Transport for NSW

Western Harbour Tunnel and Warringah Freeway Upgrade

Wicks Road Construction Support Site - Modification report

Country of the Wangal and Gammeraygal clans

October 2022

NSW GOVERNMENT

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Acknowledgement of Country

Transport for NSW acknowledges the Wangal and Gammeraygal clans of the Darug speaking people, the traditional custodians of the land on which the Western Harbour Tunnel and Warringah Freeway Upgrade project 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 Songlines, 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.

Document Control

Approval and Authorisation	
Title:	Western Harbour Tunnel and Warringah Freeway Upgrade Wicks Road Construction Support Site - Modification Report
Prepared by:	Jacobs and Arcadis Joint Venture
Accepted on behalf of Transport for NSW by:	Rob Owens
	
	21/10/2022

Declaration

Modification report prepared by:	
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Responsible person:	
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Proposed development:	
Western Harbour Tunnel and Warringah Freeway Upgrade - Wicks Road Construction Support Site	
Address of the land on which the infrastructure to which the report relates is to be carried out:	
160 Wicks Road, Macquarie Park NSW 2113, Ryde Local Government Area	
Description of the infrastructure to which the report relates:	
Additional construction support site at 160 Wicks Road, Macquarie Park NSW. The proposed Wicks Road construction support site (WFU10) will be used as a materials sorting, storage and stockpiling location, a car parking area for construction personnel and a precast concrete facility to support the construction of the Warringah Freeway Upgrade.	
Modification report prepared by:	
A modification report for the project is attached and is prepared in accordance with clause 180 of the *Environmental Planning and Assessment Regulation 2021*.	

Declaration:	I certify that I have prepared this modification report to comply with clause 180 of the *Environmental Planning and Assessment Regulation 2021*. To the best of my knowledge this modification report contains all available information that is relevant to the assessment of the project and the information contained in the modification report is neither false nor misleading.
Signature:	
Name:	Rebecca Grant
Date:	26/09/2022

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Glossary of terms and abbreviations

Term	Meaning
ABS SA2	Australian Bureau of Statistics – Statistical Areas Level 2
ACM	Asbestos containing material
AHIMS	Aboriginal Heritage Information Management System
AQMS	Air Quality Monitoring Station
BOM	Bureau of Meteorology
CBD	Central Business District
CNVG	*Construction Noise and Vibration Guideline* (Roads and Maritime Services, 2016)
Council	City of Ryde Council
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DAWE	Commonwealth Department of Agriculture, Water and the Environment
dBA	Decibel
DoS	Degree of Saturation
DPE	Department of Planning and Environment
DPIE	Former Department of Planning, Industry and Environment (now DPE)
EES	Environment, Energy and Science division of DPE
ENM	Excavated natural material
EP&A Act	*Environmental Planning and Assessment Act 1979*
EP&A Reg	*Environmental Planning and Assessment Regulation 2021*
EPA	NSW Environment Protection Authority
ESCP	Erosion and Sediment Control Plan
GDE	Groundwater Dependent Ecosystems
IAQM	UK Institute of Air Quality Management
ICNG	*Interim Construction Noise Guideline* (DECC, 2009)
L_{Aeq}	Equivalent Continuous Sound Pressure Level
LGA	Local Government Area
LoS	Level of Service
mbgs	Metres below ground surface

Term	Meaning
NCA	Noise Catchment Area
NIA	Noise Impact Assessment
NML	Noise Management Level
NPfI	Noise Policy for Industry (NSW EPA, 2017)
PAH	Polynuclear aromatic hydrocarbons
PCoC	Potential contaminants of concern
PCT	Plant Community Type
PM_{10}	Particulate matter 10 micrometres or less in diameter
PNTL	Project noise trigger levels
POEO Act	*Protection of the Environment Operations Act 1997*
Porters ECoMRF	Porters Creek Environmental Construction Materials Recycling Facility
ppm	Parts per million
project, the	Western Harbour Tunnel and Warringah Freeway Upgrade
RBL	Rating Background Levels
REMM	Revised Environmental Management Measure
RNP	Road Noise Policy (DECCW, 2011)
SEARs	Secretary's Environmental Assessment Requirements
SLR	SLR Consulting Australia
SIA	Social Impact Assessment
TIA	Traffic Impact Assessment
TRH	Total recoverable hydrocarbons
$\mu g/m^3$	Micrograms per cubic metre
VENM	Virgin excavated natural material
VOC	Volatile organic compounds
WFU10	The proposed construction support site

Executive summary

Transport for NSW proposes to modify the Western Harbour Tunnel and Warringah Freeway Upgrade project (the project). The project is located on the traditional lands of the Gammeraygal clans of the Darug speaking people within the Inner West, North Sydney and Willoughby local government areas.

The project consists of two main components:

- A new crossing of Sydney Harbour involving twin tolled motorway tunnels connecting the M4-M5 Link at Rozelle and the Warringah Freeway at North Sydney (the Western Harbour Tunnel)
- Upgrade and integration works along the existing Warringah Freeway, including infrastructure required for connections to the (proposed) Beaches Link and Gore Hill Freeway Connection project (the Warringah Freeway Upgrade).

The Minister for Planning and Public Spaces (now the Minister for Planning) approved the project under Section 5.19 of the *Environmental Planning and Assessment Act, 1979* (EP&A Act) on 21 January 2021 (SSI 8863). Early and preparatory works for the project started in 2021, with the main construction activities starting in the first half of 2022.

Transport for NSW is proposing a modification to the approved project to include an additional construction support site at 160 Wicks Road, Macquarie Park NSW 2113 (WFU10), about six kilometres from the approved construction boundary. This modification report describes and assesses the potential impacts of the modifications and identifies how those impacts would be managed and mitigated.

What modifications are proposed?

Since approval was granted for the project, the CPB Downer Joint Venture has been appointed to construct the Warringah Freeway Upgrade on behalf of Transport for NSW. Transport for NSW has further optimised the construction support site arrangements assessed in the environmental impact statement to reduce environmental and community impacts.

The proposed modification includes an additional construction support site at Wicks Road (WFU10) and will be used as a materials storage and stockpiling location, a car parking area for construction personnel and a precast concrete facility to support construction of the Warringah Freeway Upgrade.

WFU10 would comprise:

- Materials stockpiling, segregation and testing
- Material crushing and screening
- A construction personnel parking area, providing up to 250 spaces
- A precast concrete facility to manufacture concrete zipper barriers
- A truck marshalling area
- A new access road from Wicks Road onto the site, including a weighbridge and security gate
- Water quality management controls
- Office area including:
  - Logistics office
  - Lunchroom

  - Toilet facilities
- A dome shelter for plant inspections and minor maintenance
- Noise barriers comprising 40-foot shipping containers (stacked two high, about 5.2 metres) along the southern boundary and north-eastern boundary of the site.

A detailed description of the proposed modification is in Chapter 4.

Why is the modification needed?

The Warringah Freeway is the busiest section of motorway in NSW, with congestion and delays during both the AM and PM peak periods. To minimise impacts associated with the increase in heavy vehicles during construction, the scheduling of haulage and deliveries outside of peak periods was proposed.

Due to the nature of the work staging, it is not possible to test all areas of spoil generation prior to excavation. To this end, a spoil staging area will be required to stockpile, segregate and test material prior to re-use or disposal off site to an appropriately licenced facility. This staging area will also be critical to receive spoil that is generated out of hours as the majority of identified spoil receival facilities do not operate outside approved construction hours.

Furthermore, the environmental impact statement identified that due to the insufficient number of parking spaces available at the approved construction support sites, the construction workforce would potentially need to utilise street parking resulting in impacts to the surrounding road network and local communities. The provision of up to 250 parking spaces at WFU10 would increase the off-street parking capacity available for the project construction workforce thereby reducing the impacts on the surrounding road network during construction of the project.

An alternative offsite spoil staging area at WFU10, has been identified. This facility will allow material to be transported to the facility prior to testing. The WFU10 will also allow material to be segregated, processed and undergo geotechnical testing to produce structural fill required for the works.

What is the approval process?

On 9 November 2020 the Minister for Planning and Public Spaces declared the project to be critical State significant infrastructure (CSSI) under section 5.13 of the EP&A Act. The project was accordingly subject to assessment and approval in accordance with Division 5.2, Part 5 of the EP&A Act. The Minister for Planning and Public Spaces approved the project under section 5.19 of the EP&A Act on 21 January 2021 (SSI 8863).

Transport for NSW has prepared this modification report in accordance with section 5.25 of the EP&A Act and the relevant provisions of the *Environmental Planning and Assessment Regulation 2021* (EP&A Reg), including to have regard to the Department of Planning and Environment's (DPE) State Significant Infrastructure and State Significant Project Guidelines (DPIE, 2021a) including Preparing a modification report – Appendix F to the SSI Guidelines (DPIE, 2021b).

DPE will prepare an assessment report for consideration by the Minister for Planning and Public Spaces, who will then decide whether or not to approve the modified project subject to conditions.

What are the main community and stakeholder engagement outcomes?

Consultation has been carried out with Key Stakeholders, including City of Ryde Council, NSW Environmental Protection Authority (NSW EPA), DPE and community members. Further detail is provided in Section 6.2 of this modification report.

What are the main beneficial outcomes?

The main beneficial outcomes of the proposed modified project are expected to include:

- Increases to the off-street parking capacity available for the project construction workforce thereby reducing the impacts on the surrounding road network and nearby community adjacent to the approved construction boundary during construction
- Provides an opportunity to minimise the predicted construction noise and air quality impacts to sensitive receivers within or adjacent to the approved construction boundary as a result of work outside of approved construction hours by facilitating the redistribution of heavy vehicles and offsite materials processing (crushing and screening) and spoil management activities
- Due to the existing use of the site as the Porters Creek Environmental Construction Materials Recycling Facility (Porters ECoMRF), a construction waste management facility, the modification would require minimal site establishment and would not result in a substantial change in land use, thereby minimising impacts to nearby receivers during operation of the site.
- Heavy vehicle haulage between the main construction site and WFU10 would predominantly occur along major arterial roads, thereby minimising the use of local roads during works outside approved construction hours at the main construction site. This would minimise traffic and community impacts within and adjacent to the construction boundary during these time periods.

What are the main adverse outcomes?

The main adverse outcomes of the proposed modified project are expected to include:

- Air quality impacts (dust emissions) consistent with the existing use of the site
- Erosion and sedimentation impacts as a result of earthmoving activities
- Potential to impact downstream water quality, if unmitigated, through spills of pollutants and rinse water from vehicle washdown flowing to downstream watercourses
- The removal of vegetation along the southern boundary of the site, including large stands of Common Reed, Castor Oil Plant and other woody weeds, and the potential removal of one *Eucalyptus sp*. Other vegetation within the site to be removed would include large areas of vegetation growing atop waste material stockpiles, the vast majority of which comprise exotic species
- Minor noise impacts from out-of-hours works associated with operation of the site
- Lighting impacts which have the potential to impact upon fauna species in nearby vegetation, including Lane Cove National Park
- An increase in the movement of people, vehicles, machinery, vegetation waste and soil during and following construction activities
- Risk of encountering contaminated soils during surface excavation for the utility relocation required for the construction of a new access road from Wicks Road onto the site.

How will the impacts be managed?

The anticipated impacts associated with WFU10 are largely consistent with those assessed in the environmental impact statement. Impacts associated with WFU10 would be appropriately managed with the implementation of the conditions stipulated in the project approval (SSI 8863) and the Revised

environmental management measures (REMMs) detailed in Part D of the Submissions Report dated September 2020.

One additional mitigation measure would apply to WFU10:

> REMM BI31: Exclusion zones will be established at WFU10 to clearly define the limits of the works as to not further encroach on vegetation / potential habitat to be retained, including the area of PCT 1845 located immediately north of the construction boundary, drainage area, including surrounding She oak trees.

This measure will be implemented to manage site specific biodiversity impacts in relation to vegetation / potential habitat to be retained within and adjacent to WFU10.

1 Introduction and background

1.1 Introduction

Transport for NSW proposes to modify the Western Harbour Tunnel and Warringah Freeway Upgrade project (the project) located on the traditional lands of the Wangal and Gammeraygal clans of the Darug speaking people within the Inner West, North Sydney and Willoughby local government areas. The project is classified as State Significant Infrastructure (SSI) under Part 5, Division 5.2 of the *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act) and Clause 94 of the former *State Environmental Planning Policy (Infrastructure) 2007* (now Section 2.108 of the *State Environmental Planning Policy (Transport and Infrastructure) 2021*). The project was declared Critical State Significant Infrastructure (CSSI) by the NSW Minister for Planning and Public Spaces on 9 November 2020 under Section 5.13 under the EP&A Act and Clause 16 of the former *State Environmental Planning Policy (State and Regional Development) 2011* (now Section 2.15 of the *State Environmental Planning Policy (Planning Systems) 2021*). Subsequently, the project was approved, subject to conditions, by the NSW Minister for Planning and Public Spaces on 21 January 2021 (SSI 8863).

Transport for NSW is proposing a modification to the approved project to include an additional construction support site at 160 Wicks Road, Macquarie Park NSW. This modification report describes and assesses the proposed modification and identifies updated environmental management measures where necessary for the project.

The request for modification will be formally made with the Department of Planning and Environment (DPE) with the submission of this modification report and subject to DPE's discretion, placed on public exhibition. DPE will prepare an assessment report for consideration by the Minister for Planning (formerly the Minister for Planning and Public Spaces). The Minister for Planning will then decide whether or not to approve the modified project subject to conditions, if any.

1.2 Description of the approved project

The approved Western Harbour Tunnel and Warringah Freeway Upgrade project consists of two main components:

- A new crossing of Sydney Harbour involving twin tolled motorway tunnels connecting the M4-M5 Link at Rozelle and the Warringah Freeway at North Sydney (the Western Harbour Tunnel)
- Upgrade and integration works along the existing Warringah Freeway, including infrastructure required for connections to the (proposed) Beaches Link and Gore Hill Freeway Connection project (the Warringah Freeway Upgrade).

Key features of the Western Harbour Tunnel component of the project (as approved) would include:

- Twin mainline tunnels about 6.5 kilometres long and each accommodating three lanes of traffic in each direction, connecting the stub tunnels from the M4-M5 Link at Rozelle to the Warringah Freeway and to the (proposed) Beaches Link mainline tunnels at Cammeray. The crossing of Sydney Harbour between Birchgrove and Balls Head would involve a dual, three lane, immersed tube tunnel
- Connections to the stub tunnels at the M4-M5 Link project in Rozelle and to the mainline tunnels at Cammeray (for a future connection to the (proposed) Beaches Link and Gore Hill Freeway Connection project)

- Surface connections at Rozelle, North Sydney and Cammeray, including direct connections to and from the Warringah Freeway (including integration with the Warringah Freeway Upgrade), an off ramp to Falcon Street and an on ramp from Berry Street at North Sydney
- A ventilation outlet and motorway facilities (fit out and commissioning only) at the Rozelle Interchange
- A ventilation outlet and motorway facilities at the Warringah Freeway in Cammeray
- Operational facilities including a motorway control centre at Waltham Street within the Artarmon industrial area and tunnel support facilities at the Warringah Freeway in Cammeray
- Other operational infrastructure including groundwater and tunnel drainage management and treatment systems, signage, tolling infrastructure, fire and life safety systems, lighting, emergency evacuation and emergency smoke extraction infrastructure, CCTV and other traffic management systems.

Key features of the Warringah Freeway Upgrade component of the project (as approved) would include:

- Upgrade and reconfiguration of the Warringah Freeway from immediately north of the Sydney Harbour Bridge through to Willoughby Road at Naremburn
- Upgrades to interchanges at Falcon Street in Cammeray and High Street in North Sydney
- New and upgraded pedestrian and cyclist infrastructure
- New, modified and relocated road and shared user bridges across the Warringah Freeway
- Connection of the Warringah Freeway to the portals for the Western Harbour Tunnel mainline tunnels and the (proposed) Beaches Link tunnels via on and off ramps, which would consist of a combination of trough and cut and cover structures
- Upgrades to existing roads around the Warringah Freeway to integrate the project with the surrounding road network
- Upgrades and modifications to bus infrastructure, including relocation of the existing bus layover along the Warringah Freeway
- Other operational infrastructure, including surface drainage and utility infrastructure, signage, tolling, lighting, CCTV and other traffic management systems.

Construction of the Warringah Freeway Upgrade would require 10 construction support sites, with seven of these sites are within the existing Warringah Freeway corridor (refer to Figure 1-1). The approved Warringah Freeway Upgrade construction support sites have direct access to the arterial road network, and spoil would be removed using trucks.

The complete description of the approved project is set out in the Western Harbour Tunnel and Warringah Freeway Upgrade environmental impact statement (dated January 2020) and Submissions Report (dated September 2020). Both the documents can be viewed on the DPE major projects website https://www.planningportal.nsw.gov.au/major-projects.

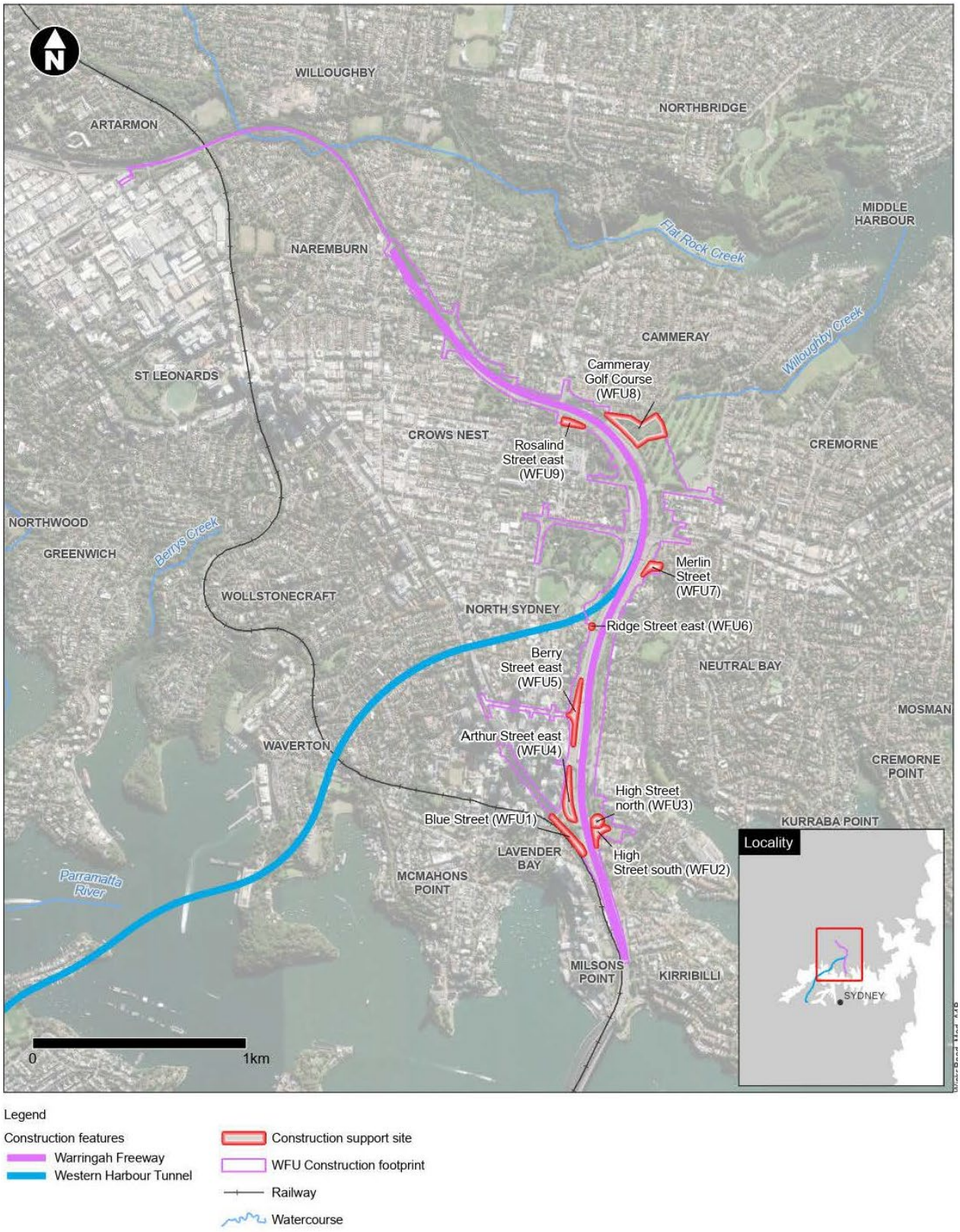


Figure 1-1: The Warringah Freeway Upgrade component of the approved project

1.3 Overview of the proposed modification

Since approval was granted for the project, the CPB Downer Joint Venture has been appointed to construct the Warringah Freeway Upgrade on behalf of Transport for NSW. Design development and construction planning has progressed since the assessment contained in the environmental impact statement. The proponent has further optimised the construction support site arrangements assessed in the environmental impact statement to reduce environmental and community impacts. Subsequently a review of the concept design against the approved project has occurred.

Transport for NSW is proposing a modification to the approved project to include an additional construction support site at 160 Wicks Road, Macquarie Park NSW (WFU10). WFU10 would be used as a materials storage and stockpiling location, a car parking area for construction personnel and a precast concrete facility to support construction of the Warringah Freeway Upgrade.

A detailed description of the proposed modification is in Chapter 5. An updated project description which includes the proposed modification is in Appendix A.

1.4 Purpose and structure of this modification report

Transport for NSW has prepared this modification report for the purposes of section 5.25 of the EP&A Act and clause 180 of the EP&A Reg. It has been prepared]with regard to the Department of Planning and Environment's State Significant Infrastructure and State Significant Project Guidelines (DPIE, 2021a) including Preparing a modification report – Appendix F to the SSI Guidelines (DPIE, 2021b). No SEARS were issued by DPIE for the proposed modification.

The structure of the modification report is outlined in Table 1-1 below. This modification report includes a description of the proposed modification (Chapter 4) and an updated project description (Appendix A).

Table 1-1: Structure of this report

Chapter	Description
Chapter 1	**Introduction and background (this chapter)** Provides a broad overview of the approved project and the proposed modification.
Chapter 2	**Approval framework** Provides an overview of the statutory context including for the proposed modifications in the approval process.
Chapter 3	**Strategic context and need** Provides an updated strategic context and need for the proposed modification.
Chapter 4	**Modification options** Describes the alternatives and options considered and identifies the preferred modification option.
Chapter 5	**Description of proposed modification** Provides a detailed description of the proposed modification made to the approved project.
Chapter 6	**Stakeholder and community engagement** Provides an overview of the stakeholder engagement process that has been carried out for the proposed modification.

Chapter	Description
Chapter 7	**Assessment of impacts** Outlines the assessment of potential impacts associated with the proposed modification.
Chapter 8	**Sustainability outcomes** Outlines the sustainability outcomes of the project and how they have been considered in this proposed modification.
Chapter 9	**Justification and conclusion** Provides a justification for the proposed modification including in relation to the principles of ecologically sustainable development.
Chapter 10	**References**
Appendix A	**Updated project description** Provides an updated project description that incorporates the proposed modifications. Includes a table that compares the modified project to the approved project.
Appendix B	**Modification Option analysis**
Appendix C	**Updated environmental management measures**
Appendix D	**Updated statutory compliance table**
Appendix E	**Supporting information** Includes detailed specialist reports, including: • Appendix E.1 – Traffic Impact Assessment • Appendix E.2 – Noise Impact Assessment

2 Approval Framework

2.1 Modification of the Minister's approval

Transport for NSW proposes to modify the Minister's approval for the Western Harbour Tunnel and Warringah Freeway Upgrade project in accordance with section 5.25 of the EP&A Act. The Minister's approval is not required if the project as modified would be consistent with the approved project. The proposed modification is not consistent with the approval but does not constitute a project in its own right. Therefore a modification of the approval is requested.

On 15th July 2022 Transport for NSW applied to DPE to modify the project. Secretary's environmental assessment requirements (SEARs) have not been issued for the proposed modification, however, feedback from a preliminary DPE review has been considered in this modification report.

This modification report is prepared in accordance with section 180 of the EP&A Regulation, including to have regard to DPE's State Significant Infrastructure and State Significant Project Guidelines (DPIE, 2021a) including Preparing a modification report – Appendix F to the SSI Guidelines (DPIE, 2021b).

2.2 Minister's Order for CSSI

On 9 November 2020 the then Minister for Planning and Public Spaces declared the project to be critical State significant infrastructure (CSSI) under section 5.13 of the EP&A Act.

The proposed modification is considered to be ancillary development (and therefore consistent with Schedule 5 Section 22(1)(f) of the former *State Environmental Planning Policy (State and Regional Development) 2011* (now Schedule 5 Section 22(1)(f) of the *State Environmental Planning Policy (Planning Systems) 2021*). However, the site is not located on land within a suburb listed in Schedule 5 Section 22(2) and is therefore not consistent with the Minister's Order. The Minister for Planning will be requested to amend the Order for the proposed modification to proceed.

2.3 Environmental planning instruments

Section 5.22(2) of the EP&A Act excludes the application of environmental planning instruments to SSI projects except as those instruments apply to the declaration of SSI or CSSI. Section 2.1 of the environmental impact statement provides an overview of the assessment and approval framework relevant to the project. A review of environmental planning instruments has confirmed that there is no change to the statutory context identified in Chapter 2 (Assessment process) of the environmental impact statement.

The proposed modification (as per section 5.25 of the EP&A Act) remains subject to the same assessment and approval process as the project under Division 5.2 of the EP&A Act.

2.4 Other NSW legislation

Section 2.1.1 and 2.2.1 of the environmental impact statement provides an overview of NSW legislation relevant to the project.

Section 2.1.1 of the environmental impact statement discussed the EP&A Act and the relevance of various State Environmental Planning Policies (SEPPs). As discussed in Appendix D of this modification report, since exhibition of the environmental impact assessment and submissions report, there have been legislation updated including the introduction of the EP&A Reg, consolidation of some SEPPs and the introduction of the *State Environmental Planning Policy (Transport and Infrastructure) 2021* (Transport and Infrastructure

SEPP). The relevance of these changes to the proposed modification is simply updates to references to the relevant sections in the new legislation. These reference updates have been made in this modification report where appropriate.

A review of Section 2.2.1 of the environmental impact statement confirmed that the discussion of NSW legislation relevant to the project remains valid for this proposed modification and as such it is not repeated here. This includes the need for an Environmental Protection Licence (EPL) under Chapter 3 of the *Protection of the Environment Operations Act 1997* (POEO Act).

The construction of the Warringah Freeway Upgrade is considered a scheduled activity (road construction) as per Schedule 1 of the POEO Act. 'Road construction' refers to the following:

- The construction of roads (including the widening or rerouting of existing roads) and any related tunnels, earthworks and cuttings
- Any extraction of materials necessary for that construction
- Any on site processing (including crushing, grinding or separating) of any extracted materials or other materials used in that construction.

An EPL has been issued for the Warringah Freeway Upgrade (EPL 21619). As the proposed construction support site would form part of the Warringah Freeway Upgrade construction footprint, upon receiving approval for this modification, an application would be submitted to the Environment Protection Authority (EPA) for a variation to EPL 21619 to include the proposed construction support site to the premises within which EPL 21619 applies.

The proposed modification does not trigger any additional approvals or licences.

2.5 Commonwealth legislation

Section 2.2.2 of the environmental impact statement provides an overview of Commonwealth legislation that is relevant to the project. In particular, it considered the requirements of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The EPBC Act applies to activities that have the potential to impact a matter of national environmental significance, one of which being national heritage places. A review of Section 2.2.2 of the environmental impact statement confirmed that the discussion of NSW legislation relevant to the project remains valid for this proposed modification and as such it is not repeated here. The proposed modification does not trigger any Commonwealth legislation.

2.6 Overview of the approval process

The assessment and approval process for project modifications under Division 5.2 of the *Environmental Planning and Assessment Act 1979* is shown in .

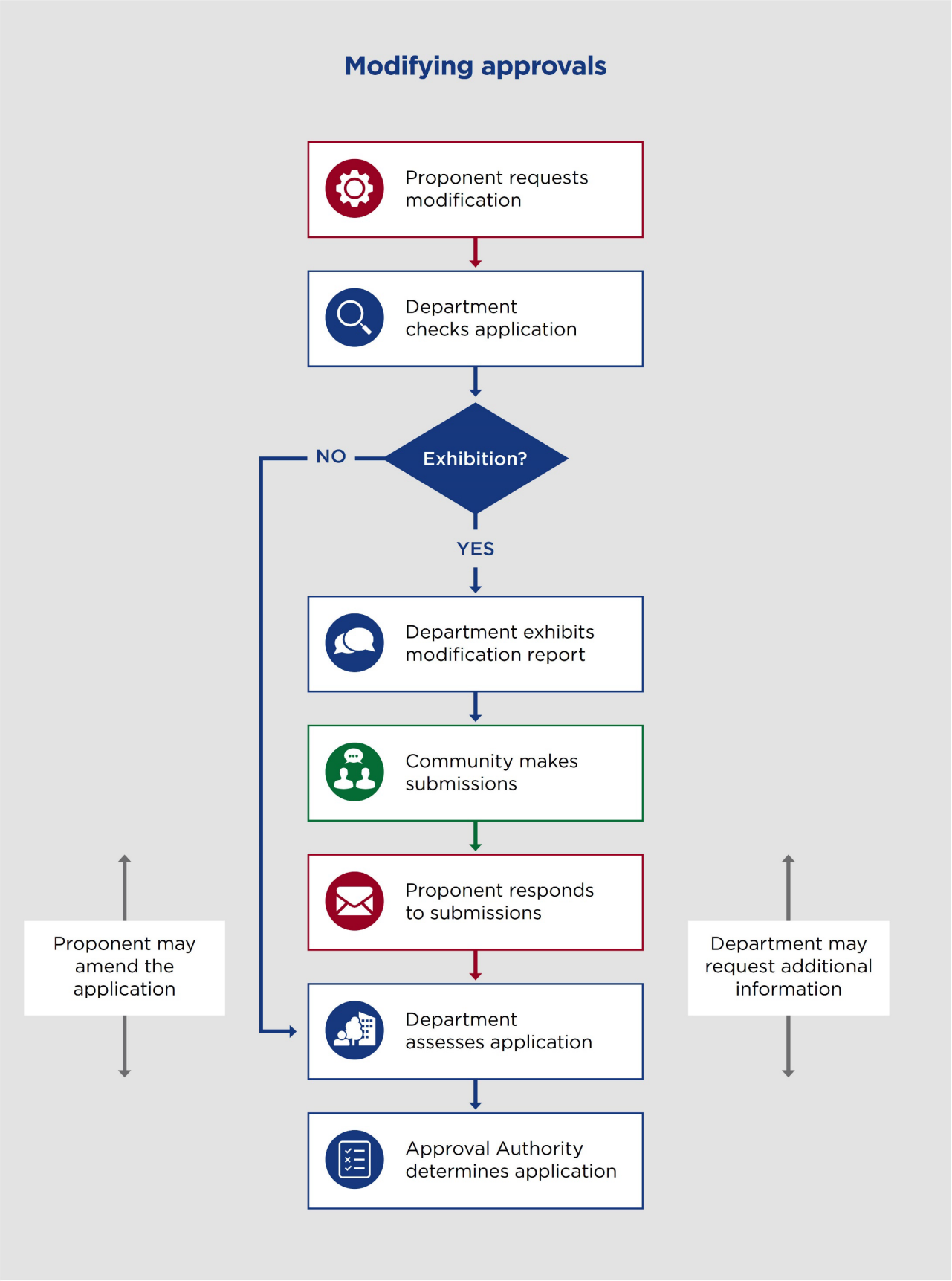


Figure 2-1: Approvals process flowchart

(Source: NSW Government Department of Planning, Industry and Environment (2021), *State Infrastructure Guidelines*)

3 Strategic context and need

3.1 Strategic context for the approved project

Chapter 3 of the environmental impact statement and Section A1.3 of the submissions report describes the strategic context and need for the approved project. A summary of this is provided below.

