



**Toongabbie Local Road
Enhancement**

Review of Environmental Factors

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Prepared for:

Parramatta City Council

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REVIEW OF ENVIRONMENTAL FACTORS – TOONGABBIE LOCAL ROAD ENHANCEMENT

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REVIEW OF ENVIRONMENTAL FACTORS – TOONGABBIE LOCAL ROAD ENHANCEMENT

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Executive Summary

This Review of Environmental Factors (REF) has been prepared under Division 5.1 of the *Environmental Planning and Assessment Act 1979* on behalf of the City of Parramatta Council (Council). The REF assesses the potential environmental impacts of the Toongabbie Local Road Network Enhancement (LRNE) project (the Proposal), which involves upgrading the intersection of Fitzwilliam Road, Station Road and Wentworth Avenue, and widening the southern approach along Wentworth Avenue.

The Proposal responds to long-standing congestion, queuing and safety issues within the Toongabbie Station precinct. Transport modelling for the NSW Government's Toongabbie Transport Study found that the existing roundabout is significantly over capacity during peak periods, resulting in long queues, unreliable travel times and limited safe pedestrian crossing opportunities. The Proposal is the preferred long-term upgrade option developed by Council in partnership with Transport for NSW.

The Proposal includes:

- signalling the existing roundabout;
- providing two continuous southbound lanes on Wentworth Avenue;
- providing a raised pedestrian crossing;
- upgrades to footpaths and kerb ramps;
- improving stormwater drainage; and
- adjusting public utilities.

All works are located within the existing urban road corridor.

Environmental impacts include:

- Traffic, access and amenity changes during construction from temporary lane closures, pedestrian diversions and changes to access near the vicinity of Toongabbie Station, residential driveways and Portico Plaza Shopping Centre.
- Construction noise for residential receivers located within approximately 40–70 m of active work areas, with the potential for disturbance during night-time works.
- Temporary visual impacts, including construction compounds, fencing, stockpiles and the removal of small areas of vegetation.
- Localised minor soil disturbance, dust generation and sediment mobilisation during excavation and drainage works.
- Localised socio-economic impacts, including reduced convenience for commuters and residents during the construction of the works.

No significant impacts are expected on biodiversity, Aboriginal or non-Aboriginal heritage, groundwater, or long-term hydrology. All impacts are short-term and manageable through the application of established mitigation measures and safeguards.



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The REF identifies mitigation and management measures (including erosion and sediment controls, traffic management, noise mitigation, utility coordination and stakeholder communication) to minimise impacts. No property acquisition is required, and the Proposal is contained within the existing road reserve.

The REF concludes that the Proposal is justified and will deliver long-term transport, safety and accessibility benefits for the Toongabbie Station precinct. With the implementation of the identified mitigation and management measures, the Proposal is unlikely to result in significant environmental impacts.



Glossary

Abbreviations	Full Name
AEP	Average exceedance probability
BC Act	Biodiversity Conservation Act 2016 (NSW)
'Blue Book'	Landcom - Guidelines that assist in mitigating impacts of land disturbance on soils, landforms and receiving waters by adequate erosion and sediment control.
CEMP	Construction Environmental Management Plan
Council	Parramatta City Council
DCCEEW	Department of Climate Change, Energy, Environment and Water
DPIE	Department of Planning, Industry and Environment (NSW)
AoS	Assessments of Significance
RBA	Rapid Biodiversity Assessment
EEC	Endangered Ecological Community
EIA	Ecological Impact Assessment
EIS	Environmental Impact Statement
IBRA	Interim Biogeographic Regionalisation for Australia
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999 (</i>



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EP&A Act	<i>Environmental Planning and Assessment Act 1979 (NSW)</i>
FM Act	<i>Fisheries Management Act 1994 (NSW)</i>
Heritage Act	<i>Heritage Act 1977</i>
LEP	Local Environment Plan
LGA	Local government area
MNES	Matters of National Environmental Significance
NPW Act	<i>National Parks and Wildlife Act 1974</i>
NSW	New South Wales
POEO Act	<i>Protection of the Environment Operations Act 1997</i>
POM	Plan of Management
REF	Review of Environmental Factors
SEPP	State Environmental Planning Policy
Stantec	Stantec Australia Pty Ltd
Study Area	The entire area assessed as part of the project
TEC	Threatened Ecological Community
Transport	Transport for New South Wales
VMP	Vegetation Management Plan



TOONGABBIE LOCAL ROAD ENHANCEMENT REF

WARR Act	<i>Waste Avoidance and Recovery Act 2001</i>
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1.0 INTRODUCTION

Stantec has prepared this Review of Environmental Factors (REF) for City of Parramatta Council (Council) under Division 5.1 of the Environmental Planning and Assessment Act 1979 (EP&A Act). The REF assesses the potential environmental impacts of the proposed activity and determines whether it may proceed with appropriate safeguards under Division 5.1. A high level overview of the Proposal is provided in Section 1.2 and a detailed description is provided in Section 3.0.

1.1 BACKGROUND

The REF considers the nature and extent of the proposed works within the established urban road corridor surrounding Fitzwilliam Road, Station Road, Service Road and Wentworth Avenue, and evaluates the potential impacts associated with modifying the existing intersection layout, widening road sections and upgrading active transport and drainage infrastructure.

The Toongabbie Transport Study (TfNSW, 2020) identified congestion, safety risks and limitations in active transport connectivity within the Station precinct. In response, Council developed the Toongabbie Local Road Network Enhancement (LRNE) program to deliver targeted local network improvements. These improvements include:

- Signalising the existing roundabout at the intersection of Fitzwilliam Road, Station Road and Wentworth Avenue.
- Widening Wentworth Avenue to two southbound lanes between the roundabouts.

1.2 PROPOSAL IDENTIFICATION

The Proposal involves the upgrade of the Fitzwilliam Road / Station Road / Wentworth Avenue intersection and adjoining sections of Wentworth Avenue in Toongabbie, within the City of Parramatta Local Government Area (LGA) (refer to Figure 1-1). The works form part of Council's Toongabbie LRNE initiative, a program developed to support transport efficiency and accessibility within the Toongabbie Station precinct.

The LRNE program was established following planning investigations funded by the NSW Government to identify opportunities to improve the performance, safety and multimodal connectivity of the local road network. These investigations highlighted the need for targeted intersection and corridor upgrades rather than structural modifications to the Wentworth Avenue Bridge. The LRNE program therefore focuses on precinct-scale improvements that better integrate local traffic movement, pedestrian access and utility infrastructure.

Under this program, the Proposal includes signalisation of the existing intersection, localised road widening, pedestrian facility upgrades and associated drainage and utility adjustments. The works are located entirely within the existing road reserve and are being delivered to support broader strategic



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Introduction

transport and place-making objectives for Toongabbie. A detailed description of the proposed works is provided in Section 3.0

1.3 PURPOSE OF THE REPORT

The purpose of this REF is to assess the potential environmental impacts of the proposed activity and determine whether it may proceed with appropriate environmental safeguards under Division 5.1 of the EP&A Act. The document provides a structured environmental assessment, identifies potential environmental risks and outlines mitigation measures. It also outlines the statutory and policy framework relevant to the Proposal and demonstrates how Council, as a public authority, will undertake the activity in an environmentally responsible manner.

This REF has been undertaken in accordance with:

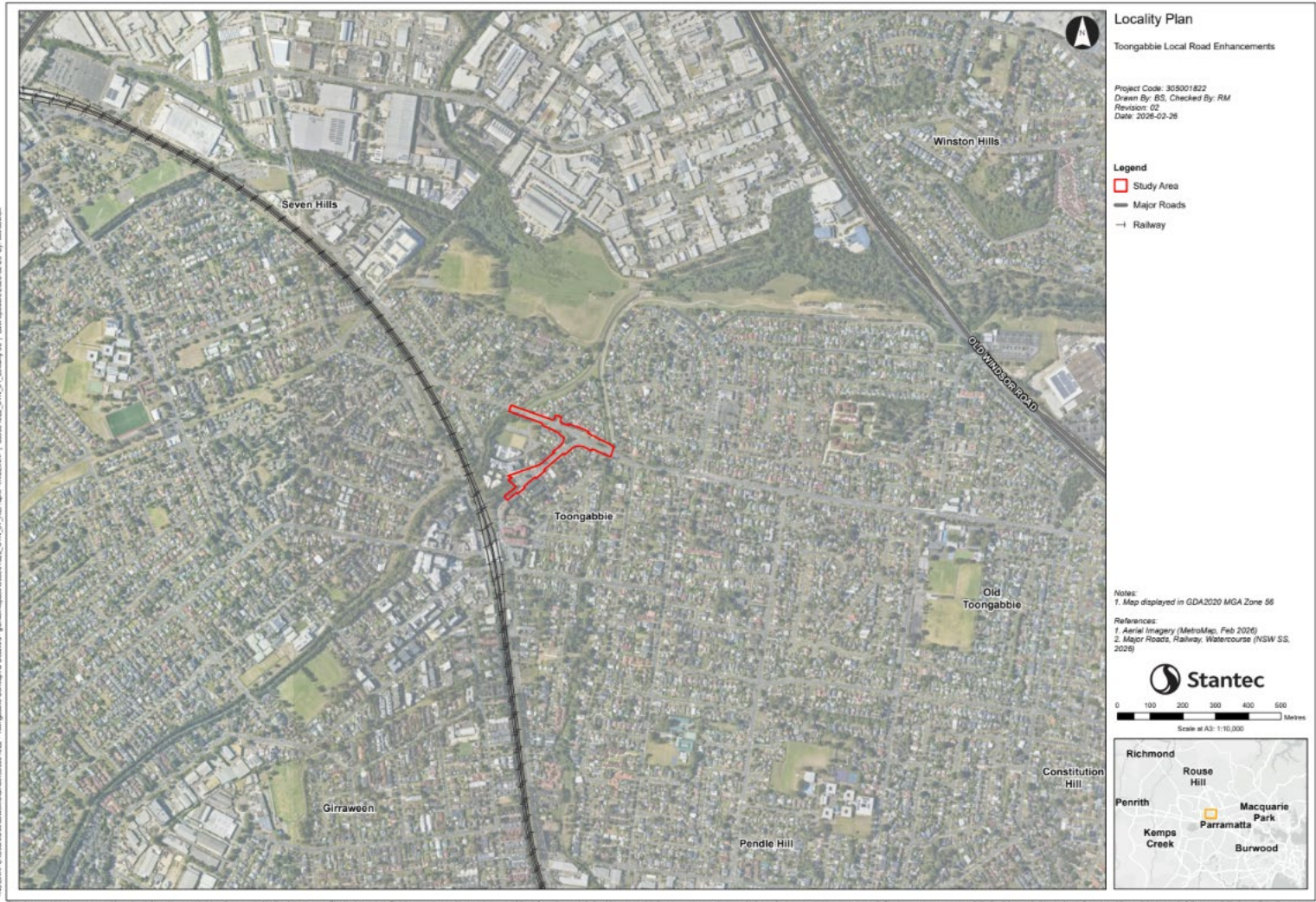
- Section 171(2) of the Environmental Planning and Assessment Regulation 2021
- Guidelines for Division 5.1 Assessments (DPE, 2022)
- relevant NSW and Commonwealth legislation, including the *Biodiversity Conservation Act 2016* and the *Environment Protection and Biodiversity Conservation Act 1999*

The findings of this REF will assist Council in determining whether the activity may proceed with the identified safeguards or whether any additional approvals, notifications or conditions are required prior to works commencing.



