Transport for NSW

Macquarie Park Precinct and Bus Interchange upgrade

Submissions Report

December 2022

* Artist's impression (see note on inside cover)

NSW GOVERNMENT

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Acknowledgement of Country

Transport for NSW acknowledges the Wallumattagal clan of the Dharug Nation, the traditional custodians of the land on which the Macquarie Park Precinct and Bus Interchange is proposed.

We pay our respects to their Elders past and present and celebrate the diversity of Aboriginal people and their ongoing cultures and connections to the lands and waters of NSW.

Many of the transport routes we use today – from rail lines, to roads, to water crossings – follow the traditional Song lines, trade routes and ceremonial paths in Country that our nation's First Peoples followed for tens of thousands of years.

Transport for NSW is committed to honouring Aboriginal peoples' cultural and spiritual connections to the land, waters and seas and their rich contribution to society.

Prepared by Hills Environment and Transport for NSW.

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* Cover image is an artist's impression. Design and finishes are subject to design development, consultation and approvals. Elements such as street furniture, public art etc. are subject to consultation and to be delivered by others. The future Macquarie Centre and Macquarie University developments are representations, and may be subject to appropriate planning approvals.

Executive summary

The proposal

Transport for NSW (Transport) is proposing a precinct and bus interchange upgrade at Macquarie Park that creates a place for people to enjoy, meet and connect. The proposal would connect people to Macquarie University, Macquarie Centre, Macquarie Business Park and residential and commercial areas. The interchange upgrade on Herring Road between Waterloo Road and Talavera Road would improve travel efficiency and connectivity, making it easier for people to move safely into and around Macquarie Park. In addition, a bus layover between Talavera Road and the M2 Motorway, east of Culloden Road, is also proposed. Key features of the proposal include:

- increasing the footpath width and provision of new mature tree planting on the western side of Herring Road between Waterloo Road and Innovation Road
- provision of a large public domain area on the eastern side of Herring Road between Waterloo Road and Innovation Road, including tree lined pedestrian areas, and public seating
- provision of a wide 'gateway' signalised pedestrian crossing at the Herring Road and Waterloo Road intersection, connecting the two Metro Station entries
- provision of a raised mid-block single phase signalised pedestrian crossing
- adjustment of the southern kerb line and footpath adjacent to the Macquarie Centre so that the bus stands are outside the Macquarie Centre property boundary
- realignment of the road corridor and removal of the existing vegetated median on Herring Road to provide one general traffic lane and one bus lane northbound, and one bus lane and one bus stop zone southbound - this would include restricting the southbound lane to buses and taxis
- removal of the existing concrete median and fencing that separates Herring Road from the existing bus stands next to the Macquarie Centre
- provision of a new roundabout at the intersection of Herring Road and Innovation Road to support bus U-turns and access to Innovation Road
- provision of a fourth leg to the proposed roundabout at Innovation Drive to allow semi-trailers to exit the Macquarie Centre
- provision of a taxi rank area near the proposed new mid-block crossing
- relocation of the existing kiss and ride on Herring Road further north towards Innovation Road and/or to the northern side of University Avenue
- reducing the sign posted speed limit on Herring Road between Waterloo Road and Talavera Road from 50 kilometres per hour to 40 kilometres per hour
- construction of a bus layover between Talavera Road and the M2 Motorway to accommodate 20 bus bays and provide driver toilets and meal-room facilities
- removal of vegetation and about 18 on-street car spaces - Transport for NSW will be looking for opportunities to reduce the impact on parking.

Additional features of the proposal include:

- relocation of existing, and provision of new, street furniture
- drainage adjustments including new pits and pipes connecting to the existing system
- utility adjustments (primarily minor power pole relocations)
- temporary facilities for construction including compounds / storage areas in a nearby location within Macquarie University.

The Macquarie Park Precinct and Bus Interchange sites are located within the City of Ryde local government area and the suburb of Macquarie Park, about 16 kilometres north-west of the Sydney CBD. The bus interchange provides access to Macquarie University, Macquarie Shopping Centre, Macquarie Business Park and residential and commercial developments around the precinct. It also connects to the Macquarie University Metro Station positioned at the intersection of Herring Road and Waterloo Road. The M2 Motorway is to the north.

Display of the review of environmental factors

Transport for NSW prepared a Review of Environmental Factors (REF) to assess the potential environmental impacts of the proposed works. The REF was publically displayed for 28 days online between Friday 12 August 2022 and Thursday 8 September 2022. The REF was placed on the Transport for NSW project website at nswroads.work/macparkprecinct and made available for download.

During public display of the REF we reached local community members, transient out of area road users and visitors to the precinct using a combination of traditional, digital and social media platforms achieving a paid audience reach of 52,655.

Two community questions and answers sessions in relation to the REF were held online by a panel of Transport for NSW staff on Wednesday 24 August 2022 and Thursday 1 September 2022. These sessions were recorded and placed on the project webpage. Community members were invited to attend these sessions via Facebook advertising and email. The recording links were also sent to community members via email.

In addition, an interactive virtual engagement room (macpark.ghdengage.com) containing the REF document, frequently asked questions, visual renders, project information and a community update was made available online. In addition to email and submissions feedback on the REF could also be given via the virtual engagement room that contained a short survey.

Summary of issues and responses

Public display of the REF, and the supporting consultation, resulted in a total of 65 submissions, of which 62 were from the general community, with one each from the City of Ryde, a university college, and a business.

The main issues raised and responses to those issues are summarised below.

Proposal design

Some submissions suggested putting the interchange underground and / or providing a pedestrian bridge or overpass, while others emphasised the need for shelter and the provision of facilities for cyclists and pedestrians. The need for kiss and ride and additional provision for taxis was raised and one submission queried the location of the bus layover.

Transport for NSW did consider multi-tiered design, whether it was an underground interchange, underground road, or a split-level interchange, but this was not preferred as it would result in poor urban design outcomes, create challenges for customer comfort and amenity, limit passive surveillance that proposed safety risks for customers and have substantial additional cost.

Bus shelters with backside covers for those waiting for buses are being considered and would help meet demand for wet weather protection, while extensive tree planting and shaded seating are part of the overall concept for the proposal. The most appropriate type and location for bicycle parking
will be further investigated during the next stage of design of the project, with the final location to be determined in consultation with key stakeholders.

The proposal provides two taxi bays directly outside Macquarie Centre and Transport for NSW will further investigate whether additional taxi spaces can be included in the design during the next phase of project development. Based on feedback from stakeholders and the desire for an alternative access to Macquarie Centre via Waterloo Rd, alternate suitable kiss and ride locations are proposed further north on Herring Road (near Innovation Road and/or University Avenue).

There were several layover locations considered. The proposed location was selected due to capacity and functional requirements of the layover to service the bus fleet, the ongoing cost of operating the bus fleet by minimising dead running time for buses, community and environmental and other cost impacts.

Consultation

Submissions identified the need for further community and stakeholder consultation as the design progresses and during construction.

Transport for NSW is committed to continuing a collaborative approach towards engagement with Council and other stakeholders, and people will always be able to reach out to the Transport for NSW project team and the community engagement team. A Community and Stakeholder Engagement Plan will be prepared for the construction phase of the proposal.

Transport and traffic

Some submissions raised issues about the ease of crossing for pedestrians and the need to consider traffic calming, lower speed limits and an additional crossing near Innovation Road. Other submissions expressed concerns about restricting general traffic on Herring Road southbound, vehicle access to Macquarie Centre and impacts on the wider traffic network. Queries and suggestions regarding bus efficiency and reliability were also received, including a suggestion that Herring Road should be bus only in both directions, and some submissions suggested more specific provision for cyclists.

The proposal involves reducing the speed limit on Herring Road between Waterloo Road and Talavera Road from 50 kilometres per hour to 40 kilometres per hour, which is considered appropriate for a high pedestrian activity area. With the reduced speed limit and the removal of southbound general traffic, slightly narrower general traffic lane, provision of a controlled raised mid-block pedestrian crossing, further traffic calming measures are not considered necessary.

The proposed mid-block crossing provides convenient access to the central part of the bus interchange and the main Macquarie Centre entrance. Transport for NSW will work with Macquarie University and City of Ryde to consider the feasibility of providing a pedestrian crossing across Innovation Road at the intersection with Herring Road.

Options involving the closure of Herring Road to all general traffic were considered, however these options require all through non-bus traffic to be re-distributed to the wider network, particularly via Khartoum Road and Lane Cove Road. It was found that this would cause excessive traffic congestion, particularly in the afternoon peak.

Bus efficiency and reliability are managed within the interchange by future proofing for anticipated growth in demand including space allocation at bus stands, providing a bus lane to enable buses to manoeuvre around the interchange, a roundabout at Innovation Avenue to accommodate bus turnaround and separating general traffic. The bus layover on Talavera Road also accommodates for bus layover off site, freeing up capacity within the interchange.

Changes to Macquarie Centre access will be accommodated through updated signage in the road network.

Cyclists would be able to ride in the proposed bus lanes along Herring Road or travel to their destination via the broad public domain. In times where there are high volumes of people in the public domain along Herring Road, cyclists would reach their destination by navigating slowly or dismounting.

Biodiversity

Submissions expressed concern about removal of mature vegetation and resultant biodiversity impacts, including impacts on native fauna. The need for adequate tree replacement was emphasised.

At the bus interchange site, the proposal is anticipated to require the removal of 36 trees/tree groups as they are within or too close to the road alignment and new bus stands to practically retain or survive . A total of 22 trees are proposed to be retained, however seven of these are at risk of removal due to structural root zone and or unacceptable tree protection zone encroachments. The trees to be retained would be protected through Tree Protection Zones and other tree protection measures throughout construction.

The loss of trees due to the proposal will be offset consistent with the Biodiversity Policy (Transport for NSW, 2022a), the No Net Loss Guidelines – A guide for achieving biodiversity offsets and conservation measures (Transport for NSW, 2022b) and the Tree and Hollow Replacement Guidelines (Transport for NSW, 2022c), resulting in a net positive of two to three fold for replacement trees. Replacement planting will occur in consultation with the City of Ryde.

A pre-clearing survey will be conducted prior to any tree removal and a suitably qualified ecologist or experienced wildlife handler would be engaged to survey for and handle any fauna.

Noise

Submissions raised concerns about construction and operational noise, including noise from accelerating buses and congested northbound traffic lanes on Herring Road.

A Noise and Vibration Management Plan, and an out of hours works procedure will be prepared and implemented as part of the Construction Environmental Management Plan. The plan will include a range of measures to address noise and vibration including a working schedule which records respite periods for extended out-of-hours works and exam periods, and arrangements for consultation with affected neighbours and sensitive receivers, including notification and complaint handling processes.

The noise assessment (refer to Section 6.4 of the REF) found that noise levels as a result of the increase in bus traffic associated with the proposal are expected to increase by between 0.3dB and 1.8dB at the nearest receivers. Changes under 3 dBA are considered barely noticeable to the average person

Changes to the proposal

Transport for NSW is proposing relocation of the existing Macquarie Centre exit, located about 60 metres north of the Herring Road / Waterloo Road intersection, to a new location on Waterloo Road.

The change is a temporary solution, pending the Macquarie Centre redevelopment, and is required to address the following issues:

- there is a conflict between customers accessing the Metro, Macquarie Centre and Macquarie University, bus stands and exiting vehicles
- drivers exiting onto Herring Road have limited views of approaching traffic due to the driveway gradient and vegetation
- the proposed plaza space has increased next to Herring Road southbound, which in turn would increase the conflict zone with pedestrians
- there is the potential for interference with bus interchange operations
- there is potential for driver confusion regarding traffic arrangements on Herring Road and a need for a change to traffic lights to accommodate general traffic on this section of Herring Road.

Transport for NSW is also proposing to relocate the kiss and ride zone (one space) on Herring Road south of the mid-block pedestrian crossing to Herring Road near Innovation Road and /or University Avenue.

Next steps

Transport for NSW, as the determining authority, will consider the information in the REF and this Submissions Report and make a decision whether or not to proceed with the proposal.

Transport will inform the community and stakeholders of this decision and, where a decision is made to proceed, will continue to consult with the community and stakeholders prior to and during the construction phase.

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Appendix A – Urban and Landscape Design Concept Plan

1. Introduction and background

1.1 The proposal

Transport for NSW (Transport) is proposing a bus interchange upgrade at Macquarie Park that creates a place for people to enjoy, meet and connect. The proposal would connect people to Macquarie University, Macquarie Centre, Macquarie Business Park and residential and commercial areas.

The Macquarie Park Precinct and Bus Interchange sites are located within the City of Ryde local government area and the suburb of Macquarie Park, about 16 kilometres north-west of the Sydney CBD. The bus interchange provides access to Macquarie University, Macquarie Shopping Centre, Macquarie Business Park and residential and commercial developments around the precinct. It also connects to the Macquarie University Metro Station positioned at the intersection of Herring Road and Waterloo Road. The M2 Motorway is to the north.

