of congestion which would increase due to the aforementioned population growth, if current road capacity is maintained.
4.1.9 Sydney Green Grid

The *Sydney Green Grid* (Government Architect NSW, 2019) promotes the creation of a network of high quality open spaces that supports recreation, biodiversity and waterway health. The Green Grid will create a network that connects strategic, district and local centres, public transport and residential hubs.

The *Sydney Green Grid* (Government Architect NSW, 2019) provides preliminary prioritisation of Green Grid opportunities in terms of their strategic potential to catalyse a new interconnected high performance green infrastructure network which will support healthy urban growth. It identifies the CSELR (Anzac Parade and Alison Road) and the Bourke Street and George Street Active Transport Links as key project opportunities.

The *Sydney Green Grid* (Government Architect NSW, 2019) identifies a recreational grid principle to increase access to open space by improving connectivity to key regional destinations, foreshores, beaches and bays and continue to invest in the improvements of major parks and infrastructure.

It also identified that the City of Sydney area enjoys a diversity of open spaces ranging from the iconic Royal Botanic Gardens, the foreshore promenades of Circular Quay, the future Barangaroo Headland Park to pocket parks including Centennial Park and Moore Park, playgrounds and inner city civic plazas. One of the key opportunities identified in the Central District project opportunity cluster is for Green Grid projects in the CBD area to focus on improving connections into the Sydney CBD from surrounding suburbs. The Stage 1 proposal would assist in improving connections to the iconic areas of green space within the CBD region and is considered consistent with this plan.

It also identifies a key project opportunity to Connect Green Square with Moore Park, Centennial Parklands and Sydney Park, St Peters. The proposal would assist in improving connections that is considered within this plan.

4.1.10 Green Square and Waterloo Transport Action Plan

A search for the *Green Square and Waterloo Transport Action Plan* (co-developed by TfNSW and City of Sydney, 2018) was carried out on 22 January 2020 and it was noted that it was not publicly available for review.

4.2 Air quality, climate change and greenhouse gases

The proposed refinements as discussed in Chapter 4 were assessed to determine changes in potential air quality impacts from the proposal compared with what had previously been assessed. Details of this assessment including an overview of the approaches applied, key features of the receiving environment as relevant to air quality, potential air quality impacts resulting from the proposed refinements, and recommended measures to mitigate or otherwise effectively manage these impacts are provided below.

4.2.1 Method

Air quality

Air quality issues can arise when emissions from an activity result in deterioration of local ambient air quality. The methodology applied to evaluate potential changes in air quality from the proposal with the proposed refinements involved the following:

- Identifying key features of the existing environment
- Determining primary sources of emissions to air during construction and operations
Evaluating the potential for impacts using risk-based (construction) and NSW Roads and Maritime Services’ Tool for Roadside Air Quality (TRAQ) (operations) methods

Developing measures to mitigate or otherwise effectively manage predicted impacts.

Greenhouse gases and climate change

Greenhouse gases is a collective term for a range of gases that are known to trap radiation in the upper atmosphere, where they have the potential to contribute to the greenhouse effect (global warming). Creating an inventory of the likely GHG emissions associated with a proposal has the benefit of determining the scale of the emissions and providing a baseline from which to develop and deliver GHG reduction options. GHGs include:

- Carbon dioxide (CO$_2$) – by far the most abundant, primarily released during fuel combustion
- Methane (CH$_4$) – from the anaerobic decomposition of carbon-based material (including enteric fermentation and waste disposal in landfills)
- Nitrous oxide (N$_2$O) – from industrial activity, fertiliser use and production
- Hydrofluorocarbons (HFCs) – commonly used as refrigerant gases in cooling systems
- Perfluorocarbons (PFCs) – used in a range of applications including solvents, medical treatments and insulators
- Sulphur hexafluoride (SF$_6$) – used as a cover gas in magnesium smelting and as an insulator in heavy duty switch gear.

In relation to the proposal which would involve the use of plant and equipment powered through the combustion of fossil fuels, and upon completion would result in changes to local traffic conditions; CO$_2$ would be the primary GHG and climate change substance of concern.

It is common practice to aggregate the emissions of these gases to the equivalent emission of CO$_2$. This provides a simple figure for comparison of emissions against targets. Aggregation is based on the potential of each gas to contribute to global warming relative to carbon dioxide and is known as the global warming potential (GWP). The resulting number is expressed as carbon dioxide equivalents (or CO$_2$e).

The GHG inventory in this document is calculated in accordance with the principles of the GHG Protocol (GHG Protocol)$^1$. The GHG emissions that form the inventory can be split into three categories known as ‘Scopes’. Scopes 1, 2 and 3 are defined by the GHG Protocol and can be summarised as follows:

- **Scope 1** – Direct emissions from sources that are owned or operated by a reporting organisation (examples – combustion of diesel in company owned vehicles or used in on-site generators)
- **Scope 2** – Indirect emissions associated with the import of energy from another source (examples – importation of electricity or heat)
- **Scope 3** – Other indirect emissions (other than Scope 2 energy imports) which are a direct result of the operations of the organisation but from sources not owned or operated by them (examples include business travel (by air or rail) and product usage).

The GHG Protocol (and similar reporting schemes) dictates that reporting Scope 1 and 2 sources is mandatory, while reporting Scope 3 sources is optional. Reporting significant Scope 3 sources is recommended. Within this inventory, we have made an assessment of

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all (Scopes 1, 2 and 3) sources of GHG deemed significant to the implementation of the proposal.

GHG emissions during construction were evaluated using the ‘Carbon Gauge’ prediction tool which automates many of the calculations, assumptions and default GHG emissions factors presented in the Greenhouse Gas Assessment ‘Workbook for Road Projects’, developed by the Transport Authorities Greenhouse Group. This tool provides a framework for assessing the GHG emissions associated with road construction projects through the completion of a materiality assessment, and then provision of standard carbon emissions factors for activities typically undertaken. This allows the user to build a GHG profile through input of standard data on the length and area of pavement, road features included and cost of construction, amongst other, accessible data. The tool was used to estimate GHG emissions associated with construction, as well as emissions arising from some post-construction operational and maintenance activities; namely electricity used to power the upgraded intersections, and materials used to maintain the asset into the future.

Where a project results in a material change in traffic conditions, NSW Roads and Maritime’s TRAQ prediction model is used to determine emissions associated with operational road use of the proposed upgrade.

Based on the outcomes of these calculations, safeguards and management measures were developed as identified to be required.

4.2.2 Description of existing environment

Key features of the existing environment as relevant to air quality include surrounding local sensitive receivers and sources of emissions to air, local climate and meteorology, and ambient air quality conditions. These aspects are discussed below in the context of the proposal with the proposed refinements.

Surrounding receivers

A mixture of residential, commercial and light to medium industrial land uses are located next to the proposal, with receivers also located nearby on adjoining side roads. Some other land uses are located within the study area including educational, places of worship and recreational areas. The nearest receivers are located 10 metres or nearer to traffic along the proposal.

Local climate and meteorology

Meteorological conditions are important for identifying the direction and rate at which air emissions from a source disperse. The nearest Bureau of Meteorology (BoM) climate station to the proposal is the Sydney Airport automatic weather station (AWS), about 4.5 kilometres to the south-west. Table 4-1 shows the historical average climate data for the Sydney Airport AWS (Bureau of Meteorology, 2017).

Table 4-1 Long-term temperature and rainfall data from BoM Sydney Airport AWS (BoM, 2017)

<table>
<thead>
<tr>
<th>Month</th>
<th>Mean maximum temperature (°C)</th>
<th>Mean minimum temperature (°C)</th>
<th>Mean rainfall (mm)</th>
<th>Mean number of rain days (&gt; 1 mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>26.6</td>
<td>18.9</td>
<td>95.4</td>
<td>8.1</td>
</tr>
<tr>
<td>February</td>
<td>26.5</td>
<td>19.1</td>
<td>111.6</td>
<td>8.6</td>
</tr>
<tr>
<td>March</td>
<td>25.3</td>
<td>17.6</td>
<td>115.8</td>
<td>9.4</td>
</tr>
<tr>
<td>April</td>
<td>22.9</td>
<td>14.3</td>
<td>108.9</td>
<td>8.5</td>
</tr>
<tr>
<td>May</td>
<td>20.1</td>
<td>11</td>
<td>97.6</td>
<td>8.4</td>
</tr>
<tr>
<td>Month</td>
<td>Mean maximum temperature (°C)</td>
<td>Mean minimum temperature (°C)</td>
<td>Mean rainfall (mm)</td>
<td>Mean number of rain days (&gt; 1 mm)</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------------------------</td>
<td>--------------------------------</td>
<td>--------------------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td>June</td>
<td>17.6</td>
<td>8.7</td>
<td>124.3</td>
<td>8.8</td>
</tr>
<tr>
<td>July</td>
<td>17.1</td>
<td>7.2</td>
<td>70.2</td>
<td>6.7</td>
</tr>
<tr>
<td>August</td>
<td>18.4</td>
<td>8.2</td>
<td>77.4</td>
<td>6.8</td>
</tr>
<tr>
<td>September</td>
<td>20.6</td>
<td>10.5</td>
<td>60.4</td>
<td>6.8</td>
</tr>
<tr>
<td>October</td>
<td>22.7</td>
<td>13.3</td>
<td>69.8</td>
<td>7.8</td>
</tr>
<tr>
<td>November</td>
<td>24.1</td>
<td>15.5</td>
<td>80.9</td>
<td>8.3</td>
</tr>
<tr>
<td>December</td>
<td>25.8</td>
<td>17.6</td>
<td>73.8</td>
<td>7.8</td>
</tr>
<tr>
<td>Annual</td>
<td>22.3</td>
<td>13.5</td>
<td>88.2</td>
<td>8.2</td>
</tr>
</tbody>
</table>

The data indicates that the locality around the proposal experiences warm and wet summers with mean daily maximum temperatures of around 27 degrees Celsius. Winter and the beginning of spring are the coldest and driest periods of the year, with average monthly rainfall from June to August around 60 millimetres per month.

To identify prevailing wind conditions around the proposal, annual and seasonal wind data were reviewed for the years 2013, 2014 and 2015 from the Sydney Airport AWS. Annual and seasonal trends were generally consistent over the three years, with winds blowing from the south most common in summer, autumn and spring, and winds from the west most prevalent in winter. Calm conditions (that is wind speeds less than 0.5 metres per second) were most common in autumn and winter; occurring around 1.5 per cent of the time during these seasons. Annual and seasonal wind roses from data collected in 2015 are displayed below in Figure 4-1.
Figure 4-1 Annual and seasonal wind roses for BoM Sydney Airport AWS, 2015
Greenhouse gas and climate change

Greenhouse gases include carbon dioxide, methane, nitrous oxide, sulphur hexafluoride, hydrofluorocarbons and perfluorocarbons. These gases have heat absorbing capacity or global warming potential. They absorb heat that is reflected from the earth, which results in warming of the air. This effect is known as the greenhouse effect. The primary human-produced greenhouse gas is carbon dioxide. Human activities, such as the combustion of carbon-based fuels, increase the amount of greenhouse gases in the atmosphere. This leads to an increase in atmospheric temperatures and is known as the enhanced greenhouse effect.

Climate change refers to the projected long-term changes to global climatic patterns as a result of increases in the concentration of greenhouse gases in the atmosphere. There is a need to understand these projected changes to future climatic conditions and the effect they could have on existing and potential projects and infrastructure. Moreover, it is important to understand how the proposal might influence these changes.

Climate change projections detailed in this assessment have utilised publicly available information. Table 4-2 provides information on climate change forecasts for the Sydney/Central Coast region of NSW. The table provides details of the climatic change projections for the area surrounding the proposal to the year 2050, adapted from the NSW Climate Impact Profile (DECCW, 2010).

<table>
<thead>
<tr>
<th>Season</th>
<th>Seasonal rainfall</th>
<th>Temperature Minimum</th>
<th>Temperature Maximum</th>
<th>Evaporation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring</td>
<td>↑ 10–20%</td>
<td>↑ 2.0–3.0°C</td>
<td>↑ 2.0–3.0°C</td>
<td>↑ 10–20%</td>
</tr>
<tr>
<td>Summer</td>
<td>↑ 20–50%</td>
<td>↑ 1.5–3.0°C</td>
<td>↑ 1.5–2.0°C</td>
<td>↑ 10–20%</td>
</tr>
<tr>
<td>Autumn</td>
<td>No change</td>
<td>↑ 1.5–3.0°C</td>
<td>↑ 1.5–3.0°C</td>
<td>No clear pattern</td>
</tr>
<tr>
<td>Winter</td>
<td>↓ 10–20%</td>
<td>↑ 1.5–3.0°C</td>
<td>↑ 2.0–3.0°C</td>
<td>No clear pattern</td>
</tr>
</tbody>
</table>

Source: Adapted from the NSW Climate Impact Profile (DECCW, 2010)

As shown in Table 4-2, the expected regional climatic changes for the Sydney/Central Coast region include:
- Increased average daily minimum and maximum temperatures
- Increased rainfall in spring and summer and decreased rainfall in winter
- Increased evaporation in spring and summer.

The NSW Climate Impact Profile (DECCW, 2010) also predicts increased intensity of extreme events (e.g. droughts, floods, and severe storms).

Background air quality

Local air quality at the proposal would be influenced by many sources but the main sources relevant to the proposal would be associated with motor vehicles. The main air pollutants from motor vehicles are \( \text{CO}_2 \) and fine particles (\( \text{PM}_{10} \), \( \text{i} \)) and VOCs. The primary pollutants of concern during construction and operations of the proposal would include Total suspended particulate (TSP), deposited dust, particulate matter, CO, NOx (as \( \text{NO}_2 \)) and VOCs.

The Department of Primary Industries and Environment operates a state-wide air quality monitoring network which provides information on current and historical air quality. Data for these key air quality pollutants collected over the past five calendar years from the nearest network stations (Rozelle, Randwick and Earlwood) were reviewed to identify existing air
quality conditions around the proposal. Using these data, the following background concentrations were adopted for the receiving environment around the proposal, refer to Table 4-3.