TOONGABBIE LOCAL ROAD NETWORK ENHANCEMENT

Introduction



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Figure 1-1 Locality Plan



2.0 NEEDS AND OPTIONS CONSIDERED

This chapter provides detail on the need for the Proposal in terms of its strategic setting and operation needs. It identifies the options considered and the selection of the preferred option for the Proposal.

2.1 STRATEGIC NEED FOR THE PROPOSAL

The Proposal responds to a demonstrated network performance problem within the Toongabbie Station precinct, where the Fitzwilliam Road / Station Road / Wentworth Avenue roundabout and the adjacent Wentworth Avenue corridor experience peak-period congestion, queue spillback and delay affecting both north–south and east–west movements. Council-commissioned transport modelling confirms oversaturation and extensive queuing at key locations in both AM and PM peaks, with flow breakdowns propagating between intersections across the town centre corridor.

The NSW-funded Toongabbie transport planning investigations and Strategic Business Case identified that the primary cause of congestion is the performance of intersections on either side of the Wentworth Avenue Bridge, with bridge-focused options (e.g., lane widening) offering minimal congestion or safety benefit and presenting significant cost, geometric and utility constraints. Accordingly, interventions centred on local network enhancements, rather than structural bridge modification, were advanced to address short- and long-term operational needs, safety and active-transport access.

The Proposal is consistent with the City of Parramatta planning framework, which seeks a safe, accessible and connected public domain. Relevant Development Control Plan (DCP) provisions emphasise street network legibility, pedestrian safety, and integration of transport infrastructure with the public realm, outcomes that are served by signalling the intersection, formalising pedestrian crossings, and reconfiguring lane arrangements to reduce conflict and improve predictable operation.

The Proposal is a targeted, value-for-money upgrade that:

- Improves network efficiency and reliability by replacing the roundabout with traffic signals and providing two southbound lanes on Wentworth Avenue to reduce queuing and spillback across the corridor.
- Enhances pedestrian safety and access through signal-controlled crossings and a raised pedestrian (wombat) crossing, supporting local centre vitality and rail-station catchment access.
- Addresses near-term and future operational risks identified by modelling (e.g., LOS E–F and long queues at multiple nodes) without the prohibitive cost and delivery risks of bridge works.
- Integrates essential enabling works, stormwater upgrades and utility adjustments, so the corridor can operate safely and efficiently within the existing road reserve, aligning with local public-domain expectations and asset owner standards.

The Proposal advances the Toongabbie LRNE program by delivering intersection and corridor improvements that align with Council’s urban movement and public-domain objectives, and with the Strategic Business Case direction to prioritise network-wide, intersection-led solutions over low-yield structural alternatives



2.2 LIMITATIONS OF EXISTING INFRASTRUCTURE

The existing road network around Wentworth Avenue, Fitzwilliam Road and Station Road demonstrates several structural and operational constraints that limit its ability to support current and future transport demands within the Toongabbie Station precinct. Refer to Table 2-1 for a summary of the key existing infrastructure limitations.

Table 2-1 Key limitations summary

Limitation Type	Limitation Description
Significant congestion and insufficient intersection capacity	Major intersections including the Wentworth Avenue roundabout, Cornelia Road / Junia Avenue, and the Fitzwilliam Road / Station Road / Wentworth Avenue roundabout, regularly operate over capacity, resulting in long queues and delays during peak periods.
Geometric constraints at the Wentworth Avenue Bridge	The bridge corridor has narrow lanes, limited shoulders, and restricted sight distances. Note that changes to the bridge structure are outside the scope of this project.
Safety concerns associated with congestion and network layout	Observed traffic queues and poor sightlines at several approaches increase the potential for vehicle conflicts and reduce operational safety during peak periods.
Limited pedestrian and cyclist accessibility	The corridor lacks formal pedestrian crossings, dedicated active-transport facilities and safe crossing opportunities at key locations, despite being a high-demand area adjacent to Toongabbie Station.
Localised drainage and utility constraints	Sections of the corridor are subject to overland flow and drainage limitations, and underground utility congestion restricts the ability to modify road geometry without coordinated upgrades.

The existing road, bridge and active-transport infrastructure limits the safe and efficient movement of people within the Toongabbie Station precinct. Without intervention, the network will experience worsening congestion, reduced accessibility and ongoing safety risks, particularly during peak periods



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Needs and Options considered

This will adversely affect the overall function and amenity of the Toongabbie Station precinct and limit future growth.

2.3 PROPOSAL OBJECTIVES AND DEVELOPMENT CRITERIA

2.3.1 Proposal Objectives

The Toongabbie Local Road Network Enhancement (LRNE) proposal has been developed to improve the operation, safety and accessibility of the transport network surrounding the Toongabbie Station precinct. The Proposal objectives reflect Council's vision for a connected, efficient and safe local centre and are aligned with the aims of the NSW Government's Easing Sydney's Congestion Program, which seeks to improve network performance, reliability and multimodal access in constrained urban areas.

The objectives of the Proposal are to:

- Improve travel-time reliability and reduce congestion for private vehicles along Wentworth Avenue, Fitzwilliam Road and Station Road, particularly during peak periods when intersections currently operate over capacity and queues spill back through the precinct.
- Enhance road-user safety by addressing conflict points, poor sightlines and intersection oversaturation, and by introducing traffic signal control that provides more predictable and safer movement patterns.
- Improve pedestrian access and connectivity, including safe crossing opportunities to Toongabbie Station, Portico Plaza and surrounding residential areas, particularly through the provision of signal-controlled crossings and upgraded footpath connections.
- Support active transport by enabling safer and more direct walking and cycling movements within the local centre, consistent with Council's movement-and-place objectives and the Parramatta DCP's emphasis on walkable centres.
- Improve bus journey times and on-time running, recognising the corridor's role as a feeder to Toongabbie Station and an important connection for routes operating between Parramatta and Blacktown.
- Integrate with the surrounding urban environment by ensuring the upgraded road configuration supports access to key land uses including retail, residential apartments, the rail station and bus services, and complements the functioning of the wider Toongabbie Station precinct.
- Accommodate existing utilities and drainage considerations within a constrained brownfield environment to minimise disruption and support resilience of essential services.

Collectively, these objectives aim to deliver a safer, more efficient and more accessible local road network that supports the long-term functioning and amenity of the Toongabbie Station precinct.

2.3.2 Design and urban development criteria

The design of the Proposal is guided by criteria that address its transport function and urban station-precinct setting. Key criteria include:



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Needs and Options considered

- Improving intersection efficiency and reducing congestion on approaches to the Wentworth Avenue bridge.
- Providing safe, direct pedestrian access to Toongabbie Station and the town centre through signal-controlled crossings and improved connectivity.
- Supporting active and public transport, ensuring the corridor accommodates bus movements and enhances walkability.
- Integrating with local land uses and existing constraints, including drainage, utilities and adjoining residential and commercial frontages.

These criteria underpin the preferred design and inform ongoing detailed design development.

2.4 ALTERNATIVES AND OPTIONS CONSIDERED

A range of alternative approaches were investigated to address congestion, safety issues and limited pedestrian access within the Toongabbie transport network. In consultation with the Network Solutions – Central River City Office (NSCRCO), Transport for NSW (Transport) and SCT Consulting identified numerous potential interventions across the Study Area, including intersection upgrades, lane configuration changes and improvements to walking connectivity. These interventions were combined into several preliminary scenarios and tested through network traffic modelling to determine which combinations produced the greatest improvements in traffic flow, safety and accessibility.

A range of upgrade options were investigated to address congestion, safety issues and limited pedestrian accessibility around the Wentworth Avenue bridge and the Fitzwilliam Road / Station Road / Wentworth Avenue intersection. These options included bridge-focused solutions, corridor widening and intersection upgrades. Each was assessed against network performance, feasibility, safety, active-transport outcomes and constructability. Bridge-based options were screened out early due to major geometric and utility constraints and limited congestion benefit.

Following this assessment, Transport refined the long list into a shortlist in mid-2021. Two scenarios were selected for detailed analysis: Scenario 4, a short-term upgrade centred on the Fitzwilliam Road / Station Road / Wentworth Avenue intersection, and Scenario 7C, a long-term option incorporating Scenario 4 alongside broader corridor improvements. These shortlisted scenarios form the basis of the options considered in this section and informed the identification of the preferred upgrade solution for the Proposal.

The options progressed for further consideration are summarised below.

2.4.1 Identified Options

2.4.1.1 Option 1- Do nothing

Under this option, the road network would remain unchanged, with no improvements to the existing roundabouts, bridge approaches, or pedestrian facilities. The Traffic Impact Assessment shows that the current network already experiences severe congestion, very long queues, and poor operational performance during both the morning and afternoon peak periods, with several intersections operating



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well beyond their capacity. These conditions are projected to worsen in future years, resulting in further delays, reduced safety and continued difficulty for pedestrians accessing Toongabbie Station.

This option does not meet the Proposal's transport, safety or accessibility objectives and was therefore not considered a viable solution.

2.4.1.2 Option 2- Short-Term Upgrade (Scenario 4)

Scenario 4 focuses on targeted improvements at the Fitzwilliam Road / Station Road / Wentworth Avenue intersection, converting the existing roundabout into traffic lights and introducing two southbound lanes on Wentworth Avenue. The Traffic Impact Assessment indicates that these upgrades would significantly reduce queue lengths, improve vehicle movement through the precinct and provide safe pedestrian crossings, which the current roundabout lacks. Network performance at the main intersection improves from failing conditions to an acceptable level during peak periods, helping address the corridor's critical bottleneck.

While Scenario 4 addresses the most severe issues, its benefits are limited to a single location and do not extend to other intersections within the Station precinct that also experience poor performance.