The Greater Sydney Region Plan – A Metropolis of Three Cities (Greater Sydney Commission, 2018) proposes a vision of three cities where most residents have convenient and easy access to jobs, education and health facilities and services. In addition to this plan, and to accommodate for Sydney's future growth, the NSW Government is implementing its Future Transport Strategy 2056 (NSW Government, 2018), a plan that sets the 40 year vision, directions and outcomes framework for customer mobility in NSW. The Western Harbour Tunnel and Beaches Link program of works is proposed to provide additional road network capacity across Sydney Harbour and to improve transport connectivity with Sydney's Northern Beaches.

The motorway crossings of Sydney Harbour, including the Sydney Harbour Bridge, Sydney Harbour Tunnel and ANZAC Bridge, are critical links in Sydney's motorway and arterial road network. In addition to the large number of customers who rely on these corridors, the high demand and limited capacity on the Sydney Harbour crossings result in delays and unreliable journey times for a significant number of customers who directly rely on these corridors. Furthermore, the limited number of alternate routes for crossing Sydney Harbour makes these corridors critical to the performance of the broader motorway and arterial road network.

Further to the large traffic volumes and limited alternative routes, a major contributor to congestion around the Harbour CBD is that many of the most critical road corridors – including Sydney Harbour Bridge, the Sydney Harbour Tunnel, ANZAC Bridge, the Western Distributor, and the Warringah Freeway – perform both bypass and access functions. The dual function of these corridors is reflected in the high proportion of vehicles that use them to travel to destinations other than the Sydney CBD. These conflicting functions, combined with high traffic volumes, result in congestion and poor network performance experienced by freight, public transport and private vehicle users.

The Sydney Harbour Bridge, Warringah Freeway and Eastern Distributor have been identified as three of Australia's 30 most congested road corridors, generating a congestion cost of $65,000 per day in 2016 (Infrastructure Australia, 2019). These corridors are integral to the economic growth of Sydney's Eastern Economic Corridor. As Sydney's population and economy continues to grow, so will the pressure on access to this corridor. Consequently, improvements to existing transport networks and creation of new transport connections will be essential for Sydney to continue to be a competitive economy.

The project is identified as a *priority initiative* by Infrastructure Australia's *Australian Infrastructure Plan*: *The Infrastructure Priority List* in recognition of its importance in addressing urban congestion on Sydney's road network and to provide cross-harbour connectivity.

The project will provide additional capacity, reducing congestion and improving road network performance and efficiency, enabling sustained growth and productivity across Sydney's Eastern Economic Corridor. The project will also enhance the resilience of the road network across the Eastern Harbour City and will improve liveability and amenity for local communities that would benefit from reduced through traffic and improved connectivity.

The Warringah Freeway Upgrade component of the project will connect the new tunnel with the existing road corridor and streamline traffic movements to optimise the future use of the three harbour crossings.

This new western bypass of the Sydney CBD will serve through journeys between the south and west of Sydney, including the international gateways of Sydney Airport and Port Botany, and strategic centres north of the harbour including North Sydney, St Leonards, Chatswood and Macquarie Park.

The increase in harbour crossing capacity and efficiency delivered by the project will also remove a major bottleneck that constrains the road transport capacity of areas north of the harbour, including the Northern Beaches area. This enables future connections, such as the Beaches Link and Gore Hill Freeway Connection project, which will deliver significant benefits for public transport, freight and other road users over an increased catchment.

The major transport benefits of the project include:

- A third harbour crossing to reduce congestion on the Sydney Harbour Bridge, Sydney Harbour Tunnel and ANZAC Bridge – leading to faster and more reliable journeys to, from and around the Harbour CBD
- Contribute to an integrated multi-modal transport network by enabling direct bus access to North Sydney and an efficient transfer to the new Sydney Metro
- Return local streets to communities by moving traffic underground, freeing up local streets for local traffic, and supporting the sustainability of local town centres
- Make journeys on the Warringah Freeway easier and safer by improving lane configuration and providing clear directions on the best way to cross the harbour and reach your destination
- Enable local businesses to have better and more efficient access to Greater Sydney, making it easier to move goods and provide services, as well as bringing employees and businesses closer together
- Opportunities to enhance the local community by improving shared user connections and providing new public open space.

3.2 Review of strategic context for the proposed modification

Transport for NSW is seeking approval to modify the approved Western Harbour Tunnel and Warringah Freeway Upgrade project. The proposed modification does not represent a change in the strategic context or need of the project and therefore remains consistent with the strategic context of the project as approved.

3.3 Need for the modification

Construction design and planning has progressed since the development of the environmental impact statement and a review of the concept design for the approved project has occurred. As a result, Transport for NSW proposes to further optimise construction site arrangements assessed in the environmental impact statement to reduce environmental and community impacts.

Under the approved project the Warringah Freeway Upgrade would utilise 10 construction support sites, as identified in the environmental impact statement, in which spoil generated by the Warringah Freeway Upgrade would be stockpiled, separated and tested prior to its reuse or disposal.

The Warringah Freeway is the busiest section of road in NSW, with congestion and delays during both the AM and PM peak periods. To minimise impacts associated with the increase in heavy vehicles during construction, the scheduling of haulage and deliveries outside of peak periods was proposed.

Due to the nature of the work staging, it is not possible to test all areas of spoil generation prior to excavation. To this end, a spoil staging area will be required to stockpile, segregate and test material prior to re-use or disposal off site. This staging area will also be critical to receive spoil that is generated outside

approved construction hours as the majority of identified spoil receival facilities do not operate outside approved construction hours.

Furthermore, the environmental impact statement identified the potential for on-street parking to be utilised once capacity is reached at the approved construction support sites, resulting in impacts to the surrounding road network and nearby community. The provision of up to 250 parking spaces at WFU10 would increase the off-street parking capacity available for the project construction workforce thereby reducing the impacts on the surrounding Warringah Freeway road network and nearby community during construction.

The need for WFU10 has been identified due to the following:

- Increases to the off-street parking capacity available for the project construction workforce thereby reducing the impacts on the surrounding road network and nearby community adjacent to the project boundary during construction.
- Provides an opportunity to minimise the predicted construction noise impacts as a result of work outside approved construction hours by facilitating the redistribution of heavy vehicles and offsite spoil management activities
- Due to the existing use of the site as a construction waste management facility, the modification would require minimal site establishment and would not result in a substantial change in land use, thereby minimising impacts to nearby receivers during operation of the site
- The location of the site would mean that heavy vehicle haulage would predominantly occur along major arterial roads minimising traffic impacts on local roads within the vicinity of the site and the nearby community adjacent to the project boundary.

4 Modification options

4.1 Design refinement

Since approval was granted for the project, CPB Downer Joint Venture has been appointed to construct the Warringah Freeway Upgrade on behalf of the proponent, Transport for NSW. Design development and construction planning has progressed since the assessment contained in the environmental impact statement. The proponent has further optimised the construction support site arrangements assessed in the environmental impact statement to reduce environmental and community impacts. However, the proposed change cannot be accommodated within the existing project approval. As such, Transport for NSW is proposing to modify the project approval.

4.2 Options considered

A comparison of the proposed modification compared to the approved project (i.e. the approved project construction support site arrangements) is provided in detail in Table 4-1 and Appendix B. Appendix B provides a weighted analysis between and describes in detail the economic, environmental, social and safety considerations affecting each.

The preferred option is to undertake the proposed modification, being referred to as Option 2 below, as it provides an opportunity to improve environmental outcomes for communities adjacent the approved construction support sites with minimal impacts to communities located near WFU10. A full description of the proposed modification is provided in Chapter 5 (Description of proposed modification).

An alternative site, the CSIRO Delhi Road site located at Macquarie Park around 11 kilometres from the Warringah Freeway Upgrade construction works was also considered for WFU 10 as it would have satisfied parking and office requirements for the proposed construction support site. However, whilst some vacant land was available, it was of an inadequate size to support the scale of the proposed operations. The ability to obtain planning approval for the proposed activities was also considered to be unlikely due to sensitivity of the surrounding land uses; the site is within B3 Commercial Core and B7 Business Park zoning. On the other side of Delhi Road, to the north of the site, is the Macquarie Park Cemetery and Crematorium and to the north and east is Lane Cove National Park.

There are many benefits associated with the preferred Option 2 compared to other potential locations. The site is:

- Located geographically close to the Warringah Freeway Upgrade project
- The only area identified within close proximity to the Warringah Freeway Upgrade construction works that is sufficiently large enough to support the required material processing activities
- Currently used for similar purposes by Council under an existing EPL
- Close to Epping Road and the M2 Motorway, has parking capability for up to 200 vehicles and thereby supports the bussing strategy proposed for the Warringah Freeway Upgrade project.

Table 4-1: Identification of the preferred option

Option	Discussion	Preferred option
Option 1 – No changes to the approved project	• Construction and operation of 10 construction support sites • Processing would be restricted to standard working hours only. The construction support sites would have limited capacity to handle and process the required material during approved construction hours. • Section 10.6 of the environmental impact statement identified that there are a number of sensitive receivers within close proximity to several of the approved construction support sites. • Receivers located near to the approved construction support sites would experience noise levels above the noise management levels without the implementation of noise mitigation measures. • The use of approved construction support sites would result in workers utilising public car parking spaces that may already be limited by temporary construction works packages.	No
Option 2 – Additional construction support site, WFU10	• The additional construction support site (WFU10) would be used as a materials stockpiling, segregation and testing location, a car parking area for construction personnel and a precast concrete facility to support the construction of the Warringah Freeway Upgrade. • The existing use of the site as a construction waste management facility would be considered consistent with the proposed land use • Minimal site establishment required and the proposed use would not result in any notable change in land user thereby decreasing impacts to nearby receivers. • WFU10 includes the provision of up to 250 carparking spaces to be utilised by Warringah Freeway Upgrade construction personnel, which would improves outcomes for communities located adjacent the Warringah Freeway Upgrade construction site. • Modelling (Section 7.2) indicates the vehicles movements would have a negligible impact on the surrounding road network. • Section 10.6 of the environmental impact statement identified that there are a number of sensitive receivers within proximity to several WFU construction support sites likely to receive noise levels above the noise management levels. There would be no exceedances of relevant noise criteria resulting from the establishment and use of WFU10 (refer to Section 7.3). • No Threatened Ecological Communities or Plant Community Types would be directly impacted meaning that impacts to biodiversity would be minimal.	Yes

Option	Discussion	Preferred option
	• There are no heritage items (Aboriginal or non-Aboriginal) located within the site and impacts to nearby heritage items would be negligible.	

5 Description of proposed modification

This chapter describes the proposed modification in detail. A comparison of the proposed modification to the approved project is included in Table 5-4. A description of the approved project as modified by the proposed modification (the updated project description) is included in Appendix A.

5.1 Overview of the proposed modification

Transport for NSW is proposing a modification to the approved project to include an additional construction support site at 160 Wicks Road, Macquarie Park NSW (WFU10). WFU10 would be used as a materials stockpiling, segregation and testing location, a car parking area for construction personnel and a precast concrete facility to support the construction of the Warringah Freeway Upgrade. WFU10 is adjacent to the M2 Motorway, with site access via Wicks Road, and would comprise:

- Materials stockpiling, segregation and testing
- Material crushing and screening
- A construction personnel parking area, providing up to 250 spaces
- A precast concrete facility to manufacture concrete zipper barriers
- A truck marshalling area
- A new access road from Wicks Road onto the site, including a weighbridge and security gate
- Water quality management controls
- Office area including:
  - Logistics office
  - Lunchroom
  - Toilet facilities
- A dome shelter for plant inspections and minor maintenance
- Noise barriers comprising 40-foot shipping containers (stacked two high, about 5.2 metres) along the southern boundary and north-eastern of the site.

An overview of WFU10 is shown in Figure 5-1.

Figure 5-1: Indicative layout of the proposed Wicks Road construction support site (WFU10)

5.2 Details of the proposed modification

5.2.1 The site

Transport for NSW is proposing a modification to the approved project to include an additional construction support site at 160 Wicks Road, Macquarie Park NSW (WFU10). The site is about 2.3 hectares and is identified as Lots 1-3, DP1078026, Lots 14-15, DP841065, and Lot 2, DP527058. The property is zoned as IN2 light Industrial in the Ryde Local Government Area.

The site is currently owned and operated by City of Ryde Council (Council) as a construction waste management facility. The Porters Creek Depot Environmental Construction Materials Recycling Facility (Porters ECoMRF) is Council's construction waste recycling facility, receiving and recycling concrete and asphalt waste. Porters ECoMRF was established as a municipal waste landfill in the late 1960s. After the redirection of domestic wastes to the Cleanaway (formerly SUEZ) Waste Transfer Station circa 1985, the site received inert wastes, principally excavated natural material (ENM), for the purpose of capping and to achieve desired levels.

The landfill was developed on top of Porters Creek, a tributary which was diverted under the site with concrete culverts prior to filling, which then flows into the Lane Cove River. Since finalisation of capping, the site has been used as a resource recovery facility, principally recycling waste concrete and waste asphalt pavement for beneficial re-use.

A Cleanaway recycling centre is located immediately to the east. Beyond the Cleanaway recycling centre is the Lane Cove National Park which continues further northeast and is valued as both an area of high conservation and recreational value.

Immediately to the west of the site is the M2 Motorway followed by a commercial area containing businesses including Epson Australia, Aegros Group, Tyres Central, Australia Post and a hospitality venue known as The Governor Hotel. Across Wicks Road to the south of the site is the locally significant heritage site, the Macquarie Park Cemetery and Crematorium.

The sites closest residential receivers are located within the Lachlans Line development southwest of the site, across the M2 Motorway. The Lachlans Line development is a high-density residential development around 220 metres away. Stage one of the development is complete comprising of four high rise residential buildings. It is predicted that stages two and three will include additional high-rise buildings will be completed by 2030. The next closest receivers are located in a low-density residential area about 650 metres northeast of the site on the other side of the Lane Cove National Park in Killara.

5.2.2 Materials stockpiling and segregation

The use of WFU10 would involve storage, stockpiling, segregation, processing (crushing and screening) and geotechnical testing of spoil generated by the Warringah Freeway Upgrade. Material would be transported from the Warringah Freeway Upgrade construction site for segregation and testing before being transported offsite for reuse or disposal as required. As discussed in Section 6.8.4 and Section 24 of the environmental impact statement, re-use of materials would be preferred wherever possible.

WFU10 would be capable of holding 50,000 tonnes of material at any one time, in stockpiles with a maximum height of 10 metres. In accordance with the Warringah Freeway Upgrade Environment Protection Licence (EPL) 21619 (as discussed in Section 2.4), materials permitted at WFU10 would include any spoil waste generated by earthworks activities required for construction of the Warringah Freeway Upgrade that that is subject to a Resource Recovery Order and / or Exemption under the *Protection of the Environment Operations (Waste) Regulation 2014*.

5.2.3 Construction personnel parking and shuttle

WFU10 includes provision of up to 250 carparking spaces to be utilised by Warringah Freeway Upgrade construction personnel. The car park covers about 6,500 square metres and would be surfaced with bitumen. The south-western boundary of the parking area includes provision of a noise attenuation barrier comprising a double height container wall approximately 100 metres in length.

Construction personnel would be transported from WFU10 to the Warringah Freeway Upgrade construction sites via shuttle bus. About 580 one-way light vehicle movements each day would be made, as well as 28 bus movements (42-person capacity) to and from the Warringah Freeway Upgrade construction site.

The shuttle bus would travel east via Epping Road and the M2, stopping at the North Sydney train station on Blue Street before accessing the construction support sites via Blue Street and High Street. Shuttle buses would be provided around every 10 minutes prior to and following a shift. Anticipated bus movement volumes required to transport personnel to and from the Warringah Freeway Upgrade construction site is provided below in Table 5-1.

Table 5-1: Anticipated bus numbers

Time	5am – 7am	5pm – 7pm
Buses	14	14

5.2.4 Haulage routes and vehicle volumes

WFU10 is located about six kilometres north-west of the Warringah Freeway Upgrade. To travel from the Warringah Freeway Upgrade construction site to WFU10, all vehicles would travel north-west via the M1 and M2 Motorways before exiting onto Epping Road and turning right onto Wicks Road, as shown in Figure 5-2.

Anticipated vehicle movement volumes to and from WFU10 are provided in . The delivery of excavated material to WFU10 outside approved construction hours would generate up to eight two-way heavy vehicle movements per hour.

Table 5-2: Anticipated daily (24-hour) total vehicle movement volumes to and from WFU10

Daily heavy vehicle movements	Daily light vehicle movements	Vehicle movements during AM peak hour (6am to 10am)		Daytime vehicle movements (10am to 3pm)		Vehicle movements during PM peak hours (3pm to 7pm)		Night-time vehicle movements (7pm to 6am)	
		Heavy vehicles	Light vehicles	Heavy vehicles	Light vehicles	Heavy vehicles	Light vehicles	Heavy vehicles	Light vehicles
176	580	34	150	22	50	28	240	90	140

Note: Light vehicle movements provided are one-way movements as the vast majority of light vehicles accessing the site will arrive and then park for most of the day. Heavy vehicle movements provided are two-way movements as trucks are expected to arrive and leave within the same one-hour window. Heavy vehicles include truck & dog/semi-trailers, low loaders, buses (42-person capacity), concrete agitators and delivery trucks.

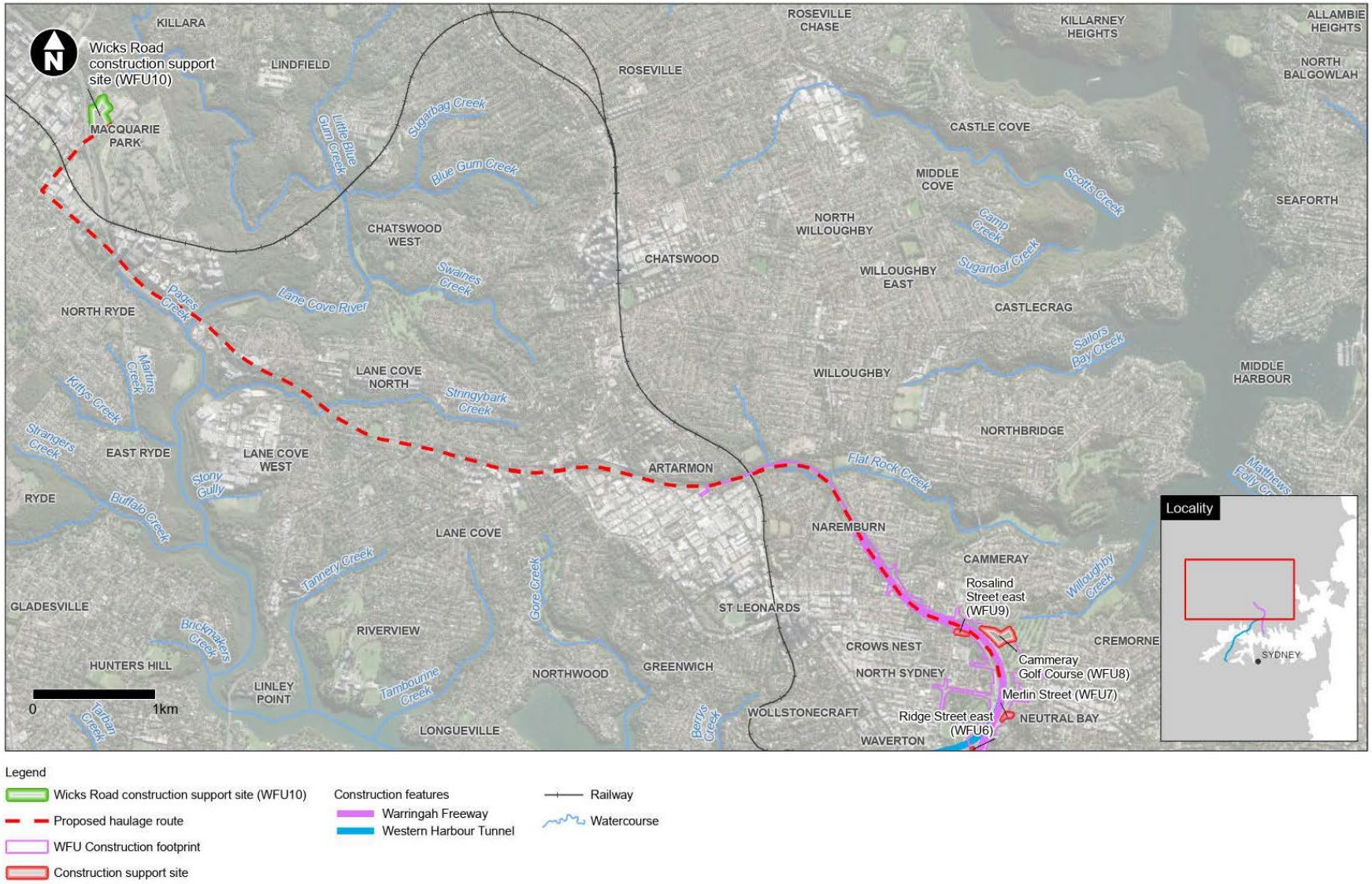


Figure 5-2: Proposed haulage route

5.2.5 Precast concrete facility

WFU10 would include a precast concrete facility to manufacture concrete zipper barriers to be used on the Warringah Freeway as traffic and safety controls to change the layout of traffic flow within the construction site safely and efficiently.

The precast facility would be about 3,400 square metres in the western portion of the construction support site. Pre-mixed concrete would be delivered to site by concrete agitator trucks and then moulded onsite. The zipper barriers would be stored in the north-western corner of the site prior to being transported to the Warringah Freeway Upgrade construction site.

No utility connections would be required to facilitate the operation of the precast facility. The precast operations require minimal external utilities to power them. Small sized compaction equipment or generators would be used for power when required. Water would be provided to the area via tankers or carried within agitator trucks.

Runoff generated by the precast facility would be managed in accordance with an Erosion and Sediment Control Plan (ESCP) prepared for the site (refer Section 5.2.7). The project Soil and Water Management Plan and Spill Management Procedure would be implemented during the operation of the precast facility to manage any accidental spills or runoff.

5.2.6 Concrete agitator washout and vacuum truck waste disposal area

A dedicated area for concrete agitator washout would be located adjacent to the pre-cast area. The washout area would be located away from drainage lines and stormwater drains and would contain water within the designated impervious bund.

The bunded area would also contain enclosed above ground detention tank/s for vacuum trucks to dispose of their waste. Waste material would be tipped into the tank/s, where the solids would settle and water would then be used on site for dust suppression, as required. The settled solids would then be disposed onto the stockpiles on site.

5.2.7 Water quality management

Water quality management controls would be dictated by an ESCP, developed prior to the commencement of site establishment to determine the appropriate erosion and sediment controls and water quality management.

An erosion hazard assessment was carried out for the site based on the methodology laid out in *Managing Urban Stormwater: Soils and Construction, Volume 1 4th Edition* (the Blue Book) (Landcom, 2004) methodology. As the permeable area of the site – the materials sorting area (1.13 hectares) – is below the threshold level of 1.35 hectares, a sediment basin would not be required.

The materials sorting area would be completely bunded, with a collection/pump point at the low corner/s of the area. Water that accumulates at the low point/s would be pumped into baffle tanks (or similar) to manage sediment runoff on site. Sediment-laden water would be flocculated, and water would be discharged to Porters Creek provided it meets the required water quality targets or removed and disposed of appropriately off site should the water quality targets not be met.

The current monthly monitoring upstream of Porters Creek, as specified in the Porters ECoMRF Environmental Management Plan as a requirement of the existing EPL, would continue.

5.2.8 Site access

WFU10 would be accessed via Wicks Road. An asphalt access road would be constructed adjacent to the existing Council access and would include a security gatehouse and weighbridge. A rumble grid would also

be installed at the proposed access road to minimise mud tracking onto local roads. The construction of the access road may require the lowering of an existing water main (to be confirmed during design development).

Subject to further refinement of the layout and constructability of WFU10, the existing Council access and weighbridge may be utilised if the proposed access road is not constructed. An electronic tracking system would be implemented to differentiate between Council and Warringah Freeway Upgrade deliveries. This option would be subject to further consultation and agreement with Council.

5.2.9 Other facilities and activities

Truck marshalling area

A bitumen sealed truck marshalling area of about 3,700 square metres would be included at WFU10 to assist in management of heavy vehicles entering and moving around the site.

Office area

Adjacent to the truck marshalling area, along the western edge of the site, would be an office area, including two demountable buildings (one logistics office and one lunchroom) and two toilet facility buildings. Potable water would be supplied by water tankers to tanks that service each of these buildings. Wastewater would be collected in storage tanks at each building and removed by a wastewater pump truck/tanker as required for offsite disposal to a licenced facility.

Dome shelter

A dome shelter would be located near the office area that would be used for plant inspections and minor maintenance. This area would not be used as a workshop area or for any major maintenance. Small amounts of hydrocarbons (e.g. oil, hydraulic fluid) may be periodically stored onsite in this area. No fuel would be stored on site, this would be supplied by mini-tankers as required.

Fencing

WFU10 would be securely fenced using chain link fencing. This fencing would delineate WFU10 from Council's site.

Lighting

Portable lighting plant would be used during nightworks and would be re-positioned to the location where trucks are tipping spoil on the particular nightshift.

Vegetation clearing

Vegetation would be removed during site establishment of WFU10. Vegetation to be cleared consists of mainly exotic species and one *Eucalyptus sp*.. No threatened species or ecological communities would be impacted. Vegetation clearing is discussed further in Section 7.7.

5.2.10 Interaction with Council's site operations

Council would temporarily cease operations on part of the existing Porters ECoMRF site which would then be utilised by Transport for NSW for the duration of construction in accordance with the terms of the lease agreement as well as any Warringah Freeway Upgrade conditions of approval and the EPL. Prior to commencing site establishment activities, Council would obtain a variation to existing EPL 13044, under which the site currently operates, to amend the boundary to which the EPL applies to exclude Transport for NSW's operating area. The Warringah Freeway Upgrade EPL (EPL 21619) (as discussed in Section 2.4) would be varied to include the area of operation at the site.

The construction support site would be delineated by fencing (Section 5.2.9). Other than the potential use of the Council access road (Section 5.2.8), the operation of WFU10 would be kept separate from Council's operations.

5.3 Changes to construction methodology

5.3.1 Site establishment

Site establishment for WFU10 would involve the following activities:

- Delineation of site boundary (fencing described in Section 5.2.9)
- Vegetation clearing
- Installation of site environmental controls (including erosion and sediment controls and container wall for noise attenuation)
- Reprofiling of the surface to level the construction support site in preparation for site work and installation of site facilities. No excavation below existing surface level would be required. Some small stockpiles in the southern part of the site would be spread out and levelled to provide a flat area for the carparking / maintenance area
- Access road, parking area and truck marshalling area surfacing
- Installation of dome shelter, temporary office / lunchroom buildings and placement of toilet facilities.

5.3.2 Plant and equipment

The additional plant and equipment that would be used at WFU10 may include:

- Excavator
- Front-end loaders
- Tandem tippers
- Light vehicles
- Heavy vehicles
- Hand power tools
- Water cart
- Fencing
- Portable buildings and toilet facilities
- Hydro excavation trucks / non-destructive digging
- Crushing and screening plant
- Concrete agitator trucks
- Generators
- Light towers

5.3.3 Construction workforce

There would be no increase in the construction workforce of the approved project as a result of WFU10. The operation of the Wicks Road construction support site would require about 30 onsite personnel. It should be noted that these personnel numbers are not additional to the number approved in the environmental impact statement as the construction workforce would be redistributed to account for the operation of the Wicks Road construction support site.

5.3.4 Construction hours

WFU10 would be established in quarter three (Q3) 2022 and would be operational until the completion of the Warringah Freeway Upgrade works.

The site would operate during the approved construction hours as well as outside approved construction hours. The approved construction hours as per condition E66 the Infrastructure Approval (SSI 8863) are:

- 7:00am to 6:00pm Mondays to Fridays, inclusive
- 8:00am to 6:00pm Saturdays
- at no time on Sundays or public holidays.