**Table 4-3 Adopted background concentrations**

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Averaging time</th>
<th>Adopted background concentration</th>
<th>Impact assessment criterion</th>
<th>Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM$_{10}$</td>
<td>24-hour</td>
<td>33 μg/m$^3$</td>
<td>50 μg/m$^3$</td>
<td>2018 95$^{th}$ percentile concentration measured at DPIE’s Earlwood station</td>
</tr>
<tr>
<td></td>
<td>Annual</td>
<td>20 μg/m$^3$</td>
<td>25 μg/m$^3$</td>
<td>2018 concentration measured at DPIE’s Earlwood station</td>
</tr>
<tr>
<td>NO$_2$</td>
<td>1-hour</td>
<td>126 μg/m$^3$</td>
<td>246 μg/m$^3$</td>
<td>Highest value measured 2015 to 2018 (excluding 2019 as an abnormal year) for DPIE Rozelle, Randwick and Earlwood stations</td>
</tr>
<tr>
<td></td>
<td>Annual</td>
<td>22 μg/m$^3$</td>
<td>62 μg/m$^3$</td>
<td></td>
</tr>
<tr>
<td>CO</td>
<td>1-hour</td>
<td>2 mg/m$^3$</td>
<td>30 mg/m$^3$</td>
<td>Highest value measured 2015 to 2018 (excluding 2019 as an abnormal year) for DPIE Rozelle and Earlwood stations</td>
</tr>
<tr>
<td></td>
<td>8-hour</td>
<td>1.4 mg/m$^3$</td>
<td>10 mg/m$^3$</td>
<td></td>
</tr>
</tbody>
</table>

For comparison, impact assessment criteria from the NSW Environment Protection Agency’s (EPA’s) ‘Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales’ (Approved Methods) (2016) are also listed above. It is noted that the NSW EPA’s impact assessment criteria for these pollutants are drawn from ambient air quality objectives presented in Ambient Air – National Environment Protection Measure for Ambient Air Quality, (National Environment Protection Council, 1998) and National Environment Protection (Ambient Air Quality) Measure, (Department of Environment 2016). The stated objectives of these standards are to allow for “adequate protection of human health and well-being”.

However, it is noted that the impact assessment criteria in the Approved Methods are applicable for assessing emissions to air from stationary sources in NSW, rather than from road projects.

4.2.3 Potential impacts

**Construction**

**Air quality**

During construction, air quality issues may arise from temporary increases in local dust (including total deposited dust, total suspended solids and fine particulate matter) emissions associated with vegetation clearing, excavation and demolition works and the handling, storage and disturbance of soils and materials; and other emissions such as exhaust fumes associated with the operation of construction machinery.

Although all phases of construction have the potential to adversely impact upon local ambient air quality, the following activities present the greatest risk:

- Excavation activities
- Materials handling and storage operations
Demolition works
Compounds, laydown and storage area operations.

The primary issues which need to be managed associated with these phases of construction are identified below:

- Site preparation and clearing
  - Increased risk of windborne erosion arising from disturbed and exposed surfaces
- Earthwork and excavations: Temporary increases in local dust and exhaust emissions associated with:
  - Windborne dust emanating from disturbed/exposed surfaces
  - Odours and emissions arising from uncovered contaminated and/or hazardous materials
  - Dust and debris arising from haulage of materials
- Building demolitions
  - Impacts associated with hazardous materials contained within demolition wastes
  - Windborne dust emanating from disturbed/exposed surfaces
- Revegetation work: Increased risk of windborne erosion arising from non-vegetated surfaces.

During construction, air quality issues may arise from temporary increases in local dust (particulate matter) emissions associated with vegetation clearing, excavation work and the handling and disturbance of soils and materials; and other emissions such as exhaust fumes associated with the operation of construction machinery.

Owing to the highly urbanised nature of the setting, there is also the potential that materials may be excavated which exhibit other risks to air quality such as odour. These types of materials would most likely to be uncovered during excavation works, including utility and drainage relocation activities.

Receivers in the direction of prevailing winds and set close to the proposal (including ancillary sites) would be most susceptible to dust-related impacts.

Greenhouse gases

Greenhouse gas emissions from the following activities were modelled as part of the construction of the proposal:

- Fuel usage (site vehicles, plant and equipment and earthworks)
- Vegetation removal (lost carbon sink capacity)
- Embedded emissions in materials used in construction of new pavement, concrete footpaths, median and traffic islands.
- Embedded emissions in materials used in construction of new structures and drainage features.

For each of the four areas outlined above, Carbon Gauge was used to determine the potential impacts, using standard emissions factors for road construction activities, referencing a relevant unit of activity. The input data applied in the model to estimate these emissions is summarised in Table 4-4.
Table 4-4 Carbon Gauge Construction Inputs

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Input value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated project value</td>
<td>Confidential</td>
</tr>
<tr>
<td>Construction duration</td>
<td>36 months</td>
</tr>
<tr>
<td>Fuel used in plant and equipment</td>
<td>100% Diesel</td>
</tr>
<tr>
<td>Area of full depth asphalt pavement</td>
<td>2,000 m²</td>
</tr>
<tr>
<td>Area of concrete footpath</td>
<td>1,000 m²</td>
</tr>
<tr>
<td>Area of median and traffic island infill</td>
<td>N/A</td>
</tr>
<tr>
<td>Dimensions of concrete retaining walls</td>
<td>N/A</td>
</tr>
<tr>
<td>Length of upright kerb and gutter</td>
<td>N/A</td>
</tr>
<tr>
<td>Volume of cut to spoil</td>
<td>4,000 m³</td>
</tr>
<tr>
<td>Volume of cut to fill</td>
<td>2,500 m³</td>
</tr>
<tr>
<td>Freeway carriageways requiring lighting</td>
<td>No change</td>
</tr>
<tr>
<td>Number of LED traffic signals</td>
<td>1, no change</td>
</tr>
<tr>
<td>Area of Class C (Open forest to be removed)</td>
<td>None, brownfield site</td>
</tr>
<tr>
<td>Area of Class I (Grassland to be removed)</td>
<td>None, brownfield site</td>
</tr>
</tbody>
</table>

Calculated emissions associated with construction are summarised below in Table 4-5.

Table 4-5 Estimated GHG emissions during construction

<table>
<thead>
<tr>
<th>Source</th>
<th>Scope 1 (tCO₂e)</th>
<th>Scope 2 (tCO₂e)</th>
<th>Scope 3 (tCO₂e)</th>
<th>Total (tCO₂e)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel combustion activities</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site compound electricity generation</td>
<td>299</td>
<td>-</td>
<td>23</td>
<td>322</td>
</tr>
<tr>
<td>Site vehicles</td>
<td>328</td>
<td>-</td>
<td>25</td>
<td>353</td>
</tr>
<tr>
<td>Plant and equipment</td>
<td>23</td>
<td>-</td>
<td>2</td>
<td>25</td>
</tr>
<tr>
<td>Demolition and earthworks</td>
<td>50</td>
<td>-</td>
<td>4</td>
<td>54</td>
</tr>
<tr>
<td>Vegetation removal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lost carbon sink</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Material usage</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aggregate</td>
<td>-</td>
<td>-</td>
<td>26</td>
<td>26</td>
</tr>
<tr>
<td>Concrete</td>
<td>-</td>
<td>-</td>
<td>218</td>
<td>218</td>
</tr>
<tr>
<td>Cement</td>
<td>-</td>
<td>-</td>
<td>90</td>
<td>90</td>
</tr>
<tr>
<td>Steel</td>
<td>-</td>
<td>-</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Bitumen</td>
<td>-</td>
<td>-</td>
<td>38</td>
<td>38</td>
</tr>
<tr>
<td>Overall total</td>
<td>701</td>
<td>-</td>
<td>441</td>
<td>1,142</td>
</tr>
</tbody>
</table>
Climate change

Climate change risks during construction would primarily be associated with the occurrence of severe weather events. For example, the increased frequency and severity of rainfall events would place increased pressure on erosion and sediment control measures and/or flooding of work sites.

However, climate change risks are generally considered to be minor and would be readily manageable through the application of standard mitigation measures that have been designed to respond to the potential for the increased frequency and severity of rainfall events.

Operation and maintenance

Air quality

NSW Roads and Maritime Services’ quantitative screening-level assessment tool TRAQ has been used to predict potential operational air quality impacts from the proposal. The model uses the CALINE algorithm to predict air pollutant concentrations near roadways. TRAQ considers combustion exhaust emissions, with particulate matter emissions also evaluated from brake and tyre wear. These emissions are estimated using emission factors developed by the NSW EPA.

The concentration of air pollutants from traffic along the proposal were predicted using TRAQ for the following assessment scenarios:

- Year of opening (2021) build (ie Project) and no build (ie no Project)
- Design year (2031) (ie 10 years after opening) build and no build.

The traffic data listed in the Noise and Vibration Assessment (refer to Appendix M of the REF) and from the Traffic and Transport Assessment (refer to Appendix J of the REF) were used to estimate roadside air quality concentrations at receivers around the proposal. The traffic volume and composition information applied in the assessment are reproduced below in Table 4-6. As stated in the Noise and Vibration Assessment, ‘traffic volumes, compositions and speeds would be the same for the no build and build scenarios’ (Renzo Tonin, 2019).

Table 4-6 Project and no project 2021, 2031 traffic volumes

<table>
<thead>
<tr>
<th>Segment</th>
<th>Direction</th>
<th>Year of opening (2021)</th>
<th>Design year (2031)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>24-hour traffic volume</td>
<td>% heavy vehicles</td>
<td>24-hour traffic volume</td>
</tr>
<tr>
<td>Segment 01: Proposal corridor, between Maddox Street and Bunnings</td>
<td>Eastbound</td>
<td>14484</td>
<td>6.34</td>
</tr>
<tr>
<td></td>
<td>Westbound</td>
<td>15245</td>
<td>6.34</td>
</tr>
<tr>
<td>Segment 02: Proposal corridor, between Bunnings and Fountain Street</td>
<td>Eastbound</td>
<td>14983</td>
<td>6.34</td>
</tr>
<tr>
<td></td>
<td>Westbound</td>
<td>16244</td>
<td>6.34</td>
</tr>
<tr>
<td>Segment 03: Proposal corridor, between Fountain Street and Wyndham Street</td>
<td>Eastbound</td>
<td>14754</td>
<td>6.34</td>
</tr>
<tr>
<td></td>
<td>Westbound</td>
<td>17853</td>
<td>6.34</td>
</tr>
<tr>
<td></td>
<td>Eastbound</td>
<td>7799</td>
<td>6.34</td>
</tr>
<tr>
<td>Segment</td>
<td>Direction</td>
<td>Year of opening (2021)</td>
<td>Design year (2031)</td>
</tr>
<tr>
<td>---------</td>
<td>-----------</td>
<td>------------------------</td>
<td>--------------------</td>
</tr>
<tr>
<td></td>
<td>24-hour traffic volume</td>
<td>% heavy vehicles</td>
<td>24-hour traffic volume</td>
</tr>
<tr>
<td>Segment 04: Proposal corridor, between Wyndham Street and Botany Road</td>
<td>Westbound</td>
<td>17549</td>
<td>6.34</td>
</tr>
<tr>
<td>Segment 05: Proposal corridor, between Botany Road and George Street</td>
<td>Eastbound</td>
<td>13544</td>
<td>6.34</td>
</tr>
<tr>
<td></td>
<td>Westbound</td>
<td>10501</td>
<td>6.34</td>
</tr>
<tr>
<td>Segment 06: Proposal corridor, between George Street and Pitt Street</td>
<td>Eastbound</td>
<td>12313</td>
<td>6.34</td>
</tr>
<tr>
<td></td>
<td>Westbound</td>
<td>11240</td>
<td>6.34</td>
</tr>
<tr>
<td>Segment 07: Proposal corridor, between Pitt Street and Elizabeth Street</td>
<td>Eastbound</td>
<td>11325</td>
<td>6.34</td>
</tr>
<tr>
<td></td>
<td>Westbound</td>
<td>10967</td>
<td>6.34</td>
</tr>
<tr>
<td>Segment 08: Proposal corridor, between Elizabeth Street and Bourke Street</td>
<td>Eastbound</td>
<td>10162</td>
<td>6.34</td>
</tr>
<tr>
<td></td>
<td>Westbound</td>
<td>7462</td>
<td>6.34</td>
</tr>
<tr>
<td>Segment 09: Proposal corridor, between Bourke Street and Lachlan Street</td>
<td>Eastbound</td>
<td>11557</td>
<td>6.34</td>
</tr>
<tr>
<td></td>
<td>Westbound</td>
<td>12706</td>
<td>6.34</td>
</tr>
<tr>
<td>Segment 10: Proposal corridor, between Lachlan Street and South Dowling Street</td>
<td>Eastbound</td>
<td>7449</td>
<td>6.34</td>
</tr>
<tr>
<td></td>
<td>Westbound</td>
<td>7575</td>
<td>6.34</td>
</tr>
<tr>
<td>Segment 11: Maddox Street – North of Proposal Corridor</td>
<td>Northbound</td>
<td>5671</td>
<td>3.93</td>
</tr>
<tr>
<td></td>
<td>Southbound</td>
<td>4971</td>
<td>8.82</td>
</tr>
<tr>
<td>Segment 12: Maddox Street – South of Proposal Corridor</td>
<td>Northbound</td>
<td>5620</td>
<td>2.16</td>
</tr>
<tr>
<td></td>
<td>Southbound</td>
<td>3411</td>
<td>9.34</td>
</tr>
<tr>
<td>Segment 13: Fountain Street – North of Proposal Corridor</td>
<td>Northbound</td>
<td>5600</td>
<td>8.33</td>
</tr>
<tr>
<td></td>
<td>Southbound</td>
<td>3751</td>
<td>9.68</td>
</tr>
<tr>
<td>Segment 14: Wyndham Street – North of Proposal Corridor</td>
<td>Northbound</td>
<td>6220</td>
<td>8.17</td>
</tr>
<tr>
<td></td>
<td>Southbound</td>
<td>2580</td>
<td>8.01</td>
</tr>
<tr>
<td>Segment 15: Wyndham Street – South of Proposal Corridor</td>
<td>Northbound</td>
<td>3900</td>
<td>5.36</td>
</tr>
<tr>
<td></td>
<td>Southbound</td>
<td>3420</td>
<td>9.12</td>
</tr>
<tr>
<td>Segment 16: Botany Road – North of Proposal Corridor</td>
<td>Northbound</td>
<td>8560</td>
<td>8.95</td>
</tr>
<tr>
<td></td>
<td>Southbound</td>
<td>13151</td>
<td>10.61</td>
</tr>
<tr>
<td>Segment 17: Botany Road – South of Proposal Corridor</td>
<td>Northbound</td>
<td>8860</td>
<td>8.68</td>
</tr>
<tr>
<td></td>
<td>Southbound</td>
<td>8151</td>
<td>10.85</td>
</tr>
<tr>
<td>Segment 18: George Street – South of Proposal Corridor</td>
<td>Southbound</td>
<td>1191</td>
<td>12.05</td>
</tr>
<tr>
<td>Segment</td>
<td>Direction</td>
<td>Year of opening (2021)</td>
<td>Design year (2031)</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>---------------</td>
<td>------------------------</td>
<td>--------------------</td>
</tr>
<tr>
<td>Segment 19: Pitt Street – South of Proposal Corridor</td>
<td>Northbound</td>
<td>471</td>
<td>491</td>
</tr>
<tr>
<td></td>
<td>Southbound</td>
<td>480</td>
<td>491</td>
</tr>
<tr>
<td>Segment 20: Elizabeth Street – North of Proposal Corridor</td>
<td>Northbound</td>
<td>12151</td>
<td>11931</td>
</tr>
<tr>
<td></td>
<td>Southbound</td>
<td>13531</td>
<td>14071</td>
</tr>
<tr>
<td>Segment 21: Elizabeth Street – South of Proposal Corridor</td>
<td>Northbound</td>
<td>9380</td>
<td>10380</td>
</tr>
<tr>
<td></td>
<td>Southbound</td>
<td>9751</td>
<td>10680</td>
</tr>
<tr>
<td>Segment 22: Bourke Street – North of Proposal Corridor</td>
<td>Northbound</td>
<td>10691</td>
<td>12420</td>
</tr>
<tr>
<td></td>
<td>Southbound</td>
<td>7331</td>
<td>9800</td>
</tr>
<tr>
<td>Segment 23: Bourke Street – South of Proposal Corridor</td>
<td>Northbound</td>
<td>8620</td>
<td>9291</td>
</tr>
<tr>
<td></td>
<td>Southbound</td>
<td>9480</td>
<td>11300</td>
</tr>
<tr>
<td>Segment 24: South Dowling Street – North of Proposal Corridor</td>
<td>Northbound</td>
<td>11560</td>
<td>13020</td>
</tr>
<tr>
<td></td>
<td>Southbound</td>
<td>15940</td>
<td>18980</td>
</tr>
<tr>
<td>Segment 25: South Dowling Street – South of Proposal Corridor</td>
<td>Northbound</td>
<td>16180</td>
<td>19231</td>
</tr>
<tr>
<td></td>
<td>Southbound</td>
<td>21811</td>
<td>20731</td>
</tr>
</tbody>
</table>

The Noise and Vibration Assessment also noted the following with regards to forecast traffic characteristics:

- Speeds would be 50 km/h as posted
- Peak hour traffic volumes are 10 per cent of the daily traffic volume.