2.4.1.3 Option 3- Long-Term Upgrade (Scenario 7C)

Scenario 7C builds on Scenario 4 by extending improvements across the wider Toongabbie corridor. It incorporates the signalisation of the main intersection and the additional southbound lane while adding further upgrades that improve pedestrian access, enhance corridor flow and support safer movements to and from Toongabbie Station and the nearby shopping centre. Traffic modelling demonstrates that Scenario 7C delivers the strongest overall performance across all assessed intersections, offering the greatest reduction in delays and queue lengths while also improving safety and walkability in the station precinct.

2.5 PREFERRED OPTION (SCENARIO 7C)

Scenario 7C has been selected as the preferred option because it provides the most balanced and effective response to the transport, safety and accessibility challenges within the Toongabbie precinct. It performs more strongly across the full corridor than any other option assessed, addressing congestion at multiple locations while also supporting safer and more reliable access to Toongabbie Station, Portico Plaza and nearby residential areas.

In addition to its transport performance, Scenario 7C aligns with the strategic direction developed through consultation between Transport and the Network Solutions – Central River City Office (NSCRCO), which emphasised the need for coordinated improvements rather than isolated upgrades. It also represents a practical and deliverable solution within the constrained urban environment of Toongabbie, integrating effectively with existing utilities, drainage systems and surrounding land uses without requiring major structural changes, such as bridge widening.



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Description of the Proposal

Scenario 7C offers the greatest long-term value, improving efficiency for vehicles, enhancing conditions for pedestrians and public transport users, and strengthening overall network resilience. For these reasons, it has been adopted as the preferred option for the Proposal.

3.0 DESCRIPTION OF THE PROPOSAL

3.1 THIS CHAPTER DESCRIBES THE PROPOSAL, THE PROPOSAL

The Proposal is for the upgrade of the Fitzwilliam Road, Station Road, and Wentworth Avenue intersection, and associated sections of Wentworth Avenue in Toongabbie, within the City of Parramatta LGA. The works occur along an established urban road corridor bordered predominantly by low- and medium-density residences, local businesses, and multiple driveway access points. The Proposal is situated within a road environment characterised by high traffic volumes, queue spillback during peak periods, limited pedestrian crossing opportunities and existing sight-distance and access challenges.

The key components of the Proposal include:

- Converting the existing Fitzwilliam Road, Station Road, and Wentworth Avenue roundabout to a new signalised intersection, incorporating left-turn slip lanes and signal phasing designed to improve safety, reduce delay and provide controlled pedestrian crossing facilities.
- Providing driveway access for residents of the Fitzwilliam Road cul-de-sac, improving property access by formalising a safe and compliant connection to the new intersection.
- Widening of Wentworth Avenue to provide two continuous southbound traffic lanes, achieved through the removal of kerbside parking and an existing pedestrian refuge island on the southern approach.
- Modifying the existing Wentworth Avenue roundabout to accommodate the widened southbound approach and maintain safe turning movements.
- Installing a raised pedestrian (wombat) crossing on southern Wentworth Avenue, improving pedestrian safety and supporting access to local bus stops, commercial areas and Toongabbie Station.
- Installing new and upgraded road furniture, including signage, line marking, speed cushions, and associated traffic-calming measures.
- Upgrading the stormwater drainage network, including pit and pipe improvements to align with new road geometry, and adjustments to utilities (water, electricity, communications and gas) where conflicts are identified through survey and service proving.

A detailed layout of the Proposal is provided in **Figure 3-1**.



TOONGABBIE LOCAL ROAD NETWORK ENHANCEMENT

Description of the Proposal

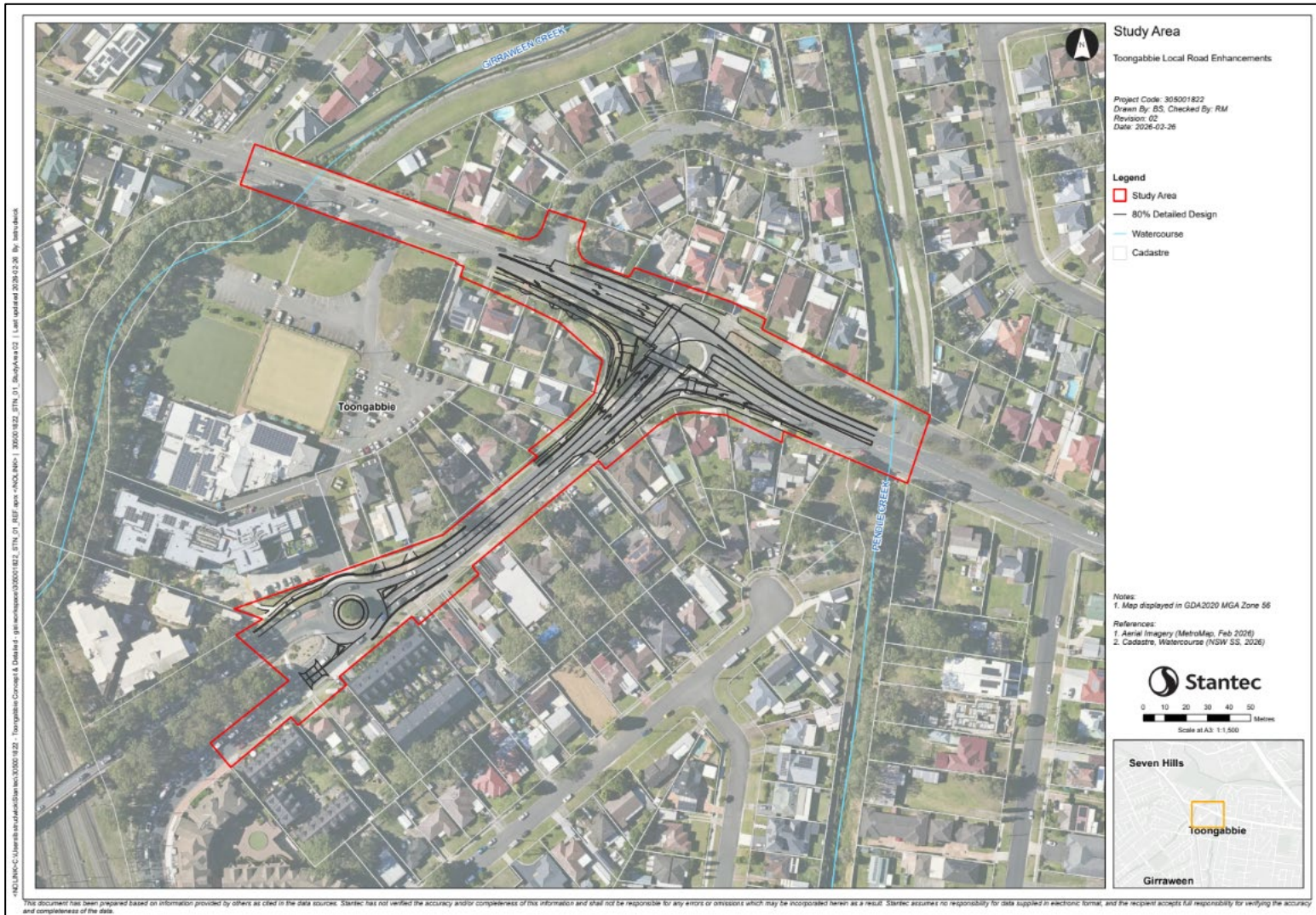


Figure 3-1 Study Area



TOONGABBIE LOCAL ROAD NETWORK ENHANCEMENT

Description of the Proposal

3.2 DESIGN

3.2.1 Design Criteria

The design criteria have been developed to tie the upgraded intersection and road geometry into the existing networks on Wentworth Avenue, Station Road and Fitzwilliam Road. The design criteria for the used for the 50% detailed design has been summarised in Table 3-1.

Table 3-1 Design Criteria

Design Element	Design Criteria
Speed limit	<p>Design speed:</p> <ul style="list-style-type: none">• Fitzwilliam Road: 70km/h• Station Road: 70km/h• Wentworth Avenue:70km/h** <p>Posted speed:</p> <ul style="list-style-type: none">• Fitzwilliam Road: 60km/h• Station Road: 60km/h• Wentworth Avenue:60km/h**
Typical cross section	<ul style="list-style-type: none">• Lane width: 3.5 (minimum & desired)• Turn lane width: 3.5 (minimum & desired)• Raised median width: 0.5m (adjacent to right turn)• Crossfall: 3.0%• Transport's standard kerbs:
Auxiliary lane length	<ul style="list-style-type: none">• Taper length – 19m (desirable), a shorter length up to 10m may be used to maximise storage• Deceleration length – 75m (desirable), 55m (minimum)
Horizontal and vertical alignment	<p>Horizontal alignment:</p> <ul style="list-style-type: none">• Desirable minimum horizontal curve radii (5% superelevation) – 98m, absolute minimum 75m• Minimum horizontal curve radii (for 3.0% adverse crossfall for new roads) – 220m, 95m for existing urban roads• Superelevation – Max 5%



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	<p>Vertical alignment:</p> <ul style="list-style-type: none"> • Maximum vertical grade (flat terrain) – 6-8% • Minimum vertical grade – Crest 'K' – 15.3 (RT = 1.5s) • Sag 'K' = 8
Shared path and footpath	<ul style="list-style-type: none"> • Shared path width: 3.5 (minimum) • Footpath width: 1.2 (minimum) • Crossfall: 1.2% to 2.5%
Sight Distance	<ul style="list-style-type: none"> • Reaction time (Rt) – 1.5s • Stopping sight distance (SSD) – 83m (RT=1.5s) • Safe intersection sight distance (SISD) – 141m • Approach sight distance (ASD) = 83m
Drainage	<ul style="list-style-type: none"> • Design storm AEP – Minor: 10% AEP, Major: 1% AEP • Allowable flow width in 10% AEP event - 1.5m (2 lanes, Speed environment \leq 70km/hr) • 1% AEP Overland Flow Limits - Depth x velocity \leq 0.3m² • Minimum Pipe Grade - 1% (desirable), 0.5% (minimum) • Maximum Pipe Grade - 15% (375mm pipe) • Minimum Pipe size - 600mm • Minimum Pipe Cover - 0.6m • Self-Cleansing Velocity- 0.6m/s (minimum), 1m/s preferred in 2EY event • Pit Blockage Factors - 20% & 50% for on-grade and sag pits respectively in the major storm event only. • Minimum freeboard at pits - 150 mm in 10% AEP

** Council noted that the posted speed on Wentworth Avenue could be reduced to 50km/h. Current design is for a posted speed of 60km/h in case the speed change is not progressed.