The interchange upgrade, on Herring Road between Waterloo Road and Talavera Road, would improve travel efficiency and connectivity, making it easier for people to move safely into and around Macquarie Park. In addition, a bus layover is proposed between Talavera Road and the M2 Motorway, east of Culloden Road.

The location of the proposal is shown in Figure 1-1 and an overview of the proposal is provided in Figure 1-2.

Figure 1-1: Location of the proposal

Figure 1-2: The proposal

A more detailed description of the Macquarie Park Precinct and Bus Interchange upgrade is found in the Macquarie Park Precinct and Bus Interchange Upgrade Review of Environmental Factors (REF) prepared by Transport in August 2022.

1.2 REF display

Transport prepared the REF to assess the potential environmental impacts of the proposed works. The REF was publically displayed for 28 days online, between Friday 12 August 2022 and Thursday 8 September 2022. The REF was placed on the Transport project website at nswroads.work/macparkprecinct and made available for download.

Two community questions and answers sessions in relation to the REF were held online by a panel of Transport staff on Wednesday 24 August 2022 and Thursday 1 September 2022. These sessions were recorded and placed on the project webpage. Community members were invited to attend these sessions via Facebook advertising and email. The recording links were sent to community members via email.

In addition, an interactive virtual engagement room (macpark.ghdengage.com) containing the REF document, frequently asked questions, visual renders, project information and a community update was made available online. In addition to email and submissions feedback on the REF could also be given via the virtual engagement room that contained a short survey.

There were 65 submissions relating to the proposal and the REF received by Transport. The questions submitted to the questions and answers panel were included in the submissions list. This submissions report summarises the issues raised and provides responses to each issue (Section 2).

Two changes to proposal described in the REF are proposed. These changes are described in Section 3 and assessed in Section 4.

1.3 Purpose of this report

This Submissions Report relates to the REF prepared for the Macquarie Park Precinct and Bus Interchange proposal and should be read in conjunction with that document.

The REF was placed on public display online and submissions relating to the proposal and the REF were received by Transport. This Submissions Report summarises the issues raised and provides responses to each issue (Section 2), describes a proposed change to vehicle exit arrangments from Macquarie Centre (Section 3) and assesses the environmental impacts of the proposed change (Section 4).

Minor revisions have been made to the environmental management measures as described in the REF (Section 5) to reflect policy and guideline updates.

2. Response to issues

Transport received 65 submissions, accepted up until Thursday, 8 September 2022. Table 2-1 lists the respondents and each respondent's allocated submission number. The table also indicates where the issues from each submission have been addressed in Section 2 of this report.

Table 2-1: Respondents

Respondent	Submission No.	Section number where issues are addressed
Individual	1	2.5.1, 2.5.4, 2.11.1
Individual	2	2.5.5
Individual	3	2.3.1, 2.8.2, 2.11.2
Individual	4	2.5.2
Individual	5	2.5.3, 2.11.1
Individual	6	2.5.1, 2.5.2, 2.7
Individual	7	2.5.4
Individual	8	2.3.4
Individual	9	2.3.1, 2.5.4
Individual	10	2.5.3
Individual	11	2.5.6
Individual	12	2.5.3, 2.7
Individual	13	2.11.1
Individual	14	2.5.3
Individual	15	2.3.3, 2.3.5
Individual	16	2.3.2
Individual	17	2.5.1, 2.5.3, 2.7
City of Ryde	18	2.2, 2.3.1, 2.3.3, 2.3.4, 2.4, 2.5.1, 2.6, 2.7, 2.11.1, 2.11.3
AMP Capital	19	2.3.1, 2.3.3, 2.3.5, 2.4, 2.5.2, 2.8.1, 2.10, 2.11.1, 2.11.3
Individual	20	2.5.5, 2.11.3
Individual	21	2.3.2, 2.5.1, 2.5.3, 2.7
Individual	22	2.3.2, 2.7
Individual	23	2.5.5, 2.11.1, 2.11.3
Individual	24	2.3.1, 2.3.4
Individual	25	2.3.3, 2.11.1
Individual	26	2.5.3
Individual	27	2.3.1, 2.3.2, 2.3.3
Individual	28	2.3.1, 2.11.1

Individual	29	2.5.2
Individual	30	2.2
Individual	31	2.3.1
Morling College	32	2.5.2, 2.5.6
Individual	33	2.9,
Individual	34	2.4, 2.5.1, 2.8.1
Individual	35	2.3.4, 2.9
Individual	36	2.5.2, 2.8.2
Individual	37	2.3.2
Individual	38	2.3.1
Individual	39	2.11.3
Individual	40	2.3.3, 2.5.4
Individual	41	2.5.2
Individual	42	2.3.2
Individual	43	2.3.2
Individual	44	2.3.1
Individual	45	2.5.1
Individual	46	2.3.2
Individual	47	2.5.1
Individual	48	2.5.2
Individual	49	2.5.2
Individual	50	2.5.2
Individual	51	2.8.2
Individual	52	2.5.6
Individual	53	2.4
Individual	54	2.5.2
Individual	55	2.5.3
Individual	56	2.8.1
Individual	57	2.8.1
Individual	58	2.8.1
Individual	59	2.5.1
Individual	60	2.9
Individual	61	2.8.1
Individual	62	2.3.1
Individual	63	2.3.1

Individual	64	2.5.2
Individual	65	2.5.2

2.1 Overview of issues raised

A total of 65 submissions were received in response to the display of the REF. This included submissions from one government agency, one major business, a university college and 62 from the community.

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

The main issues raised in submissions from the community, businesses, and organisations were:

- support or opposition for the closure of lanes to general traffic on Herring Road and associated impacts to traffic flow on surrounding streets and residents in surrounding suburbs
- suggestions for alternatives to at-grade movement through the interchange, including a pedestrian and cyclist overpass or underground tunnel with connectivity to the Macquarie University Metro Station
- concern for loss of mature vegetation and associated biodiversity impacts
- concern regarding construction impacts to businesses, students, local residents, pedestrians and local traffic
- preference for further engagement and consultation with the community, local government and business
- suggestions for layout and location of bus stops, kiss and ride places, and taxi ranks
- suggestions regarding provision of access and facilities for cyclists
- suggestions in relation to the design and provision of facilities for staff at the proposed bus layover.

The main issues raised in the City of Ryde submission were:

- in principle support subject to consideration of Council's submission and further involvement in detailed design
- vision and design for the public domain should be developed in consultation with Council as the future landowner and manager of these spaces
- integration and relationship with the adjacent Waterloo Road Linear Park should be considered in the selection and configuration of the soft and hard landscape elements
- public domain interface with the existing and likely future land uses that adjoin the proposal should be considered to ensure the public domain can be designed to cater for the needs and expectations of future users
- concern about the loss of canopy trees and the need to offset this loss with new tree plantings
- suggested alternative location for the Northern Bus Layover, with concerns about the loss of biodiversity values at the proposed site
- need to upgrade the Waterloo Road/Khartoum Road and Talavera Road/Khartoum Road intersections to address increased traffic
- need for further consideration of future pedestrian movements, taxi zone needs and and kiss and ride
- need to minimise parking loss on Talavera Road.

2.2 Proposal justification

Submissions numbers

18, 30

Issue description

a) The role, function and design of the public space is critical to the success of the public domain and the interchange. The vision and design for the public domain should be developed in consultation with Council as the future landowner and manager of these spaces.

b) Explain planning for the proposal given the amount of road work disruption in the area and noting that recent works in the area would be superseded by the proposal before end of life.

Response

(a) In the development of options, Transport has worked closely with City of Ryde and other local stakeholders to ensure their aspirations for the future of the Macquarie Park precinct underpin the design and that the design of the interchange is integrated with current and future land uses. Consideration of stakeholder input during the development of the proposal is discussed in Chapter 5 of the REF.

Transport has aligned the design of the works with City of Ryde's Strategic Intentions outlined in their design package 'Alternative Options for MUBI'. These are outlined below:

- foster a Green City
- create an identifiable centre for Macquarie Park
- provide active civic space and public open space
- integrate Macquarie Park Precinct Bus Interchange and proposed public spaces
- support the development of 'Sydney's fourth City'
- encourage and provide active, public and other travel
- decreasing private vehicle use.

(b) It is acknowledged there would be disruption during the construction of the proposal. Measures have been proposed to address impacts in areas such as noise, traffic congestion, access and visual amenity. The design has sought to make use of existing infrastructure where possible. The community will be kept informed about the construction of the proposal as described in Section 5.6 of the REF and in accordance with the Community and Stakeholder Engagement Plan (refer to measure SE1 in Section 7.1 of this report).

The proposed works related to the interchange form part of a larger strategy to improve transport access to and within the Macquarie Park precinct. Rather than superseding the road works, the interchange and layover provide complementary enhancements to enable better, more reliable and more efficient transport services to Macquarie Park making it easier to move in and around the area. By providing the improved infrastructure and services to support a better public transport network, now and into the future, customers are encouraged to reduce their reliance on private vehicles, which places strain on the existing road network and environment. More people can travel together using public transport reducing the carbon emissions generated per person.

2.3 Proposal design

2.3.1 Interchange design

Submissions numbers

3, 9, 18, 19, 24, 27, 28, 31, 38, 44, 62, 63

Issue description

a) Consider putting the bus interchange underground.

b) Consider a pedestrian bridge or underpass, instead of a signalised crossing to assist pedestrian and cyclist access across Herring Road.

c) Consider an underground tunnel that links the bus interchange with the existing Macquarie University Metro Station tunnel.

d) Consider Council's earlier comments on the design.

Response

(a) Multiple design options were considered for the bus interchange and Herring Road precinct, including an underground interchange. A multi-tiered design, whether it was an underground interchange, underground road, or a split-level interchange was not identified as the preferred design for several reasons, including:

- extensive cutting and retaining structures would be required along Herring Road, which would result in a poor urban design outcome
- the precinct would not deliver the overarching vision and objective for an integrated and highly connected precinct
- there would be challenges to achieving customer comfort and amenity, due to the shadowing and wind tunnelling effects commonly associated with a tiered interchange
- accessibility would be challenging with a tiered or underground interchange. There is a need for easy, direct, convenient and high-capacity access for all users and abilities, including a preference for non-mechanical means of access
- there would be a reduction in public domain space at footpath level for tiered interchanges, due to the land needed for retaining walls, safety buffers, access ramps and duplication of pedestrian paths and waiting areas
- there would be a need for separate footpaths at street levels and waiting platforms in the interchange
- the existing infrastructure associated with the nearby Metro and gradient of the site limits the location options for the tunnel entries
- ventilation would be required for customers, separate waiting areas would be required for buses and air quality would be compromised
- substantial additional utility relocations would be required
- there would be some safety concerns due to separation of the interchange waiting areas from the wider public domain, reducing passive surveillance, which is a key principle of Crime Prevention through Environmental Design (CPTED)
- there would be increased construction (noise and vibration) impacts due to extensive and prolonged rock excavation
- substantial additional cost.

(b) Grade-separated alternatives to the pedestrian crossing, including a pedestrian bridge or underpass, were considered but not pursued. They are often seen as unattractive and are under used, especially where street level crossing options are available. Overbridges offer reduced capacity relative to level crossing opportunities, due to their comparatively narrow width.

Bridges and underpasses also require lifts to provide adequate access for less mobile people. In addition, there are safety constraints and design challenges which require extra piers and ramps to be built to meet design standard requirements.

Pedestrian underpasses tend to accumulate dirt, dust and leaf litter due to the absence of wind and rain. They also tend to generate higher ongoing maintenance needs to maintain cleanliness and customer comfort, due to higher rates of littering, graffiti and urinating.

(c) Underground links to the Macquarie University Metro station have not been included in the proposal because keeping pedestrians at street level was considered preferable for efficient interchange operation. There are other issues around land slope, safety and amenity, as outlined above.

(d) Underground facilities would work against the place outcomes being sought by the proposal. The two Metro entries at the Herring Road / Waterloo Road intersection are visible and easily accessible for people coming to and from buses at the interchange. It is noted that the provision of the two Metro entrances and the existing underground link enables customers to cross Herring Road below ground and to surface on the side of Herring Road closest to their desired destination within the precinct. Council's earlier comments on the design were considered. These comments are discussed in Chapter 5 of the REF. Transport is continuing to engage with the City of Ryde on all matters of the design development and refinement to ensure the proposal is aligned with the City of Ryde's vision and objectives for the precinct.

2.3.2 Interchange facilities

Submissions numbers

16, 21, 22, 27, 37, 42, 43, 46

Issue description

a) Consider providing more facilities for cyclists including bicycle lock-up rails, noting the precinct connects with the Shrimptons Creek cycleway at Waterloo Road.

b) Consider users of the precinct, including shade to shelter from sun, adequate lighting for safety and clearly visible level changes for passengers boarding/alighting buses.

c) Consider shelter between the interchange and Metro station.

d) Provide adequate and accessible provision of trolley storage.

e) Consider using more of the 'no stopping area' toward the Metro entrance for parking.

f) Provide for more cafes, shops and public toilets.

