Monaro Street Upgrade

Review of Environmental Factors

April 2025



Document review tracking

Draft No.	Date	Document author	Reviewer
Draft 1	14 January 2025	Cleo Courtney	Jarryd Barton
RevA	3 March 2025	Cleo Courtney	Jarryd Barton
RevB	5 March 2025	Cleo Courtney	Jarryd Barton
RevC	3 April 2025	Cleo Courtney	Jarryd Barton

Authorising Manager's Approval

Name	Kylie Coe
Title	Manager Development Queanbeyan-Palerang Regional Council
Signed	
Date	01/09/2025

Certification

This review of environmental factors provides a true and fair review of the proposal in relation to its potential effects on the environment. It addresses to the fullest extent possible all matters affecting or likely to affect the environment as a result of the proposal.

Name:	Jarryd Barton
Position:	Principal Environmental Planner
Company name:	WSP Australia Pty Ltd
Date:	3 April 2025

I certify that I have reviewed and endorsed the contents of this REF and, to the best of my knowledge, it is in accordance with the EP&A Act, the EP&A Regulation and the Guidelines approved under Section 170 of the EP&A Regulation, and the information is neither false nor misleading.

Name: Kylie Coe

Position: Manager Development

Queanbeyan-Palerang Regional

Council Date: 01/09/2025

Executive summary

The proposal

Queanbeyan-Palerang Regional Council (QPRC) proposes to upgrade Monaro Street, Queanbeyan (the proposal), generally between Lowe Street and Collett Street. Key features of the proposal include:

- resurfacing of the existing road pavement
- implementation of a 40 kilometres per hour speed limit for the section of Monaro Street between Lowe Street and Collett Street (subject to approval by Transport for NSW)
- improved pedestrian and urban design upgrades
- integration of accessibility features such as directional tactile indicators
- upgrades to ancillary infrastructure including additional street and pedestrian lighting, improved communication and security services, improved stormwater drainage (including kerb and channel drainage) and other utility adjustments.

Construction of the proposal

Construction activities for the proposal would include:

- establishment of compound(s) and stockpile site(s)
- adjust existing utilities as required
- implement traffic control
- install environmental controls, including erosion and sediment controls
- vegetation removal, where required
- mill and reconstruct of the existing road pavement (and realignment where applicable), including gravel and asphalt layers
- upgrades to utilities (lighting, electrical, communications, and security)
- mark road lines
- rehabilitate the site including planting of new landscaping and installation of new street furniture.

The proposal is anticipated to be construction in a single construction phase commencing in mid-2025 (subject to planning approval). The proposal is expected to be completed over a period of around 18 months.

Need for the proposal

Upgrading the main street of Queanbeyan has been a priority of QPRC and the community for many years and has been a key feature of several community engagement activities. The project is included in the following strategic policies:

- *Queanbeyan CBD Spatial Masterplan* (QPRC, 2019)
- *Queanbeyan CBD Place Plan* (QPRC, 2020)
- *Retail Growth Strategy* (QPRC, 2018)

Analysis of Monaro Street within the *Queanbeyan CBD Spatial Master Plan* (QPRC, 2019) and *Queanbeyan CBD Place Plan* (QPRC, 2020) have identified Monaro Street as requiring reinvigoration to balance the function of the street as a transport route as well as a community space.

The *Queanbeyan CBD Spatial Master Plan* (QPRC, 2019) identifies the historical significance of Monaro Street, having been a crucial transport route within the community since the 1860's. Since then, Monaro Street has remained a centre of activity within Queanbeyan as the main traffic route which also hosts a high proportion of heavy vehicles.

Currently, the Queanbeyan CBD is not being used to its full potential. Surveys of Queanbeyan business owners and residents indicate that the current state of the area is dissuading residents from using the CBD to its full extent. The proposal involves upgrades to both civil infrastructure (including lighting, communication, and security traffic management) and pedestrian access. The proposed landscaping has also considered pedestrian infrastructure including accessibility for disabled people, public space, public art, planting and sustainability. Through these upgrades, the proposal aims to balance the function of Monaro Street though improved amenity for residents, visitors and businesses.

This project will assist in ensuring the full potential of the Queanbeyan CBD is realised. These works will reduce traffic noise and manage the flow of traffic, provide greater safety for drivers and pedestrians, and support the growing region to ensure residents and local businesses can access the facilities and services they need.

Proposal objectives

The objectives of the proposal are to:

- provide safe road environment for road users and pedestrians on Monaro Street through upgrades to the road pavement, widening of footpaths and upgrades to street lighting
- reduce ongoing maintenance costs by extending/resetting the life of the existing road pavement
- improve traffic efficiency of the Monaro Street
- minimise impacts on the environment and locality
- provide a cost-effective solution
- minimise disruptions to road users and the community in Queanbeyan
- celebrate and preserve the existing local character of Monaro Street.

Options considered

In addition to the 'do nothing' option, two other options were considered for the proposal. The options are summarised below:

- Option 1 – This option would involve a full upgrade of Monaro Street. This option involved proposed upgrades that would include realignment of the existing road, lane and parking configurations, replacement of existing road and footpath pavement, upgrades to ancillary infrastructure, stormwater drainage and traffic management. Proposed upgrades would also include landscaping improvements including installation of street furniture, pedestrian and accessibility infrastructure, replacement of amenity trees and planting of native vegetation.
- Option 2 – Amenity improvements. This option would be similar to the first option, however, would retain the existing street and kerb alignment configuration, focusing on footpath pavement and landscaping improvements only.
- Option 3 – The 'do nothing' option would involve not upgrading Monaro Street. Under the 'do nothing' option, Monaro Street would likely continue to primarily be considered a transport route, limiting potential for the street provide functions other than transport to local residents or contribute to a sense of community within the Queanbeyan CBD.

The preferred option for the proposal is Option 2 as it is the most closely aligned to the project objectives and would provide the best overall and cost efficient improvement for Monaro Street as well as the broader Queanbeyan community.

Statutory and planning framework

The proposal is for a road and road infrastructure facilities and is to be carried out QPRC and can therefore be assessed under Division 5.1 of the *Environmental Planning and Assessment Act 1979 (NSW)*. Development consent from council is not required.

Monaro Street is a State road controlled by Transport for NSW. As such, the Review of Environmental Factors (REF) was prepared consistent with the structure of Transport for NSWs' REF template and reviewed by QPRC in consultation with Transport for NSW.

Community and stakeholder consultation

Consultation has been undertaken with a range of stakeholders including customers, business partners, industry, community members and organisations with an interest in the proposal during the development of design options and the preferred option. Consultation would continue through the detailed design and construction of the proposal in line with the consultation strategy outlined in Section 5.1.

QPRC prepared a consultation report in September 2021 based on community consultation conducted 15 July 2021 to 15 August 2021. Consultation was based on the concept designs and involved online and hard copy surveys, exhibition of proposed upgrades through a 3D 'fly-through' and pop-up information sessions at Riverside Plaza. Results of the surveys conducted indicated the majority of respondents were supportive of the proposal. Similarly, QRPC observations from the pop-up information sessions indicated that after people had an opportunity to have questions addressed directly, only a few people were not supportive.

The main issues raised during consultation were concerns regarding parking availability, that the proposed upgrades are not significantly different from the current condition of Monaro Street, high vacancy rates on the street and whether this proposal is the best use of QPRC funding. Refer to Table 5-1 for details of responses to these initial concerns and, if relevant, where they are addressed in the REF.

Considering the highly disturbed nature and size of the project site in addition to the absence of any known Aboriginal Heritage Information Management System (AHIMS) sites within the project site, not formal consultation with Aboriginal stakeholders has been carried out as part of the proposal.

Environmental impacts

The main environmental impacts of the proposal are anticipated to include:

Biodiversity

Construction of the proposal would not result in the removal of native vegetation, and clearing would be restricted to minor impacts to exotic street trees and vegetation generally within the existing median. As a result, the proposal is unlikely to have a direct impact on threatened species or their habitat.

Traffic and transport

To accommodate the existing vehicle movements that currently use Monaro Street during construction indicative staging arrangement (including the use of reduced land and contra-flow arrangements) has been prepared such that vehicle movements in both directions have been retained, although at a reduced capacity. It is likely that temporary detour routes would be necessary when an intersection is closed for works.

During construction, there would be impacts to the availability of parking along Monaro Street. Alternative parking options are considered to be available in the vicinity of the project site that would be able to accommodate the reduction in any one section of Monaro Street (including 9G Morisset Street Parking and Rutledge Street Car Park). Several bus routes also operate through the intersections of Monaro Street and Crawford Street, as well as Monaro Street and Lowe Street. It is likely that an alternative temporary route would be negotiated with the relevant bus operator(s) for buses affected by through travel along Monaro Street, whilst retaining as many bus stops open as possible throughout construction.

During operation, the two key signalised intersection are expected to perform satisfactorily with the exception of the intersection of Monaro Street / Lowe Streety / Farrer Place in the 2031 scenario during the weekday afternoon peak hour. Overall the impacts to traffic based on the development of the proposal itself are minimal.

The proposal would have minor impacts to vehicle travel and access as the proposal includes the removal (banning) of the eastbound right turn from Monaro Street into Crawford Street. However, alternative routes would be available from other nearby intersections including via Lowe Street or Collett Street to Rutledge Street and then Crawford Street.

The proposal is expected to have a negligible impact on public transport and would improve pedestrian amenity and accessibility. Cyclist amenity or accessibility along Monaro Street would not be impacted. The proposal would result in minimal impacts to existing parking provisions within the Queanbeyan Central Business District.

Noise and vibration

Construction of the proposal would generate short term noise impacts. The extent of these impacts has been assessed in accordance with the *Interim Construction Noise Guideline* (ICNG) (Department of Environment and Conservation, 2009) and the *Construction Noise and Vibration Guideline* (CNVG) (Transport for NSW, 2022). Noise management levels (NMLs) were calculated and based on noise monitoring undertaken during March 2025. Construction noise was modelled at a large range of sensitive receivers for seven construction work scenarios. These predicted noise levels were assessed against the calculated NMLs. This assessment found that noise impacts were expected during all construction phases for the nearest receivers. The largest impacts are predicted during the mill and reconstruct scenario and generally for receivers located along Monaro Street, although impacts would extend into surrounding areas. Impacts are also predicted as a result of activities at the compound location. No road traffic noise impacts were predicted to occur as a result of construction traffic.

Ground vibration impacts have been assessed to determine potential impacts against the human comfort and building damage criteria outlined in both the *Assessing Vibration: A Technical Guideline* (Department of Environment and Conservation, 2006) and the CNVG. The assessment has found cosmetic damage may occur at properties and heritage items adjacent to works involving the operation of vibration intensive plant and vibration mitigation measures would be required at these locations. Potential human comfort impacts have been predicted at up to 95 receivers, noting that these impacts would be temporary during certain construction work scenarios.

The proposal would not change operational traffic volumes compared to existing traffic volumes. As such, the proposal is not expected to alter the existing noise and vibration environment for sensitive receivers during operation.

Site specific and effective noise management and mitigation measures have been recommended in Section 6.5, in accordance with the CNVG.

Other issues

The REF also assesses the impacts associated with other relevant environmental aspects, including:

- surface water, groundwater and flooding
- soils and contamination
- Aboriginal cultural heritage
- non-Aboriginal heritage
- landscape character and visual impacts
- socio-economic
- waste and resources
- air quality
- hazards and risks
- sustainability, climate change and greenhouse gas emissions
- cumulative impacts.

The assessment of each of the above topics concluded the impacts during construction and operation of the proposal would generally be minor and would be managed through the implementation of safeguards and management measures outlined in Section 7.2.

Justification and conclusion

This REF has been prepared having regard to Sections 5.5 of the EP&A Act to ensure that QPRC takes into account to the fullest extent possible, all matters affecting or likely to affect the environment as a result of the proposal.

The proposal is considered to meet its objectives, as the proposal would not result in the removal of native flora or fauna habitat and is unlikely to have an impact on threatened species. In addition, the proposal would provide improved public amenity on Monaro Street that would provide a positive social impact.

Should the proposal proceed, any potential associated adverse impacts would be appropriately managed in accordance with the mitigation measures outlined in this REF. This would ensure the proposal is delivered to maximise benefit to the community and minimise any adverse impacts on the environment.

In considering the overall potential impacts outlined in this REF, the proposal is unlikely to significantly affect the environment including critical habitat or threatened species, populations, ecological communities or their habitats.

Display of the review of environmental factors

***Drafting note**: need for display pending confirmation*

This REF is on display for comment between [date and date]. You can access the documents in the following ways:

Internet

The documents are available as pdf files on the Transport for NSW website at [insert website address or hyperlink] [if applicable add the 'Have your say' website]

Printed copies

The documents can be viewed at the following locations:

List exhibition venues, including street address (with floor level if required) and provide other details where necessary e.g., this location will be staffed between 10am to 2pm, etc. Locations could include the local library, Transport office and council office.

Copies by request

Printed and electronic copies are available by contacting [add contact name and number], noting that there may be a charge for hard copies or USB.

Staffed displays

[Day / date / times / locations]

How can I make a submission?

To make a submission about this proposal, please send your written comments to:

[Mail]

[Email]

Submissions must be received by [day/date]. Submissions will be managed in accordance with the *Transport Privacy Statement*. A copy can be made available upon request.

What happens next?

QPRC will collate and consider the submissions received during public display of the REF.

After this consideration, QPRC will determine whether or not the proposal should proceed as proposed and will inform the community and stakeholders of this decision.

If the proposal is determined to proceed, QPRC will continue to consult with the community and stakeholders prior to and during construction.

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1. Introduction

This chapter introduces the proposal and provides context for the environmental assessment. In introducing the proposal, the objectives and proposal development history are detailed and the purpose of the report provided.

1.1 Proposal identification

Queanbeyan-Palerang Regional Council (QPRC) proposes to upgrade Monaro Street, Queanbeyan (the proposal), generally between Lowe Street and Collett Street. QPRC are the proponent and determining authority for the proposal.

Key features of the proposal would include the following:

- resurfacing of the existing road pavement
- implementation of a 40 kilometres per hour speed limit for the section of Monaro Street between Lowe Street and Collett Street (subject to approval by Transport for NSW)
- improved pedestrian and urban design upgrades
- integration of accessibility features such as directional tactile indicators
- upgrades to ancillary infrastructure including additional street and pedestrian lighting, improved communication and security services, improved stormwater drainage (including kerb and channel drainage) and other utility adjustments.

The proposal is located on land zoned SP2 – Infrastructure which forms an existing road corridor about 22 metres wide. Monaro Street is a dual carriageway separated by a landscaped median that is approximately 420 metres in length and is classified as a State Road by Transport for NSW. The road is constructed with a concrete surface along with a concrete pavement in the traffic lanes along with an asphalt surface that is utilised in the parking bays. The proposal site is heavily disturbed from its existing use as a road corridor, and the proposal is unlikely to have a significant impact on the environment. A key feature of the environment nearby to the proposal is Queanbeyan River, located adjacent to the northeastern extent of the proposal site.

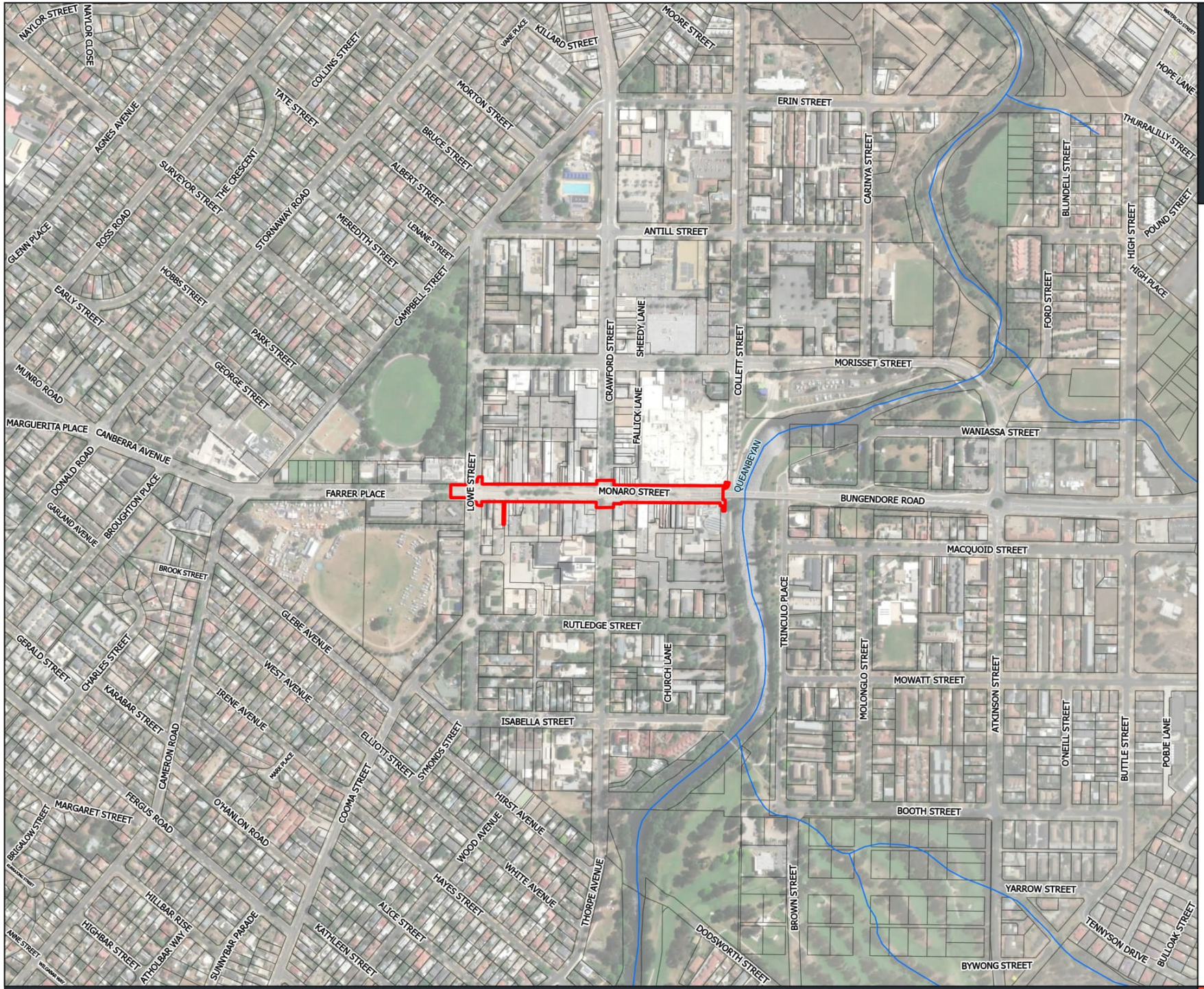
The road has a posted speed limit of 50 kilometres per hour and on street parking along both sides of Monaro Street.

Monaro Street is located in the Queanbeyan Central Business District (CBD) between Lowe Street and Collett Street within the QPRC Local Government Area (LGA), around 10 kilometres east of Canberra, ACT. Monaro Street forms part of the main transport route which runs through the town of Queanbeyan.

The proposal forms part of of the third stage of the *Queanbeyan CBD Spatial Master Plan* (QPRC, 2019) and aims to improve the amenity of the street for residents, visitors and local businesses.

Subject to planning approval, construction of the proposal is expected to be completed by 2027.

The location of the proposal is shown in Figure 1-1 and an overview of the proposal is provided in Figure 1-2. Chapter 3 describes the proposal in more detail.



Monaro Street Upgrade REF Project

Figure 1-1
Project Site Location

Legend

- Project site
- Watercourse
- Cadastre



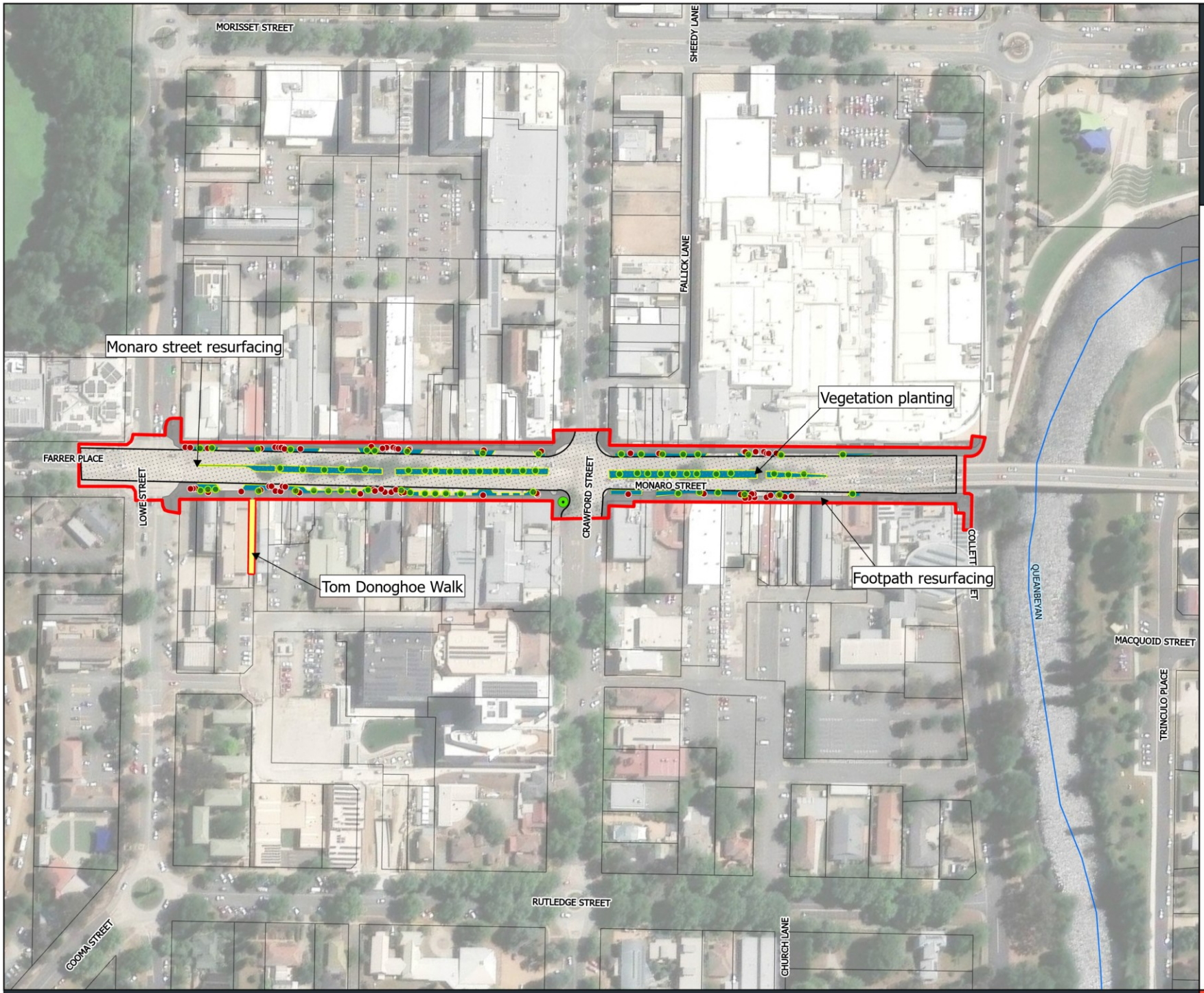
Coordinate system: GDA2020 MGA Zone 55
Scale ratio correct when printed at A3

1:6,500 Date: 28/02/2025

GDA 2020

Data sources: DELWP, Geoscience Australia
World Imagery: Maxar

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Monaro Street Upgrade REF Project

Figure 1-2
Key Features of the Proposal

Legend

- Tree Plantings
- Street Furniture
- Tree of Knowledge
- Project site
- Watercourse
- Cadastre
- Tom Donoghoe Walk
- Monaro Street resurfacing
- Footpath resurfacing
- Mass Planting



Coordinate system: GDA2020 MGA Zone 55
Scale ratio correct when printed at A3

1:2,000 Date: 5/03/2025

GDA 2020

Data sources: DELWP, Geoscience Australia
World Imagery: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

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1.2 Purpose of the report

This REF has been prepared by WSP Australia Pty Ltd (WSP) on behalf of QPRC. For the purposes of these works, QPRC is the proponent and determining authority under Division 5.1 of the *Environmental Planning and Assessment Act 1979 (NSW)* (EP&A Act).

The purpose of the REF is to describe the proposal, to document the likely impacts of the proposal on the environment, and to detail mitigation and management measures to be implemented. As Monaro Street is a State road controlled by Transport for NSW, this review of environmental factors (REF) was prepared in the Transport for NSW REF template and has been undertaken in consultation between QPRC and Transport for NSW.

The description of the proposed work and assessment of associated environmental impacts has been undertaken in the context of Section 171 of the Environmental Planning and Assessment Regulation 2021, the factors in *Guidelines for Division 5.1 assessments, (DPE 2022)*, *Roads and Related Facilities EIS Guideline* (DUAP 1996), the *Biodiversity Conservation Act, 2016* (BC Act), the *Fisheries Management Act 1994* (FM Act), and the Australian Government's *Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)* (EPBC Act).

In doing so, the REF helps to fulfill the requirements of:

- Section 5.5 of the EP&A Act including that QPRC examine and take into account, to the fullest extent possible, all matters affecting or likely to affect the environment by reason of the activity.

The findings of the REF would be considered when assessing:

- Whether the proposal is likely to have a significant impact on the environment and therefore the necessity for an environmental impact statement to be prepared and approval sought from the Minister for Planning under Division 5.2 of the EP&A Act
- The significance of any impact on threatened species as defined by the BC Act and/or FM Act, in Section 1.7 of the EP&A Act and therefore the requirement for a Species Impact Statement or a Biodiversity Development Assessment Report
- The significance of any impact on nationally-listed biodiversity matters under the https://www.awe.gov.au/environment/epbc EPBC Act, including whether there is a real possibility that the activity may threaten long-term survival of these matters, and if offsets are required and able to be secured.

The potential for the proposal to significantly impact any other matters of national environmental significance or Commonwealth land and the need, subject to the EPBC Act strategic assessment approval, to make a referral to the Australian Department of Climate Change, Energy, the Environment and Water for a decision by the Commonwealth Minister for the Environment on whether assessment and approval is required under the EPBC Act.

2. Need and options considered

This chapter describes the need for the proposal in terms of its strategic setting and operational need. It identifies the various options considered and the selection of the preferred option for the proposal.

2.1 Strategic need for the proposal

Upgrading the main street of Queanbeyan has been a priority of QPRC and the community for many years and has been a key feature of several community engagement activities. The project is included in the following strategic policies:

- *Queanbeyan CBD Spatial Masterplan* (QPRC, 2019)
- *Queanbeyan CBD Place Plan* (QPRC, 2020)
- *Retail Growth Strategy* (QPRC, 2018).

Analysis of Monaro Street within the *Queanbeyan CBD Spatial Master Plan* (QPRC, 2019) and *Queanbeyan CBD Place Plan* (QPRC, 2020) have identified Monaro Street as requiring reinvigoration to balance the function of the street as a transport route as well as a community space.

The *Queanbeyan CBD Spatial Master Plan* (QPRC, 2019) identifies the historical significance of Monaro Street, having been a crucial transport route within the community since the 1860s. Since then, Monaro Street has remained a centre of activity within Queanbeyan as the main traffic route which also hosts a high proportion of heavy vehicles. The three strategic elements of the *Queanbeyan CBD Spatial Master Plan* (QPRC, 2019) are as follows:

- *Identity*: Delivered by amenity, safety, streetscape, place making and great urban design. Creating safe and enjoyable spaces that attract people and encourage activity whilst improving the liveability
- *Connection*: With a strong emphasis on pedestrian-focused environments and orientation. Creating connections into and around the CBD to enable easy access for people, vehicles, bikes and public transport
- *Investment*: By providing a business environment that supports economic activity and defines an investment proposition to grow commercial activity and jobs.

The *Queanbeyan CBD Place Plan Report* (QPRC, 2020) discusses the need for reinvigoration of the Queanbeyan CBD and highlights current gaps in the local community which would contribute to a more active and enjoyable place. These gaps include but are not limited to more cafes, restaurants, bars and engaging spaces, safety at night, and improved pedestrian experience including walkable and active streets. The *Queanbeyan CBD Place Plan* (QPRC, 2020) outlines the vision for Monaro Street to have a function and identity which does not focus solely on movement and transport.

Currently, the Queanbeyan CBD is not being used to its full potential. Surveys of Queanbeyan business owners and residents indicate that the current state of the area is dissuading residents from using the CBD to its full extent. The *Retail Growth Strategy* (QPRC, 2018) found that a lack of choice and variety within the Queanbeyan CBD contributes to existing threat of competition from retail centres in Canberra and the surrounding region. Further, lack of public amenity and walkability on Monaro Street has also contributed to an increase in vacancy rates on the street.

The proposal involves upgrades to both civil infrastructure (including lighting, communication, and security traffic management) and pedestrian access. The proposed landscaping has also considered pedestrian infrastructure including accessibility for disabled people, public space, public art, planting and sustainability. Through these upgrades, the proposal aims to balance the function of Monaro Street though improved amenity for residents, visitors and businesses.

This project will assist in ensuring the full potential of the Queanbeyan CBD is realised. These works will reduce traffic noise and manage the flow of traffic, provide greater safety for drivers and pedestrians and support the growing region to ensure residents and local businesses can access the facilities and services they need.

2.2 Limitations of existing infrastructure

Limitations of the existing road infrastructure have contributed greatly to the need of the proposal. Limitations of the existing road infrastructure include:

- in several instances street lighting poles and building awnings clash, where the awning has been built around the pole
- lighting of footpaths is not specifically provided from the roadway lighting poles, and it is likely that in many areas the light throw from the street lighting luminaires is shaded by the building awnings
- a number of existing pits for communication services with damaged lids and uneven placement within pavement
- insufficient CCTV surveillance
- a concrete road surface which is showing signs of visible wear and tear including:
    - texture loss and areas of cracking and erosion
    - areas where top layer of concrete has been lost revealing the aggregate underneath
    - several sections where sealing between the concrete slabs has been undertaken where either concrete spalling or cracking and joint displacement or settlement has occurred over time
    - section where an asphalt patch was applied indicating possible water ingress following surface cracking that may lead to subgrade failure.

The current condition of Monaro Street is contributing to increased threat of competition from retail centres in Canberra and the surrounding region (QPRC, 2018). Further, an increase in vacancy rates on Monaro Street is exacerbated by the current lack of pedestrian-centred urban design, public amenity and walkability on the street (QPRC, 2018). Without upgrades, Monaro Street would likely continue to be considered primarily a transport route, limiting potential for the street to contribute to a sense of community within the Queanbeyan CBD through provision of public amenity for residents, visitors and businesses.

2.3 Proposal objectives and development criteria

2.3.1 Proposal objectives

The objectives of the proposal are to:

- provide safe road environment for road users and pedestrians on Monaro Street through upgrades to the road pavement, widening of footpaths and upgrades to street lighting
- reduce ongoing maintenance costs by extending/resetting the life of the existing road pavement
- improve traffic efficiency of the Monaro Street
- minimise impacts on the environment and locality
- provide a cost-effective solution
- minimise disruptions to road users and the community in Queanbeyan
- celebrate and preserve the existing local character of Monaro Street.

2.3.2 Development criteria

The development criteria for the proposal include:

- improve road safety
- improve the road and footpath pavement surfaces to improve the experience for all users
- minimise impacts to existing utilities
- minimise adverse environmental impacts.

2.3.3 Urban design objectives

Urban design objectives for the proposal that have been used to inform the design include:

- keeping the road footprint to the minimum possible to achieve a good design outcome
- considering connectivity into and through surrounding urban environments
- integrating trees creatively and safely into road corridors
- improving the legibility of roads
- achieving an integrated and minimal maintenance design
- creating clean lines and a coordinated and neat composition of infrastructure elements
- using robust durable materials fit for purpose and place
- providing a self-reliant and minimal maintenance natural landscape
- considering the design quality and maintainability of major road.

2.4 Alternatives and options considered

2.4.1 Methodology for selection of preferred option

The methodology for selection of the preferred option involved a collaborative process. Key steps of the process included:

- concept design development
- value management
- safety-in-design and constructability considerations
- long-term strategic vision assessment
- analysis of options
- design refinement.

2.4.2 Identified options

The options considered for the proposal are described below:

Option 1: Full upgrade of Monaro Street

Option 1 would involve a full upgrade of Monaro Street. This option involved proposed upgrades that would include realignment of the existing road, lane and parking configurations, replacement of existing road and footpath pavement, upgrades to ancillary infrastructure, stormwater drainage and traffic management. Proposed upgrades would also include landscaping improvements including installation of street furniture, pedestrian and accessibility infrastructure, replacement of amenity trees and planting of native vegetation.

An overview of Option 1 is shown in Figure 2-1.

Option 2: Monaro Street amenity improvements

This option would be similar to the first option, however would retain the existing street and kerb alignment, focusing on lane configuration, footpath pavement and landscaping improvements only.

An overview of Option 2 is shown in Figure 2-2.

Option 3: 'Do-Nothing'

The 'do nothing' option would involve not upgrading Monaro Street. This would likely result in exacerbated threat of competition from other regional centres such as Canberra. Further, the 'do nothing' option would likely contribute the current increases in vacancy rates within the Queanbeyan CBD.

Under the 'do nothing' option, Monaro Street would likely continue to primarily be considered a transport route, limiting potential for the street provide functions other than transport to local residents and contribute to a sense of community within the Queanbeyan CBD.



Figure 2-1: Design option 1 – full upgrade of Monaro Street

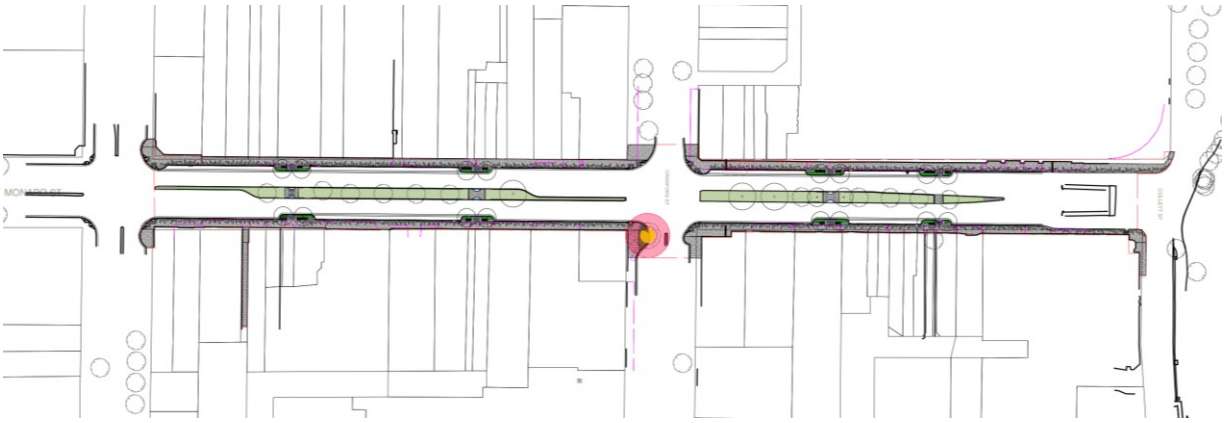


Figure 2-2: Design option 2 – Monaro Street amenity improvements

2.5 Preferred option

Following consideration of each of the available options, the preferred option for the proposal was identified as being Option 2. It was considered that this option most closely aligned to the project objectives and would provide the best overall and affordable improvement for Monaro Street as well as the broader Queanbeyan community.

2.6 Design refinements

No additional future design requirements have been identified for the proposal at this time.

3. Description of the proposal

This chapter describes the proposal and provides descriptions of existing conditions, the design parameters including major design features, the construction method and associated infrastructure and activities.

3.1 The proposal

QPRC proposes to upgrade Monaro Street, in Queanbeyan. The proposal would inlcude upgrades to the road and pedestrian infrastructure, urban design, lighting and security and communication utilities. The proposal footprint is approximately 420 metres in length between Lowe Street and Collett Street.

The key features of the proposed upgrades are shown in Figure 3-1 and include:

- resurfacing of the existing road pavement
- implementation of a 40 kilometres per hour speed limit for the section of Monaro Street between Lowe Street and Collett Street (subject to approval by Transport for NSW)
- improved pedestrian and urban design upgrades
- integration of accessibility features such as directional tactile indicators
- upgrades to ancillary infrastructure including additional street and pedestrian lighting, improved communication and security services, improved stormwater drainage (including kerb and channel drainage) and other utility adjustments.

The proposal site is heavily disturbed from its existing use as a road corridor, and the proposal is unlikely to have a significant impact on the environment. The existing amenity trees and landscaping within the existing median would be removed to accommodate traffic staging during construction, however would be replaced with alternative landscaping within this area. A key feature of the environment near the proposal is the Queanbeyan River. It is around 30 metres east of the proposal site, at its nearest point. A more detailed description of the existing environment is provided in Chapter 6.

3.2 Design

3.2.1 Design criteria

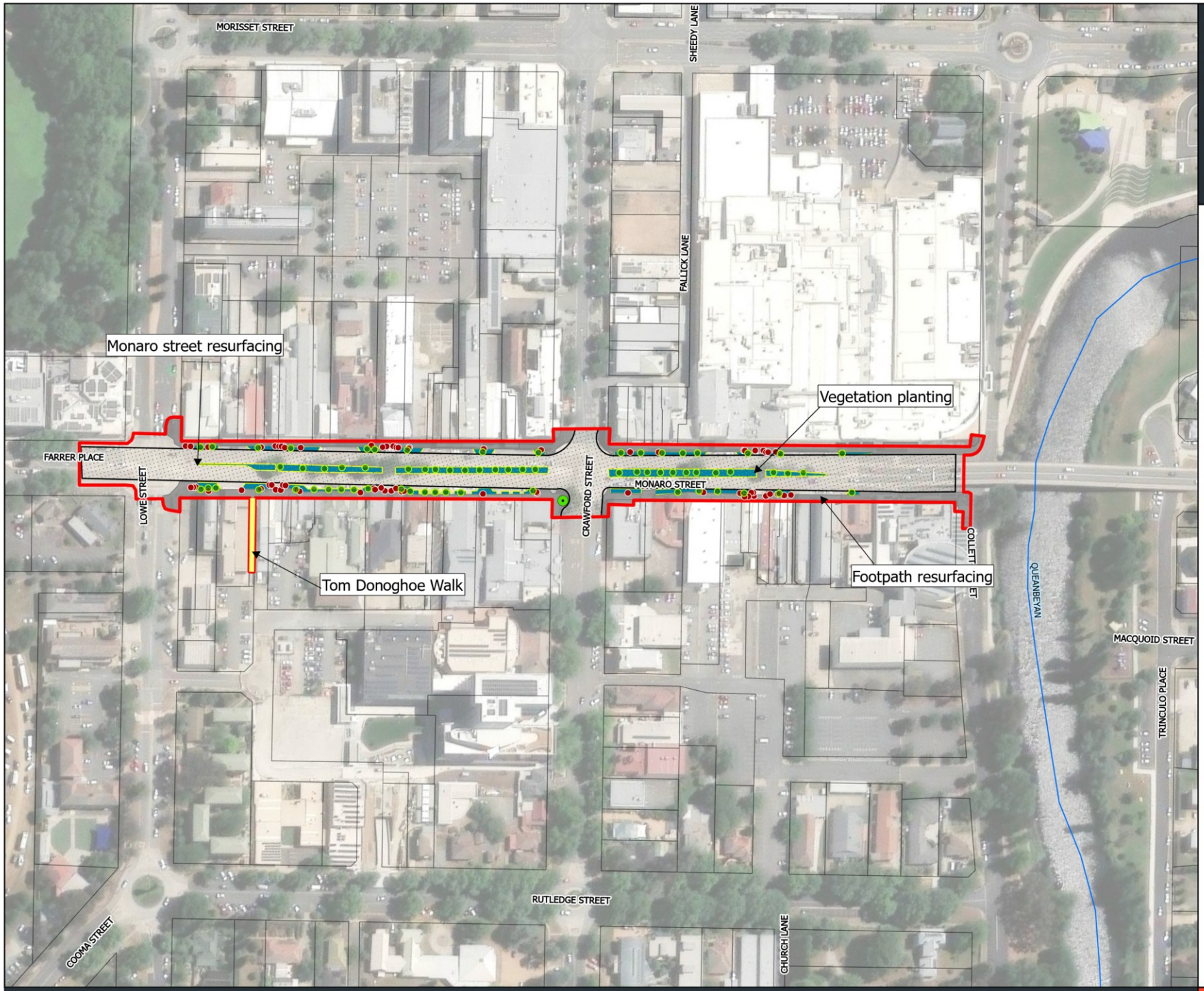
Design guides, standards and policies considered during the development of the proposal included but not limited to:

- Austroads *Guide to Road Design 2021* (Austroads, 2021)
- *Beyond the Pavement 2020* (Transport for NSW, 2020)
- Transport for NSW technical directions, specifications and quality alerts
- Australian standards
- NSW Bicycle Guidelines.

3.2.2 Engineering constraints

Key engineering constraints considered in the design of the proposal include:

- utilities: numerous utilities are located within the construction footprint that would need to be relocated during the proposal, including power poles, water mains and telecommunications
- Queanbeyan River: the eastern end of the proposal site is within close proximity of Queanbeyan River. Any potential run-off or other disturbance to this area would need to be avoided avoided as part of construction of the proposal.



Monaro Street Upgrade REF Project

Figure 3-1
Key Features of the Proposal

Legend

- Tree Plantings
- Street Furniture
- Tree of Knowledge
- Project site
- Watercourse
- Cadastre
- Tom Donoghoe Walk
- Monaro Street resurfacing
- Footpath resurfacing
- Mass Planting



Coordinate system: GDA2020 MGA Zone 55
Scale ratio correct when printed at A3

1:2,000 Date: 5/03/2025

GDA 2020

Data sources: DELWP, Geoscience Australia
World Imagery: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

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3.2.3 Major design features

The proposal involves upgrade of Monaro Street including replacement of the road and footpath pavement, upgrades to ancillary infrastructure, stormwater drainage, pedestrian infrastructrure and landscaping. The proposal does not contain any major design features such as bridges, interchanges or fauna crossings.

Road surface

The key road surface improvements identified as part of the proposal would include:

- resurfacing of the existing road pavement
- new/updated road signage and line markings.

Pedestrian and urban design upgrades

The key pedestrian and urban design upgrades identified as part of the proposal would include:

- pavement upgrades to the pedestrian footpaths on both sides of Monaro Street, in addition to Tom Donoghoe Walk footpath between Monaro Street and the Lowe Street parking area
- upgrades to pedestrian infrastructure including installation of new street furniture (seating and drinking fountains)
- improved / relocated median refuges for pedestrians crossing Monaro Street
- additional street and pedestrian lighting
- new public art and additional landscaping/planting
- integration of accessibility features such as directional tactile indicators.

Details on the key pedestrian and urban design upgrades are provided in the following sections.

Pedestrian Infrastructure

To prioritise pedestrian safety and comfort, the design would include widened footpaths where possible through the removal of existing car parking spaces. The footpath on either side of Monaro Street would include high-quality, durable granite paving. The footpaths have been designed to meet Australian access standards, ensuring ease of movement for all users, including those with mobility impairments. To further enhance pedestrian experience, directional stone tactile indicators would be strategically integrated into the paving, providing clear guidance at midblock crossings for visually impaired individuals.

Public Space

The design would incorporate a diverse range of well-spaced seating areas, catering to various needs, providing opportunities for relaxation, social interaction, and quiet contemplation. A series of low maintenance street furniture, including modern waste bins, drinking fountains with integrated dog bowls would also be provided near pedestrian nodes and spillout areas.

Public Art and planting

Public art is proposed to be integrated into the street furniture such as bollards, with additional opportunity to also integrate stencilling into seating to connect and elevate the overall aesthetic experience.

3.3 Construction activities

3.3.1 Work methodology

Construction activities would generally be undertaken within the identified proposal site. Construction activities for the proposal would generally include the following sequence of events for each stage of the proposal (refer to section 3.3.7):

- establish a compounds and stockpile site
- set up traffic control and close section of roadway between identified street blocks (based on finalised project staging)
- locate underground services and adjust utilities as required

- install environmental controls, including erosion and sediment controls
- remove vegetation, where required
- mill and reconstruct / widen kerb realignment where applicable
- replace / reinstate existing pavement generally in the following sequence:
  - proof roll exposed subgrade
  - testing of the subgrade material and stabilise (if required)
  - placement, spreading and compaction of additional subbase layer
  - testing of the subbase material
  - application of emulsion seal
  - placement, spreading and compaction of new asphalt base layer
  - testing of asphalt base layer
  - placement, spreading and compaction of new asphalt wearing layer
  - testing of the wearing surface layer
- upgrades to utilities (lighting, electrical, communications, and security)
- line marking and installation of new road signage
- installation of landscaping and street furniture including planting of new amenity trees and native vegetation
- rehabilitate the site.

3.3.2 Construction workforce

The expected workforce for the proposal would include around 20 workers during peak periods. However, the construction workforce at any one time would vary depending on the construction and associated activities. Final construction workforce numbers would be identified by the appointed construction contractor during construction planning.

3.3.3 Construction hours and duration

Construction would occur during both standard working hours and night time (out of hours works (OOHW)) periods with a contraflow arrangement (closing one lane at a time) along the relevant section of Monaro Street for the duration of the proposed works.

Standard working hours would be adopted during construction of the proposal and include:

- Monday-Friday: 7.00am to 6.00pm
- Saturday: 8.00am to 1.00pm
- Sunday and Public Holidays: No work.

Work outside of standard hours and night time works would also be required during the construction of the proposal. Periods of OOHW would allow minimal disruption to the Queanbeyan CBD and local businesses located along Monaro Street. OOHW would be subject to permitted work occupancy licenses (ROL) and construction staging. The final timing of any OOHW would be determined by the appointed construction contractor during construction planning. Any OOHW would be undertaken in accordance with the ICNG and CNVG.

Construction of the proposal is expected to commence in mid-2025 (subject to planning approval) and take approximately 18 months to complete.

3.3.4 Plant and equipment

Indicative plant and equipment likely to be required for the construction of the proposal would include:

- trucks
- graders
- loaders
- rollers
- water carts (12,000 litres)
- bitumen sprayer/spray seal truck
- aggregate spreaders
- concrete agitator
- milling machine/pug mill
- asphalt paver/paving machine
- shuttle buggy
- chainsaws
- profiler
- track steer loaders
- steel drum roller (four tonnes)
- steel drum roller (seven tonnes)
- multi tyre roller
- eight live bottom trailers (25 tonnes)
- excavator (eight tonnes).

Not all equipment identified would be required for all phases of the proposed construction of the proposal. Equipment to be utilised during construction of the proposal would be refined by the appointed construction contractor during construction planning.

3.3.5 Earthworks

Earthworks would be required to carry out the proposal. The ability to reuse the material would depend on its physical and chemical properties and determined during construction. Earthworks and estimated quantities (including milling) would be defined prior to the start of construction during detail design.

3.3.6 Source and quantity of materials

The following materials would generally be required:

- earthwork materials such as sand, gravel, topsoil, general fill material and selected material for road formation
- bitumen and aggregates including stone, sand and gravel for pavement production
- binders to stabilise and treat the road formation and culvert bases
- cement, sand and aggregates for concrete used in drainage and pavement construction such as barriers, kerbs and gutters, paving and signpost footings
- precast concrete elements for drainage construction and miscellaneous work
- native and exotic planting mixes for landscaping.

Materials would be sourced from local suppliers where practicable. Reuse of existing and recycled materials would be undertaken where practicable.

3.3.7 Traffic management and access

As noted in section 3.3.3, construction would occur during both standard working hours and night time (OOHW) periods with a contraflow arrangement (closing one lane at a time) along the relevant section of Monaro Street for the duration of the proposed works.

An indicative staging plan for the proposal has been identified, splitting the construction of the proposal into multiple smaller stages, to allow for Monaro Street to operate as close to existing conditions as possible while facilitating construction. The current staging plan provides for an arrangement that generally allows a majority of the northern section of the carriageway to be complete first, and then the southern carriageway is complete afterwards. Following this, intersection and tie-in works would be completed.

The final staging for the proposal would be determined following engagement of the nominated construction contractor, however, the current indicative staging is summarised below:

Northern carriageway:

- Stage 1a: Completion of the section of Monaro Street west of Lowe Street. Eastbound traffic would to be moved to the southern carriageway adjacent to this section, where they can return to existing conditions east of Lowe Street.
- Stage 1b: Completion of the carriageway between Lowe Street and Crawford Street. Traffic would be switched prior to the intersection at Lowe Street, where it would operate in the southern carriageway before returning to existing conditions east of Crawford Street.
- Stage 1c: Completion of the Northern Carriageway from Crawford Street to the Monaro Street Bridge. Eastbound traffic will be switched into the southern carriageway, before it is switched back into the existing northern lanes prior to the bridge to allow for safe traffic conditions.

Southern Carriageway:

- Stage 2a: Completion of the section of Monaro Street west of Lowe Street. Westbound traffic is to be moved to new northern carriageway adjacent to this section prior to the Lowe Street intersection and return to existing conditions west of the construction zone.
- Stage 2b: Completion of the carriageway between Lowe Street and Crawford Street. Traffic would be switched prior to the intersection at Crawford Street, where it will operate in the new northern carriageway before returning to existing conditions west of Lowe Street.
- Stage 2c: Completion of the southern carriageway from Crawford Street to the Monaro Street Bridge. Westbound traffic would operate as per existing across the bridge and complete the switch into the new northern carriageway on the exit from the bridge.

Intersection and Slip Lane Works – Northern Carriageway:

- Stage 3a: The Lowe Street intersection is to undergo works on the northern leg of Lowe Street and to tie into the new northern carriageway.
- Stage 3b: The Crawford Street then undergoes construction on its northern leg, and to tie into the new northern carriageway.
- Stage 3c: The slip lane connection to Collett Street will undergo construction to tie into the new northern carriageway.

Intersection and Slip Lane Works – Southern Carriageway:

- Stage 4a: The Lowe Street intersection is to undergo works on the southern leg of Lowe Street and to tie into the new southern carriageway.
- Stage 4b: Crawford Street then undergoes construction on its southern leg, and to tie into the new southern carriageway.
- Stage 4c: The slip lane connection from Collett Street will undergo construction to tie into the new southern carriageway.

During construction, pedestrian pathways on both sides of the carriageway need to remain open to provide access to the properties and businesses on Monaro Street. Where necessary during the construction period, traffic management and controllers will be available to assist safe pedestrian/cyclist crossing movements.

If required, nightworks may be utilised to allow works to occur on pedestrian paths, such that the impacts to pedestrian traffic in the area is minimised.

Traffic and transport impacts associated with the proposal are assessed in Section 6.4 of this REF.

3.4 Ancillary facilities

Ancillary facilities would be required to store equipment, machinery, vehicles and stockpile.

An old nursery site on Morisset Street opposite Queen Elizabeth II Park would be used as a compound site / stockpile site to support the construction of the proposal. The compound site is located around 270 metres north of the proposal. If the nursery site is not available when construction activities commence, an alternative / equivalent the compound site would be identified (see Figure 3-2).

Some equipment and/or plant machinery may be stored temporarily on adjoining streets (along the kerbside areas of these streets within the first one to two blocks) between Lowe Street and Collett Street during the construction period to improve efficiency of construction operations and to minimise the movement of large plant. The placement of these vehicles for temporary parking would not impact the use of these streets for general traffic.

3.5 Public utility adjustment

The proposal would involve upgrades to the electrical network, street lighting, communications system and storm water drainage. Survey would be carried out prior to the start of works to determine any additional utility impact. Additional environment assessment would be done if additional impact is identified.

3.6 Property acquisition

The proposal would not require any property acquisition and will be completed within the existing SP2 Infrastructure road corridor.



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Monaro Street Upgrade REF Project

Figure 3-4
Proposed compound location - Morisset Street

Legend

- Project site
- Proposed Compound Location
- Watercourse
- Cadastre



Coordinate system: WGS 1984 Web Mercator Auxiliary Sphere
Scale ratio correct when printed at A3

1:3,693 Date: 3/03/2025

GDA 2020

Data sources: DELWP, Geoscience Australia
World Imagery: Maxar

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4. Statutory and planning framework

This chapter provides the statutory and planning framework for the proposal and considers the provisions of relevant state environmental planning policies, local environmental plans and other legislation.

4.1 Environmental Planning and Assessment Act 1979

4.1.1 State Environmental Planning Policies

State Environmental Planning Policy (Transport and Infrastructure) 2021

State Environmental Planning Policy (Transport and Infrastructure) 2021 (SEPP (Transport and Infrastructure)) aims to facilitate the effective delivery of infrastructure across the State.

Section 2.109 of SEPP (Transport and Infrastructure) permits development on any land for the purpose of a road or road infrastructure facilities to be carried out by or on behalf of a public authority without consent.

As the proposal is for road and road infrastructure facilities and is to be carried out QPRC, it can be assessed under Division 5.1 of the *Environmental Planning and Assessment Act 1979* (NSW). Development consent from council is not required.

The proposal is not located on land reserved under the *National Parks and Wildlife Act 1974* and does not require development consent or approval under the following:

- *State Environmental Planning Policy (Resilience and Hazards) 2021*
- *State Environmental Planning Policy (Planning Systems) 2021*
- *State Environmental Planning Policy (Precincts – Central River City)*
- *State Environmental Planning Policy (Precincts – Eastern Harbour City)*
- *State Environmental Planning Policy (Precincts – Regional) 2021*
- *State Environmental Planning Policy (Precincts – Western Parkland City) 2021.*

Section 2.10 to 2.15 of SEPP (Transport and Infrastructure) contains provisions for public authorities to consult with local councils and other public authorities prior to the commencement of certain types of development. Consultation, including consultation as required by SEPP (Transport and Infrastructure) (where applicable), is discussed in Chapter 5 of this REF.

State Environmental Planning Policy (Biodiversity and Conservation) 2021

The proposal is not within the Sydney Drinking Water Catchment. As such, Chapter 8 (Sydney Drinking Water Catchment) of the *State Environmental Planning Policy* ((Biodiversity and Conservation) 2021 (SEPP (Biodiversity and Conservation) does not apply to the proposal.

4.1.2 Local Environmental Plans

Queanbeyan-Palerang Regional Local Environmental Plan

Monaro Street is located within the QPRC LGA and is in land zoned as SP2 – Infrastructure (Roads) under the QPRC Local Environmental Plan 2022 (QPRC LEP). Objectives of land zoned as SP2 under the QPRC LEP and how the proposal aligns with the objectives is outlined in Table 4-1.

Table 4-1 Consistency of the proposal with the objectives of the QPRC LEP

SP2 Objectives	How the proposal aligns
To provide for infrastructure and related uses	The proposal involves upgrades to the existing road infrastructure including upgrades to lighting, traffic and parking design, pavement, stormwater drainage, road geometry and landscaping. As such the proposal provides an infrastructure use that is consistent with this objective.

SP2 Objectives	How the proposal aligns
To prevent development that is not compatible with or that may detract from the provision of infrastructure	The proposal is consistent with the provision of infrastructure land use, as it would involve the upgrade of the existing infrastructure on Monaro Street. As such the proposal provides an infrastructure use that is consistent with this objective.

Division 17 (Roads and traffic), Subdivision 1 (Roads and road infrastructure facilities), Clause 2.109(1) of the SEPP (Transport and Infrastructure) allows for the 'development for the purpose of road or road infrastructure facilities may be carried out by or on behalf of a public authority without consent on any land.'

The proposal involves the development for the purpose of upgrading an existing road by QPRC, as such is permitted without consent under the SEPP (Transport and Infrastructure). As such, the requirement to seek consent under the provisions of the QPRC LEP is not applicable to the proposal.

4.2 Other relevant NSW legislation

4.2.1 Roads Act 1993

The *Roads Act 1993* (Roads Act) sets out the provisions for the roads of NSW. Part 4 of the Roads Act sets out the provisions for the closing of public roads, including notification procedures.

The proposal requires construction work on Monaro Street, which is a classified road within the QPRC LGA, and temporary interruption to traffic along the proposal. A Road Occupancy Licence is required for any activity likely to impact on traffic flow, even if that activity takes place off-road. QPRC is the proponent and Transport for NSW are the relevant roads authority for the proposal as Monaro Street is a State road. QPRC would consult with Transport for NSW for NSW regarding the requirement for any ROL for the proposal.

This REF has been prepared consistent with the structure of Transport for NSWs'REF template and reviewed in consultation with Transport for NSW.

4.2.2 Fisheries Management Act 1994

The *Fisheries Management Act 1994* (FM Act) provides for the protection, conservation and recovery of threatened aquatic species, populations and ecological communities (as defined under the FM Act). This includes the protection of fish stocks and key fish habitat, mangroves, seagrasses and seaweeds on public water, land and foreshores.

The FM Act and the associated FM Regulations set out provisions to protect aquatic vegetation (such as saltmarshes, mangroves, seagrass and seaweeds whether alive or dead) from harm on public water land below the astronomical high tide mark or the foreshore of such land.

One of the objects of the FM Act is to conserve fish stocks and key fish habitat. The Queanbeyan River is classified as key fish habitat, the buffer for which extends across the easternmost part of the proposal site. However, given the minor nature of the proposed works and expected impacts, consultation with the NSW Department of Primary Industries and Regional Development (DPIRD) Fisheries was not considered to be required at this time.

The proposal is unlikely to significantly impact key fish habitat within the proposal site (refer to Section 6.1).

4.2.3 Heritage Act 1977

The *Heritage Act 1977* (Heritage Act) established the Heritage Council of NSW (The Heritage Council). The Heritage Council's role is to advise the government on the protection of heritage assets, make listing recommendations to the Minister in relation to the State Heritage Register, and assess, approve or decline proposals involving modification to heritage items listed on the State Heritage Register.

There are four heritage items listed on the NSW State Heritage Register (NSW Environment and Heritage, 2024) within up to 250 metres from the proposal site. Numerous heritage items listed on the QPRC LEP are also located adjacent to the proposal site.

Assessment of potential impacts to non-Aboriginal heritage is discussed in Section 6.7.

4.3 Commonwealth legislation

4.3.1 Environment Protection and Biodiversity Conservation Act 1999

Under the EPBC Act, a referral is required to the Australian Government for proposed actions that have the potential to significantly impact on matters of national environmental significance or the environment of Commonwealth land. These are considered in Appendix A - Consideration of Section 171 factors and matters of national environmental significance and Commonwealth land and Chapter 6 of the REF.

A referral is not required for proposed road activities that may affect nationally-listed threatened species, endangered ecological communities and migratory species. This is because requirements for considering impacts to these biodiversity matters are the subject of a strategic assessment approval granted under the EPBC Act by the Australian Government in September 2015.

Potential impacts to these biodiversity matters are also considered as part of Chapter 6 of the REF and Appendix A - Consideration of Section 171 factors and matters of national environmental significance and Commonwealth land.

Findings - matters of national environmental significance

The assessment of the proposal's impact, on matters of national environmental significance and the environment of Commonwealth land, found that there is unlikely to be a significant impact on relevant matters of national environmental significance or on Commonwealth land. Accordingly, the proposal has not been referred to the Australian Government Department of Climate Change, Energy, the Environment and Water (Commonwealth DCCEEW) under the EPBC Act.

Findings - nationally-listed biodiversity matters (where the strategic assessment applies)

The assessment of the proposal's impact on nationally-listed threatened species, endangered ecological communities and migratory species found that there is unlikely to be a significant impact on relevant matters of national environmental significance.

Chapter 6 of the REF describes the safeguards and management measures to be applied.

4.3.2 Other relevant Commonwealth legislation

Native Title Act 1993

The *Native Title Act 1993* recognises and protects native title. The Act covers actions affecting native title and the processes for determining whether native title exists and compensation for actions affective native title. It establishes the Native Title Registrar, the National Native Title Tribunal, the Register of Native Title Claims and the Register of Indigenous Land Use Agreements, and the National Native Title Register. Under the Act, a future act includes proposed public infrastructure on land or waters that affects native title rights or interest.

A search of the Native Title Tribunal Native Title Vision website was undertaken, with no Native Title holders/claimants identified. A search of the Register of Native Title Claims identified no Native Title Claims for the proposal site.

Potential impacts on Aboriginal heritage re considered in section 0 of this REF.

4.4 Confirmation of statutory position

The proposal is categorised as development for the purpose of a road and road infrastructure facilities and is being carried out by or on behalf of a public authority. Under Section 2.109 of SEPP (Transport and Infrastructure) the proposal is permissible without consent. The proposal is not State significant infrastructure or State significant development. The proposal can be assessed under Division 5.1 of the EP&A Act.

QPRC is the determining authority for the proposal. This REF fulfils QPRC's obligation under Section 5.5 of the EP&A Act including to examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of the activity. Monaro Street is a State road controlled by Transport for NSW. As such, the REF was prepared in the Transport for NSW REF template and reviewed in consultation with Transport for NSW.

5. Consultation

This chapter discusses the consultation undertaken to date for the proposal and the consultation proposed for the future.

5.1 Consultation strategy

QPRC have adopted a consultation strategy for the proposal. The strategy ensures consistency in how QPRC will manage their relationships with customers, business partners, industry, community members and organisations with an interest in the proposal. The strategy identifies key communication and engagement objectives that aim to:

- keep the local community and other key stakeholders regularly informed about proposal progress
- ensure community and stakeholder feedback is continuously fed into communication and engagement
- listen to feedback, investigate suggestions and report back
- engage in a collaborative, innovative, adaptive and sustainable manner
- increase stakeholder understanding of the proposed Monaro Street upgrade and its objectives
- ensure community and stakeholder enquiries about the proposal are managed and resolved effectively
- be transparent
- ensure that proposal information is distributed in an effective and timely manner.

Key stakeholders relevant to the strategy include:

- Aboriginal Land Council / representatives of Country
- Federal, State and Local government representatives
- emergency services
- utilities providers
- local residents
- local businesses
- local community
- road users
- interest groups.

Engagement tools and techniques that will be used across various stages of the proposal include:

- door-knocking nearby residents and businesses (as required)
- meetings and briefings for stakeholders, businesses and residents (as required)
- proposal web page and email address
- proposal notifications for local residents, businesses and stakeholders
- media releases and traffic alerts
- social and digital media for wider audience, targeting Queanbeyan LGA and heavy vehicle industry
- digital engagement tools
- VMS signs / signage (as required)
- weekly traffic report to ensure proposal inclusion on Live Traffic website when investigations are carried out or construction starts
- local government websites and communication channels.

5.2 Community involvement

QPRC prepared a consultation report in September 2021 based on the concept design for Monaro Street Upgrade. The intent of the consultation was to gain feedback on the proposed concept prior to proceeding to detailed design. Community consultation was conducted from 15 July 2021 to 15 August 2021 through 'Your Voice'.

At the time, the concept design (similar to the current proposal) included the following:

- reducing the speed limit to 40 kilometres per hour
- maintaining two travelling lanes in each direction
- widening footpaths
- reducing the width of the median
- removing right turn movement into Crawford Street from Monaro Street travelling east
- large street trees on the footpath and smaller trees in the median
- retaining mid-block crossings (two between Lowe Street and Crawford Street and one between Crawford and Collett Streets)
- increased landscaping and street furniture in widened footpath areas.

The key recommendations that emerged from the public exhibition are as follows:

- amend species selection for street trees to include Urban Ash and Pin Oak
- endorse the parking changes proposed in the concept design
- proceed with detailed design.

Engagement tools that were during consultation include:

- online or hard copy survey
- emails to all registered users of 'Your Voice'
- exhibition of concept designs and drawings and a 3D 'fly-though' of the proposed changes
- pop-up information sessions at Riverside Plaza.

During consultation, 48 submissions of the online survey were completed, and 10 written surveys were submitted. The survey responses indicate that the majority of respondents (86 percent) lived in the Queanbeyan area, 20 percent worked in the area, five percent were business owners and 12 percent were landlords.

The 58 completed surveys identified that 40 percent of respondents were 'highly supportive' of the proposal, 40 percent were 'supportive' and 20 percent were 'not supportive'. QRPC observations of the feedback from the 281 people engaged at a community information session during the exhibition period indicated that after people had an opportunity to have questions addressed directly, only a few people were not supportive. A summary of the concerns raised by the community from the survey and pop-up information session are presented in Table 5-1.

Table 5-1: Summary of issues raised by the community

Issue raised	Response to initial community feedback / where addressed in REF
Traffic, parking and accessibility: • concerns by respondents that parking should be a major focus of the proposal • a general perception that there is not enough now and there will be less after this work (the proposal) • concerns that there is insufficient accessible parking proposed in the concept design • removal of heavy vehicles and high traffic volumes identified as a limitation on the attractiveness of Monaro Street and the potential for activation.	Parking: • it is not proposed to alter number of car parking spaces currently available as part of the proposal • other projects identified in the Queanbeyan CBD Spatial Masterplan 2019 (specifically the redevelopment of the Lowe and Morisset car parks) will provide significantly more parking options than the 19 spaces removed from Monaro Street • previous consultation with business operators in Monaro Street has indicated an acceptance of a reduction in car parking spaces identified in the concept designs • currently, there are no accessible parking spaces in Monaro Street • discussions with QPRC's Access Committee confirm a preference for quality and quantity of accessible parking spaces in locations close to (but not on) Monaro Street • it is not proposed to include a requirement for accessible parking in Monaro Street. Traffic: • Monaro Street will continue to be classified as a state highway without a permanent alternative route for heavy vehicles and this restricts the options available for the redevelopment of the Queanbeyan CBD • the proposed concept design has been prepared within these limitations in conjunction with Transport for NSW.
Landscaping and building facades: • concerns that the proposed designs are not significantly different from what is already there or from what has been implemented in nearby centres of Canberra • comments that QPRC should do something to improve the building facades in Monaro Street.	Landscaping: • the changes to the median (both reduction in width and height) are different • the change of large trees in the median and smaller trees on the footpath to large trees on the footpath with smaller trees in the median is different • QPRC staff have proposed a change to species selection to include Urban Ash with Japanese Elm on the footpath and Pin oak with Crepe Myrtle in the median • the proposed paving colour is consistent with QPRC's Queanbeyan CBD Place Plan. • the addition of street furniture is consistent with QPRC's Queanbeyan CBD Place Plan • a separate lighting upgrade is also proposed. Building facades: • this issue is outside the scope of this proposal • QPRC has recently established the Monaro Street Upgrade Fund to encourage landlords and business operators to upgrade the facades in the CBD (this fund also includes businesses in the main streets of Bungendore and Braidwood) • it is proposed that the detailed design process will address lighting options for Monaro Street which may also impact building facades.
Building occupancy: • comments that QPRC should ensure greater occupancy of buildings on Monaro Street.	• this issue is not within QPRC's immediate control; individual landlords and business operators are responsible for their investment decisions • QPRC's upgrade of Monaro Street is designed to encourage the activation of the business environment.

Issue raised	Response to initial community feedback / where addressed in REF
QPRC priorities: • concerns that the funding for this proposal could be better utilised in other areas of QPRC.	• this proposal was identified in the Queanbeyan CBD Spatial Masterplan and is funded in QPRC's Operational Plan.

5.3 Aboriginal community involvement

Considering the highly disturbed nature and size of the project site in addition to the absence of any known Aboriginal Heritage Information Management System (AHIMS) sites within the project site, not formal consultation with Aboriginal stakeholders has been carried out as part of the proposal.

Refer to Section 0 for assessment of potential impacts to Aboriginal cultural heritage.

5.4 SEPP (Transport and Infrastructure) consultation

None of the clauses from Section 2.10 to 2.16 of the SEPP (Transport and Infrastructure) are triggered by the proposal. As such, consultation was not carried out under the SEPP.

5.5 Government agency and stakeholder involvement

As QPRC is the proponent and determining authority for the proposal, consultation with QPRC was not required.

5.6 Ongoing or future consultation

Ongoing consultation will continue following planning approval in line with the consultation strategy outlined in Section 5.1. This will included ongoing engagement through activities such as:

- door-knocking for nearby residents and businesses
- meetings and briefings for stakeholders, businesses and residents
- proposal notifications for local residents, businesses and stakeholders
- media releases and traffic alerts
- social and digital media for wider audience, targeting Queanbeyan LGA and heavy vehicle industry
- digital engagement tools.

6. Environmental assessment

This section of the REF provides a detailed description of the potential environmental impacts associated with the construction and operation of the proposal. All aspects of the environment, potentially impacted upon by the proposal, have been considered. This includes consideration of:

- potential impacts on matters of national environmental significance under the EPBC Act
- the factors specified in the Guideline for Division 5.1 assessments (DPE 2022) and as required under Section 171 of the Environmental Planning and Assessment Regulation 2021 and the *Roads and Related Facilities EIS Guideline* (DUAP 1996). The factors specified in Section 171 of the Environmental Planning and Assessment Regulation 2021 are also considered in Appendix A - Consideration of Section 171 factors and matters of national environmental significance and Commonwealth land
- site-specific safeguards and management measures are provided to mitigate the identified potential impacts.

6.1 Biodiversity

6.1.1 Methodology

The assessment of biodiversity was completed in general accordance with relevant policy and guidelines. The assessment included a review of publicly available information and the following key steps:

- undertake a desktop search of relevant databases to understand the existing environment and obtain records of threatened species, populations and ecological communities known or predicted to occur in the locality of the study area
- assess the 'likelihood of occurrence' following the collation of database records and species and community profiles
- assess the potential impacts to flora, fauna, migratory and aquatic species including assessments of significance where required
- identify construction and operational management measures as well as the need for offsets.

6.1.2 Existing environment

Environmental context

A summary of the existing environment is outlined in Table 6-1.

Table 6-1 Existing landscape features

Feature	Description
Interim Biogeographic Regionalisation for Australia (IBRA) bioregion and subregion	• South Eastern Highlands Bioregion • Murrumbateman IBRA subregion.
NSW landscape region (Mitchell landscapes)	• Upper Murrumbidgee Channels and Floodplains • Canberra Plains.
Native vegetation extent in the construction and operation footprint	The construction and operation footprint for the proposal contains the 'Tree of Knowledge' as well as vegetation and trees along the road and within the median strip. Trees and vegetation within the proposal site are not-native.
Cleared areas	The existing road reserve is comprised of cleared and disturbed areas.
Rivers and streams	The Queanbeyan River is located immediately north of the proposal site.

Feature	Description
Wetlands	There are no wetlands within the proposal site.
Connectivity features	There are no connectivity features within the proposal site. There are various connectivity features within 10 kilometres of the proposal site, in particular to the east of the proposal site between the Cuumbeun Nature Reserve (NSW) and the Molonglo Gorge Nature Reserve (ACT).
Areas of geological significance and soil hazard features	A search of the NSW Planning Portal Planning Spatial Viewer (NSW DPHI, 2024) identified no presence of acid sulfate soils at the proposal site. There are no areas identified as having geological significance at the proposal site.
Areas of outstanding biodiversity value	None recorded at the proposal site. However, Queanbeyan River, located immediately northeast of the proposal site, is mapped as an area of biodiversity values (NSW DPHI, 2024).

Plant Community Types and Threatened Ecological Communities (TEC's)

Two Plant Community Types (PCT's) were identified in proximity to the proposal site:

- PCT 3376: Southern Tableland Grassy Box Woodland
- PCT 4085: Southwest Tableland Gorges Riparian Shrubland.

PCT 3376 is located in patches southwest of the proposal site approximately 75 metres east from the proposal site as well as northwest across the Queanbeyan River. PCT 4805 is located along the banks of the Queanbeyan River, approximately 15 metres east of the proposal site. See Table 6-2 for details of PCT 3376 and PCT 4085.