3.2.2 Design standards

All design for the Proposal has been undertaken in accordance with the relevant Transport, Austroads, Australian Standards and Council engineering requirements, including:

Transport's Standards and Guidelines

- Transport's Guide to Traffic Modelling and Traffic Modelling Guidelines (RMS 2013), used for SIDRA model development, calibration, and validation,
- Transport's Traffic Control Signal (TCS) design requirements, including Agreement in Principle and signal phasing development for the upgraded intersection,
- Transport's QA Specifications and Pay Item format for quantities and cost estimation (BOQ),



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- Transport's Road Noise Criteria Guideline (2023) and Road Noise Mitigation Guideline (2024) for operational noise assessment,
- Transport's Construction Noise and Vibration Guideline (CNVG) for construction noise and vibration assessment,
- Transport's Road Safety Audit (RSA) requirements for detailed design stage audits.

Austroads Standards

- Austroads Guide to Road Design for geometric design, intersection layout and active transport considerations,
- Austroads Guide to Pavement Technology – Part 2: Pavement Structural Design (AGPT02-17) for pavement design using CIRCLY modelling,
- Austroads Drainage Design Guidelines for pit and pipe stormwater drainage system design.

Australian Standards

- AS 1726 – Geotechnical Site Investigation for borehole logging, sampling and DCP testing,
- AS 1158 – Lighting for Roads and Public Spaces for street lighting compliance and design certification via Endeavour Energy,
- Relevant standards for environmental investigations, including asbestos and contamination testing, such as:
 - TRH/BTEXN/PAH metals suites and AS 4964 (asbestos) analysis

City of Parramatta (CoP) Requirements

- CoP Engineering Design Standards, including public domain, stormwater, road and footpath requirements,
- Relevant provisions of the Parramatta Development Control Plan 2023 (e.g., public domain, access, landscaping, stormwater) where applicable to road and streetscape design.

Environmental Legislation and Guidance

- Environmental Planning and Assessment Act 1979 and EP&A Regulation 2021, guiding the REF process, impact assessment and approvals requirements,
- State Environmental Planning Policy (Transport and Infrastructure) 2021 for statutory assessment and agency consultation requirements,
- Biodiversity assessment in accordance with:
 - NSW Biodiversity Conservation Act 2016
 - Commonwealth Environment Protection and Biodiversity Conservation Act 1999
 - DPE BioNet Atlas and DCCEEW Protected Matters Search Tool usage for threatened species assessment

Utility and Asset Owner Standards

- All utility adjustments will be undertaken in accordance with the requirements of the respective asset owners, including:



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- Endeavour Energy – electrical asset relocation, undergrounding, pole replacement and street lighting design certification (MOS, DB, AVS, EIA)
- Sydney Water – Building Plan Approval (BPA), Specialist Engineering Assessment (SEA) and design standards for potable water asset protection and relocations
- Jemena (Gas) – gas main protection/relocation procedures and certification
- Telecommunications providers (Telstra, NBN) – duct, pit and cable relocation requirements; service proving and shared trench design
- BYDA service location requirements (QL-B and QL-A investigations) prior to excavation and design finalisation

Additional Technical Requirements

- Safety in Design processes in accordance with WHS legislation and industry best practice,
- Landscape design consistent with CoP species lists and public domain guidelines, including suitability of native and low-maintenance species,

Flood and overland flow assessment referencing the Parramatta River Flood Study for Girraween and Pendle Creeks (used to inform constraints but not involving new structure design)

3.2.3 Major design features

The Proposal includes the following key design elements:

- Signalising the Fitzwilliam Road / Station Road / Wentworth Avenue intersection, incorporating slip lanes and pedestrian crossing facilities.
- Widening of Wentworth Avenue to provide two southbound lanes, requiring removal of kerbside parking and an existing pedestrian refuge.
- Modifying the Wentworth Avenue roundabout to suit the widened approach.
- Installing a raised pedestrian (wombat) crossing on southern Wentworth Avenue.
- Formalising driveway access for residents at the Fitzwilliam Road cul-de-sac.
- Upgrading stormwater drainage and adjustments to impacted utilities, informed through QL-B/QL-A investigations.

Updating road furniture including new signage, line marking and traffic-calming devices.

3.3 CONSTRUCTION ACTIVITIES AND STAGING

3.3.1 Construction methodology

This section outlines the proposed construction methodology for the Proposal. The construction contractor would outline the final construction methodology in the Construction Environmental Management Plan (CEMP).

Construction works would be undertaken within the existing road corridor, associated verges and laydown sites. This will require careful coordination to manage utilities, drainage adjustments and traffic



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movements. The construction footprint would be confined to the areas necessary to undertake the works. Works would be staged to maintain traffic access and minimise disruption where practicable.

3.3.1.1 Site Preparation

Site preparation works would occur prior to main construction activities. The works would typically include the following:

- Site establishment, including installation of temporary fencing, delineation of the work area and establishment of site compounds where required.
- Utility identification and service proving, informed by Before You Dig Australia (BYDA) searches, QL-B utility surveys and targeted QL-A potholing where conflicts are identified. These activities ensure safe excavation around water, gas, communications and electrical assets.
- Installation of traffic management measures, including signs, barriers and temporary line marking to safely manage vehicle and pedestrian movements during works.
- Implementation of staged road closures and traffic control measures, including advance signage, barriers and detours, to safely manage vehicle and pedestrian movements around the work zone prior to construction commencing.
- Pre-construction notifications, including communication with affected residents and businesses about temporary access changes and timing of works.
- Establishment of environmental site controls, including sediment and erosion protection, spill kits, and dust suppression, to be implemented in accordance with the contractor's CEMP.
- Preparation of site briefing and safety documentation, including Safe Work Method Statements (SWMS) for field activities and confirmation of access arrangements. Minor vegetation trimming or removal where required to allow plant access or to facilitate stormwater or utility adjustments.

3.3.1.2 Construction Activities

Construction activities for the Proposal would include:

- Demolition and removal of existing roundabout elements at the Fitzwilliam Rd and Wentworth Ave intersection.
- Road widening works along Wentworth Avenue, including kerb removal, new kerb installation and pavement reconstruction.
- Pavement excavation and reconstruction, informed by geotechnical investigations and pavement design requirements.
- Installation of new traffic signals, including conduits, poles, lanterns and signal control infrastructure.
- Modification of the Wentworth Avenue roundabout to accommodate the widened southbound approach.
- Construction of upgraded pedestrian facilities, including a raised (wombat) crossing and adjustments to kerb ramps and footpaths.
- Upgrade of stormwater drainage, including installation or modification of pits and pipes to suit the revised road geometry.
- Utility adjustments and relocations for electrical, water, gas and communications assets where conflicts are identified.



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- Installation of road furniture, including line marking, signage and traffic-calming devices such as speed cushions.

3.3.2 Construction hours and duration

The duration of construction for the Proposal is to be determined depends on the proposed staging. Construction hours would be in accordance with the Interim Construction Noise Guideline (ICNG) (DECC, 2009). The construction phase is expected to extend for a 6-to-10-month period, with detailed staging and working hours will possibly be refined in consultation with the community.

Construction would occur during the standard construction hours of:

- Monday to Friday 7 am to 6 pm
- Saturday 8am to 1 pm
- No work on Sundays or public holidays.

Night works are required to complete particular components of the Proposal. More comprehensive information of the night works that would be required will be provided at a later date by the nominated contractor. Night works could include the following hours:

- Monday to Friday 6 pm to 7am
- Saturday 12 pm to 7am
- No work on Sundays or public holidays.

3.3.3 Plant and Equipment

The following plant and equipment and vehicles will be used during the construction period. This list is subject to change based on the successful Contractor.

- Construction plant and equipment and vehicles
- Excavators and backhoes
- Graders, compactors and rollers
- Asphalt pavers and rollers
- Concrete trucks and kerb machines
- Vacuum excavation trucks
- Water carts
- Utility trenchers and related excavation equipment
- Light vehicles and delivery trucks
- Traffic control devices and signage

3.3.4 Traffic management and access

A Traffic Management Plan (TMP) would be prepared and implemented as part of the CEMP to ensure the safety of construction personnel, motorists and pedestrians during all stages of the works. The TMP



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would be finalised prior to construction and would outline measures such as temporary lane closures, traffic staging, detours, signage, barriers and safe pedestrian diversions.

Construction vehicle movements would be managed to minimise impacts on the surrounding network, with access generally from Wentworth Avenue, Fitzwilliam Road and Station Road. Light vehicles, delivery trucks and plant would operate under controlled access arrangements, with peak-hour restrictions applied where practicable.

Access to adjoining residential properties and businesses would be maintained wherever possible. Any short-term interruptions would be communicated with the affected occupiers in advance. Temporary changes to on-street parking may occur, particularly along Wentworth Avenue where road widening is required.

3.4 ANCILLARY FACILITIES

Ancillary facilities required for the Proposal, such as site compounds, laydown areas and material stockpiles, would be established within or adjacent to the construction footprint. The final locations would be confirmed by the Contractor as part of the CEMP however, three (3) proposed ancillary sites have been identified at the following locations;

- Laydown #1 (Fitzwilliam Road) – *‘Shut half of Fitzwilliam Rd cul-de-sac and remove parking for duration of construction’.*
- Laydown #2 (Station Road and Wentworth Avenue) – *‘Existing vegetated area proposed to be cleared for layout’.*
- Laydown #3 (In-between 170 Fitzwilliam Road and Pendle Creek) – *‘Grass area next to flooding swale’.*

The compound facilities would typically include:

- secure bunded areas for storage of fuels and chemicals
- designated parking areas for construction personnel
- waste management areas for segregated waste streams
- temporary site offices and amenities (if required)

Stockpile areas would be managed in accordance with best-practice environmental controls and would be, where feasible:

- located outside areas prone to flooding and more than 40 m from any watercourse
- positioned in clear public view to deter theft and illegal dumping
- sited outside the dripline of trees and on level, previously disturbed ground

All ancillary and stockpile areas would be temporary and would be rehabilitated and decommissioned at the completion of construction.



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3.5 PUBLIC UTILITY ADJUSTMENT

The Proposal would require adjustments to several existing public utilities to accommodate the proposed intersection signalisation, road widening along Wentworth Avenue, and associated drainage and pedestrian improvements. These works are necessary to maintain service continuity, protect existing infrastructure and ensure the modified road environment is safely integrated with public utility assets.

Utility investigations undertaken during detailed design, supported by BYDA searches, QL-B utility surveys and targeted QL-A potholing have identified the presence of multiple underground and overhead utilities within the Study Area, as summarised in Table 3-2. These include water, potable water mains crossing the road reserve, sewer, electrical distribution, telecommunications and gas infrastructure owned or managed by the relevant authorities.