Response

(a) Bike racks will be provided as part of this proposal. The most appropriate type and location for bicycle parking is being further explored in relation to the key destinations in the precinct and in consideration of the local cycle network.

Transport will consider City of Ryde's planning for connection to Macquarie Centre and Macquarie University and will continue to work with key stakeholders, including the City of Ryde, to ensure the proposal supports their cycling strategy.

(b) Extensive tree planting and shaded seating are part of the overall concept for the proposal. Shade will be provided through a combination of bus shelters and extensive tree planting, to create tree canopy cover to mitigate urban heat and provide thermal comfort throughout the interchange. This will be consistent with the City of Ryde's vision and Transport's commitment to a high level of customer comfort and amenity.

The interchange would be well lit at night to enhance safety for all users. Lighting will include those required by law, with opportunities for architectural feature lighting to be further explored.

Level changes through the interchange will be minimised as much as possible, with no level changes proposed in bus boarding/alighting areas. Lighter coloured concrete would be used to construct kerbs, making them more visible with clear contrast to the darker coloured asphalt and high-quality plaza paving either side. The interchange will be fully accessible for all people including for people with mobility impairments, customers wheeling luggage and people pushing prams.

(c) Due to the length of the interchange, consistent with Transport interchanges throughout NSW, continuous shelter cover between the Metro portals and bus stands is not proposed. Extensive tree canopy will provide shade along footpaths. For wet weather protection, the use of larger, double-sided bus shelters with backside covers for those waiting for buses is being considered. Transport is working with City of Ryde to ensure that any proposed bus shelters are easy to maintain and maximise customer comfort.

(d) The provision of trolley storage, public toilets and additional cafés is part of this proposal. Transport will continue to work closely with AMP Capital to ensure the proposed project interfaces and aligns with their proposal and needs such as trolley storage bays.

(e) Existing and proposed no stopping areas on Herring Road and Waterloo Road are needed for road safety and intersection performance reasons. These areas are not suitable for the provision of parking as line of sight needs to be maintained for drivers to ensure safe turning movements

(f) It is noted that AMP Capital received Development Approval allowing significant changes to Macquarie Centre including opportunities for activation (cafes, shops etc.).

2.3.3 Bus stops, kiss and ride, and taxis

Submissions numbers

15, 18, 19, 25, 27, 40

Issue description

a) Confirm whether the bus stops on Waterloo Road (southeast bound) are to be removed and replaced by kiss and ride spaces.

b) Show how many kiss and ride (car) spaces are planned (relocated from Herring Road) at the new location on Waterloo Road.

c) Consider kiss and ride facilities noting the needs of people with disabilities and that the northern side of Waterloo Road adjacent Macquarie Centre is not a safe location.

d) The significant decrease in taxi provision in the interchange will impact customers and potentially impede bus movements, and therefore opportunities should be considered to provide for alternate taxi rank locations.

e) Consider providing a taxi holding area to prevent taxis congesting bus lanes on Herring Road. Taxi queueing should be managed using a demand-based system that would alert drivers when a passenger is waiting at the taxi stand.

f) Consider accommodating articulated buses at Herring Road interchange.

Response

(a-c) The bus stop on the northern side of Waterloo Road near the Herring Road intersection may be moved to Herring Road to accommodate a temporary alternate Macquarie Centre exit (refer to Section 3). Transport is investigating kiss and ride numbers, locations and accessibility. Transport will continue to work with Macquarie University and AMP Capital to ensure the provision of kiss and ride integrates with their future developments. Kiss and ride locations are discussed further in Section 3.2.

(d-e) The proposal provides two taxi bays directly outside Macquarie Centre. These spaces will provide direct *Disability Discrimination Act 1992* (DDA) compliant access to Macquarie Centre, bus stands and the Metro. Transport will investigate whether further taxi spaces can be included in the design during the next phase of project development.

The proposed taxi stands are separate from the travel lanes, to reduce the potential impact on the bus interchange performance. The space allocation for road users has been balanced to enable the public domain enhancements to the precinct, a key objective for stakeholders.

Transport acknowledges the transformation of the Point-to-Point industry over the past decade. Comment was sought from the Point- to-Point Commissioner and NSW Taxis during the development stage of the project. Based on feedback from stakeholders the proposal is seeking to provide separate accessible kerbside spaces for taxi customers and safe kiss and ride areas (see 3.2).

(f) The bus interchange has been designed to cater for articulated buses as well as rigid buses. Articulated buses are anticipated to be phased out over the coming decade.

2.3.4 Bus layover

Submissions numbers

8, 18, 24, 35

Issue description

a) Concern regarding the location of the layover facility due to loss of mature trees and suggestion of alternative location at 164 Talavera Road.

b) Consider maximising the quantity of parking spaces on Talavera Road at the bus layover.

c) Ensure facilities for bus drivers in the layover area are adequate and clean - facilities should include sheltered rest and recreational spaces for staff in periods of down-time

d) Consider facilitating food and beverage service to bus layover with options such as informal food truck operators for drivers noting extended hours of work for busway employees.

e) Consider using LED lights and flood lights at the bus layover for the safety of bus drivers.

f) Consider automatic entry/exit security gates for the buses at the layover so members of the public cannot drive in there and park their cars.

Response

(a) There were a number of layover locations assessed, including using government and private land, however all had their own challenges. Assessments of options considered the capacity and functional requirements of the layover to service the bus fleet, the ongoing cost of operating the bus fleet by minimising dead running time for buses, community and environmental and other cost impacts. Loss of trees at the layover site will be offset consistent with the Transport Biodiversity Policy (Transport for NSW, 2022a) and Tree and Hollow Replacement Guidelines (Transport for NSW, 2022c).

The 164 Talavera Road location would position the bus interchange next to the University community gardens, which is a less desirable community outcome resulting in amenity impacts to the recreational public space. In addition, operational costs would also increase due to increased travel to the interchange.

(b) The proposed bus layover has been designed to minimise impacts on parking. The proposal would however result in the permanent removal of about 18 on-street parking spaces to allow for safe entry and exit to and from the bus layover. The proposed bus layover includes a building with a meal room, rest rooms and an adjacent outdoor area.

(d) Provision of a food and beverage service is beyond the scope of the proposal and will be at the discretion of the facility operator.

(e) Floodlights are included in the current design and bus bays will be clearly marked.

(f) Boom gates have the risk of failure and create the potential for accidental collision - should illegal parking be identified as a problem during operations, use of cameras and fines can be explored.

2.3.5 Integration with adjacent uses

Submissions numbers

15, 19

Issue description

a) Explain how the proposal will align with the recent revised Macquarie Centre development application approved by City of Ryde.

b) Consider integrating the proposal with future development planned for both sides of Herring Road.

c) Consider timing of street furniture delivery in relation to the redevelopment of Macquarie Centre to ensure design consistency.

d) Detailed design should reflect property boundaries to clarify maintenance responsibilities.

Response

(a-b) Transport has been working closely with AMP Capital (Macquarie Centre) and Macquarie University to ensure the precinct integrates well with adjacent land uses, including the future redevelopment of Macquarie Centre.

(c) Transport will continue to consult to ensure any refinements during detailed design continue to align with adjacent uses and planned developments, as well as with maintenance and operational cons.

(d) Transport is assisting a dialogue between the City of Ryde and AMP Capital with a view to resolving maintenance responsibilities and to seek agreement between each stakeholder.

2.4 Consultation

Submissions numbers

18, 19, 34, 53

Issue description

a) Council should continue to be involved during the detailed design phase.

b) Existing stakeholders, including the established working group, should continue to be involved throughout the detailed design phase.

c) Suggest updating mitigation measure SE1 (Anxiety and Uncertainty) to acknowledge consultation with council and key stakeholders will continue during detailed design phase.

d) Ensure residents can express their concerns during the construction period and provide (in person or virtual) events for people to discuss their concerns about the project.

e) Consider organising events to bring people together and discuss their concerns about the project, beyond the usual contractor, phone number and email.

Response

(a) Transport is committed to continuing a collaborative approach with Council and other stakeholders as detailed on Chapter 5 of the REF.

(b-c) Transport will continue to meet regularly with City of Ryde, AMP Capital and Macquarie Centre regarding key design decisions, to ensure integration with surrounding land uses and stakeholders' comments are taken on board in a timely manner. In this context, amendment of mitigation measure SE1 is not proposed.

(d) If the proposal is approved, ongoing consultation activities would occur with the affected community including nearby landholders, businesses and road users during detail design and construction. Ongoing communications and notifications may include:

- procedure for the management of complaints and enquiries, including a contact name and 1800 number for complaints
- community/ construction updates
- media announcements
- NSW LiveTraffic updates
- social media updates
- project subscriber emails
- stakeholder meetings as required
- web page updates
- work notification letters as required.

(d) People will always be able to reach out to the Transport project team and to the community engagement team throughout construction.

(e) A Community and Stakeholder Engagement Plan will be prepared for construction phase of the proposal and will include:

- procedures and mechanisms that would be implemented in response to the key social impacts identified for the proposal
- procedures and mechanisms that would be used to engage with affected landowners, business owners, and the wider community to identify potential access, parking, business visibility, and other impacts and develop appropriate management measures
- procedures to keep the community informed about construction and any associated changes to conditions (e.g. detours or lane closures) such as through postal notifications, e-marketing, sms, digital and social media, advertisements in local media and advisory notices or variable message signs
- procedure for the management of complaints and enquiries, including a contact name and 1800 number for complaints.

2.5 Transport and Traffic

2.5.1 Pedestrian access, safety and amenity

Submission number(s)

1, 6, 17, 18, 21, 34, 45, 47, 59

Issue description

(a) Change the design to include traffic calming and lower speed limits to improve safety and amenity.

(b) Consider making Herring Road bus only in both directions to make the area an attractive and safe place for pedestrians.

(c) Concern that location of crossings and widening of pavement will negatively impact people with accessibility needs by moving the crossing further from the Macquarie Centre entrance and bus stops.

(d) Concern in relation to reduced capacity of the median to support pedestrians crossing.

(e) Consider pedestrian movements and desire lines in the detailed design and potential for a pedestrian crossing at Innovation Road.

(f) Enquiry whether pedestrians will be able to access Talavera Road on the southbound side from the bus precinct.

(g) Concern surrounding ease of movement through the site for those with accessibility needs during construction phase.

Response

(a) The proposal involves reducing the speed limit on Herring Road between Waterloo Road and Talavera Road from 50 kilometres per hour to 40 kilometres per hour, which is considered appropriate for a high pedestrian activity area. With the reduced speed limit and the removal of southbound general traffic, provision of a controlled raised mid-block pedestrian crossing, further traffic calming measures are not considered necessary.

(b) Options involving the closure of Herring Road to all general traffic were considered (refer to Chapter 2 of the REF). These options require all through private traffic to be re-distributed to the wider network, particularly via Khartoum Road and Lane Cove Road. This was found to cause excessive traffic congestion, particularly in the afternoon peak. Traffic modelling identified that even with further enhancement work on Talavera Road, Waterloo Road and Khartoum Road, there would still be unacceptable network performance (traffic) impacts associated with a full closure of Herring Road to through general traffic.

(c-d) The proposed mid-block crossing is located only slightly to the north of the existing crossing and would allow easy access to both nearby bus stops and the Macquarie Centre entrance. The crossing is shorter and has better sight distances than the existing and would be designed to allow equitable access for less mobile people.

The mid-block is proposed as a single phase, meaning pedestrians can cross the road completely in one phase (pedestrian green light), hence a median is not required. Further, the proposed design has only three lanes at the mid-block crossing, reducing the distance to cross the road. The crossing would also be suitably lit to ensure pedestrians are clearly visible at night. Traffic light phasing would optimise both pedestrian movements across Herring Road and bus movements at the interchange.

(e) Transport will work with Macquarie University and City of Ryde to consider the feasibility of providing a pedestrian crossing across Innovation Road at the intersection with Herring Road for safer and prioritised pedestrian movements. The proposed mid-block crossing provides convenient access to the central part of the bus interchange and the main Macquarie Centre entrance.

The design has been developed with specific consideration to the pedestrian desire lines. This will be further developed during the next phase of design.

(f) Pedestrians will be able to access Talavera Road on the southbound side from the bus precinct via a footpath connection.

(g) During construction and at the completion of works, pedestrian access along both sides of Herring Road would be maintained. Pedestrian movements during construction would be managed under the Traffic Management Plan (refer to Section 6.1 of the REF). The proposal provides footpaths on both sides of Herring Road to Talavera Road.