The proposed construction hours for activities that would be carried out at the WFU10 are outlined below in Table 5-3. Work outside approved construction hours would also be required for a number of activities. Works outside approved construction hours would be carried out in accordance with EPL 21619 which would be varied to account for the modification as outlined in Section 2.4.

Table 5-3: Activities to occur during and outside approved construction hours

Proposed activity	Approved construction hours	Work outside approved construction hours
Spoil management / stockpiling / segregation	X	X
Material deliveries / storage	X	X
Logistics / staging for spoil haulage	X	X
Parking	X	X
Precasting	X	
Crushing and screening	X	
Vacuum truck and site water treatment pond	X	X

5.3.5 Site demobilisation and reinstatement

Demobilisation would involve removal of all temporary construction materials, plant and equipment installed. The site would be reinstated and returned to Council in accordance with the terms and conditions of the lease agreement and associated REMMs. Transport for NSW is not responsible for any pre-existing contamination, known or unknown, and would remove all of its improvements (at Council's options) and make good the site at the end of the lease.

5.4 Comparison against the approved project description

A comparison of the proposed modification to the approved project description is provided in Table 5-4.

Table 5-4: Summary comparison of proposed modification against approved project

Project element	Summary of the approved project	Summary of the proposed modification	Updated project description	Fig. ref
Temporary construction support sites				
Location	Ten sites in North Sydney and Cammeray: • Blue Street (WFU1) • High Street south (WFU2) • High Street north (WFU3) • Arthur Street east (WFU4) • Berry Street east (WFU5) • Merlin Street Reserve (WFU7) • Cammeray Golf Course (WHT10/WFU8) • Rosalind Street east (WFU9) • Northern Hub (NH1).	One additional site in Macquarie Park: • Wicks Road (WFU10).	Described in Section 5 and Appendix A of this modification report.	Figure 5-1
Construction support sites area	The 10 construction support sites have a total area of 39,968m^2.	WFU10 has an area of 23,000m^2.		
Materials sorting and storage	Spoil generated by the project would be stockpiled, separated and tested at the 10 identified sites prior to its reuse or disposal, much of which would occur outside approved construction hours.	Material would be transported to WFU10 for stockpiling, segregation and storage, minimising the predicted construction noise impacts of work outside approved construction hours.		
Parking	Parking to be consistent with Construction Parking and Access Strategy (CPAS), which includes potential use of on-street parking when ancillary facility parking is at capacity, resulting in impacts to surrounding road network and community.	Provision of up to 250 parking spaces at WFU10 and shuttle services to the construction site, thereby reducing the on-street parking use by construction personnel.		
Concrete precasting activities	Not included.	Precasting of concrete zipper barriers to be carried out at WFU10.		

6 Stakeholder and community engagement

Community and stakeholder engagement has been an integral component in the development of the Western Harbour Tunnel and Warringah Freeway Upgrade project. The engagement program has proactively informed and involved stakeholders and community members during project development. This approach aimed to increase public understanding of the project, encourage participation in the development process, and promote the benefits of the project to local communities and stakeholders. The project has benefitted from the input of local knowledge, insight, experience, goals and priorities, which has helped to identify issues, potential mitigation strategies and opportunities to improve project outcomes.

6.1 Project engagement to date

Chapter 7 (Stakeholder and community engagement) of the environmental impact statement and Part A2 of the response to submissions report describes the consultation that has been carried out for the approved project to date.

6.2 Engagement and consultation during the preparation of the proposed modification

A number of consultation activities were carried out with key stakeholders and the community and a community consultation report has been prepared for the proposed modification.

Table 6-1 provides a summary of community consultation activities undertaken during the preparation of the modification. Community consultation included the property owners located in Ryde and Ku-ring-gai LGAs which contains around 5000 residents.

Table 6-1: Summary of the community consultation activities carried out during the preparation of this modification report

Stakeholder	Timing	Details
Community	30/03/2022	Doorknock of properties in Killara, North Ryde and Macquarie Park for installation of noise loggers for noise investigation as part of the environmental assessment for the proposal.
	4/04/2022	Letterbox drop of properties surrounding noise logging locations advising that the activity was being carried out.
	25/08/2022-09/09/2022	A two-week consultation period occurred for community members to provide feedback on the proposal via feedback form or email. Residents were contacted via either email or hand delivered notification beginning on 25 August 2022.
	06/09/2022-07/09/2022	Two community consultation sessions were held allow community members to provide feedback for the proposed modification. A total of eight residents attended the consultation sessions.

During the two-week consultation period (25 August 2022 - 09 September 2022), five community members provided a feedback form for the proposal. An additional five responses were received following the community consultation sessions. Community members raised issues regarding light, traffic, noise, air

quality specifically dust, soil and water quality impacts, contamination and waste, visual impacts and construction duration. A consultation report has been prepared and a summary of the outcomes is included in Table 6-2.

Table 6-2 provides a summary of environmental feedback raised during consultation period by community members.

Table 6-2: Summary of the community feedback during consultation period for the proposed modification

Environmental Aspect	Community Feedback	Response	Section reference
Alternative sites	No alternative sites were investigated for the proposal.	An alternative site, the CSIRO Delhi Road site located at Macquarie Park around 11 kilometres from the Warringah Freeway Upgrade construction works was also considered for WFU 10 as it would have satisfied parking and office requirements for the proposed construction support site. However, whilst some vacant land was available, it was of an inadequate size to support the scale of the proposed operations. The ability to obtain planning approval for the proposed activities was also considered to be unlikely due to sensitivity of the surrounding land uses; the site is within B3 Commercial Core and B7 Business Park zoning. On the other side of Delhi Road, to the north of the site, is the Macquarie Park Cemetery and Crematorium and to the north and east is Lane Cove National Park. The benefits associated with the Wicks Road site include: • Geographical proximity to the project • Large space to support the required material processing activities • Similarly purposed by Council under an existing EPL • The existing land use is similar to what is being proposed • Close to Epping Road and the M2 Motorway with capacity for up to 200 vehicles and support the bus strategy proposed for the project.	Section 4.2
Light Impacts	Community members provided feedback regarding light impacts. Lighting operating 24 hours a day and seven days a week may impact local residents and fauna species in Lane Cove National Park. Bund walls and containers are likely to be ineffective in reducing light impacts because many properties on the north side of the Lane Cove River are within the line of sight of the proposed works.	Site lighting will be designed generally consistent with the requirements of Australian Standards and Guidelines 4282 – 2019 Control of the obtrusive effects of outdoor lighting. This will include minimising glare issues and light spillage into adjoining properties and include shrouding and be directed onto operations areas only. A portable lighting plant would be used during nightworks and would be re-positioned to the location where trucks are tipping spoil on that particular nightshift. Lighting impacts have the potential to impact upon fauna species in nearby vegetation in Lane Cove National Park. Impacts would be limited to the construction period of approximately five years (or until completion of the project) and areas near the site. Once the construction phase concludes, the area will be returned to its previous function and night works would cease in this	Section 5.2.9 Appendix C

Environmental Aspect	Community Feedback	Response	Section reference
		area. Mitigation measures as described in the EIS would be implemented, including CNV1, CNV4 and V5 to manage any potential light impacts.	
Traffic	Community members provided feedback related to proposed heavy vehicles entering and exiting WFU10 that will add to the congestion along Wicks Road and surrounding arterial roads.	As detailed in Appendix E.2, an additional traffic assessment was undertaken for the proposal. WFU10 includes a provision of up to 250 car parking spaces to be utilised by WFU construction personnel. They would be transported from the site to the Warringah Freeway Upgrade construction site via shuttle bus. It is estimated that about 580 one-way light vehicle movements, as well as 28 bus movements (42-person capacity) to and from the WFU construction site per day. SIDRA modelling was undertaken for three intersections, Intersection 1 - Wicks Road / Waterloo Road / Halifax Road, Intersection 2 - Epping Road / Wicks Road and Intersection 3 - Epping Road / Delhi Road. Intersection 1 will operate at an acceptable level of service. The modelling shows minor increases in queue length and average delays as a result of WFU10 but is considered negligible on the current road network. Intersections 2 and 3 would fail to meet the traffic performance criteria without traffic generation from WFU10; however, this result is attributed to the background traffic demand rather than the operation of WFU10. Therefore, the traffic assessment indicates that the vehicles movements associated with WFU10 would have a negligible impact on the surrounding road network and environmental management measures outlined in the EIS and RtS are considered consistent with the proposal. Additionally, traffic impacts would be managed in accordance with the Construction Traffic and Transport Management Plan (CTTMP).	Section 7.2.3 Appendix E.1
Noise	Community members provided feedback related to noise levels, plant and equipment, hours of operation, traffic noise and the proposed noise barriers. The increase of these noise activities may affect the amenity of residents located north of Lane Cove National Park and may impact fauna species.	As detailed in Appendix E.1, an additional noise assessment was undertaken for the proposal. Noise modelling was conducted at several properties in Killara during April 2022. The outcomes of the noise modelling determined that the worst-case predicted noise levels at the nearest receiver in each Noise Catchment Area are contingent with the implementation of a 5.2 metre high noise barrier at the northern and southern boundary of WFU10. Therefore, predicted noise levels will be negligible compared to the existing noise levels. Additionally, ongoing monitoring will be undertaken during the operation of WFU10 to ensure the mitigation is sufficient for the proposal.	Section 7.3.3 Appendix E.2

Environmental Aspect	Community Feedback	Response	Section reference
		Construction traffic associated with the project is predicted to increase existing road traffic noise levels by less than 0.5 dBA. Differences in noise levels of less than 2 dBA (whether an increase or a decrease) are generally considered to be imperceptible and of low significance. The proposal would be operational 24 hours a day, seven days a week; however high noise generating activities will only take place during standard construction hours Monday to Friday (7am to 6pm) and Saturday (8am to 6pm).	
Construction duration	Community members provided feedback that five years for the operation of WFU10 is an unacceptable timeframe and could lead to cumulative community fatigue.	Transport for NSW will consult with proponents of other construction works and nearby adjoining industrial operators near the WFU10 site and take reasonable steps to coordinate works to minimise cumulative noise and vibration impact and coordinate respite for affected sensitive receivers in accordance with CoA E82 and E83.	Section 7.3.4 Section 7.9.4
Air quality	Community members provided feedback related to dust migration from construction activities associated with WFU10 causing potential community and environmental impacts. Additional construction and operational activities associated with WFU10 may contribute to cumulative potential air quality impacts.	There are potential air quality impacts associated with the operation of WFU10, including the crushing and screening of materials, there would be no additional activities than what was described in the EIS that would result in significant air quality impacts. Furthermore, it should be noted that activities associated with WFU10 are largely consistent with those already carried out onsite for the operation of the Porters ECoMRF. Associated air quality impacts associated with WFU10 would likely be negligible as it would not result in a substantial change in land use. Additionally, air quality impacts will be managed in accordance with the Construction Air Quality Management Plan (CAQMP).	Section 7.5.3
Soil and Water Quality	Community members questioned whether appropriate management measures have been considered including physical bunding, run-off controls and spill response to mitigate any risks of spills and contaminated run-off from storage and processing operations including plant and equipment.	Section 7.5.3 and 7.6.3 describes potential soil and water quality impacts as a result of construction of the car park, an access road and stockpiling of excavated materials. The potential impacts are consistent with construction impacts to soil and water quality outlined in the EIS. This will be managed in accordance with the Construction Soil and Water Management Plan (CSWMP).	Section 7.5.3 Section 7.6.3
Contamination and Waste	Community members provided feedback relating to contaminated materials being transported to and from the site and if a protocol was implemented for	Ground disturbance is expected to be minimal during the construction of WFU10. It is not anticipated that contaminated material would be encountered. Should any unexpected contaminated material be discovered on site, it will be	Section 7.5.3

Environmental Aspect	Community Feedback	Response	Section reference
	managing contaminated and asbestos containing materials.	managed in accordance with the Unexpected Finds Procedure. Additionally, potential contaminated material will be managed in accordance with the Construction Contaminated Land Management Plan (CCLMP). Contaminated materials that may be encountered for the project would be segregated and would not be transported to WFU10.	
Visual impacts	Community members found it unclear whether the height of buildings within WFU10 would be visible from vantage points around Lane Cove Valley.	Table 7-43 provides a visual impact assessment of WFU10 and has assessed as having a negligible impact at all viewpoints including VP1 located on the northern side of the valley. Vegetation located within the Lane Cove National Park, along the M2 Motorway and Wicks Road would provide screening for most of the surrounding sensitive areas. Additionally, due to the existing use of the site as a resource recovery facility and current stockpiling activities, the nature and scale of the change is likely to be inconsequential as WFU10 would comprise of activities largely consistent with the existing land use.	Section 7.10.3

Stakeholder consultation was undertaken with City of Ryde Council, NSW Environment Protection Authority (EPA), State Emergency Service (SES) and DPE. Table 6-3 provides a summary of the consultation activities carried out during the preparation of this modification report.

Table 6-3: Summary of the stakeholder consultation activities carried out during the preparation of this modification report

Stakeholder	Timing	Details
City of Ryde Council	12/10/2021	Project personnel discussed proposed use of the WFU10 with Council, including approvals required and likely timeframes.
	16/12/2021	Site inspection carried out with Council staff to assess site access, utilities and other existing site conditions.
	04/03/2022	Phone call to Council Communications Manager to discuss community consultation strategy for proposal. Council requested a copy of any notifications being sent to the Council community.
EPA	8/04/2022	Presentation to EPA on proposed modification to include Wicks Road construction support site for the project.
State Emergency Service	14/09/2022	Phone call to the Deputy Unit Commander of the SES on Wicks Road, Macquarie Park. A follow up email was sent through containing the proposal notification. Additional traffic management information was requested by SES. CPB Downer Joint Venture has continued to consult with SES to ensure traffic impacts are managed appropriately on Wicks Road.
DPE	11/04/2022	Presentation to DPE on proposed modification to include Wicks Road construction support site for the project.

6.3 Ongoing consultation requirements

Transport for NSW are committed to ongoing consultation with key stakeholders throughout the project.

Subject to approval by DPE, the proposed modification is planned to be communicated with broader stakeholders (including nearby residential receivers) in accordance with communication activities determined by DPE and in line with the Community Communication Strategy for the project. The Community Communication Strategy is available on the DPE Major project website – https://www.planningportal.nsw.gov.au/major-projects/project/10451.

Transport for NSW will support the public release of the modification report by using a number of different engagement methods, carrying out a variety of communications activities and the development of communications materials. This will include:

- Written communication including notification to email subscribers including a link to the below community update
- The modification report will be uploaded to the project website and project's interactive online portal
- Direct engagement including:
  - Phone calls to key stakeholders to inform them of the modification report release

- Meetings with key stakeholder and community groups to discuss relevant issues in the modification report
- Responses to enquiries and questions via the 1800 number and project email address
- Briefings with City of Ryde Council to provide an update on the project.

Consultation on the project would continue throughout the remainder of the proposed modification assessment process and into the construction period, with a view to further minimising project impacts wherever possible. The 1800 number and email address would continue to operate, and the project website and interactive online portal would be updated as the project progresses.

Future engagement would be carried out in line with the project's Community Communication Strategy and Report, Revised Environmental Management Measures (REMMs) (refer to Appendix C of this modification report), and as required by any Conditions of Approval.

7 Assessment of impacts

7.1 Environmental scoping

A scoping assessment has been completed in Table 7-1 to identify the likely potential environmental impacts associated with the proposed modification which require further assessment, and those which are generally consistent with the environmental impact statement and do not require further assessment. The relevant environmental aspect assessed for this modification report were considered when completing this assessment.

Table 7-1: Scoping summary of the environmental assessment of the proposed modification

Environmental aspect	Scoping assessment
Construction traffic and transport	WFU10 would be located around six kilometres from the project boundary, it may result in additional impacts to the road network in Macquarie Park due to the redistribution of construction traffic. These impacts have been assessed in Section 7.2 and Appendix E.1. Impacts from WFU10 are considered to be minor and no additional mitigation measures are proposed.
Operational traffic and transport	An operational traffic and transport assessment is not required as WFU10 does not extend to the operation of the approved project.
Construction noise and vibration	Receivers not previously impacted by the approved project may be impacted by the use of WFU10. These impacts have been assessed in Section 7.3 and Appendix E.2. While there are noise impacts associated with the works, WFU10 would comply with the noise management levels at all receivers.
Operational noise and vibration	An operational noise and vibration assessment is not required as WFU10 does not extend to the operation of the approved project.
Air quality	Due to the nature of activities proposed to be undertaken at WFU10 (i.e. transport of excavated material and sorting and testing of excavated material) there is a high potential for dust release. Receivers not previously impacted by the approved project may be impacted by the use of WFU10. These impacts have been assessed in Section 7.4. Mitigation measures already outlined for the project would be adequate to manage air quality at WFU10. An operational air quality assessment is not required as WFU10 does not extend to the operation of the approved project.
Human health	No additional human health impacts are expected as a result of WFU10.
Non-Aboriginal heritage	As the site is located in an area not already assessed within the approved construction boundary, the potential for impacts to additional non-Aboriginal heritage items require assessment. These impacts have been assessed in Section 7.8. No known items of non-Aboriginal heritage significance would be impacted by WFU10.
Aboriginal heritage	As the site is located in an area not already assessed within the approved construction boundary, the potential for impacts to additional Aboriginal heritage items require assessment. These impacts have been assessed in Section 7.8. No known items of Aboriginal heritage significance would be impacted by WFU10.
Geology, soils and groundwater	As the site is located in an area not already assessed within the approved construction boundary, the potential for additional soil and contamination

Environmental aspect	Scoping assessment
	impacts would require further assessment. These impacts have been assessed in Section 7.5. While WFU10 is situated atop a historic landfill, the site has been capped, is currently subject to an EPL and environmental management plan, and contamination is not anticipated.
Hydrodynamics and water quality	With the exception of a precast concrete facility, the modification would not result in any additional construction activities not already accounted for in the environmental impact statement, and due to the location of WFU10, impacts to water quality of the receiving environment require assessment. The water quality impacts of WFU10 have been assessed in Section 7.6. Porters Creek, a tributary of the Lane Cove River, runs through the site within a pipe culvert. This is a highly disturbed waterway with high pollution concentrations and low dissolved oxygen levels. To manage potential water quality impacts, a collection/pump point would be located at the low corner/s of the material sorting area. Water that accumulates at the low point/s would be pumped into baffle tanks (or similar) to manage sediment runoff on site. Sediment-laden water would be treated, and water would be discharged to Porters Creek provided it meets the required water quality targets, , or removed and disposed of appropriately off site should the water quality targets not be met.
Flooding	No additional flooding impacts are expected as a result of WFU10.
Biodiversity	WFU10 has been extensively disturbed due to historic landfilling activities and existing operations of the Porters ECoMRF. Minimal vegetation is present on the site that may require clearing during site establishment activities. Additionally, given the sites current operates as a waste management facility, operational impacts to surrounding fauna are considered unlikely. Due to the extensively disturbed and generally cleared nature of the site, biodiversity impacts are likely to be minor. However, in the interests of maintaining a conservative approach, biodiversity impacts are further assessed in Section 7.7.
Land use and property	WFU10 would be located on land currently owned and operated by Council. As outlined in Section 5.3.5 and 5.2.10, use of WFU10 would be done so in accordance with a lease agreement with Council. Consultation has been carried out with Council as described in Section 6.2. As such, no further assessment is required.
Socio-economic	Socio-economic impacts of the proposed modification are expected to be minor. However, the community surrounding WFU10 were not previously considered in the environmental impact statement as a result of its location. An assessment of the socio-economic impacts of WFU10 is provided in Section 7.9.
Visual amenity	As the site is located in an area not already assessed within the approved construction boundary, the potential for impacts to landscape character and visual amenity were assessed in Section 7.10. As WFU10 would comprise of activities largely consistent with the existing land use, visual impacts are assessed to be negligible.
Hazards and risks	No additional hazards and risks are expected as a result of WFU10. However, as WFU10 is within 140 metres of land classified as bushfire prone land, it is considered that WFU10 has a potential bushfire hazard with a ‘possible’ likelihood of occurrence.

Environmental aspect	Scoping assessment
Resource use and waste management	WFU10 predominantly involves the handling and sorting of waste materials, further assessment of the impacts of WFU10 on waste management is provided in Section 7.11.
Sustainability	No additional sustainability impacts are expected as a result of WFU10.
Climate change risk greenhouse gas	No additional climate change risks or greenhouse gas impacts are expected as a result of WFU10.
Cumulative impacts	One existing development has been identified in the vicinity of WFU10. Lachlan's Line, part of the North Ryde Urban Activation Precinct, comprises residential apartments, parks, playgrounds and retail space. As the development is already underway, the activities have been captured as part of the existing environment conditions of this assessment. There are no other additional cumulative impacts expected as a result of WFU10.

7.2 Traffic and transport

7.2.1 Assessment methodology

This section provides an assessment of the potential traffic and transport impacts associated with WFU10. The assessment methodology for the traffic and assessment is generally consistent with the methodology presented in Chapter 8 (Construction traffic and transport) of the environmental impact statement. Arcadis has carried out an assessment of the potential traffic impacts of WFU10 and prepared a Traffic Impact Assessment (TIA) provided in Appendix E.1.

The traffic assessment has been prepared in accordance with the following relevant guidelines and policies:

- *Traffic Modelling Guidelines* (TfNSW, 2013)
- *Guide to Traffic Management Part 3: Traffic Studies and Analysis and Highway Capacity Manual* (Austroads, 2016).

Modelling scenarios

To assess the potential impacts of WFU10 on road network performance, traffic modelling for the road network peak periods using SIDRA Intersection 9.0, a computer-based modelling package which calculates intersection performance has been carried out at the key intersections between WFU10 and the Warringah Freeway Upgrade construction site.

The assessment included modelling of the following study intersections in a network:

- **Intersection 1**: Wicks Road / Waterloo Road / Halifax Road
- **Intersection 2**: Epping Road / Wicks Road
- **Intersection 3**: Epping Road / Delhi Road.

The intersection analysis was performed for the peak hours as described below in Table 7-2.

Table 7-2: Modelled peak hours

WFU10 traffic peak	Background traffic peak
6am – 7am (AM peak)	8am – 9am (AM peak)
5pm – 6pm (PM peak)	5pm – 6pm (PM peak)

These intersections were assessed for the current year 2022 and the forecasted year 2023 in the peak periods. The assessed scenarios are listed in Table 7-3.

Table 7-3: Assessed SIDRA model scenarios

Scenario	Year	Peak period	Time
Base case	2022	AM WFU10 Traffic Peak	6am – 7am
		AM Background Traffic Peak	8am – 9am
		PM WFU10 & Background Peak	5pm – 6pm
Forecasted year without development	2023	AM WFU10 Traffic Peak	6am – 7am
		AM Background Traffic Peak	8am – 9am

Scenario	Year	Peak period	Time
		PM WFU10 & Background Peak	5pm – 6pm
Forecasted year with development	2023	AM WFU10 Traffic Peak	6am – 7am
		AM Background Traffic Peak	8am – 9am
		PM WFU10 & Background Peak	5pm – 6pm

Traffic data source

Hourly traffic volume data was collected for a one-week period between Saturday 5 February and Sunday 13 February 2022 and provided by CPB Downer for the study intersections to determine the existing traffic conditions.

Traffic surveys were carried out by Arcadis on Thursday 7 and Friday 8 April 2022 to collect queue length data and observe the intersection performance and traffic split on the shared lanes at the three study intersections.

Traffic growth rate

A linear 3.89 per cent annual traffic growth rate was adopted for the assessment and subsequent analysis to project future year background traffic volumes. The traffic growth rate is based on the information obtained from Traffic Volume View for Station 52040 located on Epping Road in North Ryde. The traffic growth rates were based on data obtained from year 2018 to 2021.

Traffic distribution

To account for peak traffic directional flows, the following assumptions were made for traffic generated by the construction personnel based on the population distribution from the nearby suburbs:

- 36 per cent of traffic access from Epping Road via Wicks Road – west
- 27 per cent of traffic access from Epping Road via Delhi Road – east
- 33 per cent of traffic access from Waterloo Road – west
- 4 per cent of traffic access from Wicks Road – south.

Intersection performance criteria

According to Transport for NSW's *Traffic Modelling Guidelines 2013*, the operational performance of the intersection was evaluated by assessing the following elements:

- **Degree of Saturation (DoS)** – the ratio of demand flow to capacity, the maximum practical DoS for a signalised intersection is 0.90
- **Level of Service (LoS)** – determined by average vehicle delay, Table 7-4 summarises the LoS definitions for vehicle based on delay
- **95 per cent Back of queue distance** – value below which 95 per cent of all observed cycle queue lengths fall / five per cent of all observed queue lengths exceed. This value represents the storage length of a lane and forms part of the overall lane length.

Table 7-4: LoS criteria for intersection capacity analysis

Level of service	Average delay per vehicle in seconds (d)	Description of intersection operation
A	d < 14	Good operation
B	d < 15 to 28	Good with acceptable delays and spare capacity
C	d < 29 to 42	Satisfactory
D	d < 43 to 56	Operating near capacity
E	d < 57 to 70	At capacity, incidents will cause excessive delays at signals
F	d > 70	Unsatisfactory and requires additional capacity

The intersection traffic performance targets established for the assessment include:

- An overall intersection LoS of D or better
- A DoS of less than 0.90.

7.2.2 Existing environment

External road network

WFU10 is to the east of the M2 Motorway and is accessed via Wicks Road.

The key roads and key intersections within the external network surround WFU10 are summarised in Table 7-5, Table 7-6 and Figure 7-1.

Table 7-5: Key roads within the site network

Road link name	Number of lanes per direction	Divided (D) / Undivided (U)	Posted speed (km/h)
M2 Motorway (Toll Road)	2	D	100
Wicks Road	1	U	60
Waterloo Road	1	U	50
Halifax Street	1	U	50
Epping Road	3	D	70
Delhi Road	2	D	60

Table 7-6: Key intersections within the site network

Intersection ID	Intersections	Control
1	Wicks Road / Waterloo Road / Halifax Road	Signalised

Intersection ID	Intersections	Control
2	Epping Road / Wicks Road	Signalised
3	Epping Road / Delhi Road	Signalised

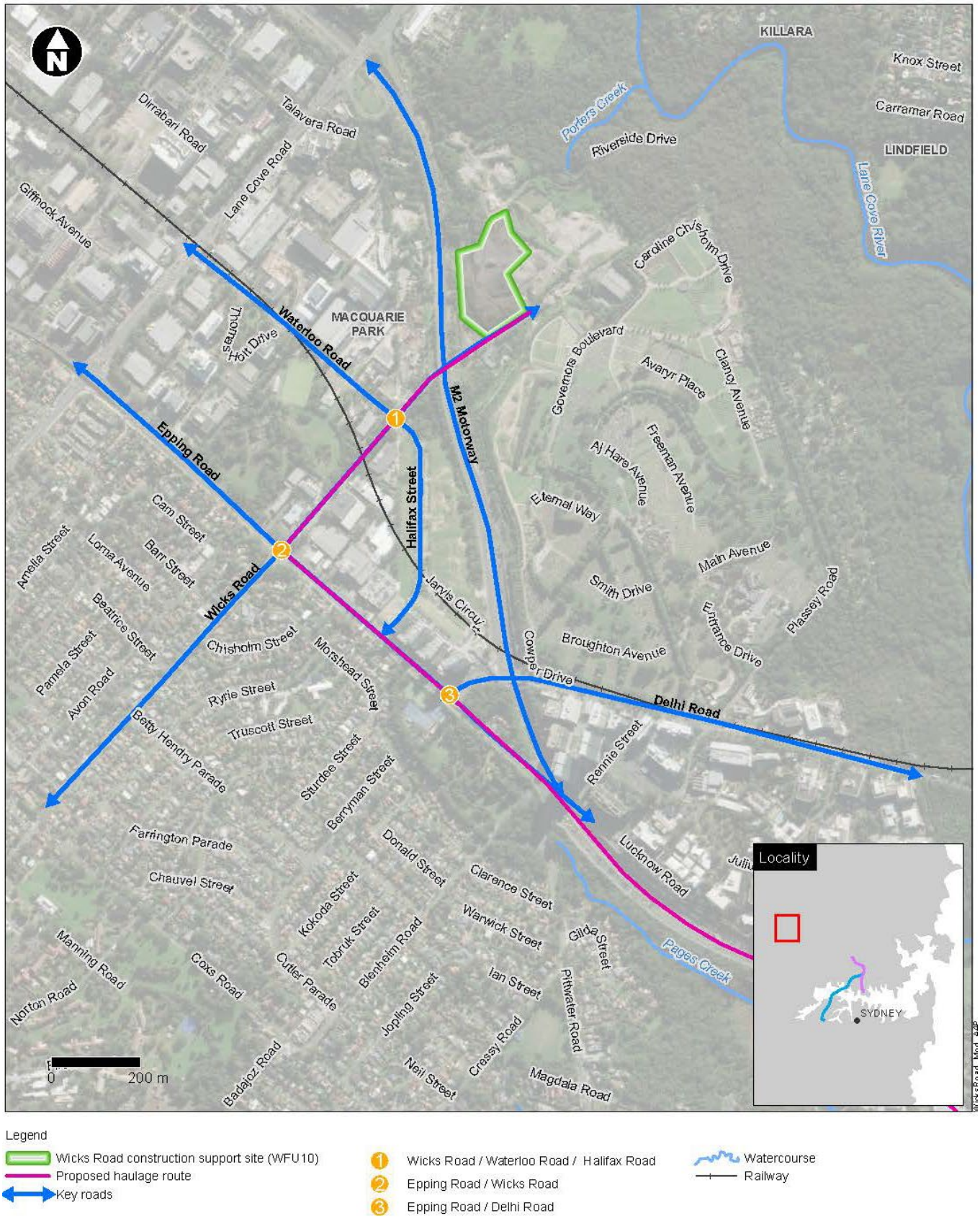


Figure 7-1: Surrounding road network

Surrounding land use

The area surrounding the site includes a mix of neighbourhood, residential, commercial, environmental recreation and special activity uses. Further details of the site and surrounding land use is provided in Section 5.2.1.