Using TRAQ, Figure 4-2 and Figure 4-3 display the predictions made at different distances from the proposal along the segment of the corridor where impacts were highest (Segment 03 as listed above in Table 4-6). Results are displayed for the incremental contribution from the proposal, as well as the cumulative (i.e., roadway and background contributions) concentrations. Criteria values from the NSW EPA’s Approved Methods, although it is noted that they do not strictly apply. Noting that the traffic data available for the assessment was the same for the no project and project assessment scenarios, these screening results are considered applicable for both scenarios.

These worst-case predictions indicate that in 2021 and 2031 with and without the project, 24-hour and annually averaged PM$_{10}$ concentrations may be exceeded up to distances of approximately 100 and 200 metres from the proposal route respectively. 1-hour averaged NO$_2$ concentrations were predicted to be exceeded within about 20 metres of the proposal in 2021, with annual concentrations predicted to remain below the EPA’s criterion. 2021 and 2031 with and without the project concentrations of CO and VOCs as benzene were also predicted to be below the applicable impact assessment criteria.
Figure 4-2 Worst-case predictions, 2021 with and without proposal
The key consideration for road projects in NSW with regard to air quality is whether a proposal has the potential to result in adverse air quality changes at nearby sensitive receivers compared with no build options. Although TRAQ default peak hour speed settings were applied in the review outlined above, Figures 25, 26, 34 and 35 of the Traffic and Transport Assessment included as Appendix J of the REF indicate that there may be improvements in average speeds during AM and PM peak hours with the proposal. Considering this, roadside air quality conditions may improve at some locations along the proposal corridor with the proposal compared with traffic conditions if it was not to proceed.

Figure 4-3 Worst-case predictions, 2031 with and without proposal
Greenhouse gases

Additional GHG emissions were also reviewed over a period of 50 years from the following operational and maintenance activities:

- Electricity consumption for powering additional intersection signalling and lighting
- Fuel and material consumption for additional maintenance activities
- Fuel consumption from road traffic using the proposal.

Carbon Gauge was used to project emissions relating to energy consumption for operation of additional intersection signalling, lighting and fuels / materials usage in undertaking pavement maintenance activities. Input values applied in Carbon Gauge to estimate emissions associated with these sources and activities for the Project are summarised in Table 4-7.

**Table 4-7 Additional lighting, signalling and pavement maintenance area inputs**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Input value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional length of carriageway requiring lighting</td>
<td>Not applicable, no additional lighting</td>
</tr>
<tr>
<td>Additional number of LED traffic signals at major, divided road urban intersections</td>
<td>Not applicable, no additional traffic signals</td>
</tr>
<tr>
<td>Additional pavement maintenance area</td>
<td>2,000 m²</td>
</tr>
</tbody>
</table>

Estimated additional emissions from these sources and activities over the 50-year design life of the proposal compared with the existing scenario are listed in Table 4-8.

**Table 4-8 Estimated additional GHG emissions, lighting, signalling and pavement maintenance**

<table>
<thead>
<tr>
<th>Source</th>
<th>Scope 1 (tCO₂e)</th>
<th>Scope 2 (tCO₂e)</th>
<th>Scope 3 (tCO₂e)</th>
<th>Total (tCO₂e)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel combustion activities</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Additional lighting</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Additional traffic signaling</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Additional maintenance activities</td>
<td>43</td>
<td>-</td>
<td>55</td>
<td>98</td>
</tr>
<tr>
<td>Overall total</td>
<td>43</td>
<td>-</td>
<td>55</td>
<td>98</td>
</tr>
</tbody>
</table>

As noted in the Noise and Vibration Assessment, ‘traffic volumes, compositions and speeds would be the same for the no build and build scenarios’. As such it was concluded that emissions from the combustion of fuel in vehicles along the project would not be different from existing operations.

**Climate change**

Climate change risks during the operation of the proposal would primarily be associated with:

- Increased average temperatures and heatwaves, which could affect the integrity of the road surface and other construction materials. Direct impacts could include more rapid deterioration of infrastructure, which could result in higher operational and maintenance costs. Indirectly, evaporative changes could result in changes to soil moisture content
and soil instability, which could impact foundations of structures, cause cracking and/or softening of pavements and ruts in road rutting

- Increased frequency and severity of rainfall events, which would place increased pressure on drainage infrastructure and/or result in flooding of the study area.

However, it is unlikely that the infrastructure provided for the proposal would be more susceptible to climate change risks than the existing road network.

Greenhouse gases summary

Estimates for construction and additional maintenance-related greenhouse gas emissions compared with the existing base case were estimated using Carbon Gauge with the inputs outlined above applied. From this review, it was estimated that the project would result in an additional 1,240 tonnes of carbon dioxide equivalents (tCO$_2$e) in greenhouse gas emissions. It is noted that this outcome is contingent on traffic volumes, compositions and speeds being the same for the no build and build scenarios (Renzo Tonin, 2019).

4.2.4 Revised safeguards and management measures

Based on the outcomes of the review, no specific operational air quality mitigation measures are recommended, but additional measures for managing climate change impacts are provided in Table 4-9.

Table 4-9 Recommended safeguards and management measures for climate change

<table>
<thead>
<tr>
<th>Impact</th>
<th>Environmental safeguards</th>
<th>Responsibility</th>
<th>Timing</th>
<th>Standard/additional safeguard</th>
</tr>
</thead>
<tbody>
<tr>
<td>GHG and climate change</td>
<td>Energy and Greenhouse Gas management measures will be included in the CEMP. The CEMP may include, but not be limited to:</td>
<td>Contractor</td>
<td>Detailed design/pre-construction</td>
<td>Additional safeguard</td>
</tr>
<tr>
<td>impacts</td>
<td>• The use of alternative fuels and power sources for construction plant and equipment will be investigated and implemented, where appropriate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Energy efficiency and related carbon emissions will be considered in the selection of vehicle and plant equipment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Materials will be delivered as full loads and local suppliers will be used, where possible</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Construction equipment, plant and vehicles will be appropriately sized for the task.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GHG and climate change</td>
<td>The following measures will be considered during detailed design and construction, and implemented as appropriate:</td>
<td>Contractor</td>
<td>Construction</td>
<td>Additional safeguard</td>
</tr>
<tr>
<td>impacts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Stage 1 Alexandria to Moore Park
Submissions Report
<table>
<thead>
<tr>
<th>Impact</th>
<th>Environmental safeguards</th>
<th>Responsibility</th>
<th>Timing</th>
<th>Standard/ additional safeguard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use of light-emitting diode (LED) and low energy equipment for traffic lights and signage</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use of modern diesel engine equipment, to ensure highest fuel efficiency ratings</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Review of local options for import and export of materials as needed to reduce excess fuel used during transport</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specification of the use of biofuels, or biofuel blends in construction plant and equipment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specification and certification of steel from recycled sources where suitable for offsetting virgin steel</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specification of materials with low embodied energy/embodied greenhouse gas content, such as:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Replacement of Portland cement in concrete mixes with low carbon alternatives such as fly-ash</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use of warm mix asphalt versus hot mix.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
5 Environmental management

The REF for the Alexandria to Moore Park Stage 1 proposal (Roads and Maritime, 2019) identified the framework for environmental management, including safeguards and management 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 refinements of the proposal, TfNSW revised the management and mitigation measures in the REF. The key changes include:

- General – one new mitigation measure (GEN6)
- Traffic and transport – two new mitigation measures (TT16 and TT17)
- Noise and vibration – three new mitigation measures (NV17, NV18, NV19)
- Landscape character and visual amenity – two new mitigation measures (V18 and V19)
- Biodiversity – two new mitigation measures (B9 and B10)
- Other (air quality and climate change) – two new mitigation measures (O3 and O4).

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

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

The CEMP will be prepared prior to construction of the proposal and must be reviewed and certified by environment staff (TfNSW, Western 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 would be developed in accordance with the specifications set out in:

- QA Specification G36 – Environmental Protection (Management System)
- QA Specification G38 – Soil and Water Management (Soil and Water Plan)
- QA Specification G40 – Clearing and Grubbing