Table 6-2 Plant community types

Plant Community Type	Condition	Area (hectares) within proposal	Threatened ecological community?	
			BC Act	EPBC Act
PCT 3376: Southern Tableland Grassy Box Woodland	Poor	Nil	Yes – White Box Yellow Box Blakely's Red Gum Woodland, listed as an Endangered Ecological Community	Yes – White Box Yellow Box Blakely's Red Gum Woodland, listed as Critically Endangered
PCT 4085: Southwest Tableland Gorges Riparian Shrubland	Poor-fair	Nil	No	No

Threatened flora

A search of BioNet Atlas on 19 December 2024 found no threatened flora within the proposal site, and six threatened flora records within 10 kilometres of the proposal. Listed threatened flora species are listed in Table 6-3.

Table 6-3 Listed threatened flora within 10 kilometres of the proposal site

Threatened flora	Status	Approximate distance from proposal
Button Wrinklewort (*Rutidosis leptorrhynchoides*)	Endangered under the BC Act and EPBC Act	3 kilometres southwest
Hoary Sunray (*Leucochrysum albians subsp. Tricolour*)	Endangered under the BC Act and EPBC Act	500 metres south
Small Purple-pea (*Swainsona recta*)	Endangered under the BC Act and EPBC Act	350 metres south
Black Gum (*Eucalyptus aggregate*)	Vulnerable under the BC Act and EPBC Act	1.5 kilometres northeast
Thick Lip Spider Orchid (*Caladenia tessellate*)	Vulnerable under the BC Act and EPBC Act	9.5 kilometres southwest
Pale Pomaderris (*Pomaderris pallida*)	Vulnerable under the BC Act and EPBC Act	three kilometres southeast

Threatened fauna

A search of BioNet Atlas on 19 December 2024 found no threatened fauna within the proposal site, and 37 threatened fauna records within 10 kilometres of the proposal. Listed threatened fauna species are listed in Table 6-4.

Table 6-4 Listed threatened fauna within 10 kilometres of the proposal site

Threatened fauna	Status	Approximate distance from the proposal
Green and Golden Bell Frog (*Litoria aurea*)	Endangered under the BC Act and Vulnerable under the EPBC Act	6 kilometres south
Southern Bell Frog (*Litoria raniformis*)	Endangered under the BC Act and Vulnerable under the EPBC Act	6 kilometres south
Pink-tailed Legless Lizard (*Aprasia parapulchella*)	Vulnerable under the BC Act and EPBC Act	1.2 kilometres southeast
Canberra Grassland Earless Dragon (*Tympanocryptis lineata*)	Critically endangered under the BC Act and the EPBC Act	6 kilometres southwest
Rosenberg's Goanna (*Varanus rosenbergi*)	Vulnerable under the BC Act	650 metres east
White-throated Needletail (*Hirundapus caudacutus*)	Vulnerable under the BC Act and EPBC Act	750 metres west
Australasian Bittern (*Botaurus poiciloptilus*)	Endangered under the BC Act and EPBC Act	3 kilometres southeast
Spotted Harrier (*Circus assimilis*)	Vulnerable under the BC Act	6 kilometres south
White-bellied Sea-Eagle (*Haliaeetus leucogaster*)	Vulnerable under the BC Act	6 kilometres south
Little Eagle (*Hieraaetus morphnoides*)	Vulnerable under the BC Act	30 metres southwest
Gang-gang Cockatoo (*Callocephalon fimbriatum*)	Endangered under the BC Act and EPBC Act	500 metres northeast
South-eastern Glossy Black-Cockatoo (*Calyptorhynchus lathami lathami*)	Vulnerable under the BC Act and the EPBC Act	6.5 kilometres southwest
Little Lorikeet (Glossopsitta pusilla)	Vulnerable under the BC Act	3 kilometres southeast
Swift Parrot (Lathamus discolor)	Endangered under the BC Act and critically endangered under the EPBC Act	2.5 kilometres northeast
Superb Parrot (*Polytelis swainsonii*)	Vulnerable under the BC Act and the EPBC Act	400 metres northwest
Brown Treecreeper (eastern subspecies) (*Climacteris picumnus victoriae*)	Vulnerable under the BC Act and the EPBC Act	3 kilometres southeast
Southern Whiteface (*Aphelocephala leucopsis*)	Vulnerable under the BC Act and the EPBC Act	3.5 kilometres southwest
Speckled Warbler (*Chthonicola sagittate*)	Vulnerable under the BC Act	2 kilometres northeast
White-fronted Chat (*Epthianura albifrons*)	Vulnerable under the BC Act	6.5 kilometres south
Painted Honeyeater (*Grantiella picta*)	Vulnerable under the BC Act and the EPBC Act	3 kilometres southeast
Black-chinned Honeyeater (eastern subspecies) (*Melithreptus gularis gularis*)	Vulnerable under the BC Act	3 kilometres southeast
Varied Sittella (*Daphoenositta chrysoptera*)	Vulnerable under the BC Act	2.7 kilometres southwest
Olive Whistler (*Pachycephala olivacea*)	Vulnerable under the BC Act	3 kilometres southeast

Threatened fauna	Status	Approximate distance from the proposal
Dusky Woodswallow (*Artamus cyanopterus cyanopterus*)	Vulnerable under the BC Act	1.2 kilometres north
South-eastern Hooded Robin (*Melanodryas cucullata cucullata*)	Endangered under the BC Act and the EPBC Act	800 metres south
Scarlet Robin (*Petroica boodang*)	Vulnerable under the BC Act	2.5 kilometres southeast
Flame Robin (*Petroica phoenicea*)	Vulnerable under the BC Act	6 kilometres south
Diamond Firetail (*Stagonopleura guttata*)	Vulnerable under the BC Act and the EPBC Act	2.5 kilometres southeast
Spotted-tailed Quoll (*Dasyurus maculatus*)	Vulnerable under the BC Act and endangered under the EPBC Act	6 kilometres south
Koala (*Phascolarctos cinereus*)	Endangered under the BC Act and the EPBC Act	1 kilometre south
Southern Greater Glider (*Petauroides Volans*)	Endangered under the BC Act and the EPBC Act	4.5 kilometres east
Grey-headed Flying-fox (*Pteropus poliocephalus*)	Vulnerable under the BC Act and the EPBC Act	250 metres northwest
Yellow-bellied Sheathtail-bat (*Saccolaimus flaviventris*)	Vulnerable under the BC Act	1.5 kilometres east
Eastern False Pipistrelle (*Falsistrellus tasmaniensis*)	Vulnerable under the BC Act	2.5 kilometres southeast
Southern Myotis (*Myotis Macropus*)	Vulnerable under the BC Act	4 kilometres east
Large Bent-winged Bat (*Miniopterus orianae oceanensis*)	Vulnerable under the BC Act	400 metres north
Golden Sun Moth (*Synemon plana*)	Vulnerable under the BC Act and the EPBC Act	3 kilometres southwest

Wildlife connectivity corridors

The proposal would be within an existing road infrastructure corridor and as such would not sever or remove an existing vegetation corridor. Likewise, the proposal would follow a similar alignment to the existing road infrastructure and would not bisect an existing patch of native vegetation.

Weeds and pests

The *South East Regional Strategic Weed Management Plan 2023-2027* (Local Land services, 2022) identified 55 priority weed species for the region and include:

- Boxthorn
- Alligator weed
- All species of vascular plant
- Anchored water hyacinth
- Asparagus weeds
- Athel pine
- Bellyache bush
- Bitou bush
- Blackberry
- Black knapweed
- Boneseed
- Bridal veil creeper
- Fireweed
- Frogbit/Spongeplant
- Gamba grass
- Gorse
- Hawkweed
- Hydrocotyl/Water pennywort
- Hymenache
- Karoo acacia
- Kochia
- Koster's curse
- Lagarosiphon
- Lantana
- Parkinsonia
- Parthenium weed
- Pond apple
- Prickly acacia
- Prickly pears
- Rubber vine
- Sagittaria
- Salvinia
- Serrated tussock
- Siam weed
- Silver-leaf nightshade
- Spotted knapweed

- Broomrape
- Brooms
- Cabomba
- Cat's claw creeper
- Chilean needle grass
- Chinese violet
- Eurasion water milfoil
- Madeira vine
- Mesquite
- Mexican feather grass
- Miconia
- Mikania vine
- Mimosa
- Tropical soda apple
- Water hyacinth
- Water soldier
- Willows
- Witchweed
- Yellow burrhead.

Matters of National Environmental Significance (MNES)

MNES that are of relevance to the proposal include:

- no MNES are expected to be impacted within the construction and operation footprint of the proposal
- threatened fauna – 37 species identified on a Protected Matters Search Tool (PMST) (Appendix C) that may, likely or are known to occur within the area have been recorded within 10 kilometres of the proposal on BioNet Atlas. However, no native vegetation or habitat would be cleared by the proposal
- migratory species – ten migratory species identified on a PMST that may, likely or are known to occur within the area that have been recorded within 10 kilometres of the proposal on BioNet Atlas. However, no native vegetation or habitat would be cleared by the proposal
- threatened flora – 14 species identified on PMST that may, likely or are known to occur within the area have been recorded within 10 kilometres of the proposal on BioNet Atlas. However, no native vegetation or habitat would be cleared by the proposal.

Aquatic ecology

A search of the NSW Department of Primary Industries and Regional Development (DPIRD) Fisheries Spatial Data Portal on 13 December 2024. The Queanbeyan River is classified as key fish habitat, the buffer for which extends across the easternmost part of the proposal site.

6.1.3 Potential impacts

Construction

Removal of vegetation

To accommodate the proposed staging of the construction works, the existing amenity street trees and existing landscape planting within the median area between Lowe Street and Collett Street would be removed. This would result in the removal of around 10 trees within the median. It is noted that a number of trees would be replanted within the median following construction as part of the overall landscaping plan.

Construction of the proposal is however not expected to result in the removal of native vegetation or habitat for threatened species. PCT 3376 and PCT 4085 are located outside the proposal site and are not anticipated to be directly impacted by the proposal. The proposal is unlikely to have a direct impact on threatened species or their habitat.

Injury and mortality

Fauna injury or death has the greatest potential to occur during construction when removal of amenity trees and vegetation within the median strip would take place. However, the extent of this impact would be proportionate to the extent of vegetation that is cleared. The proposal would not clear native vegetation or other fauna habitat. As such, potential of injury and mortality is expected to be low.

Invasion and spread of weeds

Potential impacts from the spread of weeds are likely to occur during construction, although impacts would be greatest due to vegetation clearing during the construction phase. The most likely causes of weed dispersal is associated with earthworks, movement of soil, and attachment of seed and other propagules to vehicles and machinery.

Noise and vibration, dust and light pollution

Noise, vibration, dust, light and contaminant pollution are direct but temporary impacts that are likely to result from construction of the proposal that could impact local fauna movements.

Aquatic ecology

Given the minor nature of the proposed works within this area, impacts are expected to be minimal and unlikely to impact on the key fish habitat associated with the Queanbeyan River.

Indirect impacts

The potential for indirect impacts on biodiversity values is considered low given that much of the proposal site is highly fragmented, subject to existing edge effects and surrounded by existing roads and development.

Operation

Wildlife connectivity

The proposal would not break apart continuous habitats into separate smaller fragments. As such, the proposal is unlikely to have significant impact on any threatened species or ecological communities due to fragmentation.

Edge effects on adjacent nature vegetation and habitat

No new edge habitats would be created as a result of operation of the proposal, As such, the proposal is unlikely to exacerbate existing edge effects associated with the environment of the project site. It is noted that replacement landscaping would be provided to replace existing landscaping removed as part of the changes to the proposed median.

Injury and mortality

Given the nature of the existing roadway and the minimal changes proposed, it is unlikely that the proposal would result in any changes to the likely occurrence of fauna injury or mortality (such as through vehicle collision along Monaro Street).

Conclusion on significance of impacts

The proposal is not likely to significantly impact threatened species or ecological communities or their habitats, within the meaning of the *Biodiversity Conservation Act, 2016* or *Fisheries Management Act 1994* and therefore a *Species Impact Statement* or Biodiversity Development Assessment Report is not required. The proposal is not likely to significantly impact threatened species, ecological communities or migratory species, within the meaning of the EPBC Act.

6.1.4 Safeguards and management measures

Table 6-5 Biodiversity safeguards and management measures

Impact	Environmental safeguards	Responsibility	Timing	Reference
Biodiversity	A Flora and Fauna Management Plan will be prepared in accordance with the Transport for NSW *Biodiversity Guidelines: Protecting and Managing Biodiversity on Projects* (RMS, 2011) and implemented as part of the Construction Environmental Management Plan (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* (RMS, 2008) • pre-clearing survey requirements • procedures for unexpected threatened species finds and fauna handling • procedures addressing relevant matters specified in the DPI *Policy and guidelines for fish habitat conservation and management* (2013) • protocols to manage weeds and pathogens.	Contractor	Pre-construction	Section 4.8 of QA G36 Environment Protection

Impact	Environmental safeguards	Responsibility	Timing	Reference
Tree removal	Tree protection and tree replacement requirements will be implemented in line with the Transport for NSW *Tree and hollow replacement guidelines* – (EMF-BD-GD-0129).	Contractor/ QPRC	Construction	Additional measure

6.1.5 Biodiversity offsets

Efforts have been made to avoid, minimise and mitigate potential ecological impacts from the proposal. The proposal is not likely to have a significant impact on nationally-listed or NSW listed threatened species, endangered ecological communities or migratory species.

The clearing totals for this proposal site are considered to be negligible and generally do not reach the thresholds requiring offsets. As such, offsets would not be required for this proposal, noting that additional replacement landscaping is proposed as part of the proposed works.

6.2 Surface water, groundwater and flooding

6.2.1 Methodology

Surface water, groundwater and flooding were investigated through a desktop assessment. The desktop assessment reviewed publicly available data from the following sources:

- NSW Planning Portal Planning Spatial Viewer (Flood Planning Map) (NSW DPHI, 2024)
- NSW DPIRD Fisheries Spatial Data Portal (NSW DPIRD, 2024)
- NSW Planning Portal Planning Spatial Viewer (Natural Resource – Groundwater Vulnerability Map) (NSW DPHI, 2024)
- Groundwater Dependent Ecosystems Atlas (Bureau of Meteorology (BOM), 2024)
- QPRC Online Mapping (Flood Planning Area) (QPRC, 2024).

6.2.2 Existing environment

Monaro Street is located immediately southwest of Queanbeyan River. The Queanbeyan River is fed by the Googong Dam approximately 9.7 kilometres southwest from the proposal site. The easternmost section of the proposal site, adjacent to the Queanbeyan River, is mapped as key fish habitat (including areas adjacent to the river itself affected by the easternmost section of the proposal site).

The proposal is located within the Murrumbidgee catchment area. The Murrumbidgee catchment traverses both New South Wales and the Australian Capital Territory and spans 1,485 kilometres (Murray Darling Basin Authority (MDBA), 2024). The Murrumbidgee River is located about 17 kilometres southwest of the proposal site.

The proposal site is not mapped as groundwater vulnerable according to a search of the Groundwater Vulnerability Map (NSW, DPHI, 2024). A search of the Groundwater Dependent Ecosystems (GDE) Atlas found the Queanbeyan River has high potential to be an aquatic GDE by national assessment (BOM, 2024). The proposal site is not mapped as having potential to be a terrestrial GDE by national assessment.

The proposal site is mapped within the Flood Planning Area layer on QPRC's online mapping (QPRC, 2024). However, the proposal site is not mapped on the NSW Planning Portal Planning Spatial Viewer Flood Panning Map (NSW DPHI, 2024).

6.2.3 Potential impacts

Construction

The potential impact to water quality could arise if activities are not appropriately managed. Surface water impact from construction activities is typically directly related to the exposure of underlying soils (through activities such as excavation), potentially leading to erosion and downstream sedimentation.

Activities that have the potential to contribute to water quality include:

- general earthworks and excavation (e.g. pavement resurfacing works)
- stockpiling of material
- leaks or spills from chemicals or fuels used during construction of the proposal (e.g. diesel vehicles or construction equipment).

Excavation work (up to around 0.5 metre deep) is expected to be required during construction of the pavement works. The depth of the subsurface drains and utilities may be required some deeper excavations. While excavation during construction activities would be relatively shallow, the proposal is unlikely to substantially impact any existing groundwater during construction.

The potential for localised flood risks associated during construction of the proposal is expected to me minimal, however measures for management would be considered as part of the CEMP for the proposal.

Appropriate mitigation measures outlined in section 6.2.4 would be implemented during construction and therefore impacts would be minor.

Operation

The resurfacing of the existing pavement and footpath works are not expected to change the existing drainage flows, flood immunity or other flooding and hydrology characteristics of the current operation of Monaro Road.

6.2.4 Safeguards and management measures

Table 6-6 Surface water safeguards and management measures

Impact	Environmental safeguards	Responsibility	Timing	Reference
Soil and water	A Soil and Water Management Plan (SWMP) will be prepared and implemented as part of the CEMP. The SWMP will identify all reasonably foreseeable risks relating to soil erosion and water pollution and describe how these risks will be addressed during construction.	Contractor	Pre-construction	Section 2.1 of QA *G38 Soil and Water Management*
Soil and water	A site-specific Erosion and Sediment Control Plan 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.	Contractor	Pre-construction	Section 2.2 of *QA G38 Soil and Water Management*
Pollutants and spills	Measures to control pollutants from stormwater and spills will be investigated and incorporated in the pavement drainage system at locations where it discharges to receiving drainage lines. Measures aimed at reducing flow rates and potential scour during rain events will be incorporated in the design of the pavement drainage system.	QPRC	Pre-construction	Additional measure
Disposal of water	No dirty water will be released into drainage lines and/or waterways.	Contractor	Construction	Additional measure
Water quality	Water quality control measures will be used to prevent any materials (e.g. concrete, grout, sediment) entering drain inlets or waterways.	Contractor	Construction	Additional measure

6.3 Soils and contamination

6.3.1 Methodology

Soils and contamination at Monaro Street were investigated through desktop assessment. The desktop assessment reviewed publicly available data on the following platforms:

- NSW Planning Portal Planning Spatial Viewer (Acid Sulfate Soils and Salinity Map) (NSW DPHI, 2024)
- Sharing and Enabling Environmental Data in NSW Map (SEED Map) (Australian Soil Classification (ASC) Soil Map of NSW) (DCCEW, 2012)
- NSW Environment Protection Authority (EPA) Contaminated Land Record of Notices (NSW EPA, 2024).

6.3.2 Existing environment

The primary soil type at Monaro Street is mapped as Kurosols (DCCEW, 2012). Kurosols typically have strong texture contrast between A horizons and strongly acidic B horizons (Isbell, 2021). The primary surface geology at Monaro Street is Ordovician sedimentary rocks, specifically interbedded-quartz-rich sandstone, siltstone and mudstone (DCCEW, 2012). The proposal site is not mapped as having potential for acid sulfate soils and is not a known salinity hazard (NSW DPHI, 2024).

A search of the NSW EPA contaminated land record of notices on 13 December 2025 identified no known contaminated sites within five kilometres of the proposal site.

6.3.3 Potential impacts

Construction

The site does not have any known constraints for erosion and sedimentation controls such as steep gradients or narrow corridors, with the proposal site being generally flat.

Potential impact to soils during construction work would be primarily associated with soil loss from erosion of exposed soils and stockpiles, and potential sedimentation of surrounding land and waterways. Work activities with the potential to expose soils include:

- vehicle movements
- stockpiling
- excavation (including removal of existing pavement surfaces as part of the resurfacing works)
- importation of fill material (as required)
- vegetation removal.

These activities have potential to cause the following:

- erosion and sedimentation of exposed soils
- erosion, leaching and dust generation from stockpiled materials
- loss of soil quality and condition from material stockpiling
- associated soil quality impact due to accidental spills and leaks caused by:
    - use of fuels and oils outside of bunded and/or contained areas
    - leaks from poorly maintained vehicles, machinery and equipment
    - temporary storage and management of spoil and waste.

Based on the existing environmental conditions, the risk to human and environmental health due to significant contamination being present is low.

Operation

Operation of the proposal would be consistent with the existing use of Monaro Street. The operation and on-going maintenance of the road would be managed through similar practices that are currently carried out along the road.

There is expected to be no net change or impact from maintaining the road.

6.3.4 Safeguards and management measures

Table 6-7 Soils safeguards and management measures

Impact	Environmental safeguards	Responsibility	Timing	Reference
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 and extent of the contamination has been confirmed and any necessary site-specific controls or further.	Contractor	Construction	Section 4.2 of QA *G36 Environment Protection*
Accidental spill	A site-specific emergency spill plan will be developed and include spill-management measures in accordance with the Transport for NSW *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 EPA officers).	Contractor	Construction	Section 4.3 of QA *G36 Environment Protection*

6.4 Traffic and transport

6.4.1 Methodology

A specialist assessment by WSP was carried out to assess potential impacts to traffic and transport from operation of the proposal (Appendix D). The methodology for assessment of potential impacts to traffic and transport included:

- identification of the proposal study area
- review of relevant available documents including: the Queanbeyan CBD Transformation and Activation Monaro Street Traffic Study, Monaro Street Upgrade Civil Design Package, Monaro Street Upgrade Concept Design Review and Gap Analysis, and the Monaro Street Upgrade Draft Detailed Design Report
- modelling of the current (2021), and future scenario (2026 and 2031) traffic conditions
- assessment of impacts to the road network with consideration of level of service (LoS), degree of saturation (DoS), average vehicle delay and queen lengths.

Consideration of the potential construction impacts on traffic, parking and pedestrian movements was also undertaken as part of a Preliminary Construction Traffic Management Plan for the proposal.

6.4.2 Existing environment

Monaro Street

Monaro Street is a two-way State Road managed by Transport for NSW and runs generally in an east-west direction. Between Lowe Street and Collet Street, it has a carriageway width of around 22 metres and consists of two trafficable lanes in each direction, separated by a physical centre median. The street also provides on-street parallel parking on both sides of the carriageway. Monaro Street also forms part of an approved 19 metres B-double route.

A default speed limit of 50 kilometres per hour applies along Monaro Street, within the proposal site.

Lowe Street

Lowe Street is a two-way road and runs generally in a north-south direction. The section north of Monaro Street is classified as a local road whereas the section south of Monaro Street is classified as a regional road (both managed by QPRC). North of Monaro Street, Low Street comprised a carriageway of around 22 metres wide and consists of one trafficable lane in each direction, separated by a physical centre median, providing on-street parallel parking on both sides of the carriageway. South of Monaro Street, it has a carriageway width of around 11 metres, consisting of one trafficable lane in each direction, separated by a physical centre median.

A default speed limit of 50 kilometres per hour applies along Lowe Street.

Crawford Street

Crawford Street is a two-way local road managed by QPRC and runs generally in a north-south direction. North of Monaro Street, it has a carriageway width of around 13 metres and consists of one trafficable lane in each direction, providing on-street parallel parking on both sides. South of Monaro Street, it has a carriageway width of around 12 metres and consists of one trafficable lane in each direction. Angled parking is provided on both sides. A section of Crawford Street (between Monaro Street and Morisset Street) forms part of an approved 19 metre B-double route.

A default speed limit of 50 kilometres per hour applies along Crawford Street, in the vicinity of the proposal site.

Collett Street

Collett Street is a two-way Local Road managed by QPRC and runs generally in a north-south direction. It connects to Monaro Street via an on-ramp and off-ramp. North of Monaro Street, it has a carriageway width of around seven metres and consists of one trafficable lane in each direction and intermittently provides on-street parking on both sides. South of Monaro Street, it has a carriageway width of around 10 metres and consists of one trafficable lane in each direction.

A default speed limit of 50 kilometres per hour applies along Collett Street, in the vicinity of the proposal site.

Monaro Street/Lowe Street intersection

The intersection of Monaro Street and Lowe Street operates as a signalised intersection. At this intersection, the Monaro Street carriageway is around 22 metres in width, where it provides two traffic lanes in each direction, alongside a dedicated right and left turning lane in each direction. A centre median can be found on both approaches of Monaro Street. The Lowe Street carriageway is around 20 metres in width at the intersection, where it also provides one through lane alongside a turning lane for right and left turns on both approaches to the intersection. A centre median can be found on both approaches of Lowe Street. Signalised pedestrian crossings can be found on all legs of the intersection.

Monaro Street/Crawford Street Intersection

The intersection of Monaro Street and Crawford Street operates as a signalised intersection. At this intersection, the Monaro Street carriageway is around 22 metres in width, where it provides two traffic lanes in each direction. A dedicated left and right turning lane is provided on the western approach to the intersection, while a dedicated left turn lane is provided on the eastern approach. Centre median separation can be found on both approaches of Monaro Street.

The eastbound approach of Crawford Street has a width of around 23 metres, with two trafficable lanes including one shared through and left turning lane, and a dedicated right turning lane. This approach also includes kerbside parking on both sides of the road. The westbound approach of Crawford Street has a width of around 11.5 metres and consists of a dedicated through lane and short left turning lane. Kerbside parking can be found on the western side of this approach. Signalised pedestrian crossings can be found on all legs of the intersection.

Intersection performance

As per the *Queanbeyan CBD Transformation and Activation Monaro Street – Traffic Study* (Stantec, 2021), SIDRA Intersection 8.0 modelling software was previously utilised to assess the above key intersections. The results for the weekday morning and afternoon peak hours under existing conditions are summarised in Table 6-8 and Table 6-9 respectively.

Table 6-8 Intersection performance – existing conditions weekday AM peak

Intersection	Volume	DoS	Average delay (s)	LoS	95th percentile queue length (m)
Monaro Street/Lowe Street/Farrer Place	2,540	0.59	38	LoS C	152 – northeast approach
Monaro Street/Crawford Street	2,374	0.53	27	LoS B	155 – northeast approach

Table 6-9 Intersection performance – existing conditions weekday PM peak

Intersection	Volume	DoS	Average delay (s)	LoS	05th percentile queue length (m)
Monaro Street/Lowe Street/Farrer Place	2,869	0.72	40	LoS C	168 – southwest approach
Monaro Street/Crawford Street	2,537	0.56	31	LoS C	157 – southwest approach

Public transport

Multiple bus routes operate in the vicinity of the proposal extent, with some operating through a Section of Monaro Street between Crawford Street and Collet Street. There are also multiple bus stops nearby along adjacent roads such as Lowe Street, Crawford Street and Morisset Street. Queanbeyan bus interchange is also located approximately 400 metres from the subject site, which provides access to several bus routes, as well as facilities such as a park and ride, taxi stand and bicycle cages.

Active transport

Along Monaro Street, footpaths are available on both sides of the carriageway providing pedestrians with full access to the variety of uses along Monaro Street. Dedicated signalised pedestrian crossings are provided at both the key intersections of Monaro Street / Lowe Street / Farrer Place and Monaro Street / Crawford Street, with mid-block crossings (non-priority) also provided along Monaro Street within the subject site.

No dedicated bicycle paths are provided within the proposal however, several shared paths are available within the vicinity of the proposal site.

Car parking

Existing on-street parking within the vicinity of the proposal comprises of a total of around 60 to 65 spaces. Based on a desktop review, it is evident that on-street car parking within the area is well utilised.

Road safety

A review of the available five-year crash data from 2019 to 2023 revealed that 13 crashes were recorded on Monaro Street between Lowe Street and Collett Street. These included six non-casualty crashes, three minor injuries, and four moderate injuries. Four crashes occurred at mid-block locations, while the remaining nine occurred at intersections. Only one crash involved a pedestrian. Six crashes were rear end collisions, and three out of the 13 crashes occurred during dark or dusk conditions. None of the crashes were noted as involving speeding as a cause.

6.4.3 Potential impacts

Construction

Surrounding traffic

To accommodate the existing vehicle movements that currently use Monaro Street during construction, an indicative staging arrangement (including the use of reduced land and contra-flow arrangements) has been prepared such that vehicle movements in both directions have been retained, although at a reduced capacity (refer to section 3.3.7 of this REF). It is likely that detour routes would be necessary when an intersection is closed for works, as in stages 3 and 4.

Monaro Street is also listed under the National Heavy Vehicle Register (NHVR) as an approved B-double route, with 25 metre and 26 metre B-doubles expected to pass through Monaro Street. Additionally, 19 metre B-doubles are also approved to undertake a left turning manoeuvre from Crawford Street onto Monaro Street. A detailed construction traffic management plan (CTMP) would be developed as part of the project which would identify how access would be maintained for these vehicles (or identify a viable temporary detour).

Road closures and diversions

Temporary road closures and subsequent diversions would likely required as part of the intersection works and for sections of Monaro Street which would be required to be closed to allow construction to occur.

As noted in section 3.3.7, stages 3 and 4 of the indicative staging arrangement would involve partial closures of the Lowe Street or Crawford Street intersections, as well as the slip lane to Collett Street, with vehicles needing to make a detour to avoid the closure. Only one of the three connecting streets within the project extent (Lowe Street, Crawford Street and Collett Street) will be closed at a time, and therefore vehicles wishing to use these streets would need to use an adjacent street for access through or to Monaro Street.

Through traffic in a single direction along Monaro Street would also be impacted, with traffic management needing to be provided well in advance that there will be restricted conditions through Monaro Street within the project extent. Vehicles would likely be able to divert to Morisset Street or Rutledge Street and connect back to Monaro Street in most circumstances. Contra-flow arrangements along Monaro Street would also likely be put in place for each stage of the construction works.

It is noted that the closure of each section of Monaro Street would only be temporary.

Parking

Monaro Street contains kerbside parking on both sides of the carriageway and as such there would be significant parking impacts during construction. Based on the staging plan, parking may not be available along each closed section of Monaro Street during each stage of construction, on either one side or both sides of the road, however several alternative options are considered to be available in the vicinity of the project site that would be able to accommodate the reduction in any one section of Monaro Street (including 9G Morisset Street Parking and Rutledge Street Car Park). These carparks are accessible off nearby streets and provide parking only a short walk from the various properties and businesses along Monaro Street.

Pedestrian and cyclists

It is expected that during construction, pedestrian pathways may not be available on one side of the road, with the opposing pedestrian pathway to remain open for use during construction.

Where necessary during the construction period, traffic management controllers will be available to assist safe pedestrian/cyclist crossing movements.

If required, nightworks may be utilised to allow works to occur on pedestrian paths, such that the impacts to pedestrian traffic in the area is minimised.

Public transport

As stated within section 6.4.2, a number of bus routes operate in the section of Monaro Street between Crawford Street and Collett Street, with potential impacts on the operation of such routes to occur when a road closure is necessary. Several bus routes also operate through the intersections of Monaro Street and Crawford Street, as well as Monaro Street and Lowe Street.

It is likely that an alternative temporary route would be negotiated with the relevant bus operator(s) for buses affected by through travel along Monaro Street, whilst retaining as many bus stops open as possible throughout construction. As most buses are going to or coming from the Queanbeyan Bus Interchange, buses may be able to utilise Morisset Street to provide a connection back to Monaro Street where needed (subject to consultation with relevant bus operator(s)).

Impacts to adjacent properties/businesses

The staging associated with the construction works along Monaro Street may have temporary impacts on the operation of adjacent properties and businesses. Reduced access may occur to some businesses, with impacts to loading and parking arrangements, as well as pedestrian impacts (noting pedestrian access to all properties would be maintained throughout construction, potentially through temporarily reduced pedestrian footpath widths). Kerbside parking and loading may not be available temporarily during the construction program (depending on the stage of construction), with loading needing to be undertaken under traffic management or elsewhere where possible.

Operation

Traffic

The current lane configuration and intersection layouts are not proposed to change with the development of the proposal therefore traffic operations are expected to be as per existing conditions.

Operation of the proposal would result in positive impacts for road users with the improved pavement surface and sealed shoulder improving road safety.

Vehicle access

The current vehicle access arrangements are not proposed to change with the development of the proposal therefore access is expected to be as per existing conditions.

Public transport

The current bus operations and access arrangements are not proposed to change with the development of the proposal. In addition, implementation of the Proposal is expected to have no impact on operational traffic (delays).

Parking

The proposal would not change the level of on-street car parking provisions currently available along Monaro Street.

Active transport

Active transport is physical activity undertaken as a mode of transport, usually walking or cycling. The proposal would improve pedestrian amenity and accessibility by reducing travel speeds, widening footpaths and improving mid-block crossing links / locations. The proposal would not change cyclist amenity or accessibility along Monaro Street (within the proposal site). The implementation of the proposal is expected to have a negligible impact on operational traffic (delays) for cyclists travelling along Monaro Street.

Property access

No retained property accesses are expected to be compromised during the operation of the proposal.

Road safety

It is envisaged the proposal would not worsen the existing road safety issues on the road network, rather, the proposed reduced speed limit of 40 kilometres per hour (subject to approval by Transport for NSW) and improved pedestrian amenities would mitigate some of the existing road safety risks.

6.4.4 Safeguards and management measures

Table 6-10 Traffic and transport safeguards and management measures

Impact	Environmental safeguards	Responsibility	Timing	Reference
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 Transport for NSW *Traffic Control at Work Sites Manual* (RTA, 2010) and *QA Specification G10 Control of Traffic* (Transport for NSW, 2008). The TMP will include: • 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	Contractor	Pre-construction	Section 4.8 of QA *G36 Environment Protection*

Impact	Environmental safeguards	Responsibility	Timing	Reference
	• access to construction sites including entry and exit locations and measures to prevent construction vehicles queuing on public roads • a response plan for any construction traffic incident • consideration of other developments that may be under construction to minimise traffic conflict and congestion that may occur due to the cumulative increase in construction vehicle traffic • monitoring, review and amendment mechanisms.			
Traffic performance	Traffic performance, impacts and mitigation measures during the construction stage are to be addressed within a Preliminary Construction Traffic Management Plan to be provided along with the Preliminary Construction Staging Designs. A detailed Construction Traffic Management Plan is to be prepared by the construction contractor once the construction methodology and staging has been finalised.	QPRC	Construction	Additional measure

6.5 Noise and vibration

6.5.1 Methodology

A specialist Noise and Vibration impact Assessment (NVIA) assessment by WSP was carried out to assess potential impacts to noise and vibration from construction and operation of the proposal (Appendix E). The methodology for assessment of potential impacts to noise and vibration included:

- assessment of the existing noise environment, including the undertaking of noise monitoring to measure existing road traffic and background noise levels
- assessment of construction and operation noise and vibration impacts
- recommendation of mitigation measures in accordance with relevant guidelines in cases where construction noise or vibration, or operational road traffic noise is predicted to exceed relevant criteria.

A summary of the guidelines and polices used in the development of the assessment of noise and vibration impacts is provided in Section 2 of Appendix E.

6.5.2 Existing environment

Study area and sensitive receivers

The noise and vibration study area was based on preliminary calculations of the likely extent of noise impacts and extends to an approximate distance of 550 metres to one kilometres from the proposal. The identified study area primarily consists of residential and commercial properties. Land use along Monaro Street itself is primarily commercial and retail, and also includes shop-top apartments.

Sensitive receivers located within the study can be grouped into residential and non-residential noise sensitive receivers. Residential receivers located close to the proposal are generally two storey mixed used building (retail ground floor and residential first floor). The wider study area also includes suburban residential areas comprised of apartments and standalone dwellings.

A number of non-residential receivers are located throughout the proposal site, including many retail shopfronts on Monaro Street. However any mixed use receiver was considered as residential for the purpose of assessment. Other non-residential receivers include commercial premises, standalone retail shops, educational establishments, place of public worship and a mixture of active and passive recreational sites.

Noise monitoring

A baseline noise monitoring survey was undertaken during March 2025 to quantify and characterise the existing noise environment in the areas surrounding the proposal and nearby sensitive receivers. Environmental noise levels were continuously monitored for a minimum period of seven days at 40 Monaro Street, Queanbeyan between Lowe Street and Crawford Street.

Unattended noise measurements were recorded between 6 and 13 March 2025 to determine the existing noise environment. Detailed results of unattended noise monitoring are provided in Appendix A of the NVIA (Appendix E).

Operator attended noise monitoring was undertaken during logger deployment and retrieval to assist in characterising the existing ambient noise environment. During the course of the site inspection, observations of the noise environment were recorded at each logger location as outlined in Table 6-11.

Table 6-11 Operator attended noise monitoring results

Location	$L_{Aeq\ (15\ minute)}$ dB	$L_{A90\ (15\ minute)}$ dB	Observed noise environment
40 Monaro Street, Queanbeyan	67	56	Light and heavy-vehicle traffic

The rating background level (RBL) for each site was determined in accordance with the *Noise Policy of Industry* (EPA, 2017) (NSW NPfI). The measured RBLs (Table 6-12) have been used to formulate the noise management levels (NMLs) for construction noise impacts.

Typical measured noise levels, averaged for each 15-minute time period, are shown in Table 6-12.

Table 6-12 Rating background noise level (RBL)

Location	Measured RBL (dBA)		
	Day (7 am – 6 pm)	Evening (6 – 10 pm)	Night (10 – 7 pm)
40 Monaro Street, Queanbeyan	51	50	35

Traffic counts

The *Queanbeyan CBD Transformation and Activation Monaro Street – Traffic Study* (Stantec, 2021) included SIDRA Intersection 8.0 modelling software utilised to assess the key intersections, which was considered as part of the noise and vibration assessment. The results for the weekday morning and afternoon peak hours under existing conditions are summarised in Table 6-13.

Table 6-13 Traffic volumes

Road	Vehicles per hour (AM peak)	Vehicle per hour (PM peak)
Monaro Street/Lowe Street/Farrar Place	2,540	2,869
Monaro Street/Crawford Street	2,374	2,537

6.5.3 Potential impacts

Construction

Construction noise impact

Noise impacts from the loudest work stage are predicted to be associated with mill and reconstruct/widen kerb realignment works, particularly where pavement milling is undertaken. During this work stage, noise impacts are predicted to affect up to 75 residential receivers within standard hours working hours. The highest impacts are predicted to occur at properties along Monaro Street and properties adjoining the compound site location.

While the majority of receivers predicted to exceed NMLs would only be subject to low or moderate noise impacts (less than 20 dB above NMLs), up to 30 properties may be highly noise affected (greater than 75 dB $L_{Aeq(15\ minute)}$) without the implementation of noise mitigation measures during milling and pavement reconstruction works. These properties include shop-top apartments located above commercial/retail properties fronting Monaro Street. Noise mitigation measures provided in Table 6-16 would assist in reducing the noise impact to all potentially impacted receivers.

It should be noted that OOHW has been proposed for the project, however specific work stages are not confirmed at this stage. Table 6-14 summarises the identified noise impacts during the loudest construction scenario (mill and reconstruct) at residential properties (should these activities be undertaken as OOHW). Where milling work are undertaken during OOHW, noise may impact up to 1,061 receivers, and potential cause sleep disturbance at up to 295 receivers. Detailed potential noise impacts at non-residential receivers are presented in Appendix C of the NVIA (Appendix E).

Table 6-14 Stage 2 maximum predicted noise impacts – residential (mill and reconstruct and compound site)

Mill and reconstruct – standard hours				
Number of residential receivers exceeding NML, grouped by magnitude of exceedance (L_{Aeq})			**Highly affected (>75 dB)**	**Total exceedances**
0-10 dB	**10-20 dB**	**>20 dB**		
38	11	26	30	75
Mill and reconstruct – OOHW period 1				
Number of residential receivers exceeding NML, grouped by magnitude of exceedance (L_{Aeq})				**Total exceedances**
0-5 dB	**5-15 dB**	**15-25 dB**	**>25 dB**	
128	68	11	26	233
Mill and reconstruct – OOHW period 2				
Number of residential receivers exceeding NML, grouped by magnitude of exceedance (L_{Aeq})				**Total exceedances**
0-5 dB	**5-15 dB**	**15-25 dB**	**>25 dB**	
151	677	181	52	1,061
Mill and reconstruct – sleep disturbance				
Number of residential receivers exceeding sleep disturbance, grouped by magnitude of exceedance (L_{Aeq})				
0-5 dB	**5-10 dB**	**10-20 dB**	**20-30 dB**	**>30 dB**	**Total exceedances**
190	49	255	7	24	295
Mill and reconstruct – sleep awakening					
0-5 dB	**5-10 dB**	**10-20 dB**	**20-30 dB**	**>30 dB**	**Total exceedances**
17	11	6	3	22	59

Road traffic noise

A doubling of road traffic numbers would result in a three dB increase in road noise and a 60 per cent increase in traffic is required to increase traffic noise levels by two dB.

Given these numbers and Monaro Street's designation as an approved NHVR B-double route, construction road traffic numbers are unlikely to substantially alter the overall traffic flow and road traffic noise impacts as a result of construction road traffic for properties along this route are not anticipated during the construction period.

Construction vibration impact

The number of identified sensitive receiver buildings and sites of heritage significance within the recommended safe working distances are detailed in Table 6-15. It is noted that the vibration sensitivity of buildings would vary depending upon multiple factors, such as the specific ground features, structural design and building condition and exposure period, and their inclusion in this list does not necessarily mean that building damage would occur. It is noted that hydraulic hammers for breaking up pavement are not expected to be used extensively, if at all, however have conservatively been included in the assessment.

Potentially impacted sites are presented graphically in Appendix E of the NVIA (Appendix E) and would require additional mitigation to be considered (refer to Section 6.1.2 of Appendix E).

The results detailed in Table 6-15 are based on a conservative selection of a vibratory roller weighing between seven and 13 tonnes. The use of such a vibratory roller would result in 61 receivers at risk of cosmetic damage and 95 at risk of exceeding human comfort levels. Should a smaller vibratory roller be used, the impacts on surrounding sensitive receivers would be significantly decreased. Alternatively, the use of a non-vibratory roller would significantly reduce the risk of cosmetic building damage or human comfort.

Sixteen heritage items have been identified to be within the estimated cosmetic damage safe working distance for heritage items. It is important to note that British Standard 7385 states that 'a building of historical value should not (unless it is structurally unsound) be assumed to be more sensitive' and, therefore, items should not be assumed to be sensitive to vibration on the basis of being classified a heritage item alone. If any heritage items are identified in the future their vibration sensitivity should be determined by a qualified acoustic specialist prior to the commencement of construction.

Table 6-15 Receivers with safe working distances for ground vibration (human comfort and cosmetic damage)

Construction scenario and vibration intensive construction plant	Number of sensitive receivers within the estimated safe working distances		
	Cosmetic building damage		Human comfort
	Sensitive receivers (<5 mm/s)	Heritage (>3 mm/s)	Residences
Compound site operation			
No vibration intensive equipment proposed.			
Site establishment and vegetation clearance			
Mini excavator with hydraulic breaker (1.5T to 8T)	5	11	34
Mill and reconstruct/widen kerb realignment			
Vibratory roller <300 kN (typically 7-13 tonnes)	48	13	95
Replace/reinstate existing pavement			
Vibratory roller <300 kN (typically 7-13 tonnes)	48	13	95
Upgrades to utilities			
No vibration intensive equipment proposed.			
Line marking and installation of new road signage			
No vibration intensive equipment proposed.			
Installation of landscaping and street furniture including planting of new amenity trees and native vegetation			
No vibration intensive equipment proposed.			
Rehabilitation			
No vibration intensive equipment proposed.			

Operation

The proposal would not change operational traffic volumes. As such, the proposal is not expected to alter the existing noise and vibration environment for sensitive receivers during operation.

6.5.4 Safeguards and management measures

Table 6-16 Noise and vibration safeguards and management measures

Impact	Environmental safeguards	Responsibility	Timing	Reference
Noise and vibration	A Construction Noise and Vibration Management Plan (CNVMP) will be prepared as part of the CEMP. The CNVMP will identify: • all potential significant noise and vibration generating activities associated with the activity • noise and vibration sensitive receivers • measures to be implemented during construction to minimise noise and vibration impacts • feasible and reasonable mitigation measures to be implemented, taking into account the CNVG process and principles • 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.	Contractor	Pre-construction, construction	Section 4.6 of QA G36 Environment Protection
Noise and vibration	The CNVMP will also contain a comprehensive night works approval procedure, including: • inclusion of scheduled respite for the community for extended periods of night work • methods for assessment and review of impacts, • methods for expanded community engagement, notification and agreements • records of community engagement, and proposed mitigation measures.	Contractor	Pre-construction, construction	
Noise and vibration	All sensitive receivers likely to be affected will be notified at least five working days prior to commencement of any works associated with the scenario that may have an adverse noise or vibration impact. The notification will include details of: • the construction activities likely to have noise or vibration impact • construction period and construction hours • any proposed mitigation measures for noise and vibration • contact information for the proposal, including out of hours contact • complaint and incident reporting and how to obtain further information.	Contractor	Pre-construction, construction	Section 4.6 of QA G36 Environment Protection

Impact	Environmental safeguards	Responsibility	Timing	Reference
Noise and vibration	All employees, contractors and subcontractors are to receive awareness training in control of noise and vibration as part of their regular site induction and updated prior to any significant period of nightwork: • all relevant proposal specific and standard noise and vibration mitigation measures • relevant licence and approval conditions • permissible hours of work • any limitations on high noise generating activities • location of nearest sensitive receivers • construction employee parking areas • designated loading/unloading areas and procedures • site opening/closing times (including deliveries) • environmental incident procedures.	Contractor	Pre-construction, construction	Additional measure
Noise and vibration	Where feasible and reasonable, construction should be carried out during the standard daytime working hours. Works generating high noise and/or vibration levels should be scheduled during less sensitive time periods. Where it is unavoidable to conduct works in standard hours for safety of workers and the public, for the safe and efficient operation of the road network or to maintain critical access to local services, then an assessment and approval process will be undertaken as per the CNVMP and CNVG.	Contractor	Pre-construction, construction	Additional measure
Noise and vibration	Where feasible and reasonable, high noise generating work (75 dB(A) L_{Aeq} at receiver) should be carried out during standard construction hours and in continuous blocks of no more than three hours with at least one hour respite between each block of work generating high noise impact, where the location of the work is likely to impact the same receiver.	Contractor	Pre-construction, construction	Additional measure
Noise and vibration	Where high noise generating activities (75 dB(A) L_{Aeq} at receiver) are required out of hours, equipment will be used prior to 10 pm where feasible and reasonable. Where this cannot be achieved, the equipment can be used where feasible and reasonable controls are implemented and there is engagement with any highly noise affected community receivers.	Contractor	Pre-construction, construction	Additional measure
Noise and vibration	The following will be implemented for deliveries to and from the Proposal: • loading and unloading of materials/deliveries is to occur as far as possible from sensitive receivers or • loading/unloading areas are to be shielded or screened if close to sensitive receivers • delivery vehicles are to be fitted with straps rather than chains for unloading, wherever possible.	Contractor	Pre-construction, construction	Additional measure

Impact	Environmental safeguards	Responsibility	Timing	Reference
	When establishing work areas, ancillary sites, site compounds and laydowns consideration will be given to arranging the site to limit the need for reversing associated with regular/repeatable movements, where safe and space permits.			
Noise and vibration	Non-tonal reversing beepers (or an equivalent mechanism) must be fitted and used on all construction vehicles and mobile plant regularly used on site and for any out of hours work.	Contractor	Pre-construction, construction	Additional measure
Noise and vibration	Consideration will be given to the layout of the ancillary sites in order to maximise distance and shielding to nearby receivers	Contractor	Pre-construction, construction	Additional measure
Noise and vibration	Vibration intensive equipment size will be selected to avoid working within the structural damage minimum working distances. The use of less vibration intensive methods of construction or equipment will be considered where feasible and reasonable.	Contractor	Pre-construction, construction	Additional measure
Noise and vibration	Where the use of vibration intensive equipment within the relevant minimum working distances cannot be avoided, a detailed inspection will be carried out and a written and photographic report prepared to document the condition of buildings and structures within the minimum working distances. This will be conducted during the development of the CEMP and reviewed prior to the commencement of vibration intensive work. A copy of the report will be provided to the relevant landowner or land manager.	Contractor	Pre-construction, construction	Additional measure
Noise and vibration	Vibration generating activities will be managed to minimise the potential for impacts on structures and sensitive receiver(s), including maximising minimum safe working distances where practicable, or use of alternate methods to minimise vibration where minimum safe working distances cannot be achieved. Where alternatives cannot be implemented, vibration monitoring is to be undertaken and receivers notified at least five days in advance of works.	Contractor	Pre-construction, construction	Additional measure

In addition to the standard noise mitigation measures outlined in Table 6-16, additional mitigation measures may be required, particularly during OOHW. The CNVG requires the use of additional mitigation measures where feasible and reasonable. The trigger levels for implementing additional mitigation measures defined in the CNVG are shown in Table 6.2 of the NVIA (Appendix E).

6.6 Aboriginal cultural heritage

6.6.1 Methodology

Aboriginal cultural heritage was investigated through a desktop assessment. The desktop assessment reviewed publicly available data from the following sources:

- NSW Planning Portal Planning Spatial Viewer (Local Aboriginal Land Council) (NSW DPHI, 2024)
- Aboriginal Heritage Information Management System (AHIMS) (NSW Environment and Heritage, 2024) (Appendix F)
- Register of Native Title Claims (National Native Title Tribunal, 2024)
- National Native Title Register (National Native Title Tribunal, 2024)
- Native Title Tribunal Native Title Vision (National Native Title Tribunal, 2024).

6.6.2 Existing environment

The proposal site is located within the Ngambri Local Aboriginal Land Council (LALC) (NSW DPHI, 2024). A basic search of the AHIMS found there are no Aboriginal sites located within the proposal site (NSW Environment and Heritage, 2024) (Appendix F). The AHIMS search identified three Aboriginal sites located approximately 250 metres southwest of the proposal site (within the Queanbeyan Showground site). A search of the Register of Native Title Claims, National Native Title Register and the Native Title Tribunal Native Title Vision identified no Native Title Claims for the proposal site (National Native Title Tribunal, 2024).

6.6.3 Potential impacts

There is low potential for Aboriginal archaeological sites within the study area as the area contains no landforms that would be considered archaeologically sensitive. Based on the Aboriginal Heritage Information Management System (AHIMS) data, it has been assessed as being unlikely to have an impact on Aboriginal Cultural Heritage.

The assessment is based on the following due diligence considerations:

- the proposal is unlikely to harm known Aboriginal objects or places
- the AHIMS searches did not indicate moderate to high concentrations of Aboriginal objects or places in the proposal site
- the proposal site does not contain landscape features that indicate the presence of Aboriginal objects, based on the *Due diligence Code of Practice for the Protection of Aboriginal objects in New South Wales* (NSW DECCW, 2010) and the Transport for NSW procedure.
- the cultural heritage potential of the proposal site appears to be reduced due to past disturbance (previous road construction).

6.6.4 Safeguards and management measures

Table 6-17 Aboriginal heritage safeguards and management measures

Impact	Environmental safeguards	Responsibility	Timing	Reference
Aboriginal heritage	The *Standard Management Procedure - Unexpected Heritage Items* (Transport for NSW, 2015) will be followed in the event that an unknown or potential Aboriginal object/s, including skeletal remains, is found during construction. This applies where QPRC does not have approval to disturb the object/s or where a specific safeguard for managing the disturbance (apart from the Procedure) is not in place. Work will only re-commence once the requirements of that Procedure have been satisfied.	Contractor	Construction	Section 4.9 of QA *G36 Environment Protection*

6.7 Non-Aboriginal heritage

6.7.1 Methodology

Non-Aboriginal heritage was investigated through a desktop assessment. The desktop assessment reviewed publicly available data from the following sources:

- NSW State Heritage Inventory (NSW Environment and Heritage, 2024)
- QPRC LEP
- QPRC Online Mapping (Heritage) (QPRC, 2024)
- Commonwealth Heritage List (NSW DCCEEW, 2024).

6.7.2 Existing environment

A search of the NSW State Heritage Inventory (NSW Environment and Heritage, 2024) and Heritage layer on the QPRC Online Mapping (QPRC, 2024) on 12 December 2024 identified numerous local heritage items listed on the QPRC LEP within and nearby to the proposal site including:

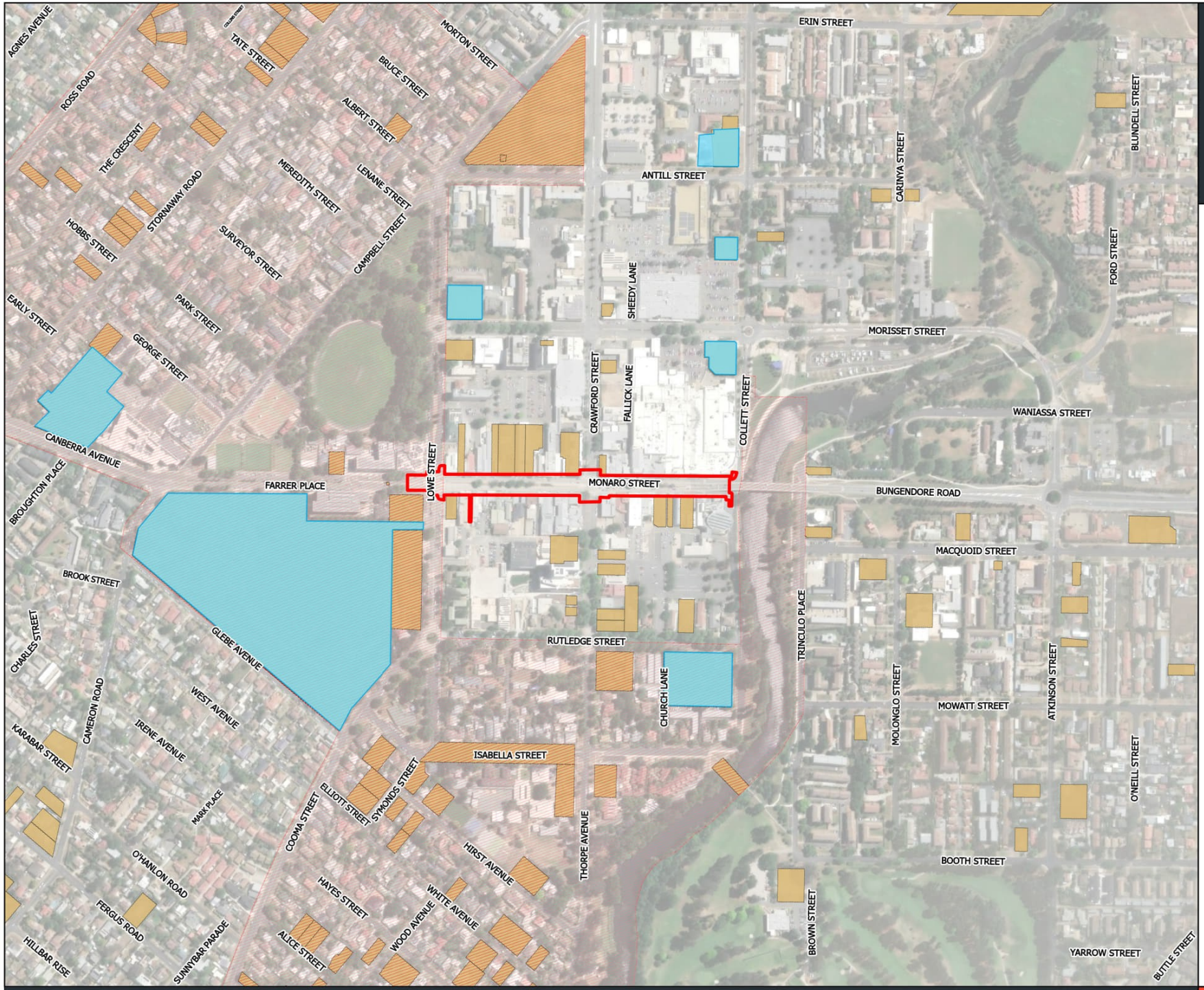
- Former Bradbury's Brewery Site (#1461) adjacent to the proposal site
- Commercial premises (#I460) adjacent to the proposal site
- Federation free style shops (#I459) adjacent to the proposal site
- Former Temperance Hall (#I451) adjacent to the proposal site
- Tourist Information Centre, former municipal chambers, Lazarus sundial and World War I memorial (#I409) approximately 35 metres south of the proposal site
- Shop (#I452) adjacent to the proposal site
- Shop (#I453) adjacent to the proposal site
- Tourist Hotel (#I454) adjacent to the proposal site
- Black's Chambers (#I455) adjacent to the proposal site
- Dudley Building (#I456) adjacent to the proposal site
- Royal Hotel (#I457) adjacent to the proposal site
- 'Fallick's Building' (#I458) adjacent to the proposal site.

Additionally, land adjacent of the proposal site to northeast and southwest is mapped as conservation site (general) under the QPRC LEP.

There are several sites listed on the State Heritage Register (NSW Environment and Heritage, 2024) within 100 and 250 metres from the proposal site:

- Christ Church Anglican Group (#00043) approximately 215 metres southeast of the proposal site
- Mill and Millhouse (#00363) approximately 140 metres north of the proposal site
- St. Stephen's Presbyterian church and manse (#02018) approximately 240 metres north of the proposal site
- Queanbeyan Showground (#01890) approximately 60 metres south of the proposal site.

A search of the Commonwealth Heritage List (DCCEEW, 2024) did not identify any listed heritage items within or nearby the proposal site. Identified heritage sites within the vicinity of the proposal are shown on Figure 6-1.



Monaro Street Upgrade REF Project

Figure 6-1
Heritage Sites

Legend

- Project site
- State Heritage
- Local Heritage



Coordinate system: GDA2020 MGA Zone 55
Scale ratio correct when printed at A3

1:5,500 Date: 28/02/2025

GDA 2020

Data sources: DELWP, Geoscience Australia
Local Heritage:
World Imagery: Maxar

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6.7.3 Potential impacts

Construction

Construction of the proposal would not encroach the curtilage of adjacent heritage items and there are no expected direct impacts on these items. The final construction methodology would consider (as far as reasonably practicable) any options for reducing vibration associated with the construction works in order to reduce any potential impacts on heritage items adjacent to the proposal.

Operation

Operation of the proposal would be consistent with the existing use of Monaro Street. There are no expected impacts to heritage items adjacent to the proposal during operation.

6.7.4 Safeguards and management measures

Table 6-18 Non-Aboriginal heritage safeguards and management measures

Impact	Environmental safeguards	Responsibility	Timing	Reference
Non-Aboriginal heritage	The *Standard Management Procedure - Unexpected Heritage Items* (Transport for NSW, 2015) will be followed in the event that any unexpected heritage items, archaeological remains or potential relics of non-Aboriginal origin are encountered. Work will only re-commence once the requirements of that Procedure have been satisfied.	Contractor	Construction	Section 4.9 of QA *G36 Environment Protection*

6.8 Landscape character and visual impacts

6.8.1 Methodology

A desktop visual impact assessment was completed for the proposal in accordance with the *Guideline for landscape and visual impact assessment* (Transport for NSW, 2023).

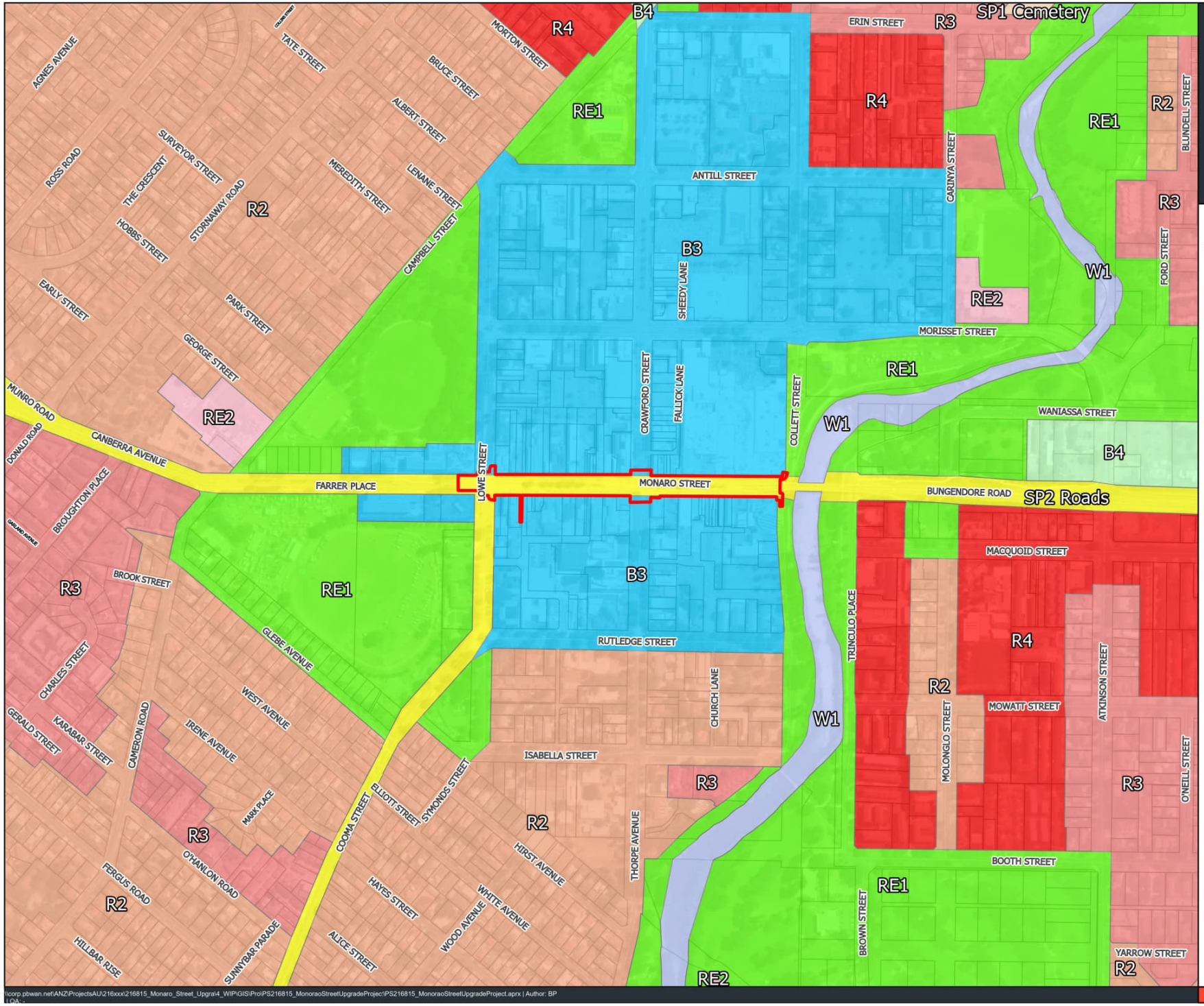
6.8.2 Existing environment

Monaro Street between Lowe Steet and Collet Street is within an existing road infrastructure corridor (SP2 Infrastructure) that travels northeast southwest through the Queanbeyan CBD. Monaro Street is generally flat, with street side parking, and amenity trees (Crape Myrtle) planted alongside the road. Japanese elms and vegetation are also planted within the median strip. The 'Tree of Knowledge' is located on the corner of Monaro Street and Crawford Street.

There are three main intersections within the proposal site including Lowe Street and Monaro Street, Crawford Street and Monaro Street and Collett Street and Monaro Street. In the northern portion of the proposal site, the outermost lanes of Monaro Street in each direction slope downwards towards Collett Street. The inner lanes in each direction slope upwards to form a bridge over Queanbeyan River, before becoming Bungendore Road.

The land surrounding the proposal site is zoned E2 – Commercial Centre, RE1 – Public Recreation and W1 – natural waterways. The landscape character surrounding the proposal site can be described as urban with commercial properties and recreation space within close proximity of the proposal site.

Identified land zoning within the vicinity of the proposal are shown on Figure 6-2.



Monaro Street Upgrade REF Project

Figure 6-2
Land Zoning

Legend

- Project site

Land Zoning

- B3,Commercial Core
- B4,Mixed Use
- R2,Low Density Residential
- R3,Medium Density Residential
- R4,High Density Residential
- RE1,Public Recreation
- RE2,Private Recreation
- SP1 Cemetery,Special Activities
- SP2 Roads,Infrastructure
- W1,Natural Waterways
- Cadastre



Coordinate system: GDA2020 MGA Zone 55
Scale ratio correct when printed at A3

1:5,500 Date: 28/02/2025

GDA 2020

Data sources: DELWP, Geoscience Australia
World Imagery: Maxar

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LOA: -

6.8.3 Potential impacts

Construction

Impacts to visual amenity would be generated during construction, and include construction vehicles and activities. However, these changes would be minor and of a temporary nature during the 18 month construction period. Amenity trees, including the 'Tree of Knowledge' would be retained.

Monaro Street also contains several heritage buildings with local heritage significance as outlined in Section 6.7 of this document. Construction of the proposal would result in temporary changes to the view of and from these heritage buildings. However, these changes would be of a temporary nature and would be reduced by the proposed staging of works.

The proposal is not near any other physical or cultural elements of landscapes including National Parks, conservation areas of scenic highways.

Operation

Operation of the proposal would include operation of upgraded street lighting, traffic management, parking, signage, road and footpath pavement and landscaping including pedestrian infrastructure, public art, and planting. The existing character of Monaro Street as an urban road corridor with adjacent commercial properties and recreational spaces is expected to remain the same. As such, the magnitude of change is expected to be low.

Amenity trees proposed to be removed would be replaced with revised landscaping. Planting of native grass and vegetation is proposed along the footpath and within the median strip. Generally, from a public domain perspective the magnitude of the impacts will remain low as the proposed works are generally within the existing road corridor and will be viewed as minor modifications / improvements to the existing arrangement.

The proposal would not obstruct or intrude upon any important character or views of a valued landscape or areas along Monaro Street.

There would be no impact on the existing heritage streetscape during operation of the proposal.

6.8.4 Safeguards and management measures

Table 6-19 Landscape character and visual safeguards and management measures

Impact	Environmental safeguards	Responsibility	Timing	Reference
Landscape character and visual impact	An Urban Design Plan will be prepared to support the final detailed proposal design and implemented as part of the CEMP. The Urban Design Plan will present an integrated urban design for the proposal, providing practical detail on the application of design principles and objectives identified in the environmental assessment. The Plan will include design treatments for: • location and identification of existing vegetation and proposed landscaped areas, including species to be used • pedestrian elements including footpath location, paving types and pedestrian crossings • fixtures such as seating, lighting and signs • details of the staging of landscape works • procedures for monitoring and maintaining landscaped or rehabilitated areas. The Urban Design Plan will be prepared in accordance with relevant guidelines, including: • Beyond the Pavement urban design policy, process and principles (Transport for NSW, 2020) • Landscape Guideline (Centre for Urban Design, 2008) • Transport for NSW EIA-N04 *Guideline for Landscape Character and visual impact assessment 2020*.	Contractor	Pre-construction	Additional measure

6.9 Socio-economic

6.9.1 Methodology

The proposal occurs on classified road and is anticipated to have a minimal localised negative impacts to the communities surrounding Monaro Street. As such, a basic level of socio-economic assessment was applied and has been undertaken based on desktop review and collation of publicly available data.

The socio-economic assessment included the following:

- identify the existing socio-economic characteristics of the proposal through desktop research, reviewing secondary-source quantitative data, undertaking limited primary research including the Australian Bureau of Statistics (ABS) Census data and publicly available information from QPRC
- review the outcome of other assessments containing relevant socio-economic themes including noise and vibration
- consider a range of land use and property information, including:
  - existing and future land uses in the area
  - property acquisition or leasing requirements
  - land use zoning provisions in the area
- evaluate the significance of any impact and consider any safeguards and management measures.

The level of significance of any negative impact was assessed in accordance with the *Environmental Impact Assessment Practice Note: Socio-economic assessment: EIA-N05* (Transport for NSW, 2020). Table 6-20 and Table 6-21 describe the levels of sensitivity (qualities of the receptor which influence its vulnerability to change and capacity to adapt) and magnitude (scale, duration, intensity and scope) respectively.

Table 6-20 Levels of sensitivity

Sensitivity	Definition
Negligible	No vulnerability and able to absorb or adapt to change
Low	Minimal areas of vulnerabilities and a high ability to absorb or adapt to change
Moderate	A number of vulnerabilities but retains some ability to absorb or adapt to change
High	Multiple vulnerabilities and/or very little capacity to absorb or adapt to change

Table 6-21 Levels of magnitude

Magnitude	Definition
Negligible	No discernible positive or negative changes caused by the impact. Change from the baseline remains within the range commonly experienced by receptors
Low	A discernible change from baseline conditions. Tendency is that the impact is to a small proportion of receptors over a limited geographical area and mainly in the vicinity of the proposal. The impact may be short-term or some impacts may extend over the life of the proposal
Moderate	A clearly noticeable difference from baseline conditions. Tendency is that the impact is to a small to large proportion of receptors and may be over an area beyond the vicinity of the proposal. Duration may be short-term to medium or some impacts may extend over the life of the proposal
High	A change that dominates over existing baseline conditions. The change is widespread or persists over many years or is effectively permanent

The level of significance was considered for all negative construction and operational impacts (with mitigation) using the matrix identified in Table 6-22.

Table 6-22 Matrix to assess the level of significance

		Magnitude			
Sensitivity		High	Moderate	Low	Negligible
	High	High	High-moderate	Moderate	Negligible
	Moderate	High-moderate	Moderate	Moderate-low	Negligible
	Low	Moderate	Moderate-low	Low	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

6.9.2 Existing environment

The proposal is located within the QPRC LGA. The proposal site comprises an area zoned as SP2 – Infrastructure land. Land surrounding the proposal site includes land zoned as E2 – Commercial Centre, RE1 – Public Recreation and W1 – Natural Waterways. Monaro Street is a classified road and a major transport route through Queanbeyan. Monaro street hosts a high proportion of heavy vehicles (QPRC, 2019).

The existing land uses within and surrounding the proposal site include existing Monaro Street infrastructure as well as commercial properties either side of Monaro Street including:

Accessible from Monaro Street (eastbound) between Collett Street and Crawford Street:

- Riverside Plaza
- Commonwealth Bank
- The Royal Turban
- MONARO BITES
- Aussie Home Loans Queanbeyan.

Accessible from Monaro Street (eastbound) between Crawford Street and Lowe Street

- The Royal Hotel QBN
- Queanbeyan Tobacconist
- Bevan and Co Lawyers and Conveyancers
- APM Employment services
- On Point Hair
- Manor Thai
- Shu's Massage
- Patorama Studios
- Deep image Tattooing
- Melita Coffee Lounge
- Tourist Hotel
- Matrix Physiotherapy and Sports Clinic
- Kristy McBain MP
- Ray White Real Estate
- Sureway Employment and Training
- South Ground Yoga
- PRONTO
- New Cathay Chinese Restaurant

Accessible from Monaro Street (westbound) between Crawford Street and Lowe Street

- Trendy Hair and Beauty
- LJ Hooker
- The Sposa Wedding Group
- Queanbeyan Dental
- Queanbeyan Clothing Alterations
- AJ's Café Take Away
- Walsh's Hotel
- TAB
- Ward Real Estate
- The Social Connectors
- Fuse Property
- Villa Olivo
- RMB Lawyers
- Turquoise Turkish Restaurant
- Deziner Beauty
- Queanbeyan City Travel and Cruise
- Guitar Smith
- Beauty by Nikki
- Yes Property
- Absolute Hair.

Accessible from Monaro Street (westbound) between Crawford Street and Collett Street

- Westpac
- St. George
- Busy Ability
- Belle Property
- C3 Church
- Elrington Lawyers
- Hare and Fawn
- Vinnies
- Moonlight Nails and Spa
- Queanbeyan Leagues Club.