One high density residential development, the Lachlans Line development, is underway about 300 metres south of WFU10 and has been considered in this traffic and transport impact assessment. There is no other significant planned developments in close proximity of WFU10 which would have a cumulative impact on the surround road network and modes of transport.

Public transport and active transport network

The closest bus stop to WFU10 is located on Halifax Street. The bus stop is serviced by bus route 545 which connects Macquarie Park to Parramatta every 10 to 15 minutes on weekdays. The bus services provide connections to several railway stations for Sydney Trains services to destinations across Greater Sydney, such as Macquarie Park Station, Eastwood Station and Parramatta Station.

There are no cycle paths along Wicks Road in front of WFU10. No formal pedestrian footpaths are provided along Wicks Road in front of the site, which would be the main road used by construction vehicles and workforce vehicles during the use of WFU10.

7.2.3 Assessment of potential impacts

The construction traffic volumes associated with WFU10 would be within the approved project traffic volumes, as without WFU10, the storage and testing of spoil would occur at approved construction support sites associated with the Warringah Freeway Upgrade.

WFU10 includes a provision of up to 250 car parking spaces to be utilised by Warringah Freeway Upgrade construction personnel. They would be transported from the site to the Warringah Freeway Upgrade construction site via shuttle bus. It is estimated that about 580 one-way light vehicle movements, as well as 28 bus movements (42-person capacity) to and from the Warringah Freeway Upgrade construction site per day. Table 5-2 summarises the anticipated daily (24-hour) vehicle movement volumes to and from WFU10.

Forecasted vehicle movements to and from WFU10 by time of day are tabulated in Table 7-7. Estimated peak hour traffic volumes for WFU10 are provided in Table 7-8.

Table 7-7: Forecast vehicle movements to and from the proposed construction support site by time of day

Time	Light vehicles (Project Personnel)	Truck & Dog/Semi Trailer (Excavated Materials)	Low Loader (Plant Floats)	Buses (42 No capacity) (Project Personnel)	Concrete Agitators (Concrete Delivery)	Delivery Trucks (Other Materials)
1:00	4	8	0	0	0	0
2:00	4	8	0	0	0	0
3:00	4	8	0	0	0	0
4:00	4	8	0	0	0	0
5:00	100	8	2	6	0	0
6:00	120	8	0	8	0	0

Time	Light vehicles (Project Personnel)	Truck & Dog/Semi Trailer (Excavated Materials)	Low Loader (Plant Floats)	Buses (42 No capacity) (Project Personnel)	Concrete Agitators (Concrete Delivery)	Delivery Trucks (Other Materials)
7:00	10	4	2	0	0	0
8:00	10	4	0	0	0	2
9:00	10	4	0	0	0	2
10:00	10	4	0	0	0	2
11:00	10	4	0	0	0	0
12:00	10	2	0	0	2	0
13:00	10	0	0	0	2	0
14:00	10	4	0	0	2	2
15:00	10	4	0	0	0	2
16:00	10	2	0	0	0	2
17:00	150	2	0	10	0	0
18:00	70	2	0	4	0	0
19:00	4	2	0	0	0	0
20:00	4	8	0	0	0	0
21:00	4	8	0	0	0	0
22:00	4	8	0	0	0	0
23:00	4	8	0	0	0	0
0:00	4	8	0	0	0	0

Table 7-8: Estimated peak hour traffic volumes

Peak hours	In (vehicles / hour)	Out (vehicles / hour)
6am – 7am (AM peak)	128	8
8am – 9am (AM peak)	13	3
5pm – 6pm (PM peak)	6	156

Vehicles associated with construction works would also include heavy vehicles delivering materials for sorting and testing before transported offsite for reuse or disposal, as well as storage and stockpiling.

SIDRA modelling indicated that Intersection 1 – Wicks Road / Waterloo Road / Halifax Road operates at an acceptable level of service B and C during the AM and PM peak periods in 2022 current year and 2023 forecasted year. It experiences minor increases in queue lengths and average delays as a result of WFU10 which are considered to have a negligible impact on the current road network. Therefore, no mitigation measures are proposed.

Table 7-9 presents the analysis summary to compare the impacts of WFU10 on Intersection 1 – Wicks Road / Waterloo Road / Halifax Road.

Table 7-9: Intersection 1 traffic impact results and comparison

Year	Scenario	Peak	DoS	Average delay (s)	Average percentile queue length (m)	LoS
2022	Base case	Construction AM (6-7am)	0.205	32.1	21.8	C
		Operation AM (8-9am)	0.362	26.8	23.9	B
		PM (5-6pm)	0.343	29.9	29.6	C
2023	Without development	Construction AM (6-7am)	0.214	32.1	22.3	C
		Operation AM (8-9am)	0.369	26.9	25.6	B
		PM (5-6pm)	0.352	29.8	32.1	C
	With development	Construction AM (6-7am)	0.271	35.3	32.7	C
		Operation AM (8-9am)	0.381	27.5	25.8	B
		PM (5-6pm)	0.388	35.6	38.9	C

Modelling indicated that Intersection 2 – Epping Road / Wicks Road does not meet the traffic performance criteria for capacity and delay during the AM and PM peak periods for the current situation. However, the assessment indicates that this intersection would fail to meet the traffic performance criteria without traffic generation from WFU10. As such, this result is attributed to the background traffic demand, rather than WFU10. As a result, impacts from WFU10 are considered to be minor and therefore no mitigation measures are proposed.

Table 7-10 presents the analysis summary to compare the impacts of WFU10 on Intersection 2 – Epping Road / Wicks Road.

Table 7-10: Intersection 2 traffic impact results and comparison

Year	Scenario	Peak	DoS	Average delay (s)	Average percentile queue length (m)	LoS
2022	Base case	Construction AM (6-7am)	0.948	48.9	333.9	D
		Operation AM (8-9am)	1.079	86.6	460.5	F
		PM (5-6pm)	1.304	183.9	530.5	F
2023	Without development	Construction AM (6-7am)	0.985	58.7	391.9	E
		Operation AM (8-9am)	1.120	105.4	523.6	F
		PM (5-6pm)	1.352	208.6	587.0	F
	With development	Construction AM (6-7am)	0.985	58.2	391.8	E
		Operation AM (8-9am)	1.176	107.5	523.3	F
		PM (5-6pm)	1.308	199.4	564.6	F

Modelling indicated that Intersection 3 – Epping Road / Delhi Road operates at an acceptable level of service C during the AM peak periods in 2022 current year and 2023 forecasted year. However, the PM peak has reached capacity for the current situation. The assessment indicates that this intersection would fail to meet the traffic performance criteria without traffic generation from WFU10. As such, this result is attributed to the background traffic demand, rather than WFU10. As a result, impacts from WFU10 are considered to be minor and therefore no mitigation measures are proposed.

Table 7-11 presents the analysis summary to compare the impacts of WFU10 on Intersection 3 – Epping Road / Delhi Road

Table 7-11: Intersection 3 traffic impact results and comparison

Year	Scenario	Peak	DoS	Average delay (s)	Average percentile queue length (m)	LoS
2022	Base case	Construction AM (6-7am)	0.802	31.0	210.0	C
		Operation AM (8-9am)	0.861	33.9	215.4	C
		PM (5-6pm)	0.973	62.2	319.0	E
2023	Without development	Construction AM (6-7am)	0.833	32.2	225.3	C

Year	Scenario	Peak	DoS	Average delay (s)	Average percentile queue length (m)	LoS
		Operation AM (8-9am)	0.895	34.6	220.9	C
		PM (5-6pm)	1.044	106.6	559.4	F
	With development	Construction AM (6-7am)	0.837	32.1	226.6	C
		Operation AM (8-9am)	0.895	34.5	219.3	C
		PM (5-6pm)	1.049	93.6	476.5	F

There is no impact on the existing bus services expected as a result of WFU10.

There is no impact on pedestrian and cycling facilities expected as a result of WFU10.

7.2.4 Cumulative impacts

Chapter 27 (Cumulative impacts) of the environmental impact statement discusses cumulative impacts associated with the project. The proposed modification is not expected to result in additional cumulative traffic impacts during construction. Traffic associated with the proposed modification would consist of a redirection of some traffic from the approved construction support sites to the proposed WFU10. As noted above, this redistribution of construction traffic to the area would have a negligible impact on the surrounding road network.

7.2.5 Environmental management measures

The traffic assessment indicates that the vehicles movements associated with WFU10 would have a negligible impact on the surrounding road network. As such, no further environmental management measures are considered necessary beyond those summarised in Part D of the Submissions Report.

However, amendment of Condition E132 of the project approval is proposed as detailed in Appendix C.

Table 7-12: Amended Condition of Approval (traffic and transport)

Reference	Condition	Responsibility	Phase
E132	Local roads proposed to be used by heavy vehicles to directly access the construction boundary and ancillary facilities that are not shown in Figure 5-7 to 5-22 inclusive of Appendix F of the EIS **or Figure 7-1 of Modification Report 1** must be approved by the Planning Secretary and included in the Traffic, Transport and Access Management CEMP Sub-plan.	Contractor	Construction

7.3 Noise and Vibration

7.3.1 Assessment methodology

This section provides an assessment of the potential noise and vibration impacts associated with WFU10. A Noise Impact Assessment was carried out for WFU10 and is provided in Appendix E.2. The assessment methodology for the noise assessment is generally consistent with the methodology presented in Chapter 10 (Construction noise and vibration) of the environmental impact statement.

The noise assessment has been prepared in accordance with the following relevant guidelines and policies:

- *Interim Construction Noise Guideline* (ICNG) (DECC, 2009)
- *Construction Noise and Vibration Guideline* (CNVG) (Roads and Maritime Services, 2016)
- *NSW Road Noise Policy* (RNP) (DECCW, 2011).

Assessment scenarios

Noise modelling scenarios have been determined based on key noise generating activities that would occur at WFU10. The noise modelling scenarios along with the construction hours of each scenario is shown in Table 7-12. The approved construction hours, as outlined by condition E66 of the Infrastructure Approval (SSI 8863), are as follows:

- Monday to Friday 7am to 6pm
- Saturday 8am to 6pm
- No work on Sundays or public holidays.

In addition to the approved construction hours, works are permitted outside the above hours, as outlined by condition E68 of the Infrastructure Approval (SSI 8863), in the below circumstances:

- Safety and emergencies
- Low impact works, including
  - Construction that causes $L_{Aeq(15\ minute)}$ noise levels
    - no more than 5dB(A) above the rating background level (RBL) at any residence in accordance with the ICNG
    - no more than the 'Noise affected' noise management levels (NMLs) specified in the ICNG at other sensitive land users
  - construction that causes $L_{AFmax(15\ minute)}$ noise levels no more than 15 dB(A) above the rating background level at any residence
  - construction that causes continuous, impulsive or intermittent vibration values, measured at the most affected residence, no more than the preferred values for human exposure to vibration, specified in Table 2.2 and Table 2.4 of Assessing Vibration: a technical guideline (DEC, 2006).
- By approval under an EPL or an Out-of-Hours Work Protocol.

Table 7-13: Scenarios and period of work

ID	Scenario	Hours of work			
		Approved Day	Out-of-hours work		
			Day[1]	Evening[2]	Night[3]
W.001	**Site establishment** Including: • Installation of site environmental controls (e.g. noise barriers) • Reprofiling to level the site • Installation of site facilities (office area, dome shelter).	✓			
W.002	**General Work at WFU10** Materials storage and stockpiling.	✓	✓	✓	✓
W.003	**Concrete and Vacuum Truck Washout** Project concrete and vacuum trucks to empty their tanks into a washout area.	✓	✓	✓	✓
W.004	**Crushing and Screening Plant for Processing Material**	✓			
W.005	**Precast of Concrete Traffic Barriers** Precast of concrete traffic barriers using moulds.	✓			
W.006	**Demobilisation** Demobilisation of the construction support site.	✓			

1. Daytime out of hours is 7 am to 8 am on Saturday, and 8 am to 6 pm on Sunday and public holidays.
2. Evening is 6 pm to 10 pm Mondays to Saturdays.
3. Night is 10 pm to 7 am for Mondays to Saturdays and 6 pm to 8 am for Sundays and public holidays.

The assessment utilised 'realistic worst-case' scenarios to determine the impacts from the noisiest 15-minute period that is likely to occur for each work scenario.

The potential noise levels from WFU10 have been predicted using ISO 9613:2 algorithm in iNoise V2021. The model includes ground topography, buildings and representative noise sources from WFU10.

Study area

The nearest sensitive receivers are commercial properties located approximately to the east and west of the project site. Residential receivers are located further to the north and south of the project site. The area located to the east of the site is Lane Cove National Park. The area located directly to the south of the site is Macquarie Park Cemetery and Crematorium.

The study area has been divided into six Noise Catchment Areas (NCAs). These NCAs reflect the ambient noise environment of that area, as well as the noise sensitivity of the surrounding land uses. These six NCA are listed below and presented in Figure 7-2.

- NCA39 – Highrise residential receivers south of WFU10, near the M2 Motorway.
- NCA40 – Residential receivers to the southwest of WFU10, near Epping Road.
- NCA41 – Residential receivers to the northeast of WFU10, on the eastern side of the Lane Cove River.

- NCA42 – Commercial and other sensitive receivers to the west of WFU10
- NCA43 – Commercial and other sensitive receivers surrounding WFU10.
- NCA44 – Highrise residential receivers north of WFU10, near the M2 Motorway.

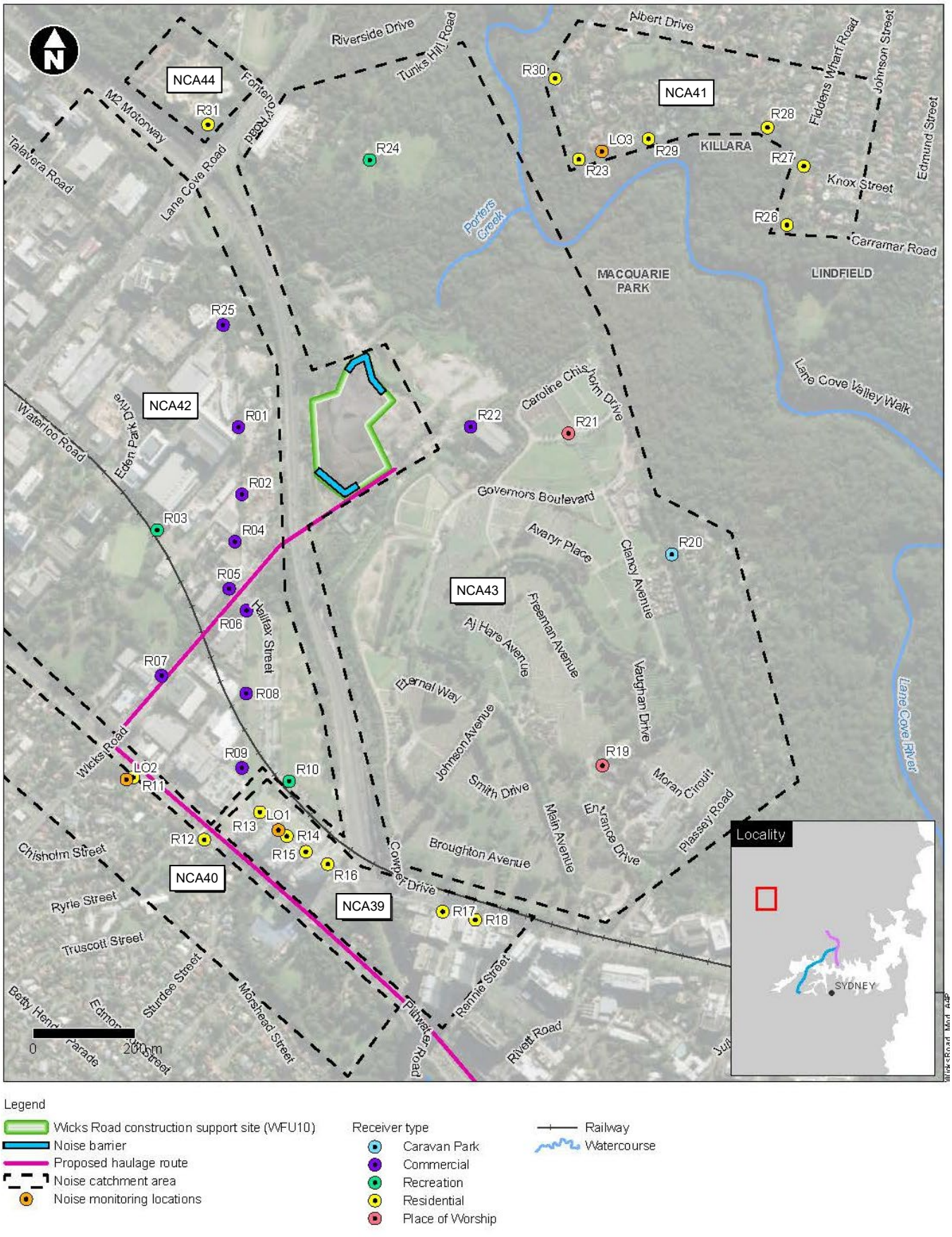


Figure 7-2: Site location and surrounding receivers

Noise monitoring

Unattended noise monitoring was completed in the study area during April 2022. The measured noise levels have been used to determine the existing noise environment and to set the criteria used to assess the potential impacts from the project.

The monitoring equipment was positioned to measure existing noise levels that are representative of receivers potentially most affected by the project, within constraints such as accessibility, security and landowner permission. The noise monitoring equipment continuously measured existing noise levels in 15-minute periods during the daytime, evening and night-time. The noise monitoring locations are provided in Table 7-14 and shown in Figure 7-2.

Table 7-14: Unattended noise monitoring locations

ID	NCA	Address
L01	NCA39/44	23 Halifax Street, Macquarie Park NSW
L02	NCA40	50 Epping Road, North Ryde NSW
L03	NCA41	57 Albert Drive, Killara NSW

The measured data has been processed to exclude noise from extraneous events and periods affected by adverse weather conditions, such as strong wind or rain (measured at Bureau of Meteorology (BOM) Weather Station situated at Sydney Olympic Park - 066212), to establish representative existing noise levels in the study area.

Short-term attended noise monitoring was also completed at each monitoring location. The attended measurements allow the contributions of the various noise sources at each location to be determined. Detailed observations from the attended measurements are provided in Appendix B of the NIA.

Assessment criteria

Residential and other sensitive receivers

The *NSW Interim Construction Noise Guideline (ICNG)* (DECC, 2009) is used to assess and manage impacts from construction noise on residences and other sensitive land uses in NSW.

The ICNG contains procedures for determining project specific Noise Management Levels (NMLs) for sensitive receivers based on the existing background noise in the area. The 'worst-case' noise levels from construction of a project are predicted and then compared to the NMLs in a 15-minute assessment period to determine the likely impact of the project.

The NMLs are not mandatory limits, however, where construction noise levels are predicted or measured to be above the NMLs, feasible and reasonable work practices to minimise noise emissions are to be investigated. These NMLs have been derived using the results of noise monitoring used to determine the rating background levels (RBL) for nearby residential receivers. The established NMLs for each NCA is provided below in Table 7-15.

Table 7-15: Noise management levels

NCA	NML ($L_{Aeq(15\ minute)}$ (dBA))			
		OOHW		
	Approved Day	Day	Evening	Night
NCA39/44	64	59	56	46
NCA40	67	62	60	47
NCA41	51	46	44	40

Sleep disturbance

Maximum noise levels generated by construction activities have the potential to disturb sleep. In accordance with ICNG guidance, and as consistent with Appendix G (Technical working paper: Noise and vibration) of the EIS, a L_{Amax} sleep disturbance screening level of RBL + 15 dB(A) has been adopted for the project. The sleep disturbance screening level for each applicable NCA is presented in Table 7-16.

Table 7-16: Sleep disturbance screening level

NCA	Sleep disturbance screening level
NCA39/44	56
NCA40	57
NCA41	50

Other sensitive land uses and commercial receivers

The ICNG NMLs for 'other sensitive' non-residential land uses are shown in Table 7-17.

Table 7-17: Noise management levels for other sensitive receivers

Receiver type	NCA	NML ($L_{Aeq(15\ minute)}$ (dBA))
Commercial	NCA42/43	70
Active recreation	NCA42	65
Place of worship	NCA43	55
Passive recreation	NCA43	60

Construction road traffic noise

The potential impacts from construction traffic on public roads are assessed under the RNP and CNVG. An initial screening test is first applied to evaluate if existing road traffic noise levels are expected to increase by more than 2 dB as a result of construction traffic. Where this is considered likely, further assessment is required using the RNP base criteria shown in Table 7-18.

Table 7-18: RNP Criteria for Assessing Construction Vehicles on Public Roads

Road Category	Type of Project/Land Use	Assessment Criteria (dBA)	
		Daytime (7 am – 10 pm)	Night-time (10 pm – 7 am)
Freeway / arterial / sub-arterial roads	Existing residences affected by additional traffic on existing freeways/arterial/sub-arterial roads generated by land use developments	LAeq(15hour) 60 (external)	LAeq(9hour) 55 (external)
Local roads	Existing residences affected by additional traffic on existing local roads generated by land use developments	LAeq(1hour) 55 (external)	LAeq(1hour) 50 (external)

7.3.2 Existing environment

The nearest sensitive receivers are commercial properties located about 200 metres to the east and west of the project site. Residential receivers are located further to the north and south of WFU10, about 550 metre and 750 metres, respectively. The area located to the east of the site is Lane Cove National Park. The area located directly to the south of the site is Macquarie Park Cemetery and Crematorium.

The existing noise environment surrounding the project site is generally dominated by road traffic from the surrounding road network with the nearest major road being the M2 Motorway, which is located 20 metres to the west. Other existing industrial noise sources include the Ryde Resource Recovery Centre, which is located 160 metres to the east.

Background noise levels for the residential areas to the north and south of WFU10 have been identified based on noise monitoring as described in Section Assessment methodology7.3.1. The RBL established based on noise monitoring is outlined below in Table 7-19.

Table 7-19: Background noise levels

Monitoring location	NCA	Measured noise level (dBA)					
		Background noise (RBL)			Average noise (LAeq)		
		Day	Evening	Night	Day	Evening	Night
L01	NCA01	54	51	41	60	58	54
L02	NCA02	57	55	42	67	65	62
L03	NCA03	41	39	35	54	54	47

7.3.3 Assessment of potential impacts

Predicted noise levels

The assessment utilised ‘realistic worst-case’ scenarios to determine the impacts from the noisiest 15-minute period that is likely to occur for each work scenario. Sound power levels for the equipment used in the modelling are listed in Table 7-20.

Table 7-20: Modelling scenarios and equipment

Equipment		Total Sound Power level LW (dBA)	Crane Franna (20 tonne)	Crusher - Rock	Excavator - Tracked (20 tonne)	Grader	Generator - attenuated	Lighting Tower	Light Vehicle (accelerating)	Truck – Medium Rigid (20 tonne)	Truck - road truck/ truck & dog (30 tonne)	Water Cart	Concrete agitator truck	Water Pump	Front End Loader
Sound Power Level (LW)[1]			98	118	105	113	92	80	95[2]	103	108	107	108	93	108
Estimated utilisation per period (%)			30	100	100	100	100	100	25	25	50	100	100	100	100
ID	Work Scenario														
W.001	Site establishment	**116**	1		1	1				2	1	1			
W.002	General Work at WFU10	**111**			1			2	4		2				1
W.003	Concrete and NDD Truck Washout	**108**					1						1	1	
W.004	Crushing and screening plant for processing material	**118**		1	1				4		2				2
W.005	Precast of concrete traffic barriers	**113**							2		2		2		1
W.006	Demobilisation	**109**	1		1	1				2	1	1			

1. Individual Sound Power Levels (Lw) for key activities have been adopted from AS2436, DEFRA, and CNVG
2. Taken from *Road Traffic Noise Prediction Model "ASJ RTN-Model 2013" Proposed by the Acoustical Society of Japan – Part 2: Study on Sound Emission of Road Vehicles*, OKADA et al, Internoise 2014, and accounts for vehicles accelerating

A summary of the worst-case predicted noise levels at the nearest receiver in each NCA surrounding the project are shown in Table 7-21. These predicted noise levels are contingent on the implementation of a noise barrier about 5.2 metres high at the northern and southern boundary of WFU10 (refer Figure 5-1). The detail set of predicted noise levels are presented in Appendix E.2. The assessment of the predicted worst-case noise levels shows:

- Mitigated noise levels are predicted to comply with daytime, evening and night-time NMLs for all nearby sensitive receivers
- Mitigated noise levels are predicted to comply with the sleep disturbance screening level for all nearby residential receivers during OOHW scenarios.

The assessment is generally considered conservative as the calculations assume several items of construction equipment are in use at the same time within individual scenarios. In reality, there would frequently be periods when construction noise levels are much lower than the worst-case levels predicted as well as times when no equipment is in use and no noise impacts occur.

Table 7-21: Worst-case predicted noise levels – Noise enhancing weather conditions

NCA	Receiver ID	Noise management levels (dBA) LAeq(15 minute)				Sleep Disturbance Screening Level LAmax (dBA)	Predicted Noise Levels (dBA) LAeq, 15 min							Compliant
		Approved hours (AH)	OOHW				W.001	W.002	W.003	W.004	W.005	W.006	LAmax	
			Day	Evening	Night	Night	AH	AH OOHW	AH OOHW	AH	AH	AH	OOHW	
NCA39	R13[1]	64	59	56	46	56	45	38	35	42	40	39	46	Y
NCA40	R11[1]	67	62	60	47	57	31	26	22	30	28	25	34	Y
NCA41	R23[1]	51	46	44	40	50	40	34	29	38	35	34	42	Y
NCA42	R01[2]	70 (when in use)				-	58	51	53	56	56	52	-	Y
NCA43	R22[2]	70 (when in use)				-	56	51	44	56	51	50	-	Y
	R24[3]	60 (when in use)				-	47	40	35	44	43	41	-	Y
	R21[4]	55 (when in use)				-	43	38	30	43	37	36	-	Y
	R20[5]	51	46	44	40	50	39	34	27	39	35	32	42	Y
NCA44	R31[1]	64	59	56	46	56	47	40	37	45	42	41	48	Y

4. Residential receiver
5. Commercial receiver
6. Passive recreation receiver
7. Place of worship receiver
8. Caravan park receiver

Traffic noise

WFU10 is expected to generate an average of 378 vehicles per day. That would be approximately 756 vehicle movements (in and out) per day. The proposed construction traffic route to and from the site passes residential receivers along Epping Road. A summary of the vehicle data for the assessment and predicted increase in traffic noise levels are shown in Table 7-22. There are no sensitive receivers located on Wicks Road.

Table 7-22: Vehicle traffic data

Road Name	Vehicle type	Existing Traffic Volumes[1]		Project Traffic Volumes		Change in Noise Level (dBA)	
		Day (7 am – 10 pm)	Night (10 pm – 7 am)	Day (7 am – 10 pm)	Night (10 pm – 7 am)	Day (7 am – 10 pm)	Night (10 pm – 7 am)
Epping Road	Light Vehicles	39,918[2]	6,485[2]	332	248	0.1	0.3
	Heavy Vehicles	4,435[3]	721[3]	88	88		

1 . Existing traffic volumes adopted from TfNSW *Traffic Volume Viewer* (Station 52040, dated 2021).
2. Existing light vehicle volumes assumed at 90 per cent of total traffic
3. Existing heavy vehicle volumes assumed at 10 per cent of total traffic

Construction traffic associated with the project is predicted to increase existing road traffic noise levels by less than 0.5 dBA. Differences in noise levels of less than 2 dBA (whether an increase or a decrease) are generally considered to be imperceptible and of low significance. As such, no management measures for road traffic noise mitigation and are required for the proposed modification.

7.3.4 Cumulative impacts

Chapter 27 (Cumulative impacts) of the environmental impact statement discusses cumulative impacts associated with the project. To minimise the risk of cumulative impacts Transport for NSW will consult with proponents of other construction works and nearby adjoining industrial operators near the WFU10 site and take reasonable steps to coordinate works to minimise cumulative noise and vibration impact and coordinate respite for affected sensitive receivers, to satisfy CoA E82 and E83.

At the time of this assessment, no other construction projects have been identified in the vicinity of the WFU10 site.

It should also be noted that vehicles accessing the Cleanaway Recycling Centre will be limited to the daytime period, therefore cumulative impacts are not expected to occur during the most sensitive periods (i.e. night-time)

7.3.5 Environmental management measures

The noise assessment identified that all predicted noise levels for WFU10 are at or below the established NMLs at all the identified receivers during all assessed scenarios. As such, no additional environmental management measures are considered necessary beyond those summarised in Part D of the Submissions Report and the standard site management measures that will be detailed in a site-specific construction noise and vibration impact statement and included in the project noise and vibration management plan (NVMP). No amendments to the conditions of the project approval as they relate to noise impacts are required.

7.4 Air quality

7.4.1 Assessment methodology

The air quality impact assessment carried out for the project in Chapter 12 (Air quality) of the environmental impact statement assessed potential construction air quality impacts associated with the approved project using the methodology described in the UK Institute of Air Quality Management's (IAQM) *Guidance on the assessment of dust from demolition and construction* (IAQM, 2014). Air quality impacts for WFU10 have been assessed in a manner consistent with the methodology utilised in the environmental impact statement. For the purpose of the construction dust assessment the IAQM methodology uses a four-step process to assess construction dust impacts:

- Step 1: Screening assessment based on distance to human and ecological receptors
- Step 2: Assess risk of dust impacts from activities based on the scale and nature of the works and sensitivity of the area
- Step 3: Determine site-specific mitigation
- Step 4: Reassess residual dust impacts after mitigation has been applied.

This section provides an assessment of potential construction air quality impacts associated with WFU10 in accordance with the IAQM methodology.

An operational air quality assessment is not required as WFU10 does not extend to the operation of the approved project.