2.5.2 Local traffic

Submission number(s)

4, 6, 19, 29, 32, 36, 41, 48, 49, 50, 54, 64, 65

Issue description

(a) Consider keeping one lane southbound for cars on Herring Road.

(b) Suggest alternative routes for drivers who usually travel southbound along Herring Road.

(c) Explain how vehicles will access buildings on the western side of Herring Road (between Epping Road and Talavera Road) when coming from Talavera and Waterloo Road in the east.

(d) Query about how cars will enter Macquarie Centre and Macquarie University during construction and after, and whether southbound traffic will be allowed on Herring R€ during construction.

(e) Consider the traffic congestion on Talavera and Culloden Roads, caused by the buses entering the bus layover.

(f) Suggest consideration of signage and wayfinding in consultation with Macquarie Centre to communicate traffic changes to the southbound lane of Herring Road to motorists.

(g) Suggest providing an illustrated map to indicate exit routes recommended by Transport from Macquarie Shopping Centre and returning to the western side of Epping Road.

Response

(a) The proposal was developed in close consultation with key stakeholders and provides a balance of transport, customer and urban amenity outcomes. Removing general traffic on Herring Road southbound allows more public domain to enable a more cohesive public space that can serve as the intended public heart of the precinct.

Removing southbound general traffic also provides greater capacity for buses at a strategically located interchange, nestled between the significant trip generators of Macquarie University, Macquarie Centre and the adjacent Macquarie University Metro Station.

(b) Drivers who would usually travel southbound along Herring Road will travel via Talavera Rd, Khartoum Road and Waterloo Rd.

(c-d) Access to Macquarie Centre would remain available via the ramp at the northern end of Herring Road. As is currently the case, the best access for vehicles on Talavera Road would be via the entry opposite Alma Road. During construction, existing entry points to Macquarie University and Macquarie Centre would be maintained and change to the Macquarie Centre exit to Herring Road is now proposed described in Section 3.

(e) The proposal provides 20 layover spaces at the Northern Bus Layover site, which addresses part of the predicted demand for layover spaces. The additional movements associated with these spaces is not expected to substantially affect the operation of Talavera Road.

(f-g) Changes to traffic conditions will be communicated to road users prior to and during construction by a range of methods which may include Transport webpage updates, NSW LiveTraffic updates, social media updates and on-site signage. Provision of other information in consultation Macquarie Centre management will also be considered.

2.5.3 Wider traffic network

Submission number(s)

5, 10, 12, 14, 17, 21, 26, 55

Issue description

a) Concern for traffic impacts to adjacent streets, suggest providing further detail on impacts to traffic on adjoining streets due to closure of southbound lanes to private motor vehicles.

b) Concern for increase in travel times for local traffic.

c) Concern that the closure of lanes on Herring Road will impact flows between Epping Road and M2 and will impact residents from surrounding suburbs trying to access shops at Herring Road.

d) Local streets handle heavy traffic now during peak periods. Consider strategies to handle the amount of fast traffic on these local streets, especially Culloden Road.

e) Consider a roundabout at Talavera Road and Alma Road to reduce congestion along Talavera Road, with cars unable to enter from Talavera Road to Herring Road.

f) Consider encouraging higher volumes of vehicular traffic to utilise the Talavera Road entry to Macquarie Centre to divert traffic from Herring Road.

Response

(a) Removing the southbound general traffic lane from Herring Road as proposed would cause this traffic to reroute, predominantly via Khartoum Road and Lane Cove Road. It is predicted that during the weekday 5-6pm period, about 500 vehicles could reroute through Khartoum Road and 200 vehicles could reroute through Lane Cove Road to access Waterloo Road, depending on the destination.

It is expected that this change would be made at the start of construction. The impacts of this traffic rerouting are discussed in Section 6.1 of the REF, with small impacts to intersection performance identified due to the proposal.

(b) Additional travel distances depend on the destination, but the additional distance via Talavera Road, Khartoum Road and Waterloo Road is about 800 metres. Conservatively assuming an average travel speed of 40 kilometres per hour, this indicatively suggests potential increased travel time of just over one minute.

(c,d,f) Changes to the wider road network are not part of the proposal. The operation of the bus interchange and surrounding road network will be reviewed following the completion of the proposal. Any recommendations for improvement will be considered.

(e) The intersection at Talavera Road and Alma Road was identified to have performance issues from transport modelling undertaken to review network impacts. Any future road upgrades would be considered by Transport in collaboration with City of Ryde.

2.5.4 Bus efficiency and reliability

Submission number(s)

1, 7, 9, 40

Issue description

a) Consider extending the bus lane along Herring Road to Talavera Road, allowing bus only left turns onto Talavera Road.

b) Consider making Herring Road bus only in both directions to improve bus reliability.

c) Consider adding a third westbound bus lane in peak times for buses to navigate getting into and out of bus bays.

d) Consider indenting the southbound bus bays, leaving two lanes for buses to travel.

e) The signalised ground level pedestrian crossing will have high pedestrian volumes and cause buses to be delayed.

f) The Community Update says 1,440 buses carrying 10,700 passengers which equals 7.43 people per bus. This seems inefficient, carrying so few customers.

Response

(a) The bus only lane(s) on the northbound side of Herring Road cannot be extended to Talavera Road as the proposal must accommodate general traffic movements both at the Innovation Road roundabout and the Talavera Road traffic lights.

(b) Options involving the closure of Herring Road to all general traffic (buses only) were considered (refer to Chapter 2 of the REF). These options require all through private traffic to be re-distributed to the wider network, particularly via Khartoum Road and Lane Cove Road.

This was found to cause excessive traffic congestion, particularly in the afternoon peak. Traffic modelling identified that even with further enhancement work on Talavera Road, Waterloo Road and Khartoum Road, there would still be unacceptable network performance impacts associated with a full closure of Herring Road to through general traffic.

(c-d) The proposed through bus lane in both directions on Herring Road, with an adjacent lane for buses to stop, is adequate for efficient bus operations at the interchange.

(e) Traffic light phasing would optimise both pedestrian movements across Herring Road and bus movements at the interchange. The crossing is not expected to substantially hinder bus operations at the interchange.

(f) Bus patronage varies throughout the day, with higher bus occupancy near the start and the end of the workday. Consistent provision of bus services throughout the day, accepting lower bus occupancy rates during off peak periods, is needed to ensure adequate transport access to shops and services for a range of people who may not be daily commuters. These figures include empty buses leaving the interchange, lowering average numbers.

2.5.5 Bus routes

Submission number(s)

2, 20, 23

Issue description

a) Clarify whether the existing bus routes (410, 506, 517, 518) which currently terminate at Macquarie University/Waterloo Park will terminate at the Talavera Road bus layover bay instead after its completion.

b) Explain the bus stand allocation at Herring Road after the completion of the new bus interchange.

c) Consider incorporating the Macquarie Interchange as a stop as part of the M2 Motorway express services (to Castle Hill/Bella Vista etc).

d) Consider rerouting the 506 service to include North Ryde station, returning to Coxs Road via Wicks Road.

Response

(a-b) Any changes to bus routes would be communicated to customers clearly and well in advance. Bus stand allocation would be determined in the next phase of proposal development, with stand allocations clearly signposted prior to operation.

(c) Rerouting M2 Motorway express services to include the Macquarie Park Precinct and Bus Interchange is not currently proposed and this would add to the travel time for these express services. Other bus services and the Metro can be used for trips to and from the interchange.

(d) Changes to bus route 506 (Macquarie University to City Domain via East Ryde) are not currently proposed. People wishing to travel to the area around the North Ryde Station can interchange to Metro or to bus route 259 (Macquarie Park to Chatswood via Delhi Road).

2.5.6 Cyclist access

Submission number(s)

11, 32, 52

Issue description

a) Query whether separated cycling infrastructure (shared footpath) will be provided, rather than cyclists having to use bus lanes, as bus lanes would not be suitable for all ages and abilities.

b) Consider cyclist markings on the signalised mid-block crossing and lanterns to connect to bike parking in front of Macquarie Centre.

c) Provide a clear route for cyclists exiting the M2 Motorway going to Herring Road.

Response

(a) This section of Herring Road is not part of the City of Ryde's bicycle strategy and masterplan. There are however key cyclist destinations along Herring Road including Macquarie Centre, Macquarie University, the Metro and bus interchange. The proposal will allow for shared use of public domain space along the northern footpath, enabling access by bike to the Macquarie Shopping Centre, Macquarie University, Metro Station and Bus Interchange. Transport will continue to engage closely with the City of Ryde to ensure cycling access aligns with Councils active transport planning and provides safe customer access.

The redesign of Herring Road will allow for shared use of footpath spaces, providing access to the Macquarie Shopping Centre and bus interchange. Cyclists would access Macquarie University and Metro Station from the intersection of Waterloo and Herring Road.

(b) Additional design investigation will be carried out to manage the pedestrian and cyclist interactions through the next design phase. Transport is working closely with City of Ryde and AMP to understand future cycling access requirements and redevelopment proposals for Macquarie Shopping Centre. Current plans indicate the future entrance to the Macquarie Shopping Centre will be via a new plaza accessed via the Waterloo and Herring Road intersection, which will include the provision for bikes.

(c) Cycle access between the M2 and Herring Road will be via City of Ryde's existing cycle network. The project does not propose any changes to the wider cycle network.

2.6 Landscape character and visual

Submission number(s)

18

Issue description

a) Council's Public Domain Manual is referenced in Table 6-12 Landscape and visual environmental management measures in the REF, but this is not referenced in the summary table in Section 7.2 (measure LCV1). Section 7.2

should be updated to include the following wording: "The Urban Design Plan will ensure that the design is able to meet the objectives in Section 1.3 and follow design principles in Section 2.0 of the Macquarie Park Public Domain Technical Manual".

b) The REF should be updated to include the preparation of a Landscape Concept in Section 7.2 (measure LCV1) to address the matters outlined in Section 6.2 REF.

c) Landscape concept plan should ensure the overall tree canopy is extended to deliver on the Premier's priorities (Greener Public Places and Greening our Cities), Green Grid Strategy and reduction in urban heat island impacts.

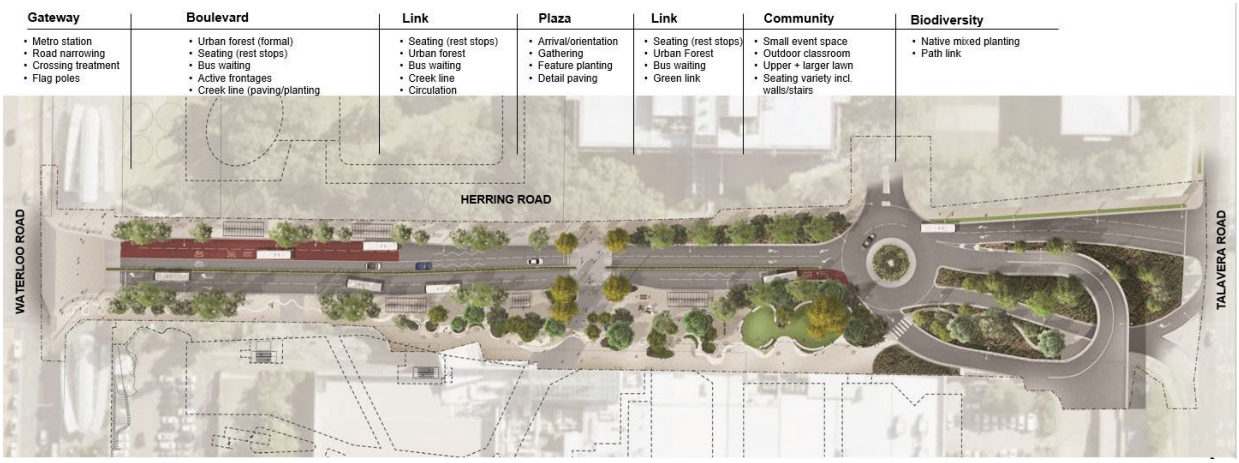
d) There should be a commitment to 40 per cent canopy cover in line with the Councils Ryde Resilience Plan 2030 urban tree canopy cover and 4:1 replacement tree planting. Replacement plantings should be species that have been specified by Council noting that planting of 4:1 replacement will not be sustainable at the site and plantings should also occur in other locations as prescribed by Council.

Response

(a -c) Measure LCV5 now references the updated Premier's priorities, Green Grid Strategy and reduction in urban heat island impacts (refer to Section 5.2).

(b) The design concept prepared for the REF came from an urban design and engineering process that culminated in an urban and landscape design concept plan. The plan illustrates the desired public domain outcomes. The plan is shown in the figure below (and in Appendix A) and will continue to be refined in consultation with the City of Ryde and AMP Capital.

(d) The loss of trees due to the proposal will be offset consistent with the Transport Biodiversity Policy (Transport for NSW, 2022a) and Tree and Hollow Replacement Guidelines (Transport for NSW, 2022c). Transport will continue to work with City of Ryde to ensure the tree species are supported by City of Ryde and to explore offset planting opportunities.