5.2 Summary of safeguards and management measures

The REF for the Alexandria to Moore Park Stage 1 proposal identified a range of environmental outcomes and management measures that would be required to avoid or reduce the environmental impacts.
After consideration of the issues raised in the public submissions, the environmental management measures for the proposal (refer to Chapter 7 of the REF) have been revised. Should the proposal proceed, the environmental management measures in Table 5-1 will guide the subsequent phases of the proposal. Additional and/or modified environmental safeguards and management measures to those presented in the REF have been underlined and deleted measures, or parts of measures, have been struck out.
<table>
<thead>
<tr>
<th>No.</th>
<th>Impact</th>
<th>Environmental safeguards and management measures</th>
<th>Responsibility</th>
<th>Timing</th>
<th>Reference</th>
</tr>
</thead>
</table>
| GEN1| General - minimise environmental impacts during construction | A CEMP will be prepared and submitted for review and endorsement by the Roads and Maritime TfNSW Environment Manager prior to commencement of the activity.  
As a minimum, the CEMP will address the following:  
• Any requirements associated with statutory approvals  
• Details of how the project will implement the identified safeguards outlined in the REF  
• Issue-specific environmental management plans  
• Roles and responsibilities  
• Communication requirements  
• Induction and training requirements  
• Procedures for monitoring and evaluating environmental performance, and for corrective action  
• Reporting requirements and record-keeping  
• Procedures for emergency and incident management  
• Procedures for audit and review.  
The endorsed CEMP will be implemented during the undertaking of the activity. | Contractor / TfNSW Roads and Maritime project manager | Pre-construction / detailed design | Core standard safeguard GEN1 |
| GEN2| General - notification                      | All businesses, residential properties and other key stakeholders (eg schools, local councils) affected by the project will be notified.  
Contractor / TfNSW Roads and Maritime project manager | Pre-construction | Core standard |
<table>
<thead>
<tr>
<th>No.</th>
<th>Impact</th>
<th>Environmental safeguards and management measures</th>
<th>Responsibility</th>
<th>Timing</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>the activity will be notified at least five days prior to commencement of the activity.</td>
<td>project manager</td>
<td>safeguard</td>
<td>GEN2</td>
</tr>
</tbody>
</table>
| GEN3| General – environmental awareness          | All personnel working on site will receive training to ensure awareness of environment protection requirements to be implemented during the project. This will include up-front site induction and regular “toolbox” style briefings. Site-specific training will be provided to personnel engaged in activities or areas of higher risk. These include:  
  - Areas of Aboriginal heritage sensitivity  
  - Non-Aboriginal heritage management including unexpected finds procedures  
  - Trees to be protected  
  - Adjoining residential areas requiring particular noise management measures]  
  - Dust and air quality management. | Contractor / TfNSW Roads and Maritime project manager | Pre-construction / detailed design | Core standard safeguard GEN3 |
| GEN4| Utilities                                  | Prior to the commencement of works:  
  - The location of existing utilities and relocation details will be confirmed following consultation with the affected utility owners  
  - If the scope or location of proposed utility relocation works falls outside of the assessed proposal scope and footprint, further assessment will be undertaken. | Contractor                    | Detailed design / pre-construction | Core standard safeguard U1   |
<p>| GEN5| Waste                                      | In the event a trade waste licence is requested, it will be obtained in accordance with the correct              | Contractor                    | Detailed design/ pre-construction | Additional safeguard         |</p>
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</table>
|     |                                             | approval process- usually through Sydney Water - and relevant guidelines.  
The discharge protocols of chlorinated water due to shut down and reconnection of live Sydney Water assets may need to be adjusted as part of the proposal.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                     |                             |                                  |
| GEN6| Community contact phone line during construction | A 24 hour phone line would be developed for the project during construction.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Construction contractor | Construction              | Additional safeguard             |
| TT1 | Traffic and transport                       | A Traffic Management Plan (TMP) will be prepared and implemented as part of the CEMP. The TMP will be prepared in accordance with the Roads and Maritime Traffic Control at Work Sites Manual (RTA, 2010) and QA Specification G10 Control of Traffic (Roads and Traffic Authority, 2006). The TMP will include:  
  - Confirmation of haulage routes  
  - Measures to maintain access to local roads and properties  
  - Site specific traffic control measures (including signage) to manage and regulate traffic movement  
  - Measures to maintain pedestrian and cyclist access  
  - Requirements and methods to consult and inform the local community of impacts on the local road network | Construction contractor | Detailed design / Pre-construction | Core standard safeguard TT1  
Section 4.8 of QA G36 Environment Protection |
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<tbody>
<tr>
<td>TT2</td>
<td>Local community notification</td>
<td>Consultation will be carried out with potentially affected residences prior to the commencement of and during works in accordance with the RTA’s Community Involvement and Communications Resource Manual. Consultation will include but not be limited to door knocks, newsletters or letter box drops providing information on the proposal, working hours and a contact name and number for more information or to register complaints.</td>
<td>TfNSW Roads and Maritime</td>
<td>Pre-construction/construction</td>
<td>Core standard safeguard</td>
</tr>
<tr>
<td>TT3</td>
<td>Access</td>
<td>Requirements for any changes to local access arrangements will be confirmed during detailed design in consultation with the local road authority and any affected landowners.</td>
<td>TfNSW Roads and Maritime</td>
<td>Pre -construction/detailed design/</td>
<td>Additional standard safeguard</td>
</tr>
<tr>
<td>TT4</td>
<td>Access</td>
<td>Access to properties will be maintained during construction. Where that is not possible or necessary, temporary alternative access arrangements will be provided following consultation.</td>
<td>Construction contractor</td>
<td>Pre –construction/construction</td>
<td>Additional standard safeguard</td>
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<td>No.</td>
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<tr>
<td>TT5</td>
<td>Impacts to pedestrians and cyclists</td>
<td>Pedestrian and cyclist access will be maintained throughout construction. Where that is not possible or necessary, temporary alternative access arrangements will be provided following consultation with affected landowners and the local road authority.</td>
<td>Construction contractor</td>
<td>Construction</td>
<td>Additional standard safeguard</td>
</tr>
<tr>
<td>TT6</td>
<td>Community information</td>
<td>Road users and local communities will be provided with timely, accurate, relevant and accessible information about changed traffic arrangements and delays owing to construction activities.</td>
<td>Construction contractor</td>
<td>Construction</td>
<td>Additional standard safeguard</td>
</tr>
<tr>
<td>TT7</td>
<td>Disruption to public transport, including school bus services</td>
<td>Access for public transport services, including school bus services, will be maintained. The requirements for any temporary changes will be confirmed following consultation with local bus operators and the community.</td>
<td>Construction contractor</td>
<td>Construction</td>
<td>Additional standard safeguard</td>
</tr>
<tr>
<td>TT8</td>
<td>Access</td>
<td>Where any existing access arrangements to property is permanently affected, arrangements for appropriate alternative access will be determined in consultation with the affected landowner and local road authority.</td>
<td>TfNSW Roads and Maritime</td>
<td>Pre-construction/detailed design/</td>
<td>Additional standard safeguard</td>
</tr>
<tr>
<td>TT9</td>
<td>Bus stops</td>
<td>The opportunity to consolidate stops between Fountain Street and Botany Road will be considered in consultation with local bus operators.</td>
<td>TfNSW Roads and Maritime</td>
<td>Detailed design</td>
<td>Additional safeguard</td>
</tr>
<tr>
<td>TT10</td>
<td>Emergency services</td>
<td>Conduct consultation with emergency services to ensure adequate emergency vehicle access is maintained for the duration of construction. Provide regular updates to emergency services about any changes to local access during construction.</td>
<td>Construction contractor</td>
<td>Construction</td>
<td>Additional safeguard</td>
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<tr>
<td>TT11</td>
<td>Change in availability of on-street parking</td>
<td>The NSW SES will be notification where there are likely to be significant delays in the operation of the roads affected by the proposal.</td>
<td>TfNSW Roads and Maritime</td>
<td>Detailed design</td>
<td>Additional safeguard</td>
</tr>
<tr>
<td>TT12</td>
<td>Change in availability of on-street parking</td>
<td>During detailed design TfNSW will investigate refinements to proposed parking restrictions to mitigate impacts, where possible.</td>
<td>TfNSW Roads and Maritime</td>
<td>Detailed design</td>
<td>Additional safeguard</td>
</tr>
<tr>
<td>TT13</td>
<td>Parking during operation</td>
<td>During detailed design Roads and Maritime will consider options for mitigating the loss of off-street parking for businesses through reconfiguration of remaining space at 102-112 McEvoy Street where possible.</td>
<td>TfNSW Roads and Maritime</td>
<td>Detailed design</td>
<td>Additional safeguard</td>
</tr>
<tr>
<td>TT14</td>
<td>Parking during construction</td>
<td>Consult with the City of Sydney on the possible inclusion of timed restrictions in areas that currently have no parking restrictions along side streets and along the proposal itself to allow for a greater turnover of parked vehicles during business hours.</td>
<td>TfNSW Roads and Maritime</td>
<td>Detailed design</td>
<td>Additional safeguard</td>
</tr>
<tr>
<td>TT15</td>
<td>Intersection design reviews</td>
<td>Implement a construction workforce parking strategy to minimise loss of parking during construction. Provide parking for construction workforce within construction areas and implement worker parking policies to reduce demand for local parking.</td>
<td>Construction contractor</td>
<td>Construction</td>
<td>Additional safeguard</td>
</tr>
<tr>
<td>TT16</td>
<td>Operation performance of the road corridor</td>
<td>The Fountain Street/McEvoy Street intersection will be reviewed and considered further in detailed design in consultation with the City of Sydney</td>
<td>TfNSW</td>
<td>Detailed design</td>
<td>Additional safeguard</td>
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### Noise and vibration

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</table>
| NV1 | Noise and vibration     | A CNVMP will be prepared and implemented as part of the CEMP. The CNVMP will generally follow the approach in the ICNG and identify:  
  - All potential significant noise and vibration generating activities associated with the activity  
  - Site inductions  
  - Feasible and reasonable mitigation measures to be implemented, taking into account *Beyond the Pavement: urban design policy, process and principles* (Roads and Maritime, 2014)  
  - A monitoring program to assess performance against relevant noise and vibration criteria  
  - Arrangements for consultation with affected neighbours and sensitive receivers, including notification and complaint handling procedures  
  - Contingency measures to be implemented in the event of non-compliance with noise and vibration criteria.                                                                 | Contractor      | Detailed design/ pre-construction | Core standard safeguard NV1                      |
|     |                         |                                                                                                                                                                                                                                                                  |                 |                              | Section 4.6 of QA G36 Environment Protection |
| NV2 | Noise and vibration     | All sensitive receivers (eg schools, local residents) likely to be affected will be notified at least five days prior to commencement of any works associated with the activity that may have an adverse noise or vibration impact. The notification will provide details of:  
  - The project  
  - The construction period and construction hours                                                                                                                                                                                                 | Contractor      | Detailed design / pre-construction | Additional safeguard                           |
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<tr>
<td></td>
<td></td>
<td>• Contact information for project management staff</td>
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<td>• Complaint and incident reporting</td>
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<td>• How to obtain further information.</td>
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<td>Where feasible and reasonable, construction will be carried out during the standard daytime working hours and work generating high noise levels will be scheduled during less sensitive time periods.</td>
<td>Construction contractor</td>
<td>Construction</td>
<td>Additional safeguard</td>
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<tr>
<td>NV3</td>
<td>Construction hours and scheduling</td>
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<td></td>
<td>Construction respite period during normal hours and out-of-hours</td>
<td>• The duration and respite of high noise generating activities will be carrying out in accordance with the CNVG, and consultation with the community</td>
<td>Construction contractor</td>
<td>Detailed design/pre-construction /construction</td>
<td>Additional safeguard</td>
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<td>• As a guide, high noise generating activities near receivers will be carried out in blocks that do not exceed three hour hours each, with a minimum respite period of one hour between each block. The duration of each block of work and respite will be flexible to accommodate the usage and amenity at nearby receivers.</td>
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<tr>
<td>NV4</td>
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<td></td>
<td>Equipment selection</td>
<td>• Use quieter and less noise emitting construction methods where feasible and reasonable</td>
<td>Construction contractor</td>
<td>Detailed design/pre-construction</td>
<td>Additional safeguard</td>
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<td></td>
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<td>• Ensure plant including the silencer is well maintained.</td>
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<tr>
<td>NV5</td>
<td>Plant noise levels</td>
<td>• The noise levels of plant and equipment will have operating Sound Power or Sound Pressure Levels compliant with the criteria in Appendix F of the CNVG</td>
<td>Construction contractor</td>
<td>Detailed design/pre-construction</td>
<td>Additional safeguard</td>
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<td>• A noise monitoring audit program will be implemented to ensure equipment remains</td>
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<td>NV6</td>
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<td>within the more stringent of the manufacturer's specifications or Appendix F of the CNVG</td>
<td>Construction contractor</td>
<td>Detailed design/pre-construction</td>
<td>Additional safeguard</td>
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<td>• The noise levels of plant and equipment items will be considered in rental decisions and in any case cannot be used on site unless compliant with the criteria in the CNVG</td>
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<td>• Use only the necessary size and power of equipment will be used.</td>
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<tr>
<td>NV7</td>
<td>Use and siting of plant</td>
<td>• The offset distance between noisy plant and adjacent sensitive receivers will be maximised</td>
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<td>• Plant used intermittently will be throttled down or shut down</td>
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<td>• Noise-emitting plant will be directed away from sensitive receivers. Only have necessary equipment on site.</td>
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<tr>
<td>NV8</td>
<td>Plan worksites and activities to minimise noise</td>
<td>• Locate compounds away from sensitive receivers and discourage access from local roads where possible</td>
<td>Construction contractor</td>
<td>Detailed design/pre-construction</td>
<td>Additional safeguard</td>
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<td></td>
<td>• Parking and loading/unloading areas will be planned to minimise reversing movements within the site</td>
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<td>• Where additional activities or plant may only result in a marginal noise increase and speed up works, consider limiting duration of impact by concentrating noisy activities at one location and move to another as quickly as possible</td>
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<td>• Very noisy activities will be scheduled for normal working hours. If the work cannot be undertaken during the day, it should be completed before 11:00pm where possible</td>
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<td>· If programmed night works is postponed the work will be re-programmed and the approaches in the CNVG apply again.</td>
<td>Construction contractor</td>
<td>Detailed design/pre-construction</td>
<td>Additional safeguard</td>
</tr>
</tbody>
</table>
| NV9 | Non-tonal and ambient sensitive reversing alarms | · Non-tonal reversing beepers (or an equivalent mechanism) will be fitted and used on all construction vehicles and mobile plant regularly used on site and for out of hours work  
· The use of ambient sensitive alarms that adjust output relative to the ambient noise level will be considered. | Construction contractor | Detailed design/pre-construction | Additional safeguard |
| NV10| Minimise disturbance arising from delivery of goods to construction sites | · Loading and unloading of material/deliveries is to occur as far as possible from sensitive receivers  
· Select site access points and roads as far as possible away from sensitive receiver.  
· Dedicated loading/unloading areas will be shielded if close to sensitive receivers  
· Delivery vehicles will be fitted with straps rather than chains for unloading, wherever possible  
· Avoid or minimise these out of hours movements where possible. | Construction contractor | Detailed design/pre-construction | Additional safeguard |
| NV11| Engine compression braking | · Limit the use of engine compression brakes at night and in residential areas  
· Vehicles will be are fitted with a maintained Original Equipment Manufacturer exhaust silencer or a silencer that complies with the National Transport Commission’s ‘in-service test procedure’ and standard. | Construction contractor | Detailed design/pre-construction | Additional safeguard |
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<tr>
<td>NV12</td>
<td>Shield stationary noise sources such as pumps, compressors, fans etc.</td>
<td>Stationary noise sources will be enclosed or shielded where feasible and reasonable while ensuring that the occupational health and safety of workers is maintained. Appendix D of AS 2436:2010 lists materials suitable for shielding.</td>
<td>Construction contractor</td>
<td>Detailed design/pre-construction</td>
<td>Additional safeguard</td>
</tr>
<tr>
<td>NV13</td>
<td>Additional noise mitigation measures</td>
<td>Where the NML at a receiver is exceeded after the standard mitigation measures from Section 4.5.1 of the noise and vibration assessment (Appendix M of the REF) have been implemented, additional noise mitigation measures as per Appendix C of the CNVG will be considered.</td>
<td>Construction contractor</td>
<td>Detailed design/pre-construction</td>
<td>Additional safeguard</td>
</tr>
<tr>
<td>NV14</td>
<td>Vibration</td>
<td>Dilapidation surveys should be conducted at all residential and other sensitive receivers identified to be impacted by vibration from the construction site.</td>
<td>Construction contractor</td>
<td>Construction</td>
<td>Additional safeguard</td>
</tr>
</tbody>
</table>
| NV15 | At property treatments | • Further investigation of all reasonable and feasible noise control options will be required as a result of any exceedances of the applicable NCG noise criteria.  
• All reasonable and feasible noise mitigation treatments would be considered for the affected receivers as part of the proposal to reduce traffic noise levels at residences to within the applicable noise limits.  
• Additional acoustic design survey to confirm if the level of acoustic treatment within the 30 newly-developed buildings is already equivalent to the acoustic treatments that would be offered by the NMG and the Roads and Maritime At-Receiver Noise Treatment Guideline before | TfNSW Roads and Maritime | Detail design | Additional safeguard |
## Environmental safeguards and management measures