7.4.2 Existing environment

The closest Air Quality Monitoring Station (AQMS) used by the approved project as outlined in Appendix H (Technical working paper: Air Quality) of the environmental impact statement is located in Macquarie Park. Data from the Macquarie Park AQMS along with data from other stations in the Sydney metropolitan area was utilised to establish an annual average background PM_{10} concentration of 16.5 µg/m^3 for the project environmental impact statement. Due to the close proximity of WFU10 to the Macquarie Park AQMS, the existing air quality environment surrounding WFU10 is considered to be consistent with the local and regional conditions described in Chapter 12 (Air quality) of the environmental impact statement.

7.4.3 Assessment of potential impacts

Step 1: Screening assessment

The IAQM recommends a construction dust assessment is generally required where:

- There are human receptors within 350 metres of the boundary of the site and/or within 50 metres of the route(s) used by construction vehicles on the public highway, up to 500 metres from the site entrances(s)
- There are ecological receptors within 50 metres of the boundary of the site and/or within 50 metres of the route(s) used by construction vehicles on the public highway, up to 500 metres from the site entrance.

For the screening assessment, the assessment area was assumed to be limited to WFU10. There are human receptors (commercial properties) within a 350-metre radius of the footprint of WFU10, although the total number of receptors is low shown in Figure 7-3. There are also human receptors (high density residential) along the proposed vehicle haulage route (Epping Road). There are no ecological receptors within WFU10 boundary or buffer zone. As there are human receptors within 350 metres of WFU10, a construction dust assessment is required.

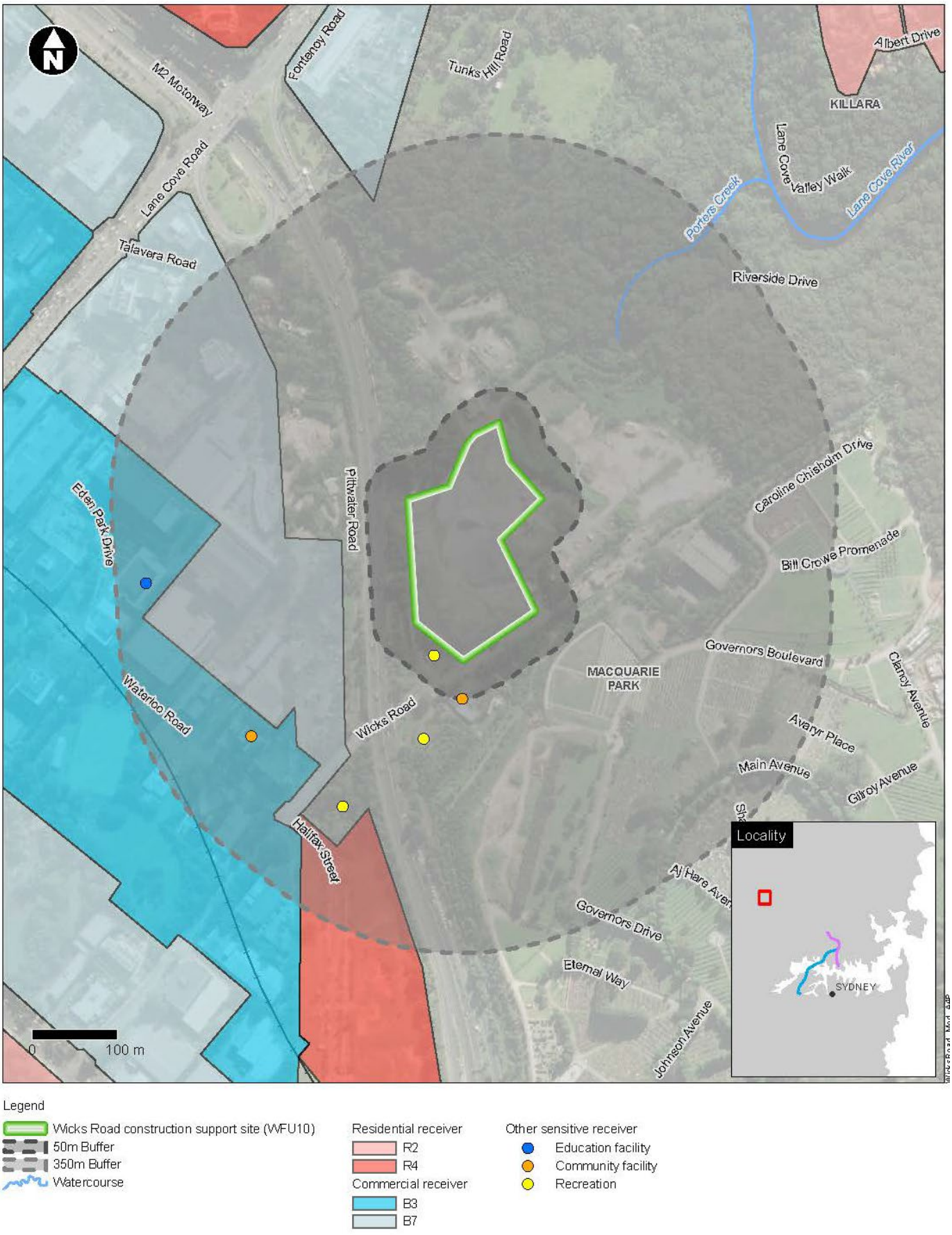


Figure 7-3: Proposed construction support site dust screening assessment

Step 2: Dust risk assessment

Step 2 requires an assessment of the risk of dust from WFU10 causing annoyance and/or health effects. This is determined by assessing:

- Step 2A: The scale and nature of the works, which determines the potential dust emission magnitude as small, medium or large
- Step 2B: The sensitivity of the area to dust impacts which is defined as low, medium or high sensitivity.

Step 2A Dust emission magnitude

The IAQM determines that construction activities likely to cause dust can be separated into the following four categories: demolition, earthworks, construction and track-out.

An assessment of the potential dust emission magnitude associated with WFU10 is provided in Table 7-23.

Table 7-23: IAQM dust emission magnitude assessment

Activity	Description of activities at WFU10	Potential dust emission magnitude
Demolition	No demolition works would be required for the modification.	Small (Total demolition volume <20,000m^3)
Earthworks	WFU10 will provide a spoil staging area to stockpile, segregate and test material prior to re-use or disposal off site. More than 10 heavy earth moving plant and equipment may be active onsite at one time • Eight two-way vehicle movements per hour importing and exporting excavated material • One loader • Two to three tandem tippers • One 25 tonne excavator • Crushing and screening plant It is estimated that around 200,000 tonnes of spoil would be processed onsite throughout the duration of construction.	Large (Total site area >10,000m^2, >10 heavy vehicles active onsite at any one time, >100,000 tonnes of material moved)
Construction	The total building volume would be minimal as there are no permanent built works proposed. As the construction support site would be utilised for the stockpiling, segregation and testing of excavated material, there would be a high potential for dust release.	Large (Dusty excavated materials to be stockpiled, segregated and tested)
Track out	About 63 outward heavy vehicle movements carrying excavated materials on a typical day.	Large (>50 outward heavy vehicle movements in any one day)

Step 2B Sensitivity analysis

The IAQM methodology requires an analysis of the sensitivity of an area to dust soiling and health impacts caused by potential dust emissions by considering type and proximity of local receptors and local background PM_{10} concentration. For the purpose of consistency with the assessment carried out in the environmental impact statement and to maintain conservatism, all sensitive receptor locations were considered as having equal sensitivity to residential locations (i.e. high).

According to the IAQM guidance, the overall sensitivity of WFU10 to dust is medium provided in Table 7-24.

Table 7-24: Dust sensitivity analysis

Potential impact	Sensitivity of the area	Justification
Dust soiling	Medium	• There are about 30 receptors within 100 metres of WFU10. • There are over 100 receptors located within 350 metres of WFU10
Human health (PM_{10})	Medium	• There are about 30 receptors within 100 metres of WFU10 • There are over 100 receptors located within 350 metres of WFU10 • As outlined in Appendix H of the environmental impact statement, the annual average background PM_{10} concentration is 16.5 µg/m^3. This is below the EPA criterion of 25 µg/m3 and within the lower ranges of the IAQM criteria.

Step 2C Risk of dust impact

Step 2C of the IAQM requires the dust emission potential determined in Step 2A to be combined with the sensitivity of the area determined in Step 2B to give the risk of impacts with no mitigation applied.

As shown in Table 7-25 even with no mitigation the risk of dust impacts associated with WFU10 is low to medium.

Table 7-25: Risk of dust impacts without mitigation

Potential impact	Risk of dust impacts on sensitive receptors- without mitigation			
	Demolition	Earthworks	Construction	Track out
Dust soiling	Low	Medium	Medium	Medium
Human health (PM10)	Low	Medium	Medium	Medium

Step 3 Determine site specific mitigation

The IAQM recommends site specific mitigation measures be applied to reduce potential dust emissions and a residual risk assessment (Step 4) be carried out to determine the risk of dust impacts following the implementation of the recommended mitigation measures.

Step 4 of the IAQM has not been carried out, as the risk of dust impacts without mitigation has been assessed as low to medium. As such, no additional mitigation measures other than those described in Part D of the Submissions Report and the conditions of approval would be required, as described in Section 7.4.5.

7.4.4 Cumulative impacts

Chapter 27 (Cumulative impacts) of the environmental impact statement discusses cumulative impacts associated with the project. Given that Council operations would still be occurring on part of the site not occupied by WFU10, additional cumulative air quality impacts may occur. However, it is expected that the air quality impacts of WFU10 would likely be negligible with the implementation of mitigation measures, cumulative air quality impacts are considered unlikely.

7.4.5 Environmental management measures

The impacts associated with dust emissions as a result of WFU10 are generally consistent with those assessed in the environmental impact assessment. Although there are potential air quality impacts associated with WFU10, including the crushing and screening of materials, there would be no activities in addition to what was described in the environmental impact statement that would result in significant air quality impacts. No further environmental management measures are considered necessary beyond those summarised in Part D of the Submissions Report. No amendments to the conditions of the project approval as they relate to air quality impacts are required.

Furthermore, it should be noted that activities associated with WFU10 are largely consistent with those already carried out onsite for the operation of the Porters ECoMRF. This indicates that the impacts associated with WFU10 would likely be negligible as it would not result in a substantial change in land use.

7.5 Soils and contamination

7.5.1 Assessment methodology

The assessment methodology for the soils and contamination assessment is generally consistent with the methodology presented in Chapter 16 (Geology soils and groundwater) of the environmental impact statement.

In order to determine the impacts of WFU10 on soils and contamination a desktop review of publicly available information and previous baseline investigations for WFU10 was carried out. This included:

- A review of the geological context, soil landscapes, salinity and acid sulfate soils
- A review of the following sources to determine the potential for land contamination within and adjacent to WFU10 included:
  - NSW Environment Protection Authority (EPA) Contaminated Sites Register and Record of Notices
  - iEnvironmental Australia, 2022. Macquarie Park NSW – Prelease Contamination Assessment. 160 Wicks Road, Macquarie Park, NSW 2113. Prepared for City of Ryde
- A review of the existing Site Environmental Management Plan – Porters Creek Depot (City of Ryde, 2021)
- A review of the REMMs to determine whether any additional environmental management measure would be required.

7.5.2 Existing environment

Porters ECoMRF was established as a municipal waste landfill in the late 1960s. After the redirection of domestic wastes to the Cleanaway Waste Transfer Station circa 1985, the site received inert wastes, principally Excavated Natural Material (ENM), for the purpose of capping and to achieve desired levels.

The landfill was developed on top of Porters Creek, a tributary which was diverted under the site with concrete culverts prior to filling. Porters Creek surfaces around 180 metres east of WFU10 and discharges into Lane Cove River about 420 metres east of the site. Since finalisation of capping of the landfill, the site has been used as a resource recovery facility, principally recycling waste concrete and waste asphalt pavement for beneficial re-use.

Soils

The existing environment of WFU10 with regards to soils is summarised in Table 7-26.

Table 7-26: Soils at the Wicks Road site

Aspect	Description
Soil types and erodibility	The *Soil Landscapes of Sydney 1:100,000 Sheet* (Department of Conservation and Land Management, 1999) shows the site is located within two soil landscapes The southern portion of the site has been identified as occurring within the '*Lucas Heights*' soil landscape. This soil landscape is characterised by – gently undulating crests and ridges on plateau surfaces of the Mittagong formation with local reliefs up to 30 metres and slopes less than 10 per cent. Soils consist of moderately deep, hard setting yellow podzolic soils and yellow soloths with yellow earths on the outer edges. Limitations associated with this soil landscape include stony soil, low soil fertility and low available water capacity. Erodibility of this soil is moderate with erosion hazard for non-concentrated flows being generally moderate but ranging from slight to extreme. The northern portion of the site has been identified as '*Disturbed Terrain*'. The topography varies from level planes to undulating terrain and has been disturbed by human activity to a depth of at least 100 centimetres. The original soil has been removed, greatly disturbed or buried. Most of these areas have been levelled to slopes of less than five per cent. The soils are dependent on the nature of fill material, with subsidence resulting in a mass movement hazard. Soil impermeability may lead to poor drainage and low fertility.
Soil salinity	Salinity mapping by the NSW DPE identifies WFU10 as being located in an area of low to very low salinity potential.
Geology	The Sydney 1:100,000 Geological Series Sheet 9130 (NSW Department of Mineral Resources, 1983) indicates WFU10 is underlain by Ashfield Shale a geological unit associated with the Wianamatta Group.
Groundwater	The clay rich Ashfield Shale behaves as an aquitard as it has a very low vertical hydraulic conductivity (low water flow) which reduces groundwater transfer within and between the strata above and below. Groundwater quality within the shale is highly variable but is typically brackish or saline due to the marine salts contained within it. The shale aquifer is characterised by low yields, limited storage and poor groundwater quality. (As described in Appendix N (Groundwater) of the environmental impact statement)
Acid Sulfate Soils (ASS)	The Commonwealth Scientific and Industrial Research Organisation (CSIRO) Atlas of Australian Soils database indicates that the soils are classified as Class 5 ASS and are therefore not typically acid sulfate prone.

Contamination

An online search of the EPA Contaminated Sites Record of Notices (EPA, 2022) and the list of contaminated sites notified to the NSW EPA indicated a previous notification exists for 160 Wicks Road, Macquarie Park, due to previous landfilling activities. No other sites have been registered with the NSW EPA within 500 metres of WFU10.

160 Wicks Road, Macquarie Park was listed on the EPA notified sites database as not being regulated under the *Contaminated Land Management Act 1997.*

On 15 December 2021, environmental scientists visited the site to complete a site inspection and undertake soil sampling up to a depth of 0.1 metres below ground surface (mbgs). Soil samples were collected from thirteen locations on and across the site for analysis of potential contaminants of concern (PcoC). The results of the site investigation indicated:

- The soil was not stained and did not have any visible or olfactory evidence of contamination. In addition, no elevated concentrations of volatile organic compounds were detected during field screening, with levels ranging between 4.8 and 13.1 parts per million (ppm)
- Volatile organic compounds (VOC) were not detected within any soil samples
- Total recoverable hydrocarbons (TRH) were detected, predominantly at relatively low concentrations in a number of samples
- Polynuclear aromatic hydrocarbons (PAH) were detected in some samples with results predominantly at relatively low to moderate concentrations
- Heavy metals (excluding mercury and cadmium) were present at relatively low concentrations
- Suspected asbestos containing material (ACM) was not observed on the ground surface or in fill material at the site and laboratory results indicated that asbestos was not present in the surface soil samples tested.

7.5.3 Assessment of potential impacts

Soils

The proposed construction activities associated with the construction support site establishment works would involve surface excavation and earthmoving. The new access road to be constructed, as described in Section 5.2.8, would require surface excavation to lower the water main located adjacent to where the access road would be located. Earthmoving would be required to level the existing site stockpiles.

The temporary exposure of soil to water runoff and wind could increase soil erosion potential. There is the potential for exposed soils – and other unconsolidated materials, such as spoil, sand and other aggregates – to be transported from the construction support site into surrounding waterways via stormwater runoff.

Activities carried out at WFU10 would include the stockpiling, segregation and testing of spoil. As a result, uncompacted or unconsolidated materials (such as excavated and stockpiled soils) have the potential to leave the construction support site area during rain through surface water run-off, with the potential to cause downstream sedimentation. Sedimentation in natural waterways can result in reduced water quality as well as smothering of vegetation and clogging of channels, impacting the natural flow paths of the waterway. Given the existing use of the site is a waste management facility, which includes operational activities consistent with those being proposed, as well as the proposed bunding around the materials sorting area, WFU10 would be unlikely to result in any substantial change to impacts already experienced on-site. Further details regarding erosion and sedimentation are provided in Section 7.6.

Soil salinity is not considered a concern within WFU10. Salinity is considered unlikely to represent a risk to surface water and/or groundwater during the construction of the project. Additionally, acid sulfate soils are unlikely to occur within WFU10 and therefore are unlikely to present risk during the use of the site as a construction support site.

The REMMs, which include provision of erosion and sediment controls (WQ1), would be adequate in controlling any potential impacts.

Contamination

The historical landfilling activities onsite for the disposal of municipal waste may have resulted in soil, groundwater and potentially gas/vapour contamination sources. Additionally, the current use of the site as a resource recovery facility may have also contaminated the site with heavy metals, hydrocarbons, and VOC, although it should be noted that no VOCs were detected during recent baseline investigations. The contaminants detected in soil samples (TRH, PAH and heavy metals) were at relatively low to moderate concentrations. The earthworks required for the utility relocation required to construct the new access

road could potentially result in the disturbance of contaminated soils. The potential risks associated with the disturbance of contaminated soils are outlined in Table 7-27.

Table 7-27: Potential contamination risks

Location relative to site	Construction works	Potential impacts	Risk of land contamination
Within construction support site	• Construction support site establishment works • Material stockpiling and sorting	If contamination is present and not appropriately controlled, there is the potential for: • Inhalation and/or ingestion risk to site workers and nearby residents of hazardous building materials via dust • Cross contamination associated with the incorrect handling or disposal of spoil/unexpected finds • Excavation activities may mobilise and spread buried contaminants • Accidental leaks and spills during the use of land as a construction support site. • Erosion and offsite transport of sediment and contamination via overland flow and stormwater runoff, affecting the water quality of local waterways	**High** Known contamination / excavation activities within potential contamination distribution range (laterally and vertically).

7.5.4 Cumulative impacts

Chapter 27 (Cumulative impacts) of the environmental impact statement discusses cumulative impacts associated with the project. There is the potential for existing contamination at the site to impact imported material. However, material will be tested before the export of any material and delineated from known contaminated stockpiles therefore cumulative impacts are expected to be negligible.

7.5.5 Environmental management measures

Soil impacts associated with the activities at WFU10 would be sufficiently managed by the environmental management measures summarised in Part D of the Submissions Report. Soil and water management measures will be implemented in accordance with the Blue Book and relevant Transport for NSW guidelines, procedures and specifications, as per REMM SG5 and WQ1. Additionally, relevant measures and monitoring requirements from the existing Site Environmental Management Plan – Porters Creek Depot (City of Ryde, 2021) would be incorporated into the project Soil and Surface Water Management Sub-Plan (SWMP).

Due to the risk of encountering contaminated soils during surface excavation for the utility relocation should it be required for the new access road, prior to the commencement of site establishment, the area should be investigated and managed in accordance with the requirements of guidance endorsed under section 105 of the Contaminated Land Management Act 1997, as per REMM SG6. This REMM has been revised to specifically identify WFU10 as an investigation area, as outlined in Table 7-28. If required, the investigation of the site would include a Detailed Site Investigation (DSI) that will comply with the requirements of NSW CoA E115 to E117 of the project approval.

No amendments to the conditions of the project approval as they relate to soils and contamination impacts are required.

Transport for NSW will return the site at the end of the lease to the condition as agreed within the lease agreement. Transport for NSW is not responsible for any pre-existing contamination, known or unknown, and would remove all of its improvements (at Council's options) and make good the site at the end of the lease.

Table 7-28: Additional management measures (soils and contamination)

Reference	Management measure	Responsibility	Phase
SG6	Potentially contaminated areas directly affected by the project will be investigated and managed in accordance with the requirements of guidance endorsed under section 105 of the *Contaminated Land Management Act 1997*. This includes, but is not limited to, further investigations in potential areas of environment interest in the project footprint, including: • Easton Park • Birchgrove peninsula (including Yurulbin Park) • Balls Head peninsula • Waverton Park • Warringah Freeway (from North Sydney to Cammeray) • **WFU10 (Wicks Road construction support site)**. Subject to the outcomes of the investigations, a Remediation Action Plan will be implemented in the event that site remediation is warranted ~~prior to construction~~. The Remediation Action Plan will be prepared and implemented in accordance with Managing Land Contamination: Planning Guidelines SEPP 55 – Remediation of Land (Department of Urban Affairs and Planning and EPA, 1998). An independent NSW EPA Accredited site Auditor will be engaged **where contamination is complex** to review **applicable** ~~all~~ contamination reports and evaluate the suitability of sites for a specified use as part of the project.	Contractor	Construction

7.6 Water quality

7.6.1 Assessment methodology

The environmental impact statement identified receiving water bodies within and adjacent to the approved project footprint, assessed the potential impact of the project on these water bodies and recommended environmental management measures to minimise these potential impacts. As WFU10 is outside of the approved project boundary, an assessment of the potential impact of WFU10 on water quality is included in this section.

A desktop review of publicly available resources was carried out to establish the existing environment of WFU10 and determine the potential impacts to water quality associated with WFU10.

7.6.2 Existing environment

The nearest surface watercourse is Porters Creek, about 180 metres east of WFU10. Porters Creek discharges into Lane Cove River about 420 metres east of the site. Lane Cove River eventually discharges into the Sydney Harbour about 7.5 kilometres south-east of the site. Porters Creek also runs through the site within a pipe resurfacing in the north western portion of the site. A visual inspection of the creek indicates that the span of the creek appeared to be in poor condition (i.e. signs of pollutants, excess sediments and nutrients) and contained a high density of weeds.

Water quality monitoring is carried out at four sites within the Porters Creek catchment by Council. The most recent water quality monitoring report for Spring 2018 to Autumn 2018 indicates that overall water quality within the Porters Creek catchment was consistent with historical data. Porters Creek is categorised as a highly disturbed with high concentrations of total nitrogen, ammonia and total phosphorus and low dissolved oxygen levels (Sydney Water, 2019).

7.6.3 Assessment of potential impacts

A summary of potential impacts to surface water quality as a result of construction of the carpark, an access road and stockpiling of excavated materials is provided in Table 7-29.

Table 7-29: Summary of potential impacts on water quality

Construction activities	Potential impacts
Site establishment	Establishment of WFU10 may result in erosion and mobilisation of exposed soils and open cuts during the construction of the carpark and access road by stormwater runoff and wind leading to sedimentation of waterways. It should be noted however that these activities are anticipated to be completed in around two weeks, meaning that these impacts would only be short term. If unmitigated, disturbance of contaminated land (refer Section 7.5.2) could result in the mobilisation of contamination or acid sulfate soils by stormwater runoff and subsequent transportation to downstream waterways, potentially increasing contaminant concentrations in the receiving environment.
Stockpiling	Storage of earthwork materials in stockpiles onsite has the potential to impact water quality through the transportation of sediment offsite and impact the aquatic environment if not appropriately managed. Stockpiles may be located within 500 metres of Porters Creek which could potentially present a risk to water quality, if unmitigated. Further, the movement of construction vehicles may transfer soil and pollutants to adjacent roads, which may then be transported via stormwater runoff into waterways.

Construction activities	Potential impacts
Spills and leaks / vehicle washdown	Construction support sites may include activities that have the potential to impact downstream water quality, if unmitigated, through spills of pollutants flowing to downstream waterways. Typical activities that pose a risk include: • Storage of chemicals • Vehicle wash down areas • Vehicle refuelling areas • Vacuum truck waste disposal. If unmitigated, accidental spills or leaks could occur from spillage of diesel during refuelling, and leakage of hydraulic and lubricating oil from plant and equipment. Pre-casting activities and general vehicle maintenance would require vehicle washdown to occur on-site. Rinse water from plant washing has the potential to enter waterways if unmitigated.

The water quality impacts outlined are consistent with construction impacts to water quality outlined in Chapter 17 (Hydrodynamics and water quality) of the environmental impact statement. It should be noted that the activities carried out at WFU10 would be largely consistent with the existing activities currently carried out onsite for the operation of the Porters EcoMRF. Therefore, as WFU10 would unlikely result in a substantial change in land use, and with the implementation of appropriate environmental controls, would unlikely result in a significant change in water quality impacts.

The implementation of erosion and sediment controls would reduce the potential water quality impacts of WFU10. The site would include an appropriately bunded area for the washout of concrete agitators and vacuum truck waste disposal thereby preventing rinse water from vehicle washout entering nearby waterways.

Further assessment would be carried out during the development of an ESCP for the site prior to the commencement of site establishment and would determine the extent of controls to be implemented. The materials sorting area would be completely bunded, with a collection/pump point at the low corner/s of the area. Water that accumulates at the low point/s would be pumped into baffle tanks (or similar) to manage sediment runoff on site. As a result, it is anticipated that water quality impacts associated with WFU10 would be minor.

7.6.4 Cumulative impacts

Chapter 27 (Cumulative impacts) of the environmental impact statement discusses cumulative impacts associated with the project. WFU10 will remain relatively unchanged from its existing use. While the car park area would increase the amount of impervious area at the site, the controls in place would manage any runoff and is not expected to considerably alter the current hydrodynamics at the site. The environmental management measures outlined below will further reduce any potential cumulative impacts.

7.6.5 Environmental management measures

Identified surface water quality impacts would be managed via standard erosion and sediment control management and mitigation measures including:

- REMM WQ1: Erosion and sediment measures will be implemented at all work sites and surface road upgrades in accordance with the principles and requirements in *Managing Urban Stormwater – Soils and Construction, Volume 1* (Landcom, 2004), *Managing Urban Stormwater: Volume 2D Main Road Construction* (NSW Department of Environment, Climate Change and Water, 2008) and relevant guidelines, procedures and specifications of Transport for NSW. A soil conservation specialist will be engaged by both Transport for NSW and the Contractor for the duration of

construction of the project to provide advice regarding erosion and sediment control including review of Erosion and Sediment Control Plans (ESCPs).

- REMM WQ2: Emergency spill procedures will be developed to avoid and manage accidental spillages of fuels, chemicals or fluids during construction.
- Implementation of a Construction Soil and Water Management Plan as outlined in Table D1-1 in Part D of the Response to Submissions Report

As the potential water quality impacts of WFU10 would be appropriately managed by the environmental management measures summarised in Part D of the Submissions Report, no additional measures have been proposed. No amendments to the conditions of the project approval as they relate to water quality impacts are required.

7.7 Biodiversity

7.7.1 Assessment methodology

The assessment methodology for the biodiversity assessment is generally consistent with the methodology presented in Chapter 19 (Biodiversity) of the environmental impact statement.

The environmental impact statement identified biodiversity values within the approved project footprint, assessed the potential impact of the project on these values and recommended environmental management measures to minimise these potential impacts. As WFU10 is outside of the approved project boundary, an assessment of the potential impact of WFU10 on biodiversity is included in this section.

Desktop assessment

A number of desktop database searches were carried out prior to the site survey to identify any ecological constraints, including threatened species and ecological communities listed under the *Biodiversity Conservation Act 2016* (BC Act) and EPBC Act.

A database search was carried out to identify State and Commonwealth records of threatened entities and Commonwealth Matters of National Environmental Significance (MNES) that occur or have the potential to occur within 10 kilometres of WFU10. Databases interrogated include:

- BioNet Atlas of NSW Wildlife, managed by DPE, Environment, Energy and Science division (EES)
- Protected Matters Search Tool managed by the Commonwealth Department of Agriculture, Water and the Environment (DAWE)
- The Native Vegetation of the Sydney Metropolitan Area map data – Version 3.1 (OEH, 2016)
- Threatened species, populations, and ecological communities profile database, managed by EES
- Biodiversity Values Map (EES)
- NSW WeedWise, managed by DPE
- The Commonwealth Bureau of Meteorology's Atlas of Groundwater Dependent Ecosystems (GDEs).

Field survey

An ecological field survey was carried out on 13 April 2022 by an ecologist to detect any potential threatened flora and fauna habitat and other potential habitat features within the site. Weather conditions during the field survey were fair, a with minimum temperature of 14.3 degrees Celsius, maximum temperature of 21.5 degrees Celsius, south-southeast wind of about 30 kilometres per hours and no rain (as per the conditions recorded at the closest weather station in Sydney Olympic Park (station number 066212)).

Areas of vegetation along Wicks Road could not be accessed due to large areas of dense exotic vegetation. These areas were viewed from the road and from behind the vegetation from within the site, however definitive identification of one *Eucalyptus* sp. tree in this area was unable to be made.

7.7.2 Existing environment

The main habitat within the study area comprises construction waste material stockpiles vegetated with exotic species, a small creek comprised run off water from the stockpile and areas of native vegetation on the southern boundary. Lane Cove National Park is located immediately north of the facility. There are small patches of native vegetation, including *Acacia paramattensis*, *Casuarina glauca* (She-oak), *Phragmites australis* (Common Reed) and *Cynodon dactylon* (Couch Grass). The majority of the site was infested with exotic grasses and herbs, including *Cyperus eragrostis* (Tall Flatsedge), *Trifolium repens* (White Clover), *Verbena bonariensis* (Purpletop Vervain), *Cenchrus clandestinus* (Kikuyu Grass), *Foeniculum vulgare*

(Fennel), *Melinis repens* (Red Natal Grass), *Ricinus communis* (Castor Oil Plant), *Cirsium vulgare* (Spear Thistle) and *Chloris gayana* (Rhodes Grass).

Protected biodiversity

Database searches returned 78 flora species, 135 fauna species and nine fungi species within 10 kilometres of the site.

The fungi species are restricted to a small area about three kilometres from the site, and specific habitat requirements for these species are not present within the site. As such, these species have been excluded from this impact assessment. Additionally, all marine species were excluded from the assessment, as the modification would not involve any impacts to the marine environment.

Threatened species recorded within 1.5 kilometres of the site since 1990 are provided in Table 7-30.