Table 3-2 Utility and providers within the Study Area

Authority	Utility
Sydney Water	Water mains (DN100 C1CL, DN160 PE) and sewer infrastructure
Endeavour Energy	Overhead HV/LV lines, streetlighting cables, power poles
Telstra / NBN	Telecommunications conduits and overhead cable routes
City of Parramatta Council	Stormwater drainage infrastructure
Jemena	Medium-pressure gas distribution main

Proposed Utility Adjustments

Where existing utilities conflict with the proposed intersection layout, kerb realignments, pavement widening or new drainage infrastructure, they would be adjusted in consultation with the respective asset owners. Typical adjustments would include:

- Relocation or realignment of impacted assets within available verge space
- Raising or lowering of assets to suit the revised road levels and new drainage grades
- Protection in place, including support systems, slab protection or conduit encasement, where feasible
- Upgrades to electrical infrastructure, including undergrounding or relocation of several Endeavour Energy poles and modification of associated HV/LV conductors and street lighting



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- Sydney Water approvals, including Building Plan Approval (BPA) and Specialist Engineering Assessment (SEA), for works affecting potable water mains that cross Station Road and Wentworth Avenue
- Telecommunications modifications, including relocation of underground conduits and overhead cables into consolidated service trenches where practicable
- Gas main protection or relocation, as required, based on conflict points identified during utility proving

Coordination and Approvals

Coordination with Endeavour Energy, Sydney Water, Jemena, Telstra, NBN and Council would occur during the detailed design and pre-construction phases to:

- confirm final asset locations
- obtain necessary approvals (e.g. MOS, BPA/SEA, relocation design packages)
- sequence works to minimise disruptions to customers and road users
- ensure all adjustments comply with asset-owner specifications and relevant engineering standards

All public utility works would be delivered in accordance with authority guidelines, and any service interruptions would be managed in consultation with affected residents and businesses.

3.6 PROPERTY ACQUISITION

No property acquisition or leasing of lots are likely to be required for the Proposal. All works and ancillary facilities would be situated within the road corridors which are owned by Council.



4.0 STATUTORY AND PLANNING FRAMEWORK

This section of the REF provides a brief overview of the key planning instruments and legislation relevant to the proposed telecommunications works.

4.1 COMMONWEALTH LEGISLATION

4.1.1 Environment Protection and Biodiversity Conservation Act 1999

Under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act), a referral is required to Department of Climate Change, Energy, the Environment and Water (DCCEEW), for proposed actions that have the potential to significantly impact on Matters of National Environmental Significance (MNES). These are assessed in Chapter 6 of the REF.

The Proposal does not occur on, or adjacent to, any Commonwealth land. As the works are located entirely within Council-owned public road reserve and no Commonwealth assets or landholdings occur in the vicinity, the “Commonwealth land” provisions of the EPBC Act do not apply.

The assessment of the Proposal’s impact on MNES and the environment of Commonwealth land found that there is unlikely to be a significant impact on relevant MNES or on Commonwealth land. Accordingly, the Proposal has not been referred to the DCCEEW under the EPBC Act.

4.1.2 Native Title Act 1993

The *Native Title Act 1993* (NT Act) recognises and protects native title. It provides that native title cannot be extinguished contrary to the NT Act. The NT Act covers actions affecting native title and the processes for determining whether native title exists and compensation for actions affecting native title.

A search of the Native Title Tribunal Native Title Vision website was undertaken, with no native title holders, claimants or Indigenous Land Use Agreements over the Study Area. As the works occur entirely within an existing Council-owned road reserve and no native title rights or interests exist, the NT Act is not triggered, and no further assessment is required.

4.2 NEW SOUTH WALES LEGISLATION

4.2.1 Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act 1979* (EP&A Act) establishes the framework for land-use planning and environmental assessment in New South Wales. The Act sets out the processes for preparing environmental planning instruments, assessing proposed development, and ensuring that environmental, social and economic impacts are considered before works proceed.

Under Division 5.1 of the EP&A Act, public authorities may carry out activities, such as local road upgrades, without development consent, provided the environmental impacts of the activity are examined



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and taken into account to the fullest extent possible. This REF has been prepared in accordance with the requirements of Division 5.1 to assess the potential impacts of the Proposal and to determine whether it may proceed with appropriate environmental safeguards.

It is noted that the *Environmental Planning and Assessment Amendment (Planning System Reforms) Act 2025* amends section 5.5 of EP&A Act. The amendments are:

- Section 5.5: Duty to consider environmental impact Omit “to the fullest extent possible all” from section 5.5(1).
- Section 5.5(1) - (2): For subsection (1), a determining authority may take into account the matters referred to in the subsection in a manner that is proportionate to the nature and risk of the activity.

4.2.2 State Environmental Planning Policy (Transport and Infrastructure) 2021

The State Environmental Planning Policy (Transport and Infrastructure) 2021 (SEPP (Transport and Infrastructure)) aims to facilitate the effective delivery of infrastructure across the State, including for roads and road-related infrastructure.

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

As the proposal is classified as development for the purposes of a road or road infrastructure facilities and is to be carried out by Council, it may proceed under Division 5.1 of the EP&A Act and does not require development consent.

Sections 2.10 to 2.15 of SEPP (Transport and Infrastructure) set out consultation requirements for certain types of development undertaken by public authorities. Any consultation required under these provisions (where applicable) is addressed in Section 5.3 **Error! Reference source not found.** of this REF.

4.2.3 Environmental Planning Policy (Precincts—Western Parkland City) 2021

The Proposal is located within the area regulated by the State Environmental Planning Policy (Precincts—Central River City) 2021. This SEPP consolidates planning controls for strategic precincts across the Central River City, including parts of the City of Parramatta LGA, and provides a coordinated planning framework to support economic growth, housing delivery, infrastructure integration and place-based outcomes within these established urban centres.

The aims of the SEPP include:

- coordinating land use and infrastructure planning across key precincts of the Central River City
- supporting housing and employment growth in centres identified for targeted renewal and investment
- promoting high-quality urban design and walkable neighbourhoods around major transport nodes
- protecting and enhancing environmental, heritage and open-space values within the Central River City
- ensuring development responds to local character and integrates with existing communities



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- facilitating infrastructure delivery by enabling development necessary for transport, utilities and public-domain improvements

The Proposal sits within an established urban area near Toongabbie Railway Station, consistent with the SEPP's strategic emphasis on supporting renewal and infrastructure delivery in transport-accessible precincts. The SEPP provides broader strategic direction for development within the Central River City but does not introduce additional assessment triggers or land-use controls that modify the Proposal's pathway under Division 5.1 of the EP&A Act.

The land within the Study Area continues to rely on the City of Parramatta Local Environmental Plan (LEP) 2023 for zoning and land-use permissibility, with the SEPP informing strategic planning outcomes for the broader precinct. The Proposal comprising road and intersection upgrades, aligns with the SEPP's objectives by improving transport connectivity, supporting local economic resilience and enhancing accessibility within an identified urban centre.

4.2.4 Parramatta Local Environment Plan 2023

LEPs are statutory documents that guide planning decisions on development and land use for local governments. The Parramatta LEP 2023 is the prevailing planning instrument for the Parramatta LGA and applies to most forms of development.

The Proposal would occur on land zoned under the Parramatta LEP 2023 as:

- R2 – Low Density Residential
- R3 – Medium Density Residential
- W1 – Natural Waterways

The objectives and permissibility of these land zones are detailed in Table 4-1.

Table 4-1 Land Zone Objectives and Permissibility

Land Zone	Objectives	Permissibility
R2	<ul style="list-style-type: none">▪ To provide for the housing needs of the community within a low density residential environment.▪ To enable other land uses that provide facilities or services to meet the day to day needs of residents.▪ To maintain the low density residential character of the area.▪ To ensure non-residential land uses are carried out in a way that minimises impacts on the amenity of a low density residential environment.▪ To provide a range of community facilities that serve the needs of people who live in, work in and visit the area.▪ To protect and enhance tree canopy, existing vegetation and other natural features.	Permitted with consent
R3	<ul style="list-style-type: none">▪ To provide for the housing needs of the community within a medium density residential environment.	Permitted with consent



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	<ul style="list-style-type: none"> ▪ To provide a variety of housing types within a medium density residential environment. ▪ To enable other land uses that provide facilities or services to meet the day to day needs of residents. ▪ To provide opportunities for people to carry out a reasonable range of activities from their homes if the activities will not adversely affect the amenity of the neighbourhood. ▪ To provide a range of community facilities that serve the needs of people who live in, work in and visit residential neighbourhoods. 	
W1	<ul style="list-style-type: none"> ▪ To protect the ecological and scenic values of natural waterways. ▪ To prevent development that would have an adverse effect on the natural values of waterways in this zone. ▪ To provide for sustainable fishing industries and recreational fishing. ▪ To provide for cultural and scientific study of natural waterways. ▪ To enable works associated with the rehabilitation of land towards its natural state. 	Permissible with Consent

The TI SEPP overrides the provisions of the Parramatta LEP, and development consent under Division 4.1 of the EP&A Act is not required. However, the proponent should consider the Parramatta LEP in order to identify the Proposal's consistency with its land use and planning policy.

4.2.5 Local Strategic Plans

4.2.5.1 Parramatta Community Strategic Plan 2025-2050

The Proposal has potential relevance to two of the strategic objectives within the Community strategic plan (CSP), refer to **Table 4-2**.

Table 4-2 Strategic Objectives

Strategic Objective	Timeline	Relevance to Proposal
We all Belong; <i>A diverse, creative, inclusive and inspiring city</i>	2025-2050	<ul style="list-style-type: none"> ▪ Supports safer and more accessible movement for all users, including pedestrians, cyclists and public-transport passengers, improving inclusivity within the Toongabbie Station precinct. ▪ Enhances access to local public spaces and community destinations (station, shops, bus stops), contributing to a welcoming and connected neighbourhood. ▪ Improves the quality and usability of civic spaces surrounding the station, consistent with the CSP emphasis on accessible community participation and cultural engagement
We put people first: <i>An equitable and socially connected city</i>	2025-2050	<ul style="list-style-type: none"> ▪ Improves safety for vulnerable road users through upgraded pedestrian crossings and intersection controls, supporting Council's commitment to safe, healthy and accessible environments. ▪ Strengthens local connectivity by ensuring residents can move easily between homes, transport, shops and community facilities, central to supporting wellbeing and social cohesion. ▪ Enhances accessibility around a high-use public-transport node, aligning with CSP objectives for inclusive and accessible public infrastructure.