Population and growth

The population and growth data (ABS, 2021) for QPRC found that the population in 2016 was 56,027 and grew to 63,304 in 2021, resulting in an 11.5 percent increase in population. The median age in the QPRC LGA is currently 38, with children aged 0 – 14 years making up 19.5 percent of the population and people aged 65 years and over make up around 12.5 percent of the population (ABS, 2021). The most common ancestries in QPRC LGA were Australian (38.1 percent), English (35.7 percent), Irish (12.0 percent) and Scottish (10.4 percent). The most common response for religion was no religion (38.3 precent) followed by Catholic (24.0 percent) (ABS, 2021).

Socio-economic characteristics

As of 2021, around 65.6 percent of the QPRC LGA population were in full-time employment with around 24.8 percent in part-time employment. Unemployment within the QPRC LGA was 3.1 percent.

QPRC LGA has a personal medium weekly income of $1,159 and medium household median weekly income of $2,295, compared to $805 and $1,746 nationally, respectively (ABS, 2021).

Businesses

In general, the main occupation of residents of the QPRC LGA include professionals (22.0 percent), managers (18.0 percent), clerical and administrative workers (16.3 percent) and technicians and trade workers (13.3 percent). The main method for travelling to work in 2021 was car (as driver) at 68.4 percent, followed by car (as passenger) at 4.8 percent.

Commercial premises are located on the north and south boundaries of the proposal.

Community values

Monaro Street is classified road that links Bungendore Road to Farrer Place and is a major transport route through Queanbeyan. The road traverses through the Queanbeyan CBD adjacent to predominantly commercial premises.

Community values held by local residents and workers based on the *Queanbeyan CBD Master Plan Renewal Process Workshops: Summary Report* (QPRC, 2017) include:

- a compact, connected and caring community
- lively and inviting streets and spaces
- connected to nature
- culturally expressive
- energetic economy.

Land use changes and development

Under the QPRC LEP, land within or directly adjacent to the proposal includes SP2 – Infrastructure, E2 – Commercial centre, RE1 – Public recreation, and W1 – Natural waterways.

The proposal is unlikely to reduce or alter the visibility of local businesses and properties during operation.

Public infrastructure

Public infrastructure surrounding the proposal that may be indirectly impacted include community facilities (e.g. schools and places of worship) and public recreational areas (e.g. Queen Elizabeth II Playground, Queanbeyan Showground).

6.9.3 Potential impacts

Construction

There would be temporary impacts to the community throughout the 18 month construction period.

Road users

Road users may encounter minor traffic delays during construction because of traffic management (contra-flow), detour routes and movement of construction vehicles. However, the extent of the impacts is unlikely to significantly alter people's travel or commuting habits or requirements to access businesses along Monaro Street.

Commercial and retail access

The proposal would have temporary impacts on shop frontage street parking and vehicle access during construction (where each section of Monaro Street is closed to allow works to occur). These impacts would be temporary in nature and would be reduced through the proposed staging of the works. There would be the potential for some impact on pedestrian access to local businesses. However, this would be mitigated by safeguards implemented for the proposal. Customers would be able to utilise parking on alternate streets and in some instances would be able to retain access to parking areas from surrounding road network.

On-street parking and access to carparks of local businesses would generally be available in sections of the proposal outside of the current stage of works.

Localised employment opportunities

There would be the opportunity for localised employment during construction of the proposal (subject to confirmation by the appointed construction contractor).

Operation

The objectives of the proposal are to improve road safety and public amenity, as such operation of the proposal would provide positive impacts for residents, visitors and businesses in Queanbeyan.

The visual amenity would be changed through replacement of amenity trees (including native vegetation species), installation of street furniture and upgrades to lighting. These road improvements would be executed according to urban design standards aimed at maintaining local character, amenity and natural setting.

6.9.4 Safeguards and management measures

Table 6-23 Socio economic safeguards and management measures

Impact	Environmental safeguards	Responsibility	Timing	Reference
Socio-economic	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): • mechanisms to provide details and timing of proposed activities to affected residents, including changed traffic and access conditions • contact name and number for complaints. The CP will be prepared in accordance with the *Community Involvement and Communications Resource Manual* (RTA, 2008).	Contractor	Pre-construction	Standard measure
Socio-economic	Road users, including freight companies will be informed of changed conditions, including likely disruptions to access during construction.	Contractor	Pre-construction	Additional measure

Impact	Environmental safeguards	Responsibility	Timing	Reference
Socio-economic	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.	Contractor	Construction	Standard measure
Socio-economic	Consultation will be carried out with all affected property owners during detailed design and construction to develop and implement measures to mitigate the impact on land use viability, infrastructure and severance.	QPRC	Detailed design	Additional measure
Socio-economic	Residents and businesses will be notified before any utility interruption.	QPRC / Contractor	Pre-construction	Additional measure

6.10 Waste and resources

6.10.1 Methodology

The assessment considered the impact associated with:

- resource use and materials management during construction
- waste generation, management and disposal during construction
- the operational waste and resource management strategy
- the proposals' ability to respond to waste management and resource conservation plans, policies and guidelines.

The basis of the assessment was to consider the hierarchy of waste avoidance and primary resource use in favour of reduction, reuse and recycling, consistent with the NSW *Waste Avoidance and Resource Recovery Act 2001*.

6.10.2 Existing environment

General waste within the proposal site generally consists of general litter. The quantity of rubbish is not considered to present any significant environmental concerns or risk to human health.

6.10.3 Potential impacts

Construction

Construction activities as part of the proposal would require the use of a number of resources, including:

- material required for the upgrade of road surfaces, pavement, concrete, drainage infrastructure, and landscaping such as asphalt, granite paving and stone, native planting mix, concrete and landscaping furniture
- materials required for construction of ancillary infrastructure (settle, aluminium, etc)
- construction water and other operational construction resources (fuels, etc).

The construction of the proposal would result in some increased demand on local and regional resources, however, it is not expected that the development of the proposal would result in resources becoming scarce or short supply in the QPRC LGA. Resource requirements, including for water and general construction materials, would be determined during detailed design.

Most of the waste generated by the proposal would either be recycled (wherever possible) or disposed of off-site as general solid waste. Any suspected contaminated waste, harmful materials or classifiable special wastes would be managed in accordance with the *Contaminated Land Management Act 1997* and other relevant legislation.

Where waste materials generated by the proposal cannot be reused on site, disposal would be required. Any disposal of waste would be undertaken in accordance with the *Waste Classification Guidelines: Parts 1 and 2* and to a suitably licensed waste facility.

Generated waste has the potential to affect the local environment if not managed appropriately. Potential impacts during construction include:

- runoff resulting from:
  - accidental spillages
  - stockpile mismanagement
  - waste transfer
  - poor waste storage
- ground contamination resulting from:
  - untreated excavated contaminated material leaching into the surrounding environment
  - accidental spillages
  - incorrect disposal of waste materials
  - amenity impact through littering
  - potential waste misclassification
  - excessive waste being diverted to landfill.

Any associated impact would be managed and minimised by implementing the safeguards.

Operation

Materials required to maintain and repair the operational road would be minimal and consistent with any operational road in NSW. The volumes of waste generated from maintaining and repairing the operational road is expected to be minimal, however opportunities would be taken, when possible, to use:

- more durable materials to limit maintenance and frequency of replacement
- existing materials onsite such as signposts
- recycled and low energy intensive materials
- low pollution and low environmentally degradative materials where they are performance and cost effective.

Waste management and minimisation during operation would be consistent with the approach used above for construction waste, to ensure that the impact is minimised and wastes are classified, treated and disposed of effectively and sustainably.

6.10.4 Safeguards and management measures

Table 6-24 Waste and resources safeguards and management measures

Impact	Environmental safeguards	Responsibility	Timing	Reference
General waste management	A Waste Management Plan (WMP) will be prepared and implemented as part of the CEMP. The WMP will include but not be limited to: • measures to avoid and minimise waste associated with the proposal • classification of wastes and management options (re-use, recycle, stockpile, disposal) • statutory approvals required for managing both on and off-site waste, or application of any relevant resource recovery exemptions • procedures for storage, transport and disposal • monitoring, record keeping and reporting. The WMP will be prepared considering the Environmental Procedure Management of Wastes on Transport Land (Roads and Maritime, 2014) and relevant Transport for NSW Waste Fact Sheets.	Contractor	Pre-construction	Section 4.11 QA G36 Environmental Protection

Impact	Environmental safeguards	Responsibility	Timing	Reference
General waste impact	Waste accumulation, littering and general tidiness will be monitored during routine site inspections.	Contractor	Construction	Additional measure
Resource minimisation	Recycled, durable, and low embodied energy products will be used to reduce primary resource demand in instances where the materials are cost and performance competitive and comparable in environmental performance (e.g. where quality control specifications allow).	Contractor	Construction	Additional measure

6.11 Other impacts

6.11.1 Existing environment and potential impacts

Table 6-25 Other potential impacts

Environmental factor	Existing environment	Potential impacts
Air quality	The closest air quality monitoring stations to the proposal site are located a Goulburn and Cooma, approximately 80 kilometres northeast and 100 kilometres south from the proposal site, respectively. Existing ambient air quality of the proposal site based on the air quality concentration data at Goulburn and Cooma indicates relatively consistent and 'Good' air quality (NSW Government, 2024). Existing likely contributions to poorer air quality in the region are road traffic emissions and natural effects such as bushfires throughout summer.	The air quality impact associated with construction of the proposal includes the following: • dust generation due to the disturbance, movement, storage, loading and transfer and transportation of spoil when excavations and exposed surfaces are left open • traffic and equipment emissions during construction would result in a temporary and short-term reduction of local are quality. Operation of the proposal is not expected to cause a significant increase in traffic compared to the existing traffic on Monaro Street. Any emissions created by vehicles would be dispersed quickly and would be temporary. Therefore, vehicle emissions are not likely to be significantly impacted as a result of the proposal.
Hazard and risk	Hazardous materials and dangerous goods storage or handling does not currently occur within the construction or operation footprint. Fuel and oil spills may occur as a result from vehicle passing through the proposal.	Small quantities of hazardous materials and dangerous goods would be required during construction (fuels, etc). As a result, the transportation, use and storage of these materials would occur. A potential impact may result from spills or inappropriate and inadequate handling and storage of material. The potential impact is not considered to be significant given the implementation of relevant legislation to manage risks. Relevant legislation includes the National Codes of Practice and Australian Standards for the storage and handling of dangerous goods and materials. Such guidelines, in conjunction with the recommended safeguards described in Section 6.11.2, would potentially reduce the occurrence of an incident on the site.
Sustainability, climate change and greenhouse gas emissions	Transport emissions are currently the second largest component of NSW greenhouse gas emissions accounting for 20 percent of total emissions in NSW (NSW EPA, 2024).	Given the scale of the proposal, the minor contribution to greenhouse gas emissions during construction are considered negligible. Likewise, operation of the proposal is not expected to result in an increase in greenhouse gas emissions.

6.11.2 Safeguards and management measures

Table 6-26 Other impacts Safeguards and management measures

Impact	Environmental safeguards	Responsibility	Timing	Reference
Air quality	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: • potential sources of air pollution • air quality management objectives consistent with any relevant published EPA and/or Office of Environment and Heritage (OEH) guidelines • mitigation and suppression measures to be implemented • methods to manage work during strong winds or other adverse weather conditions • a progressive rehabilitation strategy for exposed surfaces.	Contractor	Pre-construction	Section 4.4 of *QA G36 Environment Protection*
Utilities	Prior to the commencement of works: • the location of existing utilities and relocation details will be confirmed following consultation with affected utility owners • further assessment will be undertaken if the scope or location of proposed utility relocation works falls outside of the assessed proposal scope and footprint.	Contractor	Pre-construction	Standard measure

6.12 Cumulative impacts

Cumulative impacts occur when two or more projects are carried out concurrently and near one another. The impacts may be caused by both construction and operational activities and can result in a greater impact to the surrounding area than would be expected if each project was undertaken in isolation. Multiple projects undertaken at a similar time/similar location may also lead to construction fatigue, particularly around noise, traffic and air quality impacts, if not appropriately managed.

6.12.1 Study area

The cumulative impact assessment has considered suburbs within approximately five kilometres of the proposal including:

- Crestwood
- Greenleigh
- Jerrabomberra
- Karabar
- Queanbeyan
- Queanbeyan East
- Queanbeyan West
- Oaks Estate (Australian Capital Territory (ACT))
- Beard (ACT).

6.12.2 Other projects and developments

A search of the following databases was completed on 16 December 2024 to identify and proposals and/or projects that may result in a cumulative impact with the proposal:

- NSW DPHI Major Projects website (2024)
- QPRC Major Works and Projects (2024).

Relevant projects identified are shown in Table 6-27.

Table 6-27: Other potential projects

Project	Construction impacts	Operational impacts
New High School in Jerrabomberra – Modification 2 (SSD24461956)	Stage 1 of the project finalised construction in 2023/4. Stage 2 is currently in the design phase. There are no expected cumulative impacts during construction of the proposal.	Cumulative impacts are not expected during operation of the proposal.
Proposed redevelopment of the Queanbeyan Leagues Club on the corner of Monaro Street and Collett Street	Construction planned to commence during 2025 (subject to approval). There is potential for overlap in construction of Monaro Street Upgrade and the redevelopment of Queanbeyan Leagues Club. As such, there is potential for minor cumulative impacts to traffic and transport and noise and vibration. Proposed mitigation measures are expected to appropriately mitigate potential cumulative impacts from redevelopment of the Queanbeyan Leagues Club.	Cumulative impacts are not expected during operation of the proposal.
Proposed multistorey shop top residential development on Rutledge Street	Construction timeframes are unknown. Cumulative impacts are not anticipated.	Operation timeframes are unknown. Cumulative impacts are not anticipated.

6.12.3 Potential impacts

No major projects occurring at the same time as the proposal within five kilometres. As such, no cumulative impacts are anticipated during construction of the proposal.

6.12.4 Safeguards and management measures

No cumulative impacts are anticipated during construction of the proposal. As such, no safeguards and management measures are required.

7. Environmental management

This chapter describes how the proposal will be managed to reduce potential environmental impacts during detailed design, construction and operation. A framework for managing potential impacts is provided. A summary of site-specific environmental safeguards is provided and the license and/or approval requirements required prior to construction are listed.

7.1 Environmental management plans (or system)

Safeguards and management measures have been identified in the REF 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 safeguards and 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 the 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.

A CEMP will be prepared prior to 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.

7.2 Summary of safeguards and management measures

Environmental safeguards and management measures outlined in this REF will be incorporated into the detailed design phase of the proposal and during construction and operation of the proposal, should it proceed. These safeguards and management measures will minimise any potential adverse impacts arising from the proposed works on the surrounding environment. The safeguards and management measures are summarised in Table 7-1.

Table 7-1: Summary of safeguards and management measures

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
GEN1	General - minimise environmental impacts during construction	A CEMP will be prepared and submitted for review and endorsement of the Transport for NSW Senior Manager Environment and Sustainability 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 proposal will implement the identified safeguards outlined in the REF • issue-specific environmental management plans • roles and responsibilities • communication requirements • induction and training requirements • procedures for monitoring and evaluating environmental performance, and for corrective action • reporting requirements and record-keeping • procedures for emergency and incident management • procedures for audit and review. The endorsed CEMP will be implemented during the undertaking of the activity.	Contractor / QPRC project manager	Pre-construction	Standard measure
GEN2	General - notification	All businesses, residential properties and other key stakeholders (e.g. schools, local councils) affected by the proposed activity will be notified at least five days prior to commencement of the activity. The notification will include details of: the proposal; construction period and construction hours; contact information for project management staff; complaint and incident reporting; and how to obtain further information.	Contractor / QPRC project manager	Pre-construction	Standard measure
GEN3	General - environmental awareness	All personnel working on site will receive training to ensure awareness of environment protection requirements to be implemented during the proposal, including relevant statutory responsibilities. 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 • threatened species habitat • adjoining residential areas requiring particular noise management measures. Records of training will be maintained by the contractor, including details of staff attending, dates, nature of training provided, and training provider(s) used	Contractor / QPRC project manager	Pre-construction	Standard measure

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
B1	Biodiversity	A Flora and Fauna Management Plan will be prepared in accordance with the Transport for NSW *Biodiversity Guidelines: Protecting and Managing Biodiversity on Projects* (RMS, 2011) 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* (RMS, 2008) • pre-clearing survey requirements • procedures for unexpected threatened species finds and fauna handling • procedures addressing relevant matters specified in the DPI *Policy and guidelines for fish habitat conservation and management* (2013) • protocols to manage weeds and pathogens.	Contractor	Pre-construction	Section 4.8 of QA G36 Environment Protection
B2	Tree removal	Tree protection and tree replacement requirements will be implemented in line with the Transport for NSW *Tree and hollow replacement guidelines* – (EMF-BD-GD-0129).	Contractor/ QPRC	Construction	Additional measure
SW1	Soil and water	A Soil and Water Management Plan (SWMP) will be prepared and implemented as part of the CEMP. The SWMP will identify all reasonably foreseeable risks relating to soil erosion and water pollution and describe how these risks will be addressed during construction.	Contractor	Pre-construction	Section 2.1 of QA *G38 Soil and Water Management*
SW2	Soil and water	A site-specific Erosion and Sediment Control Plan 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.	Contractor	Pre-construction	Section 2.2 of *QA G38 Soil and Water Management*
SW3	Pollutants and spills	Measures to control pollutants from stormwater and spills will be investigated and incorporated in the pavement drainage system at locations where it discharges to receiving drainage lines. Measures aimed at reducing flow rates and potential scour during rain events will be incorporated in the design of the pavement drainage system.	Contractor	Pre-construction	Additional measure
SW4	Disposal of water	No dirty water will be released into drainage lines and/or waterways.	Contractor	Construction	Additional measure
SW5	Water quality	Water quality control measures will be used to prevent any materials (e.g. concrete, grout, sediment) entering drain inlets or waterways.	Contractor	Construction	Additional measure
C1	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 and extent of the contamination has been confirmed and any necessary site-specific controls or further actions.	Contractor	Construction	Section 4.2 of QA *G36 Environment Protection*

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
C2	Accidental spill	A site-specific emergency spill plan will be developed and include spill-management measures in accordance with the Transport for NSW *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 EPA officers).	Contractor	Construction	Section 4.3 of QA *G36 Environment Protection*
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 Transport for NSW *Traffic Control at Work Sites Manual* (RTA, 2010) and *QA Specification G10 Control of Traffic* (Transport for NSW, 2008). 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 • access to construction sites including entry and exit locations and measures to prevent construction vehicles queuing on public roads. • a response plan for any construction traffic incident • consideration of other developments that may be under construction to minimise traffic conflict and congestion that may occur due to the cumulative increase in construction vehicle traffic • monitoring, review and amendment mechanisms.	Contractor	Pre-construction	Section 4.8 of QA *G36 Environment Protection*
TT2	Traffic performance	Traffic performance, impacts and mitigation measures during the construction stage are to be addressed within a Preliminary Construction Traffic Management Plan to be provided along with the Preliminary Construction Staging Designs. A detailed Construction Traffic Management Plan is to be prepared by the Contractor once the construction methodology and staging has been finalised.	QPRC	Construction	Additional measure
NV1	Noise and vibration	A Construction Noise and Vibration Management Plan (CNVMP) will be prepared as part of the CEMP. The CNVMP will identify: • all potential significant noise and vibration generating activities associated with the activity • noise and vibration sensitive receivers • measures to be implemented during construction to minimise noise and vibration impacts • feasible and reasonable mitigation measures to be implemented, taking into account the CNVG process and principles • 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.	Contractor	Pre-construction/construction	Section 4.6 of QA G36 Environment Protection

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
NV2		The CNVMP will also contain a comprehensive night works approval procedure, including: • inclusion of scheduled respite for the community for extended periods of night work • methods for assessment and review of impacts, • methods for expanded community engagement, notification and agreements records of community engagement, and proposed mitigation measures.	Contractor	Pre-construction, construction	
NV3	Noise and vibration	All sensitive receivers likely to be affected will be notified at least five working days prior to commencement of any works associated with the scenario that may have an adverse noise or vibration impact. The notification will include details of: • the construction activities likely to have noise or vibration impact • construction period and construction hours • any proposed mitigation measures for noise and vibration • contact information for the proposal, including out of hours contact • complaint and incident reporting and how to obtain further information.	Contractor	Pre-construction/construction	Section 4.6 of QA G36 Environment Protection
NV4	Noise and vibration	All employees, contractors and subcontractors are to receive awareness training in control of noise and vibration as part of their regular site induction and updated prior to any significant period of nightwork: • all relevant proposal specific and standard noise and vibration mitigation measures • relevant licence and approval conditions • permissible hours of work • any limitations on high noise generating activities • location of nearest sensitive receivers • construction employee parking areas • designated loading/unloading areas and procedures • site opening/closing times (including deliveries) • environmental incident procedures.	Construction contractor	Pre-construction/ construction	Additional measure
NV5	Noise and vibration	Where feasible and reasonable, construction should be carried out during the standard daytime working hours. Works generating high noise and/or vibration levels should be scheduled during less sensitive time periods. Where it is unavoidable to conduct works in standard hours for safety of workers and the public, for the safe and efficient operation of the road network or to maintain critical access to local services, then an assessment and approval process will be undertaken as per the CNVMP and CNVG.	Construction contractor	Pre-construction/ construction	Additional measure

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
NV6	Noise and vibration	Where feasible and reasonable, high noise generating work (75 dB(A) L_{Aeq} at receiver) should be carried out during standard construction hours and in continuous blocks of no more than three hours with at least one hour respite between each block of work generating high noise impact, where the location of the work is likely to impact the same receiver.	Construction contractor	Pre-construction/ construction	Additional measure
NV7	Noise and vibration	Where high noise generating activities (75 dB(A) L_{Aeq} at receiver) are required out of hours, equipment will be used prior to 10 pm where feasible and reasonable. Where this cannot be achieved, the equipment can be used where feasible and reasonable controls are implemented and there is engagement with any highly noise affected community receivers.	Construction contractor	Pre-construction/ construction	Additional measure
NV8	Noise and vibration	The following will be implemented for deliveries to and from the Proposal: • loading and unloading of materials/deliveries is to occur as far as possible from sensitive receivers or • loading/unloading areas are to be shielded or screened if close to sensitive receivers • delivery vehicles are to be fitted with straps rather than chains for unloading, wherever possible. When establishing work areas, ancillary sites, site compounds and laydowns consideration will be given to arranging the site to limit the need for reversing associated with regular/repeatable movements, where safe and space permits.	Construction contractor	Pre-construction/ construction	Additional measure
NV9	Noise and vibration	Non-tonal reversing beepers (or an equivalent mechanism) must be fitted and used on all construction vehicles and mobile plant regularly used on site and for any out of hours work.	Construction contractor	Pre-construction/ construction	Additional measure
NV10	Noise and vibration	Consideration will be given to the layout of the ancillary sites in order to maximise distance and shielding to nearby receivers	Construction contractor	Pre-construction/ construction	Additional measure
NV11	Noise and vibration	Vibration intensive equipment size will be selected to avoid working within the structural damage minimum working distances. The use of less vibration intensive methods of construction or equipment will be considered where feasible and reasonable.	Contractor	Pre-construction, construction	Additional measure
NV12	Noise and vibration	Where the use of vibration intensive equipment within the relevant minimum working distances cannot be avoided, a detailed inspection will be carried out and a written and photographic report prepared to document the condition of buildings and structures within the minimum working distances. This will be conducted during the development of the CEMP and reviewed prior to the commencement of vibration intensive work. A copy of the report will be provided to the relevant landowner or land manager.	Contractor	Pre-construction, construction	Additional measure
NV13	Noise and vibration	Vibration generating activities will be managed to minimise the potential for impacts on structures and sensitive receiver(s), including maximising minimum safe working distances where practicable, or use of alternate methods to minimise vibration where minimum safe working distances cannot be achieved. Where alternatives cannot be implemented, vibration monitoring is to be undertaken and receivers notified at least five days in advance of works.	Contractor	Pre-construction, construction	Additional measure

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
AH1	Aboriginal heritage	The *Standard Management Procedure - Unexpected Heritage Items* (Transport for NSW, 2015) will be followed in the event that an unknown or potential Aboriginal object/s, including skeletal remains, is found during construction. This applies where QPRC does not have approval to disturb the object/s or where a specific safeguard for managing the disturbance (apart from the Procedure) is not in place. Work will only re-commence once the requirements of that Procedure have been satisfied.	Contractor	Construction	Section 4.9 of QA *G36 Environment Protection*
NAH1	Non-Aboriginal heritage	The *Standard Management Procedure - Unexpected Heritage Items* (Transport for NSW, 2015) will be followed in the event that any unexpected heritage items, archaeological remains or potential relics of non-Aboriginal origin are encountered. Work will only re-commence once the requirements of that Procedure have been satisfied.	Contractor	Construction	Section 4.9 of QA *G36 Environment Protection*
LCVI1	Landscape character and visual impact	An Urban Design Plan will be prepared to support the final detailed proposal design and implemented as part of the CEMP. The Urban Design Plan will present an integrated urban design for the proposal, providing practical detail on the application of design principles and objectives identified in the environmental assessment. The Plan will include design treatments for: • 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: • *Beyond the Pavement urban design policy, process and principles* (Transport for NSW, 2020) • *Landscape Guideline* (Centre for Urban Design, 2008) • *Bridge Aesthetics* (Transport for NSW, 2019) • *Noise Wall Design Guidelines* (RTA, 2006) • *Shotcrete Design Guideline* (Centre for Urban Design, 2016).	Contractor	Pre-construction	Additional measure

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
SE1	Socio-economic	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): • mechanisms to provide details and timing of proposed activities to affected residents, including changed traffic and access conditions • contact name and number for complaints. The CP will be prepared in accordance with the *Community Involvement and Communications Resource Manual* (RTA, 2008).	Contractor	Pre-construction	Standard measure
SE2	Socio-economic	Road users, including freight companies will be informed of changed conditions, including likely disruptions to access during construction.	Contractor	Pre- construction	Additional measure
SE3	Socio-economic	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.	Contractor	Construction	Standard measure
SE4	Socio-economic	Consultation will be carried out with all affected property owners during detailed design and construction to develop and implement measures to mitigate the impact on land use viability, infrastructure and severance.	QPRC	Detailed design	Additional measure
SE5	Socio-economic	Residents and businesses will be notified before any utility interruption.	QPRC / Contractor	Pre-construction	Additional measure
W1	General waste management	A Waste Management Plan (WMP) will be prepared and implemented as part of the CEMP. The WMP will include but not be limited to: • measures to avoid and minimise waste associated with the proposal • classification of wastes and management options (re-use, recycle, stockpile, disposal) • statutory approvals required for managing both on and off-site waste, or application of any relevant resource recovery exemptions • procedures for storage, transport and disposal • monitoring, record keeping and reporting. The WMP will be prepared considering the Environmental Procedure Management of Wastes on Transport Land (Roads and Maritime, 2014) and relevant Transport for NSW Waste Fact Sheets.	Contractor	Pre-construction	Section 4.11 QA G36 Environmental Protection
W2	General waste impact	Waste accumulation, littering and general tidiness will be monitored during routine site inspections.	Contractor	Construction	Additional measure
W3	Resource minimisation	Recycled, durable, and low embodied energy products will be used to reduce primary resource demand in instances where the materials are cost and performance competitive and comparable in environmental performance (e.g. where quality control specifications allow).	Contractor	Construction	Additional measure

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
AQ1	Air quality	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: • potential sources of air pollution • air quality management objectives consistent with any relevant published EPA and/or Office of Environment and Heritage (OEH) guidelines • mitigation and suppression measures to be implemented • methods to manage work during strong winds or other adverse weather conditions • a progressive rehabilitation strategy for exposed surfaces.	Contractor	Pre-construction	Section 4.4 of *QA G36 Environment Protection*
U1	Utilities	Prior to the commencement of works: • the location of existing utilities and relocation details will be confirmed following consultation with affected utility owners • further assessment will be undertaken if the scope or location of proposed utility relocation works falls outside of the assessed proposal scope and footprint.	Contractor	Pre-construction	Standard measure

7.3 Licensing and approvals

No additional licences or approvals are expected to be required for the proposal.

8. Conclusion

This chapter provides the justification for the proposal taking into account its biophysical, social and economic impacts, the suitability of the site and whether or not the proposal is in the public interest. The proposal has also been considered in the context of the objectives of the EP&A Act, including the principles of ecologically sustainable development as defined in Section 193 of the Environmental Planning and Assessment Regulation 2021.

8.1 Justification

8.1.1 Social factors

As outlined in Section 6.9, the proposal would have some negative social impacts due to the disturbance that would occur during construction. The combined effect of traffic delays, construction noise, dust and visual impacts would result in a general loss of amenity for adjacent properties and road users. However, once operational, the proposal would provide improved safety conditions and traffic efficiency that would provide a positive social impact. This project is required to ensure the full potential of the Queanbeyan CBD is realised. These works will reduce traffic noise and manage the flow of traffic, provide greater safety for drivers and pedestrians and support our growing region to ensure our residents and local businesses can access the facilities and services they need.

8.1.2 Biophysical factors

The proposal would not result in the removal of native flora or fauna habitat and is unlikely to have an impact on threatened species. The proposal would involve the removal of some exotic amenity trees and vegetation within the median strip. The amenity trees and additional landscaping would be replaced, and native vegetation would be planted.

Construction of the proposal has the potential to impact the local water quality, including from earthworks, removal of vegetation, disturbance of soil and the construction of road surfaces and drains. This may lead to exposed soils, sediment entering watercourse and the degradation of water quality.

Operation of the proposal would result in the widening of pedestrian footpaths and installation of street furniture. The proposal would result upgrades to road pavement, stormwater drainage and ancilary infrastructure, however these changes are minor and water quality from surface water runoff from the road pavement would not be impacted as a result of the proposal.

8.1.3 Economic factors

The proposal would be constructed within the existing road corridor, and no land acquisition would be required. Many of the existing commercial businesses have dual access from alternate streets in the surrounding local road network. QPRC would continue to consult with local businesses during the construction phase of the proposal.

Locally, the proposal would improve public amenity. This would provide a positive impact for residents, visitors and businesses in the Queanbeyan CBD.

These long-term benefits for public amenity are considered to outweigh the short-term inconvenience on the local community and businesses during construction of the proposal.

8.1.4 Public interest

The public interest is best served through the equitable distribution of resources, and investment in public infrastructure that fulfils the need of the majority. The proposal represents a cost-efficient investment in public infrastructure that would maximise the long-term social and economic benefits, while minimising the long-term negative impacts on communities and the environment. By improving local public infrastructure on Monaro Street, the proposal would better enable movement of people, goods and services and improve overall public amenity.

The proposal would result in some impacts on amenity during construction. Mitigation measures would be implemented to manage and reduce these impacts.

There are a number of local strategic plans that specifically address improving the condition and public amenity of Monaro Street. The proposal is consistent with these plans including the *Queanbeyan CBD Spatial Master Plan* (QPRC, 2019) and *Queanbeyan CBD Place Plan* (QPRC, 2020).

8.2 Objects of the EP&A Act

Table 8-1 Objects of the Environmental Planning and Assessment Act 1979

Instrument	Requirement
1.3(a) To promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources.	The proposal would improve the social and economic welfare of the community by providing public amenity infrastructure. The proposal aims to reinvigorate Monaro Street to balance its function as both a transport route as well as a community space within the Queanbeyan CBD. During construction, the community and businesses in the area would likely experience temporary traffic, noise and vibration air quality and visual amenity impacts. The proposal design, impacts, safeguards and management measures details in the REF allow for proper management, development and conservation of natural and artificial resources.
1.3(b) To facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment.	Ecological sustainable development is considered in Section 8.2.1 of this REF have considered relevant economic, environmental and social considerations in decision making about environmental planning and assessment.
1.3(c) To promote the orderly and economic use and development of land.	The proposal aims to promote economic use of Monaro Street through installation of public infrastructure and improvement of public amenity for visitors, residents and businesses.
1.3(d) To promote the delivery and maintenance of affordable housing.	Not relevant to the proposal.
1.3(e) To protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats.	The proposal is not expected to have an impact on threatened species, ecological communities or their habitats.
1.3(f) To promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage).	An assessment of impacts to Aboriginal heritage has been undertaken. No impacts to built and cultural heritage (including Aboriginal cultural heritage) are anticipated for the proposal.
1.3(g) To promote good design and amenity of the built environment.	The proposal aims to improve public amenity on Monaro Street through widening of footpaths, landscaping, and installation of street furniture and lighting.
1.3(h) To promote the proper construction and maintenance of buildings, including the protection of the health and safety of their occupants.	Not relevant to the proposal.
1.3(i) To promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State.	Concept designs for the proposal were developed in consultation with Transport for NSW. QPRC is the determining authority for the proposal. However, Monaro Street is a State road owned and managed by Transport for NSW. The REF has been prepared in the Transport for NSW template and will be reviewed by both QPRC and Transport for NSW.
1.3(j) To provide increased opportunity for community participation in environmental planning and assessment.	Consultation with the community and relevant government agencies was carried out during the development of the proposal. Details on this consultation can be found in Chapter 5.

8.2.1 Ecologically sustainable development

Ecologically sustainable development (ESD) is development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends. The principles of ESD have been an integral consideration throughout the development of the proposal.

ESD requires the effective integration of economic and environmental considerations in decision-making processes. The four main principles supporting the achievement of ESD are discussed below.

The precautionary principle

The precautionary principle deals with reconciling scientific uncertainty about environmental impacts with certainty in decision-making. It provides that where there is a threat of serious or irreversible environmental damage, the absence of full scientific certainty should not be used as a reason to postpone measures to prevent environmental degradation.

This principle was considered during options development (refer to Chapter 2). The precautionary principle has guided the assessment of environmental impacts for this REF and the development of mitigation measures.

The concept design has sought to minimise impacts on amenity while maintaining engineering feasibility and safety for all road users. Safeguards have been proposed in this REF to minimise potential impacts. These safeguards would be implemented during construction and operation of the proposal. No safeguards have been postponed out of any lack of scientific certainty.

A CEMP would be prepared before construction starts. This requirement would ensure the proposal achieves a high level of environmental performance. No mitigation measures or management mechanisms would be postponed because of a lack of information.

Intergenerational equity

Social equity is concerned with the distribution of economic, social and environmental costs and benefits. Inter-generational equity introduces a temporal element with a focus on minimising the distribution of costs to future generations.

The proposal would not result in any impacts that are likely to adversely impact on the health, diversity or productivity of the environment for future generations.

While the proposal would have some adverse impacts, they are not considered to be of a nature or extent that would result in disadvantage to any specific Section of the community or to future generations.

Conservation of biological diversity and ecological integrity

The proposal involves removal and replacement of some existing amenity trees and vegetation. As part of the proposal, a landscape strategy has been developed for the street upgrade. The detailed landscape design aims to create a transformative, inclusive, and ecologically sound public space that will transform the main street and enhance the quality of life for residents and visitors alike.

Native and endemic plant species, carefully selected for their resilience and natural sensory beauty have been proposed in verge and median garden beds with thoughtfully designed planting beds which also incorporate Macrophyte species to filter stormwater runoff within the WSUD raingarden areas. The overall planting strategy is not only to create a strong sense of place but also contribute to local biodiversity, and minimise maintenance requirements.

Improved valuation, pricing and incentive mechanisms

The principle of internalising environmental costs into decision making requires consideration of all environmental resources that may be affected by the carrying out of a proposal, including air, water, land and living things.

This REF has examined the environmental consequences of the proposal and has identified mitigation measures to manage the potential for adverse impacts. The requirement to implement these mitigation measures would result in an economic cost to QPRC and would increase the capital and operating costs of the proposal. This signifies that environmental resources have been given appropriate valuation.

The proposal has been developed with an objective of minimising potential impacts on the surrounding environment. This indicates that the proposal is being developed with an environmental objective in mind.

8.3 Conclusion

The proposed upgrade of Monaro Street at Queanbeyan is subject to assessment under Division 5.1 of the EP&A Act. The REF has examined and taken into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of the proposed activity.

This has included consideration (where relevant) of conservation agreements and plans of management under the NPW Act, biodiversity stewardship sites under the BC Act, wilderness areas, areas of outstanding value, impacts on threatened species and ecological communities and their habitats, and other protected fauna and native plants. It has also considered potential impacts to matters of national environmental significance listed under the EPBC Act.

A number of potential environmental impacts from the proposal have been avoided or reduced during the concept design development and options assessment. The proposal, as described in the REF, best meets the proposal objectives but would still result in some impacts on noise and transport and traffic.

Safeguards and management measures as detailed in this REF would ameliorate or minimise these expected impacts. The proposal would also improve public amenity for residents, visitors and businesses. On balance, the proposal is considered justified and the following conclusions are made.

Significance of impact under NSW legislation

The proposal would be unlikely to cause a significant impact on the environment. Therefore, it is not necessary for an environmental impact statement to be prepared nor approval to be sought from the Minister for Planning under Division 5.2 of the EP&A Act. A Biodiversity Development Assessment Report or Species Impact Statement is not required. The proposal is subject to assessment under Division 5.1 of the EP&A Act. Consent from Council is not required.

Significance of impact under Australian legislation

The proposal is not likely to have a significant impact on matters of national environmental significance nor the environment of Commonwealth land within the meaning of the *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth). A referral to the Australian Department of Climate Change, Energy, the Environment and Water is not required.

9. EP&A Regulation publication requirement

Table 9-1 EP&A Regulation publication requirement

Requirement	Yes/No
Does this REF need to be published under Section 171(4) of the EP&A Regulation?	

10. References

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Terms and acronyms used in this REF

Table 10-1 Terms and acronyms used in this REF

Term / Acronym	Description
AHIMS	Aboriginal Heritage Information Management System
AHMP	Aboriginal Heritage Management Plan
AusLink	Mechanism to facilitate cooperative transport planning and funding by Commonwealth and state and territory jurisdictions
AQMP	Air Quality Management Plan
BC Act	*Biodiversity Conservation Act 2016 (NSW)*
CEMP	Construction environmental management plan
CP	Community Plan
DCCEW	Department of Environment, Climate Change and Water
DoS	Degree of Saturation
DPIRD	Department of Primary Industries and Regional Development
DPHI	Department of Planning, Housing and Infrastructure
EIA	Environmental impact assessment
EP&A Act	*Environmental Planning and Assessment Act 1979 (NSW).* Provides the legislative framework for land use planning and development assessment in NSW
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)*. Provides for the protection of the environment, especially matters of national environmental significance, and provides a national assessment and approvals process
ESD	Ecologically sustainable development. Development which uses, conserves and enhances the resources of the community so that ecological processes on which life depends, are maintained and the total quality of life, now and in the future, can be increased
FM Act	*Fisheries Management Act 1994 (NSW)*
GDE	Groundwater Dependent Ecosystem
Heritage Act	*Heritage Act 1977 (NSW)*
IBRA	Interim Biogeographic Regionalisation for Australia
KFH	Key Fish Habitat
LALC	Local Aboriginal Land Council
LEP	Local Environmental Plan. A type of planning instrument made under Part 3 of the EP&A Act.
LGA	Local Government Area
LoS	Level of Service. A qualitative measure describing operational conditions within a traffic stream and their perception by motorists and/or passengers
MDBA	Murray Darling Basin Authority
MNES	Matters of national environmental significance under the *Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)*
NCA	Noise Catchment Area
NML	Noise Management Level
NPW Act	*National Parks and Wildlife Act 1974 (NSW)*
NVMP	Noise and Vibration Management Plan
OEH	Office of Environment and Heritage within the Department of Planning and Environment.

Term / Acronym	Description
PACHCI	Procedure for Aboriginal Cultural Heritage Consultation and Investigation
PCT	Plant Community Type
PEA Act	*Protection of the Environment Administration Act 1991.*
PMST	Protected Matters Search Tool
QA Specifications	Specifications developed by Transport for use with road work and bridge work contracts let by Transport.
QPRC	Queanbeyan-Palerang Regional
RBL	Rating Background Level
REF	Review of Environmental Factors
RMS	NSW Roads and Maritime Services, now Transport
Roads Act	Roads Act 1993 (NSW)
SEPP	State Environmental Planning Policy. A type of planning instrument made under Part 3 of the EP&A Act.
SEPP (Biodiversity and Conservation)	*State Environmental Planning Policy (Biodiversity and Conservation) 2021*
SEPP (Planning Systems)	*State Environmental Planning Policy (Planning Systems) 2021*
SEPP (Precincts – Central River City)	*State Environmental Planning Policy (Precincts – Central River City) 2021*
SEPP (Precincts – Eastern Harbour City)	*State Environmental Planning Policy (Precincts – Eastern Harbour City) 2021*
SEPP (Precincts – Regional)	*State Environmental Planning Policy (Precincts – Regional) 2021*
SEPP (Resilience and Hazards)	*State Environmental Planning Policy (Resilience and Hazards) 2021*
SEPP (Transport and Infrastructure)	*State Environmental Planning Policy (Transport and Infrastructure) 2021*
SES	State Emergency Services
SWMP	Soil and Water Management Plan
TEC	Threatened Ecological Community
TMP	Traffic Management Plan
Transport	Transport for NSW
WMP	Waste Management Plan

Appendix A - Consideration of Section 171 factors and matters of national environmental significance and Commonwealth land

Section 171 Factors

In addition to the requirements of the Guideline for Division 5.1 assessments (DPE 2022) and the *Roads and Related Facilities EIS Guideline* (DUAP 1996) as detailed in the REF, the following factors, listed in Section 171 of the Environmental Planning and Assessment Regulation 2021, have also been considered to assess the likely impacts of the proposal on the natural and built environment.

Factor		Impact
a	*Any environmental impact on a community?* The proposal would have some impacts during construction but would improve public amenity over the longer term. The community could experience temporary disruption and traffic delays due to lane / road closures. These impacts have been reduced through the proposed staging of the works and detour design.	Short-term, negative Long-term, positive
b	*Any transformation of a locality?* The proposal would alter Monaro Street with pavement resurfacing. Over the longer term there would be substantial improvements to the public domain due to the proposed pedestrian infrastructure upgrades, stormwater drainage upgrades, and integration of public art, planting and accessibility features.	Short-term, negative Long-term, positive
c	*Any environmental impact on the ecosystems of the locality?* The proposal would impact some exotic plant species. Impacts have been assessed as not significant and would include replanting as part of the proposal.	Negligible
d	*Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality?* The proposal would have some potential impacts associated with changes to the removal of around 10 existing amenity trees. These would be improved over time with the proposed landscaping and urban design treatments identified as part of the proposal.	Short-term, negative Long-term, positive
e	*Any effect on a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or other special value for present or future generations?* The proposal is not expected to have an impact on any locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or other special value for present or future generations. Construction of the proposal would increase vibration on Monaro Street, however, the construction methodology would be designed to reduce any potential impacts to a level that is not expected would result in any impacts on heritage buildings.	Nil
f	*Any impact on the habitat of protected fauna (within the meaning of the National Parks and Wildlife Act 1974)?* The proposal is not within a National Park and would not result in the removal of native vegetation or habitat.	Nil
g	*Any endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air?* The proposal is not expected to endanger any species of animal, plant or other form of life due to the proposal not requiring the removal of native vegetation.	Nil
h	*Any long-term effects on the environment?* The proposal is not expected to have any long-term negative effects on the environment. The proposal would improve the public domain over time.	Long-term positive
i	*Any degradation of the quality of the environment?* The proposal would result in some temporary impacts through the generation of dust, noise and vibration during the construction phase. However, the potential impacts have been minimised through the development of the construction methodology and proposed safeguards.	Short-term negative Nil long-term

Factor		Impact
j	*Any risk to the safety of the environment?* The proposal does not represent a risk to the safety of the environment.	Nil
k	*Any reduction in the range of beneficial uses of the environment?* During construction there is potential for reduction in the range of uses of the environment (i.e. restrictions on vehicle and/or pedestrian movements, traffic delays through lane closures etc.). Public amenity and range of use would be improved due to the proposal in the longer term.	Short-term, negative Long-term, positive
l	*Any pollution of the environment?* Construction of the proposal would have minor air quality impacts due to dust generation and traffic and equipment emissions. These would be temporary and would not exceed the construction of the proposal. The operation of the proposal is not expected to impact existing air quality.	Short-term, negative
m	*Any environmental problems associated with the disposal of waste?* Waste streams generated during construction are expected to be common and would pose no difficulty in their disposal. Waste would be recycled wherever possible.	Nil
n	*Any increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply?* All resources required for the proposal are expected to be readily available and not in short supply.	Nil
o	*Any cumulative environmental effect with other existing or likely future activities?* Significant cumulative impacts are not expected during construction of the proposal.	Nil
p	*Any impact on coastal processes and coastal hazards, including those under projected climate change conditions?* The proposal is not within the coast zone and would not influence coast processes and/or coastal hazards.	Nil
q	*Applicable local strategic planning statements, regional strategic plans or district strategic plans made under the Act, Division 3.1* A review of applicable local strategic planning statements, regional strategic plans or district strategic plans are provided in Chapter 2 of this REF. The proposal is considered to be consistent with these documents.	Long-term positive
r	Other relevant environmental factors	In considering the potential impacts of this proposal all relevant environmental factors have been considered (refer to Chapter 6 of this REF).

Matters of National Environmental Significance and Commonwealth land

Under the environmental assessment provisions of the EPBC Act, the following matters of national environmental significance and impacts on Commonwealth land are required to be considered to assist in determining whether the proposal should be referred to the Australian Department of Climate Change, Energy, the Environment and Water.

A referral is not required for proposed actions that may affect nationally-listed threatened species, endangered ecological communities and migratory species. Impacts on these matters are still assessed as part of the REF in accordance with Australian Government significant impact criteria and taking into account relevant guidelines and policies.

Factor		Impact
a	*Any impact on a World Heritage property?* The proposal would not impact on a World Heritage property.	Nil
b	*Any impact on a National Heritage place?* The proposal would not impact on a National Heritage place.	Nil
c	*Any impact on a wetland of international importance?* The proposal would not impact on a wetland of international importance.	Nil
d	*Any impact on a listed threatened species or communities?* The proposal is not expected to have an impact on threatened species, ecological communities or their habitats.	Nil
e	*Any impacts on listed migratory species?* The proposal would not substantially modify, destroy or isolate an area of important habitat for migratory species, and it would not seriously disrupt the lifecycle of an ecologically significant proportion of a population of migratory birds. While some migratory species of bird are likely to use the proposal site and locality the proposal site would not be classes as an 'important habitat'.	Nil
f	*Any impact on a Commonwealth marine area?* The proposal would not impact bon a Commonwealth marine area.	Nil
g	*Does the proposal involve a nuclear action (including uranium mining)?* The proposal would not include a nuclear action (including uranium mining)	Nil
h	*Additionally, any impact (direct or indirect) on the environment of Commonwealth land?* The proposal would not impact on the environment of Commonwealth land.	Nil

Appendix B - Statutory consultation checklists

Transport and Infrastructure SEPP

Certain development types

Development type	Description	Yes / No	If 'yes' consult with	SEPP (Transport and Infrastructure) Section
Car Park	Does the project include a car park intended for the use by commuters using regular bus services?	No	N/A	Section 2.110
Bus Depots	Does the project propose a bus depot?	No	N/A	Section 2.110
Permanent road maintenance depot and associated infrastructure	Does the project propose a permanent road maintenance depot or associated infrastructure such as garages, sheds, tool houses, storage yards, training facilities and workers' amenities?	No	N/A	Section 2.110

Development within the Coastal Zone

Development type	Description	Yes / No	If 'yes' consult with	SEPP (Transport and Infrastructure) Section
Development with impacts on certain land within the coastal zone	Is the proposal within a coastal vulnerability area and is inconsistent with a certified coastal management program applying to that land?	No	N/A	Section 2.14

Note: See interactive map at ***Planning Portal NSW spatial viewer - find a property***. Note the coastal vulnerability area has not yet been mapped.

Note: a certified coastal zone management plan is taken to be a certified coastal management program.

Council related infrastructure or services

Development type	Potential impact	Yes / No	If 'yes' consult with	SEPP (Transport and Infrastructure) Section
Stormwater	Are the works likely to have a *substantial* impact on the stormwater management services which are provided by council?	Yes	Queanbeyan-Palerang Regional Council	Section 2.10
Traffic	Are the works likely to generate traffic to an extent that will *strain* the capacity of the existing road system in a local government area?	No	N/A	Section 2.10
Sewerage system	Will the works involve connection to a council owned sewerage system? If so, will this connection have a *substantial* impact on the capacity of any part of the system?	No	N/A	Section 2.10
Water usage	Will the works involve connection to a council owned water supply system? If so, will this require the use of a *substantial* volume of water?	No	N/A	Section 2.10

Development type	Potential impact	Yes / No	If 'yes' consult with	SEPP (Transport and Infrastructure) Section
Temporary structures	Will the works involve the installation of a temporary structure on, or the enclosing of, a public place which is under local council management or control? If so, will this cause more than a *minor* or *inconsequential* disruption to pedestrian or vehicular flow?	No	N/A	Section 2.10
Road & footpath excavation	Will the works involve more than *minor* or inconsequential excavation of a road or adjacent footpath for which council is the roads authority and responsible for maintenance?	Yes	Queanbeyan-Palerang Regional	Section 2.10

Local heritage items

Development type	Potential impact	Yes / No	If 'yes' consult with	SEPP (Transport and Infrastructure) Section
Local heritage	Is there is a local heritage item (that is not also a State heritage item) or a heritage conservation area in the study area for the works? If yes, does a heritage assessment indicate that the potential impacts to the heritage significance of the item/area are more than minor or inconsequential?	No Impacts minor or inconsequential	Queanbeyan-Palerang Regional Council	Section 2.11

Flood liable land

Development type	Potential impact	Yes / No	If 'yes' consult with	SEPP (Transport and Infrastructure) Section
Flood liable land	Are the works located on flood liable land? If so, will the works change flood patterns to more than a *minor* extent?	Yes No change to flood patterns	Queanbeyan-Palerang Regional Council	Section 2.12
Flood liable land	Are the works located on flood liable land? (to any extent). If so, do the works comprise more than minor alterations or additions to, or the demolition of, a building, emergency works or routine maintenance?	No	State Emergency Services	Section 2.13

Note: Flood liable land means land that is susceptible to flooding by the probable maximum flood event, identified in accordance with the principles set out in the manual entitled Floodplain Development Manual: the management of flood liable land published by the New South Wales Government.

Public authorities other than councils

Development type	Potential impact	Yes / No	If 'yes' consult with	SEPP (Transport and Infrastructure) Section
National parks and reserves	Are the works adjacent to a national park or nature reserve, or other area reserved under the *National Parks and Wildlife Act 1974*, or on land acquired under that Act?	No	N/A	Section2.15
National parks and reserves	Are the works on land in Zone E1 National Parks and Nature Reserves or in a land use zone equivalent to that zone?	No	N/A	Section 2.15
Navigable waters	Do the works include a fixed or floating structure in or over navigable waters?	No	N/A	Section 2.15
Bush fire prone land	Are the works for the purpose of residential development, an educational establishment, a health services facility, a correctional centre or group home in bush fire prone land?	No	N/A	Section 2.15
Artificial light	Would the works increase the amount of artificial light in the night sky and that is on land within the dark sky region as identified on the dark sky region map? (Note: the dark sky region is within 200 kilometres of the Siding Spring Observatory)	No	N/A	Section 2.15
Defence communications buffer land	Are the works on buffer land around the defence communications facility near Morundah? (Note: refer to Defence Communications Facility Buffer Map referred to in Section 5.15 of Lockhart LEP 2012, Narrandera LEP 2013 and Urana LEP 2011.	No	N/A	Section 2.15
Mine subsidence land	Are the works on land in a mine subsidence district within the meaning of the *Mine Subsidence Compensation Act 1961*?	No	N/A	Section 2.15

Appendix C – Protected Matters Search Tool (PMST)

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 12-Dec-2024

Summary
Details
- Matters of NES
- Other Matters Protected by the EPBC Act
- Extra Information

Caveat
Acknowledgements

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	1
Wetlands of International Importance (Ramsar	4
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	2
Listed Threatened Species:	51
Listed Migratory Species:	10

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	264
Commonwealth Heritage Places:	29
Listed Marine Species:	21
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	15
Regional Forest Agreements:	1
Nationally Important Wetlands:	1
EPBC Act Referrals:	108
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

National Heritage Places [Resource Information]

Name	State	Legal Status	Buffer Status
Historic			
Australian War Memorial and the Memorial Parade	ACT	Listed place	In buffer area only

Wetlands of International Importance (Ramsar Wetlands) [Resource Information]

Ramsar Site Name	Proximity	Buffer Status
Banrock station wetland complex	800 - 900km upstream from Ramsar site	In feature area
Hattah-kulkyne lakes	600 - 700km upstream from Ramsar site	In feature area
Riverland	700 - 800km upstream from Ramsar site	In feature area
The coorong, and lakes alexandrina and albert wetland	800 - 900km upstream from Ramsar site	In feature area

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Natural Temperate Grassland of the South Eastern Highlands	Critically Endangered	Community likely to occur within area	In feature area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community likely to occur within area	In feature area

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Anthochaera phrygia](#) Regent Honeyeater [82338]	Critically Endangered	Species or species habitat known to occur within area	In feature area
[Aphelocephala leucopsis](#) Southern Whiteface [529]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Botaurus poiciloptilus](#) Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area	In feature area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
[Callocephalon fimbriatum](#) Gang-gang Cockatoo [768]	Endangered	Species or species habitat known to occur within area	In feature area
[Calyptorhynchus lathami lathami](#) South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Climacteris picumnus victoriae](#) Brown Treecreeper (south-eastern) [67062]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Falco hypoleucos](#) Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Gallinago hardwickii](#) Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Grantiella picta](#) Painted Honeyeater [470]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Endangered	Species or species habitat may occur within area	In buffer area only
Melanodryas cucullata cucullata South-eastern Hooded Robin, Hooded Robin (south-eastern) [67093]	Endangered	Species or species habitat known to occur within area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat known to occur within area	In feature area
Polytelis swainsonii Superb Parrot [738]	Vulnerable	Species or species habitat known to occur within area	In feature area
Pycnoptilus floccosus Pilotbird [525]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area	In feature area
Stagonopleura guttata Diamond Firetail [59398]	Vulnerable	Species or species habitat known to occur within area	In feature area
FISH			
Maccullochella macquariensis Trout Cod [26171]	Endangered	Species or species habitat may occur within area	In feature area
Maccullochella peelii Murray Cod [66633]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Macquaria australasica](#)			
Macquarie Perch [66632]	Endangered	Species or species habitat may occur within area	In feature area
FROG			
[Litoria aurea](#)			
Green and Golden Bell Frog [1870]	Vulnerable	Species or species habitat may occur within area	In feature area
[Litoria castanea](#)			
Yellow-spotted Tree Frog, Yellow-spotted Bell Frog [1848]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
[Litoria raniformis](#)			
Southern Bell Frog,, Growling Grass Frog, Green and Golden Frog, Warty Swamp Frog, Golden Bell Frog [1828]	Vulnerable	Species or species habitat may occur within area	In buffer area only
INSECT			
[Keyacris scurra](#)			
Key's Matchstick Grasshopper [89739]	Endangered	Species or species habitat may occur within area	In buffer area only
[Synemon plana](#)			
Golden Sun Moth [25234]	Vulnerable	Species or species habitat known to occur within area	In feature area
MAMMAL			
[Chalinolobus dwyeri](#)			
Large-eared Pied Bat, Large Pied Bat [183]	Endangered	Species or species habitat may occur within area	In feature area
[Dasyurus maculatus maculatus (SE mainland population)](#)			
Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat known to occur within area	In feature area
[Petauroides volans](#)			
Greater Glider (southern and central) [254]	Endangered	Species or species habitat may occur within area	In buffer area only
[Petaurus australis australis](#)			
Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)			
Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat known to occur within area	In feature area
Pteropus poliocephalus			
Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
PLANT			
Caladenia actensis			
Canberra Spider Orchid [76138]	Critically Endangered	Species or species habitat known to occur within area	In buffer area only
Calotis glandulosa			
Mauve Burr-daisy [7842]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Dodonaea procumbens			
Trailing Hop-bush [12149]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Eucalyptus aggregata			
Black Gum [20890]	Vulnerable	Species or species habitat known to occur within area	In feature area
Lepidium aschersonii			
Spiny Peppercress [10976]	Vulnerable	Species or species habitat may occur within area	In feature area
Lepidium ginninderrense			
Ginninderra Peppercress [78474]	Critically Endangered	Species or species habitat known to occur within area	In buffer area only
Lepidium hyssopifolium			
Basalt Pepper-cress, Peppercress, Rubble Pepper-cress, Pepperweed [16542]	Endangered	Species or species habitat likely to occur within area	In feature area
Leucochrysum albicans subsp. tricolor			
Hoary Sunray, Grassland Paper-daisy [89104]	Endangered	Species or species habitat known to occur within area	In feature area
Pomaderris pallida			
Pale Pomaderris [13684]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Prasophyllum petilum Tarengo Leek Orchid [55144]	Endangered	Species or species habitat may occur within area	In feature area
Rutidosis leptorhynchoides Button Wrinklewort [67251]	Endangered	Species or species habitat known to occur within area	In feature area
Senecio macrocarpus Large-fruit Fireweed, Large-fruit Groundsel [16333]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Swainsona recta Small Purple-pea, Mountain Swainson-pea, Small Purple Pea [7580]	Endangered	Species or species habitat likely to occur within area	In feature area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area	In feature area
REPTILE			
Aprasia parapulchella Pink-tailed Worm-lizard, Pink-tailed Legless Lizard [1665]	Vulnerable	Species or species habitat known to occur within area	In feature area
Delma impar Striped Legless Lizard, Striped Snake-lizard [1649]	Vulnerable	Species or species habitat known to occur within area	In feature area
Tympanocryptis lineata Canberra Grassland Earless Dragon, Lined Earless Dragon [25558]	Critically Endangered	Species or species habitat known to occur within area	In buffer area only

Listed Migratory Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Motacilla flava			
Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat likely to occur within area	In feature area
Calidris acuminata			
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris ferruginea			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Calidris melanotos			
Pectoral Sandpiper [858]		Species or species habitat known to occur within area	In feature area
Gallinago hardwickii			
Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area	In feature area
Limosa lapponica			
Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In buffer area only
Pandion haliaetus			
Osprey [952]		Species or species habitat likely to occur within area	In buffer area only

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State	Buffer Status
Communications, Information Technology and the Arts - Australian Postal Corporation		
Commonwealth Land - Australian Postal Corporation [12324]	NSW	In buffer area only
Communications, Information Technology and the Arts - Telstra Corporation Limited		
Commonwealth Land - Australian Telecommunications Commission [12321]	NSW	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - Australian Telecommunications Commission [12322]	NSW	In buffer area only
Commonwealth Land - Telstra Corporation Limited [12320]	NSW	In feature area
Defence		
Defence - 10 WHYALLA ST - FYSHWICK [80001]	ACT	In buffer area only
Defence - 139 CANBERRA AVE - FYSHWICK [80004]	ACT	In buffer area only
Defence - 139 CANBERRA AVE - FYSHWICK [80002]	ACT	In buffer area only
Defence - 139 CANBERRA AVE - FYSHWICK [80003]	ACT	In buffer area only
Defence - 169 GLADSTONE ST - FYSHWICK [80005]	ACT	In buffer area only
Defence - AUSTRALIAN DEFENCE FORCE ACADEMY [80104]	ACT	In buffer area only
Defence - CAMPBELL PARK [80040]	ACT	In buffer area only
Defence - DEFENCE ARCHIVES - QUEANBEYAN [10098]	NSW	In buffer area only
Defence - DEFENCE ARCHIVES - QUEANBEYAN [10097]	NSW	In buffer area only
Defence - HMAS HARMAN - SYMONSTOWN [80106]	ACT	In buffer area only
Defence - HMAS HARMAN - SYMONSTOWN [80107]	ACT	In buffer area only
Defence - HMAS HARMAN - SYMONSTOWN [80105]	ACT	In buffer area only
Defence - MAJURA FIELD FIRING RANGE [80013]	ACT	In buffer area only
Defence - MAJURA FIELD FIRING RANGE [80012]	ACT	In buffer area only
Defence - MAJURA FIELD FIRING RANGE [80011]	ACT	In buffer area only
Defence - MAJURA FIELD FIRING RANGE [80014]	ACT	In buffer area only
Defence - MAJURA FIELD FIRING RANGE [80015]	ACT	In buffer area only
Defence - MAJURA FIELD FIRING RANGE [80008]	ACT	In buffer area only
Defence - MAJURA FIELD FIRING RANGE [80020]	ACT	In buffer area only
Defence - MAJURA FIELD FIRING RANGE [80022]	ACT	In buffer area only
Defence - MAJURA FIELD FIRING RANGE [80019]	ACT	In buffer area only
Defence - MAJURA FIELD FIRING RANGE [80021]	ACT	In buffer area only
Defence - MAJURA NAVIGATION BEACON [80033]	ACT	In buffer area only
Defence - MT JERRABOMBERRA OBSTRUCTION WARNING [80047]	NSW	In buffer area only

Commonwealth Land Name	State	Buffer Status
Defence - MT JERRABOMBERRA OBSTRUCTION WARNING [80046]	NSW	In buffer area only
Defence - NAVAL COMBAT DATA SYSTEM CENTRE - FYSHWICK [80007]	ACT	In buffer area only
Defence - NAVAL COMBAT DATA SYSTEM CENTRE - FYSHWICK [80006]	ACT	In buffer area only
Defence - NORTHCOTT DRIVE PLAYING FIELDS (Addison Rd) [80048]	ACT	In buffer area only
Defence - PHYSICS FIELD TESTING STATION - CANBERRA [80103]	ACT	In buffer area only
Defence - RAAF BASE FAIRBAIRN [80069]	ACT	In buffer area only
Defence - RAAF BASE FAIRBAIRN [80068]	ACT	In buffer area only
Defence - RAAF BASE FAIRBAIRN [80065]	ACT	In buffer area only
Defence - RAAF BASE FAIRBAIRN [80072]	ACT	In buffer area only
Defence - RAAF BASE FAIRBAIRN [80079]	ACT	In buffer area only
Defence - RAAF BASE FAIRBAIRN [80083]	ACT	In buffer area only
Defence - RAAF BASE FAIRBAIRN [80082]	ACT	In buffer area only
Defence - RAAF BASE FAIRBAIRN [80081]	ACT	In buffer area only
Defence - RAAF BASE FAIRBAIRN [80080]	ACT	In buffer area only
Defence - RAAF BASE FAIRBAIRN [80063]	ACT	In buffer area only
Defence - RAAF BASE FAIRBAIRN [80057]	ACT	In buffer area only
Defence - RAAF BASE FAIRBAIRN [80056]	ACT	In buffer area only
Defence - RAAF BASE FAIRBAIRN [80059]	ACT	In buffer area only
Defence - RAAF BASE FAIRBAIRN [80058]	ACT	In buffer area only
Defence - RAAF BASE FAIRBAIRN [80055]	ACT	In buffer area only
Defence - RAAF BASE FAIRBAIRN [80054]	ACT	In buffer area only
Defence - RAAF BASE FAIRBAIRN [80052]	ACT	In buffer area only
Defence - RAAF BASE FAIRBAIRN [80051]	ACT	In buffer area only
Defence - RAAF BASE FAIRBAIRN [80050]	ACT	In buffer area only
Defence - RAAF BASE FAIRBAIRN [80053]	ACT	In buffer area only
Defence - RAAF BASE FAIRBAIRN [80062]	ACT	In buffer area only

Commonwealth Land Name	State	Buffer Status
Defence - RAAF BASE FAIRBAIRN [80060]	ACT	In buffer area only
Defence - RAAF BASE FAIRBAIRN [80061]	ACT	In buffer area only
Defence - RAAF BASE FAIRBAIRN [80066]	ACT	In buffer area only
Defence - RAAF BASE FAIRBAIRN [80067]	ACT	In buffer area only
Defence - RAAF BASE FAIRBAIRN [80064]	ACT	In buffer area only
Defence - RAAF BASE FAIRBAIRN [80078]	ACT	In buffer area only
Defence - RAAF BASE FAIRBAIRN [80077]	ACT	In buffer area only
Defence - RAAF BASE FAIRBAIRN [80074]	ACT	In buffer area only
Defence - RAAF BASE FAIRBAIRN [80071]	ACT	In buffer area only
Defence - RAAF BASE FAIRBAIRN [80076]	ACT	In buffer area only
Defence - RAAF BASE FAIRBAIRN [80075]	ACT	In buffer area only
Defence - RAAF BASE FAIRBAIRN [80070]	ACT	In buffer area only
Defence - RAAF BASE FAIRBAIRN [80073]	ACT	In buffer area only
Defence - RAAF BASE FAIRBAIRN [80049]	ACT	In buffer area only
Defence - ROYAL MILITARY COLLEGE - DUNTROON [80084]	ACT	In buffer area only
Defence - ROYAL MILITARY COLLEGE - DUNTROON [80085]	ACT	In buffer area only
Defence - RUSSELL HILL COMPLEX [80100]	ACT	In buffer area only
Defence - RUSSELL HILL COMPLEX [80101]	ACT	In buffer area only
Defence - RUSSELL HILL COMPLEX [80099]	ACT	In buffer area only
Defence - RUSSELL HILL COMPLEX [80088]	ACT	In buffer area only
Defence - RUSSELL HILL COMPLEX [80089]	ACT	In buffer area only
Defence - RUSSELL HILL COMPLEX [80093]	ACT	In buffer area only
Defence - RUSSELL HILL COMPLEX [80092]	ACT	In buffer area only
Defence - RUSSELL HILL COMPLEX [80091]	ACT	In buffer area only
Defence - RUSSELL HILL COMPLEX [80090]	ACT	In buffer area only
Defence - RUSSELL HILL COMPLEX [80097]	ACT	In buffer area only
Defence - RUSSELL HILL COMPLEX [80096]	ACT	In buffer area only

Commonwealth Land Name	State	Buffer Status
Defence - RUSSELL HILL COMPLEX [80095]	ACT	In buffer area only
Defence - RUSSELL HILL COMPLEX [80086]	ACT	In buffer area only
Defence - RUSSELL HILL COMPLEX [80087]	ACT	In buffer area only
Defence - RUSSELL HILL COMPLEX [80098]	ACT	In buffer area only
Defence - RUSSELL HILL COMPLEX [80094]	ACT	In buffer area only
Defence - WERRIWA DEPOT [80108]	ACT	In buffer area only
Defence - Defence Housing Authority		
Commonwealth Land - Defence Housing Authority [15593]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16218]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16224]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [15931]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16114]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [15726]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16210]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [15728]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16298]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16199]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16214]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [12310]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16215]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16359]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16358]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [12313]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16112]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16195]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [12328]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16194]	NSW	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - Defence Housing Authority [12311]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16197]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [12312]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [12326]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16196]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [12318]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16217]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [12319]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [12325]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [12327]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [12323]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16237]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [15925]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16075]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [15595]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [15933]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16493]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [15594]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [12294]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16229]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [12317]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [12316]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [12315]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [12314]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [15924]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [15927]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [15926]	NSW	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - Defence Housing Authority [16110]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16113]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16299]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16261]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16297]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16262]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16294]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16295]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16260]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16111]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16292]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16293]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16296]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16301]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16263]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16360]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16078]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [12309]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [12300]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [12301]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16227]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [12302]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16225]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16226]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16223]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [12308]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [15935]	NSW	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - Defence Housing Authority [16221]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16222]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [15932]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16220]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [12303]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [15540]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16076]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16077]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [12306]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [12307]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [15907]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [15906]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16074]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [15908]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [12305]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [15905]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [15904]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16265]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16266]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16264]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16235]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16234]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16231]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16230]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [15412]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16238]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16239]	NSW	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - Defence Housing Authority [16232]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16233]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [15699]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16561]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [15409]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16193]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [15745]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [15747]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [15746]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16106]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16202]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16203]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16200]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16201]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16206]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16207]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16204]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16209]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16205]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16208]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16253]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16212]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16107]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16024]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16022]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16023]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [15934]	NSW	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - Defence Housing Authority [16108]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16109]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16254]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16255]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [15684]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16492]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16098]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16219]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [15965]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16257]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16095]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16094]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16097]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16096]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16258]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16565]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16256]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16259]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16244]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16247]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16242]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16245]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [12298]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [12299]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [15695]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [15696]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [15697]	NSW	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - Defence Housing Authority [16216]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16246]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [15727]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16198]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16211]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [12297]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [12296]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [12295]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16228]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16240]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16241]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16243]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16213]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16079]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [15617]	NSW	In buffer area only
Transport and Regional Services - Airservices Australia		
Commonwealth Land - Airservices Australia [12293]	NSW	In buffer area only
Unknown		
Commonwealth Land - [16524]	NSW	In buffer area only
Commonwealth Land - [12337]	NSW	In buffer area only
Commonwealth Land - [12336]	NSW	In buffer area only
Commonwealth Land - [12304]	NSW	In buffer area only
Commonwealth Land - [16236]	NSW	In buffer area only
Commonwealth Land - [16559]	NSW	In buffer area only

Commonwealth Heritage Places			[Resource Information]
Name	State	Status	Buffer Status
Historic			
Anzac Memorial Chapel of St Paul	ACT	Listed place	In buffer area only
Apple Shed Asset C58	ACT	Listed place	In buffer area only

Name	State	Status	Buffer Status
Australian American Memorial and Sir Thomas Blamey Square	ACT	Listed place	In buffer area only
Australian War Memorial	ACT	Listed place	In buffer area only
Blundells Farmhouse, Slab Outbuilding and Surrounds	ACT	Listed place	In buffer area only
Captains Quarters Assets B1 to B4	ACT	Listed place	In buffer area only
Carillon	ACT	Listed place	In buffer area only
Changi Chapel	ACT	Listed place	In buffer area only
Commandants House Asset B9	ACT	Listed place	In buffer area only
Duntroon House and Garden	ACT	Listed place	In buffer area only
General Bridges Grave	ACT	Listed place	In buffer area only
Lake Burley Griffin and Adjacent Lands	ACT	Listed place	In buffer area only
Parade Ground and Associated Buildings Group	ACT	Listed place	In buffer area only
Parliament House Vista	ACT	Listed place	In buffer area only
Parliament House Vista Extension - Portal Buildings	ACT	Listed place	In buffer area only
Redwood Plantation	ACT	Listed place	In buffer area only
Residence Asset B5	ACT	Listed place	In buffer area only
Residence Asset B7	ACT	Listed place	In buffer area only
Residence Asset C12	ACT	Listed place	In buffer area only
Residence Asset C13	ACT	Listed place	In buffer area only
Residence Asset C14	ACT	Listed place	In buffer area only
Residence Asset C15	ACT	Listed place	In buffer area only
Residence Asset C7	ACT	Listed place	In buffer area only
Residence Asset C8	ACT	Listed place	In buffer area only
RMC Duntroon Conservation Area	ACT	Listed place	In buffer area only
Russell Cafeteria	ACT	Within listed place	In buffer area only
Russell Precinct Heritage Area	ACT	Listed place	In buffer area only

Name	State	Status	Buffer Status
Three Wartime Bomb Dump Buildings	ACT	Listed place	In buffer area only
Natural			
Majura Valley Natural Temperate Grassland	ACT	Listed place	In buffer area only

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area overfly marine area	In feature area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Breeding known to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In buffer area only
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area overfly marine area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area overfly marine area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Pterodroma cervicalis White-necked Petrel [59642]		Species or species habitat may occur within area	In feature area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area overfly marine area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area overfly marine area	In feature area

Extra Information

State and Territory Reserves [Resource Information]

Protected Area Name	Reserve Type	State	Buffer Status
Callum Brae	Nature Reserve	ACT	In buffer area only
Cuumbeun	Nature Reserve	NSW	In buffer area only
Goorooyarroo	Nature Reserve	NSW	In buffer area only
Isaacs Ridge	Nature Reserve	ACT	In buffer area only
Jerrabomberra Wetlands	Nature Reserve	ACT	In buffer area only
Kowen Escarpment	Nature Reserve	ACT	In buffer area only
Molonglo Gorge	Nature Reserve	ACT	In buffer area only
Mt Ainslie	Nature Reserve	ACT	In buffer area only
Mt Mugga Mugga	Nature Reserve	ACT	In buffer area only
Mt Pleasant	Nature Reserve	ACT	In buffer area only
Queanbeyan	Nature Reserve	NSW	In buffer area only
Stony Creek	Nature Reserve	NSW	In buffer area only
Wanna Wanna	Nature Reserve	NSW	In buffer area only
Wanniassa Hills	Nature Reserve	ACT	In buffer area only
West Jerrabomberra	Nature Reserve	ACT	In buffer area only

Regional Forest Agreements [Resource Information]

Note that all areas with completed RFAs have been included. Please see the associated resource information for specific caveats and use limitations associated with RFA boundary information.