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<td>committing to offering additional at-property treatment.</td>
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<tr>
<td>NV16</td>
<td>Operation sleep disturbance</td>
<td>A more detailed sleep disturbance assessment will be carried out during the detailed design stage for the operation impacts of the proposal.</td>
<td>TfNSW Roads and Maritime</td>
<td>Detail design</td>
<td>Additional safeguard</td>
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<td></td>
<td><strong>Non-Aboriginal heritage</strong></td>
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<tr>
<td>NAH1</td>
<td>Non-Aboriginal heritage</td>
<td>A Non-Aboriginal Heritage Management Plan (NAHMP) will be prepared and implemented as part of the CEMP. It will provide specific guidance on measures and controls to be implemented to avoid and mitigate impacts to non-Aboriginal heritage.</td>
<td>Contractor</td>
<td>Detailed design/ pre-construction</td>
<td>Core standard safeguard NA1 Section 4.10 of QA G36 Environment Protection</td>
</tr>
<tr>
<td>NAH2</td>
<td>Centennial Park, Moore Park, Queens Park and Moore Park Heritage Conservation Area</td>
<td>As the proposal will involve temporary construction activities within the curtilage of the SHR listed ‘Centennial Park, Moore Park, Queens Park’, a section 57 notification would be submitted to, and approved by, the Heritage Council of NSW prior to construction of the proposal commencing.</td>
<td>TfNSW Roads and Maritime</td>
<td>Detailed design/pre-construction</td>
<td>Additional safeguard</td>
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<tr>
<td>NAH3</td>
<td>Non-Aboriginal heritage</td>
<td>The Standard Management Procedure - Unexpected Heritage Items (Roads and Maritime, 2015) will be followed in the event that any unexpected heritage items, archaeological remains</td>
<td>Contractor</td>
<td>Detailed design / pre-construction</td>
<td>Section 4.10 of QA G36 Environment Protection</td>
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<tr>
<td>NAH4</td>
<td>Site induction</td>
<td>All personnel working on site will receive training to ensure awareness of requirements of the NAHMP and relevant statutory responsibilities. Site-specific training will be given to personnel when working in the vicinity of identified non-Aboriginal heritage items.</td>
<td>Contractor</td>
<td>Pre-construction</td>
<td>Additional standard safeguard</td>
</tr>
<tr>
<td>NAH5</td>
<td>Non-Aboriginal heritage</td>
<td>The City of Sydney and Sydney Water will be consulted as part of this development process to ensure any requirements about their heritage assets are identified and incorporated into the proposal.</td>
<td>TfNSW Roads and Maritime</td>
<td>Detailed design/pre-construction</td>
<td>Additional safeguard</td>
</tr>
<tr>
<td>NAH6</td>
<td>Non-Aboriginal heritage</td>
<td>Materials chosen for signage, kerbs, and other road infrastructure would be compatible and complimentary to the surrounding heritage character of the study area.</td>
<td>TfNSW Roads and Maritime</td>
<td>Detailed design/pre-construction</td>
<td>Additional safeguard</td>
</tr>
<tr>
<td>NAH7</td>
<td>Protect Non-Aboriginal cultural heritage items</td>
<td>The protection of areas of identified non-Aboriginal cultural heritage value that are to be retained will occur in accordance with the adopted NAHMP.</td>
<td>Construction Contractor</td>
<td>Pre-construction</td>
<td>Additional standard safeguard</td>
</tr>
</tbody>
</table>
| NAH8 | Non-Aboriginal heritage | To prevent inadvertent impacts to significant heritage listed buildings and fabric during construction temporary protection zones (TPZ) such as fencing or protective padding will be placed around the following heritage items:  
- ‘Former Sydney Water Pumping Station & Valve House Incl. Interiors’ | TfNSW Roads and Maritime | Pre-construction and construction | Additional safeguard |
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<tr>
<td>NAH9</td>
<td>Impact to trees</td>
<td>TPZ would be established around trees within the construction footprint to prevent inadvertent impacts to these items during construction. This would require advice from a qualified arborist.</td>
<td>Contractor</td>
<td>Pre-construction and construction</td>
<td>Additional safeguard</td>
</tr>
<tr>
<td>NAH11</td>
<td>Impact to trees</td>
<td>In order to prevent inadvertent impacts to trees listed on the City of Sydney Register of Significant Trees (2013) and those located within the SHR curtilage for the Centennial Park, Moore Park, Queens Park and Moore Park Heritage Conservation Area located closed to the proposal, Tree Protection Zones (TPZ) would be established while construction of the proposal is in progress. This would require advice and management from a qualified arborist</td>
<td>Contractor</td>
<td>Pre-construction and construction</td>
<td>Additional safeguard</td>
</tr>
<tr>
<td>NAH11</td>
<td>Sandstone kerbs</td>
<td>Sandstone kerbs will be retained where possible. If retention is not possible, they will be reinstated or replaced as per guidelines set out by the City of Sydney’s Sydney Streets Technical Specifications: Kerb and Gutter booklet (2013).</td>
<td>TfNSW Roads and Maritime</td>
<td>Pre-construction and construction</td>
<td>Additional safeguard</td>
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<tr>
<td>NAH12</td>
<td>Archaeological potential in ancillary Site 2</td>
<td>A section 139 excavation permit covering the works at construction compound (ancillary Site 2) would be obtained from the NSW Heritage Division. An Archaeological Research Design (ARD) would be prepared to support the permit application. The ARD would outline archaeological management zoning for the proposal area. Test excavations would be designed to investigate the presence of intact structural remains and/or artefact deposits associated with the former building within the construction footprint and subsequently provide management advice for the proposal. If intact remains associated with artefact bearing deposits were identified during the test excavations a section 140 permit for salvage excavations or archaeological monitoring and recording may be required prior to the work commencing.</td>
<td>TfNSW Roads and Maritime</td>
<td>Detailed design/pre-construction/construction</td>
<td>Additional safeguard</td>
</tr>
<tr>
<td>NAH13</td>
<td>Archaeological potential in ancillary Site 2 and Site 3</td>
<td>An ARD and excavation methodology would also be prepared to manage requirements for the potential remains of former tram tracks along Botany Road (Site 2), Elizabeth Street (Site 3) and South Dowling Street. These have been assessed as ‘works’ containing local significance. Impacts to works do not require approval under the Heritage Act 1977, although they would be managed according to their significance.</td>
<td>Contractor</td>
<td>Construction</td>
<td>Additional safeguard</td>
</tr>
<tr>
<td>NAH14</td>
<td>Archaeology</td>
<td>If relics are discovered during construction work must stop work immediately and the Heritage Council of NSW contacted, in accordance with section 146 of the Heritage Act 1977. The proponent must also inform the either the City of</td>
<td>Contractor</td>
<td>Construction</td>
<td>Additional safeguard</td>
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| NAH15| Vibration impacts to heritage items | All feasible and reasonable vibration mitigation measures will be implemented to avoid vibration impacts to:  
|      |                              | • Former Sydney Water Pumping Station & Valve House Including Interiors and Waterloo Water Pumping Station      | Contractor     | Construction       | Additional safeguard               |
|      |                              | • Terrace group ‘Gordon Terrace’ 1–25 John Street                                                             |                |                   |                                    |
|      |                              | • Electrical Substation no. 174                                                                                |                |                   |                                    |
|      |                              | • Terrace group including interiors                                                                             |                |                   |                                    |
|      |                              | • Electrical substation                                                                                        |                |                   |                                    |
|      |                              | • Moore Park View Hotel.                                                                                       |                |                   |                                    |

Mitigation measures will include using construction methods with reduced levels of vibration, and monitoring of vibration levels in accordance with the noise and vibration assessment (refer to Section 6.2.5 and Appendix M of the REF).

### Aboriginal heritage

<p>| AH1  | Aboriginal heritage | The Standard Management Procedure - Unexpected Heritage Items (Roads and Maritime, 2015) will be followed in the event that any unexpected heritage items, archaeological remains or potential relics of Non-Aboriginal origin are encountered. | Contractor | Detailed design / pre-construction | Section 4.10 of QA G36 Environment Protection |</p>
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<td></td>
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<td>Work will only re-commence once the requirements of that Procedure have been satisfied.</td>
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<td></td>
<td><strong>Hydrology and flooding</strong></td>
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<tr>
<td>HF1</td>
<td>Soil and water</td>
<td>A Soil and Water Management Plan (SWMP) will be prepared and implemented as part of the CEMP. The SWMP will identify all reasonably foreseeable risks relating to soil erosion and water pollution and describe how these risks will be addressed during construction.</td>
<td>Contractor</td>
<td>Detailed design/pre-</td>
<td>Core standard safeguard SW1</td>
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<td>construction</td>
<td>Section 2.1 of QA G38 Soil and Water Management</td>
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<tr>
<td>HF2</td>
<td>Soil and water</td>
<td>A site specific Erosion and Sediment Control Plan/s will be prepared and implemented as part of the Soil and Water Management Plan. The Plan will include arrangements for managing wet weather events, including monitoring of potential high risk events (such as storms) and specific controls and follow-up measures to be applied in the event of wet weather.</td>
<td>Contractor</td>
<td>Detailed design/Pre-</td>
<td>Core standard safeguard SW2</td>
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<td></td>
<td>construction</td>
<td>Section 2.2 of QA G38 Soil and Water Management</td>
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<tr>
<td>HF3</td>
<td>Dewatering</td>
<td>During detailed design, additional geotechnical investigations will be completed and will include an investigation of groundwater depth. Should excavation dewatering be required during construction, water will be tested and managed appropriately. For example, this may involve</td>
<td>Contractor</td>
<td>Construction</td>
<td>Additional safeguard</td>
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<td>Disposal to an appropriately licensed facility. These measures will be managed under the CEMP. Confirmation of whether or not a licence under the <em>Water Management Act 2000</em> as defined under the <em>Aquifer Interference Policy</em> is required will be confirmed prior to any dewatering activity commencing.</td>
<td>Contractor</td>
<td>Construction</td>
<td>Additional standard safeguard SW9</td>
</tr>
<tr>
<td>HF4</td>
<td>Minimise risks to water quality and soil impacts</td>
<td>Stockpiles will be designed, established, operated and decommissioned in accordance with the <em>Stockpile Site Management Guideline</em> (RTA, 2011a).</td>
<td>Contractor</td>
<td>Construction</td>
<td>Additional Safeguard</td>
</tr>
</tbody>
</table>
| HF5 | Hydrology and flooding | The following measures will be implemented during detailed design:  
- Flooding impacts will be reassessed for both the construction and operation of the proposal as refinements to the road and drainage designs are expected to change the flooding impacts  
- The flood risk to vehicles will also be reassessed and the design adjusted to provide safe flow conditions for vehicles, if possible  
- Stormwater survey received from ongoing site investigations should be reviewed against the stormwater data incorporated in the baseline model, and any necessary updates made to the model for both the baseline and design case scenarios  
- The identified mitigation measures and strategies will be reviewed and reassessed in | TfNSW Roads and Maritime | Detail design |  |
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<td>light of any changes to the flooding impacts resulting from the detailed design</td>
<td>TfNSW Roads and Maritime</td>
<td>Detail design</td>
<td>Additional safeguard</td>
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<td></td>
<td>Flood impacts of the proposal on the probable maximum flood event will be carried out to ensure no adverse flood impacts due to the proposal.</td>
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<tr>
<td>HF6</td>
<td>Impacts to building</td>
<td>Any residual flood impacts to properties after implementing feasible mitigation works will be quantified. Floor level survey data will be collected to quantify impacts to above-floor flooding of properties located along the proposal that may be impacted. Any residual flood impacts to properties after implementing feasible mitigation works will be quantified. TfNSW will carry out site inspections and consultation with affected landowners to address any potential impacts and will maintain ongoing consultation with property owners, including the owner at 147-161 McEvoy Street where flood impacts are identified.</td>
<td>TfNSW Roads and Maritime</td>
<td>Detail design</td>
<td>Additional safeguard</td>
</tr>
<tr>
<td>HF7</td>
<td>Flooding</td>
<td>The CEMP will consider the potential impacts of temporary construction works including trenching, solid traffic barriers and stockpiles on overland flows and incorporate appropriate management measures to address these issues.</td>
<td>Contractor</td>
<td>Construction</td>
<td>Additional safeguard</td>
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<tr>
<td>VI1</td>
<td>Landscape character and visual impact</td>
<td>An Urban Design Plan will be prepared to support the final detailed project design and implemented as part of the CEMP.</td>
<td>Contractor</td>
<td>Detailed design / pre-construction</td>
<td>Core standard safeguard UD1</td>
</tr>
</tbody>
</table>

The Urban Design Plan will present an integrated urban design for the project, providing practical detail on the application of design principles and objectives identified in the environmental assessment. The Plan will include design treatments for:

- Location and identification of existing vegetation and proposed landscaped areas, including species to be used
- Built elements including retaining walls, bridges and noise walls
- Pedestrian and cyclist elements including footpath location, paving types and pedestrian crossings
- Fixtures such as seating, lighting, fencing and signs
- Details of the staging of landscape works taking account of related environmental controls such as erosion and sedimentation controls and drainage
- Procedures for monitoring and maintaining landscaped or rehabilitated areas.

The Urban Design Plan will be prepared in accordance with relevant guidelines, including:
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<td></td>
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<td>Beyond the Pavement urban design policy,</td>
<td>Construction contractor</td>
<td>Construction</td>
<td>Core standard safeguard UD2</td>
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<td></td>
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<td>process and principles (Roads and Maritime, 2014)</td>
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<td>Landscape Guideline (RTA, 2008)</td>
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<td>Bridge Aesthetics (Roads and Maritime 2012)</td>
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<td>Noise Wall Design Guidelines (RTA, 2006)</td>
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<td>Shotcrete Design Guideline (RTA, 2005).</td>
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<tr>
<td>VI2</td>
<td>Work sites</td>
<td>Project work sites, including construction areas and supporting facilities (such as storage compounds and offices) will be managed to minimise visual impacts, including appropriate storage of equipment, parking, stockpile screening and arrangements for the storage and removal of rubbish and waste materials.</td>
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<tr>
<td>VI3</td>
<td>Impact on street trees</td>
<td>A detailed tree assessment of trees impacted by the proposal and detailed tree survey will be carried out prior to construction based on the detail design.</td>
<td>Contractor</td>
<td>Detailed design / pre-construction</td>
<td>Additional safeguard</td>
</tr>
<tr>
<td>VI4</td>
<td>Vegetation and landscaping</td>
<td>Where feasible and reasonable:</td>
<td>TfNSW Roads and Maritime / Contractor</td>
<td>Detailed design/pre-construction</td>
<td>Additional safeguard</td>
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<td></td>
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<td>• Street trees will be retained along Euston Road, McEvoy Street and Lachlan Street</td>
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<td>• All new tree plantings would be planted in the vegetated area at the front of the foot path.</td>
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<td></td>
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<td>• Existing trees next to the kerb would be retained and the path moved away from the kerb where possible.</td>
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<td>• Where space constraints are present next to existing buildings, the wider footpaths would be</td>
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<td>adjusted to allow for a vegetated verge next to the kerb</td>
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<td>• Elevated walkways and wider footpaths will be constructed where paths have the potential to impact on trees or tree roots</td>
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<td>• New street trees will be planted in accordance with the City of Sydney’s Street Tree Masterplan where possible and in consultation with the City of Sydney. Tree species to be used include:</td>
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<td></td>
<td></td>
<td>- <em>Ficus microcarpa var. hillii</em> (Hill’s Fig)</td>
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<td></td>
<td></td>
<td>- <em>Waterhousea floribunda</em> ‘Green Avenue’ (Weeping Lilly Pilly)</td>
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<td></td>
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<td>- <em>Lophostemon confertus</em> (Brush Box)</td>
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<td></td>
<td>- <em>Platanus acerifolia</em> (London Plane).</td>
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<tr>
<td>VI5</td>
<td>Visual impact of work sites</td>
<td>Compound and ancillary facilities will be decommissioned, and the sites rehabilitated to their existing condition or as otherwise agreed with the landowner on completion of works.</td>
<td>Contractor</td>
<td>Construction</td>
<td>Additional safeguard</td>
</tr>
<tr>
<td>VI6</td>
<td>Light spill from work sites</td>
<td>Temporary lighting will be located and designed to avoid light spill into residential properties and identified sensitive receptors.</td>
<td>Contractor</td>
<td>Construction</td>
<td>Additional safeguard</td>
</tr>
<tr>
<td>VI7</td>
<td>Green infrastructure</td>
<td>Consideration will be given to Water Sensitive Urban Design (WSUD) initiatives, given it’s the proposals low lying condition of the area and propensity for flooding.</td>
<td>TfNSW Roads and Maritime</td>
<td>Detailed design / pre-construction</td>
<td>Additional safeguard</td>
</tr>
<tr>
<td>V18</td>
<td>Tree impacts</td>
<td>TfNSW will review the landscaping plans further in detailed design to ensure that there are more trees planted than that removed during construction of the Stage 1 proposal. This may include small gardens</td>
<td>TfNSW</td>
<td>Detailed design</td>
<td>Additional safeguard</td>
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<tr>
<td>V19</td>
<td>Landscaping and urban design treatments</td>
<td>Landscaping and urban design treatments including reducing the length of the Lachlan Street merge will be considered further in detailed design and in consultation with the City of Sydney.</td>
<td>TfNSW</td>
<td>Detailed design</td>
<td>Additional safeguard</td>
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</tbody>
</table>
|     | Contaminated land              | A Contaminated Land Management Plan will be prepared in accordance with the Guideline for the Management of Contamination (Roads and Maritime, 2013) and implemented as part of the CEMP. The plan will include, but not be limited to:  
  • Capture and management of any surface runoff contaminated by exposure to the contaminated land  
  • Further investigations required to determine the extent, concentration and type of contamination, as identified in the detailed site investigation (Phase 2)  
  • Management of the remediation and subsequent validation of the contaminated land, including any certification required  
  • Measures to ensure the safety of site personnel and local communities during construction. | Contractor      | Detailed design / Pre-construction                       | Section 4.2 of QA G36 Environment Protection |
| CL2 | Contaminated land              | If contaminated areas are encountered during construction, appropriate control measures will be implemented to manage the immediate risks of contamination. All other works that may impact on the contaminated area will cease until the nature | Contractor      | Construction             | Core standard safeguard C2 |
### Environmental safeguards and management measures