2.7 Biodiversity

Submission number(s)

6, 12, 17, 18, 21, 22

Issue description

a) Concern about removal of mature vegetation and resultant biodiversity impacts.

b) Assurance is needed that there will be adequate tree replacement. Tree replacement and offset planting should occur in consulation with Council.

c) Consider retaining established native trees so they can reach their full habitat value, which would be greater than smaller replacements.

d) Consider measuring impact of vegetation removal based on future importance of trees for fauna habitat as they continue to mature, rather than assessing them at their current state.

e) Consider retaining mature trees on land owned by Macquarie University due to their importance in supporting biodiversity.

f) Consider non threatened species that currently live in the trees on Talavera Road in addition to assessments for threatened species. To ensure the safety of the native fauna, consider planting many more native trees than the numbers being removed. Ensure all trees are checked for possums and other natipecies before being removed.

Response

(a) The proposal would not have significant biodiversity impact within the meaning of the *Biodiversity Conservation Act 2016* (NSW) or the *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth).

At the bus interchange site, the proposal is anticipated to require the removal of 36 trees/tree groups due to being within or too close to the road alignment and new bus stands to practically retain or to survive. A total of 22 trees are proposed to be retained, however seven of these are at risk of removal due to structural root zone and/or unacceptable tree protection zone encroachments.

The trees to be retained would be protected through Tree Protection Zones and other tree protection measures throughout contstruction.

(b) The loss of trees due to the proposal will be offset consistent with the Biodiversity Policy (Transport for NSW, 2022a), the No net loss guidelines – A guide for achieving biodiversity offsets and conservation measures (Transport for NSW, 2022b) and the Tree and hollow replacement guidelines (Transport for NSW, 2022c). This will occur in consulation with the City of Ryde.

As part of the interchange design, over 100 trees are proposed to be planted, including over 60 Street/Urban Trees along Herring Road. Replacement planting will include mature trees.

(c-e) Mature trees are proposed to be sought to help ensure the canopy is enhanced at time of planting

(f) The native fauna species recorded within the proposal area are protected, as defined by the *Biodoversity Conservation Act 2016*, but are common to abundant throughout the surrounding region. These species recorded would not be solely reliant upon those habitats present within or near the proposal area, therefore the removal or further disturbance of these would not threaten the 'local' occurrence of these animals. The species recorded are all expected to be present within both the proposal area and surrounding locality post-work.

A pre-clearing survey will be conducted prior to any tree removal and a suitably qualified ecologist or experienced wildlife handler would be engaged to survey for and handle any fauna.

2.8 Noise and Vibration

2.8.1 Construction noise and vibration

Submission number(s)

19, 34, 56, 57, 58, 61

Issue description

a) Consider impacts on street facing tenants during development of construction methodology .

b) Concern for noise impacts outside of standard hours and during exam periods, noting Macquarie University adjoins the proposal area.

c) Query about the duration of noisy night work.

d) Query about specific measures and actions that will be taken to minimise any potential unnecessary noise disturbance and how Transport will work with the contractors to enforce these measures.

e) Suggest principal works contractor coordinate with Macquarie Centre regarding dilapidation reporting.

Response

(a-d) A Noise and Vibration Management Plan, and an out of hours works procedure will be prepared and implemented as part of the Construction Environmental Management Plan. The plan will include a range of measures to address noise and vibration, including a working schedule which records respite periods for extended out-of-hours works and exam periods, and arrangements for consultation with affected neighbours and sensitive receivers, including notification and complaint handling processes.

Measures such as screening, implementing respite periods and carrying out noisy works before midnight will also be considered as part of the plan. The Noise and Vibration Management Plan and Construction Environmental Management Plan will be audited and subject to continuous improvement requirements.

Further consulation with Macquarie University and AMP Capital (Macquarie Centre) will occur to ensure concerns about noise are adequately addressed.

(e) Dilapidation reports for any buildings or structures will be be undertaken at the commencement of the construction phase by the construction contractor.

2.8.2 Operational noise

Submission number(s)

3, 36, 51

Issue description

a) Concern about constant noise from accelerating buses and congested northbound traffic lanes and the impact on the new public domain areas.

b) Consider noise treatment options for local residents on Culloden and Talavera Roads impacted by noise emitted from the proposed Talavera Road layover.

Response

(a) Traffic noise is an unavoidable aspect of the urban environment. However, some features of the design are expected to help reduce noise, for example, a reduced speed limit, a much wider plaza, meaning dwell areas are further from the buses, and removal of general traffic from the southbound lanes on Herring Road. Further, the NSW Government is making a start on converting the fleet to electric buses, which will assist noise reduction at the interchange into the future.

The noise assessment (refer to Section 6.4 of the REF) found that noise levels as a result of the increase in bus traffic are expected to increase by between 0.3dB and 1.8dB with the proposal at the nearest receivers. Changes under 3 dBA are considered barely noticeable to the average person. It is also a conservative assessment because it does not take into account the reduction in traffic noise from the closure of the southbound Herring Road Lane to general traffic.

(b) The bus layover is expected to generate up to one bus movement per minute on Talavera Road between the interchange on Herring Road and the bus layover during the peak hour. The noise assessment found that this would generate an increase in noise levels below 1dB during peak hour, which is considered a minor impact that does not require the provision of noise treatments. Buses manoeuvring within the layover site would generate noise below the amenity criteria for industrial activities in the Noise Policy for Industry (Environment Protection Authority, 2017).

2.9 Socio-economic

Submission number(s)

33, 35, 60

Issue description

a) Consider ways to keep the bus interchange safe at night.

b) Query about economic cost to residents of Ryde in removing the southbound general traffic access along Herring Road from Macquarie Centre to Epping Road. Has this estimate or concept been modelled and if so, can the community see the modelling referred to justify the current proposal?

c) Consider measures to minimise impacts to local businesses.

Response

(a) The proposal would incorporate measures to minimise security and public safety risks as much as practicable, including implementation of Crime Prevention Through Environmental Design (CPTED) principles, a widely adopted approach to reduce potential for crime through good design. These CPTED principals would include considering well-designed and efficiently controlled lighting systems, which would contribute to a safe interchange environment (refer to Section 2.3.2.) Passive design elements that promote safety would include clear lines of sight and wide paths, to avoid blind spots.

(b) Only the southbound section of Herring Road between Innovation Road and Waterloo Road is proposed to be closed to general traffic. It is acknowledged that for some road users this will mean additional travel distance and time. Additional travel distances depend on the destination, but the potential detour route will be via Talavera Road, Khartoum Road and Waterloo Road.

(c) Transport and the contractor will consult potentially affected local businesses during construction to understand their specific needs with a view to minimising impacts. Access will always be maintained to local businesses.

2.10 Connection to country

Submission number(s)

19

Issue description

Detailed design should consider connection to country, reflecting traditional custodians, the Wallumattagal people.

Response

The development of the design has involved a Connecting with Country process, consistent with Transport policy. As part of this process, Transport is engaging with Aboriginal stakeholders, including local Wallumattagal people, to identify cultural values and appropriate means to integrate Aboriginal cultural values and storytelling with the design. This process is ongoing and continues to shape the development of the design including the most appropriate means to strengthen connections to Country.

2.11 Other issues

2.11.1 Support for proposal or proposal aspects

Submission number(s)

1, 5, 13, 18, 19, 23, 25, 28

Issue description

a) General support for the proposal.

b) General support for transport improvements.

c) Support for the removal of southbound traffic on Herring Road.

d) General support for the proposal and collaboration between Transport and City of Ryde.

e) Support for improved outcomes for placemaking and pedestrians.

f) Support for improved traffic outcomes and implementation of a roundabout at Innovation Road.

Response

Support for the proposal or aspects of the proposal is noted.

2.11.2 Proposal cost

Submission number(s)

3

Issue description

Query about the proportion of the approximately $200m to be spent on construction works.

Response

The proposed works related to the interchange form part of a larger strategy to improve transport access to the Macquarie Park precinct. This strategy, part of the Macquarie Park Bus Priority and Capacity Improvement project, includes road improvements along Herring Road and the upgrade of Lane Cove and Waterloo Road intersection. The proposed interchange and layover will enable better, more reliable and more efficient transport services to Macquarie Park, and the development of a large public domain 'heart' for the precinct.

Construction costs for the Macquarie Park Precinct and Bus interchange are being further refined as part of design development and construction planning process.

2.11.3 Beyond proposal scope

Submission number(s)

18, 19, 20, 23, 39

Issue description

a) Consider expanding in scope to consider upgrades to nearby intersections (e.g. Waterloo Road / Khartoum Road and Talavera Road / Khartoum Road).

b) Concerns about intersections and road conditions on Herring Road to the south of Waterloo Road and outside the proposal area.

c) Consider installing traffic lights at the Khartoum Road / Waterloo Road intersection, in accordance with council strategies.

d) Clarify whether the shopping centre entrance at 90 Waterloo Road will be closed after the completion of the Macquarie shopping centre redevelopment project. And, if it remains open, the kiss and ride zone there should not be moved to Waterloo Road eastbound.

e) Consider allowing Macquarie Centre construction traffic to use Herring Road.

f) Explain why no direct underground link was provided from Macquarie University Metro Station directly into Macquarie Centre.

Response

(a-c) Changes to the wider road network are not part of the proposal. The operation of the bus interchange and surrounding road network will be reviewed following the completion of the proposal. Any recommendations for improvement will be considered.

(d) Transport understands that the shopping centre entrance at 90 Waterloo Road is not proposed to be closed. Further information on the Macquarie Centre development application is available on the City of Ryde website. Kiss and ride spaces are being considered at the locations identified in Section 3.2 (University Avenue and/or Herring Road), with no kiss and ride proposed for Waterloo Road.

(e) Arrangements for construction traffic during the Macquarie Centre redevelopment will be reviewed prior to commencement of those works with a view to minimising impacts on bus operations and general traffic.

(f) Links between Macquarie University Metro Station and Macquarie Centre are the responsibility of Sydney Metro. It is however noted that the two Metro entries at the Herring Road / Waterloo Road intersection are visible and easily accessible for people interchanging to and from buses at the interchange. The Macquarie Centre entrance is also easily accessed and this will be further enhanced with the station plaza that has been proposed as part of the Macquarie Centre redevelopment.

3. Changes to the proposal

3.1 Herring Road access from Macquarie centre

Transport is proposing to relocate the existing Macquarie Centre exit, located about 60 metres north of the Herring Road / Waterloo Road intersection, to a new location on Waterloo Road. The location of the existing exit and proposed exit is shown in Figure 3-1.

The purpose of this proposal is to improve safety outcomes.

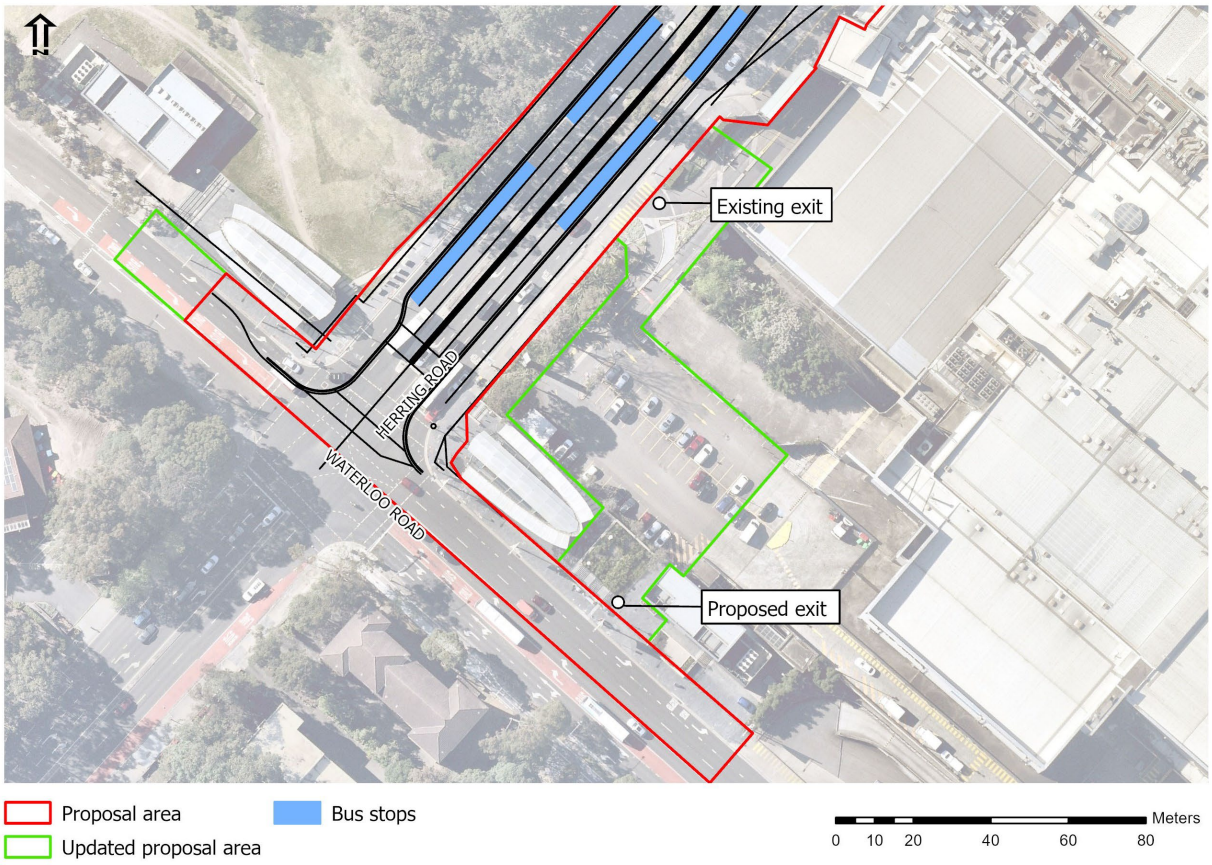


Figure 3-1: Location of existing and proposed Macquarie Centre exits

While the future redevelopment of Macquarie Centre would remove the need for the existing exit, the timing of that redevelopment means a temporary solution is required to address the following issues at Herring Road:

- conflict point between customers accessing the Metro, Macquarie Centre and Macquarie University, bus stands and exiting vehicles
- drivers exiting onto Herring Road from Macquarie Centre have limited views of approaching traffic due to the driveway gradient and vegetation
- proposed plaza space has increased adjacent to Herring Road southbound which in turn would increase conflict zone with pedestrians
- potential interference with bus interchange operations
- potential for driver confusion regarding traffic arrangements on Herring Road and need for a change to traffic lights to accommodate general traffic on this section of Herring Road.

The proposed change involves the following (refer also to Figure 3-2):

- relocate driveway to exit onto Waterloo Road eastbound for vehicles up to 10 metres

- reconfiguration of the staircase and retaining walls to allow for the exit
- relocation of bus stop (2113318) a short distance to the west on Waterloo Road
- removal of landscape vegetation and up to four trees within the existing car park
- relocation or removal of street lighting (one pole), lighting within the landscaped area (two poles) and street furniture (including bins)
- protection and/or adjustment of utilities
- civil works associated with the closure of the existing exit on Herring Road.

While the existing car park is shown within the updated proposal area, this car park would remain operational during works with any temporary impacts on vehicle movements or parking capacity to be addressed in consultation with AMP Capital (Macquarie Centre).

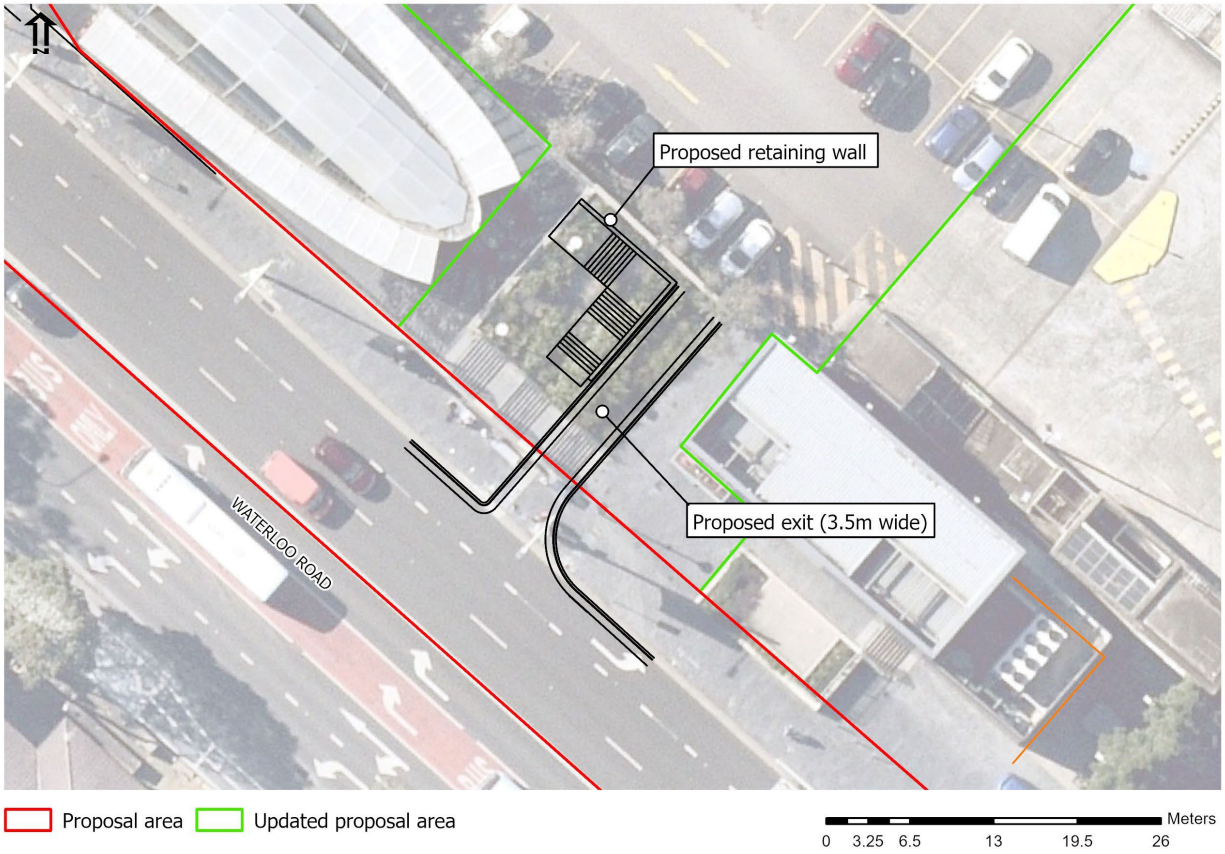


Figure 3-2: Proposed exit to Waterloo Road

Consultation with Sydney Metro regarding this change has commenced with broad support and key actions to move forward with developed. Consultation will continue as the design progresses.

3.2 Provision for kiss and ride

Transport is proposing to relocate the kiss and ride zone (one space) on Herring Road south of the mid-block pedestrian crossing to Herring Road near Innovation Road and /or University Avenue. Works would be limited to the provision of signage at these locations.

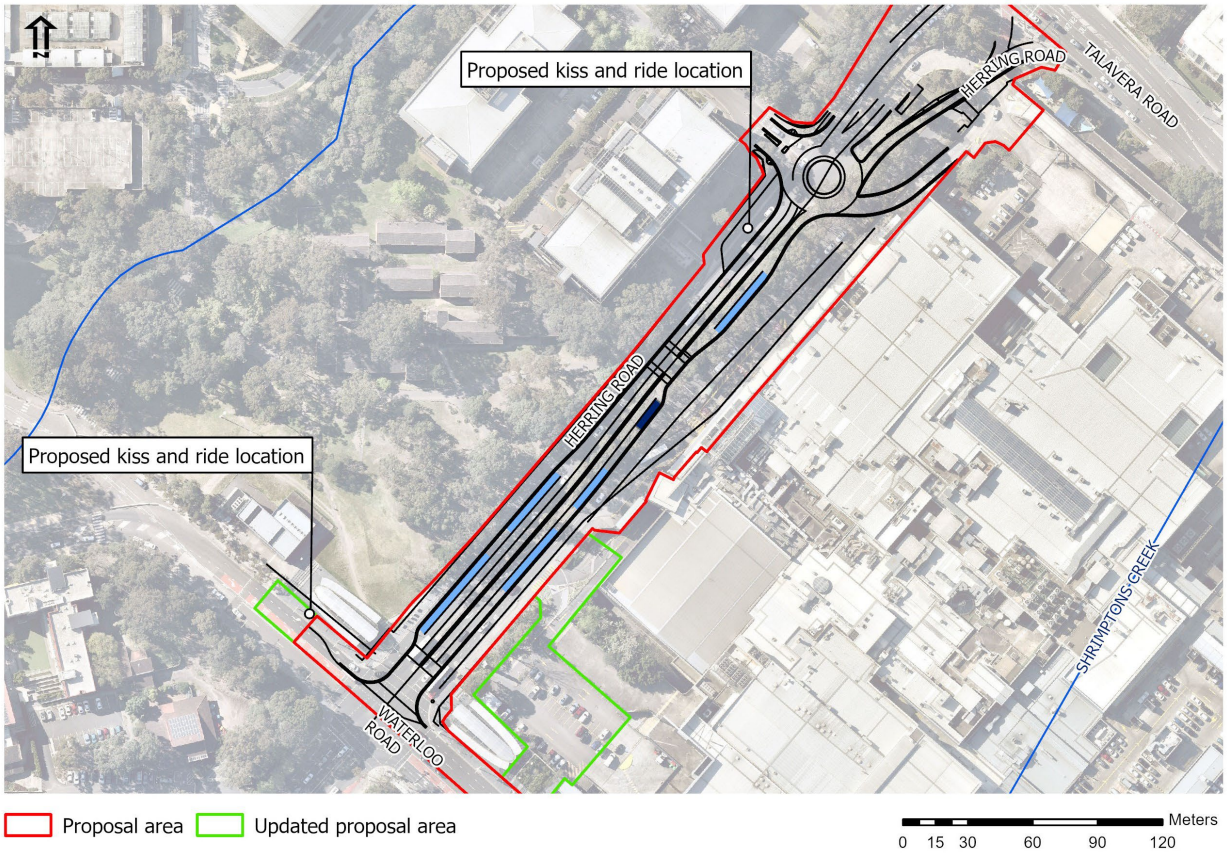


Figure 3-3: Kiss and ride locations

4. Environmental assessment

The proposed changes outlined in Section 3 are relatively minor, however, there would be some changes to traffic and transport as well as visual impacts. These aspects are discussed further in Sections 4.1 and 4.2 below.

4.1 Transport and traffic

4.1.1 Methodology

The transport and assessment methodology is presented in Section 6.1.1 of the REF. This has been applied to the proposed change where relevant. No further traffic modelling was required for the assessment of the proposed changes.

4.1.2 Existing environment

The existing environment relevant to transport and traffic is described in Section 6.1.2 of the REF.

At the site of the proposed exit, Waterloo Road has two through lanes eastbound and a dedicated left turn lane for access to Macquarie Centre opposite Cottonwood Crescent. The kerbside lane is dedicated bus zone and no stopping.

Pedestrian access is currently available via the kerbside footpath, stairs to the Metro entry and a walkway which connects Waterloo Road with the adjacent Macquarie Centre car park.

Bus stop 2113318 (and associated double shelter with seating) is located immediately adjacent to the proposed exit. This bus stop is used by the following services:

- 11M – Tallawong to Chatswood
- 197 – Mona Vale to Macquarie University via Gordon
- 410 – Macquarie Park to Hurstville
- 611 – Blacktown to Macquarie Park via M2 Motorway
- 619 – Castle Hill to Macquarie Park via Baulkham Hills and M2 Motorway.

4.1.3 Potential impacts

Relocation of the Macquarie Centre car park exit (as shown in Figure 3.1) would not adversely affect traffic flow on Waterloo Road and is located a safe distance from the Herring Road / Waterloo Road intersection. The relocated exit is less likely to interfere with pedestrian movements (compared with the existing exit) and would not interfere with the operation of the bus interchange. The design of the exit would occur in consultation with the City of Ryde and AMP Capital.

The proposed kiss and ride locations would offset the loss of the existing single kiss and ride space on Herring Road. The proposed locations are conveniently located and can be implemented with negligible impact on traffic.

4.1.4 Revised safeguards and mitigation measures

The safeguards presented in Section 6.1.4 of the REF are considered adequate to transport and traffic impacts associated with the proposed change. No additional measures are proposed.

4.2 Landscape character and visual impacts

4.2.1 Methodology

The landscape character and visual amenity assessment methodology is presented in Section 6.2.1 of the REF. This has been applied to the proposed change.

4.2.2 Existing environment

The existing environment relevant to landscape character and visual amenity is described in Section 6.2.2 of the REF.

The following landscape character zones identified in the REF are relevant to the proposed changes:

- LCZ5 Waterloo Road Residential – the sensitivity of this area is considered high. Its residential land use and well-established character makes it susceptible to change.
- LCZ6 Macquarie Centre – the sensitivity of this area is considered high. The centre is of regional significance and the Macquarie Park Precinct and Bus Interchange acts as a key arrival/departure point for this zone.
- LCZ7 Herring Road – the sensitivity of this area is considered high. The interchange is an important public transport interchange of regional significance and acts as the gateway to the general area.