RFA Name	State	Buffer Status
Southern RFA	New South Wales	In feature area

Nationally Important Wetlands [Resource Information]

Wetland Name	State	Buffer Status
Jerrabomberra Wetlands	ACT	In buffer area only

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Australian War Memorial Redevelopment	2019/8574		Post-Approval	In buffer area only
Campbell Park Car Park Consolidation Project	2022/09354		Completed	In buffer area only
Commonwealth Park to Woden Light Rail Project	2023/09753		Assessment	In buffer area only
Decommissioning of existing overhead assets and installation of an underground high-voltage powerline	2024/09996		Referral Decision	In buffer area only
East Lake Precinct Stage 1	2023/09697		Completed	In buffer area only
Malcolmvale West Detention Basin	2011/6218		Completed	In buffer area only
Mara team testing 26-10-2024	2024/10032		Post-Approval	In buffer area only
Mara team testing 28-09-2024 001	2024/10007		Referral Decision	In buffer area only
New RSPCA Facility	2022/09285		Completed	In buffer area only
Controlled action				
ANZAC Park East and ANZAC Park West sale - Parkes, ACT	2016/7766	Controlled Action	Post-Approval	In buffer area only
Blocks 3 and 15, Section 22, Barton, ACT Divestment	2017/8028	Controlled Action	Post-Approval	In buffer area only
Campbell Station 5 Development	2012/6292	Controlled Action	Post-Approval	In buffer area only
Development of the Narrabundah Long Stay Caravan Park Land Swap	2007/3554	Controlled Action	Post-Approval	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
Site				
Divestment of York Park North	2004/1426	Controlled Action	Completed	In buffer area only
Edwin Land Parkway Stage 2 - Jerrabomberra to Kambah	2009/5162	Controlled Action	Post-Approval	In buffer area only
Ellerton Drive Extension, East Queanbeyan, NSW	2014/7304	Controlled Action	Post-Approval	In buffer area only
Expansion of the Mugga Lane Resource Management Centre	2011/5808	Controlled Action	Post-Approval	In buffer area only
Extension of Taxiway Bravo	2008/4170	Controlled Action	Post-Approval	In buffer area only
Googong Township Urban Development & associated infrastructure Project	2011/5829	Controlled Action	Post-Approval	In buffer area only
Hotel and Carpark Development	2012/6606	Controlled Action	Post-Approval	In buffer area only
Infrastructure Upgrade and Construction at Canberra Airport	2009/4748	Controlled Action	Post-Approval	In buffer area only
Kings Highway Deviation	2010/5501	Controlled Action	Post-Approval	In buffer area only
Monaro Highway - Lanyon Drive Upgrade Package 1C	2020/8768	Controlled Action	Post-Approval	In buffer area only
Mugga Quarry overburden expansion project, ACT	2018/8151	Controlled Action	Post-Approval	In buffer area only
Removal of Trees on National Land	2009/5204	Controlled Action	Post-Approval	In buffer area only
School for Special Purposes at Karabar High School, Queanbeyan, NSW	2019/8418	Controlled Action	Post-Approval	In buffer area only
The Poplars, Jerrabomberra, NSW	2020/8801	Controlled Action	Post-Approval	In buffer area only
Transfer of Defence Land at Majura	2007/3756	Controlled Action	Post-Approval	In buffer area only
Not controlled action				
Benjamin Offices Redevelopment	2001/317	Not Controlled Action	Completed	In buffer area only
Block 622 Redevelopment AFP Driver Training Area	2002/810	Not Controlled Action	Completed	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Block 7, Section 74	2001/210	Not Controlled Action	Completed	In buffer area only
Bomber Command Memorial	2004/1353	Not Controlled Action	Completed	In buffer area only
Bowen Place Crossing	2011/6203	Not Controlled Action	Completed	In buffer area only
Canberra Primary Mains Extension Gas Pipeline Project	2000/15	Not Controlled Action	Completed	In buffer area only
construct addition to Admin Annex	2004/1891	Not Controlled Action	Completed	In buffer area only
Construction of a link road on Marjura Parkway, Pialligo, ACT	2015/7483	Not Controlled Action	Completed	In buffer area only
Construction of a New Office Building	2009/4814	Not Controlled Action	Completed	In buffer area only
Construction of a short haul road	2013/6802	Not Controlled Action	Completed	In buffer area only
construction of new admin bldg	2004/1731	Not Controlled Action	Completed	In buffer area only
Construction of the IKEA Canberra Northern Access Road, ACT	2016/7742	Not Controlled Action	Completed	In buffer area only
Development of Block 8 S48 for commercial purposes	2006/2570	Not Controlled Action	Completed	In buffer area only
Development of residential estate, 47 Mowatt Street	2005/2368	Not Controlled Action	Completed	In feature area
Dunlop 4 West Residential Development	2003/1055	Not Controlled Action	Completed	In buffer area only
Eastern Precinct Development and National Service Memorial	2008/4629	Not Controlled Action	Completed	In buffer area only
East O'Malley Residential Estate	2003/1163	Not Controlled Action	Completed	In buffer area only
establishment of a prison on part Block 6 Section 24 and part Block 12 Section 1	2004/1723	Not Controlled Action	Completed	In buffer area only
Extension to cooling towers at the rear of Old Parliament House	2004/1625	Not Controlled Action	Completed	In buffer area only
Ext of overhead powerline to western end of Googong Water Treatment Plant, NSW	2014/7366	Not Controlled Action	Completed	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Fairbairn Avenue Upgrade, Anzac Parade to Northcott Drive	2003/1257	Not Controlled Action	Completed	In buffer area only
Fairlane Estate Subdivision	2001/205	Not Controlled Action	Completed	In buffer area only
Gallery Development, Stage 2	2006/2829	Not Controlled Action	Completed	In buffer area only
Gungaderra Trunk Sewer Stage 1	2003/1259	Not Controlled Action	Completed	In buffer area only
Gungahlin Drive Extension	2003/1156	Not Controlled Action	Completed	In buffer area only
Horse Park Drive Project	2001/323	Not Controlled Action	Completed	In buffer area only
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed	In feature area
Installation of interceptors on stormwater outlets	2003/998	Not Controlled Action	Completed	In buffer area only
Installation of passive distributed antenna system in the Robert Garran Offices	2005/2363	Not Controlled Action	Completed	In buffer area only
Jerrabomberra Heights Residential Estate	2000/70	Not Controlled Action	Completed	In buffer area only
Jumping Creek Estate Project, Queanbeyan, NSW	2019/8486	Not Controlled Action	Completed	In buffer area only
Kingston Foreshore Development - Harbour Civil Works	2007/3492	Not Controlled Action	Completed	In buffer area only
Kingston Foreshore Development - Reclamation and Filling Lake Burley Griffin	2004/1383	Not Controlled Action	Completed	In buffer area only
Land Divestment, Block 13, Section 9, Barton, ACT (bounded by Blackall Street, B	2005/2453	Not Controlled Action	Completed	In buffer area only
minor alterations to NE corner OPH	2004/1824	Not Controlled Action	Completed	In buffer area only
Mixed Use Redevelopment of 1 Dairy Road, Fyshwick, ACT	2021/9062	Not Controlled Action	Completed	In buffer area only
Monaro Highway - Lanyon Drive Upgrade Package 1B, Hume, ACT	2020/8767	Not Controlled Action	Completed	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Mugga Lane Solar Development	2012/6670	Not Controlled Action	Completed	In buffer area only
National Gallery Upgrade	2001/295	Not Controlled Action	Completed	In buffer area only
Navigational aid facility upgrade	2005/2459	Not Controlled Action	Completed	In buffer area only
North and South Poplars Residential Development	2003/1136	Not Controlled Action	Completed	In feature area
North Watson Residential Estate	2003/1231	Not Controlled Action	Completed	In feature area
Old Cooma Road Realignment and Duplication	2010/5663	Not Controlled Action	Completed	In buffer area only
Redevelopment of Anzac Park East and West	2004/1470	Not Controlled Action	Completed	In buffer area only
Residential subdivision and construction works	2003/1197	Not Controlled Action	Completed	In buffer area only
Revocation of National Land status of Block 588 at Barton Hwy and Gundaroo Drive	2004/1527	Not Controlled Action	Completed	In buffer area only
Sale of Macquarie Hotel, 18 National Circuit	2002/836	Not Controlled Action	Completed	In buffer area only
Sale of part of Blkl3/Sct19 ACT Water Police HQ	2003/1057	Not Controlled Action	Completed	In buffer area only
South Canberra Memorial Park	2019/8595	Not Controlled Action	Completed	In buffer area only
Transfer of Building R9 in Russell ACT to Dept of Defence for demolition	2021/8898	Not Controlled Action	Completed	In buffer area only
Upgrade existing power-lines and installation of a new underground power-line	2010/5594	Not Controlled Action	Completed	In buffer area only
upgrade mechanical services Reps & Senate Press Offices	2005/1933	Not Controlled Action	Completed	In buffer area only
Upgrade of Captains Flat Road between Kings Highway and Wanna Wanna Road	2007/3401	Not Controlled Action	Completed	In buffer area only
Wells Station Drive Extension Stages 1A & 1B	2007/3420	Not Controlled Action	Completed	In buffer area only
Not controlled action (particular manner)				

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action (particular manner)				
ActewAGL - upgrade to 132kv transmission line Theodore to Gilmore, ACT	2012/6443	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Aerial baiting for wild dog control	2006/2713	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Canberra Centenary Trail Project	2012/6645	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Capital Metro - Russell Extension Project, ACT	2015/7576	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Carpark Access Road, Block 12, Section 22, Barton	2010/5548	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Commonwealth Place Forecourt, Stage 2 Works	2005/2007	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Construct Bioscience Lab and assoc works	2005/2143	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Construction and operation of new National Portrait Gallery	2005/2327	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Construction of a four lane dual carriageway road from Monaro Hwy to Federal Hwy, Majura ACT	2009/5057	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Construction of a New Office Building	2009/4871	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
construction of shoulder and taxiway fillet	2001/307	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Construct signalised bridge and underpass & remove trees	2008/4547	Not Controlled Action (Particular	Post-Approval	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action (particular manner)				
		Manner)		
Defence Headquarters, Bungendore to HMAS Harman and Russell Defence Offices fibr	2007/3507	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Duntroon Residential Development	2001/374	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
East Lake Electrical Infrastructure Relocation and Upgrade	2009/5253	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Fyshwick East Industrial Estate, Block 2223, District of Jerrabomberra	2009/4850	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Hume West Industrial Estate Development	2009/4766	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Majura Road Upgrade	2002/825	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Temporary display of bridge sections from HMAS Brisbane	2005/2379	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Referral decision				
Construction of Majura Park Precinct Including Access Road, Warehouses, and Asso	2004/1425	Referral Decision	Completed	In feature area
Construction of two 15m height memorials	2012/6269	Referral Decision	Completed	In buffer area only
Development of Symonston Stage 2	2012/6320	Referral Decision	Completed	In buffer area only
South Jerrabomberra urban development project	2010/5708	Referral Decision	Completed	In buffer area only
Symonston Residential Estate Stage 2, Symonston, ACT	2014/7327	Referral Decision	Completed	In buffer area only

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data is available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on the contents of this report.

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions when time permits.

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded breeding sites; and
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Appendix D – Traffic and Transport Impact Assessment

QUEANBEYAN-PALERANG REGIONAL COUNCIL

Monaro Street Upgrade Traffic and Transport Impact Assessment

MARCH 2025



Question today
Imagine tomorrow
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Monaro Street Upgrade
Traffic and Transport Impact Assessment

Queanbeyan-Palerang Regional Council

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REV	DATE	DETAILS
A	19/12/2024	Detailed Design - Draft Issue
B	21/01/2025	Detailed Design - Draft Issue
C	3/03/2025	Detailed Design – Final Issue

	NAME	DATE	SIGNATURE
Prepared by:	Simon Chia	3/03/2025	
Reviewed by:	Sunny Chen	3/03/2025	
Approved by:	Simon Chia	3/03/2025	

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1 INTRODUCTION

1.1 OVERVIEW OF THE PROPOSAL

1.1.1 THE NEED FOR THE PROPOSAL

Upgrading the main street of Queanbeyan 'Proposal' has been a priority of Council and the community for many years and has been a key feature of several community engagement activities. The project is included in:

- Council's CBD Transformation Strategy (adopted in May 2017)
- 2019 revision of the Queanbeyan CBD Spatial Masterplan
- Queanbeyan Place Plan in 2020.

Currently, the Queanbeyan CBD is not being used to its full potential. Surveys of Queanbeyan business owners and residents indicate that the current state of the area is dissuading residents from using the CBD to its full extent.

This project is required to ensure the full potential of the Queanbeyan CBD is realised. These works will provide greater safety for drivers and pedestrians and support the growing region to ensure residents and local businesses can access the facilities and services they need.

1.1.2 KEY FEATURES OF THE PROPOSAL

The Proposal includes the upgrade of Monaro Street generally between Lowe Street and Collett Street. Key features of the proposal include:

- resurfacing of the existing road pavement
- implementation of a 40km/h speed limit for the section of Monaro Street between Lowe Street and Collett Street, subject to approval by Transport for NSW (TfNSW)
- improved pedestrian and urban design upgrades
- integration of accessibility features such as directional tactile indicators
- upgrades to ancillary infrastructure including additional street and pedestrian lighting, improved communication and security services, improved stormwater drainage (including kerb and channel drainage) and other utility adjustments.

Subject to planning approval, construction is expected to commence in 2025 and take approximately 18 months to complete.

A detailed description of the Proposal is provided in Section 3 of the Review of Environmental Factors (REF).

1.2 THE PROPOSAL

1.2.1 LOCATION OF THE PROPOSAL

The proposed upgrade works are within the Queanbeyan CBD, on a stretch of Monaro Street between Lowe Street and Collett Street and include an existing laneway (Tom Donoghue Walk) leading to Lowe Street Car Park.

Land uses surrounding the subject site are predominantly retail and commercial with various hotels, shopping, and food and drink locations on either side of Monaro Street. Queanbeyan Bus Interchange is located approximately 400 metres northeast of the site.

The site's location within the surrounding regional context is highlighted in Figure 1.1.

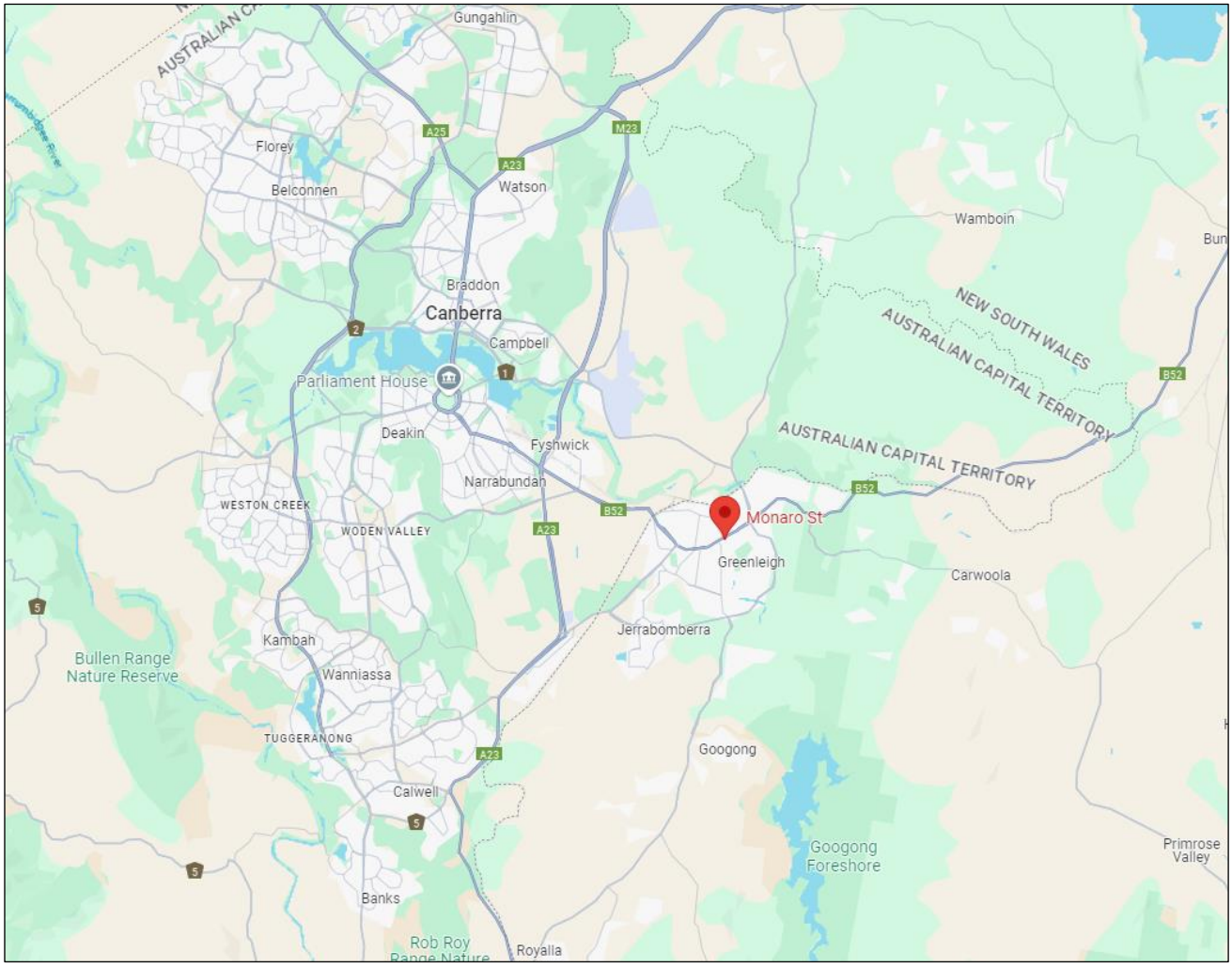


Figure 1.1 Regional context

1.3 ASSESSMENT REQUIREMENTS

This Traffic and Transport Impact Assessment has been prepared to satisfy the requirements for environmental assessment under the NSW *Environmental Planning and Assessment Act, 1979* and *State Environmental Planning Policy (Infrastructure) 2007* (Infrastructure SEPP). The following relevant State legislation, guidelines, policies and industry requirements have been considered in preparing this study:

- *Transport for NSW's Guide to Transport Impact Assessment 2024* – Section 3 of this guideline provides information on Transport Impact Studies.

- *Austroads Guide to Road Design – The Guide to Road Design* is a set of comprehensive Austroads guides developed to capture the contemporary practice of member organisations in road design.
- *Austroads Guide to Traffic Management – The Guide to Traffic Management* captures the contemporary traffic management practice including emerging techniques and technologies, and relevant international experience. For this study, this guide provides valuable guidance and considerations to achieve efficient, safe and economical management of road traffic.
- Technical Directions – Various technical directions published by Transport for NSW, encompassing design guidelines as accepted in New South Wales roads (e.g. safety barriers, design of traffic facilities, traffic signal design, delineation).

1.4 PURPOSE OF THIS REPORT

The purpose of this report is to assess the potential traffic and transport impacts from the construction and operation of the Proposal to support the Review of Environmental Factors (REF) submission. Specifically, this report:

- Describes the existing conditions for all modes of transport in the subject area including general access vehicles, freight, public transport (bus services and point-to-point transport) and active transport (bicycles and pedestrians)
- Describes the existing environment (road function, classification and operation) in the study area that will be affected by the operation of the Proposal
- Assesses the operational and construction impacts of the current Proposal on the surrounding road network
- Recommends mitigation measures to manage identified traffic and transport operational and construction impacts of the Proposal.

1.5 STRUCTURE OF THIS REPORT

The report is structured as follows:

- Section 1 – Project Background: Describes the overview of the Proposal, relevant policies and guidelines, assessment requirements, and the purpose and structure of this report.
- Section 2 – Methodology: describes the study area, data collection, study methodology and performance metrics used to measure the impacts of the Proposal.
- Section 3 – Existing Conditions: Describes the existing condition of the road network, transport services and abutting developments.
- Section 4 – Construction Impact Assessment: Provides a review of the Proposal's construction impacts.
- Section 5 – Operational Impact Assessment: Provides a review of the Proposal's operational impacts.
- Section 6 – Mitigation Measures: Discusses and recommends the available mitigation measures to address any significant operational and construction impacts identified in Section 4.

2 METHODOLOGY

2.1 STUDY AREA

The study area for this Traffic and Transport Impact Assessment is outlined below in Figure 2.1. Figure 2.1 identifies the key roads and intersections considered as part of this assessment. This boundary covers the area influenced by access to and from the Proposal site, the likely impacts of construction vehicles and the ultimate impact of the Proposal in the future.

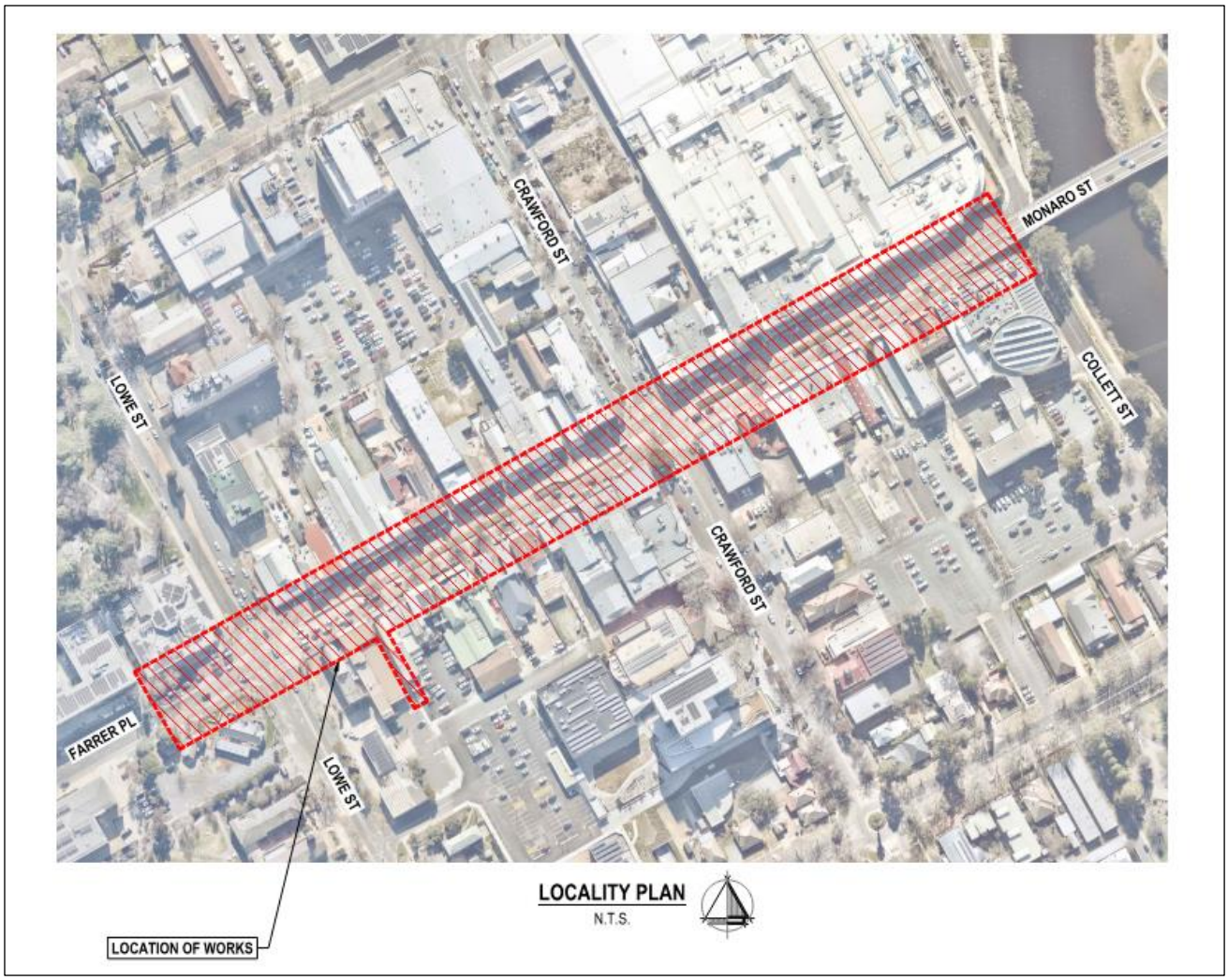


Figure 2.1 Study area

2.2 DOCUMENT REVIEW

Table 2.1 lists the documents which were reviewed as part of this study:

Table 2.1 Background document review

Title	Author	Version	Description
Queanbeyan CBD Transformation and Activation Monaro Street – **Traffic Study**	Stantec	Rev 2.3 (July 2021)	Traffic Study to assist Council with guiding CBD revitalisation projects. This report investigates the existing and future traffic and parking behaviour in Queanbeyan CBD.
Monaro Street Upgrade – **Civil design package**	WSP	Rev T1 (March 2025)	Drawing sets developed to detail the design of the Proposal.
Monaro Street Upgrade – **Concept Design Review and Gap Analysis Report**	WSP	Rev 0 (September 2024)	Summarises review of concept designs to determine if they are still suitable and appropriate to be adopted for the detailed designs.
Monaro Street Upgrade – **Draft Detailed Design Report**	WSP	Rev 0 (October 2024)	Summarises the key design criteria, considerations, and principles of the detailed design. The report also highlights any issues, as deemed relevant to the current scheme proposals.
Monaro Street Upgrade – **Preliminary Construction Traffic Management Plan**	WSP	Rev B (February 2025)	Outlines the strategies proposed to mitigate impacts on the local traffic conditions during construction while providing the appropriate staging to allow for the target completion of works to be reached.

3 EXISTING CONDITIONS

3.1 ROAD NETWORK

The subject site in the context of the adjoining road network is generally illustrated in Figure 3.1.



Figure 3.1 Road network

3.1.1 MONARO STREET

Monaro Street is a two-way State Road managed by TfNSW and runs generally in the east-west direction.

Between Lowe Street and Collett Street, it has a carriageway width of approximately 22.0 metres and consists of two trafficable lanes in each direction, separated by a physical centre median, and provides on-street parallel parking on both sides of the carriageway.

Monaro Street also forms part of an approved 19m B-double route.

A default speed limit of 50 km/h applies along Monaro Street, within the project extent.

Figure 3.2 and Figure 3.3 depict the general conditions along Monaro Street within the project extent.



Figure 3.2 Monaro Street looking east



Figure 3.3 Monaro Street looking west

3.1.2 LOWE STREET

Lowe Street is a two-way road and runs generally in the north-south direction. The section north of Monaro Street is classified as a Local Road whereas the section south of Monaro Street is classified as a Regional Road both managed by the Queanbeyan-Palerang Regional Council (QPRC).

North of Monaro Street, it has a carriageway width of approximately 22 metres and consists of one trafficable lane in each direction, separated by a physical centre median, and provides on-street parallel parking on both sides of the carriageway.

South of Monaro Street, it has a carriageway width of approximately 11 metres and consists of one trafficable lane in each direction, separated by a physical centre median.

A default speed limit of 50 km/h applies along Lowe Street, proximate the project extent.

Figure 3.4 and Figure 3.5 depict general conditions along Lowe Street.



Figure 3.4 Lowe Street north of Monaro Street



Figure 3.5 Lowe Street south of Monaro Street

3.1.3 CRAWFORD STREET

Crawford Street is a two-way Local Road managed by the QPRC and runs generally in the north-south direction.

North of Monaro Street, it has a carriageway width of approximately 13 metres and consists of one trafficable lane in each direction and provides on-street parallel parking on both sides of the carriageway.

South of Monaro Street, it has a carriageway width of approximately 12 metres and consists of one trafficable lane in each direction. Angled parking is provided on both sides of the carriageway.

A section of Crawford Street (between Monaro Street and Morisset Street) forms part of an approved 19m B-double route.

A default speed limit of 50 km/h applies along Crawford Street, in the vicinity of the project extent.

Figure 3.6 and Figure 3.7 depict the general conditions along Crawford Street.



Figure 3.6 Crawford Street north of Monaro Street



Figure 3.7 Crawford Street south of Monaro Street

3.1.4 COLLETT STREET

Collett Street is a two-way Local Road managed by QPRC and runs generally in the north-south direction. It connects to Monaro Street via an on-ramp and off-ramp.

North of Monaro Street, it has a carriageway width of approximately 7 metres and consists of one trafficable lane in each direction and intermittently provides on-street parking on both sides of the carriageway.

South of Monaro Street, it has a carriageway width of approximately 10 metres and consists of one trafficable lane in each direction.

A default speed limit of 50 km/h applies along Collett Street, in the vicinity of the project extent.

Figure 3.8 and Figure 3.9 depict the general conditions along Collett Street.



Figure 3.8 Collett Street north of Monaro Street



Figure 3.9 Collett Street south of Monaro Street

3.1.5 MONARO STREET / LOWE STREET INTERSECTION

The intersection of Monaro Street and Lowe Street operates as a signalised intersection. At this intersection, the Monaro Street carriageway is approximately 22 metres in width, where it provides two traffic lanes in each direction, alongside a dedicated right and left turning lane in each direction. A centre median can be found on both approaches of Monaro Street.

The Lowe street carriageway is approximately 20 metres in width at the intersection, where it also provides one through lane alongside a turning lane for right and left turns on both approaches to the intersection. A centre median can be found on both approaches of Lowe Street.

Signalised pedestrian crossings can be found on all legs of the intersection.

The intersection configuration is presented below in Figure 3.10.

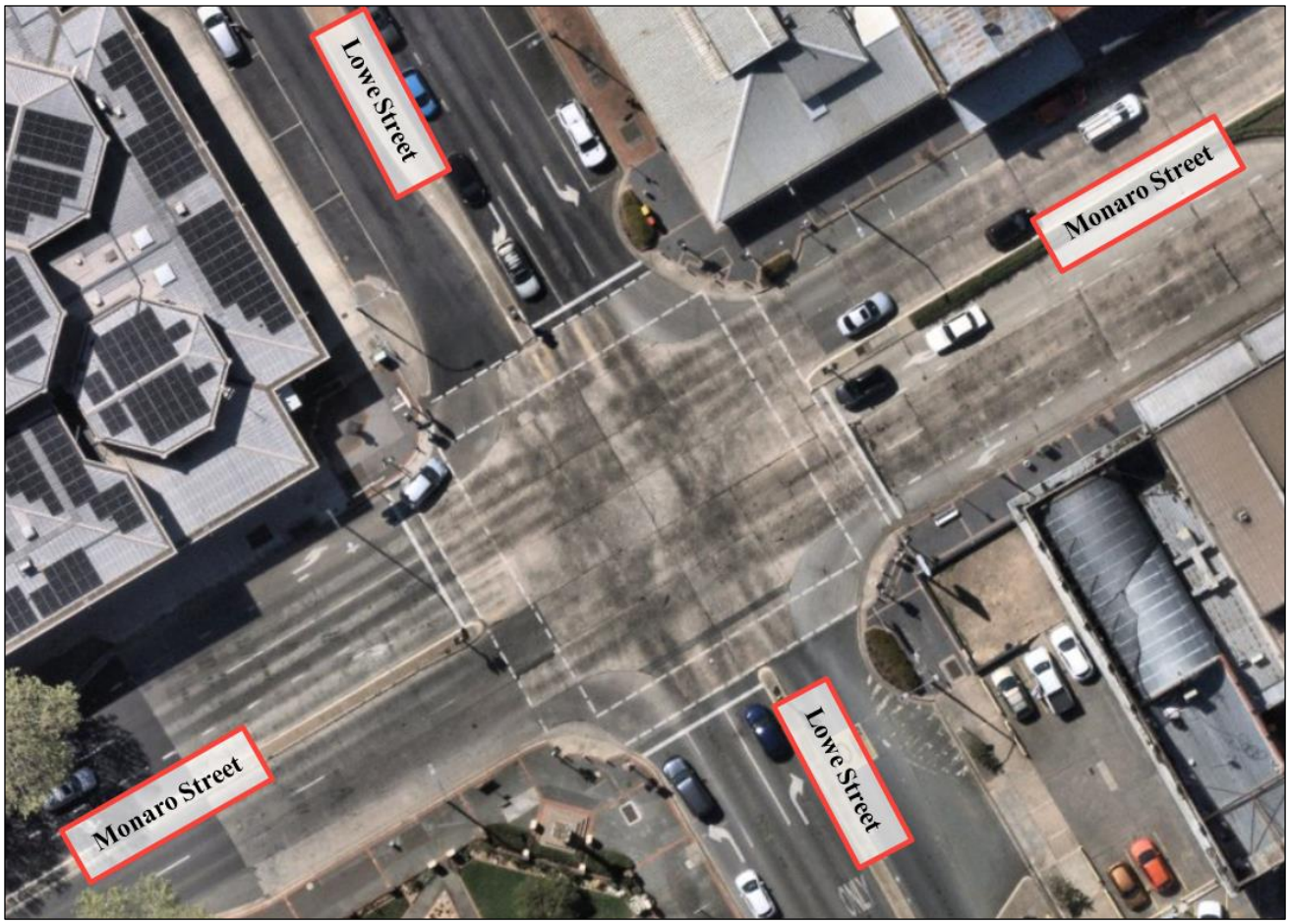


Figure 3.10 Monaro Street and Lowe Street intersection

3.1.6 MONARO STREET / CRAWFORD STREET

The intersection of Monaro Street and Crawford Street operates as a signalised intersection. At this intersection, the Monaro Street carriageway is approximately 22 metres in width, where it provides two traffic lanes in each direction. A dedicated left and right turning lane is provided on the western approach to the intersection, while a dedicated left turn lane is provided on the eastern approach. Centre median separation can be found on both approaches of Monaro Street.

The northbound approach of Crawford Street has a width of approximately 23 metres, with two trafficable lanes including one shared through and left turning lane, and a dedicated right turning lane. This approach also includes kerbside parking on both sides of the road. The southbound approach of Crawford Street has a width of approximately 11.5 metres and consists of a dedicated through lane and short left turning lane. Kerbside parking can be found on the western side of this approach.

Signalised pedestrian crossings can be found on all legs of the intersection.

The intersection configuration is presented below in Figure 3.11.



Figure 3.11 Monaro Steet and Crawford Street intersection

3.2 INTERSECTION OPERATIONS

As per the *Queanbeyan CBD Transformation and Activation Monaro Street – Traffic Study (Stantec, July 2021)*, SIDRA Intersection 8.0 modelling software was previously utilised to assess the key intersections of Monaro Street / Lowe Street / Farrer Place and Monaro Street / Crawford Street. The results for the weekday AM and PM peak hours under existing conditions are summarised in Table 3.1 and Table 3.2 respectively.

Table 3.1 Intersection performance – existing conditions weekday AM peak

Intersection	Volume	DoS	Average Delay (seconds)	LoS	95th percentile queue length (m)
Monaro Street / Lowe Street / Farrer Place	2,540	0.59	38	LoS C	152 – northeast approach
Monaro Street / Crawford Street	2,374	0.53	27	LoS B	155 – northeast approach

Table 3.2 Intersection performance – existing conditions weekday PM peak

Intersection	Volume	DoS	Average Delay (seconds)	LoS	95th percentile queue length (m)
Monaro Street / Lowe Street / Farrer Place	2,869	0.72	40	LoS C	168 – southwest approach
Monaro Street / Crawford Street	2,537	0.56	31	LoS C	157 – southwest approach

The two key signalised intersections are currently performing satisfactorily at LoS B and C across the AM and PM peaks.

3.3 PUBLIC TRANSPORT

Multiple bus routes operate in the vicinity of the project extent, with some operating through a section of Monaro Street between Crawford Street and Collett Street. There are also multiple bus stops nearby along adjacent roads such as Lowe Street, Crawford Street and Morisset Street.

Queanbeyan bus interchange is also located approximately 400 metres from the subject site, which provides access to several bus routes, as well as facilities such as a park and ride, taxi stand and bicycle cages. A summary of the routes that operate in the area is provided in Table 3.3, with Figure 3.12 illustrating the TfNSW bus network within Queanbeyan.

Table 3.3 Bus Routes operating in the vicinity of the project extent

SERVICE	ROUTE	ROUTE DESCRIPTION	NEAREST STOP	DISTANCE[1]	FREQUENCY
Bus	830	Googong to Canberra CBD via Queanbeyan & Karabar	Morisset Street / Queanbeyan Bus Interchange	250m	Peak: 30mins General: 50mins - 1 hour
	831	Karabar to Woden via Queanbeyan & Fyshwick	Morisset Street / Queanbeyan Bus Interchange	250m	Peak: 30mins General: 50mins - 1 hour
	832	Queanbeyan to East Queanbeyan (Loop Service)	Morisset Street / Queanbeyan Bus Interchange	250m	Peak: 1 hour General: 2 hours
	834	Queanbeyan to Brindabela Business Park, Majura Park and Canberra Airport	Morisset Street / Queanbeyan Bus Interchange	250m	Peak: 1 hour General: 2 hours
	835	Tralee to Queanbeyan via South Jerrabomberra & Queanbeyan West (Loop Service)	Morisset Street / Queanbeyan Bus Interchange	250m	Peak: 1 – 1.5 hours General: 2 hours
	836	Jerrambomberra to Queanbeyan (Loop Service)	Morisset Street / Queanbeyan Bus Interchange	250m	Peak: 30 mins - 1 hour General: 2 hours
	838	Queanbeyan to Queanbeyan West via Oaks Estate & Queanbeyan Station (Loop Service)	Morisset Street / Queanbeyan Bus Interchange	250m	Peak: 45 mins – 1 hour General: 2 hours
	844	Bungendore to Queanbeyan	Queanbeyan Bus Interchange	250m	3-6 Hours
	844X	Bungendore to Canberra CBD via Queanbeyan & Russell (Express Service)	Morisset Street / Queanbeyan Bus Interchange	250m	40 mins – 1 Hour

[1]Distanced measured from centre of project extent.

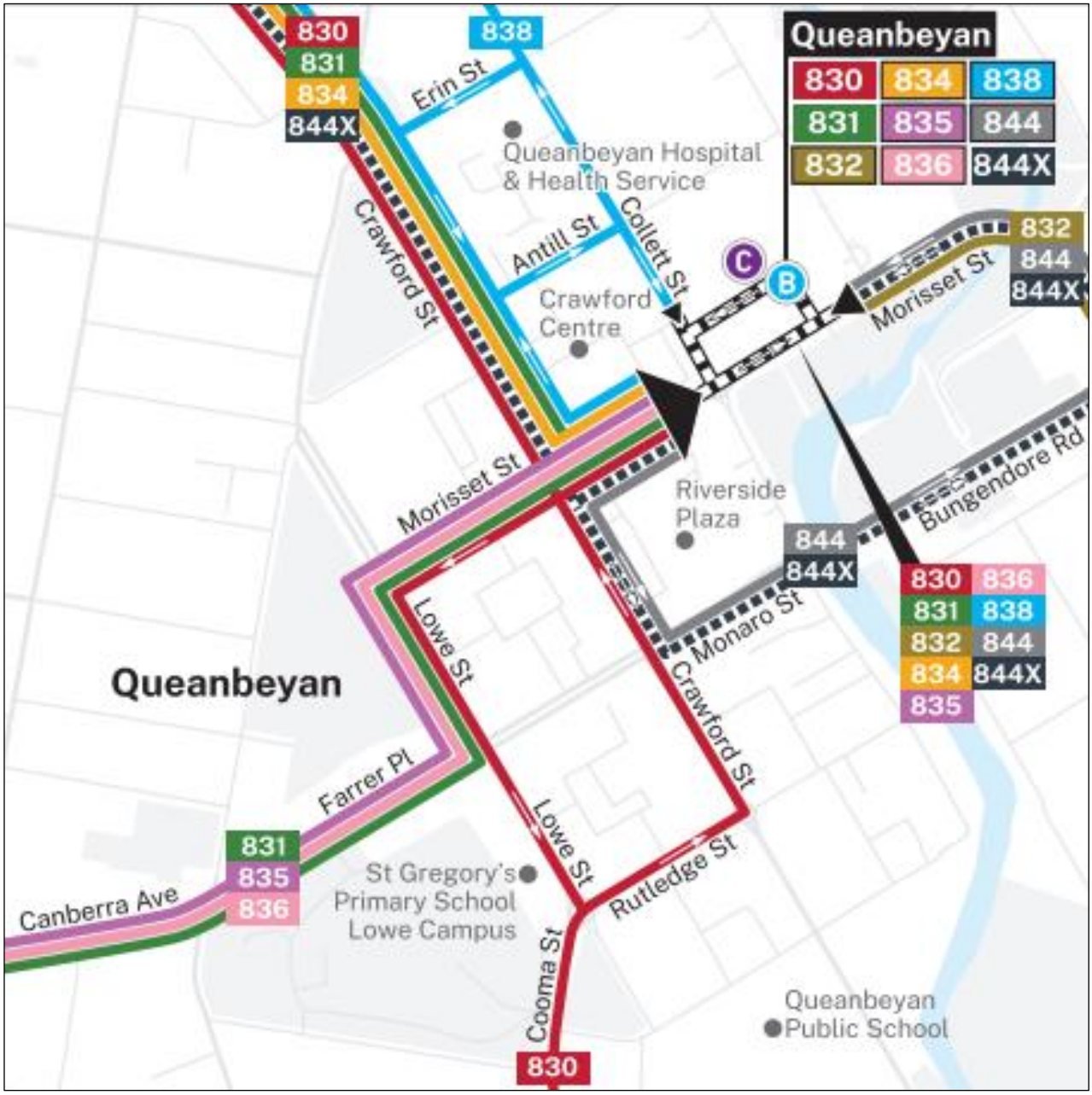


Figure 3.12 TfNSW Network Map – Queanbeyan

3.4 PEDESTRIAN AND BICYCLE PATHS

Along Monaro Street, footpaths are available on both sides of the carriageway providing pedestrians with full access to the variety of uses along Monaro Street. Dedicated signalised pedestrian crossings are provided at both the key intersections of Monaro Street / Lowe Street / Farrer Place and Monaro Street / Crawford Street, with mid-block crossings (non-priority) also provided along Monaro Street within the subject site.

No dedicated bicycle paths are provided within the project extent however, several shared paths can be found nearby. The following figure illustrates the shared paths available to users nearby to the project extent.

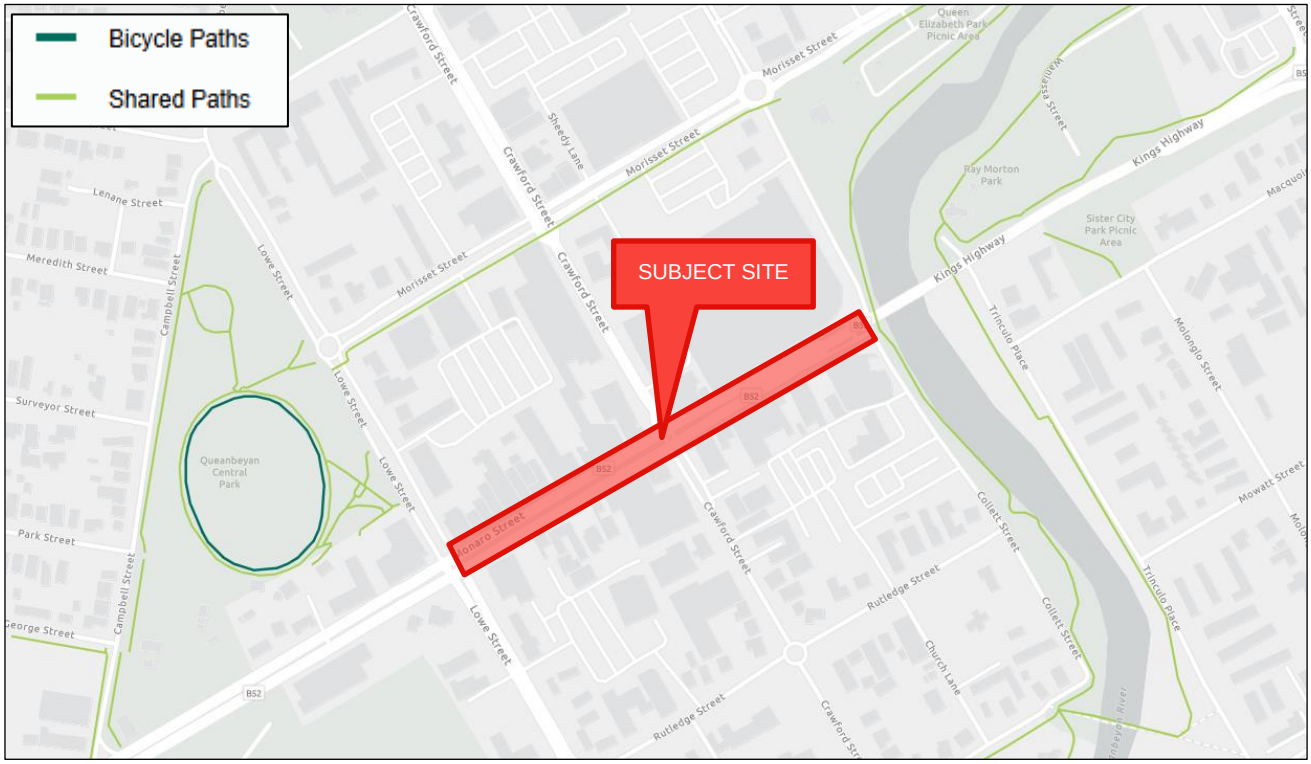


Figure 3.13 Bicycle and shared paths

3.5 CAR PARKING

Existing on-street parking within the project extent comprises of a total of 41 spaces. A summary of the car parking inventory and restrictions is provided in Table 3.4.

Based on a desktop review utilising Google Streetview it can be seen that on-street car parking within the area is well utilised.

Table 3.4 Existing on-street car parking inventory and restrictions

Location	Restriction	Spaces
Monaro St (N)		
	1/2P 8:30am – 6pm Mon-Fri, 8:30am -12:30pm Sat	18
	1/2P 11am-4pm Mon-Fri, 8:30am-12:30pm Sat Loading Zone 8:30am-11am & 4pm-5pm Mon-Fri	3
	Sub Total	21
Monaro St (S)		
	1/2P 8:30am – 6pm Mon-Fri, 8:30am -12pm Sat	18
	1/2P 11am-4pm Mon-Fri, 11am-12:30pm Sat Loading Zone 8:30am-11am & 4pm-5pm Mon-Fri, 8:30am-11pm Sat	2
	Sub Total	20
	Grand Total	**41**

3.6 ROAD SAFETY

A review of the available five-year crash data from 2019 to 2023 revealed that 13 crashes were recorded on Monaro Street between Lowe Street and Collett Street. These included six non-casualty crashes, three minor injuries, and four moderate injuries. Four crashes occurred at mid-block locations, while the remaining nine occurred at intersections. Only one crash involved a pedestrian. Six crashes were rear end collisions, and three out of the 13 crashes occurred during dark or dusk conditions. None of the crashes involved speeding.



Reporting year	Crash Id	Degree of crash	RUM - code	RUM - description	Type of location	Natural lighting	Longitude	Latitude	Number killed	Number injured
2019	1193158	Minor/Other Injury	30	Rear end	Divided road	Daylight	149.233849	-35.353647		1
2019	1213002	Minor/Other Injury	30	Rear end	X-intersection	Darkness	149.232058	-35.354400		1
2020	1248314	Non-casualty (towaway)	30	Rear end	Divided road	Darkness	149.233006	-35.353942		
2021	1253824	Non-casualty (towaway)	71	Off rd left => obj	Divided road	Daylight	149.233062	-35.353915		
2021	1258880	Moderate Injury	34	Lane change right	X-intersection	Dusk	149.232058	-35.354400		1
2021	1262518	Moderate Injury	10	Cross traffic	X-intersection	Daylight	149.232058	-35.354400		3
2021	1278685	Moderate Injury	30	Rear end	X-intersection	Daylight	149.232058	-35.354400		1
2021	1278770	Non-casualty (towaway)	31	Left rear	X-intersection	Daylight	149.234424	-35.353367		
2021	1280258	Non-casualty (towaway)	71	Off rd left => obj	X-intersection	Daylight	149.232058	-35.354400		
2022	1291603	Non-casualty (towaway)	30	Rear end	X-intersection	Daylight	149.232058	-35.354400		
2022	1292827	Minor/Other Injury	0	Ped nearside	T-junction	Daylight	149.236323	-35.352393		1
2023	1327749	Non-casualty (towaway)	30	Rear end	Divided road	Daylight	149.232751	-35.354181		
2023	1340894	Moderate Injury	10	Cross traffic	X-intersection	Daylight	149.232058	-35.354400		1

Figure 3.14 Crash data summary 2019 - 2023

Opportunities should be explored to improve conditions along Monaro Street to enhance road safety and addressed separate to this Proposal.

4 CONSTRUCTION IMPACT ASSESSMENT

4.1 CONSTRUCTION STAGING

Construction would occur during both standard working hours and night time (out of hours) periods with a contraflow arrangement (closing one lane at a time) along the relevant section of Monaro Street for the duration of the proposed works.

An indicative staging plan for the proposal has been identified, splitting the construction of the proposal into multiple smaller stages, to allow for Monaro Street to operate as close to existing conditions as possible while facilitating construction. The current staging plan provides for an arrangement that generally allows a majority of the northern section of the carriageway to be complete first, and then the southern carriageway is complete afterwards. Following this, intersection and tie-in works would be completed.

The final staging for the proposal would be determined following engagement of the nominated construction contractor, however, the current indicative staging is summarised below:

Northern Carriageway:

- **Stage 1a:** Completion of the section of Monaro Street west of Lowe Street. Eastbound traffic is to be moved to the southern carriageway adjacent to this section, where they can return to existing conditions east of Lowe Street.
- **Stage 1b:** Completion of the carriageway between Lowe Street and Crawford Street. Traffic is to be switched prior to the intersection at Lowe Street, where it will operate in the southern carriageway before returning to existing conditions east of Crawford Street.
- **Stage 1c:** Completion of the carriageway from Crawford Street to the Monaro Street Bridge. Eastbound traffic will be switched into the southern carriageway, before it is switched back into the existing northern lanes prior to the bridge to allow for safe traffic conditions.

Southern Carriageway:

- **Stage 2a:** Completion of the section of Monaro Street west of Lowe Street. Westbound traffic is to be moved to new northern carriageway adjacent to this section prior to the Lowe Street intersection and return to existing conditions west of the construction zone.
- **Stage 2b:** Completion of the carriageway between Lowe Street and Crawford Street. Traffic is to be switched prior to the intersection at Crawford Street, where it will operate in the new northern carriageway before returning to existing conditions west of Lowe Street.
- **Stage 2c:** Completion of the carriageway from Crawford Street to the Monaro Street Bridge. Westbound traffic is to operate as per existing across the bridge and complete the switch into the new northern carriageway on the exit from the bridge.

Intersection and Slip Lane Works – Northern Carriageway:

- **Stage 3a:** The Lowe Street intersection is to undergo works on the northern leg of Lowe Street and to tie into the new northern carriageway.
- **Stage 3b:** The Crawford Street then undergoes construction on its northern leg, and to tie into the new northern carriageway.
- **Stage 3c:** The slip lane connection to Collett Street will undergo construction to tie into the new northern carriageway.

Intersection and Slip Lane Works – Southern Carriageway:

- **Stage 4a:** The Lowe Street intersection is to undergo works on the southern leg of Lowe Street and to tie into the new southern carriageway.
- **Stage 4b:** Crawford Street then undergoes construction on its southern leg, and to tie into the new southern carriageway.
- **Stage 4c:** The slip lane connection from Collett Street will undergo construction to tie into the new southern carriageway.

4.2 SURROUNDING TRAFFIC

To accommodate the existing vehicle movements that currently use Monaro Street during construction, an indicative staging arrangement (including the use of reduced land and contra-flow arrangements) has been prepared such that vehicle movements in both directions have been retained, although at a reduced capacity. It is likely that detour routes would be necessary when an intersection is closed for works, as in Stages 3 and 4.

Monaro Street is also listed under the National Heavy Vehicle Register (NHVR) as an approved B-double route, with 25 metre and 26 metre B-doubles expected to pass through Monaro Street. Additionally, 19 metre B-doubles are also approved to undertake a left turning manoeuvre from Crawford Street onto Monaro Street. A detailed construction traffic management plan (CTMP) would be developed as part of the project which would identify how access would be maintained for these vehicles (or identify a viable temporary detour).

4.3 ROAD CLOSURES AND DIVERSIONS

Temporary road closures and subsequent diversions would likely be required as part of the intersection works and for sections of Monaro Street which would be required to be closed to allow construction to occur.

Stages 3 and 4 of the indicative staging arrangement would involve partial closures of the Lowe Street or Crawford Street intersections, as well as the slip lane to Collett Street, with vehicles needing to make a detour to avoid the closure. Only one of the three connecting streets within the project extent (Lowe Street, Crawford Street and Collett Street) will be closed at a time, and therefore vehicles wishing to use these streets would need to use an adjacent street for access through or to Monaro Street.

Through traffic in a single direction along Monaro Street would also be impacted, with traffic management needing to be provided well in advance that there will be restricted conditions through Monaro Street within the project extent. Vehicles would likely be able to divert to Morisset Street or Rutledge Street and connect back to Monaro Street in most circumstances. Contra-flow arrangements along Monaro Street would also likely be put in place for each stage of the construction works.

It is noted that the closure of each section of Monaro Street would only be temporary.

4.4 PARKING

Monaro Street contains kerbside parking on both sides of the carriageway and as such there would be significant parking impacts during construction. Based on the staging plan, parking may not be available along each closed section of Monaro Street during each stage of construction, on either one side or both sides of the road, however several alternative options are considered to be available in the vicinity of the project site that would be able to accommodate the reduction in any one section of Monaro Street (including 9G Morisset Street Parking and Rutledge Street Car Park). These carparks are accessible off nearby streets and provide parking only a short walk from the various properties and businesses along Monaro Street.

4.5 PEDESTRIAN AND CYCLISTS

It is expected that during construction, pedestrian pathways on both sides of the carriageway need to remain open to provide access to the properties and businesses on Monaro Street .

Where necessary during the construction period, traffic management controllers will be available to assist safe pedestrian/cyclist crossing movements.

If required, nightworks may be utilised to allow works to occur on pedestrian paths, such that the impacts to pedestrian traffic in the area is minimised.

4.6 PUBLIC TRANSPORT

A number of bus routes operate in the section of Monaro Street between Crawford Street and Collett Street, with potential impacts on the operation of such routes to occur when a road closure is necessary. Several bus routes also operate through the intersections of Monaro Street and Crawford Street, as well as Monaro Street and Lowe Street.

It is likely that an alternative temporary route would be negotiated with the relevant bus operator(s) for buses affected by through travel along Monaro Street, whilst retaining as many bus stops open as possible throughout construction. As most buses are going to or coming from the Queanbeyan Bus Interchange, buses may be able to utilise Morisset Street to provide a connection back to Monaro Street where needed (subject to consultation with relevant bus operator(s)).

4.7 ADJACENT PROPERTIES / BUSINESSES

The staging associated with the construction works along Monaro Street may have temporary impacts on the operation of adjacent properties and businesses. Reduced access may occur to some businesses, with impacts to loading and parking arrangements, as well as pedestrian impacts (noting pedestrian access to all properties would be maintained throughout construction, potentially through temporarily reduced pedestrian footpath widths). Kerbside parking and loading may not be available temporarily during the construction program (depending on the stage of construction), with loading needing to be undertaken under traffic management or elsewhere where possible.

5 OPERATIONAL IMPACT ASSESSMENT

5.1 ROAD NETWORK OPERATIONAL IMPACTS

5.1.1 TRAFFIC IMPACTS

The current lane configuration and intersection layouts are not proposed to change with the development of the Proposal therefore traffic operations are expected to be as per existing conditions.

5.1.2 VEHICLE ACCESS IMPACTS

The current vehicle access arrangements are not proposed to change with the development of the Proposal therefore access is expected to be as per existing conditions.

5.1.3 PUBLIC TRANSPORT IMPACTS

The current bus operations and access arrangements are not proposed to change with the development of the Proposal. In addition, implementation of the Proposal is expected to have no impact on operational traffic (delays).

5.1.4 PARKING IMPACTS

The current on-street car parking arrangements are not proposed to change with the development of the Proposal therefore parking is expected to be as per existing conditions.

5.1.5 PEDESTRIAN NETWORK IMPACTS

The Proposal would improve pedestrian amenity and accessibility by reducing travel speeds (subject to TfNSW approval) and improving mid-block links.

5.1.6 BICYCLE NETWORK IMPACTS

There is currently no formal cycling facility along Monaro Street (within the project extent). WSP understands that as per the *Queanbeyan CBD Spatial Master Plan* and *Queanbeyan Bicycle and Pedestrian Facilities Plan* it is intended to keep cyclists separate from Monaro Street which means there is no expectation to specifically cater for cyclists on Monaro Steet in the form of dedicated bicycle lanes etc. noting there are parallel routes available on Morisset Street and Rutledge Street.

The Proposal would not change cyclist amenity or accessibility along Monaro Street (within the project extent). In addition, the implementation of the Proposal is expected to have no impact on operational traffic (delays) for cyclists travelling along Monaro Street.

5.1.7 PROPERTY ACCESS IMPACTS

No existing property accesses are expected to be compromised during the operation of the Proposal.

5.1.8 ROAD SAFETY IMPACTS

It is envisaged the Proposal would not worsen the existing road safety issues on the road network, rather, the proposed reduced speed limit of 40 km/h (subject to TfNSW approval) and improved pedestrian amenities would mitigate some of the existing road safety risks. Notwithstanding, the existing crash patterns as discussed in Section 3.6 should be investigated appropriately and addressed separately to this Proposal.

6 MITIGATION MEASURES

The following mitigation measures are recommended to address and reduce the level of impact to the network surrounding the Proposal:

- There are no anticipated impacts to traffic based on development of the Proposal given traffic operations, access arrangements and parking (within the project extent) are expected to be as per existing conditions.
- Traffic performance impacts and mitigation measures during the construction stage are to be addressed within a Preliminary Construction Traffic Management Plan to be provided along with the Preliminary Construction Staging Designs. A detailed Construction Traffic Management Plan is to be prepared by the Contractor once the construction methodology and staging has been finalised.
- Existing crash patterns along Monaro Street (within the project extent) should be investigated appropriately and addressed separate to this Proposal. This would typically fall under TfNSW and/or Council delegation.

Appendix E – Noise and vibration impact assessment (NVIA)

Queanbeyan-Palerang Regional Council

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Monaro Street Upgrade

Noise and Vibration Impact Assessment



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Monaro Street Upgrade
Noise and Vibration Impact Assessment

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Rev	Date	Details
0	28/03/2025	Draft
1	03/04/2025	Issue

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Approved by:	J Longkwang	03/04/2025	

Front page Image source: https://www.qprc.nsw.gov.au/Major-Works-Projects/Monaro-Street-Refresh 2025

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We recognise Aboriginal and Torres Strait Islander Peoples as the first scientists and engineers and pay our respects to Elders past and present.

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1 Introduction

1.1 Proposal identification

Quenbeyan-Palerang Regional Council (QPRC) is proposing to upgrade Monaro Street, Queanbeyan (the proposal), generally between Lowe Street and Collett Street. Key features of the proposal include:

- road realignment/configuration including minor land and kerb reconfiguration
- resurfacing of the existing road pavement
- implementation of a 40 kilometres per hour speed limit for the section of Monaro Street between Lowe Street and Collett Street (subject to approval by Transport for NSW)
- improved pedestrian and urban design upgrades
- integration of accessibility features such as directional tactile indicators
- upgrades to ancillary infrastructure including additional street and pedestrian lighting, improved communication and security services, improved stormwater drainage (including kerb and channel drainage) and other utility adjustments.

This Noise and Vibration Impact Assessment (NVIA) supports the environmental assessment for the proposal. The proposal is subject to assessment by a Minor Works Review of Environmental Factors (MWREF) under Division 5.1 of *Environmental Planning and Assessment Act 1979* (EP&A Act).

Appendix B shows the proposed Monaro Street upgrade and indicates the associated proposal area.

1.2 Construction of the proposal

- Construction activities of the proposal include:
- establishment of compound(s) and stockpile site(s)
- adjust existing utilities as required
- implement traffic control
- install environmental controls, including erosion and sediment controls
- vegetation removal, where required
- mill and reconstruct of the existing road pavement (and realignment where applicable), including gravel and asphalt layers
- upgrades to utilities (lighting, electrical, communications, and security)
- mark road lines
- rehabilitate the site including planting of new landscaping and installation of new street furniture.

The proposal is anticipated to be construction in a single construction phase commencing in mid-2025 (subject to planning approval). The proposal is expected to be completed over a period of around 18 months.

1.3 Purpose of this report

The purpose of this report is to assess the potential noise and vibration impacts from the construction and operation of the proposal to support the MWREF. Specifically, this report has the following objectives:

- to assess the existing noise environment, including the undertaking of noise monitoring to measure existing road traffic and background noise levels
- to determine assessment objectives in accordance with the relevant policies and guidelines
- to assess construction noise and vibration impacts for the construction phase of the proposal
- to assess operational noise and vibration impacts of the proposal
- to provide recommendations for mitigation measures in accordance with the relevant guidelines in cases where construction is predicted to exceed the criteria for noise or vibration
- to provide recommendations for operational mitigation measures in accordance with the relevant guidelines in cases where road traffic noise is predicted to exceed the criteria.

1.4 Report outline

This report contains the following information and is structured as outlined below:

- **Section 1** provides an overview of the proposal and assessment purpose
- **Section 2** details the legislation policies and statutory requirements that apply to this assessment
- **Section 3** describes the existing conditions within the study area
- **Section 4** describes the assessment methodology for this assessment and provides a detailed description of the potential environmental noise impacts associated with the construction and operation of the proposal
- **Section 5** describes the assessment methodology for this assessment and provides a detailed description of the potential environmental vibration impacts associated with the construction and operation of the proposal
- **Section 6** details how the proposal would be managed to reduce potential environmental impacts throughout detailed design, construction, and operation
- **Section 7** provides a summary and conclusion
- **Section 9** provides references of information used throughout the assessment.

2 Noise and vibration goals

2.1 Construction noise management levels

2.1.1 Interim Construction Noise Guideline

Guidance for assessing construction noise impacts is provided in the *Interim Construction Noise Guideline* (DECC, 2009) (NSW ICNG). The guideline provides a methodology for the assessment of potential noise impacts during construction activities. This includes potential ground borne, road traffic and sleep disturbance noise impacts.

2.1.1.1 Airborne construction noise

The level of noise impact and the requirement for mitigation measures is generally determined by the timing and duration of the noise emissions and the perceived impact of the noise above existing background noise levels.

Section 4 of the guideline outlines the quantitative assessment method used for major infrastructure works, which establishes noise management levels and assessment requirements for proposed construction activities over three weeks' duration.

The noise management level for potentially affected residential properties, as taken from Section 4.2 of the guideline, is detailed in Table 2.1.

Table 2.1 Noise at residences using quantitative assessment (Source: DECC, 2019)

Time of day	Management level $L_{Aeq\ (15\ min)}$[1,2]	How to apply
Recommended standard hours: Monday to Friday 7 am to 6 pm Saturday 8 am to 1 pm No work on Sundays or public holidays	Noise affected Rating Background Level (RBL)[3] + 10 dB	The noise affected level represents the point above which there may be some community reaction to noise. Where the predicted or measured $L_{Aeq\ (15\ min)}$ is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to meet the noise affected level. The proponent should also inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.
	Highly noise affected 75 dB(A)	The highly noise affected level represents the point above which there may be strong community reaction to noise. Where noise is above this level, the relevant authority (consent, determining or regulatory) may require respite periods by restricting the hours that the very noisy activities can occur, taking into account times identified by the community when they are less sensitive to noise (such as before and after school for works near schools, or mid-morning or mid-afternoon for works near residences) if the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.

Time of day	Management level $L_{Aeq\ (15\ min)}$[1,2]	How to apply
Outside recommended standard hours	Noise affected RBL[3] + 5 dB	A strong justification would typically be required for works outside the recommended standard hours. The proponent should apply all feasible and reasonable work practices to meet the noise affected level. Where all feasible and reasonable practices have been applied and noise is more than 5 dB above the noise affected level, the proponent should negotiate with the community.

(1) For residential receivers – Noise levels apply at the property boundary that is most exposed to construction noise, and at a height of 1.5 metres above ground level. If the property boundary is more than 30 metres from the residence, the location for measuring or predicting noise levels is at the most noise-affected point within 30 metres of the residence.

(2) Noise levels may be higher at upper floors of the noise affected residence.

(3) Defined by the NSW EPA as the median value of the (lower) tenth percentile of L_{90} ambient background noise levels for day, evening or night periods, measured over a number of days during the monitoring period

Other sensitive use receivers – internal noise levels are to be assessed at the centre of the occupied room. External noise levels are to be assessed at the most affected point within 50 m of the area boundary.

A strong justification would typically be required for works outside the recommended standard hours (see Table 2.1). The proponent should apply all feasible and reasonable work practices to meet the noise affected level. The definition of feasible and reasonable work practices is outline in Section 1.4 of the NSW ICNG, with the following excerpts providing a brief description:

> *"A work practice or abatement measure is feasible if it is capable of being put into practice or of being engineered and is practical to build given project constraints such as safety and maintenance requirements."*
>
> *"Selecting reasonable measures from those that are feasible involves making a judgement to determine whether the overall noise benefits outweigh the overall adverse social, economic and environmental effects, including the cost of the measure."*

A number of factors may be considered in selecting reasonable measures, including the level of impact, the number of people affected, and the order of treatments applied to previous, similar projects. Where all feasible and reasonable practices have been applied and noise remains more than 5 dBA above the noise affected level, the proponent should negotiate with the community on suitable mitigation measures. For guidance on negotiating agreements see Section 7.2.2 of the NSW ICNG.

2.1.1.2 Sleep disturbance

Construction activity during night periods (10:00 pm–7:00 am) has the potential to cause sleep disturbance in nearby residences. Where construction works are planned to extend over more than two consecutive nights, the ICNG recommends that an assessment of sleep disturbance impacts should be completed. The ICNG makes reference to the EPA's *Environment Criteria for Road Traffic Noise* (ECRTN), now superseded by the RNP, for assessment of sleep disturbance. Sleep disturbance is considered to be both awakenings and disturbance to sleep stages.

The guidance provided in the RNP for assessing the potential for sleep disturbance recommends that to minimise the risk of sleep disturbance during the night-time period, the $L_{Aeq(15\ min)}$ noise level outside a bedroom window should not exceed the prevailing Rating Background Level (RBL) plus 15 decibels (dB). Similarly, to minimise the risk of sleep awakenings during the night-time period, the L_{Amax} outside a bedroom window should not exceed 65 dB(A).

If this sleep disturbance screening criterion is found to be exceeded, a more detailed assessment and response is required at the detailed design stage that should include the extent that the maximum noise level exceeds the background noise level and the number of times this is likely to happen during the night-time period.

2.1.1.3 Specific construction noise management levels (NMLs) – Residential receivers

In consideration of these guidelines, the noise management levels (NMLs) for residential receivers are presented in Table 2.2. The NMLs are derived from the measured existing background noise levels (refer Section 3.2.4). For the purposes of construction noise assessment, hotels have been classified as residential receivers due to the potential for night-time noise impacts.

Table 2.2 Construction noise management levels – Residential receivers

Noise management level, dBA			Sleep disturbance, dBA L_{Aeq} (RBL + 15 dBA)	Sleep awakening, dBA L_{Amax} (65 dBA)
Standard hours (RBL + 10 dBA)	Outside standard hours (RBL + 5 dBA)			
Day	OOHW 1	OOHW 2	Night	Night
61	54	40	40	52

2.1.1.4 Specific construction NMLs – Non-residential receivers

A number of non-residential land uses have been identified in the study area. These include other sensitive land uses such as educational institutes, place of worship, medical facilities, outdoor recreational areas and commercial properties. The ICNG also provides guidance for these types of receivers. Noise management levels recommended in the ICNG for non-residential receivers have been reproduced in Table 2.3. No separate NMLs for out-of-hours construction works are provided for non-residential sensitive receivers as the NMLs apply at any time the property is in use.

For certain receiver types, criteria presented in Table 2.3 are specified as an internal noise level. As the noise model predicts external noise levels, it has been conservatively assumed that all schools and places of worship have openable windows and external noise levels are 10 dB higher than the corresponding internal level, which is representative of windows being partially open to provide ventilation. Short term medical facilities such as day surgeries have been classified as commercial. No long-term medical facilities such as hospitals have been identified. Hotels have been considered as residential premises for the assessment of construction noise. Child Care centres have been considered as educational facilities for the construction noise assessment.

Table 2.3 Construction noise management levels – Non-residential receivers

Non-residential land use	Noise Management Level $L_{Aeq(15minute)}$ (when in use) dBA
Classrooms at schools, child care centres and other education institutions	45 (Internal noise level)
Places of Worship	45 (Internal noise level)
Hospital wards and operating theatres	45 (Internal noise level)
Active recreation areas	65 (External noise level)
Passive recreation areas	60 (External noise level)
Commercial (offices, retail outlets and small commercial premises)	70 (External noise level)
Industrial	75 (External noise level)
Hotels and places of temporary accommodation	As per residential NMLs

2.1.1.5 Construction road traffic noise (including traffic detours)

The proposal requires vehicle movements to facilitate the delivery and removal of materials to site, as well as the delivery of equipment and construction staff.

As the RNP provides guidance with relation to operational noise impacts, and noise from construction traffic is non-permanent, further guidance has been taken from the CNVG (RMS, 2016).

The CNVG states that 'an initial screening test should first be applied by evaluating whether noise levels would increase by more than 2 dBA due to construction traffic or a temporary reroute due to a road closure. Where increases are 2 dBA or less then no further assessment is required'. Where road traffic noise levels are anticipated to increase by more than 2 dB, the following noise assessment criteria would be considered.

Table 2.4 Road Noise Policy assessment criteria

Road category	Type of project/land use	Traffic noise assessment criteria	
		Day (7 am to 10 pm)	Night (10 pm to 7 am)
Collector/sub-arterial/ arterial/freeway	Existing residences affected by additional traffic on existing freeways/arterial/sub-arterial roads generated by land use developments	$L_{eq,15hr}$ 60 dBA	$L_{eq,9hr}$ 55 dBA
Local roads	Existing residences affected by noise from new local road corridors	55 dB(A) $L_{Aeq\ (1hour)}$ (external)	50 dB(A) $L_{Aeq\ (1hour)}$ (external)

2.1.2 TfNSW Construction Noise and Vibration Guideline (Roads)

The Construction Noise and Vibration Guideline – Road (CNVG-R) (TfNSW, 2023) provides a framework for the assessment of noise during the construction phase of the proposal.