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<td>and extent of the contamination has been confirmed and any necessary site-specific controls or further actions identified in consultation with the Roads and Maritime Environment Manager and/or EPA.</td>
<td>Contractor</td>
<td>Detailed design/Pre-construction</td>
<td>Section 4.2 of QA G36 Environment Protection</td>
</tr>
<tr>
<td>CL3</td>
<td>Contaminated land</td>
<td>Contractor</td>
<td>Detailed design/Pre-construction</td>
<td>Additional safeguard</td>
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<td></td>
<td>Where excavation works are required within low risk areas, the CEMP will detail contingency measures. These measures will manage potentially contaminated materials if materials are suspected and/or encountered during construction activities. In these low risk areas, no testing is required unless contamination is suspected or encountered during construction activities. The process for the testing and/or management of suspected or encountered contamination in these lower risk areas will be addressed in the CEMP.</td>
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<tr>
<td>CL4</td>
<td>Accidental spill</td>
<td>Contractor</td>
<td>Detailed design/Pre-construction</td>
<td>Core standard safeguard C3</td>
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<td>A site specific emergency spill plan will be developed and include spill management measures in accordance with the Roads and Maritime Code of Practice for Water Management (RTA, 1999) and relevant EPA guidelines. The plan will address measures to be implemented in the event of a spill, including initial response and containment, notification of emergency services and relevant authorities (including Roads and Maritime and EPA officers).</td>
<td></td>
<td>Section 4.3 of QA G36 Environment Protection</td>
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<tr>
<td>CL5</td>
<td>Contaminated land</td>
<td>Contractor</td>
<td>Construction</td>
<td>Additional safeguard</td>
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<td>If potentially contaminated materials (including asbestos) are suspected and/or encountered during construction, these will be managed by an unexpected finds protocol incorporated in the CEMP.</td>
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<td>CL6</td>
<td>Removed of excavated material</td>
<td>An in-situ waste classification will be carried out in accordance with the NSW <em>Waste Classification Guidelines</em> (EPA, 2004) for any materials which are excavated and removed from the proposal area.</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
<tr>
<td>CL7</td>
<td>Acid Sulfate Materials Management Plan</td>
<td>An ASS investigation within Class 3 areas where works are proposed to extend one metre below ground level. If ASS are confirmed, an appropriate ASS management plan will be prepared and implemented as part of the CEMP. The Plan will be prepared in accordance with the Roads and Maritime’s <em>Guidelines for the Management of Acid Sulfate Materials</em> (RTA, 2005).</td>
<td>Contractor</td>
<td>Pre-construction</td>
</tr>
<tr>
<td>CL8</td>
<td>Temporary construction facilities</td>
<td>Should contamination exist within the temporary construction facilities of Sites 1 to 5, contamination will need to be managed under a CEMP during establishment of the facilities, and during operation to reduce risk of contamination to site users. Should deeper excavations which encounter groundwater occur within temporary construction facility Site 4, volatile compounds (if present) may need to be managed during construction activities. Should temporary site buildings need to be established within Site 4 during construction, buildings should be raised above ground level to mitigate any potential exposure from volatile compounds which may be present as a result of VOC contaminated groundwater beneath the site.</td>
<td>Contractor</td>
<td>Pre-construction</td>
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<td>SE1</td>
<td>Communications</td>
<td>A Communication Plan (CP) will be prepared and implemented as part of the CEMP to help provide timely and accurate information to the community during construction. The CP will include (as a minimum):</td>
<td>Construction contractor</td>
<td>Detailed design / pre-construction</td>
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<td>• Mechanisms to provide details and timing of proposed activities to affected residents, including changed traffic and access conditions</td>
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<td>• Contact name and number for complaints.</td>
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<td>The CP will be prepared in accordance with the <em>Community Involvement and Communications Resource Manual</em> (RTA, 2008).</td>
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<tr>
<td>SE2</td>
<td>Emergency vehicle access</td>
<td>Consultation will be completed with emergency services prior to construction commencing to ensure adequate emergency vehicle access is maintained for the duration of construction. Regular updates will be provided to emergency services about any changes to local access during construction. Access for emergency vehicles will be maintained at all times during construction. Any site-specific requirements will be determined in consultation with the relevant emergency services agency</td>
<td>Construction contractor</td>
<td>Pre-construction and construction</td>
</tr>
<tr>
<td>SE3</td>
<td>Property acquisition</td>
<td>All property acquisition will be carried out in accordance with the <em>Land Acquisition Information Guide</em> (Roads and Maritime, 2012) and the <em>Land Acquisition (Just Terms Compensation) Act 1991</em>.</td>
<td>TfNSW Roads and Maritime project manager</td>
<td>Pre-construction and construction</td>
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<tr>
<td>SE4</td>
<td>Impacts to residents</td>
<td>Consultation will be carried out with potentially affected residences prior to the commencement of and during works in accordance with the <em>Community Involvement and Communications Resource Manual</em> (RTA, 2008). Consultation will include but not be limited to door knocks, newsletters or letter box drops providing information on the proposal, working hours and a contact name and number for more information or to register complaints.</td>
<td>Construction contractor</td>
<td>Construction</td>
</tr>
<tr>
<td>SE5</td>
<td>Impacts on viability of businesses</td>
<td>Consultation will occur with impacted businesses to identify appropriate management strategies to avoid or minimise impacts on access and operations. This will include consideration of measures such as additional signage and alternative access arrangements.</td>
<td>Construction contractor</td>
<td>Construction</td>
</tr>
<tr>
<td>SE6</td>
<td>Impacts on businesses</td>
<td>Maintain pedestrian and vehicle access to businesses near to construction works for the duration of construction and consult with local communities and motorists about changes to local access and any temporary changes required. Where temporary changes are required to property access, these will be identified in consultation with the property owner and business owner. Ensure businesses near to construction works remain visible during construction. Where screening of construction works is required that may potentially impact on visibility of businesses, this will be established in consultation with affected business owners with signage provided.</td>
<td>Construction contractor</td>
<td>Construction</td>
</tr>
<tr>
<td>No.</td>
<td>Impact</td>
<td>Environmental safeguards and management measures</td>
<td>Responsibility</td>
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<td>The Communication Plan will identify any specific mitigation and management measures in consultation with business owners to address any unexpected issues that arise during construction.</td>
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</tr>
<tr>
<td>SE7</td>
<td>Impacts on businesses</td>
<td>Roads and Maritime TfNSW will engage local businesses affected by the proposal to identify strategies to support them.</td>
<td>TfNSW Roads and Maritime</td>
<td>Construction</td>
</tr>
<tr>
<td>SE8</td>
<td>Impacts on businesses</td>
<td>Roads and Maritime TfNSW will review loading zones along the alignment during detailed design. Roads and Maritime to investigate options for mitigating the loss of off-street parking for businesses through reconfiguration of remaining space at 102-112 McEvoy Street.</td>
<td>TfNSW Roads and Maritime</td>
<td>Detailed design</td>
</tr>
</tbody>
</table>

**Biodiversity**

<p>| B1  | Biodiversity                  | A Flora and Fauna Management Plan will be prepared in accordance with Roads and Maritime’s Biodiversity Guidelines: Protecting and Managing Biodiversity on RTA Projects (RTA, 2011b) and implemented as part of the CEMP. It will include, but not be limited to:                                                                 | Contractor                      | Detailed design / pre-construction | Core standard safeguard B1        |
|     |                               | - Plans showing areas to be cleared and areas to be protected, including exclusion zones, protected habitat features and revegetation areas                                                                                                                                   |                                  |                                    | Section 4.8 of QA G36 Environment Protection |
|     |                               | - Requirements set out in the Landscape Guideline (RTA, 2008)                                                                                                                                                                                                                               |                                  |                                    |                                     |
|     |                               | - Pre-clearing survey requirements                                                                                                                                                                                                                                                                  |                                  |                                    |                                     |
|     |                               | - Procedures for unexpected threatened species finds and fauna handling                                                                                                                                                                                                                           |                                  |                                    |                                     |</p>
<table>
<thead>
<tr>
<th>No.</th>
<th>Impact</th>
<th>Environmental safeguards and management measures</th>
<th>Responsibility</th>
<th>Timing</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>B2</td>
<td>Minimise risks to native flora and fauna during construction</td>
<td>Protocols to manage weeds and pathogens.</td>
<td>Contractor</td>
<td>Pre-construction and construction</td>
<td>Core standard safeguard B2</td>
</tr>
<tr>
<td></td>
<td>A pre-construction check of native flora and fauna species and habitat will be conducted in accordance with the <em>Biodiversity Guidelines - Protecting and managing biodiversity on RTA projects</em>. Biodiversity management measures identified during the pre-construction check will be incorporated into the CEMP Flora and Fauna Management Plan.</td>
<td></td>
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</tr>
<tr>
<td>B3</td>
<td>Biodiversity</td>
<td>Measures to further avoid and minimise the construction footprint and native vegetation or habitat removal will be investigated during detailed design and implemented where practicable and feasible.</td>
<td>Contractor</td>
<td>Detailed design / pre-construction</td>
<td>Core standard safeguard B3</td>
</tr>
<tr>
<td>B4</td>
<td>Protect native flora and fauna, minimise edge effects and avoid inadvertent impacts</td>
<td>All personnel working on site will receive training to ensure awareness of requirements of the Flora and Fauna Management Plan and relevant statutory responsibilities. Site-specific training will be given to personnel when working in the vicinity of areas of identified biodiversity value that are to be protected.</td>
<td>Contractor</td>
<td>Construction</td>
<td>Core standard safeguard B4</td>
</tr>
<tr>
<td>B5</td>
<td>Unexpected threatened species</td>
<td>Consistent with the Biodiversity Guidelines - <em>Protecting and managing biodiversity on RTA projects</em>, and any specific requirements of the approved Flora and Fauna Management Plan, an unexpected finds procedure will be implemented in the event that a threatened species or ecological community that had not been identified and assessed by the REF is unexpectedly encountered during the construction process.</td>
<td>Contractor</td>
<td>Construction</td>
<td>Core standard safeguard B5</td>
</tr>
<tr>
<td>No.</td>
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<td>Environmental safeguards and management measures</td>
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</table>
| B6  | Protect native flora and fauna, minimise edge effects and avoid inadvertent impacts | Consistent with the approved Flora and Fauna Management Plan:  
- The limits of clearing within the construction site will be delineated using appropriate signage and barriers, identified on site construction drawings and during construction staff induction  
- Vegetation and habitat feature to be retained, such as hollow-bearing trees, will be clearly identified and protected by suitable fencing, signage or markings. | Contractor     | Construction | Additional safeguard |
| B7  | Fauna handling                                                         | Consistent with the Biodiversity Guidelines - *Protecting and managing biodiversity on RTA projects*, and any specific requirements of the approved Flora and Fauna Management Plan, management arrangements will be implemented to ensure safe fauna handling. As a minimum that will include:  
- Fauna handling being carried out by appropriately licenced ecologists or wildlife carers  
- Liaison with local animal rescue agency, wildlife carer group or vet to establish agreed arrangements for fauna rescue or injured animal assistance  
- Induction information for construction staff. | Contractor     | Construction | Additional safeguard |
| B8  | Minimise weed, pest species and pathogen risks                        | Weed, Pest Species and Pathogen Management Consistent with the *Biodiversity Guidelines - Protecting and managing biodiversity on RTA projects*, and any specific requirements of the approved Flora and Fauna Management Plan, | Contractor     | Construction | Additional safeguard |