The location of the proposed change to the Macquarie Centre car park exit is not within the scope of any of the viewpoints assessed in the REF. The main viewers of this location would be road users (motorists and pedestrians) and occupants of the residential units at 175 Herring Road, Marsfield.

The proposed kiss and ride locations are within the scope of the following viewpoints assessed in the REF:

- Viewpoint 01 – view looking from the corner of Waterloo Road and Herring Road, in front of the residential apartment block. High sensitivity.
- Viewpoint 08 – view from the forecourt of an office complex next to Innovation Road. Moderate sensitivity

4.2.3 Potential impacts

The provision of a new exit from Macquarie Centre to Waterloo Road and removal of the existing landscaped embankment would be a noticeable visual change but would be consistent with the character of LCZ6 (Macquarie Centre). No indirect impacts on the character of the adjacent LCZ5 (Waterloo Road Residential) are likely due to the minor nature of the change. More substantial character changes would occur with the planned redevelopment of Macquarie Centre and the provision of a station plaza adjacent to the southern Metro entrance. The proposed change would therefore not alter the impact ratings provided in the REF for LCZ5 (moderate) and LCZ6 (moderate-high).

The provision of the kiss and ride at the two proposed locations would result in negligible visual change, with the small-scale signage being consistent with the existing and proposed character of LCZ7. The proposed kiss and ride would not alter the impact ratings for LCZ7 (high).

Visual impacts for viewpoints near the proposed car park exit have been assessed as follows:

- View from residential units at 175 Herring Road, Marsfield. The sensitivity of this view is high (consistent with Viewpoint 01) in the REF. The magnitude of the changes is considered low and therefore the visual impact of the change is assessed as moderate.
- Pedestrians and motorists on Waterloo Road. The sensitivity is moderate, recognising that most viewers would be moving through this area and the experience would therefore be more transient. The magnitude of the change is considered low and therefore the visual impact of the change is assessed as moderate-low.

The proposed kiss and ride spaces on University Avenue and/or Herring Road would have a negligible visual magnitude and would not change the impact ratings for Viewpoint 01 (Moderate to high) or Viewpoint 08 (Moderate).

4.2.4 Revised safeguards and mitigation measures

The safeguards presented in Section 6.2.5 of the REF are considered adequate to landscape character and visual impacts associated with the proposed change. No additional measures are proposed.

5. Environmental management

The REF for the Macquarie Park Precinct and Bus Interchange Upgrade identified the framework for environmental management, including safeguards and management measures that would be adopted to avoid or reduce environmental impacts (section 7.2 of the REF).

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

5.1 Environmental management plan

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

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

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

5.2 Summary of safeguards and management measures

Section 7.2 of the REF for the proposal identified a range of environmental outcomes and management measures that would be required to avoid or reduce the environmental impacts.

Should the proposal proceed, the environmental management measures in Table 5-1 will guide the subsequent phases of the proposal. In the time since the REF was prepared, there have been updates to documentation referenced in the summary of safeguards and management measures, which are reflected in Table 5-1. Additional and/or modified environmental safeguards and management measures to those presented in the REF have been underlined and deleted measures, or parts of measures, have been struck out.

Table 5-1: Summary of environmental safeguards and management measures

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
G–N1	General - minimise environmental impacts during construction	A Construction Environmental Management Plan (CEMP) will be prepared and submitted for review and endorsement of the Transport for NSW Environment Manager prior to commencement of the activity. As a minimum, the CEMP will address the following: • any requirements associated with statutory approvals • details of how the project will implement the identified safeguards outlined in the REF • issue-specific environmental management plans • roles and responsibilities • communication requirements • induction and training requirements • procedures for monitoring and evaluating environmental performance, and for corrective action • reporting requirements and record-keeping • procedures for emergency and incident management • procedures for audit and review. The endorsed CEMP will be implemented during the undertaking of the activity.	Contractor / Transport for NSW project manager	Pre-construction / detailed design	Standard measure
G–N2	General - notification	All businesses, residential properties and other key stakeholders (e.g. schools, local councils) affected by the activity will be notified at least five days prior to commencement of the activity.	Contractor Transport for NSW project manager	Pre-construction	Standard measure
G–N3	General - environmental awareness	All personnel working on site will receive training to ensure awareness of environment protection requirements to be implemented during the project. This will include up-front site induction and regular 'toolbox' style briefings. Site-specific training will be provided to personnel engaged in activities or areas of higher risk.	Contractor Transport project manager	Pre-construction	Standard measure
TT1	Traffic and transport	A Traffic Management Plan (TMP) will be prepared and implemented as part of the Construction Environmental Management Plan (CEMP). The TMP will be prepared in accordance with the Traffic Control at Work Sites Manual (Transport for NSW, 2021) and QA Specification G10 Control of Traffic (Roads and Maritime, 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	Contractor	Pre-construction	Section 4.8 of QA G36 Environment Protection

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		• 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.			
TT2	Emergency services vehicles	Traffic management measures will be implemented to ensure emergency services vehicles can negotiate ~~the intersection~~ **the project area** during construction.	Contractor	Construction	Additional measure
TT3	Operational traffic	The operation of the bus interchange and surrounding road network will be reviewed following the completion of the proposal. Any recommendations for improvement will be considered.	Transport	Operation	Additional measure
LCV1	Landscape character and visual impact	An Urban Design Plan (including detailed urban design drawings, ~~landscape concept~~ and landscape plans) will be prepared to support the final detailed project design. The Urban Design Plan will present an integrated urban design for the project, providing further practical detail on the application of design principles and objectives identified in this REF. The Plan will confirm design treatments for: • location and identification of existing vegetation and proposed landscaped areas, including species to be used • 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 2020 - Urban design approach and procedures for road and maritime infrastructure planning, design and construction (Transport for NSW, 2020b)** ~~urban design - policy, process and principles (Roads and Maritime, 2014)~~ • **Around the Tracks - Urban design for heavy and light rail (Transport for NSW, 2016)** • **Landscape Guideline (Roads and Maritime Services, 2019)** • **City of Ryde Street Tree Master Plan (City of Ryde, 2013)** • **Waterloo Road Active Street Master Plan (Hassell, 2020).**	Transport	Detailed design	Standard measure

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		The Urban Design Plan will ensure that the design addresses the objectives in Section 1.3 and the design principles in Section 2.0 of the Macquarie Park Corridor Public Domain Technical Manual (City of Ryde, 2016).			
LCV2	Visual impacts	Where reasonable and feasible trees will be retained in design.	Transport	Detailed design	Additional measure
LCV3	Visual impacts	Following the completion of construction works, plant/equipment will be removed, and disturbed areas will be revegetated, turfed or otherwise restored as appropriate.	Contractor	Construction	Additional measure
LCV4	Visual impacts	Work sites including all ancillary facilities will be managed to minimise visual impacts including consideration of screening, placement of facilities and storage areas and maintaining sites in a clean state with minimal visual clutter.	Contractor	Construction	Additional measure
LCV5	Visual and landscape impacts	Opportunities to support the Future Transport Strategy 40 per cent urban tree canopy target, ~~Five Million Trees for Greater Sydney initiative~~, ~~and~~ the ~~greening our city~~ **Premier's priorities (Greener Public Places and Greening our Cities)** ~~priority~~, **Green Grid Strategy and a reduction in urban heat island impacts** will be explored during detailed design and as part of the development of the landscape design for the proposal. This would occur in consultation with the City of Ryde Council and would include replacement planting with advanced tree stock.	Transport	Detailed design	Additional measure
LCV6	Impacts on street trees	Tree protection zones would be implemented to minimise the impact to street trees. Tree protection structure would be implemented to protect trees if construction is required to occur within the Tree Protection Zones. Any excavation within Tree Protection Zones (of trees identified for retention) or pruning trees (or tree roots) is to occur under the supervision of an AQF5 qualified arborist and in accordance with a pre-agreed methodology. Vehicles, plant or equipment would not be parked or stored within the tree protection zone, if parking or storage is required additional mitigation measures would be implemented to minimise the impact to the vegetation.	Contractor	Construction	Additional measure
LCV7	Impact from lighting	Temporary site lighting will be installed and operated in accordance with AS4282:1997 Control of the Obtrusive Effect of Outdoor Lighting, and an approved Traffic Management Plan.	Contractor	Construction	Additional measure
LCV8	Impacts from lighting	The design of new street lighting will consider potential light spill impacts on adjacent properties.	Transport	Detailed design	Additional measure
BIO1	Biodiversity impacts	Biodiversity Management Plan is to be prepared and included with in the CEMP. The plan would include:	Contractor	Pre-construction	Additional measure

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		• a site walk over with an ecologist as part of the pre-clearing surveys • a map showing vegetation clearing boundaries and sensitive area/no go area or trees to be protected • incorporation of management measures identified as a result of pre-clearing survey reports, completed by an ecologist • a detailed cleaning process in accordance with Biodiversity Guidelines (2011) • identify controls/mitigation measures to prevent impacts on sensitive location or no-go zones or tree protection zones • a stop work procedure in the event of identification of unidentified species, habitat or populations.			
BIO2	Biodiversity impacts	Pre-clearing survey will be conducted in accordance with Biodiversity Guidelines, Guide 1 (Roads and Maritime, ~~2016~~**2011**) and will: • confirm (with the assistance of a surveyor) clearing boundaries, exclusion zones, protected habitat features and revegetation areas prior to starting work • identify, in toolbox talks, where biodiversity controls are located on the site.	Contractor	Pre-construction	Additional measure
BIO3	Injury to fauna	A suitably qualified ecologist or experienced wildlife handler would be engaged to survey and handle any fauna.	Contractor	Pre-construction Construction	Additional measure
BIO4	Spread of weeds	Weed management will occur in accordance with Biodiversity Guidelines, Guide 6 (Roads and Maritime, ~~2016~~**2011**) and include: • the Identification of weeds on site (confirmed during pre-clearing survey) • weed management priorities and objectives Exclusion zones, protected habitat features and revegetation areas prior to starting work within or directly next to the site • the location of weed infested areas • weed control methods • measures to prevent the spread of weeds, including machinery hygiene procedures and disposal requirements • a monitoring program to measure the success of weed management • communication with local Council noxious weed representative.	Contractor	Pre-construction	Additional measure
BIO5	Spread of weeds	Reuse of topsoil free from weeds or pathogens would be used as part of habitation/landscaping works, where reasonable and feasible.	Contractor	Construction	Additional measure

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
BIO6	Spread of diseases affecting plants	Management measures will be implemented to control and/or prevent the introduction and/or spread of disease-causing agents such as bacteria and fungi in accordance with the Biodiversity Guidelines, Guide 7 (Roads and Maritime, ~~2016~~**2011**).	Contractor	Construction	Additional measure
BIO7	Unexpected threatened species finds	If unexpected flora or fauna are discovered on site stop work immediately and implement the Roads and Maritime Unexpected Threatened Species Find Procedure in the Biodiversity Guidelines, Guide 1 (Roads and Maritime, ~~2016~~**2011**).	Contractor	Construction	Additional measure
BIO8	Loss of trees	The loss of trees due to the proposal will be offset consistent with the Transport Biodiversity Policy (Transport for NSW, 2022a) and **Tree and Hollow Replacement Guidelines (Transport for NSW, 2022c).**	Transport	Construction	Additional measure
NVI1	Construction noise	A Noise and Vibration Management Plan (NVMP), and an out of hours works procedure will be prepared and implemented as part of the CEMP. The NVMP will generally follow the approach in the Interim Construction Noise Guideline (ICNG) (DECC, 2009) and the Construction Noise and Vibration Guideline (Roads and Maritime Services, 2016) and identify: • key potential noise and vibration generating activities associated with the activity • an Out of Hours Works Protocol and provision to cover working outside of the standard hours set by the Construction Noise and Vibration Guidelines (Roads and Maritime Services, 2016) • feasible and reasonable mitigation measures to be implemented • a monitoring program to assess performance against relevant noise and vibration criteria • a review process scheduling and assessing out-of-hours activities including consideration of alternatives to out-of-hours work, plant selection, work locations and screening to minimise impacts • a working schedule which records respite periods for extended out-of-hours works • arrangements for consultation with affected neighbours and sensitive receivers, including notification and complaint handling procedures • contingency measures to be implemented in the event of non-compliance with noise and vibration criteria.	Contractor	Pre-construction	Section 4.6 of QA G36 Environment Protection
NV2	Construction vibration	Where vibration intensive plant such as vibratory rollers are used, vibration must be managed to minimise disturbance to building occupants and to avoid damage to buildings and other structures (including heritage fabric). This includes adhering to the recommended minimum working distances for vibration intensive plant identified in Section 7.1 of the Construction Noise and Vibration Guideline (Roads and Maritime Services, 2016).	Contractor	Construction	Additional measure