The guideline provides recommended noise and vibration assessment protocols and management measures, including the management of Outside of Standard Hours Work (OOHW) and providing separation distances between vibration intensive plant and sensitive receivers for minimising the risk of cosmetic damage.

This document must be complied with during construction works, unless otherwise approved by Transport or under the environmental licence as relevant.

Further to the standard working hours defined in the ICNG, the CNVG provides further breakdown of out of hours work for the purposes of identifying appropriate noise and vibration mitigation. These are defined as follows:

Table 2.5 CNVG Out of Hours work definitions

Period	Definition
Standard hours	Monday to Friday (7am to 6pm), Saturday (8am to 1pm)
OOHW Period 1	Monday to Friday (6pm to 10pm), Saturday (7am to 8am and 1pm to 10pm), Sunday / public holidays (8am – 6pm)
OOHW Period 2	Monday to Friday (10pm to 7am), Saturday (10pm to 8am), Sunday / public holiday (6pm to 7am)

2.2 Construction vibration limits

Vibration for activities associated with the proposal could potentially impact on the amenity of the occupants of dwellings or buildings located close to the site. Generally, vibration impact can be summarized into two categories:

- effect on human comfort

- structural or cosmetic damage to buildings.

2.2.1 Human comfort vibration criteria

Human comfort vibration criteria have been determined including consideration of *Assessing Vibration: A Technical Guideline* (AVaTG) (Department of Environment and Conservation, 2006) and British Standard (BS) 6472 – 1992, *Guide to Evaluation of Human Exposure to Vibration in Buildings* (1 Hz to 80 Hz) which is recognised as the preferred standard for assessing 'human comfort' in relation to potential vibration impacts.

The AVaTG (DEC, 2006) identifies three different forms of vibration associated with construction activities:

- Continuous: uninterrupted vibration occurring over a defined period
- Impulsive: short-term (typically less than two seconds) bursts of vibration which occurs up to three times over an assessment period
- Intermittent: interrupted periods of continuous or repeated impulsive vibration, or continuous vibration that varies significantly in magnitude.

Vibration from construction works tends to be intermittent in nature. The AVaTG provides criteria for intermittent vibration based on the Vibration Dose Value (VDV). To assess the potential impacts to human comfort from vibration the VDV metric is adopted. The VDV provides a cumulative measure of the vibration levels associated with the construction works over a defined time period, typically the daytime and night-time periods. The VDV accumulates vibration energy over the daytime and night-time assessment periods and is dependent on the level of vibration as well as the duration.

The VDV criteria for sensitive receivers in Table 2.6 were adopted from the AVaTG for sources of intermittent vibration, such as construction works. Where all feasible and reasonable measures have been applied to control vibration, the maximum values may be used if they can be justified.

Table 2.6 Preferred and maximum vibration levels for human comfort

Location	Assessment period[1]	Vibration dose value (m/s$^{1.75}$)	
		Preferred values	Maximum values
Residences	Daytime	0.2	0.4
	Night-time	0.13	0.26
Offices, schools, educational institutions, and places of worship	Anytime	0.4	0.8
Critical areas[2]	Anytime	0.1	0.2

(1) Daytime is 7 am to 10 pm and night-time is 10 pm to 7 am

(2) Examples include hospital operating theatres and precision laboratories where sensitive operations are occurring.

The AVaTG also specifies limits for continuous and impulsive vibration. These limits are expressed in acceleration (m/s^2) and peak particle velocity (mm/s) as presented in Appendix C of the AVaTG and reproduced in Table 2.7.

Table 2.7 Preferred and maximum values for continuous and impulsive vibration

Location	Assessment period[1]	RMS[1] acceleration m/s^2			
		Preferred values		Maximum values	
		Z-axis[2]	X and Y axes[2]	Z-axis[2]	X and Y axes[2]
Continuous vibration					

Location	Assessment period[1]	RMS[1] acceleration m/s[2]			
		Preferred values		Maximum values	
		Z-axis[2]	X and Y axes[2]	Z-axis[2]	X and Y axes[2]
Vibration sensitive working areas	Day or night-time	0.0050	0.0036	0.010	0.0072
Residences	Daytime	0.010	0.0071	0.020	0.014
	Night-time	0.007	0.005	0.014	0.010
Offices, schools, educational institutions, and places of worship	Day or night-time	0.020	0.014	0.040	0.028
Workshops	Day or night-time	0.04	0.029	0.080	0.058
Impulsive vibration					
Vibration sensitive working areas	Day or night-time	0.0050	0.0036	0.010	0.0072
Residences	Daytime	0.3	0.21	0.60	0.42
	Night-time	0.10	0.071	0.20	0.14
Offices, schools, educational institutions, and places of worship	Day or night-time	0.64	0.46	1.28	0.92
Workshops	Day or night-time	0.64	0.46	1.28	0.92

(1) RMS – Root Mean Squared

(2) X and Y axis – horizontal (parallel to ground), Z axis – vertical

2.2.2 Structural building damage vibration criteria

For most receivers, the human comfort vibration criteria are the most stringent and it is generally not necessary to set separate criteria for vibration effects on typical building contents. Exceptions to this can occur when vibration sensitive equipment, such as electron microscopes and microelectronics manufacturing equipment, are located in buildings near the construction works. Buildings with vibration sensitive equipment have not been identified within the study area.

If vibration from construction works is sufficiently high it can cause damage to structural elements of affected buildings such as cracks or loosening of drywall surfaces, cracks in supporting columns and loosening of joints. Structural damage vibration limits are contained in British Standard (BS) 7385 and German Standard DIN 4150.

2.2.2.1 Cosmetic damage (British Standard BS 7385-2)

The BS 7385 is used as a guide to assess the likelihood of building damage from ground vibration such as that caused by piling, compaction, construction equipment and road and rail traffic. The standard recommends levels at which 'cosmetic', 'minor' and 'major' categories of damage might occur based on the type of structure affected, using the peak particle velocity (PPV) parameter.

A summary of the limits is provided in Table 2.8. These peak vibration limits are set so that the risk of cosmetic damage is minimal. They have been set at the lowest level above which damage has been credibly demonstrated. The limits also assume that the equipment causing the vibration is only used intermittently.

Table 2.8 BS 7385-2 Guideline vibration limits for cosmetic damage

Group	Type of structure	Peak component particle velocity, mm/s[1]		
		4–15 Hz	15–40 Hz	40 Hz and above
1	Reinforced or framed structures Industrial or heavy commercial buildings	50		
2	Un-reinforced or light framed structures Residential or light commercial buildings	15 – 20	20 – 50	50

(1) Values referred to are at the base of the building, on the side of the building facing the source of vibration (where feasible)

(2) At frequencies below 4 Hz, a maximum displacement of 0.6 mm (zero to peak) should not be exceeded.

2.2.2.2 Other structures/heritage damage (German Standard DIN 4150)

Guidance for other structures, such as industrial and heritage items, is presented in the German Guideline DIN 4150. The DIN 4150 values for buildings and structures are shown in Table 2.9. As stated in BS 7385, heritage buildings and structures should not be assumed to be more sensitive to vibration, unless structurally unsound. Where a heritage building is deemed to be sensitive, the more stringent DIN 4150 Group 3 guideline values in Table 2.9 can be applied.

Table 2.9 DIN 4150-3 Structural damage criteria

Group	Type of structure	Vibration velocity, mm/s			
		At foundation at frequency of		Plane of floor uppermost storey	
		1 to 10 Hz	10 to 50 Hz	50 to 100 Hz	All frequencies
1	Buildings used for commercial purposes, industrial buildings and buildings of similar design	20	20 – 40	40 – 50	40
2	Dwellings and buildings of similar design and/or use	5	5 – 15	15 – 20	15
3	Structures that because of their particular sensitivity to vibration, do not correspond to those listed in Group 1 or 2 and have intrinsic value (e.g. buildings under a preservation order)	3	3 – 8	8 – 10	8

Note: At frequencies above 100 Hz, the values given in this column may be used as a minimum value.

2.2.3 Safe working distances

The CNVG provides minimum working distances to achieve human comfort criteria (from the NSW EPA Vibration Guideline) and cosmetic building damage criteria (from BS 7385 and DIN 4150) for a range of different plant and equipment. These have been reproduced in Table 2.10. Impacts on human comfort and the physical structure of buildings are considered unlikely at distances greater than the minimum working distances.

The construction activities listed in Table 2.10 occur at various activities in each construction zone as described in Section 3.3. As the final construction methodology and staging is refined further, the associated noise and vibration impacts, and associated safeguards and management measures, would be re-assessed as required.

Table 2.10 Recommended minimum working distance from sensitive receivers

Plant item	Rating/description	Minimum working distance		
		Cosmetic damage (All buildings)	Human response (All occupied buildings)	Heritage or sensitive structures[1]
Vibratory roller	< 50 kN (Typically 1–2 tonnes)	5 m	20 m	14 m
	< 100 kN (Typically 2–4 tonnes)	6 m	20 m	16 m
	< 200 kN (Typically 4–6 tonnes)	12 m	40 m	33 m
	< 300 kN (Typically 7–13 tonnes)	15 m	100 m	41 m
	> 300 kN (Typically 13–18 tonnes)	20 m	100 m	54 m
	> 300 kN (> 18 tonnes)	25 m	100 m	68 m
Small hydraulic hammer	(300 kg – 5 to 12t excavator)	2 m	7 m	5 m
Medium hydraulic hammer	(900 kg – 12 to 18t excavator)	7 m	23 m	19 m
Large hydraulic hammer	(1600 kg – 18 to 34t excavator)	22 m	73 m	60 m
Vibratory pile driver	Sheet piles	20 m	100 m	50 m
Pile boring	≤ 800 mm	2 m	7 m	5 m
Jackhammer	Hand Held	1 m	3 m	2 m

(1) Taken from the Draft CNVG (Transport for NSW, 2019)

2.3 Road traffic noise criteria

2.3.1 NSW Road Noise Policy 2011 (NSW RNP)

The base criteria for traffic noise consider noise emissions from all types of vehicles on new or upgraded sections of road. These criteria are outlined in the *NSW Road Noise Policy 2011* (DECCW, 2011) (NSW RNP) and are based on studies of national and international practices for road noise assessments.

Under the RNP guidelines, a road development may be classified as ‘minor works’, ‘new road’ or ‘redevelopment of an existing road’. Each classification has base criteria for both day and night-time assessment periods with new roads having a more stringent set of criteria.

The proposal would not increase traffic carrying capacity, would not affect the composition of traffic and does not affect the road alignment outside of the existing corridor.

No increased traffic noise impacts are likely to be associated with the proposal.

For more detail, reference is made to the Roads and Maritime *Noise Criteria Guideline* (NCG) (refer to Section 2.3.2) for a definition of this road project, and whether further assessment is required.

2.3.2 Roads and Maritime Noise Criteria Guideline

The Roads and Maritime *Noise Criteria Guideline* provides further clarification on the assessment of road traffic noise. This document outlines criteria for new and redeveloped roads and minor works.

The Roads and Maritime *Noise Criteria Guideline* outlines that “Minor Works” are projects designed primarily to improve safety and may include minor straightening of curves, installing traffic control devices, intersection widening and turning bay extensions or making minor road realignments.

The proposal would not affect road traffic numbers, nor are any changes proposed for the road alignment, lane configuration or any other feature affecting the generation or transmission of noise. A speed limit reduction is proposed and the proposal is designed primarily to improve safety and reduce maintenance costs. Under these definitions, the proposal is classified as ‘Minor works’.

Under minor works classification, where noise levels may increase by more than 2 dB(A) at the worst affected receiver, further assessment is required. As the proposal would not increase operational road traffic noise, it has not been addressed further in this assessment.

3 Existing environment

3.1 Study area

The noise study area was based on preliminary calculations of the likely extent of noise impacts and extends to an approximate distance of 550m to 1km from the proposal.

The identified study area primarily consists of residential and commercial properties. Land use along Monaro Street itself is primarily commercial/retail and also includes shop-top apartments.

3.1.1 Noise sensitive receivers

The sensitive receivers located within the study can be grouped into residential and non-residential noise sensitive receivers, these are discussed in the following sections. Noise sensitive receivers and their land use classification have been shown in Appendix B.

3.1.1.1 Residential

The residential receivers located closest to the proposal are generally two storey mixed used building (retail ground floor and residential first floor). The wider study area also includes suburban residential areas comprised of apartments and standalone dwellings.

3.1.1.2 Non-residential receivers

A number of non-residential receivers are located throughout the proposal area, including many retail shopfronts on Monaro Street, however any mixed use receiver was considered as residential for the purpose of assessment. Other non-residential receivers include commercial premises, standalone retail shops, educational establishments, place of public worship and a mixture of active and passive recreational sites.

3.2 Noise monitoring

3.2.1 Background noise monitoring locations

A baseline noise monitoring survey was undertaken during March 2025 to quantify and characterise the existing noise environment in the areas surrounding the proposal and nearby sensitive receivers.

Environmental noise levels were continuously monitored for a minimum period of seven days at the locations detailed in Table 3.1 and presented graphically in Appendix B.

3.2.2 Unattended noise monitoring methodology

Unattended noise measurements were recorded between 6th and 13th March 2025 to determine the existing noise environment. The noise monitoring was carried out in accordance with Australian Standard *AS 1055:2018 Acoustics, Description and Measurement of Environmental Noise* (Standards Australia, 2018) and *Australian Standard AS 2702:1984 Acoustics – Methods for the Measurement of Road Traffic Noise* (Standards Australia, 1984) and the RNP (EPA, 2011).

Table 3.1 presents the noise monitoring equipment used onsite, with detailed monitoring results presented in Appendix A. The purpose of the noise monitoring was to establish existing background noise levels at residents potentially impacted by construction noise. The noise monitor was located in an alcove off Monaro Street with the adjoining building providing approximately 3dB screening from Monaro Street. This location was selected as it was considered generally representative of the nearest sensitive receivers, noting that more ideal locations with no building screening

were deemed to be unsafe or unsecure. As the results are being utilised for background noise levels only, no correction was applied for building screening for conservative assessment.

The data was gathered over a period of typical traffic movement outside of school holidays.

Table 3.1 Noise monitoring equipment – Unattended monitoring

Location	Manufacturer and model	Serial number	Commencement date	Completion date
40 Monaro Street, Queanbeyan	Ngara	878238	6/03/2025	13/03/2025

Weather data for the monitoring period was obtained from the Canberra weather station located approximately 6 km northwest of the proposal. For the purpose of noise monitoring, adverse weather events are considered to be those that may influence noise levels, including winds speeds greater than 5m per second (ms^{-1}) or periods of rainfall.

Calibration of the measuring equipment was carried out before and after the monitoring, and it was noted that the maximum variation was less than +/- 0.5 dBA during the monitoring period for all equipment used.

All measurement equipment, including sound level meter and acoustic calibrators used for the assessment carried current NATA laboratory certification. A copy of these certificates can be provided upon request.

3.2.3 Attended noise monitoring methodology

Operator-attended noise monitoring was undertaken during logger deployment and retrieval to assist in characterising the existing ambient noise environment. Observations of noise sources influencing ambient and background noise environments were noted.

Attended noise monitoring was undertaken using a NTi XL-2 handheld sound level meter (S/N 05718).

During the course of the site inspection, observations of the noise environment were recorded at each logger location as outlined in Table 3.2.

Table 3.2 Operator attended noise monitoring results

Location	$L_{Aeq\ (15\ minute)}$ dB	$L_{A90\ (15\ minute)}$ dB	Observed noise environment
40 Monaro Street, Queanbeyan	67	56	Light and Heavy-vehicle traffic

3.2.4 Measured rating background levels (RBL)

The RBL for each site was determined in accordance with the Noise Policy of Industry (EPA, 2017) (NSW NPfI). The RBL is defined by the NSW NPfI as follows:

> *"Rating background noise level (RBL) – overall single-figure background level representing each assessment period (day/evening/night) over the whole monitoring period (as opposed to over each 24-hour period used for the assessment background level). The rating background level is the level used for assessment purposes. Where the rating background noise level is found to be less than 30 dBA for the evening and night periods, then it is set to 30 dBA; where it is found to be less than 35 dBA for the day time period, then it is set to 35 dBA."*

The weather affected data (due to wind or rain) was excluded from the analysis in accordance with the NSW NPfI requirements. The measured RBLs (Table 3.3) have been used to formulate the NMLs for construction noise impacts as detailed in Section 2.1.1. Typical measured noise levels, averaged for each 15-minute time period, are shown in Table 3.3.

Table 3.3 Rating background noise level (RBL)

Location	Measured RBL, dBA		
	Day 7 am–6 pm	Evening 6–10 pm	Night 10 pm–7 am
40 Monaro Street, Queanbeyan	51	50	35

3.3 Traffic counts

As per the *Queanbeyan CBD Transformation and Activation Monaro Street – Traffic Study* (Stantec, 2021), SIDRA Intersection 8.0 modelling software was previously utilised to assess the key intersections. The results for the weekday morning and afternoon peak hours under existing conditions are summarised in Table 3.4:

Table 3.4 Traffic volumes

Road	Vehicles per hour (AM Peak)	Vehicles per hour (PM Peak)
Monaro Street/Lowe Street/Farrer Place	2,540	2,869
Monaro Street/Crawford Street	2,374	2,537

4 Noise assessment

4.1 Construction methodology

4.1.1 Construction of the proposal

Construction of the proposal is expected to commence in mid-2025 (subject to planning approval) and take approximately 18 months to complete. Construction activities for the proposal would generally include the following sequence of events for each stage of the proposal:

- set up traffic control and close section of roadway between identified street blocks (based on finalised project staging)
- locate underground services and adjust utilities as required
- install environmental controls, including erosion and sediment controls
- remove vegetation, where required
- mill and reconstruct / widen kerb realignment where applicable
- replace / reinstate existing pavement generally in the following sequence:
  - proof roll exposed subgrade
  - testing of the subgrade material and stabilise (if required)
  - placement, spreading and compaction of additional subbase layer
  - testing of the subbase material
  - application of emulsion seal
  - placement, spreading and compaction of new asphalt base layer
  - testing of asphalt base layer
- placement, spreading and compaction of new asphalt wearing layer
- testing of the wearing surface layer
- upgrades to utilities (lighting, electrical, communications, and security)
- line marking and installation of new road signage
- installation of landscaping and street furniture including planting of new amenity trees and native vegetation
- rehabilitate the site.

4.1.2 Construction hours

Construction would occur during both standard working hours and night time (out of hours) periods with a contraflow arrangement (closing one lane at a time) along the relevant section of Monaro Street for the duration of the proposed works. Standard working hours would be adopted during construction of the proposal and include:

- Monday-Friday: 7.00am to 6.00pm
- Saturday: 8.00am to 1.00pm
- Sunday and Public Holidays: No work.

Work outside of standard hours and night time works would also be required during the construction of the proposal. Periods of out of hours work would allow minimal disruption to the Queanbeyan CBD and local businesses located along Monaro Street. Out of hours work would be subject to permitted work occupancy licenses (ROL) and construction staging. The final timing of any out of hours work would be determined by the appointed construction contractor during construction planning. Any out of hours would be undertaken in accordance with the ICNG and Construction Noise and Vibration Guideline (CNVG).

4.1.3 Noise modelling inputs and assumptions

Noise modelling was conducted to determine the predicted level of construction noise impact at sensitive locations surrounding the proposal.

Where representative of likely activities, the predictions generally assume the loudest construction equipment in each modelling scenario would be operating at the closest point to the receiver. In practice, most plant items are not expected to be operating in this stationary position for the full 15-minute assessment duration. As such the modelling results are a conservative representation of construction noise impacts and demonstrate the potential worst case noise levels that may be experienced.

In addition, all work stages include operation of the ancillary compound.

Table 4.1 Construction noise modelling assumptions

Modelling element	Input/assumption/source reference
Noise Model	SoundPLAN (Version 8.2)
Ground elevation geometry	ELVIS (Elevation and depth) Foundation Spatial Data
Ground absorption	— 75% soft ground for grass, wooded areas, and park land — 50% soft ground for residential/suburban land use — 25% soft ground for commercial and industrial land use
Assessment standard	CONCAWE noise prediction algorithm
Weather Conditions	Neutral meteorological conditions as per ICNG methodology
Building footprints and heights	Derived from satellite and aerial imagery (Geoscape, November 2023)
Receiver locations	All receivers within approximately 550m including additional receivers up to 1km of the alignment have been considered. Noise predictions have been determined at 1 m from the building facade.
Receiver height	1.5 m

4.1.4 Construction plant and equipment

The construction plant included in the noise models are presented in Table 4.2.

Corrections have been applied for anticipated usage and for the assessment of maximum $L_{1(1min)}$ noise level events. Sound power levels have been presented for standard hours and OOHW as indicated.

The noise emission levels for the construction plant and equipment were sourced from the following standard industry accepted databases:

- *AS 2436:2010 – Guide to noise and vibration control on construction, demolition and maintenance sites*
- The Department for Environment, Food and Rural Affairs (United Kingdom), Update of noise database for prediction of noise on construction and open sites – Phase 3: Noise measurement data for construction plant used on quarries (DEFRA noise database)

- TfNSW Construction Noise and Vibration Guideline - Roads.

Table 4.2 Construction plant sound power levels

Work scenario (all stages)	Equipment	Number of items	Usage factor per 15 minutes	Base SWL dBA	$L_{A1(1\ minute)}$ (Loudest Item)
Ancillary site operation	Light vehicles	6	0.5	88	94
	Excavator 10T - 30T (20 tonne)	1	0.75	104	110
	Backhoe 7.5 tonne	1	1	111	117
	Mobile crane – franna	1	1	98	106
	Air conditioning units	4	1	74	74
	Road truck	1	0.75	103	109
	Water cart (typical)	1	0.25	107	113
	TOTAL dB(A)	**113**			**117**
Site establishment and vegetation clearance	Hand Power Tools	4	0.5	105	110
	Backhoe 7.5 tonne	1	1	111	117
	Mobile crane – franna	1	1	98	106
	Mini Excavator with Hydraulic Breaker - (1.5 t) (1)	1	1	111	110
	Excavator 10T - 30T (20 tonne)	1	0.75	104	110
	Suction truck - 8T, pump and idling	1	0.25	105	112
	Lighting – diesel generator	1	0.5	93	103
	Bobcat	1	1	104	110
	Road truck	6	0.75	103	109
	Light vehicles	1	0.5	88	94
	Water cart (typical)	1	0.25	107	113
	TOTAL dB(A)	**117**			**117**
Mill and reconstruct / widen kerb realignment	Daymakers	2	1	98	98
	Pavement profiler(1)	1	1	117	121
	Road truck	2	0.75	103	109
	Front end loader	1	1	112	112
	Pavement laying machine	1	1	114	114
	Asphalt truck & sprayer	1	0.75	106	118
	Smooth drum roller	1	0.5	107	107
	TOTAL dB(A)	**120**			**121**
Replace / reinstate existing pavement	Pavement laying machine	1	0.75	98	106
	Road truck	2	0.75	98	98

Work scenario (all stages)	Equipment	Number of items	Usage factor per 15 minutes	Base SWL dBA	$L_{A1(1\ minute)}$ (Loudest Item)
	Concrete truck	1	1	98	110
	TOTAL dB(A)	**101**			**110**
Upgrades to utilities	Franna crane 20t	2	0.5	98	106
	Scissor lift	1	0.5	98	98
	Power tools	1	0.5	98	110
	TOTAL dB(A)	**101**			**110**
Line marking and installation of new road signage	Road truck	2	0	103	110
	Franna crane 20t	1	1	98	106
	Line marking truck	1	1	108	108
	TOTAL dB(A)	**109**			**110**
Installation of landscaping and street furniture including planting of new amenity trees and native vegetation	Light vehicles	8	0.25	103	103
	Road truck	2	0.75	103	109
	Loader 30-40T	1	1	112	118
	Telehandler	1	0.25	98	98
	TOTAL dB(A)	**113**			**118**
Rehabilitate the site	Excavator 10T - 30T	2	1	104	110
	Franna	2	0.75	98	106
	Road truck	2	0.75	103	109
	Hand tools	2	0.5	105	110
	Water cart (typical)	1	0.5	107	113
	Bobcat	2	0.75	104	110
	Telehandler (4T)	1	0.25	98	98
	TOTAL dB(A)	**113**			**113**

(1) Item includes 5dB penalty for potentially annoying noise source in accordance with ICNG

4.2 Predicted construction noise levels

A summary of the predicted construction noise levels for the highest noise impact scenario (mill and reconstruct) and ancillary site are presented in the following subsection. The full results are presented as tables in Appendix C and graphical results are presented as façade noise maps in Appendix D.

4.2.1 Highest noise impact construction scenario

Noise impacts from the loudest work stage are predicted to be associated with mill and reconstruct / widen kerb realignment works, particularly where pavement milling is undertaken. During this work stage, noise impacts are predicted to affect up to 75 residential receivers within standard hours working periods. The highest impacts are predicted to occur at properties along Monaro Street and properties adjoining the ancillary site location.

While the majority of receivers predicted to exceed NMLs would only be subject to low or moderate noise impacts (<20 dB above NMLs), up to 30 properties may be highly noise affected (>75 dB $L_{Aeq(15\ minute)}$) without the

implementation of noise mitigation measures. These properties are shop-top apartments located above commercial/retail properties fronting Monaro Street. Additional noise mitigation measures are provided in Section 6.1, which would further reduce the noise impact to all potentially impacted receivers.

It should be noted that Out of Hours Works (OOHW) has been proposed for the project, however specific work stages are not confirmed at this stage. Table 4.3 summarises the identified noise impacts during the loudest construction scenario (mill and reconstruct) at residential properties. Where milling work are undertaken during OOHW, noise may impact up to 1,061 receivers, and potential cause sleep disturbance at up to 295 receivers. Detailed Potential noise impacts at non-residential receivers are presented in Appendix C.

Table 4.3 Stage 2 Maximum predicted noise impacts – Residential (Mill and reconstruct + Ancillary compound)

Mill and reconstruct – Standard Hours				
Number of Residential Receivers exceeding NML, grouped by magnitude of exceedance (L_{Aeq})			**Highly Affected >75 dB**	**Total Exceedances**
0-10 dB	**10-20 dB**	**>20 dB**		
38	11	26	30	75

Mill and reconstruct – Out of Hours Works Period 1				
Number of Residential Receivers exceeding NML, grouped by magnitude of exceedance (L_{Aeq})				**Total Exceedances**
0-5 dB	**5-15 dB**	**15-25 dB**	**>25 dB**	
128	68	11	26	233

Mill and reconstruct – Out of Hours Works Period 2				
Number of Residential Receivers exceeding NML, grouped by magnitude of exceedance (L_{Aeq})				**Total Exceedances**
0-5 dB	**5-15 dB**	**15-25 dB**	**>25 dB**	
151	677	181	52	1,061

Mill and reconstruct – Sleep disturbance					
Number of Residential Receivers exceeding Sleep Disturbance, grouped by magnitude of exceedance (L_{Aeq})					
0-5 dB	**5-10 dB**	**10-20 dB**	**20-30 dB**	**>30dB**	**Total**
190	49	255	7	24	295

Mill and reconstruct – Sleep awakening					
Number of Residential Receivers exceeding Sleep Disturbance, grouped by magnitude of exceedance (L_{Amax})					
0-5 dB	**5-10 dB**	**10-20 dB**	**20-30 dB**	**>30dB**	**Total**
17	11	6	3	22	59

Actual OOHW staging has not been confirmed at this stage. In addition, not all equipment would be in use during OOHW and additional noise mitigation measures are provided in Section 6.1, which would also further reduce the noise impact to all potentially impacted receivers.

4.3 Construction Road traffic noise assessment

A doubling of road traffic numbers would result in a 3 dB increase in road noise and a 60 per cent increase in traffic is required to increase traffic noise levels by 2 dB. Table 3.4 outlines existing traffic volumes on Monaro Street. Given these numbers and Monaro Street's designation as an approved NHVR B-double route, construction road traffic numbers are unlikely to substantially alter the overall traffic flow and road traffic noise impacts as a result of construction road traffic for properties along this route are not anticipated during the construction period.

5 Vibration assessment

Safe working distances for vibration intensive plant are outlined in Section 2.2.3. The number of identified sensitive receiver buildings and sites of heritage significance within the recommended safe working distances are detailed in Table 5.1. It is noted that the vibration sensitivity of buildings would vary depending upon multiple factors, such as the specific ground features, structural design and building condition and exposure period, and their inclusion in this list does not necessarily mean that building damage would occur. It is noted that hydraulic hammers for breaking up pavement are not expected to be used extensively, if at all, however have conservatively been included in the assessment.

These potentially impacted sites are presented graphically in Appendix E and would require additional mitigation to be considered as addressed in Section 6.1.2.

The results detailed in Table 5.1 are based on a conservative selection of a vibratory roller weighing between 7 and 13 tonnes. The use of such a vibratory roller would result in 61 receivers at risk of cosmetic damage and 95 at risk of exceeding human comfort levels.

Should a smaller Vibratory Roller be used, the impacts on surrounding sensitive receivers would be significantly decreased. Alternatively, the use of a non-vibratory roller would significantly reduce the risk of cosmetic building damage or human comfort.

Sixteen heritage items have been identified to be within the estimated cosmetic damage safe working distance for heritage items. It is important to note that BS 7385 states that ‘a building of historical value should not (unless it is structurally unsound) be assumed to be more sensitive’ and, therefore, items should not be assumed to be sensitive to vibration on the basis of being classified a heritage item alone. If any heritage items are identified in the future their vibration sensitivity should be determined by a qualified acoustic specialist prior to the commencement of construction.

Table 5.1 Receivers within safe working distances for ground vibration (human comfort and cosmetic damage)

Construction scenario and vibration intensive construction plant	**Number of receivers within the estimated safe working distances**		
	Cosmetic building damage		**Human comfort**
	Sensitive receivers (>5 mm/s)	**Heritage (>3 mm/s)**	**Residences**
Ancillary site operation			
No vibration intensive equipment proposed			
Site establishment and vegetation clearance			
Mini Excavator with Hydraulic Breaker (1.5T to 8T)	5	11	34
Mill and reconstruct / widen kerb realignment			
Vibratory Roller < 300 kN (Typically 7–13 tonnes)	48	13	95
Replace / reinstate existing pavement			
Vibratory Roller < 300 kN (Typically 7–13 tonnes)	48	13	95
Upgrades to utilities			
No vibration intensive equipment proposed			
Line marking and installation of new road signage			
No vibration intensive equipment proposed			

Construction scenario and vibration intensive construction plant	Number of receivers within the estimated safe working distances		
	Cosmetic building damage		Human comfort
	Sensitive receivers (>5 mm/s)	Heritage (>3 mm/s)	Residences
Installation of landscaping and street furniture including planting of new amenity trees and native vegetation			
No vibration intensive equipment proposed			
Rehabilitate the site			
No vibration intensive equipment proposed			

6 Environmental management

6.1 Construction mitigation and management measures

Due to the predicted exceedance of the NMLs outlined in Section 4.2, reasonable and feasible mitigation measures to minimise construction noise levels will be required.

The CNVG contains a number of standard mitigation measures for mitigating and managing construction impacts. Project specific measures are summarised in, general measures as outlined in the CNVG are presented in Appendix F and additional measures are detailed in Section 6.1.3 of this assessment and should be applied to the works where feasible and reasonable.

6.1.1 Construction noise impact mitigation

Due to the number of receivers potentially exceeding construction NMLs, reasonable and feasible mitigation measures to minimise construction noise impacts will be required. The CNVG contains a number of standard mitigation measures for mitigating and managing construction impacts. The measures are summarised in Table 6.1 and detailed in Section 6.1.3 of this assessment and should be applied to the works where feasible and reasonable.

6.1.2 Construction vibration impact mitigation

Due to the number of receivers located within the minimum working distances outlined in Section 2.1.2, reasonable and feasible mitigation measures to minimise construction vibration impacts will be required. The CNVG contains a number of standard mitigation measures for mitigating and managing construction impacts. The measures are summarised in Table 6.1 and detailed in Section 6.1.3 of this assessment and should be applied to the works where feasible and reasonable.

Generally, the CNVG outlines that if the predicted ground-borne vibration levels exceed the cosmetic damage objectives, a different construction method with lower source vibration levels must be used where feasible and reasonable otherwise construction works should not proceed unless attended vibration measurements are undertaken at the commencement of the works.

If there is any risk of exceedance of the cosmetic damage objective, property inspections must be undertaken and a permanent vibration monitoring system should be installed, to warn plant operators when vibration levels are approaching the cosmetic damage objective.

6.1.3 Recommended project specific construction mitigation and management measures

An overview of recommended project specific safeguards and management measures is provided in Table 6.1. Additional detail on the application of these measures is outlined in Appendix F which presents the requirements of the CNVG-R for standard noise mitigation measures.

Table 6.1 Summary of construction noise and vibration safeguards and management measures

ID	Environmental safeguard	Responsibility	Timing
CNV1	A Construction Noise and Vibration Management Plan (CNVMP) will be prepared as part of the Construction Environmental Management Plan (CEMP). The CNVMP will identify: — all potential significant noise and vibration generating activities associated with the activity — noise and vibration sensitive receivers — measures to be implemented during construction to minimise noise and vibration impacts — feasible and reasonable mitigation measures to be implemented, taking into account the RMS CNVG process and principles — 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.	Construction contractor	Pre construction/ construction
CNV2	The CNVMP will also contain a comprehensive night works approval procedure, including: — inclusion of scheduled respite for the community for extended periods of night work — methods for assessment and review of impacts, — methods for expanded community engagement, notification and agreements — records of community engagement, and proposed mitigation measures.	Construction contractor	Pre construction/ construction
CNV3	All sensitive receivers likely to be affected will be notified at least five working days prior to commencement of any works associated with the scenario that may have an adverse noise or vibration impact. The notification will include details of: — the construction activities likely to have noise or vibration impact — construction period and construction hours — any proposed mitigation measures for noise and vibration — contact information for the proposal, including out of hours contact — complaint and incident reporting and how to obtain further information.	Construction contractor	Pre construction/ construction
CNV4	All employees, contractors and subcontractors are to receive awareness training in control of noise and vibration as part of their regular site induction and updated prior to any significant period of nightwork: — all relevant Proposal specific and standard noise and vibration mitigation measures — relevant licence and approval conditions — permissible hours of work	Construction contractor	Pre construction/ construction

ID	Environmental safeguard	Responsibility	Timing
	— any limitations on high noise generating activities — location of nearest sensitive receivers — construction employee parking areas — designated loading/unloading areas and procedures — site opening/closing times (including deliveries) — environmental incident procedures.		
CNV5	Where feasible and reasonable, construction should be carried out during the standard daytime working hours. Works generating high noise and/or vibration levels should be scheduled during less sensitive time periods. Where it is unavoidable to conduct works in standard hours for safety of workers and the public, for the safe and efficient operation of the road network or to maintain critical access to local services, then an assessment and approval process will be undertaken as per the CNVMP and Transport's CNVG.	Construction contractor	Pre construction/ construction
CNV6	Where feasible and reasonable, high noise generating work (75 dB(A) LAeq at receiver) should be carried out during standard construction hours and in continuous blocks of no more than three hours with at least one hour respite between each block of work generating high noise impact, where the location of the work is likely to impact the same receiver.	Construction contractor	Pre construction/ construction
CNV7	Where high noise generating activities (75 dB(A) LAeq at receiver) are required out of hours, equipment will be used prior to 10 pm where feasible and reasonable. Where this cannot be achieved, the equipment can be used where feasible and reasonable controls are implemented and there is engagement with any highly noise affected community receivers.	Construction contractor	Pre construction/ construction
CNV8	The following will be implemented for deliveries to and from the Proposal: — loading and unloading of materials/deliveries is to occur as far as possible from sensitive receivers or — loading/unloading areas are to be shielded or screened if close to sensitive receivers — delivery vehicles are to be fitted with straps rather than chains for unloading, wherever possible When establishing work areas, ancillary sites, site compounds and laydowns consideration will be given to arranging the site to limit the need for reversing associated with regular/repeatable movements, where safe and space permits.	Construction contractor	Pre construction/ construction
CNV9	Non-tonal reversing beepers (or an equivalent mechanism) must be fitted and used on all construction vehicles and mobile plant regularly used on site and for any out of hours work.	Construction contractor	Pre construction/ construction

ID	Environmental safeguard	Responsibility	Timing
CNV10	Consideration will be given to the layout of the ancillary sites in order to maximise distance and shielding to nearby receivers	Construction contractor	Pre construction/ construction
CNV11	Vibration intensive equipment size will be selected to avoid working within the structural damage minimum working distances. The use of less vibration intensive methods of construction or equipment will be considered where feasible and reasonable.	Construction contractor	Pre construction/ construction
CNV12	Where the use of vibration intensive equipment within the relevant minimum working distances cannot be avoided, a detailed inspection will be carried out and a written and photographic report prepared to document the condition of buildings and structures within the minimum working distances. This will be conducted during the development of the CEMP and reviewed prior to the commencement of vibration intensive work. A copy of the report will be provided to the relevant landowner or land manager	Construction contractor	Pre construction/ construction
CNV13	Vibration generating activities will be managed to minimise the potential for impacts on structures and sensitive receiver(s), including maximising minimum safe working distances where practicable, or use of alternate methods to minimise vibration where minimum safe working distances cannot be achieved. Where alternatives cannot be implemented, vibration monitoring is to be undertaken and receivers notified at least 5 days in advance of works.	Construction contractor	Pre construction/ construction

6.1.4 *Additional construction noise mitigation measures*

In addition to the standard noise mitigation measures outlined in Table 6.1, additional mitigation measures may be required, particularly during OOHW. The CNVG requires the use of additional mitigation measures where feasible and reasonable. The trigger levels for implementing additional mitigation measures defined in the CNVG are shown in Table 6.2.

Table 6.2 CNVG triggers for additional mitigation measures – Airborne noise (TfNSW, 2023)

Predicted $L_{Aeq(15\ minute)}$ airborne noise level at receiver			**Additional mitigation measures**	
Perception	**dBA above RBL**	**dBA above NML**	**Type[1]**	**Mitigation levels[2]**
All hours				
75 dBA or greater			N, V, PC, RO	HNA
Standard Hours: Mon – Fri (7 am – 6 pm), Sat (8 am – 1 pm), Sun/Public Holiday (No work)				
Noticeable	5 to 10	0	–	NML
Clearly Audible	10 to 20	<10	–	NML
Moderately Intrusive	20 to 30	10 to 20	N, V	NML+10
Highly Intrusive	>30	>20	N, V	NML+20
OOHW Period 1: Mon – Fri (6 pm – 10 pm), Sat (7 am – 8 am & 1 pm – 10 pm), Sun/Public Holiday (8 am – 6 pm)				
Noticeable	5 to 10	<5	–	NML
Clearly Audible	10 to 20	5 to 15	N, R1, DR	NML+5
Moderately Intrusive	20 to 30	15 to 25	V, N, R1, DR	NML+15
Highly Intrusive	>30	>25	V, IB, N, R1, DR, PC, SN	NML+25
OOHW Period 2: Mon – Fri (10 pm – 7 am), Sat (10 pm – 8 am), Sun/Public Holiday (6 pm – 7 am)				
Noticeable	5 to 10	<5	N	NML
Clearly Audible	10 to 20	5 to 15	V, N, R2, DR	NML+5
Moderately Intrusive	20 to 30	15 to 25	V, IB, N, PC, SN, R2, DR	NML+15
Highly Intrusive	>30	>25	AA, V, IB, N, PC, SN, R2, DR	NML+25

(2) N = Notification, SN = Specific Notification, PC = Phone Calls, IB = Individual Briefings, R1 = Respite Period 1, R2 = Respite Period 2, RO = Project Specific Respite Offer, DR = Duration Respite, AA = Alternative Accommodation, V = Verification.

(3) NML = Noise Management Level, HNA = Highly Noise Affected (i.e. 75 dBA or greater for residential receivers).

7 Conclusion

7.1 Construction noise impact

Construction of the proposal would generate noise impacts during the works period. The extent of these impacts has been assessed in accordance with the ICNG and the CNVG.

NMLs were calculated and based on noise monitoring undertaken during March 2025. Construction noise was modelled at a large range of sensitive receivers for seven construction work scenarios. These predicted noise levels were assessed against the calculated NMLs.

This assessment found that noise impacts were expected during all construction phases for the nearest receivers. The largest impacts are predicted during mill and reconstruct scenario and generally for receivers located along Monaro Street, although impacts would extend into surrounding areas. Impacts are also predicted as a result of activities at the Ancillary site location.

No road traffic noise impacts were predicted to occur as a result of construction traffic.

7.2 Construction vibration impact

Ground vibration impacts have been assessed to determine potential impacts against the human comfort and building damage criteria outlined in both the AVaTG and the CNVG.

The assessment has found cosmetic damage may occur at properties and heritage items adjacent to works involving the operation of vibration intensive plant and vibration mitigation measures would be required at these locations. Potential human comfort impacts have been predicted at up to 95 receivers.

7.3 Noise and vibration management and mitigation

Site specific and effective noise management and mitigation measures have been recommended in Section 6, in accordance with the CNVG.

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9 References

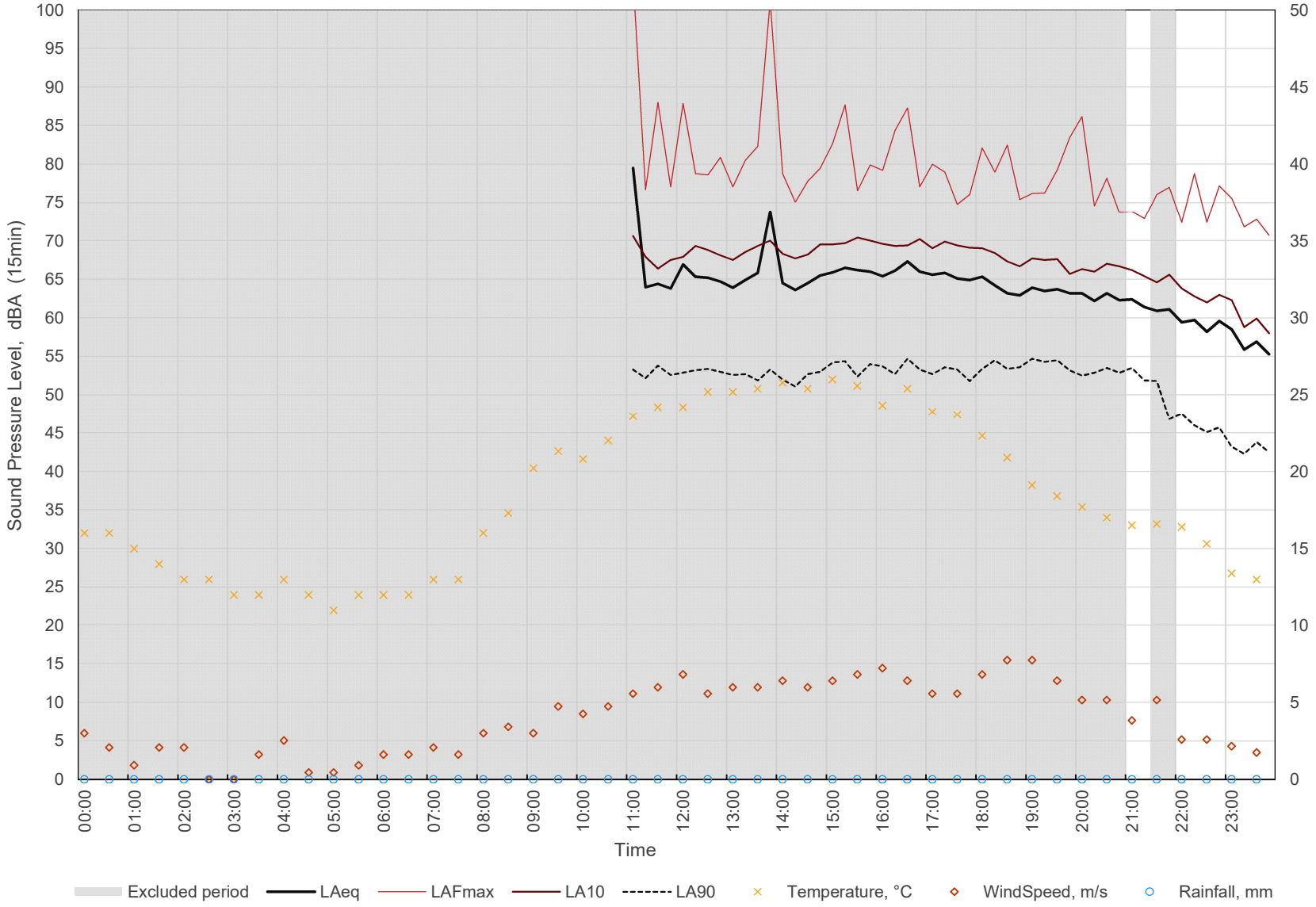
- Approved methods for the measurement and analysis of environmental noise in NSW (Environmental Protection Authority, 2022)
- Assessing Vibration: A Technical Guideline (Department of Environment and Conservation, 2006) (AVTG)
- Construction Noise and Vibration Guideline (for roads and maritime works) (Transport for NSW, 2022) (CNVG)
- Interim Construction Noise Guideline (Department of Environment and Climate Change, 2009) (ICNG)
- Road Noise Criteria Guideline (TfNSW, 2024) (NCG)
- Road Noise Model Validation Guideline (TfNSW, 2022)
- Noise Policy for Industry (NSW Environmental Protection Authority, 2017) (NPfI)
- Road Noise Policy (Department of Climate Change and Water, 2011) (RNP)
- Australian Standard – Electroacoustics – Sound Level Meters, Part 1: Specifications (AS IEC 61672.1, 2019)
- Australian Standard – Guide to noise and vibration control on construction, demolition and maintenance sites (AS 2436, 2010)
- Australian Standard – Acoustics – Description and measurement of environmental noise, Part 1: General Procedures (AS 1055.1, 2018)
- Australian Standard – Acoustics – Description and measurement of environmental noise, Part 3: Acquisition of data pertinent to land use (AS 1055.3, 2018)
- German Standard DIN 4150-3 Structural Vibration – Part 3: Effects of vibration on structures (DIN4150-3, 1999)
- British Standard (BS) 6472 – 1992, Guide to Evaluation of Human Exposure to Vibration in Buildings (1 Hz to 80 Hz) (BS 6472, 1992)

Appendix A

Detailed noise monitoring results

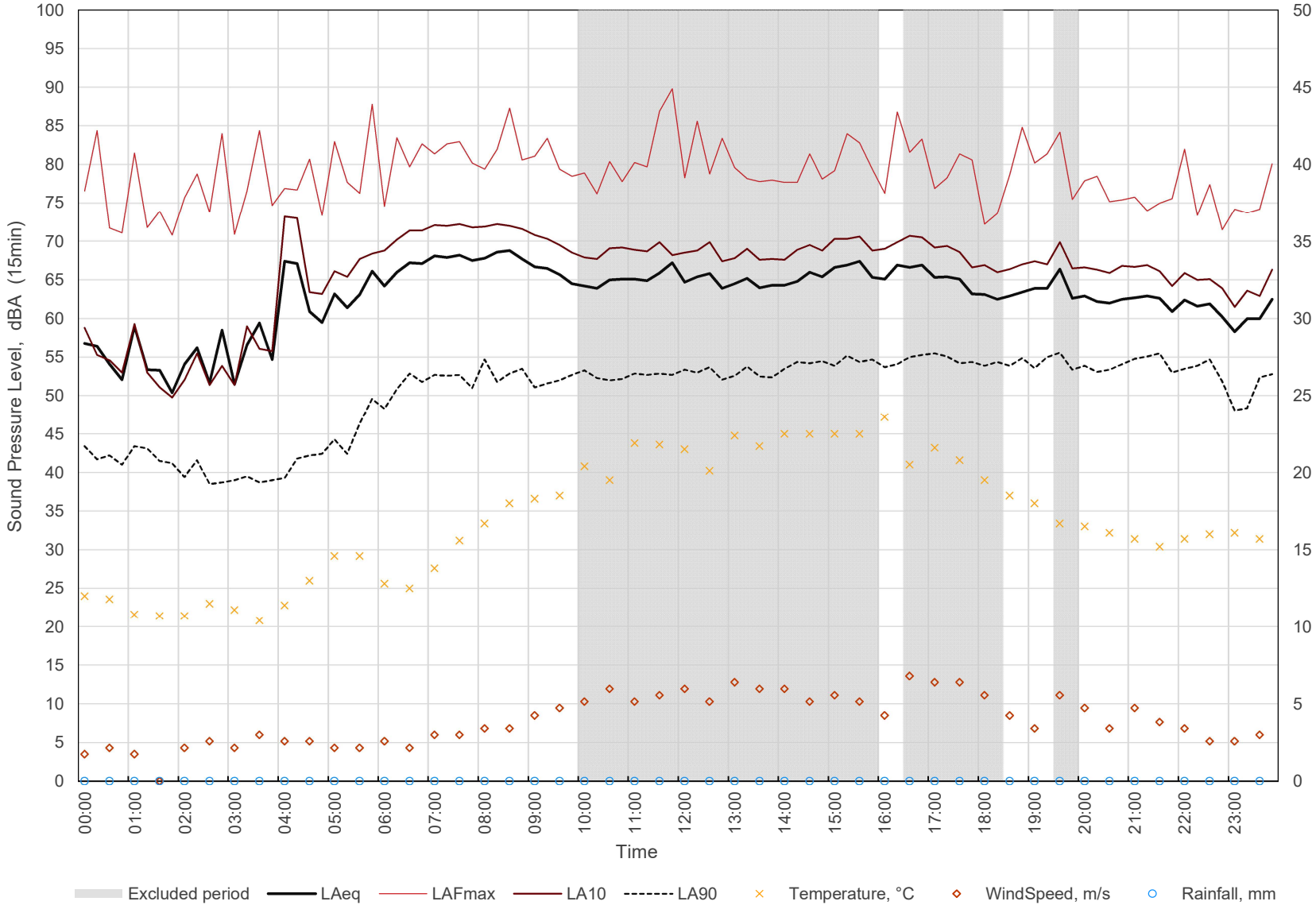
Measured Noise Levels - NM01 - Walsh's pub, Queanbeyan

Thursday, 06 March 2025



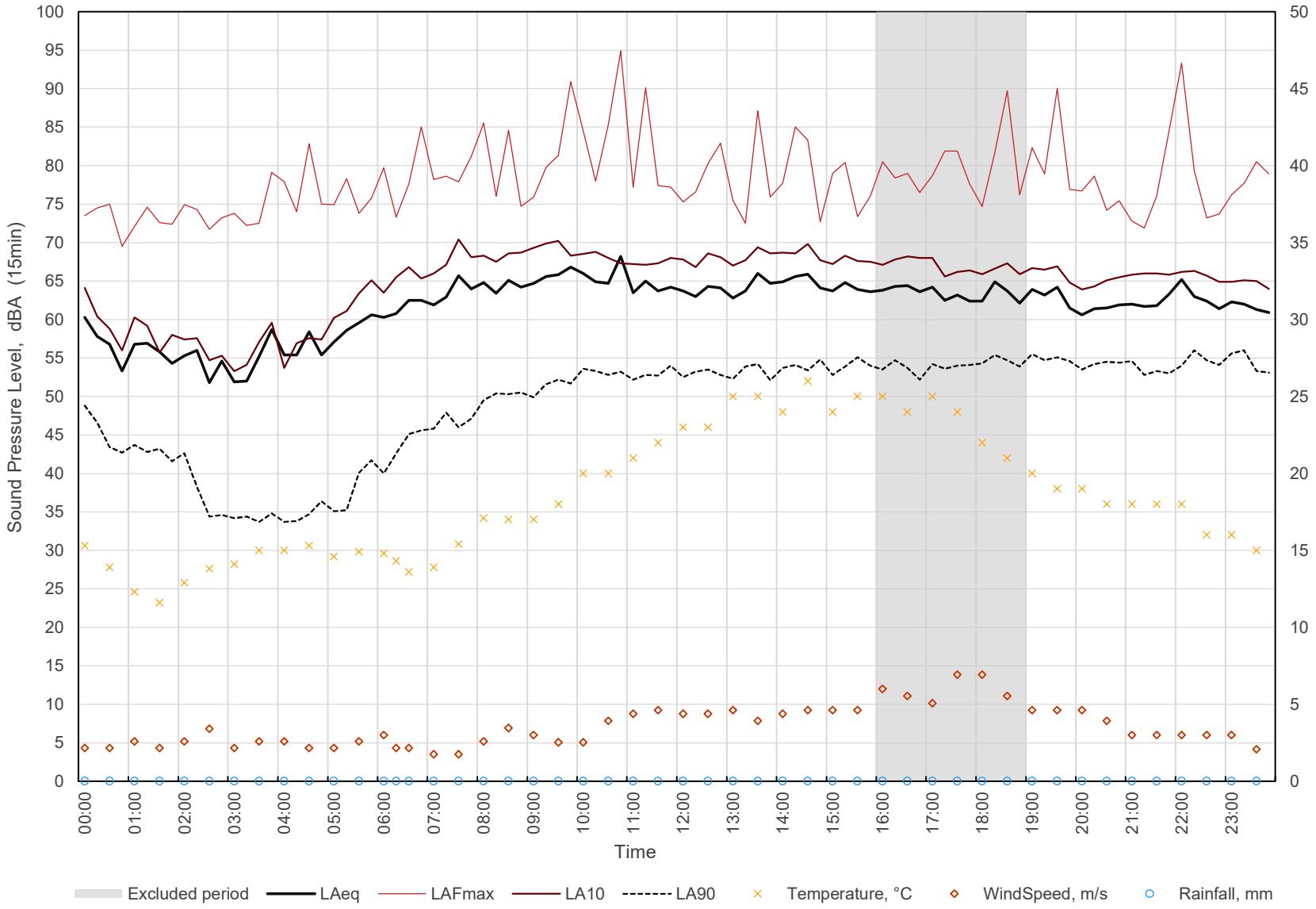
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Friday, 07 March 2025



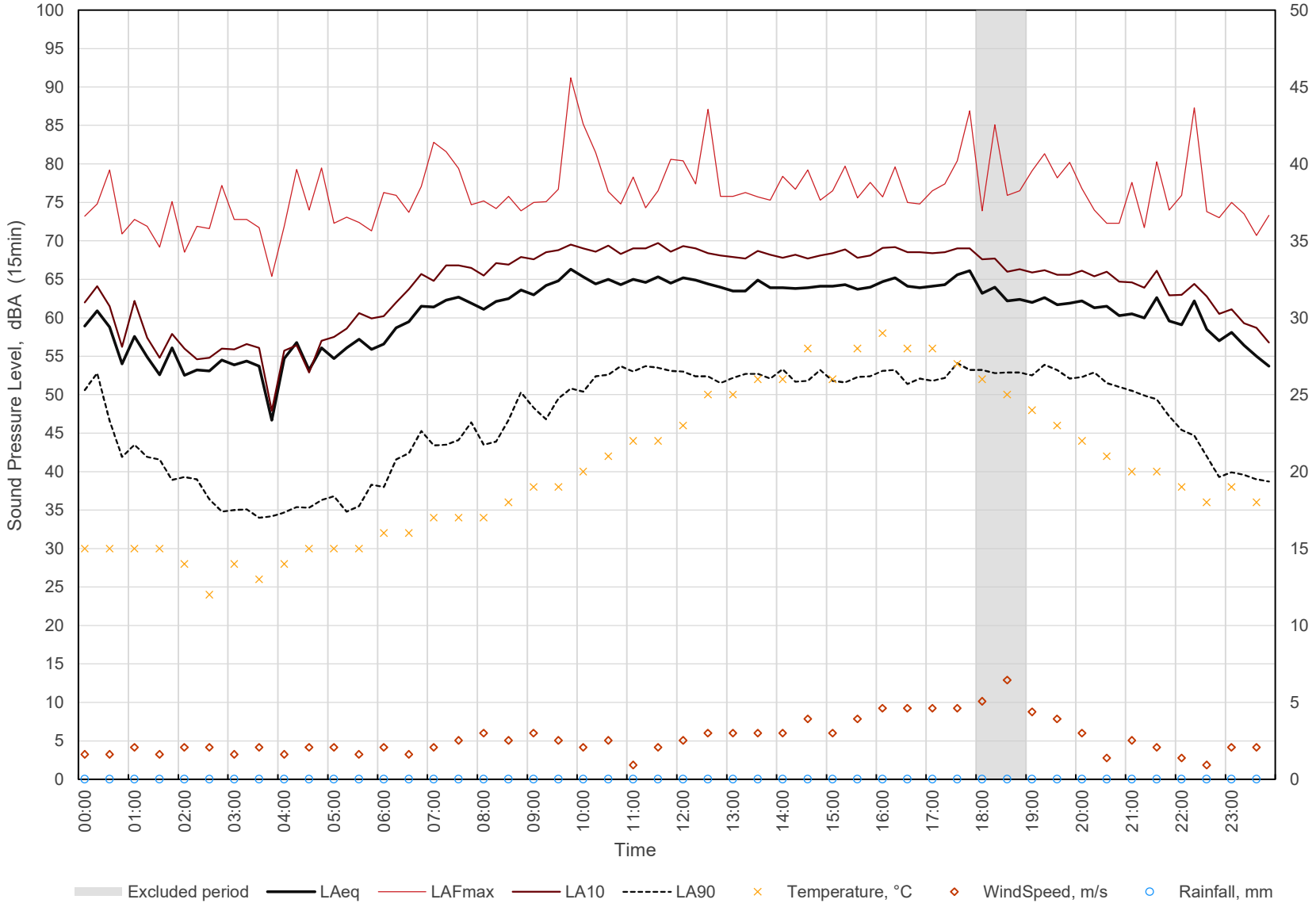
Measured Noise Levels - NM01 - Walsh's pub, Queanbeyan

Saturday, 08 March 2025



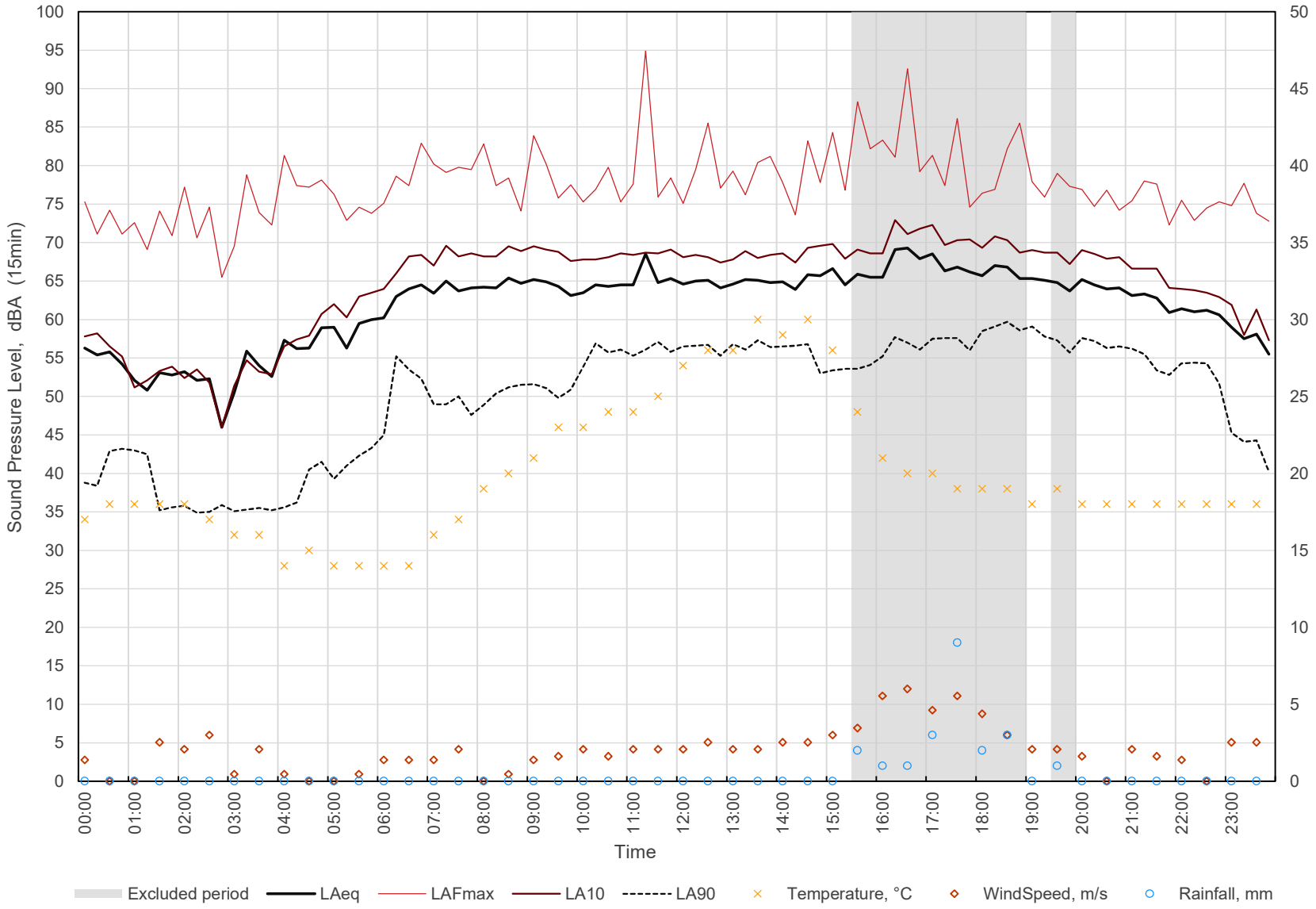
Measured Noise Levels - NM01 - Walsh's pub, Queanbeyan

Sunday, 09 March 2025



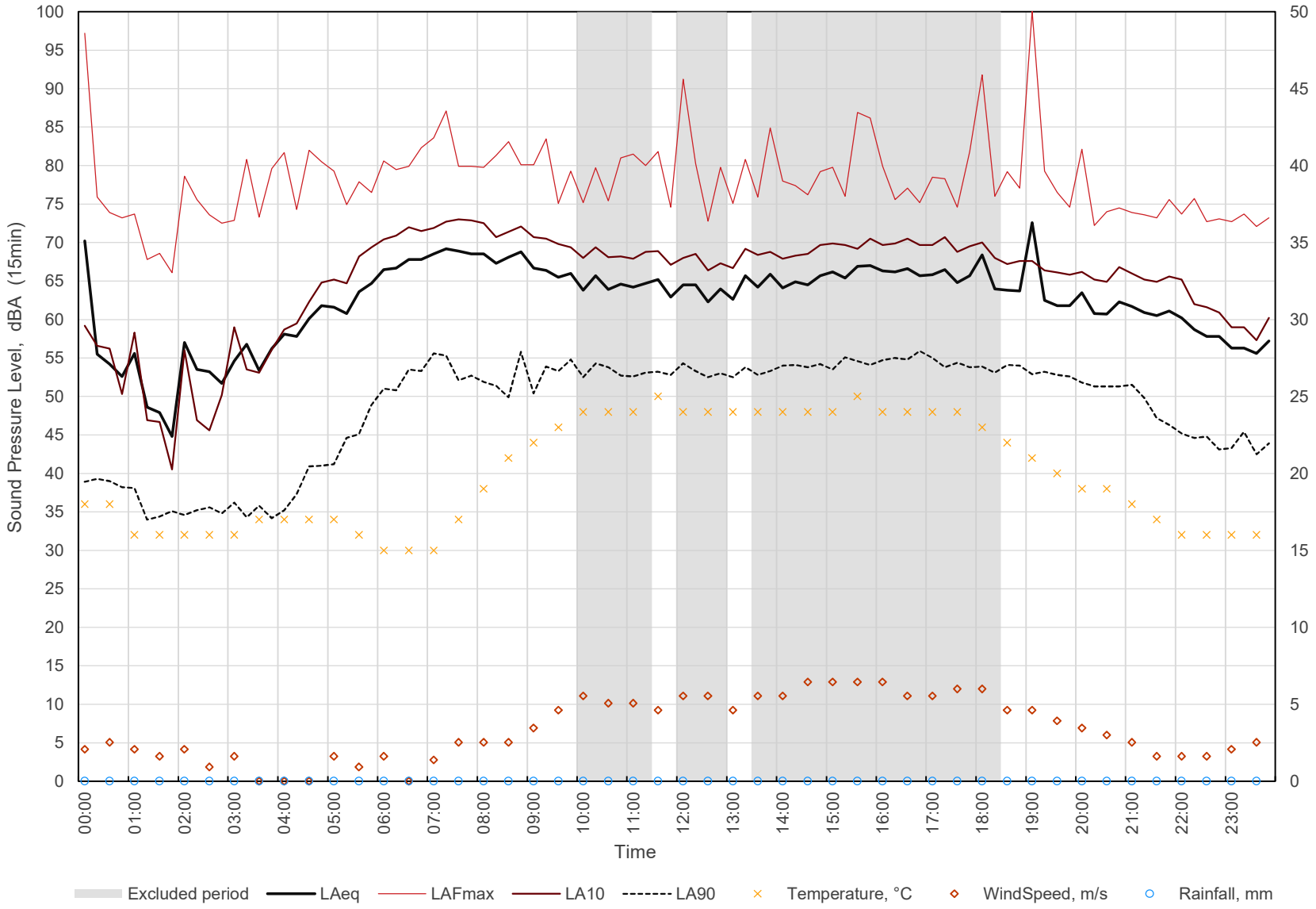
Measured Noise Levels - NM01 - Walsh's pub, Queanbeyan

Monday, 10 March 2025



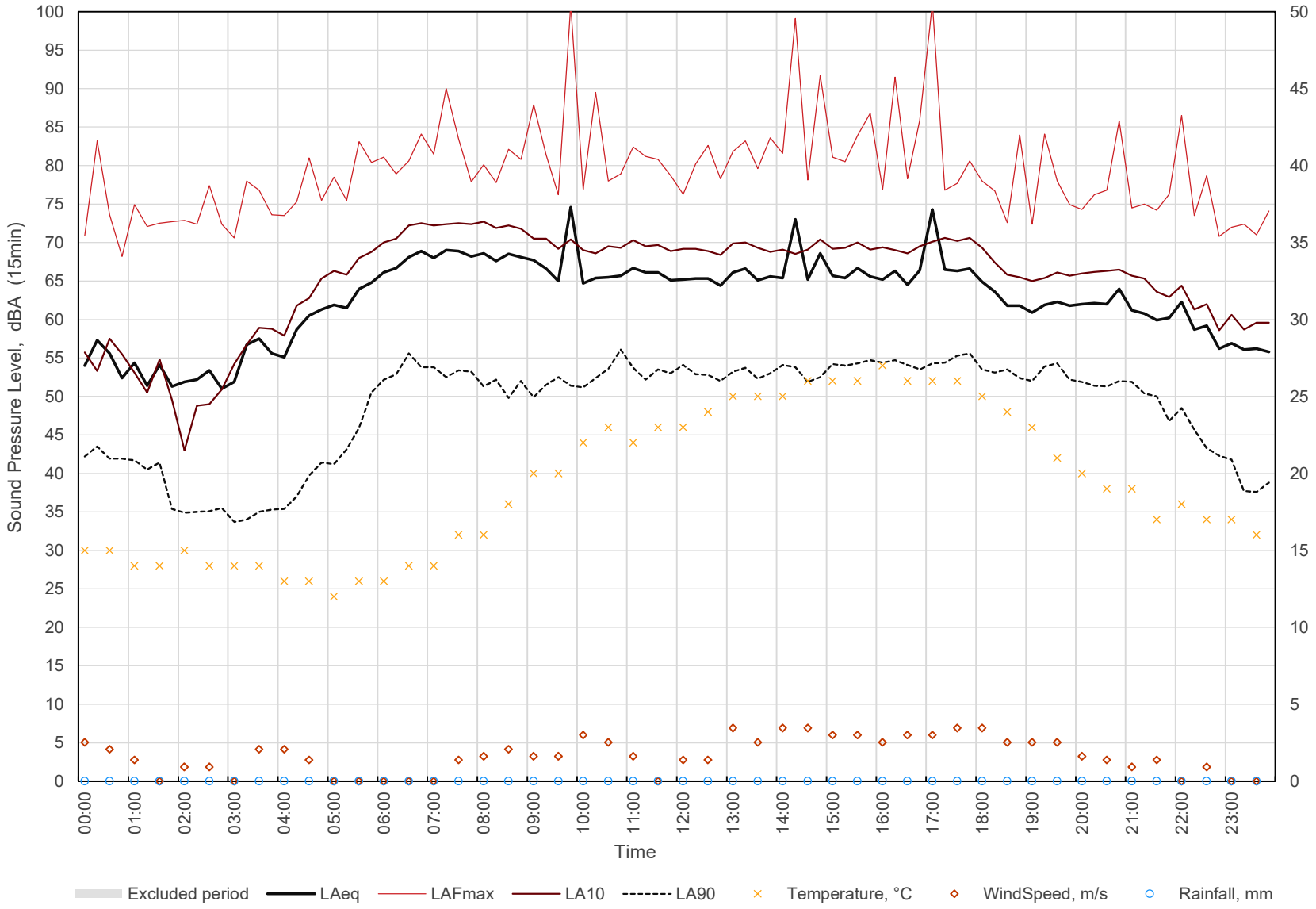
Measured Noise Levels - NM01 - Walsh's pub, Queanbeyan

Tuesday, 11 March 2025



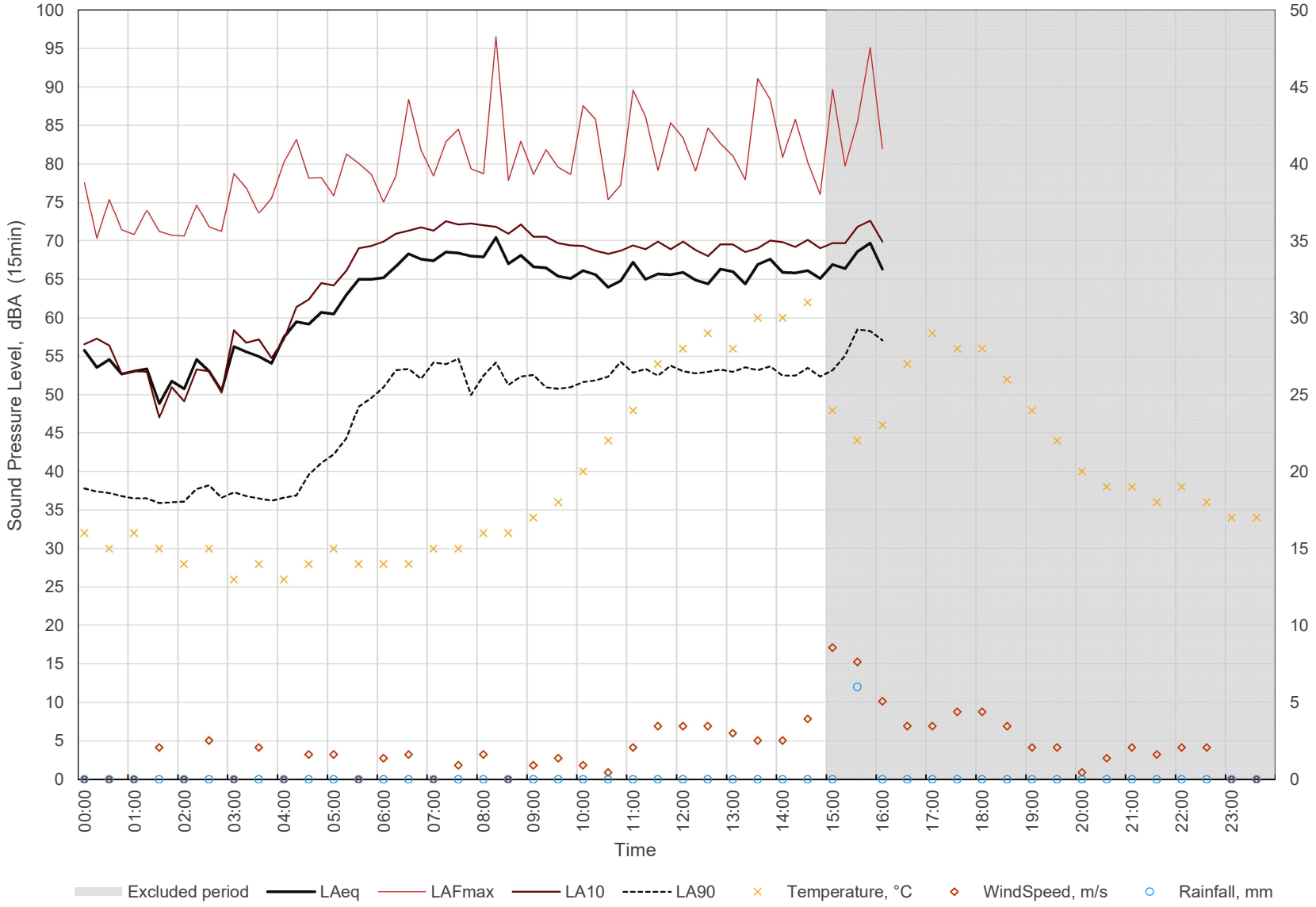
Measured Noise Levels - NM01 - Walsh's pub, Queanbeyan