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<p>We are an economic powerhouse: <i>A prosperous, productive and ambitious city</i></p>	2025-2050	<ul style="list-style-type: none"> Improves traffic efficiency and travel-time reliability around Toongabbie Station, supporting access to employment and services within the Central River City. Enhances the reliability of bus movements and active transport connections, contributing to a more productive and connected local economy. Supports local business activity by improving pedestrian access and reducing congestion in a key retail and commuter precinct
<p>We nurture our environment: <i>A regenerative and resilient city</i></p>	2025-2050	<ul style="list-style-type: none"> Incorporates drainage upgrades that improve stormwater performance and support better water-sensitive urban outcomes within the catchment. Encourages low-carbon transport choices by improving active-transport access to Toongabbie Station, consistent with CSP objectives for sustainable mobility. Supports resilience by improving road functionality in a flood-affected area between Girraween and Pendle Creeks, aligned with CSP goals for climate-adapted infrastructure.
<p>We are future focused: <i>A leading and forward-thinking city</i></p>	2025-2050	<ul style="list-style-type: none"> Delivers upgraded transport infrastructure that supports future growth, aligning with Council's vision for a well-planned, highly connected and resilient Central River City. Enhances integration with public transport and supports mode shift to sustainable travel, consistent with CSP ambitions for smart, efficient and connected movement networks. Contributes to well-designed, place-based improvements within a key local centre, supporting CSP objectives for good urban design and future-ready precincts.

4.2.6 Other Relevant NSW Legislation

A summary of the other State environmental and planning legislation potentially relevant to the Proposal is provided in **Table 4-3**. The Table includes an assessment of whether any permits or other approvals are required under other legislation.

Table 4-3 Other relevant NSW Legislation

Legislation	Relevance to the Project	Required permits and approvals
<i>Contaminated Land Management Act 1997</i> (CLM Act)	The CLM Act establishes a process for investigating and remediating land where contamination presents a "significant risk of harm" to human health or the environment. It applies to contamination which occurred before or after its commencement.	No permit and/or approval required.
<i>Protection of the Environment Operations Act 1997</i> (POEO Act)	The POEO Act establishes the procedures for issuing licences for environment protection in relation to aspects such as waste, air, noise and water pollution control. The owner or occupier of the premises engaged in scheduled activities is required to hold an environment protection licence (EPL) and comply with the conditions of that licence	No permit and/or approval required.
<i>Heritage Act 1977</i> (Heritage Act)	The Heritage Act aims to provide for the identification, registration and conservation of items of Local and State heritage significance.	No permit and/or approval required.
<i>National Parks and Wildlife Act 1974</i> (NPW Act)	The NPW Act aims to conserve nature, objects, places or features of cultural value within the landscape. The NPW Act is the primary legislation regulating Aboriginal cultural heritage in NSW.	No AHIP required.



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	Items of Aboriginal cultural heritage (Aboriginal objects) or Aboriginal places (declared under Section 84) are protected and regulated under the Act. Aboriginal objects are protected under Section 86 of the Act. Under Section 90(1) of the Act, the Secretary may issue an Aboriginal heritage impact permit for an activity that would harm an Aboriginal object	
<i>Waste Avoidance and Recovery Act 2001</i> (WARR Act)	The main objectives of the WARR Act, is to develop and support the implementation of regional and local programs to meet the outcomes of a State-wide strategy for waste avoidance and resource recovery and to minimise the consumption of natural resources and final disposal of waste by encouraging the reuse and recycling of waste.	No permit and/or approval required.
<i>Aboriginal Land Rights Act 1993</i>	This Act relates to the land rights of Aboriginal people. No Aboriginal Land Council land occurs within the Study Area.	No permit and/or approval required.
<i>Biosecurity Act 2015</i>	The objective of the <i>Biosecurity Act 2015</i> is to provide a framework for the prevention, elimination and minimisation of biosecurity risks posed by biosecurity matter, dealing with biosecurity matter, carriers and potential carriers, and other activities that involve biosecurity matter, carriers or potential carriers.	No permit and/or approval required.
<i>Fisheries Management Act 1994 (FM Act)</i>	The FM Act applies to all waters within the State of NSW, except where Commonwealth legislation applies. The FM Act aims to promote sustainable resource conservation and equitable resource allocation principles to the management of the state's aquatic resources.	No permit and/or approval required.
<i>Biodiversity Conservation Act 1994</i>	The Purpose of the BC Act is to maintain a healthy, productive and resilient environment for the greatest well-being of the community, now and into the future, which is consistent with the principles of ecologically sustainable development. If an activity potentially affects any flora or fauna species, populations or ecological communities listed by the BC Act, a test of significance under section 7.3 of the BC Act is required. Section 6.1 test determined the Proposal is not likely to significantly affect threatened species.	No permit and/or approval required.

4.3 CONFIRMATION ON STATUTORY POSITION

This REF has been prepared on behalf of Council and given that development consent is not required as outlined by the TI SEPP, refer to Section 4.1.1, the Proposal can be undertaken as an activity under Part 5 of the EP&A Act, with Council as the determining authority.

5.0 CONSULTATION

5.1 SEPP CONSULTATION

Part 2.2 of the TI SEPP contains provisions for public authorities to consult with local Councils and other public authorities prior to the commencement of certain types of development.



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 Consultation

The Proposal will be carried out by or on behalf of a public authority (Council) and due to the provisions of the TI SEPP does not require development consent. The TI SEPP consultation requirements are detailed in **Table 5-1** and **Table 5-2**.

Table 5-1: TI SEPP Consultation with Council

Is consultation with Council required under sections 2.10 - 2.12 and 2.14 of the TI SEPP		
Are the works likely to have a substantial impact on the stormwater management services which are provided by council?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Are the works likely to generate traffic to an extent that will strain the capacity of the existing road system in a local government area?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Will the works involve connection to a council owned sewerage system? If so, will this connection have a substantial impact on the capacity of the system?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Will the works involve connection to a council owned water supply system? If so, will this require the use of a substantial volume of water?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Will the works involve the installation of a temporary structure on, or the enclosing of, a public place which is under local council management or control? If so, will this cause more than a minor or inconsequential disruption to pedestrian or vehicular flow?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Will the works involve more than a minor or inconsequential excavation of a road or adjacent footpath for which council is the roads authority and responsible for maintenance?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Is there a local heritage item (that is not also a state heritage item) or a heritage conservation area in the Study Area for the works?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Is the Proposal within the coastal vulnerability area and is inconsistent with a certified coastal management program applying to that land? Note: See interactive map at Coastal management - (nsw.gov.au) . Note the coastal vulnerability area has not yet been mapped. Note: a certified coastal zone management plan is taken to be a certified coastal management program.	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Are the works located on flood liable land? If so, will the works change flooding patterns to more than a minor extent? Note: Flood liable land means land that is susceptible to flooding by the probable maximum flood event, identified in accordance with the principles set out in the Floodplain Development Manual: the management of flood liable land (nsw.gov.au).	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>

Table 5-2 Consultation with other public authorities

Is consultation with a public authority (other than Council) required under sections 2.13, 2.15 and 2.16 of the TI SEPP		
Are the works located on flood liable land? (to any extent) (SEPP (Transport and Infrastructure) s2.13) If so, do the works comprise more than minor alterations or additions to, or the demolition of, a building, emergency works or routine maintenance? Note: Flood liable land means land that is susceptible to flooding by the probable maximum flood event, identified in accordance with the principles set out in the Floodplain Development Manual: the management of flood liable land (nsw.gov.au) . In accordance with the TI SEPP, Council consulted the NSW State Emergency Service (SES) of the proposed works that will occur within flood liable land.	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>



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Are the works adjacent to a national park, nature reserve or other area reserved under the <i>National Parks and Wildlife Act 1974</i> , or on land acquired under that Act?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Are the works on land in Zone E1 National Parks and Nature Reserves or in a land use zone equivalent to that zone?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Do the works include a fixed or floating structure in or over navigable waters?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Are the works for the purpose of residential development, an educational establishment, a health services facility, a correctional facility or group home in bush fire prone land?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Would the works increase the amount of artificial light in the night sky and that is on land within the dark sky region as identified on the dark sky region map? (Note: the dark sky region is within 200 km of the Siding Spring Observatory)	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Are the works on buffer land around the defence communications facility near Morundah? (Note: refer to Defence Communications Facility Buffer Map referred to in clause 5.15 of Lockhart LEP 2012, Narrandera LEP 2013 and Urana LEP 2011).	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Are the works on land in a mine subsidence district within the meaning of the <i>Mine Subsidence Compensation Act 1961</i> ?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>

5.2 GOVERNMENT AND STAKEHOLDER CONSULTATION

Consultation has been undertaken with key government stakeholders during development of the Toongabbie Improvement Works, primarily through the 'Toongabbie Improvement Works - Strategic Business Case' (strategic business case) and associated technical studies. This consultation included:

- *Transport for NSW Divisions* – Ongoing consultation occurred with Transport's Network Safety and Services, Network Operations and Network Development throughout the options development and assessment process. These groups provided technical input on safety, traffic modelling and network performance.
- *City of Parramatta Council and Cumberland City Council* – A joint workshop was held on 24 March 2021, with follow-up correspondence, to discuss proposed upgrades, responsibilities for delivery, future maintenance, and local traffic considerations. Both councils expressed provisional support for improvements within the Toongabbie precinct, subject to funding and detailed design.
- *Further Council Engagement* – The strategic business case identifies the need for continued consultation with both councils to confirm their role in procurement, asset handover, design interfaces and refinement of cost estimates. A Proposal steering group is proposed to manage ongoing engagement between Transport and councils.
- *Community and Road User Engagement (planned)* – The strategic business case outlines that community engagement will occur through meetings, letters, media announcements and notifications during upcoming design development and construction stages. This consultation had not commenced at the time of assessment.
- *Utility Consultation (planned)* – While no detailed utility consultation has yet occurred, the strategic business case indicates that coordination with utility authorities will be required during detailed design for relocation and protection of services.

Consultation to date has focussed on early design refinement through engagement with local councils and Transport's internal stakeholders. Broader community and business consultation will be undertaken prior to construction.



5.3 ONGOING AND FUTURE CONSULTATION

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



6.0 ENVIRONMENTAL ASSESSMENT

This section of the REF provides a detailed description of the potential environmental impacts associated with the construction and operation of the Proposal. All relevant environmental factors have been examined in accordance with the EP&A Act, the EP&A Regulation 2021 and the *Guideline for Division 5.1 Assessments* (DPE, 2022). These include consideration of:

- Potential impacts on matters of national environmental significance under the EPBC Act
- The factors specified in the *Guideline for Division 5.1 assessments* (DPE 2022) and as required under section 171 of the *Environmental Planning and Assessment Regulation 2021*. The factors specified in section 171 of the *Environmental Planning and Assessment Regulation 2021* are also considered in **Appendix A**
- Site-specific safeguards and management measures are provided to mitigate the identified potential impacts.

6.1 BIODIVERSITY

This section of the REF outlines the potential impacts to Biodiversity in the Study Area from the construction and operation of the Project.