No land of high biodiversity value (as per the EES Biodiversity Values Map) are present within the site. An area classified as "Biodiverse riparian land" located about 150 metres north-east of the site (Figure 7-4) would not be impacted.

Plant Community Types and native vegetation

One Plant Community Type (PCT) directly north-west of the site, *Smooth-barked Apple - Red Bloodwood - Blackbutt tall open forest on shale sandstone transition soils in eastern Sydney* (PCT 1845) (Figure 7-4). There are currently no Threatened Ecological Communities (TECs) associated with PCT 1845.

The site includes a number of native She-oak, *Acacia parramattensis* and *Eucalyptus sp.* trees, however these are regenerating individuals and given the history of the site, none of the soils in these areas are original and therefore these areas do not conform to any PCTs or associated TECs. Similarly, the large stand of Common Reed along the Wicks Road frontage does not conform to the definition of any PCTs in the Bionet Vegetation Classification database.

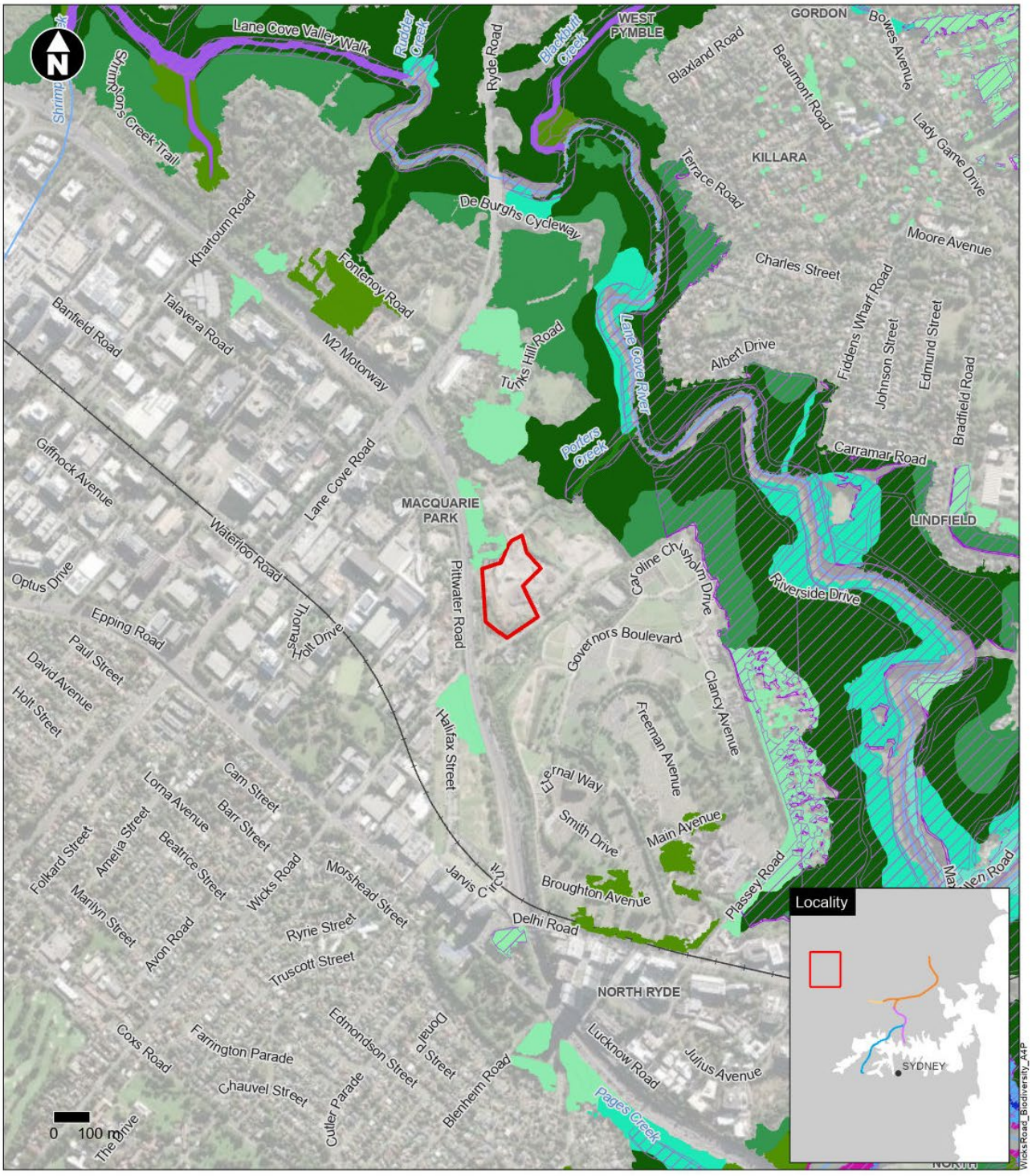


Figure 7-4: Biodiversity constraints identified by database searches

Table 7-30: Threatened flora and fauna species identified within 1.5 kilometres of the site

Scientific name	Common name	BC Act	EPBC Act	Number of records	Most recent record
Flora species					
Callistemon linearifolius	Netted Bottle Brush	Vulnerable	-	1	2008
Darwinia biflora		Vulnerable	Vulnerable	278	2013
Epacris purpurascens var. purpurascens		Vulnerable	-	3	2008
Hibbertia spanantha	Julian's Hibbertia	Critically Endangered	Critically Endangered	2	2018
Macadamia integrifolia	Macadamia Nut	-	Vulnerable	1	2016
Melaleuca deanei	Deane's Paperbark	Vulnerable	Vulnerable	31	1995
Tetratheca glandulosa		Vulnerable	-	1	1995
Fauna species					
Calyptorhynchus lathami	Glossy Black-Cockatoo	Vulnerable	-	1	1999
Ephippiorhynchus asiaticus	Black-necked Stork	Endangered	-	1	2004
Haliaeetus leucogaster	White-bellied Sea-Eagle	Vulnerable	-	1	2019
Miniopterus australis	Little Bent-winged Bat	Vulnerable	-	1	2018
Miniopterus orianae oceanensis	Large Bent-winged Bat	Vulnerable	-	41	2013
Neophema pulchella	Turquoise Parrot	Vulnerable	-	1	2016
Ninox strenua	Powerful Owl	Vulnerable	-	34	2021
Pseudophryne australis	Red-crowned Toadlet	Vulnerable	-	13	2020
Pteropus poliocephalus	Grey-headed Flying-fox	Vulnerable	Vulnerable	21	2019

Non-native vegetation

Exotic plant species such as Couch grass, White Clover, Kikuyu grass, Fennel, Castor Oil Plant and Red Natal Grass were identified at various location within the site growing atop waste material stockpiles. One weed

listed as 'priority' under the *Biosecurity Act 2015* for the Ryde Local Land Service Region was found within the site as detailed in Table 7-31.

Table 7-31: Priority weeds identified within the site

Scientific name	Common name	Biosecurity duty
Lantana camara	Lantana	Prohibition on certain dealings Must not be imported into the state, sold, bartered, exchanged or offered for sale.

Habitat features

Areas of suitable habitat for threatened flora species or threatened fauna habitat features (nests, hollows, decorticating bark) were not identified during surveys within WFU10 boundary.

Aquatic biodiversity

A small drainage channel runs through the site and into Porters Creek. A preliminary aquatic assessment did not find any suitable habitat for any threatened flora or fauna species. It is in a highly degraded state, with no habitat features suitable to amphibians or aquatic biodiversity. The water in this area is very turbid and had a thin oil film on the top. Additionally, no frog calls or tadpoles were observed within the drainage line.

Groundwater dependent ecosystems

No GDEs are present within WFU10 boundary.

7.7.3 Assessment of potential impacts

Removal of vegetation and potential fauna habitat

The proposed modification would require the removal of vegetation along the southern boundary of the site, including large stands of Common Reed, Castor Oil Plant and other woody weeds. This area does not conform to the definition of any PCTs in the BioNet Vegetation Classification Database or TECs listed under the EPBC Act or BC Act. Impacts to this vegetation would not trigger offsets under the BC Act.

The proposed modification may result in the removal of one *Eucalyptus* sp.. The *Eucalyptus* sp. tree is considered to provide limited habitat for fauna as it is immature and does not contain any hollows or nests. The tree is not considered to provide habitat for any threatened species and its removal would have a negligible impact on fauna. Efforts will be made during site establishment to retain the tree.

Any trees to be removed would be subject to replacement at an offset of 2:1, as per condition E184 of the Instrument of Approval (SSI 8863). The removal of the single *Eucalyptus* sp. would therefore require two replacement plantings. This would be incorporated into the Landscape Strategy Report in accordance with condition E187 of the Infrastructure Approval (SSI 8863).

All but one of the native trees within WFU10 (as identified above) would be retained, including stands of *Casuarina glauca* (She-Oak) along the drainage line.

Other vegetation within the site to be removed would include large areas of vegetation growing atop waste material stockpiles, the vast majority of which comprise exotic species, and included such species as Couch grass, White Clover, Kikuyu grass, Fennel, Castor Oil Plant and Red Natal Grass. Weed species would be managed in accordance with *Guide 6: Weed management of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA, 2011) as per REMM B14.

The adjacent PCT 1845 would not be directly impacted by the proposal. This area would provide foraging and roosting fauna habitat and for species that are adapted to disturbed/fragmented woodland habitats.

Additionally, Lane Cover National Park is located to the east of the site which would provide habitat for fauna, including threatened species such as those listed in Table 7-30.

No threatened flora and fauna species on BC Act and EPBC Act listed in Table 7-30 are not likely to be impacted by the proposal.

Aquatic impacts

The inclusion of erosion and sediment controls in and a sediment basin in accordance with the 'Blue Book' (Landcom, 2004) would ensure the proposed works would not exacerbate existing water quality impacts to the drainage channel on site.

Indirect impacts

Indirect impacts as a result of construction activities, including noise impacts and lighting, have the potential to impact upon fauna species in nearby vegetation, including Lane Cove National Park. Works would be temporary and daytime noise levels are expected to be similar to be existing operations. The site currently does not operate at night and night works during construction could impact fauna in nearby Lane Cove National Park and PCT 1845 from light spill and noise and vibration. Impacts would be limited to the construction period of approximately five years (or until completion of the project) and areas in close proximity to the site. Once the construction phase of the project concludes, the area will be returned to its previous function and night works would cease within this area.

An increase in the movement of people, vehicles, machinery, vegetation waste and soil during and following construction activities may facilitate the introduction or spread of exotic grasses and other weeds that currently occur into adjacent areas, such as the nearby Lane Cove National Park and PCT 1845 directly north of the site. Environmental management measures would be required to minimise the risk of introduction and spread of weeds.

7.7.4 Cumulative impacts

Chapter 27 (Cumulative impacts) of the environmental impact statement discusses cumulative impacts associated with the project. The impacts associated with the establishment and operation of WFU10 for the duration of construction is not anticipated to increase the cumulative impacts of the project on biodiversity in the area.

7.7.5 Environmental management measures

The anticipated impacts of WFU10 on biodiversity are largely commensurate with those identified in the environmental impact statement for the project. The risk of the introduction or spread of exotic grasses and other weeds that currently occur into adjacent areas would be managed in accordance with *Guide 6: Weed management of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA, 2011), as per REMM B14.

As such, environmental management measures summarised in Part D of the Submissions Report would be implemented to manage impacts to biodiversity. Furthermore, one additional mitigation measures would apply to WFU10 in order to manage site specific impacts as outlined in Table 7-32. No amendments to the conditions of the project approval as they relate to biodiversity impacts are required.

Table 7-32: Additional management measures (biodiversity)

Reference	Management measure	Responsibility	Phase
B31	**Exclusion zones will be established at WFU10 to clearly define the limits of the works as to not further encroach on vegetation / potential habitat to be retained, including the area of PCT 1845 located immediately north of the construction boundary, drainage area, including surrounding She oak trees.**	Contractor	Pre-construction

7.8 Heritage

7.8.1 Assessment methodology

The environmental impact statement identified Aboriginal and non-Aboriginal heritage values within the approved project footprint, assessed the potential impact of the project on these values and recommended environmental management measures to minimise these potential impacts. As WFU10 is outside of the approved project boundary, an assessment of the potential impact of WFU10 on Aboriginal and non-Aboriginal heritage is included in this section. The methodology for the assessment is consistent with the methodology applied in the environmental impact statement, which includes:

- A review of applicable legislation, guidelines, archaeological and historical reports and publicly available databases to identify heritage items within and adjacent to WFU10 including:
  - Aboriginal Heritage Information Management System (AHIMS)) (Heritage NSW, 2022)
  - EPBC Act Protected Matters Search Tool (DAWE, 2022)
  - National Heritage Register (DAWE, 2022)
  - NSW State Heritage Register (NSW Government, 2022)
  - Section 170 NSW State agency heritage registers (NSW Government, 2022)
  - *Ryde Local Environmental Plan 2014.*
- Assessment of potential heritage impacts from WFU10, and
- Recommendation of appropriate environmental management measures to avoid, mitigate and/or manage potential impacts on relevant Aboriginal and non-Aboriginal heritage values.

The study area for the assessment comprises WFU10 footprint and a 200-metre buffer.

7.8.2 Existing environment

A search of the AHIMS database was conducted on 10 March 2022 and no registered Aboriginal archaeological sites or Aboriginal places were identified within 200 metres of the study area. WFU10 is a disturbed site that has been subject to significant ground disturbance works due to historical use of the site as a municipal waste landfill between 1960 and 1985 (City of Ryde Council, 2021) and existing operations as a waste management facility that receives and processes concrete and asphalt waste.

A search of national, State, regional and local heritage registers identified there are no non-Aboriginal heritage items within the study area. Three heritage items are located within 200 metres of WFU10, as identified in Table 7-33.

Table 7-33: Non-Aboriginal heritage items near WFU10

Heritage item	Reference	Significance	Distance from site
Northern Suburbs Cemetery (Macquarie Park Cemetery)		Local	50 m
Porters Creek Culvert	4305012	State	150 m
Lane Cove National Park	2340183	Local	200 m

Northern Suburbs Cemetery (Macquarie Park Cemetery)

Macquarie Park Cemetery and Crematorium is situated on 59 hectares of Crown land owned by the New South Wales Government, administered by the Department of Primary Industries and managed by

successive Boards of Trustees as a not-for-profit community service in perpetuity since the first burial within the grounds on 20 April 1922. The original name was the Northern Suburbs General Cemetery. The name was changed in 2004 with the introduction of the chapels and crematorium.

Porters Creek Culvert

Porters Creek culvert has a high level of historic and aesthetic significance at a State level, as it is an intact and excellent example of an unemployment relief work, characteristic of the types of relief works favoured in the Lane Cove/Ryde district during the depression years of the 1930s. The culvert, which was constructed by unskilled labour, is a reinforced concrete structure with ornamental sandstone masonry on the parapets, wing walls and the outfacing abutments and piers. Porters Creek culvert also has a high level of historic and aesthetic significance as it was built to facilitate the development of the Lane Cove National Park, officially gazetted in 1938

Lane Cove National Park

Lane Cove National Park is of local heritage significance for its historic, aesthetic, social and research significance, as a natural habitat for rare and threatened species and as an important recreational area. The park is of historical significance as it contains a number of places and features of historic importance.

The park is of aesthetic significance as an important community of urban bushland, part of a larger bushland corridor.

The park is of social significance as a significant recreational area within an urban location. In particular it provides easily accessible outdoor recreation opportunities for residents of the northern suburbs of Sydney, being a popular location for picnics and barbecues, and also for walking, jogging, cycling, canoeing and scenic drives. Lane Cove National Park also has a long history of community association and involvement dating from the beginning of this century, and a high level of community involvement is still a feature of the park.

7.8.3 Assessment of potential impacts

Aboriginal heritage

There are no Aboriginal heritage items or places recorded within 200 metres of the study area. Minimal ground disturbance activities would be required for the establishment of the access road and utility relocation. Given the highly disturbed nature of the site discovery of an unexpected Aboriginal archaeological find is unlikely. If any items of potential Aboriginal archaeological or cultural heritage conservation significance or human remains are discovered they will be managed in accordance with the *Standard Management Procedure: Unexpected Heritage Items* (Roads and Maritime, 2015) in accordance with REMM AH5.

Non-Aboriginal heritage

There are no non-Aboriginal heritage items within the WFU10 site. There are several non-Aboriginal heritage items within the broad vicinity of WFU10 (Table 7-33), however, there are no works directly adjacent to these heritage items associated with WFU10 and there are no significant vibratory construction activities required for the establishment and use of WFU10. As such it is unlikely these items would be directly impacted by WFU10. The revised environmental management measures identified in Part D of the Submissions Report include measures to ensure safe working distances are applied when using vibration-intensive equipment adjacent to heritage items. These measures are sufficient to minimise potential vibration impacts on heritage items within the vicinity of WFU10.

WFU10 may result in a temporary change to the visual setting of non-Aboriginal heritage items including Macquarie Park Cemetery and Lane Cove National Park, however, the works would be consistent with the existing activities currently carried out onsite due to the existing operation of the Porters ECoMRF. As such,

any changes to the visual character of the site as a result of WFU10 will likely be negligible. There would be no permanent impact to the visual setting of non-Aboriginal heritage items within the vicinity of WFU10 as a result of WFU10.

7.8.4 Cumulative impacts

Chapter 27 (Cumulative impacts) of the environmental impact statement discusses cumulative impacts associated with the project. Impacts of WFU10 would likely be limited to a temporary change to the visual setting due to construction activities. At the time of this assessment, no other construction projects have been identified in the vicinity of WFU10. As such, proposed modification is not anticipated to increase the cumulative impacts of the project on heritage in the area.

7.8.5 Environmental management measures

As there are no significant impacts to Aboriginal or non-Aboriginal heritage as a result of WFU10, no further environmental management measures are considered necessary beyond those summarised in Part D of the Submissions Report.

If at any time during use of WFU10 historical heritage materials, features and / or deposits, items of potential Aboriginal archaeological, cultural heritage conservation significance or human remains are encountered during construction, the *Standard Management Procedure: Unexpected Heritage Items Archaeological Finds* (Roads and Maritime, 2015) will be followed as outlined in REMMs NAH10 and AH5. Non-Aboriginal historical heritage and cultural and historic heritage awareness training will be carried out for personnel engaged in work to ensure understanding of potential heritage items as per REMMs NAH12 and AH6.

No amendments to the conditions of the project approval as they relate to Aboriginal or non-Aboriginal heritage impacts are required.

7.9 Social

7.9.1 Assessment methodology

The assessment methodology for the social impact assessment is generally consistent with the methodology presented in Section 2 of Appendix U (Technical working paper: Socio-economic assessment) of the environmental impact statement and in accordance with the *Environmental Impact Assessment Practice Note N05 – Socio-economic assessment* (Transport for NSW, 2020a).

In July 2021, the DPE published the Social Impact Assessment Guideline to guide the preparation of social impact assessments (SIA) prepared for state significant projects. In order to adhere to best practice, this assessment of social impacts has referenced these guidelines when determining the assessment methodology of this SIA.

The key steps in the assessment process included:

- Scoping the likely range of potential social impacts and identifying businesses and communities likely to be affected by the proposed WFU10 at Macquarie Park
- Undertaking a social baseline assessment to understand the existing social characteristics, values and conditions relevant to the proposed WFU10
- Identifying and evaluating positive and negative impacts on existing socio-economic and business conditions and values due to activities carried out for the site establishment and use of WFU10 during construction including consideration of direct, indirect, and cumulative impacts
- Reviewing measures previously identified in Appendix U (Technical working paper: Socio-economic assessment) of the environmental impact statement and identifying additional measures to avoid, minimise or mitigate impacts on communities, and businesses arising from the proposed modification.

Criteria for determining the sensitivity of receptors and magnitude of proposed works are outlined in Table 7-34 and the evaluation matrix is shown in Table 7-35.

Table 7-34: Evaluation criteria (levels of sensitivity and magnitude)

Level	Description
Level of sensitivity	
Negligible	No vulnerability and able to absorb or adapt to change
Low	Minimal areas of vulnerabilities and a high ability to absorb or adapt to change
Moderate	A number of vulnerabilities but retains some ability to absorb or adapt to change
High	Multiple vulnerabilities and/or very little capacity to absorb or adapt to change
Level of magnitude	
Negligible	No discernible positive or negative changes caused by the impact. Change from the baseline remains within the range commonly experienced by receptors
Low	A discernible change from baseline conditions. Tendency is that the impact is to a small proportion of receptors over a limited geographical area and mainly in the vicinity of the proposal. The impact may be short term, or some impacts may extend over the life of the proposal

Level	Description
Moderate	A clearly noticeable difference from baseline conditions. Tendency is that the impact is to a small to large proportion of receptors and may be over an area beyond the vicinity of the proposal. Duration may be short- to medium-term, or some impacts may extend over the life of the proposal
High	A change that dominates over existing baseline conditions. The change is widespread or persists over many years or is effectively permanent

Table 7-35: Evaluation matrix (assessing level of significance)

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

Social locality

The social locality for this socio-economic assessment includes those communities that may experience impacts due to the location of WFU10, construction activities and changes in travel patterns for residents, workers and visitors. It comprises the ABS Statistical Areas Level 2 (SA2) geographies that either overlap or are located near WFU10.

The ABS SA2 geographies relevant to the proposed modification include:

- Macquarie Park – Marsfield
- Gordon – Killara
- North Ryde – East Ryde.

The WFU10 site and the nearest receivers at Lachlans Line are located within the Macquarie Park – Marsfield area. The next nearest receivers are located around 650 metres north-east of the site and fall within the Gordon – Killara area. Receivers within the North Ryde-East Ryde area are located along Epping Road, which forms part of the vehicle haulage route.

The Macquarie Park – Marsfield SA2 and North Ryde – East Ryde SA2 is located within the Ryde LGA and the Gordon – Killara SA2 within the Ku-ring-gai LGA.

7.9.2 Existing environment

Social baseline assessment

Macquarie Park forms part of Greater Sydney's Eastern Economic Corridor. The strategic centre of Macquarie Park, located to the west of the site across the M2, is a health and education precinct and is the largest non-CBD office market in Australia.

To the east of the site is the Lane Cove National Park. The park is of social significance as a significant recreational area within an urban location. It provides easily accessible outdoor recreation opportunities for residents of the northern suburbs of Sydney, being a popular location for picnics and barbecues, and also for walking, jogging, cycling, canoeing and scenic drives. Lane Cove National Park also has a long history of community association and involvement dating from the beginning of this century, and a high level of community involvement is still a feature of the park.

The study area had an estimated resident population of about 55,361 people in 2016. Between 2006 and 2016, the estimated resident population of the study area grew by about 8,539 people, an average growth rate of about 2.5 per cent annually. This was relatively high when compared to the population growth in the Greater Sydney region over the same time period. The population size for each area is provided below in Table 7-36.

Table 7-36: Population change in the social locality

Location	Population		Population change (average annual growth) (%)
	2006	2016	
Macquarie Park – Marsfield	17,456	21,724	2.6
Gordon – Killara	16,885	21,327	2.4
North Ryde - East Ryde	12,481	12,310	-0.13
Greater Sydney	4,256,161	5,029,768	1.7

Age profile

The Macquarie Park – Marsfield area had a relatively low median age of 32 compared to the Greater Sydney region median age of 36 while the Gordon-Killara and North Ryde-East Ryde areas measured a higher median age of 40 and 41 respectively. Figure 7-5 shows the proportion of people aged 65 and over near the site. The communities of the Gordon- Killara and North Ryde-East Ryde areas display a proportionally larger population of people aged over 65 while the Macquarie Park – Marsfield area has a relatively larger population within the 15-65 year age group in comparison with Greater Sydney.

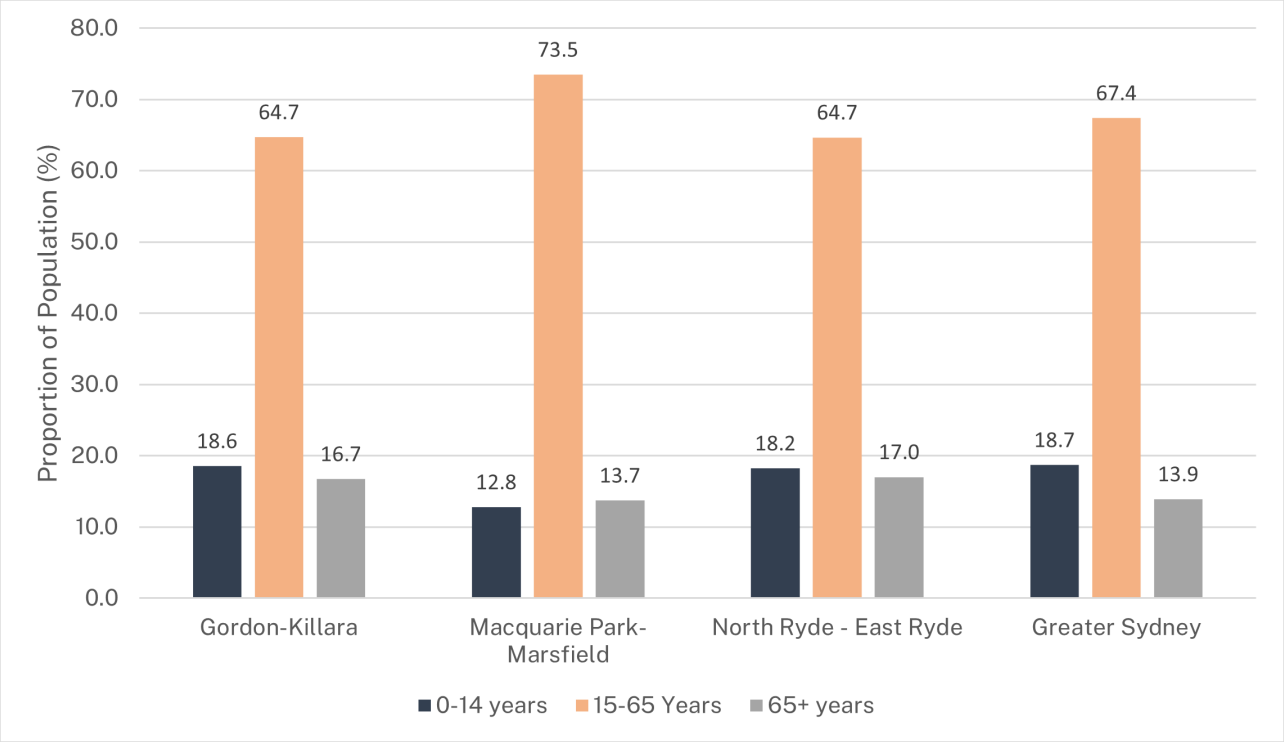


Figure 7-5: Age Profile, 2016

Household composition

Family households made up a larger proportion of households in the Gordon-Killara and North Ryde-East Ryde areas accounting for 82.1 per cent and 79.3 per cent of households respectively compared to the Greater Sydney's 73.6 per cent. The Macquarie Park-Marsfield area had a significantly larger proportion of single (or lone) person (28.4 per cent) and group households (9.5 per cent) compared to Greater Sydney's 21.6 per cent and 4.7 per cent respectively.

Vehicle ownership

A greater proportion of households in the Gordon Killara and North Ryde-East Ryde had two or more registered motor vehicles compared to the Greater Sydney area (Table 7-37). Households in the Macquarie Park-Marsfield area had a significantly larger proportion of household with none or one registered motor vehicle likely due to the greater number of single (or lone) person households, proximity to the strategic centre of Macquarie Park and greater accessibility to public transport.

Table 7-37: Number of registered motor vehicles per household

Number of registered motor vehicles	Macquarie Park-Marsfield	Gordon-Killara	North Ryde-East Ryde	Greater Sydney
None	16.3	4.6	7.7	11.1
1 motor vehicle	50	37.2	33.1	37.1
2 motor vehicles	24.6	40.1	38.9	32.8
3 or more vehicles	6.2	16.4	17.9	15.7

Income and employment

The Gordon-Killara and North Ryde-East Ryde community had relatively high incomes compared to the Greater Sydney region, with higher personal and household median incomes, lower proportions of low income households (that is, with a weekly income of less than $650) and higher proportions of high income

households (that is, with a weekly income of $3,000 or more) (refer to Table 7-38). The Macquarie Park-Marsfield area had relatively low incomes with slightly higher proportions of low income households and lower proportions of low income households.

Table 7-38: Weekly household income

Locality	Median Total income ($/week)		Weekly household income (%)	
	Personal	Household	<$650 / week	>$3,000 / week
Macquarie Park - Marsfield	638	1,645	20.0	18.4
Gordon - Killara	882	2,428	12.7	41.7
North Ryde – East Ryde	733	2,115	16.3	33.8
Greater Sydney	719	1,750	16.8	23.6

There were about 46,386 people in the locality aged 15 years or over who were either employed or looking for work at the time of the 2016 Census. This represented a labour force participation rate of 59.7 per cent, which was below the average for the Greater Sydney region (61.6 per cent) (refer to Table 7-39).

The Gordon-Killara area had an unemployment rate generally consistent with the Greater Sydney average at 5.9 per cent while the Macquarie Park-Marsfield area had an unemployment rate relatively higher at 9 per cent as shown in Table 7-39 below.

Table 7-39: Labour force participation and unemployment

Locality	Labour force	Labour force participation (%)	Unemployed (%)
Macquarie Park - Marsfield	11,163	58.9	9.0
Gordon - Killara	10,335	59.5	5.9
North Ryde – East Ryde	6,206	61.7	5.1
Greater Sydney	2,418,899	61.6	6.0

A proportionally higher proportion of people travelled to work via public transport within the locality with the exception of the North Ryde-East Ryde area. Around 33.2 per cent of residents from the Gordon-Killara area and about 31.1 per cent of residents from the Macquarie Park-Marsfield area used public transport compared to the 22.8 per cent in the Greater Sydney region.

The locality also reported a lower proportion of people who travelled to work by car as a driver or passenger with the exception of the North Ryde-East Ryde area. Around 50.4 per cent of residents from the Gordon-Killara area and about 46.6 per cent of residents from the Macquarie Park-Marsfield area travelled to work via car compared to the 59.8 per cent in the Greater Sydney region.