Wednesday, 12 March 2025



Measured Noise Levels - NM01 - Walsh's pub, Queanbeyan

Thursday, 13 March 2025



Appendix B

Noise sensitive receivers and monitoring locations



Figure: Appendix B.1	Author: FZ	N
Date: 03/04/2025	Approved by: MB	

To be read in conjunction with WSP document: PS2168115_Monaro_Street_Upgrade-Noise and Vibration_Rev_1

Map Source: MetroMaps

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0 30 60 90 120 m

1:10,500 at A4

Legend

- Study area
- Noise monitoring location
- Construction zone
- Ancillary site

Monaro St Upgrade

Study area and Noise monitoring location

wsp

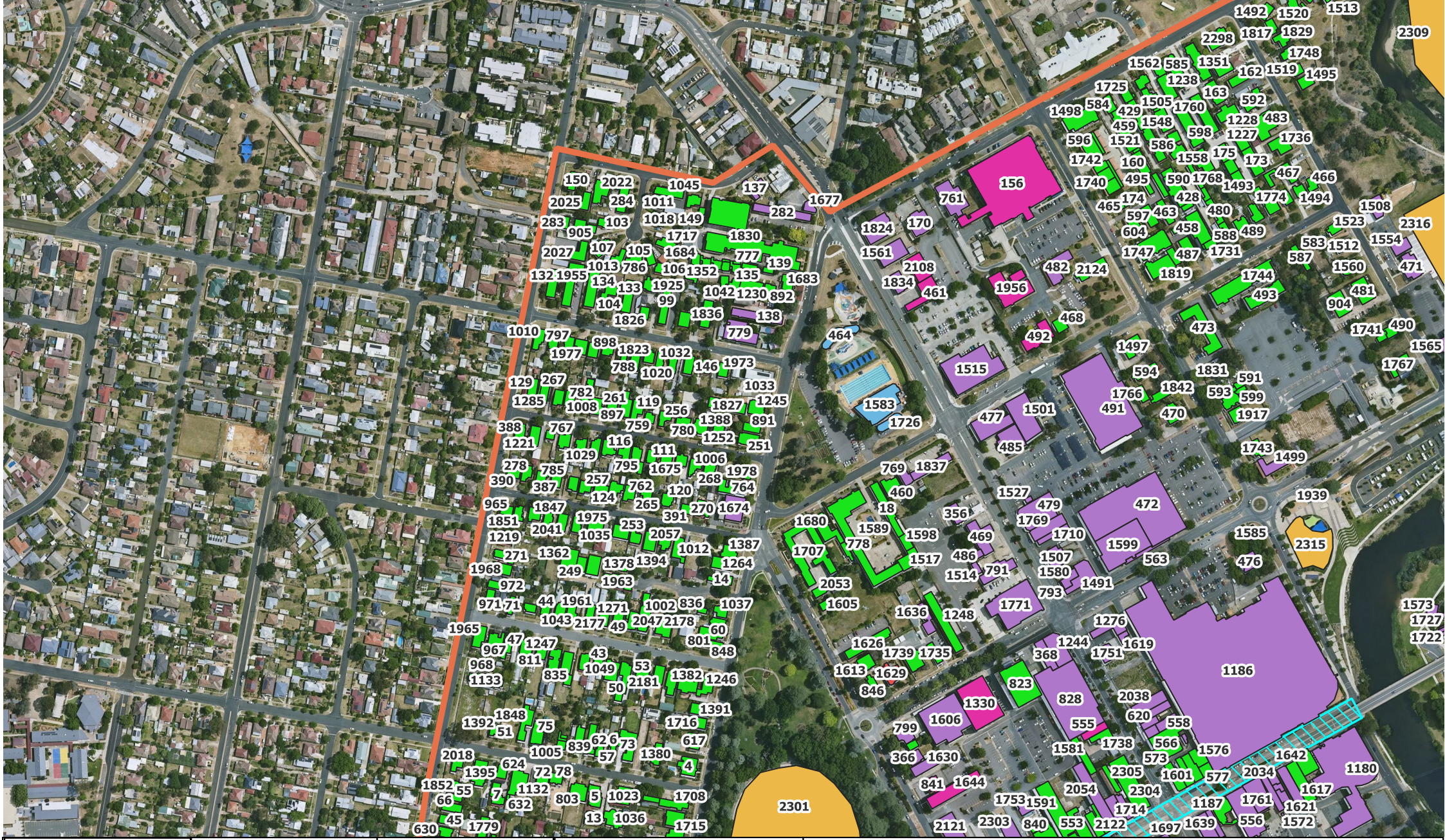


Figure: Appendix B.2	Author: FZ
Date: 03/04/2025	Approved by: MB

N

0 30 60 90 120 m

1:4,000 at A4

To be read in conjunction with WSP document: PS2168115_Monaro_Street_Upgrade-Noise and Vibration

Map Source: MetroMaps

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Legend

- Study area
- Construction zone

Sensitive receivers

- Active recreational
- Commercial
- Educational
- Medical
- Place of worship
- Passive recreational
- Residential

Monaro St Upgrade

Noise sensitive receivers

wsp

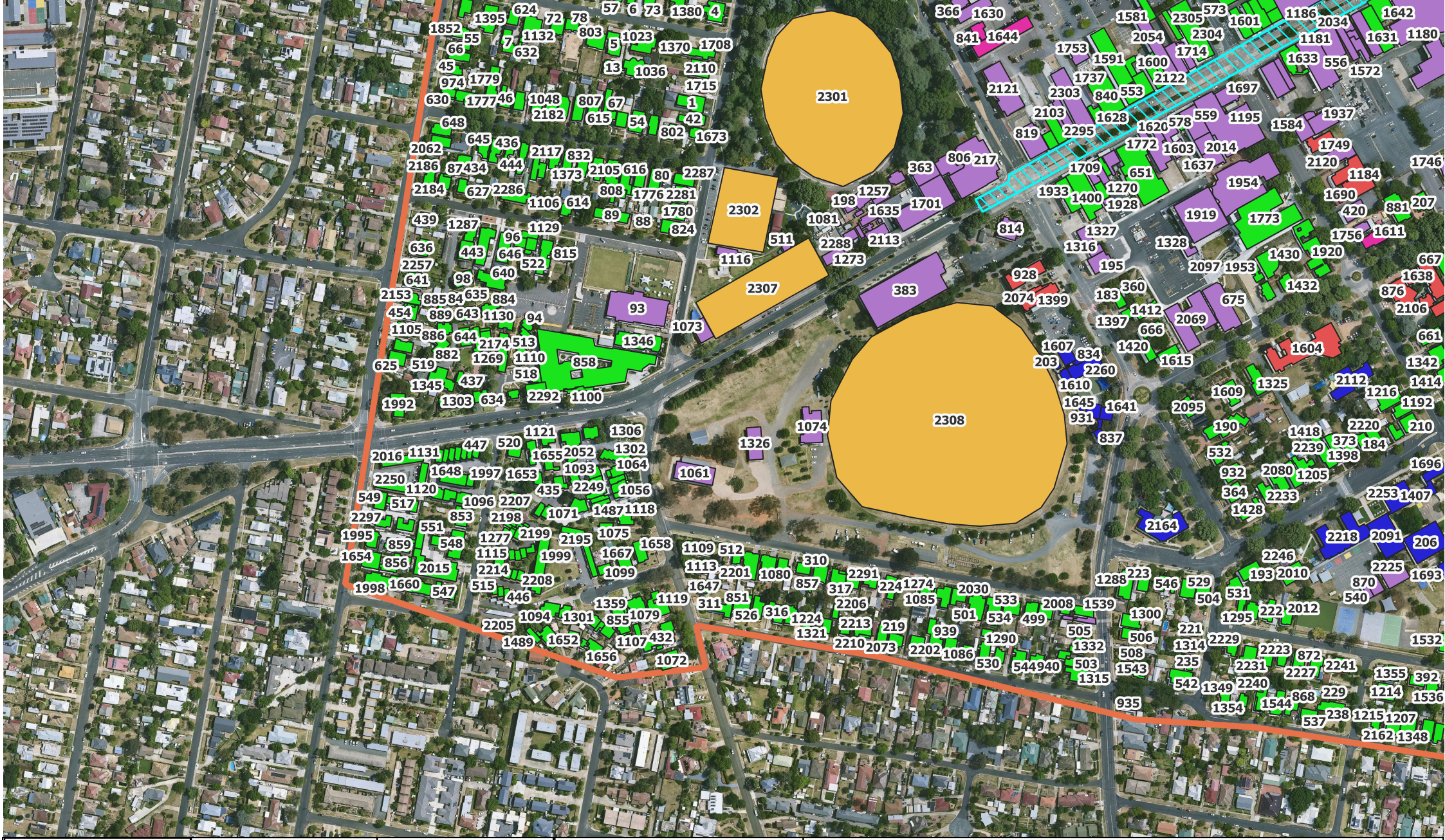


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Noise sensitive receivers

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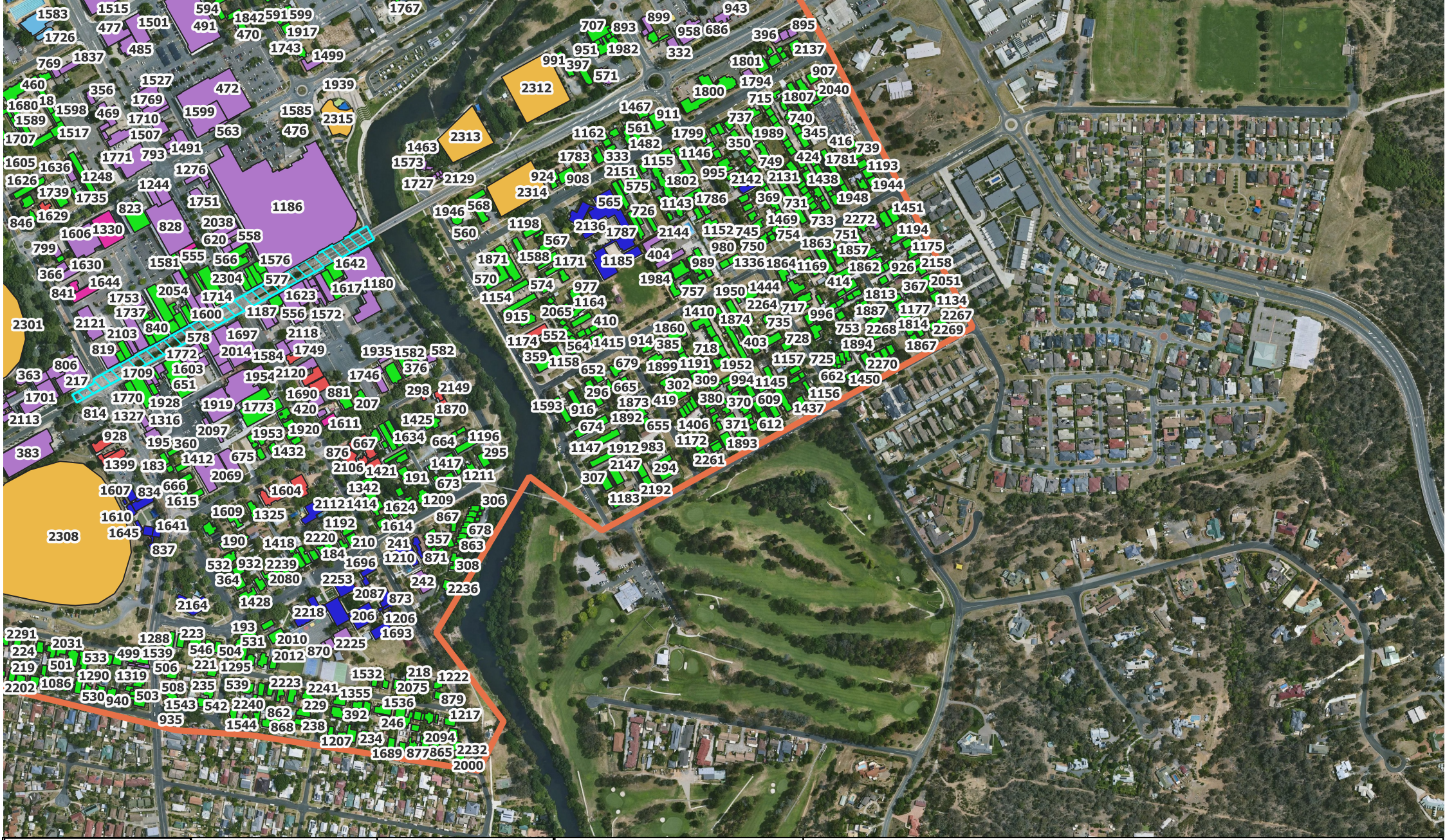


Figure: Appendix B.2	Author: FZ
Date: 03/04/2025	Approved by: MB

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Noise sensitive receivers

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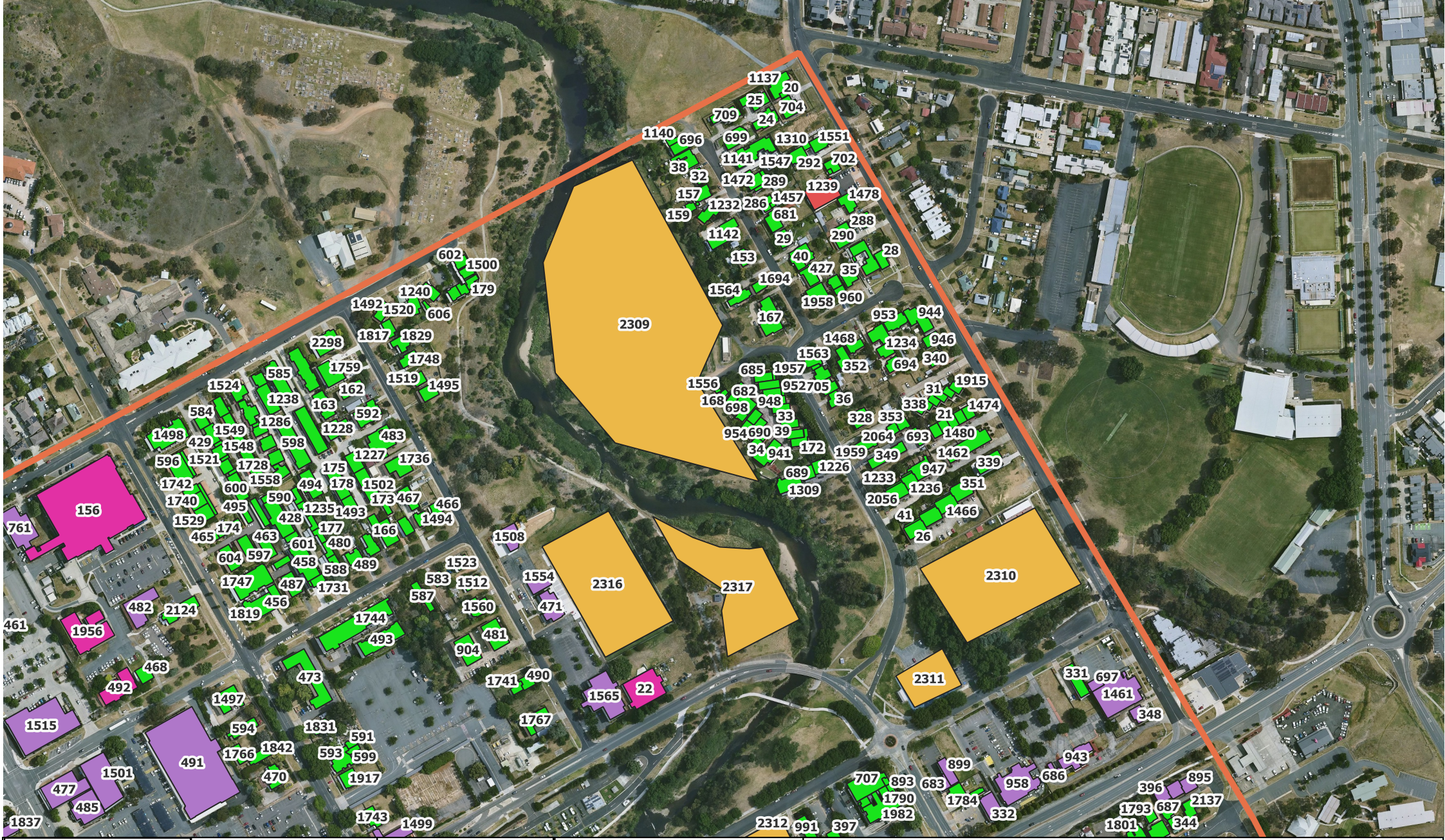


Figure: Appendix B.2	Author: FZ
Date: 03/04/2025	Approved by: MB

N

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Noise sensitive receivers

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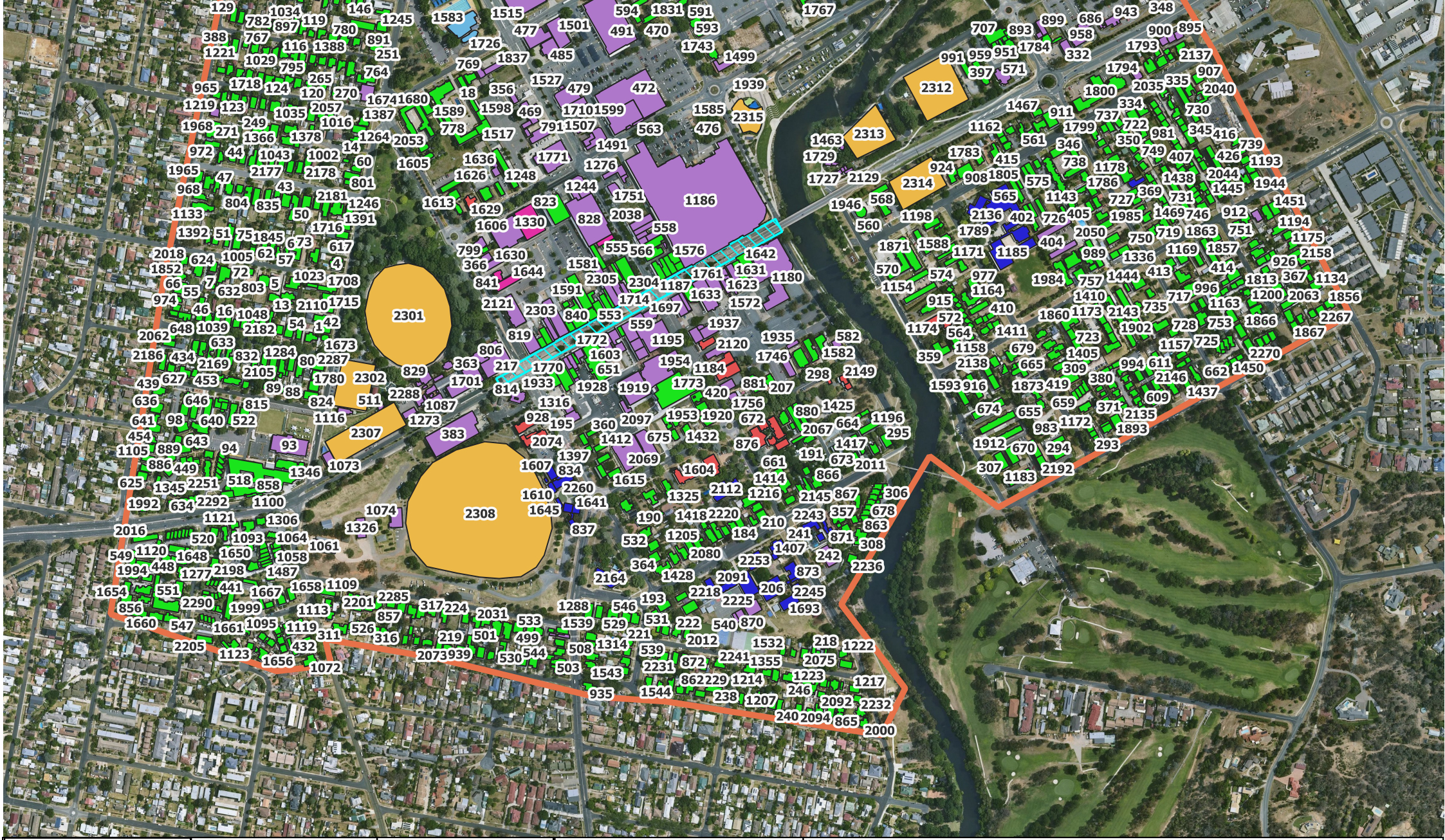


Figure: Appendix B.2	Author: FZ
Date: 03/04/2025	Approved by: MB

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Monaro St Upgrade

Noise sensitive receivers

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Appendix C

Detailed Construction Noise Prediction Results

REC_ID	R_Type	SH NML	CNVG OOH1 NML	CNVG OOH2 NML	ICNG OOH NML	Sleep Disturbance Criteria (LAeq)	Sleep Awakening Criteria (LAmax)	Site establishment and vegetation clearance LdBA	Mill and reconstruct / widen kerb realignment LdBA	Replace / reinstate existing pavement LdBA	Upgrades to utilities LdBA	Line marking and installation of new road signage LdBA	Installation of landscaping and street furniture including planting of new amenity trees and native vegetation LdBA	Rehabilitate the site LdBA
1	RES	61	55	40	40	54	64	49	52	33	33	43	45	45
4	RES	61	55	40	40	54	64	53.3	56.3	37.3	37.3	47.3	49.3	49.3
5	RES	61	55	40	40	54	64	38.6	41.6	22.6	22.6	32.6	34.6	34.6
6	RES	61	55	40	40	54	64	49.1	52.1	33.1	33.1	43.1	45.1	45.1
7	RES	61	55	40	40	54	64	42.4	45.4	26.4	26.4	36.4	38.4	38.4
13	RES	61	55	40	40	54	64	42.9	45.9	26.9	26.9	36.9	38.9	38.9
14	RES	61	55	40	40	54	64	51.3	54.3	35.3	35.3	45.3	47.3	47.3
16	RES	61	55	40	40	54	64	45.6	48.6	29.6	29.6	39.6	41.6	41.6
18	RES	61	55	40	40	54	64	50.2	53.2	34.2	34.2	44.2	46.2	46.2
20	RES	61	55	40	40	54	64	44.6	47.6	28.6	28.6	38.6	40.6	40.6
21	RES	61	55	40	40	54	64	48.4	51.4	32.4	32.4	42.4	44.4	44.4
22	MED	55	55	55	55	N/A	N/A	59	62	43	43	53	55	55
24	RES	61	55	40	40	54	64	45.4	48.4	29.4	29.4	39.4	41.4	41.4
25	RES	61	55	40	40	54	64	47.5	50.5	31.5	31.5	41.5	43.5	43.5
26	RES	61	55	40	40	54	64	49.4	52.4	33.4	33.4	43.4	45.4	45.4
28	RES	61	55	40	40	54	64	48	51	32	32	42	44	44
29	RES	61	55	40	40	54	64	48	51	32	32	42	44	44
31	RES	61	55	40	40	54	64	49.6	52.6	33.6	33.6	43.6	45.6	45.6
32	RES	61	55	40	40	54	64	46.1	49.1	30.1	30.1	40.1	42.1	42.1
33	RES	61	55	40	40	54	64	54.6	57.6	38.6	38.6	48.6	50.6	50.6
34	RES	61	55	40	40	54	64	55.2	58.2	39.2	39.2	49.2	51.2	51.2
35	RES	61	55	40	40	54	64	46.7	49.7	30.7	30.7	40.7	42.7	42.7
36	RES	61	55	40	40	54	64	49.6	52.6	33.6	33.6	43.6	45.6	45.6
38	RES	61	55	40	40	54	64	45.9	48.9	29.9	29.9	39.9	41.9	41.9
39	RES	61	55	40	40	54	64	52.2	55.2	36.2	36.2	46.2	48.2	48.2
40	RES	61	55	40	40	54	64	45.7	48.7	29.7	29.7	39.7	41.7	41.7
41	RES	61	55	40	40	54	64	40.9	43.9	24.9	24.9	34.9	36.9	36.9
42	RES	61	55	40	40	54	64	43	46	27	27	37	39	39
43	RES	61	55	40	40	54	64	35.8	38.8	19.8	19.8	29.8	31.8	31.8
44	RES	61	55	40	40	54	64	38.2	41.2	22.2	22.2	32.2	34.2	34.2
45	RES	61	55	40	40	54	64	43.6	46.6	27.6	27.6	37.6	39.6	39.6
46	RES	61	55	40	40	54	64	47	50	31	31	41	43	43
47	RES	61	55	40	40	54	64	42.4	45.4	26.4	26.4	36.4	38.4	38.4
49	RES	61	55	40	40	54	64	42	45	26	26	36	38	38
50	RES	61	55	40	40	54	64	47.8	50.8	31.8	31.8	41.8	43.8	43.8
51	RES	61	55	40	40	54	64	45.8	48.8	29.8	29.8	39.8	41.8	41.8
53	RES	61	55	40	40	54	64	51.8	54.8	35.8	35.8	45.8	47.8	47.8
54	RES	61	55	40	40	54	64	34.8	37.8	18.8	18.8	28.8	30.8	30.8
55	RES	61	55	40	40	54	64	44.6	47.6	28.6	28.6	38.6	40.6	40.6
56	RES	61	55	40	40	54	64	26.8	29.8	10.8	10.8	20.8	22.8	22.8
57	RES	61	55	40	40	54	64	48.7	51.7	32.7	32.7	42.7	44.7	44.7
60	RES	61	55	40	40	54	64	51.8	54.8	35.8	35.8	45.8	47.8	47.8
62	RES	61	55	40	40	54	64	48.6	51.6	32.6	32.6	42.6	44.6	44.6
64	RES	61	55	40	40	54	64	32.8	35.8	16.8	16.8	26.8	28.8	28.8
66	RES	61	55	40	40	54	64	44.9	47.9	28.9	28.9	38.9	40.9	40.9
67	RES	61	55	40	40	54	64	47.1	50.1	31.1	31.1	41.1	43.1	43.1
71	RES	61	55	40	40	54	64	51	54	35	35	45	47	47
72	RES	61	55	40	40	54	64	47.6	50.6	31.6	31.6	41.6	43.6	43.6
73	RES	61	55	40	40	54	64	49.8	52.8	33.8	33.8	43.8	45.8	45.8
75	RES	61	55	40	40	54	64	46.4	49.4	30.4	30.4	40.4	42.4	42.4
78	RES	61	55	40	40	54	64	41.6	44.6	25.6	25.6	35.6	37.6	37.6
80	RES	61	55	40	40	54	64	39	42	23	23	33	35	35
84	RES	61	55	40	40	54	64	42.9	45.9	26.9	26.9	36.9	38.9	38.9
87	RES	61	55	40	40	54	64	29.4	32.4	13.4	13.4	23.4	25.4	25.4
88	RES	61	55	40	40	54	64	33.9	36.9	17.9	17.9	27.9	29.9	29.9
89	RES	61	55	40	40	54	64	35.6	38.6	19.6	19.6	29.6	31.6	31.6
93	COM	70	70	70	70	N/A	N/A	53.8	56.8	37.8	37.8	47.8	49.8	49.8
94	RES	61	55	40	40	54	64	47.8	50.8	31.8	31.8	41.8	43.8	43.8
96	RES	61	55	40	40	54	64	46.9	49.9	30.9	30.9	40.9	42.9	42.9
98	RES	61	55	40	40	54	64	41.2	44.2	25.2	25.2	35.2	37.2	37.2

REC_ID	R_Type	SH NML	CNVG OOH1 NML	CNVG OOH2 NML	ICNG OOH NML	Sleep Disturbance Criteria (LAeq)	Sleep Awakening Criteria (LAmax)	Site establishment and vegetation clearance LdBA	Mill and reconstruct / widen kerb realignment LdBA	Replace / reinstate existing pavement LdBA	Upgrades to utilities LdBA	Line marking and installation of new road signage LdBA	Installation of landscaping and street furniture including planting of new amenity trees and native vegetation LdBA	Rehabilitate the site LdBA
99	RES	61	55	40	40	54	64	47.5	50.5	31.5	31.5	41.5	43.5	43.5
103	RES	61	55	40	40	54	64	47.6	50.6	31.6	31.6	41.6	43.6	43.6
104	RES	61	55	40	40	54	64	44.7	47.7	28.7	28.7	38.7	40.7	40.7
105	RES	61	55	40	40	54	64	36.9	39.9	20.9	20.9	30.9	32.9	32.9
106	RES	61	55	40	40	54	64	39.4	42.4	23.4	23.4	33.4	35.4	35.4
107	RES	61	55	40	40	54	64	39.7	42.7	23.7	23.7	33.7	35.7	35.7
108	RES	61	55	40	40	54	64	43.8	46.8	27.8	27.8	37.8	39.8	39.8
111	RES	61	55	40	40	54	64	49.9	52.9	33.9	33.9	43.9	45.9	45.9
114	RES	61	55	40	40	54	64	48.5	51.5	32.5	32.5	42.5	44.5	44.5
116	RES	61	55	40	40	54	64	48.1	51.1	32.1	32.1	42.1	44.1	44.1
119	RES	61	55	40	40	54	64	47.1	50.1	31.1	31.1	41.1	43.1	43.1
120	RES	61	55	40	40	54	64	47.3	50.3	31.3	31.3	41.3	43.3	43.3
123	RES	61	55	40	40	54	64	48.8	51.8	32.8	32.8	42.8	44.8	44.8
124	RES	61	55	40	40	54	64	42.3	45.3	26.3	26.3	36.3	38.3	38.3
129	RES	61	55	40	40	54	64	46.7	49.7	30.7	30.7	40.7	42.7	42.7
132	RES	61	55	40	40	54	64	44	47	28	28	38	40	40
133	RES	61	55	40	40	54	64	46	49	30	30	40	42	42
134	RES	61	55	40	40	54	64	46.7	49.7	30.7	30.7	40.7	42.7	42.7
135	RES	61	55	40	40	54	64	34.6	37.6	18.6	18.6	28.6	30.6	30.6
137	COM	70	70	70	70	N/A	N/A	38.9	41.9	22.9	22.9	32.9	34.9	34.9
138	COM	70	70	70	70	N/A	N/A	50.1	53.1	34.1	34.1	44.1	46.1	46.1
139	RES	61	55	40	40	54	64	46.3	49.3	30.3	30.3	40.3	42.3	42.3
140	RES	61	55	40	40	54	64	42.6	45.6	26.6	26.6	36.6	38.6	38.6
145	RES	61	55	40	40	54	64	34	37	18	18	28	30	30
146	RES	61	55	40	40	54	64	45.6	48.6	29.6	29.6	39.6	41.6	41.6
147	RES	61	55	40	40	54	64	36	39	20	20	30	32	32
148	RES	61	55	40	40	54	64	36.1	39.1	20.1	20.1	30.1	32.1	32.1
149	RES	61	55	40	40	54	64	28.4	31.4	12.4	12.4	22.4	24.4	24.4
150	RES	61	55	40	40	54	64	46.5	49.5	30.5	30.5	40.5	42.5	42.5
153	RES	61	55	40	40	54	64	47.7	50.7	31.7	31.7	41.7	43.7	43.7
156	MED	55	55	55	55	N/A	N/A	54.4	57.4	38.4	38.4	48.4	50.4	50.4
157	RES	61	55	40	40	54	64	45.2	48.2	29.2	29.2	39.2	41.2	41.2
159	RES	61	55	40	40	54	64	46.6	49.6	30.6	30.6	40.6	42.6	42.6
160	RES	61	55	40	40	54	64	43.8	46.8	27.8	27.8	37.8	39.8	39.8
161	RES	61	55	40	40	54	64	54.4	57.4	38.4	38.4	48.4	50.4	50.4
162	RES	61	55	40	40	54	64	40.9	43.9	24.9	24.9	34.9	36.9	36.9
163	RES	61	55	40	40	54	64	38.9	41.9	22.9	22.9	32.9	34.9	34.9
166	RES	61	55	40	40	54	64	58.7	61.7	42.7	42.7	52.7	54.7	54.7
167	RES	61	55	40	40	54	64	50.4	53.4	34.4	34.4	44.4	46.4	46.4
168	RES	61	55	40	40	54	64	51.4	54.4	35.4	35.4	45.4	47.4	47.4
170	COM	70	70	70	70	N/A	N/A	49.5	52.5	33.5	33.5	43.5	45.5	45.5
172	RES	61	55	40	40	54	64	51.5	54.5	35.5	35.5	45.5	47.5	47.5
173	RES	61	55	40	40	54	64	47.2	50.2	31.2	31.2	41.2	43.2	43.2
174	RES	61	55	40	40	54	64	54	57	38	38	48	50	50
175	RES	61	55	40	40	54	64	47.3	50.3	31.3	31.3	41.3	43.3	43.3
177	RES	61	55	40	40	54	64	51.1	54.1	35.1	35.1	45.1	47.1	47.1
178	RES	61	55	40	40	54	64	49.1	52.1	33.1	33.1	43.1	45.1	45.1
179	RES	61	55	40	40	54	64	48.7	51.7	32.7	32.7	42.7	44.7	44.7
183	RES	61	55	40	40	54	64	66.8	69.8	50.8	50.8	60.8	62.8	62.8
184	RES	61	55	40	40	54	64	53.7	56.7	37.7	37.7	47.7	49.7	49.7
190	RES	61	55	40	40	54	64	58.7	61.7	42.7	42.7	52.7	54.7	54.7
191	RES	61	55	40	40	54	64	44.4	47.4	28.4	28.4	38.4	40.4	40.4
193	RES	61	55	40	40	54	64	52.2	55.2	36.2	36.2	46.2	48.2	48.2
195	COM	70	70	70	70	N/A	N/A	75.5	78.5	59.5	59.5	69.5	71.5	71.5
198	COM	70	70	70	70	N/A	N/A	42.3	45.3	26.3	26.3	36.3	38.3	38.3
203	EDU	55	55	55	55	N/A	N/A	47	50	31	31	41	43	43
206	EDU	55	55	55	55	N/A	N/A	43.4	46.4	27.4	27.4	37.4	39.4	39.4
207	RES	61	55	40	40	54	64	52.7	55.7	36.7	36.7	46.7	48.7	48.7
209	RES	61	55	40	40	54	64	54.1	57.1	38.1	38.1	48.1	50.1	50.1
210	RES	61	55	40	40	54	64	51.7	54.7	35.7	35.7	45.7	47.7	47.7

REC_ID	R_Type	SH NML	CNVG OOH1 NML	CNVG OOH2 NML	ICNG OOH NML	Sleep Disturbance Criteria (LAeq)	Sleep Awakening Criteria (LAmax)	Site establishment and vegetation clearance LdBA	Mill and reconstruct / widen kerb realignment LdBA	Replace / reinstate existing pavement LdBA	Upgrades to utilities LdBA	Line marking and installation of new road signage LdBA	Installation of landscaping and street furniture including planting of new amenity trees and native vegetation LdBA	Rehabilitate the site LdBA
217	COM	70	70	70	70	N/A	N/A	98.1	101.1	82.1	82.1	92.1	94.1	94.1
218	RES	61	55	40	40	54	64	34.8	37.8	18.8	18.8	28.8	30.8	30.8
219	RES	61	55	40	40	54	64	50.7	53.7	34.7	34.7	44.7	46.7	46.7
221	RES	61	55	40	40	54	64	44.3	47.3	28.3	28.3	38.3	40.3	40.3
222	RES	61	55	40	40	54	64	50.1	53.1	34.1	34.1	44.1	46.1	46.1
223	RES	61	55	40	40	54	64	50.3	53.3	34.3	34.3	44.3	46.3	46.3
224	RES	61	55	40	40	54	64	51.8	54.8	35.8	35.8	45.8	47.8	47.8
227	COM	70	70	70	70	N/A	N/A	48.8	51.8	32.8	32.8	42.8	44.8	44.8
228	RES	61	55	40	40	54	64	48.6	51.6	32.6	32.6	42.6	44.6	44.6
229	RES	61	55	40	40	54	64	40.3	43.3	24.3	24.3	34.3	36.3	36.3
234	RES	61	55	40	40	54	64	32	35	16	16	26	28	28
235	RES	61	55	40	40	54	64	43.3	46.3	27.3	27.3	37.3	39.3	39.3
238	RES	61	55	40	40	54	64	46.2	49.2	30.2	30.2	40.2	42.2	42.2
240	RES	61	55	40	40	54	64	38	41	22	22	32	34	34
241	EDU	55	55	55	55	N/A	N/A	51.9	54.9	35.9	35.9	45.9	47.9	47.9
242	COM	70	70	70	70	N/A	N/A	48	51	32	32	42	44	44
246	RES	61	55	40	40	54	64	37	40	21	21	31	33	33
248	RES	61	55	40	40	54	64	39.5	42.5	23.5	23.5	33.5	35.5	35.5
249	RES	61	55	40	40	54	64	37.6	40.6	21.6	21.6	31.6	33.6	33.6
251	RES	61	55	40	40	54	64	47.7	50.7	31.7	31.7	41.7	43.7	43.7
253	RES	61	55	40	40	54	64	38.4	41.4	22.4	22.4	32.4	34.4	34.4
256	RES	61	55	40	40	54	64	40.8	43.8	24.8	24.8	34.8	36.8	36.8
257	RES	61	55	40	40	54	64	48.2	51.2	32.2	32.2	42.2	44.2	44.2
261	RES	61	55	40	40	54	64	47.1	50.1	31.1	31.1	41.1	43.1	43.1
265	RES	61	55	40	40	54	64	49.2	52.2	33.2	33.2	43.2	45.2	45.2
267	RES	61	55	40	40	54	64	45.2	48.2	29.2	29.2	39.2	41.2	41.2
268	RES	61	55	40	40	54	64	45.8	48.8	29.8	29.8	39.8	41.8	41.8
270	RES	61	55	40	40	54	64	48.1	51.1	32.1	32.1	42.1	44.1	44.1
271	RES	61	55	40	40	54	64	48	51	32	32	42	44	44
275	RES	61	55	40	40	54	64	44.5	47.5	28.5	28.5	38.5	40.5	40.5
278	RES	61	55	40	40	54	64	47.3	50.3	31.3	31.3	41.3	43.3	43.3
282	COM	70	70	70	70	N/A	N/A	48.7	51.7	32.7	32.7	42.7	44.7	44.7
283	RES	61	55	40	40	54	64	38.4	41.4	22.4	22.4	32.4	34.4	34.4
284	RES	61	55	40	40	54	64	45.2	48.2	29.2	29.2	39.2	41.2	41.2
286	RES	61	55	40	40	54	64	46.6	49.6	30.6	30.6	40.6	42.6	42.6
288	RES	61	55	40	40	54	64	41.9	44.9	25.9	25.9	35.9	37.9	37.9
289	RES	61	55	40	40	54	64	48.6	51.6	32.6	32.6	42.6	44.6	44.6
290	RES	61	55	40	40	54	64	43.9	46.9	27.9	27.9	37.9	39.9	39.9
292	RES	61	55	40	40	54	64	35.8	38.8	19.8	19.8	29.8	31.8	31.8
293	RES	61	55	40	40	54	64	33	36	17	17	27	29	29
294	RES	61	55	40	40	54	64	44.1	47.1	28.1	28.1	38.1	40.1	40.1
295	RES	61	55	40	40	54	64	45.7	48.7	29.7	29.7	39.7	41.7	41.7
296	RES	61	55	40	40	54	64	46.4	49.4	30.4	30.4	40.4	42.4	42.4
298	POW	55	55	55	55	N/A	N/A	47.5	50.5	31.5	31.5	41.5	43.5	43.5
300	RES	61	55	40	40	54	64	52.7	55.7	36.7	36.7	46.7	48.7	48.7
301	RES	61	55	40	40	54	64	34	37	18	18	28	30	30
302	RES	61	55	40	40	54	64	52.1	55.1	36.1	36.1	46.1	48.1	48.1
303	RES	61	55	40	40	54	64	32.1	35.1	16.1	16.1	26.1	28.1	28.1
304	RES	61	55	40	40	54	64	39.2	42.2	23.2	23.2	33.2	35.2	35.2
306	RES	61	55	40	40	54	64	46.9	49.9	30.9	30.9	40.9	42.9	42.9
307	RES	61	55	40	40	54	64	55.3	58.3	39.3	39.3	49.3	51.3	51.3
308	RES	61	55	40	40	54	64	49.7	52.7	33.7	33.7	43.7	45.7	45.7
309	RES	61	55	40	40	54	64	50.6	53.6	34.6	34.6	44.6	46.6	46.6
310	RES	61	55	40	40	54	64	50.5	53.5	34.5	34.5	44.5	46.5	46.5
311	RES	61	55	40	40	54	64	51.7	54.7	35.7	35.7	45.7	47.7	47.7
316	RES	61	55	40	40	54	64	51.1	54.1	35.1	35.1	45.1	47.1	47.1
317	RES	61	55	40	40	54	64	54.1	57.1	38.1	38.1	48.1	50.1	50.1
318	RES	61	55	40	40	54	64	51.4	54.4	35.4	35.4	45.4	47.4	47.4
323	RES	61	55	40	40	54	64	51.2	54.2	35.2	35.2	45.2	47.2	47.2
324	RES	61	55	40	40	54	64	46.6	49.6	30.6	30.6	40.6	42.6	42.6

REC_ID	R_Type	SH NML	CNVG OOH1 NML	CNVG OOH2 NML	ICNG OOH NML	Sleep Disturbance Criteria (LAeq)	Sleep Awakening Criteria (LAmax)	Site establishment and vegetation clearance LdBA	Mill and reconstruct / widen kerb realignment LdBA	Replace / reinstate existing pavement LdBA	Upgrades to utilities LdBA	Line marking and installation of new road signage LdBA	Installation of landscaping and street furniture including planting of new amenity trees and native vegetation LdBA	Rehabilitate the site LdBA
325	RES	61	55	40	40	54	64	50.2	53.2	34.2	34.2	44.2	46.2	46.2
327	RES	61	55	40	40	54	64	41.2	44.2	25.2	25.2	35.2	37.2	37.2
328	RES	61	55	40	40	54	64	52.5	55.5	36.5	36.5	46.5	48.5	48.5
331	RES	61	55	40	40	54	64	51.7	54.7	35.7	35.7	45.7	47.7	47.7
332	COM	70	70	70	70	N/A	N/A	51.4	54.4	35.4	35.4	45.4	47.4	47.4
333	RES	61	55	40	40	54	64	45.7	48.7	29.7	29.7	39.7	41.7	41.7
334	RES	61	55	40	40	54	64	49.2	52.2	33.2	33.2	43.2	45.2	45.2
335	RES	61	55	40	40	54	64	47.9	50.9	31.9	31.9	41.9	43.9	43.9
336	RES	61	55	40	40	54	64	48.7	51.7	32.7	32.7	42.7	44.7	44.7
337	RES	61	55	40	40	54	64	48.3	51.3	32.3	32.3	42.3	44.3	44.3
338	RES	61	55	40	40	54	64	51.3	54.3	35.3	35.3	45.3	47.3	47.3
339	RES	61	55	40	40	54	64	46.8	49.8	30.8	30.8	40.8	42.8	42.8
340	RES	61	55	40	40	54	64	40.5	43.5	24.5	24.5	34.5	36.5	36.5
341	RES	61	55	40	40	54	64	54.5	57.5	38.5	38.5	48.5	50.5	50.5
343	RES	61	55	40	40	54	64	50.3	53.3	34.3	34.3	44.3	46.3	46.3
344	RES	61	55	40	40	54	64	42.1	45.1	26.1	26.1	36.1	38.1	38.1
345	RES	61	55	40	40	54	64	49	52	33	33	43	45	45
346	RES	61	55	40	40	54	64	52.2	55.2	36.2	36.2	46.2	48.2	48.2
347	RES	61	55	40	40	54	64	50	53	34	34	44	46	46
348	COM	70	70	70	70	N/A	N/A	48.5	51.5	32.5	32.5	42.5	44.5	44.5
349	RES	61	55	40	40	54	64	49.9	52.9	33.9	33.9	43.9	45.9	45.9
350	RES	61	55	40	40	54	64	48.8	51.8	32.8	32.8	42.8	44.8	44.8
351	RES	61	55	40	40	54	64	47.5	50.5	31.5	31.5	41.5	43.5	43.5
352	RES	61	55	40	40	54	64	43.7	46.7	27.7	27.7	37.7	39.7	39.7
353	RES	61	55	40	40	54	64	50.4	53.4	34.4	34.4	44.4	46.4	46.4
356	COM	70	70	70	70	N/A	N/A	53.2	56.2	37.2	37.2	47.2	49.2	49.2
357	RES	61	55	40	40	54	64	54	57	38	38	48	50	50
359	RES	61	55	40	40	54	64	57.9	60.9	41.9	41.9	51.9	53.9	53.9
360	RES	61	55	40	40	54	64	68	71	52	52	62	64	64
361	RES	61	55	40	40	54	64	49.2	52.2	33.2	33.2	43.2	45.2	45.2
363	COM	70	70	70	70	N/A	N/A	56.5	59.5	40.5	40.5	50.5	52.5	52.5
364	RES	61	55	40	40	54	64	54.4	57.4	38.4	38.4	48.4	50.4	50.4
366	COM	70	70	70	70	N/A	N/A	59.6	62.6	43.6	43.6	53.6	55.6	55.6
367	RES	61	55	40	40	54	64	33	36	17	17	27	29	29
368	COM	70	70	70	70	N/A	N/A	55.4	58.4	39.4	39.4	49.4	51.4	51.4
369	RES	61	55	40	40	54	64	43.7	46.7	27.7	27.7	37.7	39.7	39.7
370	RES	61	55	40	40	54	64	33.5	36.5	17.5	17.5	27.5	29.5	29.5
371	RES	61	55	40	40	54	64	36.8	39.8	20.8	20.8	30.8	32.8	32.8
372	RES	61	55	40	40	54	64	36.6	39.6	20.6	20.6	30.6	32.6	32.6
373	RES	61	55	40	40	54	64	55.1	58.1	39.1	39.1	49.1	51.1	51.1
374	RES	61	55	40	40	54	64	55.4	58.4	39.4	39.4	49.4	51.4	51.4
376	RES	61	55	40	40	54	64	53	56	37	37	47	49	49
379	COM	70	70	70	70	N/A	N/A	70.1	73.1	54.1	54.1	64.1	66.1	66.1
380	RES	61	55	40	40	54	64	38.1	41.1	22.1	22.1	32.1	34.1	34.1
383	COM	70	70	70	70	N/A	N/A	74.9	77.9	58.9	58.9	68.9	70.9	70.9
385	RES	61	55	40	40	54	64	51.2	54.2	35.2	35.2	45.2	47.2	47.2
387	RES	61	55	40	40	54	64	47.8	50.8	31.8	31.8	41.8	43.8	43.8
388	RES	61	55	40	40	54	64	47	50	31	31	41	43	43
389	RES	61	55	40	40	54	64	41.6	44.6	25.6	25.6	35.6	37.6	37.6
390	RES	61	55	40	40	54	64	47.2	50.2	31.2	31.2	41.2	43.2	43.2
391	RES	61	55	40	40	54	64	42.8	45.8	26.8	26.8	36.8	38.8	38.8
392	RES	61	55	40	40	54	64	38.8	41.8	22.8	22.8	32.8	34.8	34.8
393	RES	61	55	40	40	54	64	35.6	38.6	19.6	19.6	29.6	31.6	31.6
394	RES	61	55	40	40	54	64	41.8	44.8	25.8	25.8	35.8	37.8	37.8
396	COM	70	70	70	70	N/A	N/A	49.1	52.1	33.1	33.1	43.1	45.1	45.1
397	RES	61	55	40	40	54	64	56.4	59.4	40.4	40.4	50.4	52.4	52.4
402	RES	61	55	40	40	54	64	42.4	45.4	26.4	26.4	36.4	38.4	38.4
403	RES	61	55	40	40	54	64	37.3	40.3	21.3	21.3	31.3	33.3	33.3
404	COM	70	70	70	70	N/A	N/A	44.5	47.5	28.5	28.5	38.5	40.5	40.5
405	RES	61	55	40	40	54	64	44.7	47.7	28.7	28.7	38.7	40.7	40.7

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407	RES	61	55	40	40	54	64	38.2	41.2	22.2	22.2	32.2	34.2	34.2
408	RES	61	55	40	40	54	64	46.8	49.8	30.8	30.8	40.8	42.8	42.8
410	RES	61	55	40	40	54	64	44.2	47.2	28.2	28.2	38.2	40.2	40.2
413	RES	61	55	40	40	54	64	49	52	33	33	43	45	45
414	RES	61	55	40	40	54	64	49.8	52.8	33.8	33.8	43.8	45.8	45.8
415	RES	61	55	40	40	54	64	56.9	59.9	40.9	40.9	50.9	52.9	52.9
416	RES	61	55	40	40	54	64	47.2	50.2	31.2	31.2	41.2	43.2	43.2
418	RES	61	55	40	40	54	64	48.3	51.3	32.3	32.3	42.3	44.3	44.3
419	RES	61	55	40	40	54	64	51.7	54.7	35.7	35.7	45.7	47.7	47.7
420	COM	70	70	70	70	N/A	N/A	63.3	66.3	47.3	47.3	57.3	59.3	59.3
424	RES	61	55	40	40	54	64	42.6	45.6	26.6	26.6	36.6	38.6	38.6
426	RES	61	55	40	40	54	64	48.6	51.6	32.6	32.6	42.6	44.6	44.6
427	RES	61	55	40	40	54	64	47.7	50.7	31.7	31.7	41.7	43.7	43.7
428	RES	61	55	40	40	54	64	53.9	56.9	37.9	37.9	47.9	49.9	49.9
429	RES	61	55	40	40	54	64	50.5	53.5	34.5	34.5	44.5	46.5	46.5
431	RES	61	55	40	40	54	64	39.1	42.1	23.1	23.1	33.1	35.1	35.1
432	RES	61	55	40	40	54	64	49	52	33	33	43	45	45
434	RES	61	55	40	40	54	64	39.6	42.6	23.6	23.6	33.6	35.6	35.6
435	RES	61	55	40	40	54	64	46.7	49.7	30.7	30.7	40.7	42.7	42.7
436	RES	61	55	40	40	54	64	37.8	40.8	21.8	21.8	31.8	33.8	33.8
437	RES	61	55	40	40	54	64	40	43	24	24	34	36	36
439	RES	61	55	40	40	54	64	36.8	39.8	20.8	20.8	30.8	32.8	32.8
441	RES	61	55	40	40	54	64	39.4	42.4	23.4	23.4	33.4	35.4	35.4
443	RES	61	55	40	40	54	64	38.7	41.7	22.7	22.7	32.7	34.7	34.7
444	RES	61	55	40	40	54	64	37	40	21	21	31	33	33
446	RES	61	55	40	40	54	64	36.7	39.7	20.7	20.7	30.7	32.7	32.7
447	RES	61	55	40	40	54	64	42	45	26	26	36	38	38
448	RES	61	55	40	40	54	64	46.7	49.7	30.7	30.7	40.7	42.7	42.7
449	RES	61	55	40	40	54	64	36.4	39.4	20.4	20.4	30.4	32.4	32.4
452	RES	61	55	40	40	54	64	43.3	46.3	27.3	27.3	37.3	39.3	39.3
453	RES	61	55	40	40	54	64	45.9	48.9	29.9	29.9	39.9	41.9	41.9
454	RES	61	55	40	40	54	64	-3	0	-19	-19	-9	-7	-7
456	RES	61	55	40	40	54	64	57.6	60.6	41.6	41.6	51.6	53.6	53.6
458	RES	61	55	40	40	54	64	58.5	61.5	42.5	42.5	52.5	54.5	54.5
459	RES	61	55	40	40	54	64	39.3	42.3	23.3	23.3	33.3	35.3	35.3
460	RES	61	55	40	40	54	64	51.5	54.5	35.5	35.5	45.5	47.5	47.5
461	MED	55	55	55	55	N/A	N/A	52.5	55.5	36.5	36.5	46.5	48.5	48.5
463	RES	61	55	40	40	54	64	55.4	58.4	39.4	39.4	49.4	51.4	51.4
464	PREC	60	60	60	60	N/A	N/A	49.3	52.3	33.3	33.3	43.3	45.3	45.3
465	RES	61	55	40	40	54	64	44.5	47.5	28.5	28.5	38.5	40.5	40.5
466	RES	61	55	40	40	54	64	56.1	59.1	40.1	40.1	50.1	52.1	52.1
467	RES	61	55	40	40	54	64	53.4	56.4	37.4	37.4	47.4	49.4	49.4
468	RES	61	55	40	40	54	64	54.3	57.3	38.3	38.3	48.3	50.3	50.3
469	COM	70	70	70	70	N/A	N/A	56	59	40	40	50	52	52
470	RES	61	55	40	40	54	64	63.3	66.3	47.3	47.3	57.3	59.3	59.3
471	COM	70	70	70	70	N/A	N/A	62	65	46	46	56	58	58
472	COM	70	70	70	70	N/A	N/A	60.1	63.1	44.1	44.1	54.1	56.1	56.1
473	RES	61	55	40	40	54	64	68.6	71.6	52.6	52.6	62.6	64.6	64.6
476	COM	70	70	70	70	N/A	N/A	63.1	66.1	47.1	47.1	57.1	59.1	59.1
477	COM	70	70	70	70	N/A	N/A	53.5	56.5	37.5	37.5	47.5	49.5	49.5
478	RES	61	55	40	40	54	64	46.7	49.7	30.7	30.7	40.7	42.7	42.7
479	COM	70	70	70	70	N/A	N/A	54.7	57.7	38.7	38.7	48.7	50.7	50.7
480	RES	61	55	40	40	54	64	39.1	42.1	23.1	23.1	33.1	35.1	35.1
481	RES	61	55	40	40	54	64	62.6	65.6	46.6	46.6	56.6	58.6	58.6
482	COM	70	70	70	70	N/A	N/A	53.8	56.8	37.8	37.8	47.8	49.8	49.8
483	RES	61	55	40	40	54	64	51.1	54.1	35.1	35.1	45.1	47.1	47.1
484	RES	61	55	40	40	54	64	53.6	56.6	37.6	37.6	47.6	49.6	49.6
485	COM	70	70	70	70	N/A	N/A	54.8	57.8	38.8	38.8	48.8	50.8	50.8
486	COM	70	70	70	70	N/A	N/A	41.7	44.7	25.7	25.7	35.7	37.7	37.7
487	RES	61	55	40	40	54	64	59.4	62.4	43.4	43.4	53.4	55.4	55.4

REC_ID	R_Type	SH NML	CNVG OOH1 NML	CNVG OOH2 NML	ICNG OOH NML	Sleep Disturbance Criteria (LAeq)	Sleep Awakening Criteria (LAmax)	Site establishment and vegetation clearance LdBA	Mill and reconstruct / widen kerb realignment LdBA	Replace / reinstate existing pavement LdBA	Upgrades to utilities LdBA	Line marking and installation of new road signage LdBA	Installation of landscaping and street furniture including planting of new amenity trees and native vegetation LdBA	Rehabilitate the site LdBA
489	RES	61	55	40	40	54	64	55.6	58.6	39.6	39.6	49.6	51.6	51.6
490	RES	61	55	40	40	54	64	63.7	66.7	47.7	47.7	57.7	59.7	59.7
491	COM	70	70	70	70	N/A	N/A	60.3	63.3	44.3	44.3	54.3	56.3	56.3
492	MED	55	55	55	55	N/A	N/A	52.3	55.3	36.3	36.3	46.3	48.3	48.3
493	RES	61	55	40	40	54	64	67.4	70.4	51.4	51.4	61.4	63.4	63.4
494	RES	61	55	40	40	54	64	50	53	34	34	44	46	46
495	RES	61	55	40	40	54	64	53.9	56.9	37.9	37.9	47.9	49.9	49.9
496	RES	61	55	40	40	54	64	44.1	47.1	28.1	28.1	38.1	40.1	40.1
499	RES	61	55	40	40	54	64	51.3	54.3	35.3	35.3	45.3	47.3	47.3
501	RES	61	55	40	40	54	64	51.5	54.5	35.5	35.5	45.5	47.5	47.5
503	RES	61	55	40	40	54	64	47.6	50.6	31.6	31.6	41.6	43.6	43.6
504	RES	61	55	40	40	54	64	54	57	38	38	48	50	50
505	RES	61	55	40	40	54	64	51.1	54.1	35.1	35.1	45.1	47.1	47.1
506	RES	61	55	40	40	54	64	39.7	42.7	23.7	23.7	33.7	35.7	35.7
508	RES	61	55	40	40	54	64	41.6	44.6	25.6	25.6	35.6	37.6	37.6
511	COM	70	70	70	70	N/A	N/A	45.2	48.2	29.2	29.2	39.2	41.2	41.2
512	RES	61	55	40	40	54	64	50.1	53.1	34.1	34.1	44.1	46.1	46.1
513	RES	61	55	40	40	54	64	36.7	39.7	20.7	20.7	30.7	32.7	32.7
514	RES	61	55	40	40	54	64	36.6	39.6	20.6	20.6	30.6	32.6	32.6
515	RES	61	55	40	40	54	64	36.9	39.9	20.9	20.9	30.9	32.9	32.9
517	RES	61	55	40	40	54	64	40.1	43.1	24.1	24.1	34.1	36.1	36.1
518	RES	61	55	40	40	54	64	35.4	38.4	19.4	19.4	29.4	31.4	31.4
519	RES	61	55	40	40	54	64	39.5	42.5	23.5	23.5	33.5	35.5	35.5
520	RES	61	55	40	40	54	64	49.5	52.5	33.5	33.5	43.5	45.5	45.5
522	RES	61	55	40	40	54	64	52	55	36	36	46	48	48
523	RES	61	55	40	40	54	64	31.6	34.6	15.6	15.6	25.6	27.6	27.6
524	RES	61	55	40	40	54	64	34.7	37.7	18.7	18.7	28.7	30.7	30.7
526	RES	61	55	40	40	54	64	51.5	54.5	35.5	35.5	45.5	47.5	47.5
529	RES	61	55	40	40	54	64	54.2	57.2	38.2	38.2	48.2	50.2	50.2
530	RES	61	55	40	40	54	64	46.7	49.7	30.7	30.7	40.7	42.7	42.7
531	RES	61	55	40	40	54	64	52.1	55.1	36.1	36.1	46.1	48.1	48.1
532	RES	61	55	40	40	54	64	55.2	58.2	39.2	39.2	49.2	51.2	51.2
533	RES	61	55	40	40	54	64	51.5	54.5	35.5	35.5	45.5	47.5	47.5
534	RES	61	55	40	40	54	64	51.4	54.4	35.4	35.4	45.4	47.4	47.4
537	RES	61	55	40	40	54	64	33.1	36.1	17.1	17.1	27.1	29.1	29.1
539	RES	61	55	40	40	54	64	50.7	53.7	34.7	34.7	44.7	46.7	46.7
540	COM	70	70	70	70	N/A	N/A	33.3	36.3	17.3	17.3	27.3	29.3	29.3
542	RES	61	55	40	40	54	64	40.9	43.9	24.9	24.9	34.9	36.9	36.9
544	RES	61	55	40	40	54	64	47.3	50.3	31.3	31.3	41.3	43.3	43.3
546	RES	61	55	40	40	54	64	53.4	56.4	37.4	37.4	47.4	49.4	49.4
547	RES	61	55	40	40	54	64	46.9	49.9	30.9	30.9	40.9	42.9	42.9
548	RES	61	55	40	40	54	64	46.9	49.9	30.9	30.9	40.9	42.9	42.9
549	RES	61	55	40	40	54	64	32.8	35.8	16.8	16.8	26.8	28.8	28.8
551	RES	61	55	40	40	54	64	39.7	42.7	23.7	23.7	33.7	35.7	35.7
552	RES	61	55	40	40	54	64	59	62	43	43	53	55	55
553	RES	61	55	40	40	54	64	108	111	92	92	102	104	104
555	MED	55	55	55	55	N/A	N/A	69	72	53	53	63	65	65
556	COM	70	70	70	70	N/A	N/A	56.3	59.3	40.3	40.3	50.3	52.3	52.3
558	COM	70	70	70	70	N/A	N/A	54.3	57.3	38.3	38.3	48.3	50.3	50.3
559	COM	70	70	70	70	N/A	N/A	102.8	105.8	86.8	86.8	96.8	98.8	98.8
560	RES	61	55	40	40	54	64	65.5	68.5	49.5	49.5	59.5	61.5	61.5
561	RES	61	55	40	40	54	64	52.5	55.5	36.5	36.5	46.5	48.5	48.5
563	COM	70	70	70	70	N/A	N/A	58.2	61.2	42.2	42.2	52.2	54.2	54.2
564	RES	61	55	40	40	54	64	50.9	53.9	34.9	34.9	44.9	46.9	46.9
565	RES	61	55	40	40	54	64	54	57	38	38	48	50	50
566	RES	61	55	40	40	54	64	73.7	76.7	57.7	57.7	67.7	69.7	69.7
567	RES	61	55	40	40	54	64	54.9	57.9	38.9	38.9	48.9	50.9	50.9
568	RES	61	55	40	40	54	64	62	65	46	46	56	58	58
570	RES	61	55	40	40	54	64	62.9	65.9	46.9	46.9	56.9	58.9	58.9
571	COM	70	70	70	70	N/A	N/A	56.3	59.3	40.3	40.3	50.3	52.3	52.3

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572	RES	61	55	40	40	54	64	59.1	62.1	43.1	43.1	53.1	55.1	55.1
573	RES	61	55	40	40	54	64	82.7	85.7	66.7	66.7	76.7	78.7	78.7
574	RES	61	55	40	40	54	64	51.7	54.7	35.7	35.7	45.7	47.7	47.7
575	RES	61	55	40	40	54	64	53.4	56.4	37.4	37.4	47.4	49.4	49.4
577	RES	61	55	40	40	54	64	99.8	102.8	83.8	83.8	93.8	95.8	95.8
578	RES	61	55	40	40	54	64	103.8	106.8	87.8	87.8	97.8	99.8	99.8
579	RES	61	55	40	40	54	64	55.9	58.9	39.9	39.9	49.9	51.9	51.9
582	COM	70	70	70	70	N/A	N/A	58	61	42	42	52	54	54
583	RES	61	55	40	40	54	64	61.5	64.5	45.5	45.5	55.5	57.5	57.5
584	RES	61	55	40	40	54	64	51.1	54.1	35.1	35.1	45.1	47.1	47.1
585	RES	61	55	40	40	54	64	46.2	49.2	30.2	30.2	40.2	42.2	42.2
586	RES	61	55	40	40	54	64	37.7	40.7	21.7	21.7	31.7	33.7	33.7
587	RES	61	55	40	40	54	64	60.8	63.8	44.8	44.8	54.8	56.8	56.8
588	RES	61	55	40	40	54	64	54.5	57.5	38.5	38.5	48.5	50.5	50.5
590	RES	61	55	40	40	54	64	52.6	55.6	36.6	36.6	46.6	48.6	48.6
591	RES	61	55	40	40	54	64	70.2	73.2	54.2	54.2	64.2	66.2	66.2
592	RES	61	55	40	40	54	64	52.6	55.6	36.6	36.6	46.6	48.6	48.6
593	RES	61	55	40	40	54	64	74.7	77.7	58.7	58.7	68.7	70.7	70.7
594	RES	61	55	40	40	54	64	49.9	52.9	33.9	33.9	43.9	45.9	45.9
596	RES	61	55	40	40	54	64	44	47	28	28	38	40	40
597	RES	61	55	40	40	54	64	54.8	57.8	38.8	38.8	48.8	50.8	50.8
598	RES	61	55	40	40	54	64	46.7	49.7	30.7	30.7	40.7	42.7	42.7
599	RES	61	55	40	40	54	64	72.8	75.8	56.8	56.8	66.8	68.8	68.8
600	RES	61	55	40	40	54	64	43	46	27	27	37	39	39
601	RES	61	55	40	40	54	64	54	57	38	38	48	50	50
602	RES	61	55	40	40	54	64	35.4	38.4	19.4	19.4	29.4	31.4	31.4
604	RES	61	55	40	40	54	64	42.7	45.7	26.7	26.7	36.7	38.7	38.7
606	RES	61	55	40	40	54	64	39.1	42.1	23.1	23.1	33.1	35.1	35.1
607	RES	61	55	40	40	54	64	-3	0	-19	-19	-9	-7	-7
609	RES	61	55	40	40	54	64	48.6	51.6	32.6	32.6	42.6	44.6	44.6
610	RES	61	55	40	40	54	64	41.2	44.2	25.2	25.2	35.2	37.2	37.2
611	RES	61	55	40	40	54	64	45.5	48.5	29.5	29.5	39.5	41.5	41.5
612	RES	61	55	40	40	54	64	48.8	51.8	32.8	32.8	42.8	44.8	44.8
614	RES	61	55	40	40	54	64	36.4	39.4	20.4	20.4	30.4	32.4	32.4
615	RES	61	55	40	40	54	64	34.7	37.7	18.7	18.7	28.7	30.7	30.7
616	RES	61	55	40	40	54	64	42.1	45.1	26.1	26.1	36.1	38.1	38.1
617	RES	61	55	40	40	54	64	53	56	37	37	47	49	49
620	COM	70	70	70	70	N/A	N/A	71.1	74.1	55.1	55.1	65.1	67.1	67.1
624	RES	61	55	40	40	54	64	43.7	46.7	27.7	27.7	37.7	39.7	39.7
625	RES	61	55	40	40	54	64	34.6	37.6	18.6	18.6	28.6	30.6	30.6
627	RES	61	55	40	40	54	64	36.4	39.4	20.4	20.4	30.4	32.4	32.4
630	RES	61	55	40	40	54	64	26.8	29.8	10.8	10.8	20.8	22.8	22.8
632	RES	61	55	40	40	54	64	33.4	36.4	17.4	17.4	27.4	29.4	29.4
633	RES	61	55	40	40	54	64	36.9	39.9	20.9	20.9	30.9	32.9	32.9
634	RES	61	55	40	40	54	64	39.5	42.5	23.5	23.5	33.5	35.5	35.5
635	RES	61	55	40	40	54	64	47.1	50.1	31.1	31.1	41.1	43.1	43.1
636	RES	61	55	40	40	54	64	39.1	42.1	23.1	23.1	33.1	35.1	35.1
637	RES	61	55	40	40	54	64	40.3	43.3	24.3	24.3	34.3	36.3	36.3
640	RES	61	55	40	40	54	64	48.8	51.8	32.8	32.8	42.8	44.8	44.8
641	RES	61	55	40	40	54	64	39.1	42.1	23.1	23.1	33.1	35.1	35.1
643	RES	61	55	40	40	54	64	44.5	47.5	28.5	28.5	38.5	40.5	40.5
644	RES	61	55	40	40	54	64	44.9	47.9	28.9	28.9	38.9	40.9	40.9
645	RES	61	55	40	40	54	64	37.6	40.6	21.6	21.6	31.6	33.6	33.6
646	RES	61	55	40	40	54	64	44.1	47.1	28.1	28.1	38.1	40.1	40.1
648	RES	61	55	40	40	54	64	36.1	39.1	20.1	20.1	30.1	32.1	32.1
651	RES	61	55	40	40	54	64	100.8	103.8	84.8	84.8	94.8	96.8	96.8
652	RES	61	55	40	40	54	64	52.2	55.2	36.2	36.2	46.2	48.2	48.2
653	RES	61	55	40	40	54	64	36.9	39.9	20.9	20.9	30.9	32.9	32.9
655	RES	61	55	40	40	54	64	54.9	57.9	38.9	38.9	48.9	50.9	50.9
659	RES	61	55	40	40	54	64	51.2	54.2	35.2	35.2	45.2	47.2	47.2