*Additional safeguard*
<table>
<thead>
<tr>
<th>No.</th>
<th>Impact</th>
<th>Environmental safeguards and management measures</th>
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<th>Reference</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Management arrangements will be implemented to manage environmental risks associated with weeds, pest species and pathogens. As a minimum that will include:</td>
<td></td>
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<td></td>
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<td>· Completion of a site weed assessment and, if necessary, based on the assessment outcomes, a weed management plan</td>
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<td></td>
<td></td>
<td>· Implementation of appropriate weed control methods and weed disposal</td>
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<td></td>
<td>· Implementation of appropriate hygiene protocols where there are potential or known pathogen risks.</td>
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<tr>
<td>B9</td>
<td>Impacts to trees</td>
<td>Impacts to trees would be further reviewed in detailed design and where possible impacts would be reduced in consultation with an arborist and BGCP’s Tree Protection Policy would be followed where possible. The landscaping plans would also be further reviewed in detailed design and would include plans to replant more trees than what is being removed by the proposal.</td>
<td>TfNSW</td>
<td>Detailed design</td>
<td>Additional safeguard</td>
</tr>
<tr>
<td>O1</td>
<td>Topography, geology and soils</td>
<td>Spoil and fill management measures will be prepared and implemented as part of the CEMP. The Plan will identify the locations of spoil and fill stockpiles, sources of imported fill, and methods to re-use or dispose of excess or unsuitable spoil material including estimated volumes and disposal sites.</td>
<td>Contractor</td>
<td>Pre-construction</td>
<td>Additional safeguard</td>
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<tr>
<td>No.</td>
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<tr>
<td>O2</td>
<td>Air quality</td>
<td>An Air Quality Management Plan (AQMP) will be prepared and implemented as part of the CEMP. The AQMP will include, but not be limited to:</td>
<td>Contractor</td>
<td>Detailed design / pre-construction</td>
<td>Section 4.4 of QA G36 Environment Protection</td>
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<tr>
<td></td>
<td></td>
<td>- Potential sources of air pollution</td>
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<td>- Air quality management objectives consistent with any relevant published EPA and/or OEH guidelines</td>
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<td></td>
<td>- Mitigation and suppression measures to be implemented</td>
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<td>- Methods to manage work during strong winds or other adverse weather conditions</td>
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<td></td>
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<td>- A progressive rehabilitation strategy for exposed surfaces.</td>
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<tr>
<td>O3</td>
<td>GHG and climate change impacts</td>
<td>Energy and Greenhouse Gas management measures will be included in the CEMP. The CEMP may include, but not be limited to:</td>
<td>Contractor</td>
<td>Detailed design/pre-construction</td>
<td>Additional safeguard</td>
</tr>
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<td></td>
<td></td>
<td>- The use of alternative fuels and power sources for construction plant and equipment will be investigated and implemented, where appropriate</td>
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<td></td>
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<td>- Energy efficiency and related carbon emissions will be considered in the selection of vehicle and plant equipment</td>
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<td>- Materials will be delivered as full loads and local suppliers will be used, where possible</td>
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<td>- Construction equipment, plant and vehicles will be appropriately sized for the task.</td>
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<td>No.</td>
<td>Impact</td>
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<tr>
<td>O4</td>
<td>GHG and climate change impacts</td>
<td>The following measures will be considered during detailed design and construction, and implemented as appropriate:</td>
<td>Contractor</td>
<td>Construction</td>
<td>Additional safeguard</td>
</tr>
<tr>
<td></td>
<td></td>
<td>· Use of light-emitting diode (LED) and low energy equipment for traffic lights and signage</td>
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<td></td>
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<td>· Use of modern diesel engine equipment, to ensure highest fuel efficiency ratings</td>
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<td></td>
<td></td>
<td>· Review of local options for import and export of materials as needed to reduce excess fuel used during transport</td>
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<td>· Specification of the use of biofuels, or biofuel blends in construction plant and equipment</td>
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<td></td>
<td>· Specification and certification of steel from recycled sources where suitable for offsetting virgin steel</td>
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<td></td>
<td></td>
<td>· Specification of materials with low embodied energy/embodied greenhouse gas content, such as:</td>
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<td></td>
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<td>· Replacement of Portland cement in concrete mixes with low carbon alternatives such as fly-ash</td>
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<td></td>
<td></td>
<td>· Use of warm mix asphalt versus hot mix</td>
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<tr>
<td>O35</td>
<td>Waste</td>
<td>A Waste Management Plan (WMP) will be prepared and implemented as part of the CEMP. The WMP will include but not be limited to:</td>
<td>Contractor</td>
<td>Detailed design / pre-construction</td>
<td>Section 4.2 of QA G36 Environment Protection</td>
</tr>
<tr>
<td></td>
<td></td>
<td>· Measures to avoid and minimise waste associated with the project</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>· Classification of wastes and management options (re-use, recycle, stockpile, disposal)</td>
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<td>No.</td>
<td>Impact</td>
<td>Environmental safeguards and management measures</td>
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<td>• Statutory approvals required for managing both on and off-site waste, or application of any relevant resource recovery exemptions</td>
<td>Contractor</td>
<td>Pre-construction</td>
<td>Additional safeguard W2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Procedures for storage, transport and disposal</td>
<td>Contractor</td>
<td>Construction</td>
<td>Additional safeguard</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Monitoring, record keeping and reporting.</td>
<td>Contractor</td>
<td>Pre-construction</td>
<td>Additional safeguard</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The WMP will be prepared taking into account the <em>Environmental Procedure - Management of Wastes on Roads and Maritime Services Land</em> (Roads and Maritime, 2014) and relevant Roads and Maritime Waste Fact Sheets.</td>
<td>Contractor</td>
<td>Pre-construction</td>
<td>Additional safeguard</td>
</tr>
</tbody>
</table>

O46 Existing condition of ancillary sites

Prior to land being used for ancillary construction purposes (compounds, storage, parking, etc) a pre-construction land assessment will be carried out to identify the presence of any pre-existing wastes. The assessment will be prepared in accordance with the Roads and Maritime’s Environmental Procedure - Management of Wastes on Roads and Maritime Services Land. Where the land is privately owned, a copy of the assessment will be provided to the landowner.

O57 Waste and resource use

Waste materials (such as soils and aggregates) obtained from the project and to be exported for use on another construction site or project will be sampled and managed in accordance with relevant resource recovery orders and exemptions as issued by the NSW EPA.

O68 Waste and resource use

A Spoil Management Strategy will be developed prior to the commencement of construction and implemented during construction. The strategy will identify spoil disposal site(s) and describe the
<table>
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<tr>
<th>No.</th>
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<th>Environmental safeguards and management measures</th>
<th>Responsibility</th>
<th>Timing</th>
<th>Reference</th>
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</thead>
</table>
| O79 | Utilities               | Prior to the commencement of works:  
• The location of existing utilities and relocation details will be confirmed following consultation with the affected utility owners  
• If the scope or location of proposed utility relocation works falls outside of the assessed proposal scope and footprint, further assessment will be undertaken. | Contractor      | Detailed design / pre-construction | Core standard safeguard U1        |
| O810| Hazards and risk management | A Hazard and Risk Management Plan (HRMP) will be prepared and implemented as part of the CEMP. The HRMP will include, but not be limited to:  
• Details of hazards and risks associated with the activity  
• Measures to be implemented during construction to minimise these risks  
• Record keeping arrangements, including information on the materials present on the site, material safety data sheets, and personnel trained and authorised to use such materials  
• A monitoring program to assess performance in managing the identified risks  
• Contingency measures to be implemented in the event of unexpected hazards or risks arising, including emergency situations.  
The HRMP will be prepared in accordance with relevant guidelines and standards, including relevant Safe Work Australia Codes of Practice, and | Contractor      | Detailed design / pre-construction | Core standard safeguard HAZ1      |
<table>
<thead>
<tr>
<th>No.</th>
<th>Impact</th>
<th>Environmental safeguards and management measures</th>
<th>Responsibility</th>
<th>Timing</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>EPA or Office of Environment and Heritage publications.</td>
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<tr>
<td>C1</td>
<td>Cumulative impacts from construction of multiple projects</td>
<td>The CEMP will be updated as required to address cumulative impacts as other projects/activities begin. This will include a process to review and update mitigation measures as new work begins or if complaints are received.</td>
<td>Contractor</td>
<td>Pre-construction/Construction</td>
<td>Additional safeguard</td>
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<tr>
<td>C2</td>
<td>Cumulative traffic and access impacts</td>
<td>The Traffic Management Plan will be prepared in consultation with Roads and Maritime’s Sydney Coordination Office, City of Sydney and Randwick City councils</td>
<td>Contractor</td>
<td>Pre-construction</td>
<td>Additional safeguard</td>
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</table>
| C3  | Cumulative construction impacts                            | The Consultation Plan will include consultation with proponents of projects in the vicinity of the proposal:  
- Increase awareness of construction timeframes and impacts  
- Coordinate impact mitigation and management (eg respite periods).  | TfNSW Roads and Maritime  | Pre-construction/Construction | Additional safeguard |
| C4  | Cumulative flooding impacts                                |  
- The flood model for the proposal will be updated to incorporate changes to design levels and updated flood model impacts associated with the New M5 designs.                                                                                                               | TfNSW Roads and Maritime  | Pre-construction            | Additional safeguard |
## 6 Licensing and approvals

Licences and approvals required for the proposal are listed in **Table 6-1**.

### Table 6-1 Summary of licensing and approvals required

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Requirement</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Roads Act 1993</em></td>
<td>ROL would need to be obtained as necessary prior to construction commencing.</td>
<td>Prior to start of the activity.</td>
</tr>
<tr>
<td>Permission from private landowners and residents</td>
<td>Permission from private landowners and residents must be obtained to access proposal work sites. This would likely be obtained through temporary lease arrangements or land acquisition.</td>
<td>Before accessing any private property.</td>
</tr>
<tr>
<td><em>POEO Act (s43)</em></td>
<td>EPL for scheduled activities (road construction/extractive activities/crushing, grinding or separating waste processing or storage) from the EPA.</td>
<td>Prior to start of the activity.</td>
</tr>
<tr>
<td><em>Heritage Act 1977 (section 57)</em></td>
<td>As the proposal would involve temporary construction activities within the curtilage of the SHR listed ‘Centennial Park, Moore Park, Queens Park’, a section 57 notification would be submitted to, and approved by, the Heritage Council of NSW prior to construction of the proposal commencing.</td>
<td>Prior to start of the activity.</td>
</tr>
<tr>
<td><em>Heritage Act 1977 (section 139 or section 140)</em></td>
<td>A section 139 excavation permit covering the works at located at ancillary Site 2 would be obtained from the Heritage Council of NSW. An ARD would be prepared to support the permit application. The ARD would outline archaeological management zoning for the proposal area. If intact remains associated with artefact bearing deposits are identified during the test excavations a section 140 permit for salvage excavations or archaeological monitoring and recording may be required prior to the work commencing.</td>
<td>Prior to start of the activity.</td>
</tr>
</tbody>
</table>
References

Centennial Park and Moore Park Trust, 2017. The Moore Park Masterplan 2040
City of Sydney, 2018a. Walking Strategy and Action Plan
City of Sydney, 2018b. Cycling Strategy and Action Plan
City of Sydney, 2018c. Alexandria Local Area Traffic Management Plan
City of Sydney, 2012. Connecting our City
City of Sydney, unpublished. Green Square Master Plan
Department of Environment, Climate Change and Water, 2010. NSW Climate Impact Profile
Department of Premier and Cabinet, 2016. NSW Government’s State Priorities 2015-2019
Greater Sydney Commission (GSC), 2018a. The Metropolis of Three Cities – the Greater Sydney Region Plan
Greater Sydney Commission (GSC), 2018b. The Central District Plan
Greater Sydney Commission (GSC), 2018c. East Sydney District Plan
Greater Sydney Commission (GSC), 2017. Directions for a Greater Sydney 2017-2056
Infrastructure Australia, 2019. Australia Infrastructure Audit
NSW Government, 2019. NSW Government’s Premiers Priorities
NSW Government, 2016. NSW Government’s Premiers Priorities
NSW Government, 2015. The NSW State Priorities: Making it Happen
Renzo Tonin, 2019. Alexandria to Moore Park Stage 1 Noise and Vibration Assessment
Roads and Maritime, 2019. Alexandria to Moore Park Stage 1 Review of Environmental Factors


Transport for NSW, 2018c. Greater Sydney Infrastructure and Services Plan

Transport for NSW, 2017. Movement and Place Framework

Transport for NSW, 2013. NSW Freight and Ports Strategy

### Terms and acronyms used in this Submissions Report and REF

<table>
<thead>
<tr>
<th>Term / Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT</td>
<td>Australian Capital Territory</td>
</tr>
<tr>
<td>AEP</td>
<td>The chance of a flood of a given or larger size occurring in any one year, usually expressed as a percentage. In this study AEP has been used consistently to define the probability of occurrence of flooding. It is to be noted that design rainfalls used in the estimation of design floods up to and including 100 year ARI (ie. 1% AEP) events was derived from 1987 Australian Rainfall and Runoff. The following relationships between EY, AEP and ARI applies to this study (Australian Rainfall and Runoff, 2016).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Frequency Descriptor</th>
<th>EY</th>
<th>AEP (%)</th>
<th>AEP (1 in x)</th>
<th>ARI</th>
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<tbody>
<tr>
<td>Very frequent</td>
<td>12</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>6</td>
<td>99.75</td>
<td>1.002</td>
<td>0.17</td>
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<td></td>
<td>4</td>
<td>98.17</td>
<td>1.02</td>
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<td>3</td>
<td>95.02</td>
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<td>0.33</td>
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<td>2</td>
<td>85.47</td>
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<p>| AHD | Above height datum |
| AHIMS | Aboriginal heritage information management system |
| AQI | Air quality index |</p>
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<td>Air quality management plan</td>
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<td>Level of Service. A qualitative measure describing operational conditions within a traffic stream and their perception by motorists and/or passengers</td>
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<td>Description</td>
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<td>Total suspended solids</td>
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Alexandria to Moore Park Connectivity Upgrade

December 2016

The NSW Government is investigating key intersection improvements to reduce travel time, improve connectivity and support urban renewal on the southern fringe of the CBD.

The Alexandria to Moore Park road corridor currently serves the function of a southern CBD priority bypass route to reduce congestion within the CBD. Road capacity and access improvements will be required to manage congestion and growth and support substantial nearby urban renewal and transport projects.

The Alexandria to Moore Park Connectivity Upgrade includes improvements at critical intersections and pinch points in the inner city suburbs of Alexandria, Waterloo and Moore Park and can be divided into three areas:

1. Euston Road (at Maddox Street), Alexandria to McEvoy Street (at Young Street), Waterloo
2. McEvoy Street (at Young Street) to Lachlan Street and South Dowling Street, Waterloo
3. Anzac Parade, Alison Road and Dacey Avenue, Moore Park.

A corridor strategy map shows the key features in each of these three areas.

Key features

Roads and Maritime Services is investigating improvements in three areas as part of the proposed Alexandria to Moore Park Connectivity Upgrade:

1. Proposed improvements between Euston Road (at Maddox Street) and McEvoy Street (at Young Street) would include:
   - Improving intersections and installing clearways in both directions during the morning and evening peaks between Euston Road (at Maddox Street) and McEvoy Street (at Young Street)
   - Investigation of to improve access for pedestrians and cyclists
   - Adjusting the intersection of Euston Road at Maddox Street to tie into the WestConnex New M5 surface work.