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		If recommended minimum working distances cannot be met by selecting smaller plant, vibration monitoring will occur to quantify and help manage vibration. If necessary, trial vibration measurements will be conducted to further assess any possible impacts and buffer distances that may be required.			
NVI3	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 activity that may have an adverse noise or vibration impact. The notification will provide details of: • the proposal • the construction period and construction hours • contact information for project management staff • complaint and incident reporting • how to obtain further information.	Contractor	Pre-construction	Standard measure
NAH1	Non-Aboriginal heritage	~~The Standard Management Procedure – Unexpected Heritage Items (Roads and Maritime Services, 2015)~~ The **Unexpected Heritage Items Procedure (Transport for NSW, 2022d)** will be followed in the event 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.	Contactor	Construction	Section 4.10 of QA G36 Environment Protection
NAH2	Aboriginal cultural heritage	The **Unexpected Heritage Items Procedure (Transport for NSW, 2022d)** will be followed in the event that an unknown or potential Aboriginal object/s, including skeletal remains, is found during construction. This applies where Transport 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
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 (including site compound operation) • air quality management objectives consistent with any relevant published EPA guidelines • mitigation and suppression measures to be implemented • methods to manage work during strong winds or other adverse weather conditions. • the AQMP will include the following requirements: • plant and equipment will be maintained in good condition and in accordance with manufactures specifications • plant and machinery will be turned off when not in use	Contactor	Construction	Section 4.4 of QA G36 Environment Protection

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		• work activities will be reprogrammed if the management measures are not adequately restricting dust generation • disturbed areas will be minimised in extent and rehabilitated progressively • dust will be suppressed on stockpiles and unsealed or exposed area using methods such as water trucks/hoses, temporary stabilisation methods, soil binders or other appropriate practices • no burning of material on site will be undertaken • visual monitoring of air quality will be undertaken to verify the effectiveness of controls and enable early intervention • vehicles transporting materials and equipment will have their loads covered.			
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. The SWMP would include: • stockpile management plan • dewatering plan which includes process for monitoring flocculants and dewatering water from site • a process to routinely monitor the Bureau of Meteorology weather forecast • preparation of a wet weather (rain event) plan which includes a process for monitoring potential wet weather and identification of controls to be implemented in the event of wet weather. • inspection and maintenance schedule for ongoing maintenance of temporary and permanent erosion and sediment controls. The SWMP will address: • Transport Code of Practice for Water Management • The Blue Book – Managing Urban Stormwater: Soils and Construction, Volume 1 and 2 • Transport Technical Guideline – Temporary Stormwater Drainage for Road Construction.	Contractor	Pre-construction	Section 2.1 of QA G38 Soil and Water Management
SW2	Soil and water	All stockpiles would be designed, established, operated and decommissioned in accordance with the Transport Stockpile Management Procedures.	Contractor	Construction	Additional measure
SW3	Soil and water	Controls would be implemented at construction zones exit points to minimise the tracking of material onto the road.	Contractor	Construction	Additional measure
SW4	Contamination	An Asbestos Management Plan (AMP) will be prepared and implemented.	Contractor	Construction	Additional measure

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		The AMP will include procedures for the management, reporting and removal of asbestos when found on site. The AMP would be prepared in accordance with relevant EPA and SafeWork NSW guidelines.			
SW5	Contamination	A Detailed Site Investigation ("DSI") will be undertaken prior to construction works commencing at the bus layover site, targeting the AECs where exposure pathways are potentially complete. The DSI should include, but not be limited to: • soil sampling across the middle section of the bus layover to assess possible contamination from potential historical orchard or market garden growing • soil sampling across the footprints of the former buildings, to assess possible contamination from weathered hazardous materials • further investigation to assess whether potentially contaminated items are being stored in the suspected maintenance / storage yard at the western end of the site if construction works are proposed in this area • sampling of the fill across the western section of the Site (the telecommunications facility and the suspected maintenance / storage yard) if construction works are proposed in this area • collection of a surface water sample from Mars Creek to assess for water quality • review of the Site Audit Statement and related documents (if available) to assess if contaminated site investigations have been previously undertaken for the site.	Transport	Detailed design	Additional measure
SW6	Contamination	If contaminated areas are encountered during construction, appropriate control measures will be implemented to manage the immediate risks of contamination. All other work 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 identified in consultation with the Transport Environment Manager and/or EPA.	Contractor	Detailed design Pre-construction	Section 4.2 of QA G36 Environment Protection
SW7	Accidental spills	A site-specific emergency spill plan will be developed and include spill management measures in accordance with the Transport 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 Transport and EPA officers).	Contractor	Detailed design Pre-construction	Section 4.3 of QA G36 Environment Protection
SE1	Anxiety and uncertainty	A Community and Stakeholder Engagement Plan (CSEP) will be prepared and will include: • procedures and mechanisms that would be implemented in response to the key social impacts identified for the proposal	Transport	Pre-construction	Standard measure

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		• procedures and mechanisms that would be used to engage with affected landowners, business owners, and the wider community to identify potential access, parking, business visibility, and other impacts and develop appropriate management measures • procedures to keep the community informed about construction and any associated changes to conditions (e.g. detours or lane closures) such as community notifications or variable message signs • procedure for the management of complaints and enquiries, including a contact name and number for complaints.			
SE2	Safety and security	The safety of people using the interchange would be considered in detailed design in accordance with crime prevention through environmental design principles.	Contractor	Detailed design	Additional measure
SE3	Access	Access to business and Macquarie University will be maintained during construction. Where temporary changes to access arrangement are necessary, the contractor will advise owners and tenants and consult with them in advance with regards to alternative access arrangements.	Contractor	Detailed design	Additional measure
SE4	Access	Access to bus stops and Macquarie University Metro Station will be maintained during construction. Where changes to access arrangement are necessary, the contractor will advise those impacted.	Contractor	Detailed design	Additional measure
CC1	Climate change risk	Climate change adaptation strategies identified in the Climate Change Risk Assessment will be considered during detailed design.	Contractor	Detailed design	Additional measure
WN1	Waste	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 project • 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.	Contractor	Detailed design	Additional measure
HR1	Hazards and risks	A Hazard and Risk Management Plan (HRMP) will be prepared and implemented as part of the CEMP. The HRMP will include, but not be limited to: • details of hazards and risks associated with the activity (including consideration of bushfire) • measures to be implemented during construction to minimise these risks • record keeping arrangements, including information on the materials present on the site, material safety data sheets, and personnel trained and authorised to use such materials	Contractor	Construction	Additional measure

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		• a monitoring program to assess performance in managing the identified risks • contingency measures to be implemented in the event of unexpected hazards or risks arising, including emergency situations. The HRMP will be prepared in accordance with relevant guidelines and standards, including relevant Safe Work Australia Codes of Practice and EPA publications.			
SU1	Sustainability	The design and delivery of the proposal will address the requirements of the Transport Sustainable Design Guidelines – Version 4.0 (Transport for NSW, 2017). The proposal will target a Gold rating.	Transport	Detailed design Construction	Additional measure
CU1	Cumulative impacts	Current and upcoming projects with the potential to interact with the proposal will be monitored. Where potential cumulative impacts are identified, the scheduling of works will be coordinated with interacting projects to minimise potential impacts. This will include: • scheduling works to allow suitable respite periods for construction noise • scheduling of works to minimise consecutive construction noise impacts, where feasible • coordinating lane closures and pedestrian/cyclist diversions to minimise the overall number of occasions where disruption occurs.	Transport Project Manager	Construction	Additional measure

5.3 Licensing and approvals

Table 5-2 provides a summary of the licensing and approval requirements relevant to the proposal.

Table 5-2: Summary of licensing and approval required

Instrument	Requirement	Timing
Roads Act 1993 (Section 138)	Road Occupancy Licence.	Prior to start of the activity.

6. Definitions

Table 6-1: Terms and acronyms used in this report

Term / Acronym	Description
BC Act	*Biodiversity Conservation Act 2016 (NSW)*
CEMP	Construction environmental management plan
DDA	*Disability Discrimination Act* 1992
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
Heritage Act	*Heritage Act 1977 (NSW)*
LEP	Local Environmental Plan- a type of planning instrument made under Part 3 of the EP&A Act.
LoS	Level of Service - a qualitative measure describing operational conditions within a traffic stream and their perception by motorists and/or passengers
LSPS	Local Strategic Planning Statement
NPW Act	*National Parks and Wildlife Act 1974 (NSW)*
OEH	Office of Environment and Heritage within the Department of Planning and Environment.
QA Specifications	Specifications developed by Transport for use with road work and bridge work contracts let by Transport.
SEPP	State Environmental Planning Policy - a type of planning instrument made under Part 3 of the EP&A Act
Transport	Transport for NSW

7. References

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Transport for NSW. (2017). *Sustainable Design Guidelines – Version 4.0*: Transport for NSW

Transport for NSW. (2020a). *Environmental Impact Assessment Practice Note: Guidelines for Landscape Character*

Transport for NSW. (2020b). *Beyond the Pavement 2020 Urban design approach*: Transport for NSW

Transport for NSW (2022a). *Biodiversity Policy*: Transport for NSW

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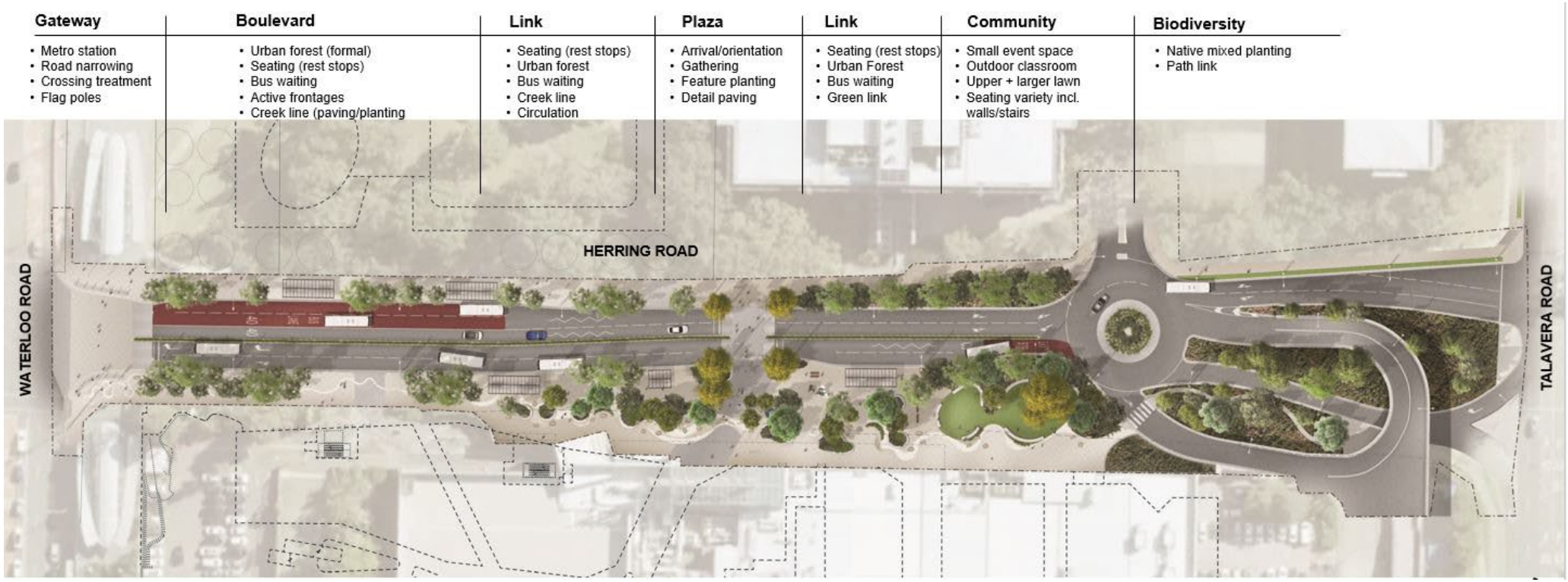
Transport for NSW (2022c). *Tree and hollow replacement guidelines:* Transport for NSW

Transport for NSW (2022d). *Unexpected heritage items procedure:* Transport for NSW

Appendix A – Urban and Landscape Design Concept Plan


Gateway
• Metro station
• Road narrowing
• Crossing treatment
• Flag poles
Boulevard
• Urban forest (formal)
• Seating (rest stops)
• Bus waiting
• Active frontages
• Creek line (paving/planting
Link
• Seating (rest stops)
• Urban forest
• Bus waiting
• Creek line
• Circulation
Plaza
• Arrival/orientation
• Gathering
• Feature planting
• Detail paving
Link
• Seating (rest stops)
• Urban Forest
• Bus waiting
• Green link
Community
• Small event space
• Outdoor classroom
• Upper + larger lawn
• Seating variety incl. walls/stairs
Biodiversity
• Native mixed planting
• Path link
HERRING ROAD
WATERLOO ROAD
TALAVERA ROAD

NSW GOVERNMENT