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661	RES	61	55	40	40	54	64	53.8	56.8	37.8	37.8	47.8	49.8	49.8
662	RES	61	55	40	40	54	64	42.9	45.9	26.9	26.9	36.9	38.9	38.9
664	RES	61	55	40	40	54	64	43.7	46.7	27.7	27.7	37.7	39.7	39.7
665	RES	61	55	40	40	54	64	46.1	49.1	30.1	30.1	40.1	42.1	42.1
666	RES	61	55	40	40	54	64	62.3	65.3	46.3	46.3	56.3	58.3	58.3
667	RES	61	55	40	40	54	64	50.3	53.3	34.3	34.3	44.3	46.3	46.3
668	RES	61	55	40	40	54	64	38.6	41.6	22.6	22.6	32.6	34.6	34.6
669	RES	61	55	40	40	54	64	34.1	37.1	18.1	18.1	28.1	30.1	30.1
670	RES	61	55	40	40	54	64	50	53	34	34	44	46	46
672	POW	55	55	55	55	N/A	N/A	50.3	53.3	34.3	34.3	44.3	46.3	46.3
673	RES	61	55	40	40	54	64	53.6	56.6	37.6	37.6	47.6	49.6	49.6
674	RES	61	55	40	40	54	64	56.3	59.3	40.3	40.3	50.3	52.3	52.3
675	COM	70	70	70	70	N/A	N/A	64.6	67.6	48.6	48.6	58.6	60.6	60.6
678	RES	61	55	40	40	54	64	51.4	54.4	35.4	35.4	45.4	47.4	47.4
679	RES	61	55	40	40	54	64	54	57	38	38	48	50	50
680	RES	61	55	40	40	54	64	32	35	16	16	26	28	28
681	RES	61	55	40	40	54	64	46.9	49.9	30.9	30.9	40.9	42.9	42.9
682	RES	61	55	40	40	54	64	52.2	55.2	36.2	36.2	46.2	48.2	48.2
683	COM	70	70	70	70	N/A	N/A	49.8	52.8	33.8	33.8	43.8	45.8	45.8
685	RES	61	55	40	40	54	64	47	50	31	31	41	43	43
686	COM	70	70	70	70	N/A	N/A	49.4	52.4	33.4	33.4	43.4	45.4	45.4
687	RES	61	55	40	40	54	64	42.1	45.1	26.1	26.1	36.1	38.1	38.1
689	RES	61	55	40	40	54	64	51.8	54.8	35.8	35.8	45.8	47.8	47.8
690	RES	61	55	40	40	54	64	47.9	50.9	31.9	31.9	41.9	43.9	43.9
693	RES	61	55	40	40	54	64	49	52	33	33	43	45	45
694	RES	61	55	40	40	54	64	49.5	52.5	33.5	33.5	43.5	45.5	45.5
696	RES	61	55	40	40	54	64	45.6	48.6	29.6	29.6	39.6	41.6	41.6
697	COM	70	70	70	70	N/A	N/A	51.4	54.4	35.4	35.4	45.4	47.4	47.4
698	RES	61	55	40	40	54	64	54.9	57.9	38.9	38.9	48.9	50.9	50.9
699	RES	61	55	40	40	54	64	45.5	48.5	29.5	29.5	39.5	41.5	41.5
700	RES	61	55	40	40	54	64	48.3	51.3	32.3	32.3	42.3	44.3	44.3
701	RES	61	55	40	40	54	64	41.7	44.7	25.7	25.7	35.7	37.7	37.7
702	RES	61	55	40	40	54	64	38.5	41.5	22.5	22.5	32.5	34.5	34.5
703	RES	61	55	40	40	54	64	51.4	54.4	35.4	35.4	45.4	47.4	47.4
704	RES	61	55	40	40	54	64	43.7	46.7	27.7	27.7	37.7	39.7	39.7
705	RES	61	55	40	40	54	64	50.1	53.1	34.1	34.1	44.1	46.1	46.1
707	RES	61	55	40	40	54	64	53.8	56.8	37.8	37.8	47.8	49.8	49.8
708	RES	61	55	40	40	54	64	-3	0	-19	-19	-9	-7	-7
709	RES	61	55	40	40	54	64	47.7	50.7	31.7	31.7	41.7	43.7	43.7
710	RES	61	55	40	40	54	64	28.1	31.1	12.1	12.1	22.1	24.1	24.1
714	RES	61	55	40	40	54	64	49.6	52.6	33.6	33.6	43.6	45.6	45.6
715	RES	61	55	40	40	54	64	51.1	54.1	35.1	35.1	45.1	47.1	47.1
717	RES	61	55	40	40	54	64	50.4	53.4	34.4	34.4	44.4	46.4	46.4
718	RES	61	55	40	40	54	64	38.9	41.9	22.9	22.9	32.9	34.9	34.9
719	RES	61	55	40	40	54	64	52.6	55.6	36.6	36.6	46.6	48.6	48.6
720	RES	61	55	40	40	54	64	49.5	52.5	33.5	33.5	43.5	45.5	45.5
721	RES	61	55	40	40	54	64	42.1	45.1	26.1	26.1	36.1	38.1	38.1
722	RES	61	55	40	40	54	64	51	54	35	35	45	47	47
723	RES	61	55	40	40	54	64	51	54	35	35	45	47	47
724	RES	61	55	40	40	54	64	42.6	45.6	26.6	26.6	36.6	38.6	38.6
725	RES	61	55	40	40	54	64	43.2	46.2	27.2	27.2	37.2	39.2	39.2
726	RES	61	55	40	40	54	64	49.1	52.1	33.1	33.1	43.1	45.1	45.1
727	RES	61	55	40	40	54	64	50.9	53.9	34.9	34.9	44.9	46.9	46.9
728	RES	61	55	40	40	54	64	46	49	30	30	40	42	42
730	RES	61	55	40	40	54	64	48.2	51.2	32.2	32.2	42.2	44.2	44.2
731	RES	61	55	40	40	54	64	43.2	46.2	27.2	27.2	37.2	39.2	39.2
732	RES	61	55	40	40	54	64	43.5	46.5	27.5	27.5	37.5	39.5	39.5
733	RES	61	55	40	40	54	64	39.4	42.4	23.4	23.4	33.4	35.4	35.4
734	RES	61	55	40	40	54	64	50.9	53.9	34.9	34.9	44.9	46.9	46.9
735	RES	61	55	40	40	54	64	50.3	53.3	34.3	34.3	44.3	46.3	46.3

REC_ID	R_Type	SH NML	CNVG OOH1 NML	CNVG OOH2 NML	ICNG OOH NML	Sleep Disturbance Criteria (LAeq)	Sleep Awakening Criteria (LAmax)	Site establishment and vegetation clearance LdBA	Mill and reconstruct / widen kerb realignment LdBA	Replace / reinstate existing pavement LdBA	Upgrades to utilities LdBA	Line marking and installation of new road signage LdBA	Installation of landscaping and street furniture including planting of new amenity trees and native vegetation LdBA	Rehabilitate the site LdBA
737	RES	61	55	40	40	54	64	47.9	50.9	31.9	31.9	41.9	43.9	43.9
738	RES	61	55	40	40	54	64	48.6	51.6	32.6	32.6	42.6	44.6	44.6
739	RES	61	55	40	40	54	64	39.8	42.8	23.8	23.8	33.8	35.8	35.8
740	RES	61	55	40	40	54	64	48.2	51.2	32.2	32.2	42.2	44.2	44.2
741	RES	61	55	40	40	54	64	49.1	52.1	33.1	33.1	43.1	45.1	45.1
743	RES	61	55	40	40	54	64	46.2	49.2	30.2	30.2	40.2	42.2	42.2
744	RES	61	55	40	40	54	64	47	50	31	31	41	43	43
745	RES	61	55	40	40	54	64	46.3	49.3	30.3	30.3	40.3	42.3	42.3
746	RES	61	55	40	40	54	64	46.5	49.5	30.5	30.5	40.5	42.5	42.5
747	RES	61	55	40	40	54	64	41.8	44.8	25.8	25.8	35.8	37.8	37.8
749	RES	61	55	40	40	54	64	50.3	53.3	34.3	34.3	44.3	46.3	46.3
750	RES	61	55	40	40	54	64	54.6	57.6	38.6	38.6	48.6	50.6	50.6
751	RES	61	55	40	40	54	64	48.3	51.3	32.3	32.3	42.3	44.3	44.3
752	RES	61	55	40	40	54	64	48	51	32	32	42	44	44
753	RES	61	55	40	40	54	64	48.3	51.3	32.3	32.3	42.3	44.3	44.3
754	RES	61	55	40	40	54	64	54.2	57.2	38.2	38.2	48.2	50.2	50.2
757	RES	61	55	40	40	54	64	35.6	38.6	19.6	19.6	29.6	31.6	31.6
759	RES	61	55	40	40	54	64	46.1	49.1	30.1	30.1	40.1	42.1	42.1
761	COM	70	70	70	70	N/A	N/A	49.3	52.3	33.3	33.3	43.3	45.3	45.3
762	RES	61	55	40	40	54	64	42.4	45.4	26.4	26.4	36.4	38.4	38.4
764	RES	61	55	40	40	54	64	48.7	51.7	32.7	32.7	42.7	44.7	44.7
766	RES	61	55	40	40	54	64	33.7	36.7	17.7	17.7	27.7	29.7	29.7
767	RES	61	55	40	40	54	64	44.6	47.6	28.6	28.6	38.6	40.6	40.6
769	COM	70	70	70	70	N/A	N/A	51.4	54.4	35.4	35.4	45.4	47.4	47.4
777	RES	61	55	40	40	54	64	34.1	37.1	18.1	18.1	28.1	30.1	30.1
778	RES	61	55	40	40	54	64	39.8	42.8	23.8	23.8	33.8	35.8	35.8
779	COM	70	70	70	70	N/A	N/A	48.2	51.2	32.2	32.2	42.2	44.2	44.2
780	RES	61	55	40	40	54	64	46.3	49.3	30.3	30.3	40.3	42.3	42.3
782	RES	61	55	40	40	54	64	47.2	50.2	31.2	31.2	41.2	43.2	43.2
785	RES	61	55	40	40	54	64	47.6	50.6	31.6	31.6	41.6	43.6	43.6
786	RES	61	55	40	40	54	64	44.3	47.3	28.3	28.3	38.3	40.3	40.3
788	RES	61	55	40	40	54	64	44.3	47.3	28.3	28.3	38.3	40.3	40.3
791	COM	70	70	70	70	N/A	N/A	55.2	58.2	39.2	39.2	49.2	51.2	51.2
793	COM	70	70	70	70	N/A	N/A	58.1	61.1	42.1	42.1	52.1	54.1	54.1
795	RES	61	55	40	40	54	64	47.2	50.2	31.2	31.2	41.2	43.2	43.2
797	RES	61	55	40	40	54	64	43.6	46.6	27.6	27.6	37.6	39.6	39.6
799	COM	70	70	70	70	N/A	N/A	60.2	63.2	44.2	44.2	54.2	56.2	56.2
801	RES	61	55	40	40	54	64	51.9	54.9	35.9	35.9	45.9	47.9	47.9
802	RES	61	55	40	40	54	64	37.3	40.3	21.3	21.3	31.3	33.3	33.3
803	RES	61	55	40	40	54	64	40.8	43.8	24.8	24.8	34.8	36.8	36.8
804	RES	61	55	40	40	54	64	49.6	52.6	33.6	33.6	43.6	45.6	45.6
805	COM	70	70	70	70	N/A	N/A	103.2	106.2	87.2	87.2	97.2	99.2	99.2
806	COM	70	70	70	70	N/A	N/A	58.7	61.7	42.7	42.7	52.7	54.7	54.7
807	RES	61	55	40	40	54	64	36.1	39.1	20.1	20.1	30.1	32.1	32.1
808	RES	61	55	40	40	54	64	34.6	37.6	18.6	18.6	28.6	30.6	30.6
811	RES	61	55	40	40	54	64	43.3	46.3	27.3	27.3	37.3	39.3	39.3
814	COM	70	70	70	70	N/A	N/A	88.4	91.4	72.4	72.4	82.4	84.4	84.4
815	RES	61	55	40	40	54	64	48.5	51.5	32.5	32.5	42.5	44.5	44.5
819	COM	70	70	70	70	N/A	N/A	103.6	106.6	87.6	87.6	97.6	99.6	99.6
823	RES	61	55	40	40	54	64	67.6	70.6	51.6	51.6	61.6	63.6	63.6
824	RES	61	55	40	40	54	64	49.5	52.5	33.5	33.5	43.5	45.5	45.5
828	COM	70	70	70	70	N/A	N/A	66.6	69.6	50.6	50.6	60.6	62.6	62.6
829	COM	70	70	70	70	N/A	N/A	45.4	48.4	29.4	29.4	39.4	41.4	41.4
832	RES	61	55	40	40	54	64	37.3	40.3	21.3	21.3	31.3	33.3	33.3
834	EDU	55	55	55	55	N/A	N/A	65.8	68.8	49.8	49.8	59.8	61.8	61.8
835	RES	61	55	40	40	54	64	48	51	32	32	42	44	44
836	RES	61	55	40	40	54	64	40.6	43.6	24.6	24.6	34.6	36.6	36.6
837	EDU	55	55	55	55	N/A	N/A	41.1	44.1	25.1	25.1	35.1	37.1	37.1
839	RES	61	55	40	40	54	64	48.8	51.8	32.8	32.8	42.8	44.8	44.8
840	RES	61	55	40	40	54	64	109	112	93	93	103	105	105

REC_ID	R_Type	SH NML	CNVG OOH1 NML	CNVG OOH2 NML	ICNG OOH NML	Sleep Disturbance Criteria (LAeq)	Sleep Awakening Criteria (LAmax)	Site establishment and vegetation clearance LdBA	Mill and reconstruct / widen kerb realignment LdBA	Replace / reinstate existing pavement LdBA	Upgrades to utilities LdBA	Line marking and installation of new road signage LdBA	Installation of landscaping and street furniture including planting of new amenity trees and native vegetation LdBA	Rehabilitate the site LdBA
841	MED	55	55	55	55	N/A	N/A	61.2	64.2	45.2	45.2	55.2	57.2	57.2
846	RES	61	55	40	40	54	64	58.3	61.3	42.3	42.3	52.3	54.3	54.3
848	RES	61	55	40	40	54	64	52.1	55.1	36.1	36.1	46.1	48.1	48.1
851	RES	61	55	40	40	54	64	49.5	52.5	33.5	33.5	43.5	45.5	45.5
853	RES	61	55	40	40	54	64	48.9	51.9	32.9	32.9	42.9	44.9	44.9
855	RES	61	55	40	40	54	64	43.6	46.6	27.6	27.6	37.6	39.6	39.6
856	RES	61	55	40	40	54	64	37.1	40.1	21.1	21.1	31.1	33.1	33.1
857	RES	61	55	40	40	54	64	51.8	54.8	35.8	35.8	45.8	47.8	47.8
858	RES	61	55	40	40	54	64	54.1	57.1	38.1	38.1	48.1	50.1	50.1
859	RES	61	55	40	40	54	64	39.3	42.3	23.3	23.3	33.3	35.3	35.3
862	RES	61	55	40	40	54	64	42.9	45.9	26.9	26.9	36.9	38.9	38.9
863	RES	61	55	40	40	54	64	51.5	54.5	35.5	35.5	45.5	47.5	47.5
865	RES	61	55	40	40	54	64	34.7	37.7	18.7	18.7	28.7	30.7	30.7
866	RES	61	55	40	40	54	64	53.5	56.5	37.5	37.5	47.5	49.5	49.5
867	RES	61	55	40	40	54	64	52.2	55.2	36.2	36.2	46.2	48.2	48.2
868	RES	61	55	40	40	54	64	34.8	37.8	18.8	18.8	28.8	30.8	30.8
870	COM	70	70	70	70	N/A	N/A	35.3	38.3	19.3	19.3	29.3	31.3	31.3
871	EDU	55	55	55	55	N/A	N/A	50.9	53.9	34.9	34.9	44.9	46.9	46.9
872	RES	61	55	40	40	54	64	40.1	43.1	24.1	24.1	34.1	36.1	36.1
873	EDU	55	55	55	55	N/A	N/A	48.9	51.9	32.9	32.9	42.9	44.9	44.9
876	POW	55	55	55	55	N/A	N/A	60.5	63.5	44.5	44.5	54.5	56.5	56.5
877	RES	61	55	40	40	54	64	39.9	42.9	23.9	23.9	33.9	35.9	35.9
879	RES	61	55	40	40	54	64	39.3	42.3	23.3	23.3	33.3	35.3	35.3
880	RES	61	55	40	40	54	64	51.4	54.4	35.4	35.4	45.4	47.4	47.4
881	RES	61	55	40	40	54	64	52.8	55.8	36.8	36.8	46.8	48.8	48.8
882	RES	61	55	40	40	54	64	49	52	33	33	43	45	45
884	RES	61	55	40	40	54	64	49.9	52.9	33.9	33.9	43.9	45.9	45.9
885	RES	61	55	40	40	54	64	32.9	35.9	16.9	16.9	26.9	28.9	28.9
886	RES	61	55	40	40	54	64	45.2	48.2	29.2	29.2	39.2	41.2	41.2
889	RES	61	55	40	40	54	64	28.4	31.4	12.4	12.4	22.4	24.4	24.4
891	RES	61	55	40	40	54	64	41	44	25	25	35	37	37
892	RES	61	55	40	40	54	64	47.9	50.9	31.9	31.9	41.9	43.9	43.9
893	RES	61	55	40	40	54	64	42.6	45.6	26.6	26.6	36.6	38.6	38.6
895	COM	70	70	70	70	N/A	N/A	48.6	51.6	32.6	32.6	42.6	44.6	44.6
897	RES	61	55	40	40	54	64	47.6	50.6	31.6	31.6	41.6	43.6	43.6
898	RES	61	55	40	40	54	64	44.4	47.4	28.4	28.4	38.4	40.4	40.4
899	COM	70	70	70	70	N/A	N/A	51.7	54.7	35.7	35.7	45.7	47.7	47.7
900	COM	70	70	70	70	N/A	N/A	49	52	33	33	43	45	45
904	RES	61	55	40	40	54	64	64.6	67.6	48.6	48.6	58.6	60.6	60.6
905	RES	61	55	40	40	54	64	38	41	22	22	32	34	34
907	RES	61	55	40	40	54	64	47.6	50.6	31.6	31.6	41.6	43.6	43.6
908	RES	61	55	40	40	54	64	54.4	57.4	38.4	38.4	48.4	50.4	50.4
910	RES	61	55	40	40	54	64	34.2	37.2	18.2	18.2	28.2	30.2	30.2
911	RES	61	55	40	40	54	64	53	56	37	37	47	49	49
912	RES	61	55	40	40	54	64	48.1	51.1	32.1	32.1	42.1	44.1	44.1
914	RES	61	55	40	40	54	64	53.7	56.7	37.7	37.7	47.7	49.7	49.7
915	RES	61	55	40	40	54	64	60.1	63.1	44.1	44.1	54.1	56.1	56.1
916	RES	61	55	40	40	54	64	56.6	59.6	40.6	40.6	50.6	52.6	52.6
917	RES	61	55	40	40	54	64	46.1	49.1	30.1	30.1	40.1	42.1	42.1
919	RES	61	55	40	40	54	64	55.5	58.5	39.5	39.5	49.5	51.5	51.5
924	RES	61	55	40	40	54	64	58.2	61.2	42.2	42.2	52.2	54.2	54.2
926	RES	61	55	40	40	54	64	37	40	21	21	31	33	33
927	RES	61	55	40	40	54	64	32.3	35.3	16.3	16.3	26.3	28.3	28.3
928	POW	55	55	55	55	N/A	N/A	73.5	76.5	57.5	57.5	67.5	69.5	69.5
931	EDU	55	55	55	55	N/A	N/A	43.3	46.3	27.3	27.3	37.3	39.3	39.3
932	RES	61	55	40	40	54	64	56.6	59.6	40.6	40.6	50.6	52.6	52.6
935	RES	61	55	40	40	54	64	46.2	49.2	30.2	30.2	40.2	42.2	42.2
939	RES	61	55	40	40	54	64	53.2	56.2	37.2	37.2	47.2	49.2	49.2
940	RES	61	55	40	40	54	64	48.3	51.3	32.3	32.3	42.3	44.3	44.3
941	RES	61	55	40	40	54	64	55.5	58.5	39.5	39.5	49.5	51.5	51.5

REC_ID	R_Type	SH NML	CNVG OOH1 NML	CNVG OOH2 NML	ICNG OOH NML	Sleep Disturbance Criteria (LAeq)	Sleep Awakening Criteria (LAmax)	Site establishment and vegetation clearance LdBA	Mill and reconstruct / widen kerb realignment LdBA	Replace / reinstate existing pavement LdBA	Upgrades to utilities LdBA	Line marking and installation of new road signage LdBA	Installation of landscaping and street furniture including planting of new amenity trees and native vegetation LdBA	Rehabilitate the site LdBA
943	COM	70	70	70	70	N/A	N/A	51.4	54.4	35.4	35.4	45.4	47.4	47.4
944	RES	61	55	40	40	54	64	45.3	48.3	29.3	29.3	39.3	41.3	41.3
945	RES	61	55	40	40	54	64	54	57	38	38	48	50	50
946	RES	61	55	40	40	54	64	37.8	40.8	21.8	21.8	31.8	33.8	33.8
947	RES	61	55	40	40	54	64	50.8	53.8	34.8	34.8	44.8	46.8	46.8
948	RES	61	55	40	40	54	64	52	55	36	36	46	48	48
950	RES	61	55	40	40	54	64	48.7	51.7	32.7	32.7	42.7	44.7	44.7
951	RES	61	55	40	40	54	64	53.5	56.5	37.5	37.5	47.5	49.5	49.5
952	RES	61	55	40	40	54	64	31.6	34.6	15.6	15.6	25.6	27.6	27.6
953	RES	61	55	40	40	54	64	46.8	49.8	30.8	30.8	40.8	42.8	42.8
954	RES	61	55	40	40	54	64	52.7	55.7	36.7	36.7	46.7	48.7	48.7
955	RES	61	55	40	40	54	64	52.3	55.3	36.3	36.3	46.3	48.3	48.3
957	RES	61	55	40	40	54	64	48.3	51.3	32.3	32.3	42.3	44.3	44.3
958	COM	70	70	70	70	N/A	N/A	53.5	56.5	37.5	37.5	47.5	49.5	49.5
959	RES	61	55	40	40	54	64	53.5	56.5	37.5	37.5	47.5	49.5	49.5
960	RES	61	55	40	40	54	64	48.2	51.2	32.2	32.2	42.2	44.2	44.2
965	RES	61	55	40	40	54	64	47.4	50.4	31.4	31.4	41.4	43.4	43.4
967	RES	61	55	40	40	54	64	49.6	52.6	33.6	33.6	43.6	45.6	45.6
968	RES	61	55	40	40	54	64	48.6	51.6	32.6	32.6	42.6	44.6	44.6
971	RES	61	55	40	40	54	64	48	51	32	32	42	44	44
972	RES	61	55	40	40	54	64	48.2	51.2	32.2	32.2	42.2	44.2	44.2
973	RES	61	55	40	40	54	64	47.2	50.2	31.2	31.2	41.2	43.2	43.2
974	RES	61	55	40	40	54	64	43.2	46.2	27.2	27.2	37.2	39.2	39.2
977	RES	61	55	40	40	54	64	58.1	61.1	42.1	42.1	52.1	54.1	54.1
979	RES	61	55	40	40	54	64	49.1	52.1	33.1	33.1	43.1	45.1	45.1
980	RES	61	55	40	40	54	64	48.4	51.4	32.4	32.4	42.4	44.4	44.4
981	RES	61	55	40	40	54	64	44.4	47.4	28.4	28.4	38.4	40.4	40.4
983	RES	61	55	40	40	54	64	51.4	54.4	35.4	35.4	45.4	47.4	47.4
985	RES	61	55	40	40	54	64	46.9	49.9	30.9	30.9	40.9	42.9	42.9
986	RES	61	55	40	40	54	64	47.5	50.5	31.5	31.5	41.5	43.5	43.5
987	RES	61	55	40	40	54	64	48.2	51.2	32.2	32.2	42.2	44.2	44.2
988	RES	61	55	40	40	54	64	40.3	43.3	24.3	24.3	34.3	36.3	36.3
989	RES	61	55	40	40	54	64	53.5	56.5	37.5	37.5	47.5	49.5	49.5
990	RES	61	55	40	40	54	64	47.4	50.4	31.4	31.4	41.4	43.4	43.4
991	RES	61	55	40	40	54	64	57.1	60.1	41.1	41.1	51.1	53.1	53.1
993	RES	61	55	40	40	54	64	34.2	37.2	18.2	18.2	28.2	30.2	30.2
994	RES	61	55	40	40	54	64	34.7	37.7	18.7	18.7	28.7	30.7	30.7
995	RES	61	55	40	40	54	64	41	44	25	25	35	37	37
996	RES	61	55	40	40	54	64	49.8	52.8	33.8	33.8	43.8	45.8	45.8
997	RES	61	55	40	40	54	64	46.1	49.1	30.1	30.1	40.1	42.1	42.1
999	RES	61	55	40	40	54	64	46.2	49.2	30.2	30.2	40.2	42.2	42.2
1001	RES	61	55	40	40	54	64	46.6	49.6	30.6	30.6	40.6	42.6	42.6
1002	RES	61	55	40	40	54	64	50.6	53.6	34.6	34.6	44.6	46.6	46.6
1005	RES	61	55	40	40	54	64	47.1	50.1	31.1	31.1	41.1	43.1	43.1
1006	RES	61	55	40	40	54	64	45.6	48.6	29.6	29.6	39.6	41.6	41.6
1008	RES	61	55	40	40	54	64	47.4	50.4	31.4	31.4	41.4	43.4	43.4
1010	RES	61	55	40	40	54	64	46.1	49.1	30.1	30.1	40.1	42.1	42.1
1011	RES	61	55	40	40	54	64	38.1	41.1	22.1	22.1	32.1	34.1	34.1
1012	RES	61	55	40	40	54	64	48.1	51.1	32.1	32.1	42.1	44.1	44.1
1013	RES	61	55	40	40	54	64	40.7	43.7	24.7	24.7	34.7	36.7	36.7
1015	RES	61	55	40	40	54	64	46.6	49.6	30.6	30.6	40.6	42.6	42.6
1016	RES	61	55	40	40	54	64	42	45	26	26	36	38	38
1018	RES	61	55	40	40	54	64	34.2	37.2	18.2	18.2	28.2	30.2	30.2
1020	RES	61	55	40	40	54	64	47.7	50.7	31.7	31.7	41.7	43.7	43.7
1023	RES	61	55	40	40	54	64	42.9	45.9	26.9	26.9	36.9	38.9	38.9
1029	RES	61	55	40	40	54	64	44.1	47.1	28.1	28.1	38.1	40.1	40.1
1032	RES	61	55	40	40	54	64	39.7	42.7	23.7	23.7	33.7	35.7	35.7
1033	RES	61	55	40	40	54	64	47.1	50.1	31.1	31.1	41.1	43.1	43.1
1034	RES	61	55	40	40	54	64	47.3	50.3	31.3	31.3	41.3	43.3	43.3
1035	RES	61	55	40	40	54	64	44.6	47.6	28.6	28.6	38.6	40.6	40.6

REC_ID	R_Type	SH NML	CNVG OOH1 NML	CNVG OOH2 NML	ICNG OOH NML	Sleep Disturbance Criteria (LAeq)	Sleep Awakening Criteria (LAmax)	Site establishment and vegetation clearance LdBA	Mill and reconstruct / widen kerb realignment LdBA	Replace / reinstate existing pavement LdBA	Upgrades to utilities LdBA	Line marking and installation of new road signage LdBA	Installation of landscaping and street furniture including planting of new amenity trees and native vegetation LdBA	Rehabilitate the site LdBA
1036	RES	61	55	40	40	54	64	45.1	48.1	29.1	29.1	39.1	41.1	41.1
1037	RES	61	55	40	40	54	64	51.8	54.8	35.8	35.8	45.8	47.8	47.8
1039	RES	61	55	40	40	54	64	33.8	36.8	17.8	17.8	27.8	29.8	29.8
1040	RES	61	55	40	40	54	64	46.3	49.3	30.3	30.3	40.3	42.3	42.3
1041	RES	61	55	40	40	54	64	36.5	39.5	20.5	20.5	30.5	32.5	32.5
1042	RES	61	55	40	40	54	64	45.9	48.9	29.9	29.9	39.9	41.9	41.9
1043	RES	61	55	40	40	54	64	41.5	44.5	25.5	25.5	35.5	37.5	37.5
1044	RES	61	55	40	40	54	64	42.2	45.2	26.2	26.2	36.2	38.2	38.2
1045	RES	61	55	40	40	54	64	40.1	43.1	24.1	24.1	34.1	36.1	36.1
1048	RES	61	55	40	40	54	64	39.2	42.2	23.2	23.2	33.2	35.2	35.2
1049	RES	61	55	40	40	54	64	41.5	44.5	25.5	25.5	35.5	37.5	37.5
1051	RES	61	55	40	40	54	64	47	50	31	31	41	43	43
1054	RES	61	55	40	40	54	64	30.3	33.3	14.3	14.3	24.3	26.3	26.3
1056	RES	61	55	40	40	54	64	50.5	53.5	34.5	34.5	44.5	46.5	46.5
1058	RES	61	55	40	40	54	64	32.5	35.5	16.5	16.5	26.5	28.5	28.5
1061	COM	70	70	70	70	N/A	N/A	36.9	39.9	20.9	20.9	30.9	32.9	32.9
1063	RES	61	55	40	40	54	64	34.1	37.1	18.1	18.1	28.1	30.1	30.1
1064	RES	61	55	40	40	54	64	49.8	52.8	33.8	33.8	43.8	45.8	45.8
1067	RES	61	55	40	40	54	64	37.3	40.3	21.3	21.3	31.3	33.3	33.3
1071	RES	61	55	40	40	54	64	35.9	38.9	19.9	19.9	29.9	31.9	31.9
1072	RES	61	55	40	40	54	64	48.2	51.2	32.2	32.2	42.2	44.2	44.2
1073	COM	70	70	70	70	N/A	N/A	57.2	60.2	41.2	41.2	51.2	53.2	53.2
1074	COM	70	70	70	70	N/A	N/A	51.9	54.9	35.9	35.9	45.9	47.9	47.9
1075	RES	61	55	40	40	54	64	31.1	34.1	15.1	15.1	25.1	27.1	27.1
1078	RES	61	55	40	40	54	64	35.4	38.4	19.4	19.4	29.4	31.4	31.4
1079	RES	61	55	40	40	54	64	45.3	48.3	29.3	29.3	39.3	41.3	41.3
1080	RES	61	55	40	40	54	64	51.2	54.2	35.2	35.2	45.2	47.2	47.2
1081	COM	70	70	70	70	N/A	N/A	43.1	46.1	27.1	27.1	37.1	39.1	39.1
1085	RES	61	55	40	40	54	64	51.2	54.2	35.2	35.2	45.2	47.2	47.2
1086	RES	61	55	40	40	54	64	50.4	53.4	34.4	34.4	44.4	46.4	46.4
1087	COM	70	70	70	70	N/A	N/A	60.4	63.4	44.4	44.4	54.4	56.4	56.4
1089	RES	61	55	40	40	54	64	36.9	39.9	20.9	20.9	30.9	32.9	32.9
1091	RES	61	55	40	40	54	64	46.3	49.3	30.3	30.3	40.3	42.3	42.3
1093	RES	61	55	40	40	54	64	38.8	41.8	22.8	22.8	32.8	34.8	34.8
1094	RES	61	55	40	40	54	64	44.2	47.2	28.2	28.2	38.2	40.2	40.2
1095	RES	61	55	40	40	54	64	45.9	48.9	29.9	29.9	39.9	41.9	41.9
1096	RES	61	55	40	40	54	64	48.3	51.3	32.3	32.3	42.3	44.3	44.3
1097	RES	61	55	40	40	54	64	48.6	51.6	32.6	32.6	42.6	44.6	44.6
1099	RES	61	55	40	40	54	64	43.4	46.4	27.4	27.4	37.4	39.4	39.4
1100	RES	61	55	40	40	54	64	38.8	41.8	22.8	22.8	32.8	34.8	34.8
1101	RES	61	55	40	40	54	64	38.8	41.8	22.8	22.8	32.8	34.8	34.8
1103	RES	61	55	40	40	54	64	51.1	54.1	35.1	35.1	45.1	47.1	47.1
1105	RES	61	55	40	40	54	64	41	44	25	25	35	37	37
1106	RES	61	55	40	40	54	64	40.4	43.4	24.4	24.4	34.4	36.4	36.4
1107	RES	61	55	40	40	54	64	-3	0	-19	-19	-9	-7	-7
1109	RES	61	55	40	40	54	64	46.2	49.2	30.2	30.2	40.2	42.2	42.2
1110	RES	61	55	40	40	54	64	35.2	38.2	19.2	19.2	29.2	31.2	31.2
1111	RES	61	55	40	40	54	64	41	44	25	25	35	37	37
1113	RES	61	55	40	40	54	64	42.9	45.9	26.9	26.9	36.9	38.9	38.9
1114	RES	61	55	40	40	54	64	48.5	51.5	32.5	32.5	42.5	44.5	44.5
1115	RES	61	55	40	40	54	64	35.5	38.5	19.5	19.5	29.5	31.5	31.5
1116	COM	70	70	70	70	N/A	N/A	46.8	49.8	30.8	30.8	40.8	42.8	42.8
1118	RES	61	55	40	40	54	64	46.8	49.8	30.8	30.8	40.8	42.8	42.8
1119	RES	61	55	40	40	54	64	47.7	50.7	31.7	31.7	41.7	43.7	43.7
1120	RES	61	55	40	40	54	64	34.3	37.3	18.3	18.3	28.3	30.3	30.3
1121	RES	61	55	40	40	54	64	50.1	53.1	34.1	34.1	44.1	46.1	46.1
1122	RES	61	55	40	40	54	64	39.7	42.7	23.7	23.7	33.7	35.7	35.7
1123	RES	61	55	40	40	54	64	42.7	45.7	26.7	26.7	36.7	38.7	38.7
1124	RES	61	55	40	40	54	64	26.7	29.7	10.7	10.7	20.7	22.7	22.7
1129	RES	61	55	40	40	54	64	41.6	44.6	25.6	25.6	35.6	37.6	37.6

REC_ID	R_Type	SH NML	CNVG OOH1 NML	CNVG OOH2 NML	ICNG OOH NML	Sleep Disturbance Criteria (LAeq)	Sleep Awakening Criteria (LAmax)	Site establishment and vegetation clearance LdBA	Mill and reconstruct / widen kerb realignment LdBA	Replace / reinstate existing pavement LdBA	Upgrades to utilities LdBA	Line marking and installation of new road signage LdBA	Installation of landscaping and street furniture including planting of new amenity trees and native vegetation LdBA	Rehabilitate the site LdBA
1130	RES	61	55	40	40	54	64	45.2	48.2	29.2	29.2	39.2	41.2	41.2
1131	RES	61	55	40	40	54	64	42.8	45.8	26.8	26.8	36.8	38.8	38.8
1132	RES	61	55	40	40	54	64	48.2	51.2	32.2	32.2	42.2	44.2	44.2
1133	RES	61	55	40	40	54	64	48.8	51.8	32.8	32.8	42.8	44.8	44.8
1134	RES	61	55	40	40	54	64	45.5	48.5	29.5	29.5	39.5	41.5	41.5
1137	RES	61	55	40	40	54	64	47.5	50.5	31.5	31.5	41.5	43.5	43.5
1140	RES	61	55	40	40	54	64	45.5	48.5	29.5	29.5	39.5	41.5	41.5
1141	RES	61	55	40	40	54	64	39.9	42.9	23.9	23.9	33.9	35.9	35.9
1142	RES	61	55	40	40	54	64	48	51	32	32	42	44	44
1143	RES	61	55	40	40	54	64	41	44	25	25	35	37	37
1144	RES	61	55	40	40	54	64	45	48	29	29	39	41	41
1145	RES	61	55	40	40	54	64	35	38	19	19	29	31	31
1146	RES	61	55	40	40	54	64	47.8	50.8	31.8	31.8	41.8	43.8	43.8
1147	RES	61	55	40	40	54	64	56.6	59.6	40.6	40.6	50.6	52.6	52.6
1148	RES	61	55	40	40	54	64	33.7	36.7	17.7	17.7	27.7	29.7	29.7
1149	RES	61	55	40	40	54	64	36.7	39.7	20.7	20.7	30.7	32.7	32.7
1150	RES	61	55	40	40	54	64	39.9	42.9	23.9	23.9	33.9	35.9	35.9
1152	RES	61	55	40	40	54	64	49.3	52.3	33.3	33.3	43.3	45.3	45.3
1154	RES	61	55	40	40	54	64	61.3	64.3	45.3	45.3	55.3	57.3	57.3
1155	RES	61	55	40	40	54	64	51.8	54.8	35.8	35.8	45.8	47.8	47.8
1156	RES	61	55	40	40	54	64	38	41	22	22	32	34	34
1157	RES	61	55	40	40	54	64	45	48	29	29	39	41	41
1158	RES	61	55	40	40	54	64	58.7	61.7	42.7	42.7	52.7	54.7	54.7
1159	RES	61	55	40	40	54	64	45.6	48.6	29.6	29.6	39.6	41.6	41.6
1160	RES	61	55	40	40	54	64	47.5	50.5	31.5	31.5	41.5	43.5	43.5
1161	RES	61	55	40	40	54	64	46.8	49.8	30.8	30.8	40.8	42.8	42.8
1162	RES	61	55	40	40	54	64	53.9	56.9	37.9	37.9	47.9	49.9	49.9
1163	RES	61	55	40	40	54	64	42.6	45.6	26.6	26.6	36.6	38.6	38.6
1164	RES	61	55	40	40	54	64	56.7	59.7	40.7	40.7	50.7	52.7	52.7
1167	RES	61	55	40	40	54	64	45.5	48.5	29.5	29.5	39.5	41.5	41.5
1168	RES	61	55	40	40	54	64	34.8	37.8	18.8	18.8	28.8	30.8	30.8
1169	RES	61	55	40	40	54	64	48.4	51.4	32.4	32.4	42.4	44.4	44.4
1170	RES	61	55	40	40	54	64	39.6	42.6	23.6	23.6	33.6	35.6	35.6
1171	RES	61	55	40	40	54	64	56.5	59.5	40.5	40.5	50.5	52.5	52.5
1172	RES	61	55	40	40	54	64	39.1	42.1	23.1	23.1	33.1	35.1	35.1
1173	RES	61	55	40	40	54	64	48.5	51.5	32.5	32.5	42.5	44.5	44.5
1174	POW	55	55	55	55	N/A	N/A	58.9	61.9	42.9	42.9	52.9	54.9	54.9
1175	RES	61	55	40	40	54	64	48.6	51.6	32.6	32.6	42.6	44.6	44.6
1177	RES	61	55	40	40	54	64	48.3	51.3	32.3	32.3	42.3	44.3	44.3
1178	RES	61	55	40	40	54	64	50.8	53.8	34.8	34.8	44.8	46.8	46.8
1180	COM	70	70	70	70	N/A	N/A	101.9	104.9	85.9	85.9	95.9	97.9	97.9
1181	COM	70	70	70	70	N/A	N/A	113.5	116.5	97.5	97.5	107.5	109.5	109.5
1182	RES	61	55	40	40	54	64	52.1	55.1	36.1	36.1	46.1	48.1	48.1
1183	RES	61	55	40	40	54	64	54.1	57.1	38.1	38.1	48.1	50.1	50.1
1184	POW	55	55	55	55	N/A	N/A	67.2	70.2	51.2	51.2	61.2	63.2	63.2
1185	EDU	55	55	55	55	N/A	N/A	40	43	24	24	34	36	36
1186	COM	70	70	70	70	N/A	N/A	111.8	114.8	95.8	95.8	105.8	107.8	107.8
1187	RES	61	55	40	40	54	64	110.1	113.1	94.1	94.1	104.1	106.1	106.1
1188	RES	61	55	40	40	54	64	34.2	37.2	18.2	18.2	28.2	30.2	30.2
1189	RES	61	55	40	40	54	64	44.7	47.7	28.7	28.7	38.7	40.7	40.7
1191	RES	61	55	40	40	54	64	44.4	47.4	28.4	28.4	38.4	40.4	40.4
1192	RES	61	55	40	40	54	64	52.1	55.1	36.1	36.1	46.1	48.1	48.1
1193	RES	61	55	40	40	54	64	33.8	36.8	17.8	17.8	27.8	29.8	29.8
1194	RES	61	55	40	40	54	64	48.5	51.5	32.5	32.5	42.5	44.5	44.5
1195	COM	70	70	70	70	N/A	N/A	106.7	109.7	90.7	90.7	100.7	102.7	102.7
1196	RES	61	55	40	40	54	64	52.3	55.3	36.3	36.3	46.3	48.3	48.3
1198	RES	61	55	40	40	54	64	51.8	54.8	35.8	35.8	45.8	47.8	47.8
1199	RES	61	55	40	40	54	64	47.5	50.5	31.5	31.5	41.5	43.5	43.5
1200	RES	61	55	40	40	54	64	44.8	47.8	28.8	28.8	38.8	40.8	40.8
1205	RES	61	55	40	40	54	64	55.6	58.6	39.6	39.6	49.6	51.6	51.6

REC_ID	R_Type	SH NML	CNVG OOH1 NML	CNVG OOH2 NML	ICNG OOH NML	Sleep Disturbance Criteria (LAeq)	Sleep Awakening Criteria (LAmax)	Site establishment and vegetation clearance LdBA	Mill and reconstruct / widen kerb realignment LdBA	Replace / reinstate existing pavement LdBA	Upgrades to utilities LdBA	Line marking and installation of new road signage LdBA	Installation of landscaping and street furniture including planting of new amenity trees and native vegetation LdBA	Rehabilitate the site LdBA
1206	EDU	55	55	55	55	N/A	N/A	38	41	22	22	32	34	34
1207	RES	61	55	40	40	54	64	33.9	36.9	17.9	17.9	27.9	29.9	29.9
1209	RES	61	55	40	40	54	64	55.9	58.9	39.9	39.9	49.9	51.9	51.9
1210	EDU	55	55	55	55	N/A	N/A	44.5	47.5	28.5	28.5	38.5	40.5	40.5
1211	RES	61	55	40	40	54	64	40.9	43.9	24.9	24.9	34.9	36.9	36.9
1214	RES	61	55	40	40	54	64	47.7	50.7	31.7	31.7	41.7	43.7	43.7
1215	RES	61	55	40	40	54	64	38.9	41.9	22.9	22.9	32.9	34.9	34.9
1216	RES	61	55	40	40	54	64	54.8	57.8	38.8	38.8	48.8	50.8	50.8
1217	RES	61	55	40	40	54	64	35.6	38.6	19.6	19.6	29.6	31.6	31.6
1219	COM	70	70	70	70	N/A	N/A	47.7	50.7	31.7	31.7	41.7	43.7	43.7
1221	RES	61	55	40	40	54	64	48.6	51.6	32.6	32.6	42.6	44.6	44.6
1222	RES	61	55	40	40	54	64	35.4	38.4	19.4	19.4	29.4	31.4	31.4
1223	RES	61	55	40	40	54	64	33.7	36.7	17.7	17.7	27.7	29.7	29.7
1224	RES	61	55	40	40	54	64	41.9	44.9	25.9	25.9	35.9	37.9	37.9
1226	RES	61	55	40	40	54	64	51.3	54.3	35.3	35.3	45.3	47.3	47.3
1227	RES	61	55	40	40	54	64	53.1	56.1	37.1	37.1	47.1	49.1	49.1
1228	RES	61	55	40	40	54	64	49.8	52.8	33.8	33.8	43.8	45.8	45.8
1229	RES	61	55	40	40	54	64	33.9	36.9	17.9	17.9	27.9	29.9	29.9
1230	RES	61	55	40	40	54	64	48.7	51.7	32.7	32.7	42.7	44.7	44.7
1232	RES	61	55	40	40	54	64	49.1	52.1	33.1	33.1	43.1	45.1	45.1
1233	RES	61	55	40	40	54	64	48.2	51.2	32.2	32.2	42.2	44.2	44.2
1234	RES	61	55	40	40	54	64	48.6	51.6	32.6	32.6	42.6	44.6	44.6
1235	RES	61	55	40	40	54	64	46.1	49.1	30.1	30.1	40.1	42.1	42.1
1236	RES	61	55	40	40	54	64	49.8	52.8	33.8	33.8	43.8	45.8	45.8
1238	RES	61	55	40	40	54	64	45.5	48.5	29.5	29.5	39.5	41.5	41.5
1239	POW	55	55	55	55	N/A	N/A	41.4	44.4	25.4	25.4	35.4	37.4	37.4
1240	RES	61	55	40	40	54	64	49.1	52.1	33.1	33.1	43.1	45.1	45.1
1241	RES	61	55	40	40	54	64	48.9	51.9	32.9	32.9	42.9	44.9	44.9
1244	COM	70	70	70	70	N/A	N/A	59	62	43	43	53	55	55
1245	RES	61	55	40	40	54	64	47.3	50.3	31.3	31.3	41.3	43.3	43.3
1246	RES	61	55	40	40	54	64	55.1	58.1	39.1	39.1	49.1	51.1	51.1
1247	RES	61	55	40	40	54	64	40	43	24	24	34	36	36
1248	RES	61	55	40	40	54	64	53.8	56.8	37.8	37.8	47.8	49.8	49.8
1252	RES	61	55	40	40	54	64	40	43	24	24	34	36	36
1255	COM	70	70	70	70	N/A	N/A	111	114	95	95	105	107	107
1257	COM	70	70	70	70	N/A	N/A	43.4	46.4	27.4	27.4	37.4	39.4	39.4
1261	RES	61	55	40	40	54	64	40.9	43.9	24.9	24.9	34.9	36.9	36.9
1264	RES	61	55	40	40	54	64	49	52	33	33	43	45	45
1268	RES	61	55	40	40	54	64	51.3	54.3	35.3	35.3	45.3	47.3	47.3
1269	RES	61	55	40	40	54	64	36.2	39.2	20.2	20.2	30.2	32.2	32.2
1270	COM	70	70	70	70	N/A	N/A	67.9	70.9	51.9	51.9	61.9	63.9	63.9
1271	RES	61	55	40	40	54	64	40.3	43.3	24.3	24.3	34.3	36.3	36.3
1273	COM	70	70	70	70	N/A	N/A	62.1	65.1	46.1	46.1	56.1	58.1	58.1
1274	RES	61	55	40	40	54	64	53.9	56.9	37.9	37.9	47.9	49.9	49.9
1276	COM	70	70	70	70	N/A	N/A	61	64	45	45	55	57	57
1277	RES	61	55	40	40	54	64	48.9	51.9	32.9	32.9	42.9	44.9	44.9
1283	EDU	55	55	55	55	N/A	N/A	41.4	44.4	25.4	25.4	35.4	37.4	37.4
1284	RES	61	55	40	40	54	64	38.9	41.9	22.9	22.9	32.9	34.9	34.9
1285	RES	61	55	40	40	54	64	46.8	49.8	30.8	30.8	40.8	42.8	42.8
1286	RES	61	55	40	40	54	64	37.1	40.1	21.1	21.1	31.1	33.1	33.1
1287	RES	61	55	40	40	54	64	42.3	45.3	26.3	26.3	36.3	38.3	38.3
1288	RES	61	55	40	40	54	64	44.8	47.8	28.8	28.8	38.8	40.8	40.8
1290	RES	61	55	40	40	54	64	51.9	54.9	35.9	35.9	45.9	47.9	47.9
1295	RES	61	55	40	40	54	64	48.4	51.4	32.4	32.4	42.4	44.4	44.4
1299	RES	61	55	40	40	54	64	43.2	46.2	27.2	27.2	37.2	39.2	39.2
1300	RES	61	55	40	40	54	64	40.1	43.1	24.1	24.1	34.1	36.1	36.1
1301	RES	61	55	40	40	54	64	45.1	48.1	29.1	29.1	39.1	41.1	41.1
1302	RES	61	55	40	40	54	64	50.8	53.8	34.8	34.8	44.8	46.8	46.8
1303	RES	61	55	40	40	54	64	40.5	43.5	24.5	24.5	34.5	36.5	36.5
1304	RES	61	55	40	40	54	64	35.3	38.3	19.3	19.3	29.3	31.3	31.3

REC_ID	R_Type	SH NML	CNVG OOH1 NML	CNVG OOH2 NML	ICNG OOH NML	Sleep Disturbance Criteria (LAeq)	Sleep Awakening Criteria (LAmax)	Site establishment and vegetation clearance LdBA	Mill and reconstruct / widen kerb realignment LdBA	Replace / reinstate existing pavement LdBA	Upgrades to utilities LdBA	Line marking and installation of new road signage LdBA	Installation of landscaping and street furniture including planting of new amenity trees and native vegetation LdBA	Rehabilitate the site LdBA
1306	RES	61	55	40	40	54	64	51.7	54.7	35.7	35.7	45.7	47.7	47.7
1307	RES	61	55	40	40	54	64	33.5	36.5	17.5	17.5	27.5	29.5	29.5
1309	RES	61	55	40	40	54	64	52.5	55.5	36.5	36.5	46.5	48.5	48.5
1310	RES	61	55	40	40	54	64	35.2	38.2	19.2	19.2	29.2	31.2	31.2
1312	RES	61	55	40	40	54	64	55.2	58.2	39.2	39.2	49.2	51.2	51.2
1313	RES	61	55	40	40	54	64	49	52	33	33	43	45	45
1314	RES	61	55	40	40	54	64	45.8	48.8	29.8	29.8	39.8	41.8	41.8
1315	RES	61	55	40	40	54	64	41.4	44.4	25.4	25.4	35.4	37.4	37.4
1316	COM	70	70	70	70	N/A	N/A	77.9	80.9	61.9	61.9	71.9	73.9	73.9
1317	RES	61	55	40	40	54	64	43.9	46.9	27.9	27.9	37.9	39.9	39.9
1319	RES	61	55	40	40	54	64	52.5	55.5	36.5	36.5	46.5	48.5	48.5
1321	RES	61	55	40	40	54	64	50.4	53.4	34.4	34.4	44.4	46.4	46.4
1325	RES	61	55	40	40	54	64	55.2	58.2	39.2	39.2	49.2	51.2	51.2
1326	COM	70	70	70	70	N/A	N/A	36.4	39.4	20.4	20.4	30.4	32.4	32.4
1327	COM	70	70	70	70	N/A	N/A	75.4	78.4	59.4	59.4	69.4	71.4	71.4
1328	COM	70	70	70	70	N/A	N/A	69.5	72.5	53.5	53.5	63.5	65.5	65.5
1330	MED	55	55	55	55	N/A	N/A	61.3	64.3	45.3	45.3	55.3	57.3	57.3
1332	RES	61	55	40	40	54	64	41.7	44.7	25.7	25.7	35.7	37.7	37.7
1333	RES	61	55	40	40	54	64	44.2	47.2	28.2	28.2	38.2	40.2	40.2
1336	RES	61	55	40	40	54	64	44.9	47.9	28.9	28.9	38.9	40.9	40.9
1338	RES	61	55	40	40	54	64	48.8	51.8	32.8	32.8	42.8	44.8	44.8
1339	RES	61	55	40	40	54	64	43.7	46.7	27.7	27.7	37.7	39.7	39.7
1342	RES	61	55	40	40	54	64	55.3	58.3	39.3	39.3	49.3	51.3	51.3
1345	RES	61	55	40	40	54	64	40.4	43.4	24.4	24.4	34.4	36.4	36.4
1346	RES	61	55	40	40	54	64	54.5	57.5	38.5	38.5	48.5	50.5	50.5
1347	RES	61	55	40	40	54	64	49.8	52.8	33.8	33.8	43.8	45.8	45.8
1348	RES	61	55	40	40	54	64	32.1	35.1	16.1	16.1	26.1	28.1	28.1
1349	RES	61	55	40	40	54	64	43.9	46.9	27.9	27.9	37.9	39.9	39.9
1351	RES	61	55	40	40	54	64	39.1	42.1	23.1	23.1	33.1	35.1	35.1
1352	RES	61	55	40	40	54	64	34.8	37.8	18.8	18.8	28.8	30.8	30.8
1354	RES	61	55	40	40	54	64	45.3	48.3	29.3	29.3	39.3	41.3	41.3
1355	RES	61	55	40	40	54	64	49.1	52.1	33.1	33.1	43.1	45.1	45.1
1357	RES	61	55	40	40	54	64	45.7	48.7	29.7	29.7	39.7	41.7	41.7
1358	RES	61	55	40	40	54	64	38.9	41.9	22.9	22.9	32.9	34.9	34.9
1359	RES	61	55	40	40	54	64	45.2	48.2	29.2	29.2	39.2	41.2	41.2
1362	RES	61	55	40	40	54	64	40.7	43.7	24.7	24.7	34.7	36.7	36.7
1366	RES	61	55	40	40	54	64	38.6	41.6	22.6	22.6	32.6	34.6	34.6
1370	RES	61	55	40	40	54	64	38.7	41.7	22.7	22.7	32.7	34.7	34.7
1372	RES	61	55	40	40	54	64	48	51	32	32	42	44	44
1373	RES	61	55	40	40	54	64	41.4	44.4	25.4	25.4	35.4	37.4	37.4
1378	RES	61	55	40	40	54	64	52.1	55.1	36.1	36.1	46.1	48.1	48.1
1380	RES	61	55	40	40	54	64	50.6	53.6	34.6	34.6	44.6	46.6	46.6
1382	RES	61	55	40	40	54	64	48.1	51.1	32.1	32.1	42.1	44.1	44.1
1385	RES	61	55	40	40	54	64	45.5	48.5	29.5	29.5	39.5	41.5	41.5
1387	RES	61	55	40	40	54	64	49.1	52.1	33.1	33.1	43.1	45.1	45.1
1388	RES	61	55	40	40	54	64	39.3	42.3	23.3	23.3	33.3	35.3	35.3
1391	RES	61	55	40	40	54	64	52.8	55.8	36.8	36.8	46.8	48.8	48.8
1392	RES	61	55	40	40	54	64	48.1	51.1	32.1	32.1	42.1	44.1	44.1
1393	RES	61	55	40	40	54	64	47.5	50.5	31.5	31.5	41.5	43.5	43.5
1394	RES	61	55	40	40	54	64	50.6	53.6	34.6	34.6	44.6	46.6	46.6
1395	RES	61	55	40	40	54	64	44.6	47.6	28.6	28.6	38.6	40.6	40.6
1397	RES	61	55	40	40	54	64	61.5	64.5	45.5	45.5	55.5	57.5	57.5
1398	RES	61	55	40	40	54	64	53.9	56.9	37.9	37.9	47.9	49.9	49.9
1399	POW	55	55	55	55	N/A	N/A	72.4	75.4	56.4	56.4	66.4	68.4	68.4
1400	RES	61	55	40	40	54	64	109.5	112.5	93.5	93.5	103.5	105.5	105.5
1402	RES	61	55	40	40	54	64	36.7	39.7	20.7	20.7	30.7	32.7	32.7
1403	RES	61	55	40	40	54	64	79.4	82.4	63.4	63.4	73.4	75.4	75.4
1405	RES	61	55	40	40	54	64	50.7	53.7	34.7	34.7	44.7	46.7	46.7
1406	RES	61	55	40	40	54	64	43.1	46.1	27.1	27.1	37.1	39.1	39.1
1407	EDU	55	55	55	55	N/A	N/A	53.2	56.2	37.2	37.2	47.2	49.2	49.2

REC_ID	R_Type	SH NML	CNVG OOH1 NML	CNVG OOH2 NML	ICNG OOH NML	Sleep Disturbance Criteria (LAeq)	Sleep Awakening Criteria (LAmax)	Site establishment and vegetation clearance LdBA	Mill and reconstruct / widen kerb realignment LdBA	Replace / reinstate existing pavement LdBA	Upgrades to utilities LdBA	Line marking and installation of new road signage LdBA	Installation of landscaping and street furniture including planting of new amenity trees and native vegetation LdBA	Rehabilitate the site LdBA
1410	RES	61	55	40	40	54	64	35.9	38.9	19.9	19.9	29.9	31.9	31.9
1411	RES	61	55	40	40	54	64	45.1	48.1	29.1	29.1	39.1	41.1	41.1
1412	RES	61	55	40	40	54	64	65.8	68.8	49.8	49.8	59.8	61.8	61.8
1414	RES	61	55	40	40	54	64	54.3	57.3	38.3	38.3	48.3	50.3	50.3
1415	RES	61	55	40	40	54	64	41.7	44.7	25.7	25.7	35.7	37.7	37.7
1417	RES	61	55	40	40	54	64	54.1	57.1	38.1	38.1	48.1	50.1	50.1
1418	RES	61	55	40	40	54	64	55.8	58.8	39.8	39.8	49.8	51.8	51.8
1420	RES	61	55	40	40	54	64	59.8	62.8	43.8	43.8	53.8	55.8	55.8
1421	POW	55	55	55	55	N/A	N/A	49.3	52.3	33.3	33.3	43.3	45.3	45.3
1425	RES	61	55	40	40	54	64	54.7	57.7	38.7	38.7	48.7	50.7	50.7
1428	RES	61	55	40	40	54	64	54.9	57.9	38.9	38.9	48.9	50.9	50.9
1429	RES	61	55	40	40	54	64	37.9	40.9	21.9	21.9	31.9	33.9	33.9
1430	RES	61	55	40	40	54	64	48.2	51.2	32.2	32.2	42.2	44.2	44.2
1432	RES	61	55	40	40	54	64	56	59	40	40	50	52	52
1434	RES	61	55	40	40	54	64	49.5	52.5	33.5	33.5	43.5	45.5	45.5
1436	RES	61	55	40	40	54	64	48	51	32	32	42	44	44
1437	RES	61	55	40	40	54	64	34.6	37.6	18.6	18.6	28.6	30.6	30.6
1438	RES	61	55	40	40	54	64	47.6	50.6	31.6	31.6	41.6	43.6	43.6
1442	RES	61	55	40	40	54	64	48.9	51.9	32.9	32.9	42.9	44.9	44.9
1443	RES	61	55	40	40	54	64	35.7	38.7	19.7	19.7	29.7	31.7	31.7
1444	RES	61	55	40	40	54	64	45.4	48.4	29.4	29.4	39.4	41.4	41.4
1445	RES	61	55	40	40	54	64	43.7	46.7	27.7	27.7	37.7	39.7	39.7
1448	RES	61	55	40	40	54	64	43.1	46.1	27.1	27.1	37.1	39.1	39.1
1449	RES	61	55	40	40	54	64	30.7	33.7	14.7	14.7	24.7	26.7	26.7
1450	RES	61	55	40	40	54	64	35.6	38.6	19.6	19.6	29.6	31.6	31.6
1451	RES	61	55	40	40	54	64	47.5	50.5	31.5	31.5	41.5	43.5	43.5
1452	RES	61	55	40	40	54	64	47.8	50.8	31.8	31.8	41.8	43.8	43.8
1453	RES	61	55	40	40	54	64	37	40	21	21	31	33	33
1454	RES	61	55	40	40	54	64	36.9	39.9	20.9	20.9	30.9	32.9	32.9
1457	RES	61	55	40	40	54	64	33.5	36.5	17.5	17.5	27.5	29.5	29.5
1458	RES	61	55	40	40	54	64	49.3	52.3	33.3	33.3	43.3	45.3	45.3
1461	COM	70	70	70	70	N/A	N/A	51.4	54.4	35.4	35.4	45.4	47.4	47.4
1462	RES	61	55	40	40	54	64	48.7	51.7	32.7	32.7	42.7	44.7	44.7
1463	COM	70	70	70	70	N/A	N/A	60.4	63.4	44.4	44.4	54.4	56.4	56.4
1466	RES	61	55	40	40	54	64	47.9	50.9	31.9	31.9	41.9	43.9	43.9
1467	RES	61	55	40	40	54	64	55.5	58.5	39.5	39.5	49.5	51.5	51.5
1468	RES	61	55	40	40	54	64	46.8	49.8	30.8	30.8	40.8	42.8	42.8
1469	RES	61	55	40	40	54	64	52.4	55.4	36.4	36.4	46.4	48.4	48.4
1470	RES	61	55	40	40	54	64	48.3	51.3	32.3	32.3	42.3	44.3	44.3
1472	RES	61	55	40	40	54	64	47.3	50.3	31.3	31.3	41.3	43.3	43.3
1473	RES	61	55	40	40	54	64	49.5	52.5	33.5	33.5	43.5	45.5	45.5
1474	RES	61	55	40	40	54	64	48.1	51.1	32.1	32.1	42.1	44.1	44.1
1478	RES	61	55	40	40	54	64	46.6	49.6	30.6	30.6	40.6	42.6	42.6
1480	RES	61	55	40	40	54	64	48.5	51.5	32.5	32.5	42.5	44.5	44.5
1481	RES	61	55	40	40	54	64	48.9	51.9	32.9	32.9	42.9	44.9	44.9
1482	RES	61	55	40	40	54	64	49.2	52.2	33.2	33.2	43.2	45.2	45.2
1484	RES	61	55	40	40	54	64	34.2	37.2	18.2	18.2	28.2	30.2	30.2
1485	RES	61	55	40	40	54	64	31.7	34.7	15.7	15.7	25.7	27.7	27.7
1487	RES	61	55	40	40	54	64	36.7	39.7	20.7	20.7	30.7	32.7	32.7
1488	RES	61	55	40	40	54	64	39.9	42.9	23.9	23.9	33.9	35.9	35.9
1489	RES	61	55	40	40	54	64	26.7	29.7	10.7	10.7	20.7	22.7	22.7
1491	COM	70	70	70	70	N/A	N/A	58.5	61.5	42.5	42.5	52.5	54.5	54.5
1492	RES	61	55	40	40	54	64	43.9	46.9	27.9	27.9	37.9	39.9	39.9
1493	RES	61	55	40	40	54	64	44.1	47.1	28.1	28.1	38.1	40.1	40.1
1494	RES	61	55	40	40	54	64	57.7	60.7	41.7	41.7	51.7	53.7	53.7
1495	RES	61	55	40	40	54	64	49	52	33	33	43	45	45
1497	RES	61	55	40	40	54	64	57.7	60.7	41.7	41.7	51.7	53.7	53.7
1498	RES	61	55	40	40	54	64	51.3	54.3	35.3	35.3	45.3	47.3	47.3
1499	COM	70	70	70	70	N/A	N/A	89.5	92.5	73.5	73.5	83.5	85.5	85.5
1500	RES	61	55	40	40	54	64	33.7	36.7	17.7	17.7	27.7	29.7	29.7

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1501	COM	70	70	70	70	N/A	N/A	55.9	58.9	39.9	39.9	49.9	51.9	51.9
1502	RES	61	55	40	40	54	64	53.9	56.9	37.9	37.9	47.9	49.9	49.9
1503	RES	61	55	40	40	54	64	38.6	41.6	22.6	22.6	32.6	34.6	34.6
1504	RES	61	55	40	40	54	64	48.2	51.2	32.2	32.2	42.2	44.2	44.2
1505	RES	61	55	40	40	54	64	37.8	40.8	21.8	21.8	31.8	33.8	33.8
1507	COM	70	70	70	70	N/A	N/A	57	60	41	41	51	53	53
1508	COM	70	70	70	70	N/A	N/A	51	54	35	35	45	47	47
1510	RES	61	55	40	40	54	64	39.9	42.9	23.9	23.9	33.9	35.9	35.9
1512	RES	61	55	40	40	54	64	59.4	62.4	43.4	43.4	53.4	55.4	55.4
1513	RES	61	55	40	40	54	64	51.3	54.3	35.3	35.3	45.3	47.3	47.3
1514	COM	70	70	70	70	N/A	N/A	44.8	47.8	28.8	28.8	38.8	40.8	40.8
1515	COM	70	70	70	70	N/A	N/A	50.7	53.7	34.7	34.7	44.7	46.7	46.7
1516	RES	61	55	40	40	54	64	56.9	59.9	40.9	40.9	50.9	52.9	52.9
1517	RES	61	55	40	40	54	64	51.8	54.8	35.8	35.8	45.8	47.8	47.8
1518	RES	61	55	40	40	54	64	-3	0	-19	-19	-9	-7	-7
1519	RES	61	55	40	40	54	64	48.5	51.5	32.5	32.5	42.5	44.5	44.5
1520	RES	61	55	40	40	54	64	45.6	48.6	29.6	29.6	39.6	41.6	41.6
1521	RES	61	55	40	40	54	64	41.3	44.3	25.3	25.3	35.3	37.3	37.3
1523	RES	61	55	40	40	54	64	59.4	62.4	43.4	43.4	53.4	55.4	55.4
1524	RES	61	55	40	40	54	64	44.3	47.3	28.3	28.3	38.3	40.3	40.3
1527	COM	70	70	70	70	N/A	N/A	53.7	56.7	37.7	37.7	47.7	49.7	49.7
1529	RES	61	55	40	40	54	64	44.9	47.9	28.9	28.9	38.9	40.9	40.9
1531	COM	70	70	70	70	N/A	N/A	42.6	45.6	26.6	26.6	36.6	38.6	38.6
1532	RES	61	55	40	40	54	64	42.7	45.7	26.7	26.7	36.7	38.7	38.7
1535	RES	61	55	40	40	54	64	37.3	40.3	21.3	21.3	31.3	33.3	33.3
1536	RES	61	55	40	40	54	64	37.1	40.1	21.1	21.1	31.1	33.1	33.1
1537	COM	70	70	70	70	N/A	N/A	49.9	52.9	33.9	33.9	43.9	45.9	45.9
1538	RES	61	55	40	40	54	64	43	46	27	27	37	39	39
1539	RES	61	55	40	40	54	64	51.1	54.1	35.1	35.1	45.1	47.1	47.1
1540	RES	61	55	40	40	54	64	37	40	21	21	31	33	33
1543	RES	61	55	40	40	54	64	46.5	49.5	30.5	30.5	40.5	42.5	42.5
1544	RES	61	55	40	40	54	64	43	46	27	27	37	39	39
1546	RES	61	55	40	40	54	64	38.5	41.5	22.5	22.5	32.5	34.5	34.5
1547	RES	61	55	40	40	54	64	35.7	38.7	19.7	19.7	29.7	31.7	31.7
1548	RES	61	55	40	40	54	64	37.1	40.1	21.1	21.1	31.1	33.1	33.1
1549	RES	61	55	40	40	54	64	40.3	43.3	24.3	24.3	34.3	36.3	36.3
1551	RES	61	55	40	40	54	64	36	39	20	20	30	32	32
1554	COM	70	70	70	70	N/A	N/A	57.9	60.9	41.9	41.9	51.9	53.9	53.9
1556	RES	61	55	40	40	54	64	50	53	34	34	44	46	46
1558	RES	61	55	40	40	54	64	39.9	42.9	23.9	23.9	33.9	35.9	35.9
1559	RES	61	55	40	40	54	64	50.9	53.9	34.9	34.9	44.9	46.9	46.9
1560	RES	61	55	40	40	54	64	57.7	60.7	41.7	41.7	51.7	53.7	53.7
1561	COM	70	70	70	70	N/A	N/A	48.6	51.6	32.6	32.6	42.6	44.6	44.6
1562	RES	61	55	40	40	54	64	45.2	48.2	29.2	29.2	39.2	41.2	41.2
1563	RES	61	55	40	40	54	64	41.4	44.4	25.4	25.4	35.4	37.4	37.4
1564	RES	61	55	40	40	54	64	49.7	52.7	33.7	33.7	43.7	45.7	45.7
1565	COM	70	70	70	70	N/A	N/A	64.8	67.8	48.8	48.8	58.8	60.8	60.8
1569	RES	61	55	40	40	54	64	101.1	104.1	85.1	85.1	95.1	97.1	97.1
1572	COM	70	70	70	70	N/A	N/A	57.4	60.4	41.4	41.4	51.4	53.4	53.4
1573	COM	70	70	70	70	N/A	N/A	66.2	69.2	50.2	50.2	60.2	62.2	62.2
1576	RES	61	55	40	40	54	64	63.8	66.8	47.8	47.8	57.8	59.8	59.8
1577	RES	61	55	40	40	54	64	100.7	103.7	84.7	84.7	94.7	96.7	96.7
1580	COM	70	70	70	70	N/A	N/A	46.1	49.1	30.1	30.1	40.1	42.1	42.1
1581	RES	61	55	40	40	54	64	60.2	63.2	44.2	44.2	54.2	56.2	56.2
1582	RES	61	55	40	40	54	64	57	60	41	41	51	53	53
1583	PREC	60	60	60	60	N/A	N/A	53.4	56.4	37.4	37.4	47.4	49.4	49.4
1584	COM	70	70	70	70	N/A	N/A	73.5	76.5	57.5	57.5	67.5	69.5	69.5
1585	COM	70	70	70	70	N/A	N/A	65.9	68.9	49.9	49.9	59.9	61.9	61.9
1588	RES	61	55	40	40	54	64	58.4	61.4	42.4	42.4	52.4	54.4	54.4
1589	RES	61	55	40	40	54	64	51.6	54.6	35.6	35.6	45.6	47.6	47.6

REC_ID	R_Type	SH NML	CNVG OOH1 NML	CNVG OOH2 NML	ICNG OOH NML	Sleep Disturbance Criteria (LAeq)	Sleep Awakening Criteria (LAmax)	Site establishment and vegetation clearance LdBA	Mill and reconstruct / widen kerb realignment LdBA	Replace / reinstate existing pavement LdBA	Upgrades to utilities LdBA	Line marking and installation of new road signage LdBA	Installation of landscaping and street furniture including planting of new amenity trees and native vegetation LdBA	Rehabilitate the site LdBA
1591	RES	61	55	40	40	54	64	108	111	92	92	102	104	104
1593	RES	61	55	40	40	54	64	57.4	60.4	41.4	41.4	51.4	53.4	53.4
1598	RES	61	55	40	40	54	64	51.3	54.3	35.3	35.3	45.3	47.3	47.3
1599	COM	70	70	70	70	N/A	N/A	56.3	59.3	40.3	40.3	50.3	52.3	52.3
1600	RES	61	55	40	40	54	64	109.2	112.2	93.2	93.2	103.2	105.2	105.2
1601	RES	61	55	40	40	54	64	100.3	103.3	84.3	84.3	94.3	96.3	96.3
1603	COM	70	70	70	70	N/A	N/A	76.4	79.4	60.4	60.4	70.4	72.4	72.4
1604	POW	55	55	55	55	N/A	N/A	59.4	62.4	43.4	43.4	53.4	55.4	55.4
1605	RES	61	55	40	40	54	64	52.2	55.2	36.2	36.2	46.2	48.2	48.2
1606	COM	70	70	70	70	N/A	N/A	63.3	66.3	47.3	47.3	57.3	59.3	59.3
1607	EDU	55	55	55	55	N/A	N/A	64.5	67.5	48.5	48.5	58.5	60.5	60.5
1608	RES	61	55	40	40	54	64	51	54	35	35	45	47	47
1609	RES	61	55	40	40	54	64	59.1	62.1	43.1	43.1	53.1	55.1	55.1
1610	EDU	55	55	55	55	N/A	N/A	44.9	47.9	28.9	28.9	38.9	40.9	40.9
1611	MED	55	55	55	55	N/A	N/A	60.5	63.5	44.5	44.5	54.5	56.5	56.5
1612	RES	61	55	40	40	54	64	104.5	107.5	88.5	88.5	98.5	100.5	100.5
1613	RES	61	55	40	40	54	64	56.8	59.8	40.8	40.8	50.8	52.8	52.8
1614	RES	61	55	40	40	54	64	52.4	55.4	36.4	36.4	46.4	48.4	48.4
1615	RES	61	55	40	40	54	64	56.7	59.7	40.7	40.7	50.7	52.7	52.7
1617	RES	61	55	40	40	54	64	96.8	99.8	80.8	80.8	90.8	92.8	92.8
1619	COM	70	70	70	70	N/A	N/A	59.6	62.6	43.6	43.6	53.6	55.6	55.6
1620	COM	70	70	70	70	N/A	N/A	101.8	104.8	85.8	85.8	95.8	97.8	97.8
1621	COM	70	70	70	70	N/A	N/A	76.2	79.2	60.2	60.2	70.2	72.2	72.2
1622	COM	70	70	70	70	N/A	N/A	44.2	47.2	28.2	28.2	38.2	40.2	40.2
1623	COM	70	70	70	70	N/A	N/A	83.7	86.7	67.7	67.7	77.7	79.7	79.7
1624	RES	61	55	40	40	54	64	54.3	57.3	38.3	38.3	48.3	50.3	50.3
1626	RES	61	55	40	40	54	64	56.3	59.3	40.3	40.3	50.3	52.3	52.3
1627	COM	70	70	70	70	N/A	N/A	45.3	48.3	29.3	29.3	39.3	41.3	41.3
1628	RES	61	55	40	40	54	64	108.5	111.5	92.5	92.5	102.5	104.5	104.5
1629	POW	55	55	55	55	N/A	N/A	53.4	56.4	37.4	37.4	47.4	49.4	49.4
1630	COM	70	70	70	70	N/A	N/A	62.5	65.5	46.5	46.5	56.5	58.5	58.5
1631	COM	70	70	70	70	N/A	N/A	97.7	100.7	81.7	81.7	91.7	93.7	93.7
1633	COM	70	70	70	70	N/A	N/A	107.9	110.9	91.9	91.9	101.9	103.9	103.9
1634	RES	61	55	40	40	54	64	56.4	59.4	40.4	40.4	50.4	52.4	52.4
1635	COM	70	70	70	70	N/A	N/A	51.3	54.3	35.3	35.3	45.3	47.3	47.3
1636	COM	70	70	70	70	N/A	N/A	42.5	45.5	26.5	26.5	36.5	38.5	38.5
1637	COM	70	70	70	70	N/A	N/A	70.9	73.9	54.9	54.9	64.9	66.9	66.9
1638	POW	55	55	55	55	N/A	N/A	47.5	50.5	31.5	31.5	41.5	43.5	43.5
1639	COM	70	70	70	70	N/A	N/A	96.4	99.4	80.4	80.4	90.4	92.4	92.4
1641	EDU	55	55	55	55	N/A	N/A	46.8	49.8	30.8	30.8	40.8	42.8	42.8
1642	RES	61	55	40	40	54	64	113.8	116.8	97.8	97.8	107.8	109.8	109.8
1643	RES	61	55	40	40	54	64	51.4	54.4	35.4	35.4	45.4	47.4	47.4
1644	MED	55	55	55	55	N/A	N/A	69.7	72.7	53.7	53.7	63.7	65.7	65.7
1645	EDU	55	55	55	55	N/A	N/A	42.3	45.3	26.3	26.3	36.3	38.3	38.3
1646	COM	70	70	70	70	N/A	N/A	51.4	54.4	35.4	35.4	45.4	47.4	47.4
1647	RES	61	55	40	40	54	64	50.5	53.5	34.5	34.5	44.5	46.5	46.5
1648	RES	61	55	40	40	54	64	48.4	51.4	32.4	32.4	42.4	44.4	44.4
1649	RES	61	55	40	40	54	64	39.7	42.7	23.7	23.7	33.7	35.7	35.7
1650	RES	61	55	40	40	54	64	50.4	53.4	34.4	34.4	44.4	46.4	46.4
1652	RES	61	55	40	40	54	64	43.6	46.6	27.6	27.6	37.6	39.6	39.6
1653	RES	61	55	40	40	54	64	38.9	41.9	22.9	22.9	32.9	34.9	34.9
1654	RES	61	55	40	40	54	64	45.8	48.8	29.8	29.8	39.8	41.8	41.8
1655	RES	61	55	40	40	54	64	48.4	51.4	32.4	32.4	42.4	44.4	44.4
1656	RES	61	55	40	40	54	64	43.8	46.8	27.8	27.8	37.8	39.8	39.8
1658	RES	61	55	40	40	54	64	45.9	48.9	29.9	29.9	39.9	41.9	41.9
1659	RES	61	55	40	40	54	64	47.4	50.4	31.4	31.4	41.4	43.4	43.4
1660	RES	61	55	40	40	54	64	41.4	44.4	25.4	25.4	35.4	37.4	37.4
1661	RES	61	55	40	40	54	64	32.9	35.9	16.9	16.9	26.9	28.9	28.9
1664	RES	61	55	40	40	54	64	39.4	42.4	23.4	23.4	33.4	35.4	35.4
1666	RES	61	55	40	40	54	64	48.9	51.9	32.9	32.9	42.9	44.9	44.9