The proportion of people who travelled to work by car as a driver or passenger (59.6 per cent) or by public transport (23 per cent) North Ryde-East Ryde area was generally consistent with the Greater Sydney region.

The top responses for travel to work in the Gordon-Killara, Macquarie Park-Marsfield and Greater Sydney areas are show below in Table 7-40.

Table 7-40: Top responses for mode of travel to work

Gordon-Killara		Macquarie Park-Marsfield		North Ryde – East Ryde		Greater Sydney	
Mode of travel	**%**	**Mode of travel**	**%**	**Mode of travel**	**%**	**Mode of travel**	**%**
Car, as driver	42.8	Car, as driver	40.7	Car, as driver	53.1	Car, as driver	52.7
Train	25.9	Bus	11.6	Bus	14.0	Train	10.9
Worked at home	7.8	Train	11.3	Worked at home	4.9	Bus	5.5
Car, as passenger	3.1	Walked only	9.3	Train	4.2	Worked at home	4.4
Train, car as driver	2.7	Train, bus	5.4	Car, as passenger	4.3	Walked only	4.0

Working population

ABS working population data provides information based on where a person goes to work. At the time of the 2016 Census, there were about 53,898 people who worked within the locality, of which 89.8 per cent worked within the Macquarie Park-Marsfield area. This reflects the major employment centres of Macquarie Park. Key industries of employment for people working in the locality are described in Table 7-41 below.

Table 7-41: Industry of employment (top five responses)

Macquarie Park-Marsfield		Gordon-Killara		North Ryde – East Ryde	
Industry	**People employed (%)**	**Industry**	**People employed (%)**	**Industry**	**People employed (%)**
Telecommunications Services	10.4	Preschool and School Education	11.1	Computer System Design and Related Services	14.2
Machinery and Equipment Wholesaling	9.7	Professional, Scientific and Technical Services (except Computer System Design and Related Services)	9.8	Professional, Scientific and Technical Services (except Computer System Design and Related Services)	7.3
Tertiary Education	8.7	Food and Beverage Services	6.4	Machinery and Equipment Wholesaling	6.9
Computer System Design and Related Services	7.2	Medical and Other Health Care Services	6.2	Hospitals	5.4
Medical and Other Health Care Services	5.9	Public Administration	5.7	Basic Chemical and Chemical Product Manufacturing	4.6

In 2016, about 63.6 per cent of people working in the study area travelled by car for all or part of their journey to work, compared to 58.3 per cent in the Greater Sydney region.

Social Infrastructure

This section provides an overview of social infrastructure located near the site that may be potentially affected by the proposed WFU10. Social infrastructure located near the site are outlined below in Table 7-42.

Table 7-42: Social infrastructure located near WFU10

Type of facility	Facility	Location	Description
Place of worship and cultural facilities	Lotus Pavilion	Caroline Chisholm Drive, Macquarie Park	The Lotus Pavilion is a chapel that caters specifically for the funeral traditions and etiquette of the Hindu and Buddhist communities
	Camellia Chapel	25 Plassey Road, Macquarie Park	A number of chapels located within the south-eastern area of the Macquarie Park Cemetery and Crematorium provide caters for funeral services for a variety of religious backgrounds and beliefs
	Palm Chapel		
	Magnolia Chapel		
	Rose Chapel		
	Eden Gardens	307 Lane Cove Road, Macquarie Park	Eden Gardens hosts an annual art exhibition, 'Eden Unearthed', which is the largest privately funded exhibition of its kind in Australia.
Education facilities / Childcare centres	Macquarie Park Montessori Academy Child Care Centre	12 Waterloo Road Macquarie Park	The centre offers long day child care for children aged between six weeks and six years. The centre is open Monday to Fridays from 7.30am to 6.00pm
	Nought To Five Early Childhood Centre	16 Waterloo Road, Macquarie Park	The centre offers long day child care for children aged between zero to five years. The centre is open Monday to Fridays from 7.15am to 6.00pm
Sport, recreation, and leisure facilities	Lane Cove National Park	Macquarie Park	Lane Cove National Park is of local heritage significance for its historic, aesthetic, social and research significance, as a natural habitat for rare and threatened species and as an important recreational area. The park is of social significance as a significant recreational area within an urban location. In particular, it provides easily accessible outdoor recreation opportunities for residents of the northern suburbs of Sydney, being a popular location for picnics and barbecues, and also for walking, jogging, cycling, canoeing and scenic drives.
	Lane Cove River Tourist Park	13 Plassey Road, Macquarie Park	A caravan park and campground located within the boundaries of the Lane Cove National Park
	St Crispens Green	Albert Drive, Killara	Open space located near residences in Killara

Type of facility	Facility	Location	Description
	Kywung reserve	Wicks Road, Macquarie Park	Open space located to the east of the M2 Motorway, south of Wicks Road
	Tirriwan reserve	Wicks Road, Macquarie Park	Open space located to the west of the M2 Motorway, south of Wicks Road
	Keith Thompson Hockey Centre	18 Waterloo Road, Macquarie Park	Utilised by the Ryde Local Hockey Club, one of Australia's largest hockey clubs and caters for men's, women's and junior hockey players of all ages
Health and emergency services	Macquarie University Hospital	3 Technology Place, Macquarie University	A not-for-profit healthcare provider which has 144 beds and offers medical imaging, radiotherapy, specialist clinics and general practice services
	Macquarie Hospital	Wicks Road, North Ryde	A referral mental health facility for acute admissions and rehabilitation services
	WiSE Specialist Emergency Clinic	17 Khartoum Road, Macquarie Park	A stand-alone facility offering Specialised Emergency and provides immediate medical attention when an injury or illness is considered non-life threatening.
	Joy and Happiness Love and Gratitude	Macquarie Park, North Ryde Warehouse, Wicks Road, North Ryde	A community health service that offers treatment and advice for chronic disorders and is open 7 days a week from 6am to 6pm.
	Macquarie Medical Centre	Macquarie Shopping Centre, Herring Rd, North Ryde	The medical centre is open Monday to Thursday (8am – 7pm) and Friday to Sunday (8am – 6pm).
	North Ryde Medical Centre	199 Coxs Road, North Ryde	The medical centre is open Monday to Friday (8am – 6pm) and Saturday (8am – 12pm)
Community Support Services	Ryde SES	143 Wicks Road, Macquarie Park	Volunteer-based organisation that provides emergency assistance to the people of NSW 24 hours a day, seven days a week.

Businesses

The strategic centre of Macquarie Park is a health and education precinct. The area is zoned B3 Commercial Core and B7 Business Park. The centre contains Macquarie University and Macquarie University Hospital. Wholesale trade, professional, scientific and technical services and information, media and telecommunications are significant employment sectors in the centre.

The Macquarie Park strategic centre provides a mix of commercial, retail, health and education services. This cluster comprises commercial offices and businesses (for wholesale retailers, food and drink retailers as well as gyms and fitness centres). The area comprises a wide range of different uses including residential, community facilities and schools as well as various wholesale retailers and food and drink retailers. Most businesses in the area service a neighbourhood catchment as well as those visiting for work.

Community values

Community values relating to local amenity and character refer to natural and physical qualities and characteristics that contribute to a person's appreciation of their surroundings. They relate to such things as built form and landscape, environmental conditions (that is, noise levels and existing air quality), and heritage and cultural features.

Local amenity and character in the study area is generally characterised by a diversity of land uses including:

- Residential neighbourhoods within Killara and North Ryde and pockets of high-density residential areas in Macquarie Park
- Major commercial centre in Macquarie park
- Major community facilities such as hospitals (including the Macquarie University Hospital), educational uses (such as Macquarie University) and cultural facilities.
- Lane Cove National Park valued by local and regional communities for its landscape amenity, heritage and recreational values

Overall, levels of community cohesion and sense of belonging in the study area are expected to be good, with communities having access to a diverse range of local and regional level community facilities, strong support networks and a variety of meeting places such as local centres, community centres, sporting clubs and cafes.

Road corridors such as the existing M2 Motorway create barriers, both real and perceived, to local movement and connectivity within the study area and form boundaries to neighbourhoods, pedestrian and cycle movements and to some local centres. This may influence some people's ability or desire to move through the study area, impacting on their access to services, meeting places, and participation in social networks.

Access and connectivity

The study area is serviced by several major transport facilities that provide a high level of access and connectivity within the study area, to the wider Sydney area and regional NSW. These include roads, rail services, bus services and active transport. Existing major roads near the WFU10 include the M2 Motorway, Lane Cove Road and Epping Road.

Public transport

The Sydney Metro is a standalone rail network, comprising Sydney Metro Northwest and Sydney Metro City & Southwest. Metro stations located near the project would include stations at Macquarie Park and North Ryde. The nearest bus stop is located around 400 metres from the site on Halifax Street.

7.9.3 Assessment of potential impacts

Way of life

The proposed modification would be unlikely to result in any substantial disruption to people's way of life. While WFU10 would result in a minor redistribution of the construction workforce. This is not expected to result in an influx of workers at a scale that would impact on population and demography in the locality.

People within the locality are generally reliant on cars to travel as indicated proportion of households that have one or more registered motor vehicles and the reliance on cars to travel to and from work. However, the Macquarie Park-Marsfield area reported a remarkably higher proportion of households with only one or no registered motor vehicles, as well as a lower proportion who relied on cars as a mode of travel to work, likely due proximity to the strategic centre of Macquarie Park and greater accessibility to public transport. It should also be noted that the 2016 data does not account for the opening of the Sydney Metro and two additional train stations within the locality potentially further reducing reliance on cars as a mode of transport.

While the locality would likely be susceptible to impacts of increased construction traffic, the TIA provided in Appendix E.1 indicates that traffic generated by WFU10 would have minimal impact to nearby intersection performance. Therefore, it is unlikely that WFU10 would result in any substantial impact to people's way of life in this regard.

Overall, potential impacts to way of life as a result of WFU10 have been assessed to have a negligible significance, with the sensitivity of the locality to changes identified as moderate and the magnitude of the impact considered negligible.

Accessibility

The proposed modification would be unlikely to result in any substantial impacts to how people access and use nearby infrastructure, services and facilities. There are no cycle paths along Wicks Road in front of WFU10. No formal pedestrian footpaths are provided along Wicks Road in front of the site, which would be the main road used by construction vehicles and workforce vehicles during the use of WFU10.WFU10 is located near where Wicks Road terminates to the west indicating that no services can be accessed via the road where the site is located.

Any potential accessibility impacts of WFU10 would likely be limited to any potential change in travel time for employees and customers for infrastructure, services and facilities located on or accessed via the haulage route. The TIA provided in Appendix E.1 indicates that traffic generated by WFU10 would have minimal impact to nearby intersection performance. As such, the impacts of WFU10 to accessibility of nearby services and facilities are anticipated to be minor.

Traffic impacts would be limited to the Macquarie Park-Marsfield area which is serviced by the Sydney Metro and would have some capability to absorb any impacts to the road network. Road corridors such as the existing M2 Motorway create barriers, both real and perceived, to local movement and connectivity within the study area and form boundaries to neighbourhoods, pedestrian and cycle movements and to some local centres meaning that individuals in the Gordon-Killara area would be less likely to access services along the same road network.

Overall, potential impacts to surroundings as a result of WFU10 have been assessed to have a negligible significance, with the sensitivity of surroundings to changes identified as low and the magnitude of the impact considered negligible.

Community

The locality hosts a number of sport, recreation and leisure and cultural facilities that service the local community as well as the Lane Cove National Park which is of both local and regional significance. These

facilities that help to foster a sense of community and local identity that attract visitors from the study area and the wider region. During construction, reduced amenity of public spaces and increased construction traffic may discourage some residents, tourists and visitors from utilising these facilities or detract from their enjoyment of them. This has potential to temporarily reduce levels of social interaction for some communities.

Activities to be carried out at WFU10 would be largely consistent with activities already occurring onsite for the operation of Council's construction waste management facility and therefore would not result in any material change to the existing landscape character or visual impacts already experienced by nearby receivers. As such, it is unlikely that WFU10 would interfere with the community's enjoyment of nearby cultural and recreational facilities.

The TIA provided in Appendix E.1 indicates that traffic generated by WFU10 would have minimal impact to nearby intersection performance. As such, the traffic impacts associated with WFU10 would be unlikely to discourage the use of these facilities.

Overall, potential impacts to community cohesion as a result of WFU10 have been assessed to have a negligible significance, with the sensitivity of meeting places to changes identified as moderate and the magnitude of the impact considered negligible.

Health and wellbeing

Dust generated by construction activities may result in health and amenity impacts to nearby receivers. The potential for construction dust to adversely impact on the health and wellbeing of groups in the community who may be more sensitive to changes in air quality (such as children, elderly or people who suffer asthma or similar conditions) is likely to be of concern for community members near construction activities. Potential risks to human health from construction dust are generally expected to be appropriately managed with the implementation of dust management measures. The sensitivity of the general community to health and safety impacts and the magnitude of possible impacts was considered low, resulting in the overall significance of potential impacts to community health and safety from WFU10 being assessed as low.

Surroundings

The study area includes a number of open space areas, reserves and parks that are valued by local and regional communities for their landscape amenity, heritage and recreational values. Two locally listed non-Aboriginal items are located within close proximity to the site, Lane Cove National Park to the west and the Macquarie Park Cemetery and Crematorium to the south.

Lane Cove National Park is valued for its historic, aesthetic, social and research significance, as a natural habitat for rare and threatened species and as an important recreational area. The park is of historical significance as it contains a number of places and features of historic importance. The park is of aesthetic significance as an important community of urban bushland, part of a larger bushland corridor. The park protects a number of ancient Aboriginal sites that are located within the park grounds.

Macquarie Park Cemetery and Crematorium has been managed as a not-for-profit community organisation since the first burial within the grounds in April 2022. Cemetery's serve a community's emotional, religious and cultural needs. As an expression of people's culture and identity, cemeteries comprise a resource which allow the community to delve into their past. The monuments and graves represent the last public memorials of many people, both famous and unknown, who were involved with the growth of the local area in which they are buried. In this way the headstones themselves, through the names, occupations, dates and epitaphs, provide a largely unique social, literary and economic record of the district.

Visual and noise impacts may disrupt or reduce the use and enjoyment of areas of Lane Cove National Park and Macquarie Park Cemetery and Crematorium and its surrounds that are near to WFU10, for some

people, including for formal and informal recreational activities. As noted in Section 7.10 and Section 7.3 visual and noise impacts of WFU10 would be minimal and any impacts experienced as a result of the proposed modification would be temporary.

Overall, potential impacts to surroundings as a result of WFU10 have been assessed to have a negligible significance, with the sensitivity of surroundings to changes identified as high and the magnitude of the impact considered negligible.

Livelihoods

The use of the WFU10 site would be unlikely to result in any notable impact to people's capacity to sustain themselves through employment or business. The local character and amenity of a place can affect the enjoyment and desirability of the environment, visitation numbers and trends, and consequently the economic activity of a commercial centre and the businesses located there.

Construction works have the potential to temporarily affect the amenity of an environment noise, construction equipment, unsightliness, the removal of established vegetation, installation of fencing, and the visual appearance of temporary construction support sites. These impacts would affect the overall amenity of the business environment and may impact where a person visits or purchases goods and services and may also generate noise levels that impede communication. This can affect the function of businesses that require interaction between customers and employees. Businesses such as retail, food and beverage services or telecommunication may experience communication difficulties during highly noisy activities.

Businesses most likely to be impacted are located within the Macquarie Park strategic centre which is well serviced by public transport and would have the capability to absorb and adapt to minor impacts to the road network. Additionally, due to the existing use of the site, WFU10 would be unlikely to result in any material change to the character of the area and impact the visual amenity of the area. As such the sensitivity of nearby businesses is considered to be low.

Any effects would be experienced at an individual business level, with limited discernible changes to overall performance of the business centre. An increase in heavy vehicles on the surrounding road network may affect the efficiency of access for employees, customers and for servicing and deliveries. However, the results of the TIA (Appendix E.1) indicate that traffic impacts of the proposed modification would be minor. Additionally, the noise assessment provided in Appendix E.2 and Section 7.3 indicates that activities carried out at WFU10 would not result in any exceedances to the established NMLs and will therefore be unlikely to result to any notable noise impacts to nearby receivers. As WFU10 would be decommissioned after construction is complete, any impacts on businesses during construction would be temporary. Construction in the area may benefit food, beverage and convenience retailers with the WFU10 site potentially promoting passing trade with an increase in workers accessing the area.

Overall, potential impacts to livelihoods as a result of WFU10 have been assessed to have a negligible significance, with the sensitivity of the locality to changes identified as low and the magnitude of the impact considered negligible.

7.9.4 Cumulative impacts

Chapter 27 (Cumulative impacts) of the environmental impact statement discusses cumulative impacts associated with the project.

Where construction timeframes for projects occur sequentially, there is potential for disturbance and disruptions due to such things as construction noise, dust and construction traffic and access changes to occur over extended periods, potentially resulting in construction fatigue for some individuals.

As noted in Section 7.3.4, to minimise the risk of cumulative impacts Transport for NSW will consult with proponents of other construction works near the WFU10 site and take reasonable steps to coordinate works to minimise cumulative noise and vibration impact and coordinate respite for affected sensitive receivers.

At the time of this assessment, no other construction projects have been identified in the vicinity of the WFU10 site.

7.9.5 Environmental management measures

No further environmental management measures are considered necessary beyond those summarised in Part D of the Submissions Report. No amendments to the conditions of the project approval as they relate to social impacts are required.

7.10 Landscape character and visual

7.10.1 Assessment methodology

The environmental impact statement identified the landscape character and visual receivers within and adjacent the approved project footprint, assessed the potential impact of the project on these visual receivers and recommended environmental management measures to minimise these potential impacts. As WFU10 is outside of the approved project boundary, an assessment of the potential impact of WFU10 on landscape character and visual amenity is included in this section.

Chapter 22 (Urban design and visual amenity) of the environmental impact statement includes a landscape character and visual impact assessment of construction activities associated with the approved project carried out in accordance with Environmental Impact Assessment Practice Note - *Guidelines for Landscape Character and Visual Impact Assessment* (NSW Roads and Maritime Services, 2013).

Assessment of the impacts on landscape character involves an understanding of the built, natural and cultural character or sense of place. Assessment of visual impacts relates to the impacts of the project on public and private views on a day-to-day basis.

The methodology for the assessment is consistent with the methodology applied in the environmental impact statement, which includes:

- A desktop assessment, including consideration of relevant legislation and policy requirements, review of the landscape context and study area and determination of sensitive receiver locations and potential viewpoints
- Surveys of the study area to confirm significant landforms and potential viewpoints
- Assessment of potential landscape character and visual impacts (including cumulative impacts)
- Review of the Project REMMs to determine whether they are adequate to mitigate potential impacts of WFU10.

7.10.2 Existing environment

WFU10 is located in east of the M2 Motorway in Macquarie Park. The site and its surrounding area exist in a diverse landscape. The site is currently operated as a waste management facility with a Cleanaway recycling centre located to the east. Beyond the Cleanaway recycling centre is the Lane Cove National Park which continues further northeast and is valued as both an area of high conservational and recreational value. To the east of the Lane Cove National Park is the suburb of Killara, a low-density residential area.

Immediately to the west of the site is the M2 Motorway followed by a commercial area containing businesses including Epson Australia, Aegros Group, Tyres Central, Australia Post and a hospitality venue known as The Governor Hotel. Across Wicks Road to the south of the site if the locally significant heritage site, the Macquarie Park Cemetery and Crematorium.

The key surrounding receivers of WFU10 are identified in Figure 7-6 as:

- Viewpoint 1: Killara residences – dwellings along Albert Drive
- Viewpoint 2: Special activities – Macquarie Park Cemetery and Crematorium
- Viewpoint 3: Residences located within Lachlans Line apartment complex
- Viewpoint 4: Commercial and industrial – Commercial receivers to the east of the M2
- Viewpoint 5: Conservation and public recreation – Lane Cove National Park.

7.10.3 Assessment of potential impacts

As the proposed modification is generally consistent with the existing use of the site, there are no changes to the landscape character anticipated.

A visual impact assessment of WFU10 is provided below in Table 7-43. WFU10 has been assessed as having a negligible impact at all viewpoints.

Vegetation located within the Lane Cove National Park and along the M2 Motorway and Wicks Road provide screening for most of the surrounding sensitive areas. Additionally, due to the existing use of the site as a resource recovery facility and current stockpiling activities, the nature and scale of the change is likely to be inconsequential as WFU10 would comprise of activities largely consistent with the existing land use.

7.10.4 Cumulative impacts

Chapter 27 (Cumulative impacts) of the environmental impact statement discusses cumulative impacts associated with the project. The proposed modification is not expected to result in any cumulative landscape character and visual impacts. Activities to be carried out at WFU10 would be largely consistent with activities already occurring onsite for the operation of Council's construction waste management facility and therefore would not result in any material change to the existing landscape character or visual impacts already experienced by nearby receivers.

7.10.5 Environmental management measures

No further environmental management measures are considered necessary beyond those summarised in Part D of the Submissions Report. No amendments to the conditions of the project approval as they relate to landscape character and visual impacts are required.

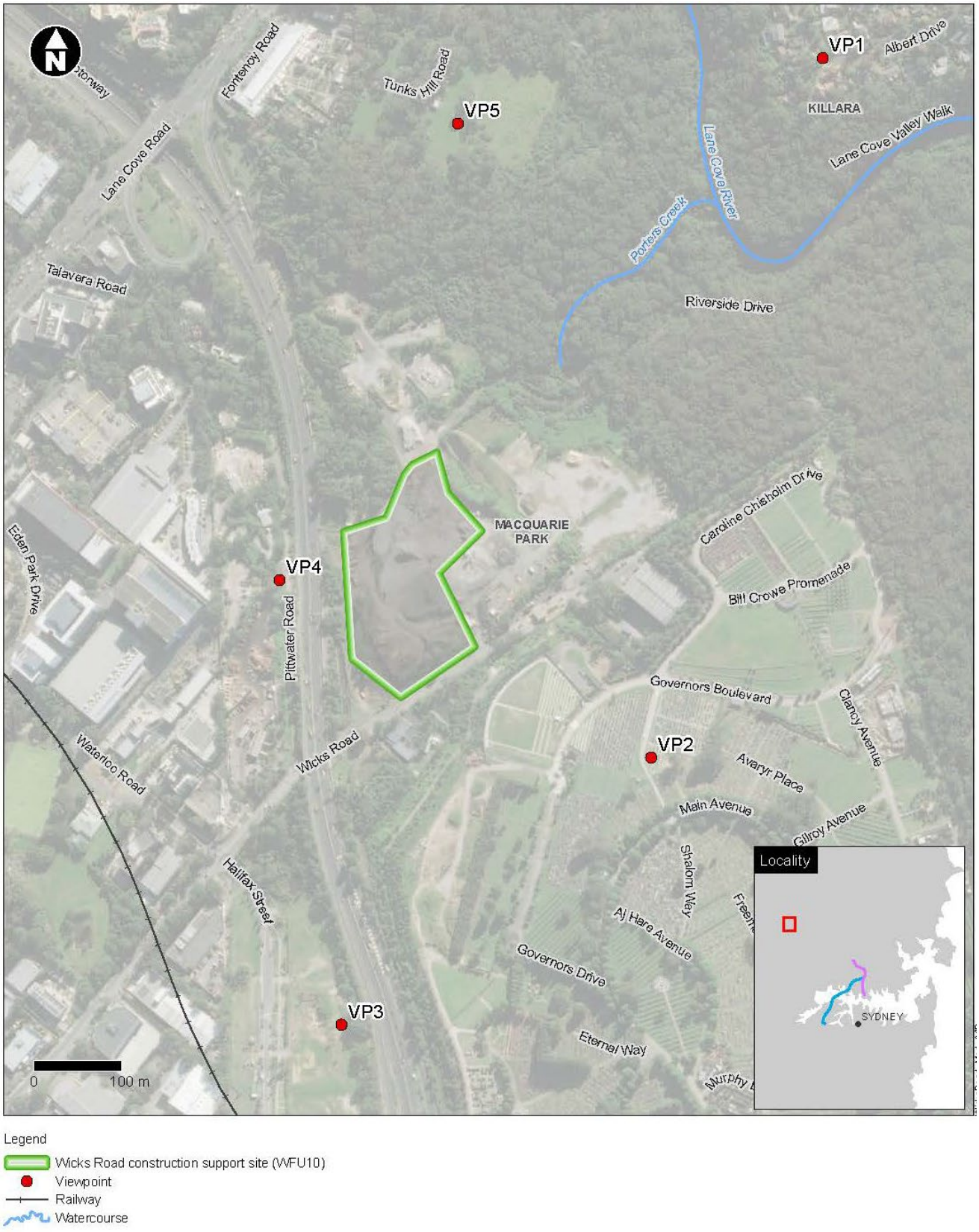


Figure 7-6: Visual receivers within the vicinity of WFU10

Table 7-43: Visual impact assessment

Sensitivity	Magnitude	Impact
Viewpoint 1		
High This viewpoint is located in a residential area about 650 metres from the site in Killara. The quality of view would be of importance to the residential viewers and viewers would be subject to long viewing durations. This view is therefore of high sensitivity.	**Negligible** WFU10 is obstructed from residential viewers by the dense vegetation within the Lane Cove National Park. Subsequently it is unlikely that the site would be visible from this viewpoint.	**Negligible**
Viewpoint 2		
High This viewpoint is located with the Macquarie Park Cemetery and Crematorium. Viewers would likely consist of people attending funeral services as well as those undertaking self-guided tours of the site. Given the local heritage significance of the site and the potential for recreational activities to occur at this site, this viewpoint has been assessed as having high sensitivity.	**Negligible** Dense vegetation located along both sides of Wicks Road would likely provide adequate visual screening of WFU10. Furthermore, given the existing use of the site as a resource recovery facility and existing stockpiling activities that occur on-site, the nature and scale of the change is likely to be inconsequential	**Negligible**
Viewpoint 3		
High This viewpoint is located within the Lachlans Line development which consists of high-density residential and mixed-use development. Stage one of the development is complete comprising of four high rise residential buildings. It is predicted that stages two and three that will include additional high-rise buildings will be completed by 2030. Due to the large number of viewers that would be subject to long viewing durations, this view is considered to be of high sensitivity.	**Negligible** WFU10 is located around 220 metres north-west of this viewpoint and would likely be visible to residents with north-westerly views. However, given the existing use of the site as a resource recovery facility and existing stockpiling activities that occur on-site, the nature and scale of the change is likely to be inconsequential	**Negligible**

Sensitivity	Magnitude	Impact
Viewpoint 4		
Low This viewpoint represents views within the commercial area located around 280 metres east of the proposed construction support across the M2 Motorway. As this viewpoint is located in a commercial area, the quality of the viewpoint is likely to be of low importance to viewers who would consist predominantly of workers within the area. Viewers may also include consumers of the services provided by business, however they would unlikely be subject to long viewing durations. This view is therefore of low sensitivity.	**Negligible** The proposed construction viewpoint may be visible from this viewpoint however would likely be partially obscured by intervening vegetation located immediately east and west of the M2 Motorway. However, given the existing use of the site as a resource recovery facility and existing stockpiling activities that occur on-site, the nature and scale of the change is likely to be inconsequential	**Negligible**
Viewpoint 5		
High Tunks Hill picnic area is a public open space located within the Lane Cove National Park. This viewpoint represents recreational areas in the Lane Cove National Park, north of the site. This location is used for recreational activities and a large number of viewers would be present. This view is therefore of high sensitivity.	**Negligible** WFU10 is located about 400 m south of this viewpoint. Views of WFU10 are obscured by dense vegetation within the Lane Cove National Park. Park users would not have views of WFU10 given the intervening vegetation.	**Negligible**

7.11 Waste management

7.11.1 Assessment methodology

The assessment methodology for the waste management assessment is consistent with the methodology presented in Chapter 24 (Resource use and waste management) of the environmental impact statement.

The assessment of waste management comprised:

- Review of the likely waste streams and volumes
- Identification of the environmental impacts associated with resource use and the generation (and subsequent disposal) of residual waste materials
- Review of the management strategies outlined in the environmental impact statement for waste during construction including:
  - Managing construction waste through the resource management hierarchy established under the *Waste Avoidance and Recovery Act 2001*
  - Developing procedures for the assessment, handling, stockpiling and disposal of potentially contaminated materials and wastewater, in accordance with the Waste Classification Guidelines (NSW EPA, 2014).

7.11.2 Assessment of potential impacts

Waste management impacts associated with the project were assessed in Chapter 24 (Resource use and waste management) of the environmental impact statement. The assessment determined that the potential impacts of the project during construction would relate to the generation and management of wastes (non-spoil) and the generation and management of spoil. Solid and liquid waste streams generated by the site establishment and operation of the construction support site would be largely consistent with those identified in the environmental impact statement. Anticipated waste streams associated with WFU10 include:

- **Demolition wastes** – demolition of existing structures onsite would occur during site establishment. However, given that these structures are not substantial in size, the modification would unlikely result in a notable increase in the quantity of demolition waste.
- **Vegetation wastes** - Minor clearing would be required during site establishment however, these works would not result in a notable increase in the quantity of vegetation wastes
- **Wastes from the operation and maintenance of construction vehicles and equipment** - The plant and equipment required for the use of the construction support site would likely result in a marginal increase of waste from the operation and maintenance of vehicles and equipment.
- **General wastes from site offices** – WFU10 may result in a marginal increase in office waste generated by the project
- **Wastewater generation** – Activities to be carried out at WFU10 such as dust suppression and vehicle washdown may result in a minor increase in the volumes of waste water generated by the project.

WFU10 would result in a negligible increase in spoil generation associated with the construction of the new access road. All other earthworks associated with the modification would be limited to reprofiling of the site. Reprofiling would involve the redistribution of existing stockpile materials from Council operations to level the site.

Due to the minimal ground disturbance required for WFU10, and it is not anticipated that any additional contaminated material would be encountered as a result of WFU10. It should be noted that although contaminated materials may be encountered as a result of the Warringah Freeway Upgrade, these materials would be segregated and would not be transported to WFU10. As such, the risk of contaminated material being brought to the site would be low. Should any unexpected contaminated material be discovered on site, it will be managed in accordance with the Unexpected Finds Procedure for Contamination prepared for the project.