6.1.1 Methodology

6.1.1.1 Desktop Review

A desktop review was undertaken to identify records of threatened flora, fauna and ecological communities, migratory species and Key Threatening Processes (KTP) within 10 km of the Study Area. This included searches of online databases and a review of available spatial data and literature of relevance, including:

- Existing vegetation mapping as available in NSW BioNet Vegetation Information System
- Local threatened species records within the NSW BioNet Atlas
- Relevant Threatened Ecological Community description and assessment guidelines (DEC 2004; DPIE 2020)
- Freshwater threatened species distribution mapping (DPI, 2018)
- Predicted Matters of National Environmental Significance (MNES), including threatened species and ecological communities as per the Commonwealth's Protected Matters Search Tool (PMST)
- The Atlas of Living Australia database, to identify known records of threatened, least concern and pest species recorded within the vicinity of the Study Area.

6.1.1.2 Likelihood of Occurrence Assessment

A habitat assessment was completed to assess the likelihood of occurrence for each threatened species, ecological community or migratory species identified within the BioNet, NSW DPIRD threatened species



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list or PMST report. This assessment determines how likely it is that each species or community is present in the Study Area using the criteria detailed in Table 6-1.

Species are considered ‘likely to occur’ (i.e., a moderate to high likelihood of occurrence) where:

- The species is ‘known’ or ‘predicted’ to occur in the Interim Biogeographic Regionalisation for Australia (IBRA) subregion in which the project is located; and
- The Study Area contains habitat features or components associated with the species, or there are records of the species in the Study Area.

A test of significance (under the FM Act/BC Act) and/or an Assessment of Significance (under the EPBC Act)- collectively known as Assessments of Significance (AoS) is completed for species considered ‘likely to occur’ and that have the potential to be impacted by the Proposal.

Table 6-1 Likelihood of Occurrence criteria

Habitat Value	Description
None/absent	The habitat within the Study Area is unsuitable for the species.
Low	It is unlikely that the species inhabits the Study Area. If it did, it would likely be a transient visitor. Criteria for this category may include: <ul style="list-style-type: none"> • Study Area does not support the specific habitat types or resources required by the species • Study Area is beyond the current distribution of the species or is isolated from known populations Non-cryptic flora species not observed during targeted surveys.
Moderate	Potential habitat for a species occurs within the Study Area. Criteria for this category may include: <ul style="list-style-type: none"> • Species previously recorded in contiguous habitat, albeit not recently (>10 years) • Habitat present, but poor quality, depauperate or modified types and/or resources • Species has potential to utilise habitat during migration or seasonal availability of resources Cryptic flora species with potential habitat within the Study Area that have not been targeted by surveys (for example, surveys were not undertaken within the flowering season).
High	It is likely that a species would inhabit or utilise habitat within the Study Area. Criteria for this category may include: <ul style="list-style-type: none"> • Species has been recently and/or regularly recorded in the Study Area or surrounds, • Species uses habitat types or resources that are present in the Study Area that are abundant and/or in good condition • Species is known or likely to maintain resident populations surrounding the Study Locality Species is known or likely to visit the area of influence during regular seasonal movements or migration.
Known	The species was recorded within the Study Area during the field survey.

6.1.1.3 Field Survey

A flora and fauna survey was undertaken by Stantec Ecologist, Elly Baker on 23 February 2026. A summary of the detailed survey effort and environmental conditions during the site inspection is presented in Table 6-2 and Table 6-3 below.



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A Random Meander (RM) and Rapid Biodiversity Assessment (RBA) was conducted to ground-truth vegetation mapping and identify potential habitat in the Study Area. Biodiversity values and conditions within the Study Area were recorded. Field data was used to generate an updated map of the vegetation communities in the Study Area. Incidental flora observations were also recorded.

Fauna habitat features were collected as part of the site inspection. The availability and quality of habitat within the Study Area was assessed with respect to the following factors:

- Flora diversity and structure
- Type and extent of habitat types
- Habitat connectivity, including continuity with similar habitats within the Study Area
- Occupancy of key habitat features including hollow-bearing trees, derelict buildings and creeks, where possible
- Degree of disturbance and degradation
- Topographic features such as aspect and slope.

Table 6-2 Site inspection survey effort

Date	Staff	Survey Period	Survey Effort
23/02/2026	Elly Baker	9:30am-11:30am	2 person hours
			Total Effort: 2 hours

Table 6-3 Environmental conditions at the time of site inspection (BoM, 2026)

Date	Temperature (°C)		Rainfall (mm)	Other observations
	Minimum	Maximum		
23/02/2026	23.4	28.5	1.0	Fine and sunny during site visit.

6.1.1.4 Survey Limitations

The methodology presented here provides a limitation on describing the biodiversity values of the Study Area. The biodiversity values of the Study Area recorded from this field survey should not be seen as a complete/comprehensive inventory. The field survey samples the Study Area at a point in time, providing a snapshot only. A period of several seasons or years is often required to identify all species in an area with confidence.

Given the short period of time spent on site, the detection of certain species may be affected by:

- Seasonal migration (particularly migratory birds);
- Seasonal flowering periods (some species are cryptic and are unlikely to be detected outside of the known flowering period);
- Seasonal availability of food, such as blossoms for some fauna;



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- Weather conditions during the survey period (some species may go through cycles of activity related to specific weather conditions, for example some microbats, reptiles and frogs can be inactive during cold weather); and/or
- Species lifecycles (cycles of activity related to breeding).

These potential limitations have been addressed by applying the precautionary principle in cases where the survey methodology may have given a false negative result (e.g., a species that could reasonably be expected to occur, based on previous records and available habitat, was not observed). All species have been assessed on the basis of the presence of suitable habitat and the likely significance of that habitat to support a viable local population.

The vegetation extent within the Study Area has been mapped as accurately as possible and assigned to the most likely PCT described in the BioNet vegetation classification database. In many cases there are no sharp boundaries defining the transition between PCTs and communities are naturally variable. The vegetation boundaries in the Study Area have been mapped as best as possible based on observations during the field survey and aerial imagery. It is likely that the boundaries of PCTs and vegetation zones will change with time and in response to long-term variation in environmental conditions such as rainfall, surface drainage patterns and anthropogenic disturbance.

6.1.2 Existing Environment

6.1.2.1 Ground-truthed Vegetation

The vegetation in the Study Area is shown in Table 6-4 and in Figure 6-1, 6-2, 6-3, and further illustrated in 6-4.

Table 6-4 Vegetation within the Study Area

Vegetation Type	Area in Study Area (ha)	Area in Laydown Area (ha)
Landscaped	0.324	0.009
Revegetation	0.042	0.000
Native Canopy	0.051	0.011

Landscaped vegetation

Majority of the vegetation within the Study Area was a mix of native and exotic planted species that are typical of an urban streetscape (see Figure 6-1). The groundlayer was dominated by grass such as Couch (*Cynodon dactylon*), Panic Veldtgrass (*Ehrharta erecta*), African Lovegrass (*Eragrostis curvula*) and Paspalum (*Paspalum dilatatum*). Planted shrubs and trees consisted of species such as Cottonwood Hibiscus (*Hibiscus tiliaceus*), Orange Jessamine (*Murraya paniculata*), Tuckeroo (*Cupaniopsis anacardioides*), Indian Hawthorn (*Rhaphiolepis indica*) and Hoop Pine (*Araucaria cunninghamii*).



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Figure 6-1 Ground-truthing Photograph 1

Revegetation

There was evidence of revegetation and landscaping works within the Study Area (see Figure 6-2). These species predominantly composed of native grasses such as Variable Sword-sedge (*Lepidosperma laterale*), Spiky-headed Mat-rush (*Lomandra longifolia*) and Blue Flax-lily (*Dianella caerulea*).



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Figure 6-2 Ground-truthing Photograph 2

Native Canopy

Sporadic occurrences of native canopy species occurred within the Study Area (see Figure 6-3). These species included Forest Red Gum (*Eucalyptus tereticornis*), Swamp Mahogany (*Eucalyptus robusta*), and Spotted Gum (*Corymbia maculata*). Forest Red Gum and Spotted Gum are characteristic species of PCT 3320 Cumberland Shale Plains Woodland which is expected to occur nearby. However, given that these are isolated individual trees they have not been determined to be part of this or any other PCT.



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Figure 6-3 Ground-truthing Photograph 3



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Figure 6-4 Ground-truthed Vegetation map



6.1.2.2 Fauna Species

A total of four fauna species were observed during the field surveys. No threatened fauna species were identified during the field survey.

Fauna Habitat

The availability of suitable fauna habitat within the Study Area is limited. Available habitat has been summarised in Table 6-5.

Table 6-5 Fauna habitat values

Habitat Value	Description
Foraging Habitat	Potential foraging habitat within the Study Area includes <i>Eucalypt</i> and <i>Melaleuca</i> species, which may provide foraging habitat for fauna within the locality.
Connectivity	The Study Area lacks connectivity to large tracts of remnant bushland. The streetscape surrounding the Study Area contains landscape vegetation.
Hollow-bearing trees, burrows, nests and other fauna habitat	No hollows, nests or burrows were identified within the Study Area.
Leaf litter	Minimal leaf litter was present within the Study Area. Given the urban nature of the Study Area, it is likely that leaf litter build up would be regularly maintained.
Logs	There was a lack of fallen branches (i.e., logs) within the Study Area. Logs are likely to be quickly removed from the Study Area to ensure pedestrian and vehicle access remains safe.
Aquatic habitat	Girraween Creek and Pendle Creek both contain suitable aquatic habitat and in-stream macrophytes.

6.1.2.3 Threatened Species

All threatened species identified in the desktop assessment were assessed for likelihood of occurrence. No species were determined to have a 'moderate or higher' likelihood of occurrence, given the urban typical landscape and lack of plant community types (PCTs). Therefore, no species have been assessed further with an AoS.

6.1.2.4 BioNet Atlas Search

The results from the BioNet Atlas database search, undertaken on 17 February 2026, indicated that 85 threatened and/or migratory species have been recorded within 10 km of the Study Area including two frog, 31 bird, 2 gastropod, 14 mammal and 36 flora species.

6.1.2.5 Protected Matters Search Tool

The results of the Commonwealth EPBC Protected Matters Search Tool (PMST), undertaken on the 17 February 2026, indicated that a total of four Matters of National Environmental Significance (MNES) are predicted to occur within the 10 km locality, as listed in Table 6-6.