2. Proposed improvements between McEvoy Street (at Young Street), Lachlan Street and South Dowling Street, Waterloo would include:
   - Realigning the intersection of Bourke Street with McEvoy Street and Lachlan Street to form one intersection
   - Widening Lachlan Street from two to four lanes
   - Investigation of to improve access for pedestrians and cyclists
   - Improving the intersection of Lachlan Street and South Dowling Street, including widening South Dowling Street between Cleveland Street and Dacey Avenue to improve traffic flow for southbound motorists.
Proposed Alexandria to Moore Park Connectivity Upgrade

**Waterloo Precinct**
- Proposed Sydney Park to Ashmore Connector Road project

**Eveleigh Precinct**
- Proposed Redfern Estate (planning phase)

**Ashmore Precinct**
- Proposed Lachlan Precinct (development underway)

**Green Square**
- Proposed City of Sydney’s Green Square to Ashmore Connector Road project

**Redfern Estate**
- Proposed investigation of Dacey Avenue pedestrian and cyclist connection

**Proposed improvements**
- Proposed improvements to the intersection of Lachlan Street and South Dowling Street, including widening South Dowling Street between Cleveland Street and Dacey Avenue to improve traffic flow for southbound motorists

- Proposed Alison Road and Anzac Parade intersection upgrade

- Proposed widening of Lachlan Street from two lanes to four lanes

- Proposed realignment of the intersection of Bourke Street with McEvoy Street and Lachlan Street to form one intersection

- Proposed widening of the intersection of Lachlan Street and South Dowling Street, including widening South Dowling Street between Cleveland Street and Dacey Avenue to improve traffic flow for southbound motorists

- Proposed investigation of Dacey Avenue pedestrian and cyclist connection

- Proposed proposed improvements to intersections and the installation of clearways in both directions during the morning and evening peaks between Euston Road (at Maddox Street) and McEvoy Street (at Young Street)

- Proposed realignment of the intersection of Bourke Street with McEvoy Street and Lachlan Street to form one intersection

**KEY**
- Euston Road, Alexandria to McEvoy Street, Waterloo
- McEvoy Street to Lachlan Street and South Dowling Street, Waterloo
- Anzac Parade, Alison Road and Dacey Avenue, Moore Park
- Urban renewal precincts
- Planned WestConnex New M5 surface work (2019)
- City of Sydney’s Green Square to Ashmore Connector Road project
- CBD to South East Light Rail (opening 2019)
3. Proposed improvements at Anzac Parade, Alison Road and Dacey Avenue, Moore Park would include:
   • Providing facilities to improve access for pedestrians and cyclists along Dacey Avenue
   • Changing the right turn arrangements at the intersection of Dacey Avenue, Anzac Parade and Alison Road to improve efficiency for traffic, pedestrians, cyclists and light rail.

Benefits
The benefits of the proposed Alexandria to Moore Park Connectivity Upgrade would include:
   • Reduced travel times and congestion
   • Integration of the corridor with new transport infrastructure such as the CBD and South East Light Rail and WestConnex New M5 surface work
   • Improved intersection performance at key points for all modes of transport
   • Improved road safety for all road users
   • Better facilities and connectivity for pedestrians and cyclists between Sydney Park and Moore Park.

Have your say
Community drop in session
Roads and Maritime recognise the importance of involving the community in the development of the Alexandria to Moore Park Connectivity Upgrade. We will host a community drop in session to provide an opportunity for the community to speak face-to-face with members of the project team and ask questions. A formal presentation will not be given, so please feel free to drop in at any time during this session.

St Joseph’s Catholic Church Hall
Corner of Rosebery Avenue and Kimberly Grove, Rosebery (entrance off Kimberley Grove)
Wednesday 7 December, 6pm–8pm

Interactive online map
Visit the project web page to submit a variety of comments directly onto an interactive map and see what others in the community have to say about the road corridor at rms.work/a2mp

We welcome your feedback on the proposed Alexandria to Moore Park connectivity upgrade by Friday 16 December.

Further information
For further information about the project, please contact the Roads and Maritime project team or visit the project web page:

1800 875 557

Where are we now?
Roads and Maritime is continuing investigation work around Alexandria, Waterloo and Moore Park. Findings from the investigation work will inform the preliminary concept design which is due to be displayed for community and stakeholder feedback in the first half of 2017.

A concept design and environmental assessment is then due to be displayed for community and stakeholder feedback in the second half of 2017. We will consider all comments in developing the proposed upgrade and we will continue to keep the community updated as the proposal progresses.

Investigation work
Consultation on the corridor strategy
Consultation on the preliminary concept design
Consultation on the concept design and display of the environmental assessment
Submissions report
Detailed design
Construction
Open to traffic
Alexandria to Moore Park Connectivity Upgrade

June 2017

Display of the preliminary concept design.

Background

The NSW Government is planning road improvements in the inner city suburbs of Alexandria, Waterloo and Moore Park to improve traffic flow and facilities for pedestrians and cyclists in one of the city’s fastest growing precincts.

The Alexandria to Moore Park Connectivity Upgrade includes improvements to traffic capacity at key intersections and pinch points to improve traffic flow and provide better access for pedestrians and cyclists. These improvements are being planned to integrate with the CBD and South East Light Rail and WestConnex New M5 projects.

By 2021 traffic volumes along this key corridor are projected to grow by 50% or more in peak periods.

The proposed improvements will support urban renewal along the corridor, and encourage motorists to use alternate routes away from the CBD, a key focus of the Sydney City Centre Access Strategy (Transport for NSW, 2013).

Key features of the proposal

- Pedestrian and cyclist improvements for the length of the corridor
- Clearways on both sides of the corridor for extended periods
- Improvements at key intersections including –
  - The ‘dog leg’ T-intersections at McEvoy Street and Bourke Street and Lachlan Street and Bourke Street will be rebuilt and combined to form a single more efficient four-way intersection
  - South Dowling Street to be widened on the eastern side north of Dacey Avenue/Lachlan Street to provide an additional right turn lane from South Dowling Street into Lachlan Street and to improve the merge from the Eastern Distributor onto South Dowling Street
  - Anzac Parade, Alison Road and Dacey Avenue intersection at Moore Park to be upgraded to a continuous flow intersection (see image overleaf)
- A right turn bay to be added at Bowden Street and right and left turn bays to be added at Fountain Street, Wyndham Street and Botany Road
- A median to be introduced along McEvoy Street
- Lachlan St to be widened on the southern side to provide four lanes.

A map of the preliminary concept design is included in this project update.
Continuous flow intersection at the Anzac Parade, Alison Avenue and Dacey Avenue intersection

What is a continuous flow intersection?
A continuous flow intersection (CFI) is an at grade intersection which allows right turn movements to occur at the same time as through movements in both directions. This allows for a more simplified and efficient intersection operation. Continuous flow intersections are progressively being introduced in Australia.

Changing the right turn arrangements at the intersection of Dacey Avenue, Anzac Parade and Alison Road through this innovative intersection arrangement will improve access and efficiency for traffic, pedestrians, cyclists and light rail.

What are the benefits of a continuous flow intersection?
- As it is built ‘at grade’, or level with the roads it connects to, a CFI often has a smaller construction footprint and less visual impact than other engineering options such as underpasses, overpasses or tunnels
- A CFI also has the ability to better integrate with other transport users such as light rail and pedestrians.

What other options were considered for the intersection?
An underpass was one option considered at the Anzac Parade, Alison Avenue and Dacey Avenue intersection, however, due to the low lying flood affected area this intersection sits in, it was ruled out.

An overpass was also considered however, the construction footprint, visual impact and land taking associated with such a large structure made it unfavourable when compared to the CFI.

Key Facts
- Roads and Maritime traffic modelling show traffic volumes on Euston Road north of Maddox Street will go from around 20,000 vehicles a day in 2016 to 40,000 vehicles a day in 2021.
- This growth is a combination of the WestConnex new M5 St Peters Interchange, the redevelopment of Green Square and the wider growth in Sydney’s population.
- The A2MP project is about upgrading key intersections at Fountain Street, Wyndham Street, Botany Road, Bourke Street, South Dowling Street and Anzac Parade so that the route can continue to function as an effective main road and reduce rat running in local streets.
- Clearways are proposed for the corridor seven days a week, to better manage current and future traffic flows and minimise the road footprint and property impacts.
- A new shared pedestrian and cyclist path is proposed along the corridor to support current and future residents and will weave around existing trees where possible.
Feedback from December 2016 consultation period

Roads and Maritime held a two-week consultation period in December 2016 and received 142 comments.

Two submissions were from government agencies or advisory bodies and the remainder were from members of the community and interest groups.

The most common points the community and interest groups raised were:

- Consider the inclusion of clearways at various locations and times including weekends along the corridor
- Improve traffic flow, particularly right hand turn movements
- Provide more information about potential property impacts
- Concern about parking availability, property access and traffic impacts
- Minimise environmental impacts, particularly to trees especially along South Dowling Street
- Provide facilities and connectivity for pedestrians and cyclists
- Need more time and information to consider the proposal.


Aspects of feedback included in this concept design include:

- Proposal for clearways at all times along most of the corridor and some times on weekends
- Pedestrian and cyclist shared path designed to minimise impacts on mature trees
- Extended period of consultation for the preliminary concept design
- Proposal for dedicated left and right turn slip lanes at key intersections at Botany Road and Wyndham Street
- Proposal for improving traffic operations at the intersections of Bourke, McEvoy and Lachlan streets
- Landscape and urban design strategy to factor in shade for pedestrians.

Typical cross section
Where are we now?

Roads and Maritime is now seeking feedback on the preliminary concept design which appears overleaf.

During the display period, Roads and Maritime will host two community drop-in sessions and provide an opportunity for the community to provide detailed comments on the proposal via the interactive plans displayed on the project web site.

All comments received before 7 July 2017 will be considered and used to inform the project’s environmental assessment and the final concept design.

Roads and Maritime will prepare a second community consultation report to respond to matters the community and stakeholders raise during the display period.

Community information sessions

Roads and Maritime recognise the importance of involving the community in the development of the Alexandria to Moore Park Connectivity Upgrade. We will host two community information sessions. These information sessions will enable the community to speak face-to-face with members of the project team and ask questions. A formal presentation will not be given, so please feel free to drop in at any time during these sessions.

Our project team will be available at:

Venue: Terrace Room, All Sorts Function Centre, 184 Bourke Road, Alexandria
Saturday June 17, 10am – 12pm
Thursday June 22, 6pm – 8pm

Where to get more information

Roads and Maritime Services
Phone: 1800 875 557
Email: a2mp@rms.nsw.gov.au
Web: www.rms.nsw.gov.au/a2mp
Online map: www.rms.work/a2mp

See the A2MP proposal in 3D

To see an animation of the corridor upgrade including the CFI go to www.rms.gov.au/a2mp

Further information

Please contact the Roads and Maritime project team:

- Phone: 1800 875 557
- Email: a2mp@rms.nsw.gov.au
- Web: www.rms.nsw.gov.au/a2mp

If you need help understanding this information, please contact the Translating and Interpreting Service on 131 450 and ask them to call us on 1800 875 557.
The NSW Government is planning road improvements in the suburbs of Alexandria, Waterloo and Moore Park to reduce travel times and improve reliability in this fast growing urban renewal area.

Following community consultation and further engagement with the City of Sydney, the Alexandria to Moore Park project will now be delivered in stages. Stage 1 is a smaller version of the original proposal. A 50 km/hr speed limit is now in place along the corridor and a further review of the speed limit is planned as more urban renewal occurs.

Roads and Maritime Services are calling for comments on the Review of Environmental Factors for the Stage 1 proposal.

Stage one focuses on four intersection improvements west of and including South Dowling Street which aim to improve safety and reliability in the highest growth section of the corridor.

These improvements require minor property acquisition and avoid impacting fig trees on South Dowling Street.

The improvements being considered include:

- turning lanes at Fountain Street on McEvoy Street,
- a new right turn lane in Botany Road, at McEvoy Street
- changes to line marking at both Elizabeth Street and South Dowling Street to convert existing dedicated left turn lanes to lanes allowing traffic to travel both through and left
- clearways and right turn bans at side streets without signals.

We will continue to work with City of Sydney to finalise key aspects of the proposal including street tree plantings and detailed intersection design.

**Key features**

- new clearways along the corridor west of Bourke Street between 6am and 7pm weekdays and 9am to 6pm on weekends
- 24 hour clearways proposed along Lachlan Street and Dacey Avenue (currently No Stopping zone)
- no right turns into side streets without traffic lights or to access Bunnings to improve safety and reliability for customer journeys
- Additional turning lanes at South Dowling Street, Fountain Street, Botany Road and changes to line marking at Elizabeth Street.
How the community feedback influenced change

Community feedback changed the design in these ways:

- redesigning the intersection at South Dowling Street and Lachlan Street to avoid fig trees along South Dowling Street
- reducing proposed clearway operating hours
- reducing proposed property acquisition by removing medians or reducing their width
- recently changed the speed limit to 50km/h along Dacey Avenue, Lachlan Street, McEvoy Street and Euston Road in consideration of future urban renewal and pedestrian traffic along the corridor.
- Placing new tree plantings along the kerb line to provide more shade

Additional changes will be considered as part of the Review of Environmental Factors display and further engagement with City of Sydney.

Alexandria to Moore Park Project – Stage 1

1. Clearways between Maddox Street and Bourke Street – 6am–7pm during the week and 9am–6pm on weekends
2. 24 hour clearways along Lachlan Street and Dacey Avenue
3. No right turns into Bunnings and side streets without traffic signals

Alexandria to Moore Park Project – Stage 1 – proposed changes

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Alexandria to Moore Park Project – Stage 1 – proposed changes
Have your say

Roads and Maritime Services recognise the importance of involving the community in the Review of Environmental Factors for the Alexandria to Moore Park Stage 1 Project. The Stage 1 Review of Environmental Factors is now on display. The concept design for the proposal is shown on the map in this project update. During the display period, we will host two community drop-in sessions and one pop up session. These sessions are an opportunity for the community to speak face-to-face with members of the project team and ask questions. A formal presentation will not be given, so please feel free to drop in at any time.

The times and locations are provided below.

If you cannot attend a session, you can submit comments using the online consultation map or by sending an email. All comments received before 18 December 2019 will be considered and used to finalise the design. Roads and Maritime Services will prepare a submissions report to respond to matters the community and stakeholders raise during the display period. We will continue to keep the community updated as the proposal progresses.

Our project team will be available at:

Moore Park Supa Centre (ground floor)
2A South Dowling Street, Moore Park
Friday 6 December, 11am–2pm

Cliff Noble Community Centre
24 Suttor St, Alexandria
Saturday 7 December, 10am–1pm
Thursday 12 December, 5pm–8pm

Printed copies located at:
• City of Sydney Council Office
  Lvl 2, 456 Kent Street, Sydney
• Roads and Maritime Services 20–44 Ennis Rd, Milsons Point
• Green Square and Waterloo Libraries

Where are we now?

Roads and Maritime Services has prepared a Review of Environmental Factors for the Stage 1 proposal which is now available on the project website. The Review of Environmental Factors includes independent specialist studies that closely examine the proposal’s benefit and impact to:

• Aboriginal and non-Aboriginal heritage
• biodiversity – including local flora and fauna
• flooding and hydrology
• traffic and transport including road safety and parking
• social and business aspects
• contamination, and
• noise and vibration.

Contact us

If you have any questions or would like to make a submission please contact the project team.

1800 875 557
a2mp@rms.nsw.gov.au
rms.nsw.gov.au/a2mp
Online map: rms.work/a2mp

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