7.11.3 Cumulative impacts

Chapter 27 (Cumulative impacts) of the environmental impact statement discusses cumulative impacts associated with the project. Cumulative impacts associated with waste management for the project were assessed as being negligible. The proposed modification is not anticipated to increase the cumulative impacts of the project on waste management.

7.11.4 Environmental management measures

As the anticipated waste management impacts are consistent with construction impacts to wase management outlined in Chapter 24 (Resource use and waste management) of the environmental impact statement, no further environmental management measures are considered necessary beyond those summarised in Part D of the Submissions Report. No amendments to the conditions of the project approval as they relate to waste management impacts are required.

7.12 Hazards and risk

7.12.1 Assessment methodology

The environmental impact statement:

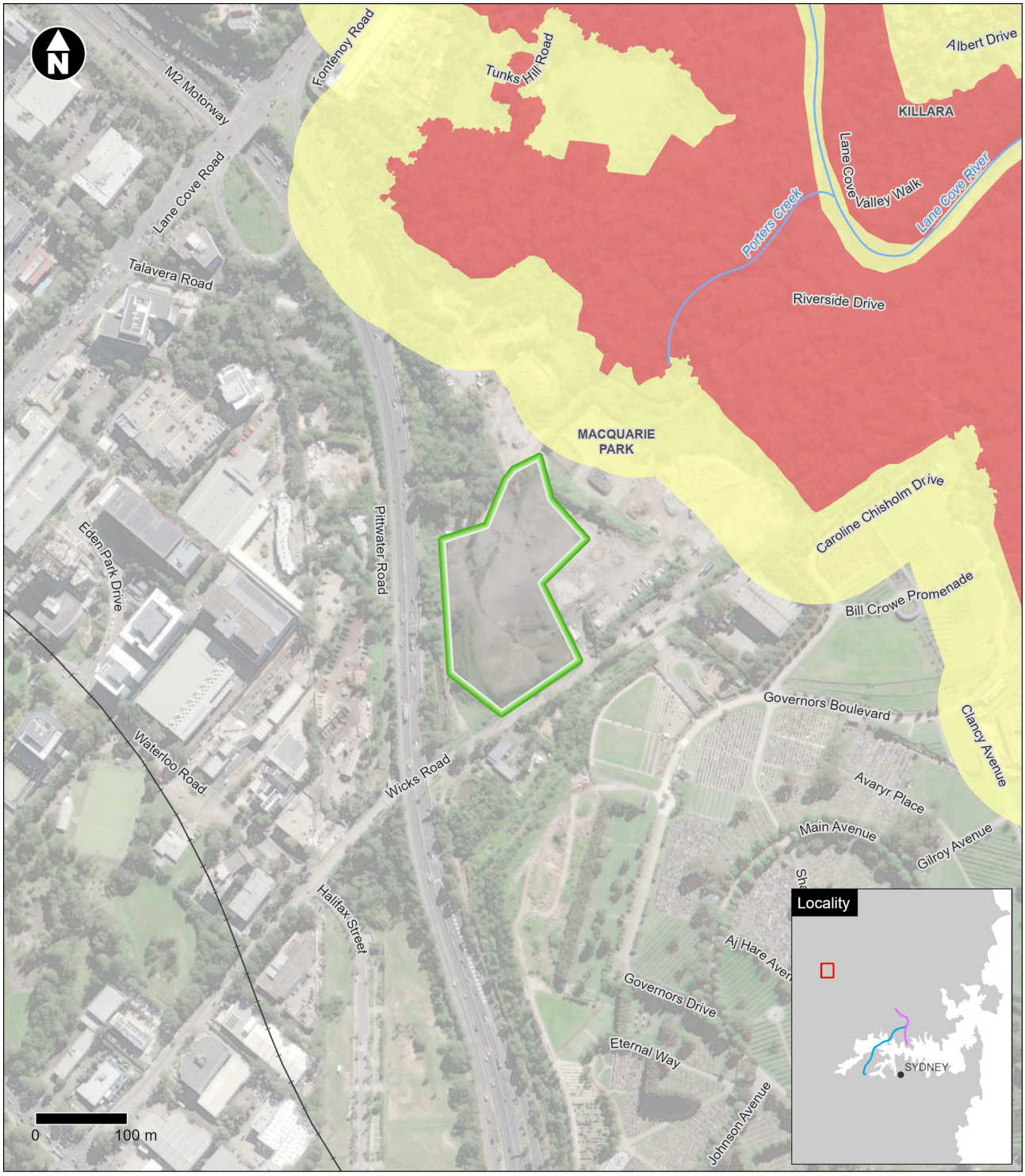
- Assessed bushfire risk level for construction support sites located on, or in proximity to, bushfire prone land within the approved project footprint
- Assessed the potential risk from bushfire to the project
- Recommended environmental management measures to minimise potential risk.

As WFU10 is outside of the approved project boundary, an assessment of potential bushfire risk of WFU10 is included in this section. The methodology for the assessment is consistent with the methodology applied in the environmental impact statement and is in accordance with Planning for Bushfire Protection (RFS, 2019).

As such, a bushfire risk assessment was carried out to assess potential bushfire implications of the project. The predominant vegetation class (bushfire prone land) has been assessed to a distance of 140 metres from the project in all directions. The level of bushfire risk is determined using a combination of likelihood and consequence, with the likelihood of bushfire risk for all assets being defined as the chance of a bushfire igniting and spreading and the consequence being the outcome or impact of a bushfire event (RFS, 2008).

7.12.2 Assessment of potential impacts

WFU10 is not located within bushfire prone land (Figure 7-7). However, land within 140 metres of WFU10 to the north and east is classified as bushfire prone land (dry and wet Sclerophyll Forest) as shown in Figure 7-7. The vegetation buffer is located about 15m, and vegetation category 1 about 115m, to the northeast of the closest extent of WFU10. Further, given that Lane Cove National Park, which is bushfire prone land, is also within 140m from the closest extent of WFU10, it is considered that WFU10 has a potential bushfire hazard with a ‘possible’ likelihood of occurrence.



Legend

- Wicks Road construction support site (WFU10)
- Watercourse
- Railway

Bushfire prone land

- Vegetation buffer
- Vegetation category 1
- Vegetation category 2
- Vegetation category 3

Figure 7-7: Bushfire prone land

7.12.3 Cumulative impacts

Chapter 27 (Cumulative impacts) of the environmental impact statement discusses cumulative impacts associated with the project. Cumulative impacts associated with hazard and risk for the project were assessed as being negligible. The proposed modification is not anticipated to increase the cumulative impacts of the project on hazard risk.

7.12.4 Environmental management measures

Bushfire risk associated with the activities at WFU10 would be sufficiently managed by the environmental management measures summarised in Part D of the Submissions Report.

Due to the proximity to bushfire prone land to WFU10 and because the site is considered a potential bushfire hazard with a 'possible' likelihood of occurrence, the site should be managed in accordance with the requirements of REMMs HR3, HR4 and HR5. These REMMs have been revised to specifically identify WFU10, as outlined in Table 7-44.

No amendments to the conditions of the project approval as they relate to hazards and risk are required.

Table 7-44: Amended management measures (hazards and risk)

Reference	Management measure	Responsibility	Phase
HR3	Adequate access and egress for fire fighting vehicles ~~and construction vehicles~~ and staff will be provided at the Berrys Bay construction support site (WHT7) **and Wicks Road construction support site (WFU10)**. Access roads should have a minimum width of four metres to allow passage of fire fighting vehicles.	Contractor	Construction
HR4	Adequate setbacks from bush fire prone vegetation to allow fire fighting vehicle access will be provided for the Berrys Bay construction support site (WHT7) **and Wicks Road construction support site (WFU10)**.	Contractor	Construction
HR5	First response capabilities, including fire extinguishers, water carts and hoses, will be **assessed and** provided at the Berrys Bay construction support site (WHT7) **and Wicks Road construction support site (WFU10) where needed**.	Contractor	Construction

8 Sustainability outcomes

The Western Harbour Tunnel and Warringah Freeway Upgrade project is committed to improving quality of life for current and future generations by maximising social, economic and environmental value. The project will achieve excellence in sustainability, and embed sustainability thinking across all stages, moving industry forward by setting the bar higher for both the process and delivery of sustainability.

The sustainability outcomes for the project, as provided in Chapter 28 (Synthesis of the environmental impact) of the environmental impact statement is outlined in Table 8-1.

Table 8-1: Sustainability performance outcomes

Desired performance outcome	How performance outcomes would be achieved
Sustainability The project reduces the NSW Government's operating costs and ensures the effective and efficient use of resources. Conservation of natural resources is maximised.	In respect to sustainability, the project has been developed such that: • Sustainability considerations would be integrated throughout design, construction, and operation • The project would seek to achieve an 'Excellent' Design and 'As Built' Infrastructure Sustainability rating • The project would be carried out in accordance with the sustainability framework developed for the project • Activities to implement the sustainability framework, including requirements from the Infrastructure Sustainability rating scheme, would be implemented through a Sustainability Management Plan.

Chapter 25 (Sustainability) of the environmental impact statement discusses the project's sustainability framework which ensures that sustainability is embedded in project planning, design, construction, and operation. The sustainability framework provides the overarching vision, objectives, targets, and implementation approaches for the project.

Figure 8-1 shows the key elements of the sustainability framework. For a detailed description of the framework, refer to Chapter 25 (Sustainability) of the environmental impact statement.

Should the modified project be approved, the sustainability outcomes would apply, and the proposed modification would align with the sustainability framework by applying the sustainability objectives and targets of the project during its design, construction and operation.

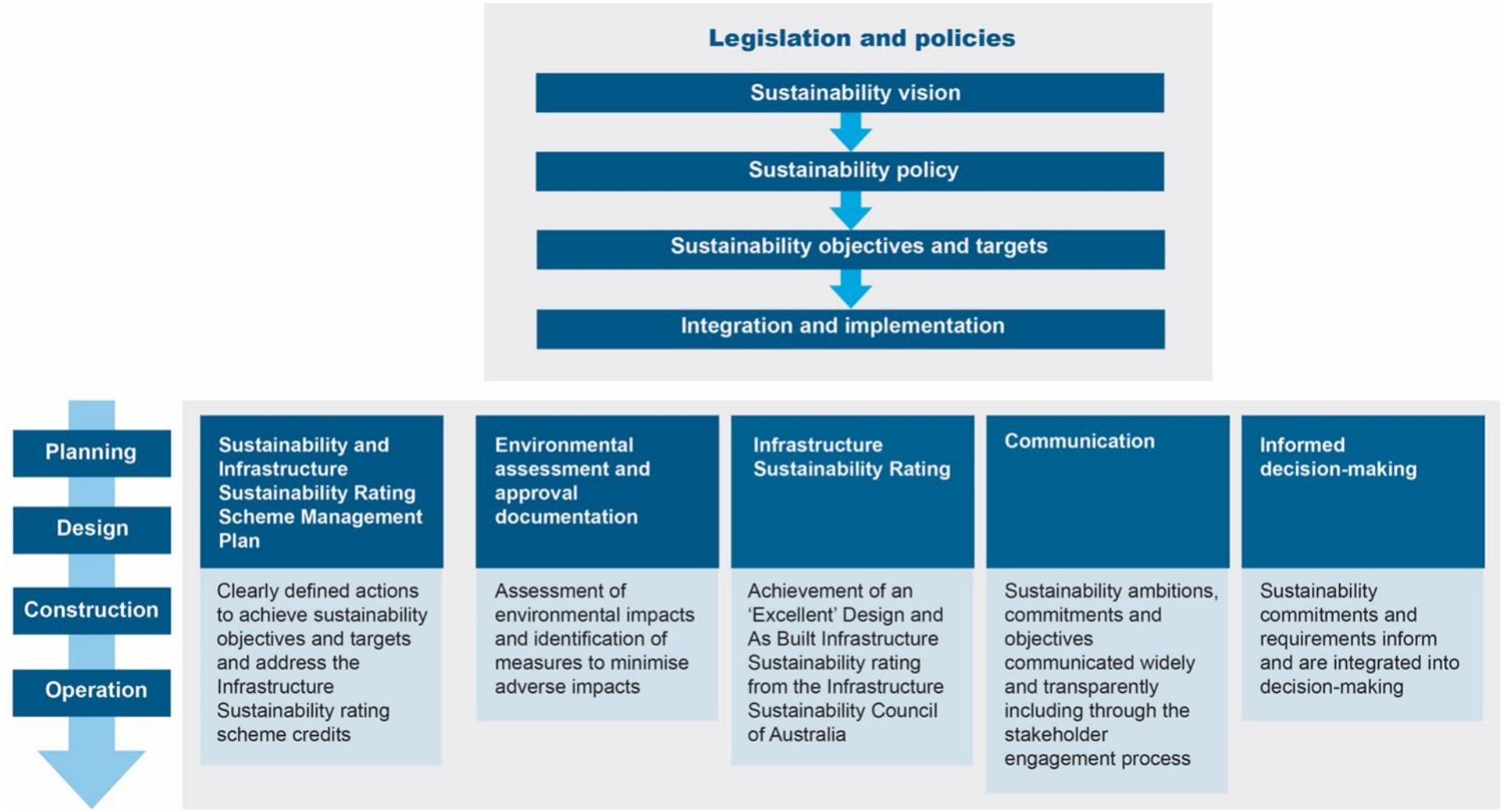


Figure 8-1: Western Harbour Tunnel and Warringah Freeway Upgrade project sustainability framework

9 Justification and conclusion

9.1 Justification

9.1.1 Project justification

Transport for NSW is proposing a modification to the approved project to include an additional construction support site at 160 Wicks Road, Macquarie Park NSW. The proposed Wicks Road construction support site (WFU10) will be used as a materials storage and stockpiling location, a car parking area for construction personnel and a precast concrete facility to support construction of the Warringah Freeway Upgrade. The construction support site is adjacent to the M2 Motorway, with site access via Wicks Road and Epping Road.

Under the approved project the Warringah Freeway Upgrade would utilise 10 construction support sites, as identified in the environmental impact statement, in which spoil generated by the Warringah Freeway Upgrade would be stockpiled, segregated and tested prior to its reuse or disposal.

The Warringah Freeway is the busiest section of motorway in NSW, with congestion and delays during both the AM and PM peak periods. To minimise impacts associated with the increase in heavy vehicles during construction, the scheduling of haulage and deliveries outside of peak periods was proposed.

Due to the nature of the work staging, it is not possible to test all areas of spoil generation prior to excavation. To this end, a spoil staging area will be required to stockpile, segregate and test material prior to re-use or disposal off site. This staging area will also be critical to receive spoil that is generated outside approved construction hours as the majority of identified spoil receival facilities do not operate outside approved construction hours.

Furthermore, the environmental impact statement identified that due to the insufficient number of parking spaces available at the approved construction support sites, the construction workforce would potentially utilise on-street parking resulting in impacts to the surrounding road network and nearby community. The provision of up to 250 parking spaces at WFU10 would increase the off-street parking capacity available for the project construction workforce thereby reducing the impacts on the surrounding road network and nearby community during construction.

An alternative offsite spoil staging area at Macquarie Park has been identified. This facility will allow material to be transported to the facility prior to testing. WFU10 will also allow material to be segregated, processed and undergo geotechnical testing to produce structural fill required for the works.

9.1.2 Project uncertainties

The design presented in this modification report is indicative and subject to detailed construction planning and further design. There remain some uncertainties relating to technical requirements and how the proposed modification would be constructed. Table 9-1 describes how the identified uncertainties would be considered and resolved during construction planning and further design. Considering the implementation of the proposed resolutions, the uncertainties listed are not expected to result in significant or unacceptable impacts to the environment that would not be capable of mitigation or management.

Table 9-1: Resolution of key uncertainties

Key uncertainties	Category	Proposed resolution
Water quality management controls	Further design development	Water quality management controls would be dictated by an ESCP to be carried out during further design development. At this time appropriate sediment and erosion management controls would be determined. The performance of the water quality controls will be verified during further design stages to ensure that waterways receiving runoff from the proposed modification meet the Water Quality Objectives (WQO) of the project as identified by REMM WQ3. In the instance that the proposed controls cannot be demonstrated as effective in mitigating potential impacts in accordance with the WQOs, then additional environmental management measures will be identified and implemented.
Diversion of existing council drainage	Further design development	The construction of the access road may require the lowering of an existing water main. Should the lowering of the water main be required consultation with Council will be undertaken prior to construction to refine potential utility adjustments and utility protection measures. The potential for any contamination impacts will also be investigated and managed by the implementation of REMMs detailed in Part D of the Submissions Report and requirements stipulated in the project approval (SSI 8863).
Position of the access road	Further design development	Subject to further refinement of the layout and constructability of WFU10, the existing Council access and weighbridge may be utilised if the proposed access road is determined not to be required. The decision to use the existing road would be made in consultation with Council. Should a new access road be constructed it would by managed by the implementation of REMMs detailed in Part D of the Submissions Report and requirements stipulated in the project approval (SSI 8863).
Potential to disturb contamination	Further design development	During further design development and construction planning WFU10 would be investigated and managed in accordance with CoA E115 and REMM SG6. This REMM has been revised to specifically identify WFU10 as an investigation area, as outlined in Table 7-28.
Removal of one *Eucalyptus* sp..	Further design development	During further design development and construction planning the removal of this tree would be confirmed. Should the tree be removed it would be subject to replacement at an offset of 2:1, as per condition E184 of the Instrument of Approval (SSI 8863).

9.1.3 Project benefits and adverse effects

The need for the addition of WFU10 has been identified as due to the following:

- Increases the off-street parking capacity available for the project construction workforce thereby reducing the impacts on the surrounding road network and the nearby community adjacent to the project boundary during construction
- Provides an opportunity to minimise the predicted construction noise impacts as a result of work outside approved construction hours by facilitating the redistribution of heavy vehicles and offsite spoil management activities
- Due to the existing use of the site as a construction waste management facility, the modification would not result in a substantial change in land character. As such, the WFU10 presents an optimal solution as there would be minimal environmental impacts due to its use as a construction support site.
- The location of the site would mean that heavy vehicle haulage would predominantly occur along major arterial roads minimising impacts on local roads within the vicinity of the site and the nearby community adjacent to the project boundary.

The main adverse effects of the proposed modified project are summarised in Table 9-2 along with the corresponding environmental management measures proposed to manage these impacts.

Table 9-2: Adverse impacts

Adverse impact	Environmental management measure
Air quality impacts (dust emissions) consistent with the existing use of the site	AQ1 and implementation of a Construction Air Quality Management Plan
Erosion and sedimentation impacts as a result of earthmoving activities	SG5, WQ1 and implementation of a Construction Soil and Water Management Plan
Potential to impact downstream water quality, if unmitigated, through spills of pollutants and rinse water from vehicle washdown flowing to downstream watercourses	WQ2 and implementation of a Construction Soil and Water Management Plan
The removal of vegetation along the southern boundary of the site, including one Eucalyptus sp., large stands of Common Reed, Castor Oil Plant and other woody weeds. Other vegetation within the site to be removed would include large areas of vegetation growing atop waste material stockpiles, the vast majority of which comprise exotic species	B1, B2, B4, B5 and B31 and implementation of a Construction Flora and Fauna Management Plan
Noise impacts and lighting, which have the potential to impact upon fauna species in nearby vegetation, including Lane Cove National Park	CNV1, CNV4 and V5 and implementation of a Construction Noise and Vibration Management Plan
An increase in the movement of people, vehicles, machinery, vegetation waste and soil during and following construction activities may facilitate the introduction or spread of exotic grasses and other weeds that currently occur into adjacent areas	B14 and implementation of a Construction Flora and Fauna Management Plan
Risk of encountering contaminated soils during surface excavation for the utility relocation for the new access road.	SG6 and implementation of a Construction Contaminated Land Management Plan

The anticipated impacts associated with WFU10 are largely consistent with those assessed in the environmental impact assessment. Although the potential impacts associated with construction may be redistributed due to the location of WFU10, there would be no activities additional to what was described in the environmental impact statement with the exception of a precast concrete facility. As such, the majority of impacts associated with WFU10 would be appropriately managed by the implementation of REMMs detailed in Part D of the Submissions Report and requirements stipulated in the project approval (SSI 8863).

Notwithstanding, one condition of approval and four environmental management measures have been revised, and one additional environmental management measure has been included as summarised in Table 9-3.

One additional mitigation measure would apply to WFU10 in order to manage site specific biodiversity impacts in relation to vegetation / potential habitat to be retained within and adjacent WFU10 as detailed below and in Section 7.7.5.

- New biodiversity management measure B31 requiring exclusion zones to be established to clearly define the limits of the works at WFU10
- Revision of mitigation measure SG6 to consider WFU10 to managed site specific contamination impacts and ensure any potential contamination is investigated and managed in accordance with the requirements of guidance endorsed under section 105 of the *Contaminated Land Management Act 1997*
- Mitigation measures HR3, HR4 and HR4 have also been revised to consider the bushfire risk to the site
- Amendment to condition E132 to manage use of local roads in relation to access to WFU10.

Table 9-3: Summary of amended management measures

Reference	Description	Responsibility	Phase	Aspect
Condition E132	Local roads proposed to be used by heavy vehicles to directly access the construction boundary and ancillary facilities that are not shown in Figure 5-7 to 5-22 inclusive of Appendix F of the EIS **or Figure 7-1 of Modification Report 1** must be approved by the Planning Secretary and included in the Traffic, Transport and Access Management CEMP Sub-plan.	Contractor	Construction	Traffic and Transport
REMM B31	**Exclusion zones will be established at WFU10 to clearly define the limits of the works as to not further encroach on vegetation / potential habitat to be retained, including the area of PCT 1845 located immediately north of the construction boundary, drainage area, including surrounding She oak trees.**	Contractor	Pre-Construction	Biodiversity

Reference	Description	Responsibility	Phase	Aspect
REMM HR3	Adequate access and egress for fire fighting vehicles ~~and construction vehicles~~ and staff will be provided at the Berrys Bay construction support site (WHT7) **and Wicks Road construction support site (WFU10)**. Access roads should have a minimum width of four metres to allow passage of fire fighting vehicles.	Contractor	Construction	Hazard and Risk
REMM HR4	Adequate setbacks from bush fire prone vegetation to allow fire fighting vehicle access will be provided for the Berrys Bay construction support site (WHT7) **and Wicks Road construction support site (WFU10)**.	Contractor	Construction	Hazard and Risk
REMM HR5	First response capabilities, including fire extinguishers, water carts and hoses, will be **assessed and** provided at the Berrys Bay construction support site (WHT7) **and Wicks Road construction support site (WFU10) where needed**.	Contractor	Construction	Hazard and Risk
REMM SG6	Potentially contaminated areas directly affected by the project will be investigated and managed in accordance with the requirements of guidance endorsed under section 105 of the *Contaminated Land Management Act 1997*. This includes, but is not limited to, further investigations in potential areas of environment interest in the project footprint, including: • Easton Park • Birchgrove peninsula (including Yurulbin Park) • Balls Head peninsula • Waverton Park • Warringah Freeway (from North Sydney to Cammeray) • **WFU10 (Wicks Road construction support site)**. Subject to the outcomes of the investigations, a Remediation Action Plan will be implemented in the event that site remediation is warranted ~~prior to construction~~. The Remediation Action Plan will be prepared and implemented in accordance with Managing	Contractor	Construction	

Reference	Description	Responsibility	Phase	Aspect
	Land Contamination: Planning Guidelines SEPP 55 – Remediation of Land (Department of Urban Affairs and Planning and EPA, 1998). An independent NSW EPA Accredited site Auditor will be engaged **where contamination is complex** to review **applicable** ~~all~~ contamination reports and evaluate the suitability of sites for a specified use as part of the project.			

The Construction Environmental Management Plan and subplans will be updated to include WFU10 and consider the additional and revised management measures. The updated plans will be reviewed by the relevant stakeholders, including City of Ryde Council, in accordance with CoA C4. The project will be carried out in accordance with the CoA for the approved project.

9.1.4 Objects of the EP&A Act

The objects of the EP&A Act provide a framework within which the justification of the proposed modified project can be considered. A summary of this assessment is provided in Table 9-4.

Table 9-4: Objects of the EP&A Act

EP&A Act objective	Comment
To promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources.	The proposed modification would: • Increase the re-use of site won materials by ensuring contaminated material is identified and disposed of appropriately and re-using non-contaminated material within the project • Increase the capacity of off-street parking, thereby reducing impacts of the surrounding road network and nearby community • Reduce noise impacts to the community by redistributing heavy vehicle traffic • Reduce impacts on local roads by utilising major arterial roads • Utilise an existing site of similar character thereby reducing land use character impacts.
To facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment.	Ecologically sustainable development has been considered in Section 9.1.5.

EP&A Act objective	Comment
To promote the orderly and economic use and development of land.	The proposed modification would continue to: • Provide improved efficiency of the road network, in particular for freight and commercial users, resulting in economic benefits for NSW • Minimise impacts to the surrounding natural and built environments where possible, for example by utilising existing land use activities • Integrate with, and thereby minimise disruption to, existing development and other projects (such as the Western Harbour Tunnel) • Provide an ancillary facility for use as part of the wider program of work to avoid additional future civil works.
To promote the delivery and maintenance of affordable housing.	Not relevant to the proposed modified project.
To protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats.	The project is proposed to be located on land already highly disturbed and cleared of most vegetation. As stated in Section 7.7, there is unlikely to be any impact to threatened and other species of native animals and plants, ecological communities, and their habitats.
To promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage).	As stated in Section 7.8, the proposed modification is unlikely to directly impact non-aboriginal and Aboriginal heritage and therefore unlikely to impact the built and cultural heritage of the site and surrounds. Temporary structures used at the site including demountable offices, dome shelter and shipping container noise barriers will be removed once the project is complete and the site returned to its existing condition.
To promote good design and amenity of the built environment.	There will be minimal built infrastructure as part of this modification. Shipping containers will be used as noise barriers at the site, however, these will not significantly detract from the existing use at the site.
To promote the proper construction and maintenance of buildings, including the protection of the health and safety of their occupants.	Construction and maintenance of new or existing buildings are not proposed as part of this modification. Demountable offices will be placed at the site as stated in Section 5 and the health and safety of the users and workers will be protected at all times.
To promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State.	Not relevant to the proposed modified project.

EP&A Act objective	Comment
To provide increased opportunity for community participation in environmental planning and assessment.	Community and stakeholder engagement has been an integral component in the development of the Warringah Freeway Upgrade and the Western Harbour Tunnel. The engagement program has proactively informed and involved stakeholders and community members during project development to participate in the environmental planning and assessment process. Consultation for this modification has been carried out with Key Stakeholders, including City of Ryde Council, NSW EPA, DPE, and doorknocking of local properties within Killara, North Ryde and Macquarie Park. Residents were also invited to attend two community sessions held in September 2022. This modification report will be publicly available and further engagement will be carried out with the community and key stakeholders to make sure they are aware of its release and have access to the document. Future engagement would be carried out in line with the project's Community Communication Strategy, Revised Environmental Management Measures (REMMs) (refer to Appendix C of this modification report), and as required by any Conditions of Approval.

9.1.5 Ecologically sustainable development

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

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

Precautionary principle

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

A conservative approach was used in the development of the environmental impact statement and this modification. Where potential impacts were expected, mitigation measures are stated to ensure the least impact occurs, which are outlined in Chapter 7 (Assessment of impacts). The precautionary principle was also considered during support site options as discussed in Chapter 4 (Modification options). The benefits of providing a significant amount of off-street parking for the proposal was one such influence in adhering to the precautionary principle.

Inter-generational equity

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

The Western Harbour Tunnel and Warringah Freeway Upgrade project is designed to meet needs of both current and future generations with a design life of about 100 years and would contribute to an increase in resilience and capacity of the Sydney transport network. During construction and operation of the proposed modification, opportunities would be taken to reduce resource and material use and maximise the use of materials with low embodied environmental impact, where feasible.

Conservation of biological diversity and ecological integrity

The proposed modification would not affect the conservation of biological diversity and ecological integrity as it does not involve impacts to biodiversity and utilises an existing highly modified site with similar land use activities.

Improved valuation, pricing and incentive mechanisms of environmental resources

The principle of internalising environmental costs into decision making requires consideration of all environmental resources which may be affected.

The value placed on avoiding and minimising environmental impacts throughout the design and assessment of the project is demonstrated in the identification of this proposed modification. The modification would generally reduce the environmental impacts of the project, such as through reduced construction noise and traffic impacts and better management of excavated material. The costs of planning, design and implementation of avoidance and environmental management measures have been incorporated into the project cost, including the proposed modification.

9.2 Conclusion

This modification report provides a robust assessment of WFU10 and its relevant environmental issues to meet the requirements of the EP&A Reg. Potential environmental impacts have been identified and assessed as part of this modification report. The preparation of the modification report has identified and assessed the environmental impacts arising as a result of WFU10 however, no significant impacts were identified. Identified environmental impacts would be mitigated through the implementation of management measures, which are largely consistent with the measures already stipulated within Part D of the Submissions Report and conditions to be implemented to comply with the project approval.

This modification report has concluded that WFU10 should proceed as it would:

- Result in no significant adverse impacts to the environment or local community
- Include a range of relevant mitigation measures and commitments that would govern the responsible and appropriate implementation of the proposed activities
- Optimise construction site arrangements assessed in the environmental impact statement to reduce environmental and community impacts
- Increase the off-street parking capacity available for the project construction workforce thereby reducing the impacts on the surrounding road network during construction
- Presents an optimal solution as activities associated with WFU10 are largely consistent with those already carried out onsite for the operation of the Porters ECoMRF.

On the basis of the findings detailed within this modification report, WFU10 is considered to be justified and is recommended to proceed subject to approval.

10 References

City of Ryde Council, 2021. *Site Establishment Management Plan: Porters Creek Depot*, 160 Wicks Road, Macquarie Park: City of Ryde Council.

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