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1667	RES	61	55	40	40	54	64	43.8	46.8	27.8	27.8	37.8	39.8	39.8
1673	RES	61	55	40	40	54	64	42.9	45.9	26.9	26.9	36.9	38.9	38.9
1674	COM	70	70	70	70	N/A	N/A	49.1	52.1	33.1	33.1	43.1	45.1	45.1
1675	RES	61	55	40	40	54	64	47	50	31	31	41	43	43
1677	COM	70	70	70	70	N/A	N/A	44.9	47.9	28.9	28.9	38.9	40.9	40.9
1680	RES	61	55	40	40	54	64	39.8	42.8	23.8	23.8	33.8	35.8	35.8
1683	RES	61	55	40	40	54	64	46.9	49.9	30.9	30.9	40.9	42.9	42.9
1684	RES	61	55	40	40	54	64	37.3	40.3	21.3	21.3	31.3	33.3	33.3
1689	RES	61	55	40	40	54	64	36.5	39.5	20.5	20.5	30.5	32.5	32.5
1690	POW	55	55	55	55	N/A	N/A	66	69	50	50	60	62	62
1693	EDU	55	55	55	55	N/A	N/A	41.5	44.5	25.5	25.5	35.5	37.5	37.5
1694	RES	61	55	40	40	54	64	49.4	52.4	33.4	33.4	43.4	45.4	45.4
1695	RES	61	55	40	40	54	64	-3	0	-19	-19	-9	-7	-7
1696	EDU	55	55	55	55	N/A	N/A	50.4	53.4	34.4	34.4	44.4	46.4	46.4
1697	COM	70	70	70	70	N/A	N/A	103.2	106.2	87.2	87.2	97.2	99.2	99.2
1701	COM	70	70	70	70	N/A	N/A	73.7	76.7	57.7	57.7	67.7	69.7	69.7
1704	RES	61	55	40	40	54	64	38	41	22	22	32	34	34
1707	RES	61	55	40	40	54	64	51.2	54.2	35.2	35.2	45.2	47.2	47.2
1708	RES	61	55	40	40	54	64	51.8	54.8	35.8	35.8	45.8	47.8	47.8
1709	COM	70	70	70	70	N/A	N/A	104.8	107.8	88.8	88.8	98.8	100.8	100.8
1710	COM	70	70	70	70	N/A	N/A	57.5	60.5	41.5	41.5	51.5	53.5	53.5
1714	COM	70	70	70	70	N/A	N/A	108.7	111.7	92.7	92.7	102.7	104.7	104.7
1715	RES	61	55	40	40	54	64	45.5	48.5	29.5	29.5	39.5	41.5	41.5
1716	RES	61	55	40	40	54	64	52.9	55.9	36.9	36.9	46.9	48.9	48.9
1717	RES	61	55	40	40	54	64	42.5	45.5	26.5	26.5	36.5	38.5	38.5
1718	RES	61	55	40	40	54	64	45.2	48.2	29.2	29.2	39.2	41.2	41.2
1719	RES	61	55	40	40	54	64	50.7	53.7	34.7	34.7	44.7	46.7	46.7
1722	COM	70	70	70	70	N/A	N/A	67.5	70.5	51.5	51.5	61.5	63.5	63.5
1723	COM	70	70	70	70	N/A	N/A	67.9	70.9	51.9	51.9	61.9	63.9	63.9
1725	RES	61	55	40	40	54	64	40.2	43.2	24.2	24.2	34.2	36.2	36.2
1726	PREC	60	60	60	60	N/A	N/A	39.6	42.6	23.6	23.6	33.6	35.6	35.6
1727	COM	70	70	70	70	N/A	N/A	66	69	50	50	60	62	62
1728	RES	61	55	40	40	54	64	51.9	54.9	35.9	35.9	45.9	47.9	47.9
1729	COM	70	70	70	70	N/A	N/A	66.4	69.4	50.4	50.4	60.4	62.4	62.4
1731	RES	61	55	40	40	54	64	45.8	48.8	29.8	29.8	39.8	41.8	41.8
1732	COM	70	70	70	70	N/A	N/A	57.3	60.3	41.3	41.3	51.3	53.3	53.3
1735	RES	61	55	40	40	54	64	49.2	52.2	33.2	33.2	43.2	45.2	45.2
1736	RES	61	55	40	40	54	64	56.9	59.9	40.9	40.9	50.9	52.9	52.9
1737	RES	61	55	40	40	54	64	56.4	59.4	40.4	40.4	50.4	52.4	52.4
1738	RES	61	55	40	40	54	64	70.3	73.3	54.3	54.3	64.3	66.3	66.3
1739	RES	61	55	40	40	54	64	49.6	52.6	33.6	33.6	43.6	45.6	45.6
1740	RES	61	55	40	40	54	64	40.1	43.1	24.1	24.1	34.1	36.1	36.1
1741	RES	61	55	40	40	54	64	65.3	68.3	49.3	49.3	59.3	61.3	61.3
1742	RES	61	55	40	40	54	64	48.2	51.2	32.2	32.2	42.2	44.2	44.2
1743	RES	61	55	40	40	54	64	81	84	65	65	75	77	77
1744	RES	61	55	40	40	54	64	62.6	65.6	46.6	46.6	56.6	58.6	58.6
1746	COM	70	70	70	70	N/A	N/A	60.4	63.4	44.4	44.4	54.4	56.4	56.4
1747	RES	61	55	40	40	54	64	56	59	40	40	50	52	52
1748	RES	61	55	40	40	54	64	50.8	53.8	34.8	34.8	44.8	46.8	46.8
1749	POW	55	55	55	55	N/A	N/A	69.2	72.2	53.2	53.2	63.2	65.2	65.2
1750	RES	61	55	40	40	54	64	55.9	58.9	39.9	39.9	49.9	51.9	51.9
1751	COM	70	70	70	70	N/A	N/A	63.8	66.8	47.8	47.8	57.8	59.8	59.8
1753	COM	70	70	70	70	N/A	N/A	67.7	70.7	51.7	51.7	61.7	63.7	63.7
1754	RES	61	55	40	40	54	64	109.6	112.6	93.6	93.6	103.6	105.6	105.6
1756	COM	70	70	70	70	N/A	N/A	61.3	64.3	45.3	45.3	55.3	57.3	57.3
1758	COM	70	70	70	70	N/A	N/A	96.1	99.1	80.1	80.1	90.1	92.1	92.1
1759	RES	61	55	40	40	54	64	39.3	42.3	23.3	23.3	33.3	35.3	35.3
1760	RES	61	55	40	40	54	64	40.2	43.2	24.2	24.2	34.2	36.2	36.2
1761	COM	70	70	70	70	N/A	N/A	110.6	113.6	94.6	94.6	104.6	106.6	106.6
1762	RES	61	55	40	40	54	64	39	42	23	23	33	35	35

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1763	RES	61	55	40	40	54	64	108.5	111.5	92.5	92.5	102.5	104.5	104.5
1765	COM	70	70	70	70	N/A	N/A	54	57	38	38	48	50	50
1766	RES	61	55	40	40	54	64	56.2	59.2	40.2	40.2	50.2	52.2	52.2
1767	RES	61	55	40	40	54	64	69	72	53	53	63	65	65
1768	RES	61	55	40	40	54	64	41.2	44.2	25.2	25.2	35.2	37.2	37.2
1769	COM	70	70	70	70	N/A	N/A	56	59	40	40	50	52	52
1770	RES	61	55	40	40	54	64	112	115	96	96	106	108	108
1771	COM	70	70	70	70	N/A	N/A	56.5	59.5	40.5	40.5	50.5	52.5	52.5
1772	COM	70	70	70	70	N/A	N/A	113.7	116.7	97.7	97.7	107.7	109.7	109.7
1773	RES	61	55	40	40	54	64	72.3	75.3	56.3	56.3	66.3	68.3	68.3
1774	RES	61	55	40	40	54	64	58	61	42	42	52	54	54
1775	RES	61	55	40	40	54	64	55.1	58.1	39.1	39.1	49.1	51.1	51.1
1776	RES	61	55	40	40	54	64	32.7	35.7	16.7	16.7	26.7	28.7	28.7
1777	RES	61	55	40	40	54	64	44.9	47.9	28.9	28.9	38.9	40.9	40.9
1779	RES	61	55	40	40	54	64	47.5	50.5	31.5	31.5	41.5	43.5	43.5
1780	RES	61	55	40	40	54	64	43.3	46.3	27.3	27.3	37.3	39.3	39.3
1781	RES	61	55	40	40	54	64	48.8	51.8	32.8	32.8	42.8	44.8	44.8
1782	RES	61	55	40	40	54	64	44.3	47.3	28.3	28.3	38.3	40.3	40.3
1783	RES	61	55	40	40	54	64	55.1	58.1	39.1	39.1	49.1	51.1	51.1
1784	RES	61	55	40	40	54	64	52.1	55.1	36.1	36.1	46.1	48.1	48.1
1786	RES	61	55	40	40	54	64	40.8	43.8	24.8	24.8	34.8	36.8	36.8
1787	RES	61	55	40	40	54	64	42.9	45.9	26.9	26.9	36.9	38.9	38.9
1788	RES	61	55	40	40	54	64	50.2	53.2	34.2	34.2	44.2	46.2	46.2
1789	EDU	55	55	55	55	N/A	N/A	58.2	61.2	42.2	42.2	52.2	54.2	54.2
1790	RES	61	55	40	40	54	64	40.7	43.7	24.7	24.7	34.7	36.7	36.7
1791	RES	61	55	40	40	54	64	40.1	43.1	24.1	24.1	34.1	36.1	36.1
1792	RES	61	55	40	40	54	64	40.1	43.1	24.1	24.1	34.1	36.1	36.1
1793	RES	61	55	40	40	54	64	41.1	44.1	25.1	25.1	35.1	37.1	37.1
1794	COM	70	70	70	70	N/A	N/A	51.2	54.2	35.2	35.2	45.2	47.2	47.2
1798	RES	61	55	40	40	54	64	51.1	54.1	35.1	35.1	45.1	47.1	47.1
1799	RES	61	55	40	40	54	64	50.7	53.7	34.7	34.7	44.7	46.7	46.7
1800	RES	61	55	40	40	54	64	53.8	56.8	37.8	37.8	47.8	49.8	49.8
1801	RES	61	55	40	40	54	64	48.6	51.6	32.6	32.6	42.6	44.6	44.6
1802	RES	61	55	40	40	54	64	54.8	57.8	38.8	38.8	48.8	50.8	50.8
1803	RES	61	55	40	40	54	64	39.5	42.5	23.5	23.5	33.5	35.5	35.5
1805	RES	61	55	40	40	54	64	55.9	58.9	39.9	39.9	49.9	51.9	51.9
1806	RES	61	55	40	40	54	64	46.3	49.3	30.3	30.3	40.3	42.3	42.3
1807	RES	61	55	40	40	54	64	49.6	52.6	33.6	33.6	43.6	45.6	45.6
1809	RES	61	55	40	40	54	64	38.6	41.6	22.6	22.6	32.6	34.6	34.6
1811	RES	61	55	40	40	54	64	34	37	18	18	28	30	30
1813	RES	61	55	40	40	54	64	46.3	49.3	30.3	30.3	40.3	42.3	42.3
1814	RES	61	55	40	40	54	64	34.3	37.3	18.3	18.3	28.3	30.3	30.3
1816	RES	61	55	40	40	54	64	44.3	47.3	28.3	28.3	38.3	40.3	40.3
1817	RES	61	55	40	40	54	64	36.8	39.8	20.8	20.8	30.8	32.8	32.8
1819	RES	61	55	40	40	54	64	57.1	60.1	41.1	41.1	51.1	53.1	53.1
1821	RES	61	55	40	40	54	64	56.1	59.1	40.1	40.1	50.1	52.1	52.1
1823	RES	61	55	40	40	54	64	44.5	47.5	28.5	28.5	38.5	40.5	40.5
1824	COM	70	70	70	70	N/A	N/A	48.4	51.4	32.4	32.4	42.4	44.4	44.4
1826	RES	61	55	40	40	54	64	45.1	48.1	29.1	29.1	39.1	41.1	41.1
1827	RES	61	55	40	40	54	64	45	48	29	29	39	41	41
1829	RES	61	55	40	40	54	64	50.7	53.7	34.7	34.7	44.7	46.7	46.7
1830	RES	61	55	40	40	54	64	49.7	52.7	33.7	33.7	43.7	45.7	45.7
1831	RES	61	55	40	40	54	64	62.5	65.5	46.5	46.5	56.5	58.5	58.5
1833	RES	61	55	40	40	54	64	46.3	49.3	30.3	30.3	40.3	42.3	42.3
1834	COM	70	70	70	70	N/A	N/A	48.4	51.4	32.4	32.4	42.4	44.4	44.4
1836	RES	61	55	40	40	54	64	46.4	49.4	30.4	30.4	40.4	42.4	42.4
1837	COM	70	70	70	70	N/A	N/A	52.5	55.5	36.5	36.5	46.5	48.5	48.5
1840	RES	61	55	40	40	54	64	-3	0	-19	-19	-9	-7	-7
1842	RES	61	55	40	40	54	64	60.4	63.4	44.4	44.4	54.4	56.4	56.4
1845	RES	61	55	40	40	54	64	33.7	36.7	17.7	17.7	27.7	29.7	29.7

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1846	RES	61	55	40	40	54	64	36.9	39.9	20.9	20.9	30.9	32.9	32.9
1847	RES	61	55	40	40	54	64	44.9	47.9	28.9	28.9	38.9	40.9	40.9
1848	RES	61	55	40	40	54	64	46.1	49.1	30.1	30.1	40.1	42.1	42.1
1851	RES	61	55	40	40	54	64	47.7	50.7	31.7	31.7	41.7	43.7	43.7
1852	RES	61	55	40	40	54	64	36.1	39.1	20.1	20.1	30.1	32.1	32.1
1854	RES	61	55	40	40	54	64	49.3	52.3	33.3	33.3	43.3	45.3	45.3
1856	RES	61	55	40	40	54	64	28.5	31.5	12.5	12.5	22.5	24.5	24.5
1857	RES	61	55	40	40	54	64	47	50	31	31	41	43	43
1858	RES	61	55	40	40	54	64	54.5	57.5	38.5	38.5	48.5	50.5	50.5
1859	RES	61	55	40	40	54	64	45.2	48.2	29.2	29.2	39.2	41.2	41.2
1860	RES	61	55	40	40	54	64	53	56	37	37	47	49	49
1861	RES	61	55	40	40	54	64	56.6	59.6	40.6	40.6	50.6	52.6	52.6
1862	RES	61	55	40	40	54	64	46.7	49.7	30.7	30.7	40.7	42.7	42.7
1863	RES	61	55	40	40	54	64	48.8	51.8	32.8	32.8	42.8	44.8	44.8
1864	RES	61	55	40	40	54	64	48.7	51.7	32.7	32.7	42.7	44.7	44.7
1866	RES	61	55	40	40	54	64	46.5	49.5	30.5	30.5	40.5	42.5	42.5
1867	RES	61	55	40	40	54	64	42.4	45.4	26.4	26.4	36.4	38.4	38.4
1869	RES	61	55	40	40	54	64	32	35	16	16	26	28	28
1870	POW	55	55	55	55	N/A	N/A	50.1	53.1	34.1	34.1	44.1	46.1	46.1
1871	RES	61	55	40	40	54	64	60.2	63.2	44.2	44.2	54.2	56.2	56.2
1873	RES	61	55	40	40	54	64	55.4	58.4	39.4	39.4	49.4	51.4	51.4
1874	RES	61	55	40	40	54	64	44.4	47.4	28.4	28.4	38.4	40.4	40.4
1876	RES	61	55	40	40	54	64	50.7	53.7	34.7	34.7	44.7	46.7	46.7
1877	RES	61	55	40	40	54	64	37.5	40.5	21.5	21.5	31.5	33.5	33.5
1878	RES	61	55	40	40	54	64	36.6	39.6	20.6	20.6	30.6	32.6	32.6
1879	RES	61	55	40	40	54	64	58.4	61.4	42.4	42.4	52.4	54.4	54.4
1880	RES	61	55	40	40	54	64	34.6	37.6	18.6	18.6	28.6	30.6	30.6
1881	RES	61	55	40	40	54	64	47.5	50.5	31.5	31.5	41.5	43.5	43.5
1882	RES	61	55	40	40	54	64	48.8	51.8	32.8	32.8	42.8	44.8	44.8
1884	RES	61	55	40	40	54	64	57.6	60.6	41.6	41.6	51.6	53.6	53.6
1885	RES	61	55	40	40	54	64	42.2	45.2	26.2	26.2	36.2	38.2	38.2
1886	RES	61	55	40	40	54	64	44.9	47.9	28.9	28.9	38.9	40.9	40.9
1887	RES	61	55	40	40	54	64	47.4	50.4	31.4	31.4	41.4	43.4	43.4
1889	RES	61	55	40	40	54	64	49.5	52.5	33.5	33.5	43.5	45.5	45.5
1890	RES	61	55	40	40	54	64	51.8	54.8	35.8	35.8	45.8	47.8	47.8
1891	RES	61	55	40	40	54	64	47.4	50.4	31.4	31.4	41.4	43.4	43.4
1892	RES	61	55	40	40	54	64	51.8	54.8	35.8	35.8	45.8	47.8	47.8
1893	RES	61	55	40	40	54	64	36.8	39.8	20.8	20.8	30.8	32.8	32.8
1894	RES	61	55	40	40	54	64	45.4	48.4	29.4	29.4	39.4	41.4	41.4
1895	RES	61	55	40	40	54	64	34.6	37.6	18.6	18.6	28.6	30.6	30.6
1897	RES	61	55	40	40	54	64	52.5	55.5	36.5	36.5	46.5	48.5	48.5
1898	RES	61	55	40	40	54	64	42.1	45.1	26.1	26.1	36.1	38.1	38.1
1899	RES	61	55	40	40	54	64	52.5	55.5	36.5	36.5	46.5	48.5	48.5
1900	RES	61	55	40	40	54	64	45.9	48.9	29.9	29.9	39.9	41.9	41.9
1901	RES	61	55	40	40	54	64	36.2	39.2	20.2	20.2	30.2	32.2	32.2
1902	RES	61	55	40	40	54	64	49.9	52.9	33.9	33.9	43.9	45.9	45.9
1906	RES	61	55	40	40	54	64	51.8	54.8	35.8	35.8	45.8	47.8	47.8
1911	RES	61	55	40	40	54	64	49	52	33	33	43	45	45
1912	RES	61	55	40	40	54	64	56.2	59.2	40.2	40.2	50.2	52.2	52.2
1914	RES	61	55	40	40	54	64	43.6	46.6	27.6	27.6	37.6	39.6	39.6
1915	RES	61	55	40	40	54	64	41.8	44.8	25.8	25.8	35.8	37.8	37.8
1917	RES	61	55	40	40	54	64	74.6	77.6	58.6	58.6	68.6	70.6	70.6
1918	RES	61	55	40	40	54	64	43	46	27	27	37	39	39
1919	COM	70	70	70	70	N/A	N/A	70.5	73.5	54.5	54.5	64.5	66.5	66.5
1920	RES	61	55	40	40	54	64	62.9	65.9	46.9	46.9	56.9	58.9	58.9
1925	RES	61	55	40	40	54	64	46	49	30	30	40	42	42
1927	RES	61	55	40	40	54	64	45.6	48.6	29.6	29.6	39.6	41.6	41.6
1928	COM	70	70	70	70	N/A	N/A	115.2	118.2	99.2	99.2	109.2	111.2	111.2
1929	COM	70	70	70	70	N/A	N/A	65.2	68.2	49.2	49.2	59.2	61.2	61.2
1932	RES	61	55	40	40	54	64	51.5	54.5	35.5	35.5	45.5	47.5	47.5

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1933	RES	61	55	40	40	54	64	107.1	110.1	91.1	91.1	101.1	103.1	103.1
1935	COM	70	70	70	70	N/A	N/A	53.5	56.5	37.5	37.5	47.5	49.5	49.5
1937	COM	70	70	70	70	N/A	N/A	70.5	73.5	54.5	54.5	64.5	66.5	66.5
1939	COM	70	70	70	70	N/A	N/A	75.1	78.1	59.1	59.1	69.1	71.1	71.1
1940	RES	61	55	40	40	54	64	60.5	63.5	44.5	44.5	54.5	56.5	56.5
1942	RES	61	55	40	40	54	64	55.8	58.8	39.8	39.8	49.8	51.8	51.8
1944	RES	61	55	40	40	54	64	31.6	34.6	15.6	15.6	25.6	27.6	27.6
1945	RES	61	55	40	40	54	64	53.1	56.1	37.1	37.1	47.1	49.1	49.1
1946	RES	61	55	40	40	54	64	65.9	68.9	49.9	49.9	59.9	61.9	61.9
1948	RES	61	55	40	40	54	64	48.4	51.4	32.4	32.4	42.4	44.4	44.4
1949	RES	61	55	40	40	54	64	43.7	46.7	27.7	27.7	37.7	39.7	39.7
1950	RES	61	55	40	40	54	64	36.8	39.8	20.8	20.8	30.8	32.8	32.8
1952	RES	61	55	40	40	54	64	44.8	47.8	28.8	28.8	38.8	40.8	40.8
1953	RES	61	55	40	40	54	64	57	60	41	41	51	53	53
1954	COM	70	70	70	70	N/A	N/A	72.8	75.8	56.8	56.8	66.8	68.8	68.8
1955	RES	61	55	40	40	54	64	44.4	47.4	28.4	28.4	38.4	40.4	40.4
1956	MED	55	55	55	55	N/A	N/A	52.8	55.8	36.8	36.8	46.8	48.8	48.8
1957	RES	61	55	40	40	54	64	31.5	34.5	15.5	15.5	25.5	27.5	27.5
1958	RES	61	55	40	40	54	64	50.1	53.1	34.1	34.1	44.1	46.1	46.1
1959	RES	61	55	40	40	54	64	52.2	55.2	36.2	36.2	46.2	48.2	48.2
1961	RES	61	55	40	40	54	64	39.1	42.1	23.1	23.1	33.1	35.1	35.1
1963	RES	61	55	40	40	54	64	47.3	50.3	31.3	31.3	41.3	43.3	43.3
1965	RES	61	55	40	40	54	64	48.2	51.2	32.2	32.2	42.2	44.2	44.2
1968	RES	61	55	40	40	54	64	48	51	32	32	42	44	44
1970	RES	61	55	40	40	54	64	44.2	47.2	28.2	28.2	38.2	40.2	40.2
1973	RES	61	55	40	40	54	64	45.2	48.2	29.2	29.2	39.2	41.2	41.2
1975	RES	61	55	40	40	54	64	43.7	46.7	27.7	27.7	37.7	39.7	39.7
1977	RES	61	55	40	40	54	64	41	44	25	25	35	37	37
1978	RES	61	55	40	40	54	64	48.5	51.5	32.5	32.5	42.5	44.5	44.5
1982	RES	61	55	40	40	54	64	53.4	56.4	37.4	37.4	47.4	49.4	49.4
1984	RES	61	55	40	40	54	64	52.1	55.1	36.1	36.1	46.1	48.1	48.1
1985	RES	61	55	40	40	54	64	49	52	33	33	43	45	45
1986	RES	61	55	40	40	54	64	39.5	42.5	23.5	23.5	33.5	35.5	35.5
1989	RES	61	55	40	40	54	64	40.7	43.7	24.7	24.7	34.7	36.7	36.7
1990	RES	61	55	40	40	54	64	36.5	39.5	20.5	20.5	30.5	32.5	32.5
1991	RES	61	55	40	40	54	64	45.5	48.5	29.5	29.5	39.5	41.5	41.5
1992	RES	61	55	40	40	54	64	36.4	39.4	20.4	20.4	30.4	32.4	32.4
1994	RES	61	55	40	40	54	64	44.8	47.8	28.8	28.8	38.8	40.8	40.8
1995	RES	61	55	40	40	54	64	35.5	38.5	19.5	19.5	29.5	31.5	31.5
1996	RES	61	55	40	40	54	64	34.9	37.9	18.9	18.9	28.9	30.9	30.9
1997	RES	61	55	40	40	54	64	48.7	51.7	32.7	32.7	42.7	44.7	44.7
1998	RES	61	55	40	40	54	64	46.6	49.6	30.6	30.6	40.6	42.6	42.6
1999	RES	61	55	40	40	54	64	44.4	47.4	28.4	28.4	38.4	40.4	40.4
2000	RES	61	55	40	40	54	64	46.3	49.3	30.3	30.3	40.3	42.3	42.3
2007	RES	61	55	40	40	54	64	51.4	54.4	35.4	35.4	45.4	47.4	47.4
2008	RES	61	55	40	40	54	64	51.2	54.2	35.2	35.2	45.2	47.2	47.2
2010	RES	61	55	40	40	54	64	51.7	54.7	35.7	35.7	45.7	47.7	47.7
2011	RES	61	55	40	40	54	64	41.2	44.2	25.2	25.2	35.2	37.2	37.2
2012	RES	61	55	40	40	54	64	49.2	52.2	33.2	33.2	43.2	45.2	45.2
2014	COM	70	70	70	70	N/A	N/A	77.1	80.1	61.1	61.1	71.1	73.1	73.1
2015	RES	61	55	40	40	54	64	48.9	51.9	32.9	32.9	42.9	44.9	44.9
2016	RES	61	55	40	40	54	64	48.7	51.7	32.7	32.7	42.7	44.7	44.7
2018	RES	61	55	40	40	54	64	36.2	39.2	20.2	20.2	30.2	32.2	32.2
2020	RES	61	55	40	40	54	64	48	51	32	32	42	44	44
2022	RES	61	55	40	40	54	64	48.3	51.3	32.3	32.3	42.3	44.3	44.3
2025	RES	61	55	40	40	54	64	44.9	47.9	28.9	28.9	38.9	40.9	40.9
2027	RES	61	55	40	40	54	64	45.3	48.3	29.3	29.3	39.3	41.3	41.3
2030	RES	61	55	40	40	54	64	51.7	54.7	35.7	35.7	45.7	47.7	47.7
2031	RES	61	55	40	40	54	64	51.7	54.7	35.7	35.7	45.7	47.7	47.7
2034	COM	70	70	70	70	N/A	N/A	95.9	98.9	79.9	79.9	89.9	91.9	91.9

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2035	RES	61	55	40	40	54	64	50.6	53.6	34.6	34.6	44.6	46.6	46.6
2037	RES	61	55	40	40	54	64	55.3	58.3	39.3	39.3	49.3	51.3	51.3
2038	COM	70	70	70	70	N/A	N/A	69	72	53	53	63	65	65
2040	RES	61	55	40	40	54	64	39.1	42.1	23.1	23.1	33.1	35.1	35.1
2041	RES	61	55	40	40	54	64	43.6	46.6	27.6	27.6	37.6	39.6	39.6
2044	RES	61	55	40	40	54	64	48.5	51.5	32.5	32.5	42.5	44.5	44.5
2045	RES	61	55	40	40	54	64	43.9	46.9	27.9	27.9	37.9	39.9	39.9
2046	RES	61	55	40	40	54	64	37	40	21	21	31	33	33
2047	RES	61	55	40	40	54	64	45.9	48.9	29.9	29.9	39.9	41.9	41.9
2048	RES	61	55	40	40	54	64	52.3	55.3	36.3	36.3	46.3	48.3	48.3
2049	RES	61	55	40	40	54	64	39.6	42.6	23.6	23.6	33.6	35.6	35.6
2050	RES	61	55	40	40	54	64	49.5	52.5	33.5	33.5	43.5	45.5	45.5
2051	RES	61	55	40	40	54	64	38.4	41.4	22.4	22.4	32.4	34.4	34.4
2052	RES	61	55	40	40	54	64	50.6	53.6	34.6	34.6	44.6	46.6	46.6
2053	RES	61	55	40	40	54	64	51.7	54.7	35.7	35.7	45.7	47.7	47.7
2054	COM	70	70	70	70	N/A	N/A	108.9	111.9	92.9	92.9	102.9	104.9	104.9
2055	RES	61	55	40	40	54	64	52.1	55.1	36.1	36.1	46.1	48.1	48.1
2056	RES	61	55	40	40	54	64	50.3	53.3	34.3	34.3	44.3	46.3	46.3
2057	RES	61	55	40	40	54	64	41.7	44.7	25.7	25.7	35.7	37.7	37.7
2058	RES	61	55	40	40	54	64	48.7	51.7	32.7	32.7	42.7	44.7	44.7
2061	RES	61	55	40	40	54	64	44	47	28	28	38	40	40
2062	RES	61	55	40	40	54	64	35.6	38.6	19.6	19.6	29.6	31.6	31.6
2063	RES	61	55	40	40	54	64	47.4	50.4	31.4	31.4	41.4	43.4	43.4
2064	RES	61	55	40	40	54	64	50.6	53.6	34.6	34.6	44.6	46.6	46.6
2065	RES	61	55	40	40	54	64	58.6	61.6	42.6	42.6	52.6	54.6	54.6
2066	RES	61	55	40	40	54	64	48.7	51.7	32.7	32.7	42.7	44.7	44.7
2067	RES	61	55	40	40	54	64	55.4	58.4	39.4	39.4	49.4	51.4	51.4
2069	COM	70	70	70	70	N/A	N/A	66.7	69.7	50.7	50.7	60.7	62.7	62.7
2073	RES	61	55	40	40	54	64	50.7	53.7	34.7	34.7	44.7	46.7	46.7
2074	POW	55	55	55	55	N/A	N/A	70.7	73.7	54.7	54.7	64.7	66.7	66.7
2075	RES	61	55	40	40	54	64	38.5	41.5	22.5	22.5	32.5	34.5	34.5
2078	RES	61	55	40	40	54	64	28.6	31.6	12.6	12.6	22.6	24.6	24.6
2080	RES	61	55	40	40	54	64	55.6	58.6	39.6	39.6	49.6	51.6	51.6
2083	RES	61	55	40	40	54	64	51.7	54.7	35.7	35.7	45.7	47.7	47.7
2087	EDU	55	55	55	55	N/A	N/A	49.2	52.2	33.2	33.2	43.2	45.2	45.2
2091	EDU	55	55	55	55	N/A	N/A	52.9	55.9	36.9	36.9	46.9	48.9	48.9
2092	RES	61	55	40	40	54	64	34	37	18	18	28	30	30
2094	RES	61	55	40	40	54	64	39.4	42.4	23.4	23.4	33.4	35.4	35.4
2095	RES	61	55	40	40	54	64	56.9	59.9	40.9	40.9	50.9	52.9	52.9
2096	RES	61	55	40	40	54	64	59	62	43	43	53	55	55
2097	COM	70	70	70	70	N/A	N/A	66.1	69.1	50.1	50.1	60.1	62.1	62.1
2103	COM	70	70	70	70	N/A	N/A	102.3	105.3	86.3	86.3	96.3	98.3	98.3
2105	RES	61	55	40	40	54	64	38.8	41.8	22.8	22.8	32.8	34.8	34.8
2106	POW	55	55	55	55	N/A	N/A	49.7	52.7	33.7	33.7	43.7	45.7	45.7
2108	MED	55	55	55	55	N/A	N/A	49	52	33	33	43	45	45
2109	COM	70	70	70	70	N/A	N/A	72.1	75.1	56.1	56.1	66.1	68.1	68.1
2110	RES	61	55	40	40	54	64	49.1	52.1	33.1	33.1	43.1	45.1	45.1
2112	EDU	55	55	55	55	N/A	N/A	58.5	61.5	42.5	42.5	52.5	54.5	54.5
2113	COM	70	70	70	70	N/A	N/A	63.3	66.3	47.3	47.3	57.3	59.3	59.3
2117	RES	61	55	40	40	54	64	37.2	40.2	21.2	21.2	31.2	33.2	33.2
2118	COM	70	70	70	70	N/A	N/A	72.3	75.3	56.3	56.3	66.3	68.3	68.3
2120	COM	70	70	70	70	N/A	N/A	66.8	69.8	50.8	50.8	60.8	62.8	62.8
2121	COM	70	70	70	70	N/A	N/A	79.1	82.1	63.1	63.1	73.1	75.1	75.1
2122	RES	61	55	40	40	54	64	107.3	110.3	91.3	91.3	101.3	103.3	103.3
2123	RES	61	55	40	40	54	64	40.4	43.4	24.4	24.4	34.4	36.4	36.4
2124	RES	61	55	40	40	54	64	55.7	58.7	39.7	39.7	49.7	51.7	51.7
2129	COM	70	70	70	70	N/A	N/A	64.8	67.8	48.8	48.8	58.8	60.8	60.8
2130	RES	61	55	40	40	54	64	34.6	37.6	18.6	18.6	28.6	30.6	30.6
2131	RES	61	55	40	40	54	64	45.4	48.4	29.4	29.4	39.4	41.4	41.4
2135	RES	61	55	40	40	54	64	35.1	38.1	19.1	19.1	29.1	31.1	31.1

REC_ID	R_Type	SH NML	CNVG OOH1 NML	CNVG OOH2 NML	ICNG OOH NML	Sleep Disturbance Criteria (LAeq)	Sleep Awakening Criteria (LAmax)	Site establishment and vegetation clearance LdBA	Mill and reconstruct / widen kerb realignment LdBA	Replace / reinstate existing pavement LdBA	Upgrades to utilities LdBA	Line marking and installation of new road signage LdBA	Installation of landscaping and street furniture including planting of new amenity trees and native vegetation LdBA	Rehabilitate the site LdBA
2136	EDU	55	55	55	55	N/A	N/A	57.6	60.6	41.6	41.6	51.6	53.6	53.6
2137	RES	61	55	40	40	54	64	48.8	51.8	32.8	32.8	42.8	44.8	44.8
2138	RES	61	55	40	40	54	64	54.4	57.4	38.4	38.4	48.4	50.4	50.4
2140	RES	61	55	40	40	54	64	47.7	50.7	31.7	31.7	41.7	43.7	43.7
2142	RES	61	55	40	40	54	64	42.6	45.6	26.6	26.6	36.6	38.6	38.6
2143	RES	61	55	40	40	54	64	37.4	40.4	21.4	21.4	31.4	33.4	33.4
2144	COM	70	70	70	70	N/A	N/A	44.6	47.6	28.6	28.6	38.6	40.6	40.6
2145	RES	61	55	40	40	54	64	54.2	57.2	38.2	38.2	48.2	50.2	50.2
2146	RES	61	55	40	40	54	64	36	39	20	20	30	32	32
2147	RES	61	55	40	40	54	64	50.8	53.8	34.8	34.8	44.8	46.8	46.8
2148	RES	61	55	40	40	54	64	39.8	42.8	23.8	23.8	33.8	35.8	35.8
2149	POW	55	55	55	55	N/A	N/A	55.2	58.2	39.2	39.2	49.2	51.2	51.2
2150	RES	61	55	40	40	54	64	48	51	32	32	42	44	44
2151	RES	61	55	40	40	54	64	53.2	56.2	37.2	37.2	47.2	49.2	49.2
2152	RES	61	55	40	40	54	64	46.1	49.1	30.1	30.1	40.1	42.1	42.1
2153	RES	61	55	40	40	54	64	37.3	40.3	21.3	21.3	31.3	33.3	33.3
2156	RES	61	55	40	40	54	64	47.7	50.7	31.7	31.7	41.7	43.7	43.7
2157	RES	61	55	40	40	54	64	38.6	41.6	22.6	22.6	32.6	34.6	34.6
2158	RES	61	55	40	40	54	64	33.9	36.9	17.9	17.9	27.9	29.9	29.9
2162	RES	61	55	40	40	54	64	38.2	41.2	22.2	22.2	32.2	34.2	34.2
2164	EDU	55	55	55	55	N/A	N/A	58.2	61.2	42.2	42.2	52.2	54.2	54.2
2169	RES	61	55	40	40	54	64	37.1	40.1	21.1	21.1	31.1	33.1	33.1
2174	RES	61	55	40	40	54	64	43.3	46.3	27.3	27.3	37.3	39.3	39.3
2177	RES	61	55	40	40	54	64	49.8	52.8	33.8	33.8	43.8	45.8	45.8
2178	RES	61	55	40	40	54	64	51	54	35	35	45	47	47
2181	RES	61	55	40	40	54	64	50	53	34	34	44	46	46
2182	RES	61	55	40	40	54	64	37.2	40.2	21.2	21.2	31.2	33.2	33.2
2184	RES	61	55	40	40	54	64	33.3	36.3	17.3	17.3	27.3	29.3	29.3
2186	RES	61	55	40	40	54	64	30.2	33.2	14.2	14.2	24.2	26.2	26.2
2187	RES	61	55	40	40	54	64	37.3	40.3	21.3	21.3	31.3	33.3	33.3
2192	RES	61	55	40	40	54	64	54.3	57.3	38.3	38.3	48.3	50.3	50.3
2195	RES	61	55	40	40	54	64	34.2	37.2	18.2	18.2	28.2	30.2	30.2
2198	RES	61	55	40	40	54	64	46.9	49.9	30.9	30.9	40.9	42.9	42.9
2199	RES	61	55	40	40	54	64	38	41	22	22	32	34	34
2200	RES	61	55	40	40	54	64	46.5	49.5	30.5	30.5	40.5	42.5	42.5
2201	RES	61	55	40	40	54	64	50.2	53.2	34.2	34.2	44.2	46.2	46.2
2202	RES	61	55	40	40	54	64	50.6	53.6	34.6	34.6	44.6	46.6	46.6
2205	RES	61	55	40	40	54	64	42.2	45.2	26.2	26.2	36.2	38.2	38.2
2206	RES	61	55	40	40	54	64	44.2	47.2	28.2	28.2	38.2	40.2	40.2
2207	RES	61	55	40	40	54	64	49.2	52.2	33.2	33.2	43.2	45.2	45.2
2208	RES	61	55	40	40	54	64	34.6	37.6	18.6	18.6	28.6	30.6	30.6
2210	RES	61	55	40	40	54	64	32.1	35.1	16.1	16.1	26.1	28.1	28.1
2212	RES	61	55	40	40	54	64	32.8	35.8	16.8	16.8	26.8	28.8	28.8
2213	RES	61	55	40	40	54	64	47.2	50.2	31.2	31.2	41.2	43.2	43.2
2214	RES	61	55	40	40	54	64	37.5	40.5	21.5	21.5	31.5	33.5	33.5
2215	RES	61	55	40	40	54	64	44.9	47.9	28.9	28.9	38.9	40.9	40.9
2218	EDU	55	55	55	55	N/A	N/A	55.6	58.6	39.6	39.6	49.6	51.6	51.6
2220	RES	61	55	40	40	54	64	52.5	55.5	36.5	36.5	46.5	48.5	48.5
2223	RES	61	55	40	40	54	64	44.9	47.9	28.9	28.9	38.9	40.9	40.9
2224	RES	61	55	40	40	54	64	52.4	55.4	36.4	36.4	46.4	48.4	48.4
2225	COM	70	70	70	70	N/A	N/A	37.3	40.3	21.3	21.3	31.3	33.3	33.3
2227	RES	61	55	40	40	54	64	48.5	51.5	32.5	32.5	42.5	44.5	44.5
2228	RES	61	55	40	40	54	64	54.2	57.2	38.2	38.2	48.2	50.2	50.2
2229	RES	61	55	40	40	54	64	52.7	55.7	36.7	36.7	46.7	48.7	48.7
2230	EDU	55	55	55	55	N/A	N/A	51.8	54.8	35.8	35.8	45.8	47.8	47.8
2231	RES	61	55	40	40	54	64	48.2	51.2	32.2	32.2	42.2	44.2	44.2
2232	RES	61	55	40	40	54	64	42	45	26	26	36	38	38
2233	RES	61	55	40	40	54	64	44.3	47.3	28.3	28.3	38.3	40.3	40.3
2235	RES	61	55	40	40	54	64	45.8	48.8	29.8	29.8	39.8	41.8	41.8
2236	RES	61	55	40	40	54	64	40.7	43.7	24.7	24.7	34.7	36.7	36.7

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2239	RES	61	55	40	40	54	64	55.9	58.9	39.9	39.9	49.9	51.9	51.9
2240	RES	61	55	40	40	54	64	36.5	39.5	20.5	20.5	30.5	32.5	32.5
2241	RES	61	55	40	40	54	64	49.6	52.6	33.6	33.6	43.6	45.6	45.6
2242	RES	61	55	40	40	54	64	37.2	40.2	21.2	21.2	31.2	33.2	33.2
2243	EDU	55	55	55	55	N/A	N/A	47.1	50.1	31.1	31.1	41.1	43.1	43.1
2245	EDU	55	55	55	55	N/A	N/A	41.5	44.5	25.5	25.5	35.5	37.5	37.5
2246	RES	61	55	40	40	54	64	52.5	55.5	36.5	36.5	46.5	48.5	48.5
2249	RES	61	55	40	40	54	64	33.7	36.7	17.7	17.7	27.7	29.7	29.7
2250	RES	61	55	40	40	54	64	39.5	42.5	23.5	23.5	33.5	35.5	35.5
2251	RES	61	55	40	40	54	64	34.3	37.3	18.3	18.3	28.3	30.3	30.3
2253	EDU	55	55	55	55	N/A	N/A	51.8	54.8	35.8	35.8	45.8	47.8	47.8
2255	RES	61	55	40	40	54	64	45.4	48.4	29.4	29.4	39.4	41.4	41.4
2257	RES	61	55	40	40	54	64	33.7	36.7	17.7	17.7	27.7	29.7	29.7
2260	EDU	55	55	55	55	N/A	N/A	64.4	67.4	48.4	48.4	58.4	60.4	60.4
2261	RES	61	55	40	40	54	64	39	42	23	23	33	35	35
2263	EDU	55	55	55	55	N/A	N/A	46.7	49.7	30.7	30.7	40.7	42.7	42.7
2264	RES	61	55	40	40	54	64	47.3	50.3	31.3	31.3	41.3	43.3	43.3
2267	RES	61	55	40	40	54	64	29.7	32.7	13.7	13.7	23.7	25.7	25.7
2268	RES	61	55	40	40	54	64	46.5	49.5	30.5	30.5	40.5	42.5	42.5
2269	RES	61	55	40	40	54	64	28.7	31.7	12.7	12.7	22.7	24.7	24.7
2270	RES	61	55	40	40	54	64	45.5	48.5	29.5	29.5	39.5	41.5	41.5
2271	RES	61	55	40	40	54	64	47.9	50.9	31.9	31.9	41.9	43.9	43.9
2272	COM	70	70	70	70	N/A	N/A	47.9	50.9	31.9	31.9	41.9	43.9	43.9
2276	RES	61	55	40	40	54	64	36.3	39.3	20.3	20.3	30.3	32.3	32.3
2277	RES	61	55	40	40	54	64	48.2	51.2	32.2	32.2	42.2	44.2	44.2
2281	RES	61	55	40	40	54	64	41	44	25	25	35	37	37
2282	RES	61	55	40	40	54	64	35.1	38.1	19.1	19.1	29.1	31.1	31.1
2283	RES	61	55	40	40	54	64	40.9	43.9	24.9	24.9	34.9	36.9	36.9
2284	RES	61	55	40	40	54	64	33.7	36.7	17.7	17.7	27.7	29.7	29.7
2285	RES	61	55	40	40	54	64	52.8	55.8	36.8	36.8	46.8	48.8	48.8
2286	RES	61	55	40	40	54	64	37.9	40.9	21.9	21.9	31.9	33.9	33.9
2287	RES	61	55	40	40	54	64	39.9	42.9	23.9	23.9	33.9	35.9	35.9
2288	COM	70	70	70	70	N/A	N/A	61.4	64.4	45.4	45.4	55.4	57.4	57.4
2289	RES	61	55	40	40	54	64	51.5	54.5	35.5	35.5	45.5	47.5	47.5
2290	RES	61	55	40	40	54	64	34.5	37.5	18.5	18.5	28.5	30.5	30.5
2291	RES	61	55	40	40	54	64	51.8	54.8	35.8	35.8	45.8	47.8	47.8
2292	RES	61	55	40	40	54	64	35.4	38.4	19.4	19.4	29.4	31.4	31.4
2293	RES	61	55	40	40	54	64	43.6	46.6	27.6	27.6	37.6	39.6	39.6
2294	RES	61	55	40	40	54	64	30.6	33.6	14.6	14.6	24.6	26.6	26.6
2295	COM	70	70	70	70	N/A	N/A	108.1	111.1	92.1	92.1	102.1	104.1	104.1
2297	RES	61	55	40	40	54	64	37.8	40.8	21.8	21.8	31.8	33.8	33.8
2298	RES	61	55	40	40	54	64	35.6	38.6	19.6	19.6	29.6	31.6	31.6
2301	AREC	65	65	65	65	N/A	N/A	64.6	67.6	48.6	48.6	58.6	60.6	60.6
2302	AREC	65	65	65	65	N/A	N/A	43.5	46.5	27.5	27.5	37.5	39.5	39.5
2303	COM	70	70	70	70	N/A	N/A	104.2	107.2	88.2	88.2	98.2	100.2	100.2
2304	RES	61	55	40	40	54	64	98.1	101.1	82.1	82.1	92.1	94.1	94.1
2305	RES	61	55	40	40	54	64	82.1	85.1	66.1	66.1	76.1	78.1	78.1
2306	COM	70	70	70	70	N/A	N/A	103.1	106.1	87.1	87.1	97.1	99.1	99.1
2307	AREC	65	65	65	65	N/A	N/A	59.6	62.6	43.6	43.6	53.6	55.6	55.6
2308	AREC	65	65	65	65	N/A	N/A	66.3	69.3	50.3	50.3	60.3	62.3	62.3
2309	AREC	65	65	65	65	N/A	N/A	51.9	54.9	35.9	35.9	45.9	47.9	47.9
2310	AREC	65	65	65	65	N/A	N/A	50.5	53.5	34.5	34.5	44.5	46.5	46.5
2311	AREC	65	65	65	65	N/A	N/A	51.9	54.9	35.9	35.9	45.9	47.9	47.9
2312	AREC	65	65	65	65	N/A	N/A	56.6	59.6	40.6	40.6	50.6	52.6	52.6
2313	AREC	65	65	65	65	N/A	N/A	60.2	63.2	44.2	44.2	54.2	56.2	56.2
2314	AREC	65	65	65	65	N/A	N/A	59	62	43	43	53	55	55
2315	AREC	65	65	65	65	N/A	N/A	68.1	71.1	52.1	52.1	62.1	64.1	64.1
2316	AREC	65	65	65	65	N/A	N/A	56.3	59.3	40.3	40.3	50.3	52.3	52.3
2317	AREC	65	65	65	65	N/A	N/A	53.7	56.7	37.7	37.7	47.7	49.7	49.7

Appendix D

Construction Scenario Façade Noise Maps



Figure: Appendix D.1	Author: FZ
Date: 03/04/2025	Approved by: MB

N

0 30 60 90 120 m

1:11,000 at A4

To be read in conjunction with WSP document: PS2168115_Monaro_Street_Upgrade-Noise and Vibration

Map Source: MetroMaps

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Legend

- Study area
- Construction zone

Noise Impacts (NML exceedance, LAeq)

- Inaudible (<0 dBA)
- 0-10 dBA
- 10-20 dBA
- > 20 dBA
- Highly Affected (>75 dBA)

Monaro Street Upgrade

Construction Scenario - Mill and reconstruct and Ancillary site- Standard hours

wsp



Appendix D.2	Author: FZ	N
Date: 03/04/2025	Approved by: INITIALS	

To be read in conjunction with WSP document: PS2168115_Monaro_Street_Upgrade-Noise and Vibration

Map Source: MetroMaps

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0 30 60 90 120 m

1:11,000 at A4

Legend

- Study area
- Construction zone

Noise Impacts (NML exceedance, LAeq)

- Inaudible (<0 dBA)
- Noticable (0-5 dBA)
- Clearly Audible (5-15 dBA)
- Moderately Intrusive (15 -25 dBA)
- Highly Intrusive (>25 dBA)

Monaro Street Upgrade

Construction Scenario - Mill and reconstruct or widen kerb realignment - Out of Hours 1



Appendix D.3	Author: FZ
Date: 03/04/2025	Approved by: MB

N

0 30 60 90 120 m

1:11,000 at A4

To be read in conjunction with WSP document: PS2168115_Monaro_Street_Upgrade-Noise and Vibration

Map Source: MetroMaps

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Legend

- Study area
- Construction zone

Noise Impacts (NML exceedance, LAeq)

- Inaudible (<0 dBA)
- Noticable (0-5 dBA)
- Clearly Audible (5-15 dBA)
- Moderately Intrusive (15 -25 dBA)
- Highly Intrusive (>25 dBA)

Monaro St Upgrade

Construction Scenario - Mill and reconstruct or widen kerb realignment - Out of Hours 2

Appendix E

Construction vibration exceedances map



Figure: Appendix E.1	Author: FZ
Date: 03/04/2025	Approved by: MB

N

0 30 60 90 120 m

1:4,000 at A4

Legend

- Construction zone
- Vibration impacted receivers
  - Commercial
  - Medical
  - Place of Worship
  - Residential

Monaro Street Upgrade

Predicted vibration impacts
Human Comfort

To be read in conjunction with WSP document: PS2168115_Monaro_Street_Upgrade-Noise and Vibration_Rev_0

Map Source: MetroMaps

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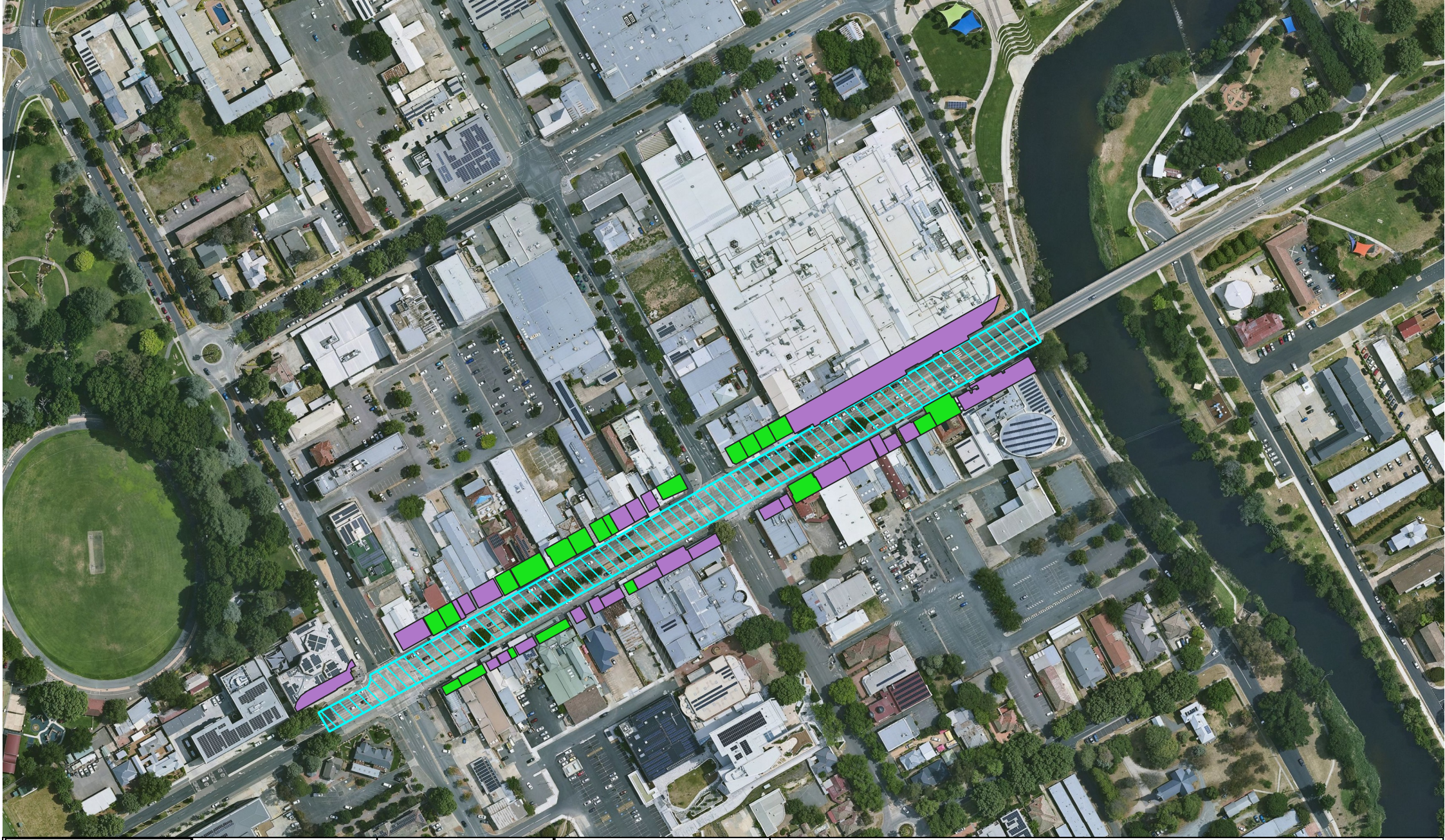


Figure: Appendix E.2	Author: FZ	N
Date: 03/04/2025	Approved by: MB	

To be read in conjunction with WSP document: PS2168115_Monaro_Street_Upgrade-Noise and Vibration

Map Source: MetroMaps

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0 30 60 90 120 m

1:3,000 at A4

Legend

- Construction zone

Vibration impacted receivers

- Commercial
- Residential

Monaro Street Upgrade

Predicted vibration impacts
Cosmetic Damage

wsp

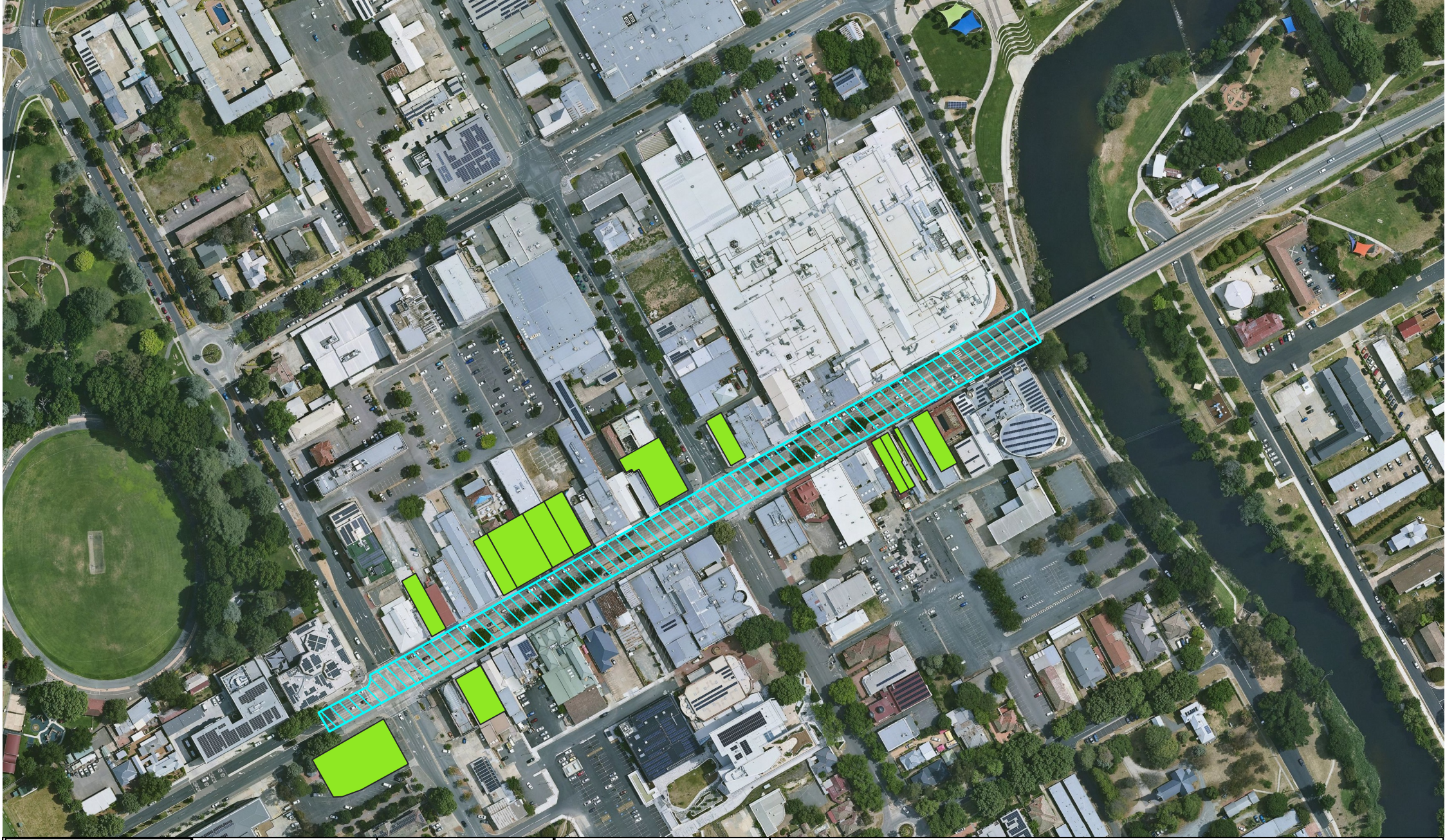


Figure: Appendix E.3	Author: FZ	N
Date: 03/04/2025	Approved by: MB	

To be read in conjunction with WSP document: PS2168115_Monaro_Street_Upgrade-Noise and Vibration_Rev_0

Map Source: MetroMaps

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0 30 60 90 120 m

1:3,000 at A4

Legend

- Construction zone

Vibration impacted receivers

- Local Heritage

Monaro Street Upgrade

Predicted vibration impacts
Heritage receivers

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Appendix F

CNVG-R Standard mitigation measures

Appendix B: Standard mitigation measures

The following standard actions and mitigation measures should be implemented on all construction projects. Assistance from Transport Communication and Stakeholder Engagement is available to coordinate and deliver community consultation and notification. The team also has the latest noise fact sheets and letter templates.

Action required	Applies to	Details
Management measures		
Implementation of any project specific mitigation measures required.	Airborne noise	Implementation of any project specific mitigation measures required.
Implement community consultation or notification measures (refer to Appendix C for further details of each measure).	Airborne noise Ground-borne noise and vibration	Notification detailing work activities, dates and hours, impacts and mitigation measures, indication of work schedule over the night-time period, any operational noise benefits from the works (where applicable) and contact telephone number. Notification should be a minimum of seven calendar days prior to the start of works. For projects other than maintenance works more advanced consultation or notification may be required. Contact Transport Communication and Stakeholder Engagement for guidance. Website (If required). Contact telephone number for community. Email distribution list (if required). Community drop-in session (if required by approval conditions).
Site inductions	Airborne noise Ground-borne noise and vibration	All employees, contractors and subcontractors are to receive an environmental induction. The induction must at least include: • all project specific and relevant standard noise and vibration mitigation measures • relevant licence and approval conditions • permissible hours of work • any limitations on high noise generating activities • location of nearest sensitive receivers • construction employee parking areas • designated loading/unloading areas and procedures • site opening/closing times (including deliveries) • environmental incident procedures
Behavioural practices	Airborne noise	No swearing or unnecessary shouting or loud stereos/radios on site. No dropping of materials from height, throwing of metal items and slamming of doors.
Verification	Airborne noise Ground-borne noise and vibration	Where specified under Appendix C, a noise verification program is to be carried out for the duration of the works in accordance with the Construction Noise and Vibration Management Plan and any approval and licence conditions.

Action required	Applies to	Details
Attended vibration measurements	Ground-borne vibration	Where required attended vibration measurements should be undertaken at the commencement of vibration generating activities to confirm that vibration levels are within the acceptable range to prevent cosmetic building damage.
Update Construction Environmental Management Plans	Airborne noise Ground-borne noise and vibration	The CEMP must be regularly updated to account for changes in noise and vibration management issues and strategies.
Building condition surveys	Vibration Blasting	Undertake building dilapidation surveys on all buildings located within the buffer zone prior to commencement of activities with the potential to cause property damage
Source controls		
Construction hours and scheduling.	Airborne noise Ground-borne noise and vibration	Where feasible and reasonable, construction should be carried out during the standard daytime working hours. Work generating high noise and/or vibration levels should be scheduled during less sensitive time periods.
Construction respite period during normal hours and out-of-hours work	Ground-borne noise and vibration Airborne noise	Please refer to Appendix C for more details on the following respite measures: • Respite Offers (RO) • Respite Period 1 (R1) • Respite Period 2 (R2) • Duration Respite (DR)
Equipment selection.	Airborne noise Ground-borne noise and vibration	Use quieter and less vibration emitting construction methods where feasible and reasonable. For example, when piling is required, bored piles rather than impact-driven piles will minimise noise and vibration impacts. Similarly, diaphragm wall construction techniques, in lieu of sheet piling, will have significant noise and vibration benefits. Ensure plant including the silencer is well maintained.
Plant noise levels.	Airborne-noise	The noise levels of plant and equipment must have operating sound power or sound pressure levels compliant with the criteria in Appendix H. Implement a noise monitoring audit program to ensure equipment remains within the more stringent of the manufacturers specifications or Appendix H.
Rental plant and equipment.	Airborne-noise	The noise levels of plant and equipment items are to be considered in rental decisions and in any case cannot be used on site unless compliant with the criteria in Table 2.
Use and siting of plant.	Airborne-noise	The offset distance between noisy plant and adjacent sensitive receivers is to be maximised. Plant used intermittently to be throttled down or shut down. Noise-emitting plant to be directed away from sensitive receivers. Only have necessary equipment on site.

Action required	Applies to	Details
Plan worksites and activities to minimise noise and vibration	Airborne noise Ground-borne vibration	Locate compounds away from sensitive receivers and discourage access from local roads. Plan traffic flow, parking and loading/unloading areas to minimise reversing movements within the site. 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. Very noise activities should be scheduled for normal working hours. If the work cannot be undertaken during the day, it should be completed before 11:00pm. Where practicable, work should be scheduled to avoid major student examination periods when students are studying for examinations such as before or during Higher School Certificate and at the end of higher education semesters. If programmed night work is postponed the work should be re-programmed and the approaches in this guideline apply again.
Reduced equipment power	Airborne noise Ground-borne vibration	Use only the necessary size and power.
Non-tonal and ambient sensitive reversing alarms	Airborne noise	Non-tonal reversing beepers (or an equivalent mechanism) must be fitted and used on all construction vehicles and mobile plant regularly used on site and for any out-of-hours work. Consider the use of ambient sensitive alarms that adjust output relative to the ambient noise level.
Minimise disturbance arising from delivery of goods to construction sites	Airborne noise	Loading and unloading of materials/deliveries is to occur as far as possible from sensitive receivers. Select site access points and roads as far as possible away from sensitive receivers. Dedicated loading/unloading areas to be shielded if close to sensitive receivers. Delivery vehicles to be fitted with straps rather than chains for unloading, wherever possible. Avoid or minimise these out-of-hours movements where possible.
Blasting regime	Airborne noise Ground-borne vibration	The noise and vibration impacts of blasting operations can be minimised by: • Choosing the appropriate blast charge configurations • Ensuring appropriate blast-hole preparation • Optimising blast design, location, orientation and spacing • Selecting appropriate blast times, and • Utilising knowledge of prevailing meteorological conditions. • *Australian Standard™ AS 2187.2-2006 Explosives -Storage and use, Part 2: Use of Explosives* provides more detailed advice on ground vibration and air blast overpressure impact minimisation options.

Action required	Applies to	Details
Engine compression brakes	Construction vehicles	Limit the use of engine compression brakes at night and in residential areas. Ensure vehicles are fitted with a maintained original equipment manufacturer exhaust silencer or a silencer that complies with the National Transport Commission's National Stationary Exhaust Noise Test Procedures for In-service Motor Vehicles and any relevant reference standards.
Path controls		
Shield stationary noise sources such as pumps, compressors, fans etc.	Airborne noise	Stationary noise sources should be enclosed or shielded where feasible and reasonable whilst ensuring that the occupational health and safety of workers is maintained. Appendix D of *AS 2436:2010* lists materials suitable for shielding.
Shield sensitive receivers from noisy activities	Airborne noise	Use structures to shield residential receivers from noise such as site shed placement, earth bunds, fencing, erection of operational stage noise barriers (where practicable), and consideration of site topography when situating plant.
Receptor controls		
Structural surveys and vibration monitoring	Ground-borne vibration	Pre-construction surveys of the structural integrity of vibration sensitive buildings may be warranted. At locations where there are high-risk receptors, vibration monitoring should be conducted during the activities causing vibration.
See Appendix C for additional measures	Airborne noise Ground-borne vibration	In some instances, additional mitigation measures may be required.

Appendix F – Aboriginal Heritage Information Management System (AHIMS) Search

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : monaro

Client Service ID : 952463

WSP Pty Ltd

Date: 20 November 2024

Level 1/121 Marcus Clarke St
Canberra Australian Capital Territory 2602

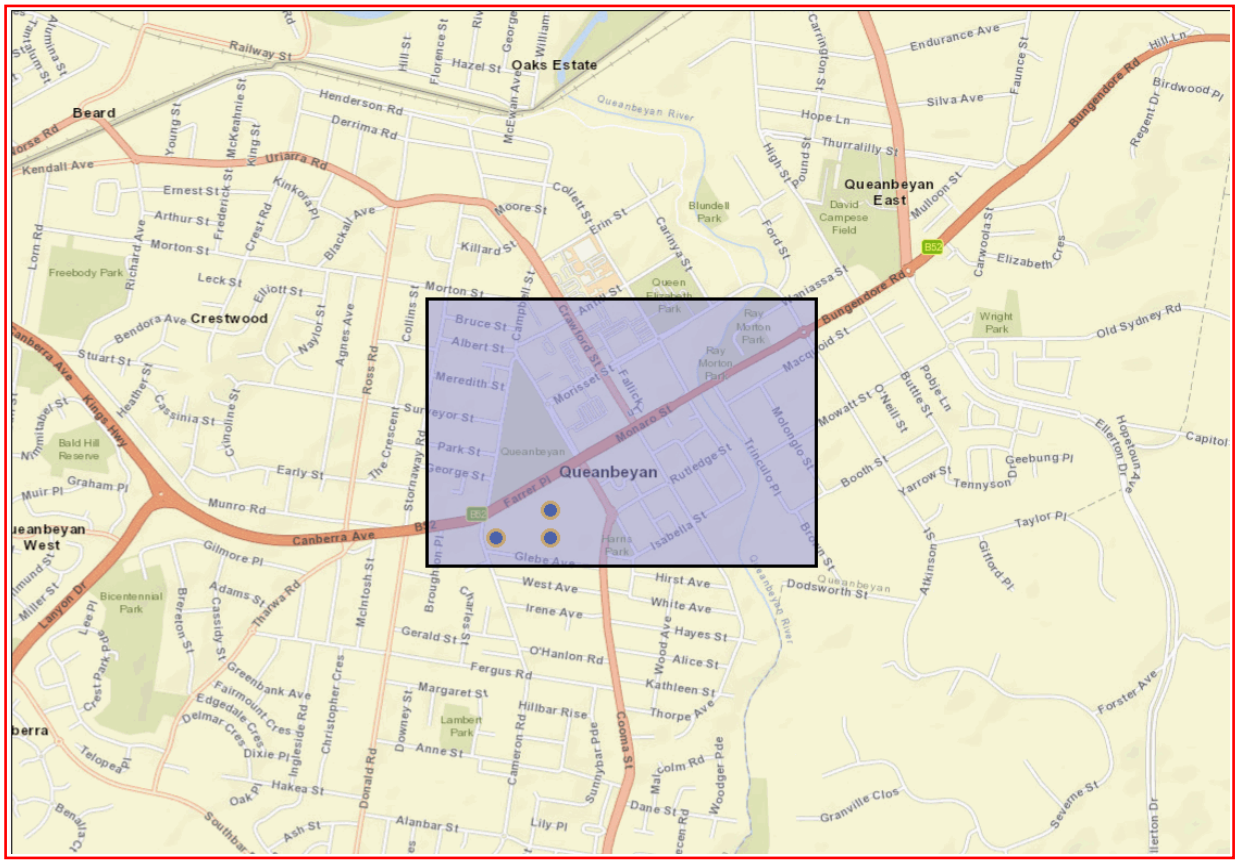
Attention: Cleopatra Courtney

Email: cleo.courtney@wsp.com

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lat, Long From : -35.3579, 149.2261 - Lat, Long To : -35.3491, 149.2415, conducted by Cleopatra Courtney on 20 November 2024.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

3	**Aboriginal sites are recorded in or near the above location.**
0	**Aboriginal places have been declared in or near the above location. ***

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the NSW Government Gazette (https://www.legislation.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Heritage NSW and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

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Web: www.heritage.nsw.gov.au