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Table 6-6 Summary of PMST results

Impact	Action																																																	
MNES	PMST Predicted																																																	
World Heritage Places	Australian Convict Sites (Old Government House and Domain)																																																	
National Heritage Places	Old Government House and the Government Domain Parramatta Female Factory and Institutions Precinct																																																	
Wetlands of International Importance	None.																																																	
Great Barrier Reef Marine Park	None.																																																	
Commonwealth Marine Area	None.																																																	
Threatened Ecological Communities (TECs)	<p>10 TECs are predicted as likely to occur within the study locality:</p> <ul style="list-style-type: none"> • Blue Gum High Forest of the Sydney Basin Bioregion • Coastal Swamp Oak (<i>Casuarina glauca</i>) Forest of New South Wales and South East Queensland ecological community • Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland • Cooks River/Castlereagh Ironbark Forest of the Sydney Basin Bioregion • Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest • River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria • Shale Sandstone Transition Forest of the Sydney Basin Bioregion • Subtropical and Temperate Coastal Saltmarsh • Turpentine-Ironbark Forest of the Sydney Basin Bioregion • Western Sydney Dry Rainforest and Moist Woodland on Shale <p>2 TECs are predicted as may occur within the study locality:</p> <ul style="list-style-type: none"> • Castlereagh Scribbly Gum and Angles Banks Woodlands of the Sydney Basin Bioregion • Coastal Upland Swamps in the Sydney Basin Bioregion 																																																	
Threatened Species	<p>A total of 104 threatened species were predicted to occur within the study locality, as per the table below:</p> <table border="1"> <thead> <tr> <th rowspan="2">Group</th> <th colspan="4">Number of species predicted</th> </tr> <tr> <th>Vulnerable</th> <th>Endangered</th> <th>Critically Endangered</th> <th>Conservation Dependent</th> </tr> </thead> <tbody> <tr> <td>Birds</td> <td>26</td> <td>12</td> <td>4</td> <td>-</td> </tr> <tr> <td>Fish</td> <td>2</td> <td>1</td> <td>-</td> <td>-</td> </tr> <tr> <td>Frogs</td> <td>2</td> <td>1</td> <td>-</td> <td>-</td> </tr> <tr> <td>Mammals</td> <td>6</td> <td>5</td> <td>-</td> <td>-</td> </tr> <tr> <td>Plants</td> <td>19</td> <td>13</td> <td>4</td> <td>-</td> </tr> <tr> <td>Reptiles</td> <td>4</td> <td>3</td> <td>-</td> <td>-</td> </tr> <tr> <td>Shark</td> <td>-</td> <td>-</td> <td>-</td> <td>1</td> </tr> <tr> <td>Snail</td> <td>-</td> <td>1</td> <td>-</td> <td>-</td> </tr> </tbody> </table>	Group	Number of species predicted				Vulnerable	Endangered	Critically Endangered	Conservation Dependent	Birds	26	12	4	-	Fish	2	1	-	-	Frogs	2	1	-	-	Mammals	6	5	-	-	Plants	19	13	4	-	Reptiles	4	3	-	-	Shark	-	-	-	1	Snail	-	1	-	-
Group	Number of species predicted																																																	
	Vulnerable	Endangered	Critically Endangered	Conservation Dependent																																														
Birds	26	12	4	-																																														
Fish	2	1	-	-																																														
Frogs	2	1	-	-																																														
Mammals	6	5	-	-																																														
Plants	19	13	4	-																																														
Reptiles	4	3	-	-																																														
Shark	-	-	-	1																																														
Snail	-	1	-	-																																														
Migratory Species	A total of 37 migratory species were predicted to occur within the 10 km locality.																																																	



6.1.3 Construction Impacts

6.1.3.1 Impacts to vegetation

The field survey confirmed that the desktop vegetation mapping (SVTM) was correct, and that no native Plant Community Types (PCTs) occur within the Study Area. The proposed works would require the clearing of laydown areas, as shown in Figure 6-3. This would require the removal of 0.011 ha of native canopy species, as well as 0.009 ha of landscaped vegetation.

6.1.3.2 Impacts to Fauna

No habitat features such as hollows were identified in the vegetation to be cleared for the proposed works. However, the native canopy species in the Study Area may offer foraging habitat for fauna species and the removal may impact native fauna. To avoid direct impacts to native fauna, the mitigation measures detailed in Table 6-7 should be implemented.

6.1.4 Operational Impacts

6.1.4.1 Impacts to Vegetation

Direct impacts to vegetation would only occur during the construction phase.

6.1.4.2 Impacts to Fauna

The proposed works are unlikely to increase the impacts to fauna during operation. While traffic mortality may impact fauna on the roads in the Study Area, the proposed works are unlikely to exacerbate the risk of this.

6.1.5 Safeguards and Management Measures

Table 6-7 Biodiversity safeguards and management measures

Impact	Action	Responsibility
Removal of native vegetation	Vegetation to be removed must be identified and limited to the Study Area. No other native remnant vegetation is to be removed as a result of the project.	Contactor
Wildlife Protection	<p>Stop-work procedure, on the chance encounter of any dispersing wildlife during works, should be implemented to avoid death or injury.</p> <p>Ensure that a suitably qualified ecologist is present during the removal of all trees and man-made structures to act as a spotter-catcher that can relocate any captured wildlife.</p> <p>Ensure that all captured animals are relocated into the nearest suitable native vegetation.</p> <p>Ensure that all injured animals are taken to a local wildlife carer for treatment.</p>	Contactor



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Impact	Action	Responsibility
Introduction of new weed species and pathogens	<p>Strict weed management, monitoring and control practices should be implemented as part of the CEMP to minimise the spread of exotic species into natural areas within and outside of the Study Area. In particular, Priority Weeds (PW), High Threat Weeds (HTW) and Weeds of National Significance (WoNS) species should be targeted in accordance with the NSW DPI WeedWise recommended control measures (DPI 2022).</p> <p>It is noted that under the NSW Biosecurity Act 2015, all landowners have the obligation to manage weeds as per the General Biosecurity Duty which states “All plants are regulated with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable”.</p>	Contactor
Sediment migration from areas of unconsolidated, exposed soil during works into waterbodies/drainage	<p>Drainage lines outside the Study Area are to be fenced off, sedimentation controls implemented and labelled as No-Go areas to prevent:</p> <ul style="list-style-type: none"> • Accidental indirect impacts downstream into drainage channels and creek lines outside the Study Area • Introduction of pathogens, such as <i>Batrachochytrium dendrobatidis</i>. <p>Erosion and sediment control measures should be implemented as part of the CEMP and monitored and maintained to prevent impacts on adjacent areas, particularly following erosion and sediment mobilisation from rain events. Stockpiles are to be located on level ground.</p>	Contactor

6.2 TOPOGRAPHY, GEOLOGY AND SOILS

6.2.1 Existing Environment

6.2.1.1 Topography

The Study Area is located within a generally flat landscape in Toongabbie, NSW. Topographic mapping and site observations indicate that the terrain is relatively consistent throughout the Study Area, with a slight north-eastern local relief ranging between 29 to 31 metres Australian Height Datum (AHD).

The Study Area is located between two tributary creeks; Girraween Creak (100 m, west) and Pendle Creek (65 m, east), which join to the main challenge, Toongabbie Creek is located approximately 450 m north. Surface water within the Study Area is expected to flow towards Fitzwilliam Road, in the direction of Pendle Creek.



6.2.1.2 Geology

The Study Area is located on the floodplains and valley flats of the Cumberland Plain, where the landscape is generally flat and shaped by shallow drainage depressions. The underlying geology consists of Quaternary alluvium formed from the erosion of Wianamatta Group shale and Hawkesbury Sandstone. These alluvial deposits typically comprise brown sandy loam to sandy clay loam with a porous, weakly structured profile. Soil colours commonly range from dull reddish-brown to yellowish-brown, and the material is generally moderately acidic, with some local variation. Small rounded or angular gravels may be present, and surface layers often contain abundant fine roots.

6.2.1.3 Soil Landscape

A review of soil landscape data provided by the NSW Government Planning Industry and Environment online mapping tool, eSPADE Version 2.2 indicates the site is underlain by ‘South Creek Alluvium’ soil landscape, as described in Table 6-8.

Table 6-8 Soil landscapes within the Study Area

Soil Landscape	Description	Limitations
South Creek Alluvium	Quaternary alluvium derived from Wianamatta Group shales and Hawkesbury Sandstone.	flood hazard, seasonal waterlogging, localised permanently high watertables, localised water erosion hazard, localised surface movement potential.

6.2.1.4 Acid Sulfate Soils

A review of the NSW eSPADE database and the Parramatta LEP 2023 mapping indicates that the Study Area has an extremely low probability (1–5%) of acid sulfate soil occurrence. The site is not located within or near an area mapped as having a risk of acid sulfate soils. Consequently, acid sulfate soils are not considered a constraint for the proposed development within the Study Area.

6.2.1.5 Contaminated Land

A desktop review of publicly available environmental information on the 20 February 2026, indicates that the Study Area is not associated with any known or notified contaminated land. Two (2) EPA-listed sites are located within the broader locality, outlined in Table 6-9; however, neither is situated within or immediately adjacent to the Study Area.

Table 6-9 EPA notified sites in the locality

Site Name	Address	Activity	EPA Management Class	Distance and Direction
Baulkham hill transmission substation	191z Old Windsor Road	Other industry	Regulation under CLM Act not required	North / 1,200 m
7-Eleven (Former Mobil) Service Station Toongabbie	3 Metella Road	Service station	Regulation under CLM Act not required	South-west / 600 m



No potentially contaminating land uses were identified within the Study Area itself, which comprises existing public road corridors and urbanised surroundings. Given the absence of industrial land uses within the footprint, the lack of recorded contamination notifications, and the separation distance from the nearest EPA-listed sites, the likelihood of widespread contamination within the Study Area is considered low. Nonetheless, as with any brownfield road-upgrade environment, the presence of minor localised contaminants such as fill material, hydrocarbons from road runoff or residual construction waste cannot be fully excluded and would be managed through appropriate construction-phase controls.

6.2.2 Construction Impacts

Construction of the Proposal would require excavation, pavement removal, trenching for services and installation of drainage infrastructure within a predominantly sealed, urban road corridor. These works would temporarily disturb the flat alluvial landform of the Study Area, with minor changes to ground levels and short-term alterations to local surface-water flow paths until areas are stabilised. Disturbance of the underlying soils may temporarily increase the potential erosion risk or sediment mobilisation while soils remain exposed.

Activities would intersect the South Creek Alluvium soil landscape, which is prone to seasonal waterlogging, localised erosion and minor surface movement. Excavation and regrading may briefly accentuate these soil characteristics in disturbed areas.

Although no contaminated land has been identified within or adjacent to the Study Area, and the closest EPA-listed sites are located 600 m and 1.2 km away, the brownfield nature of the corridor means construction may encounter minor contaminants typical of urban road environments, such as small quantities of fill, hydrocarbons from road runoff or isolated waste. As no intrusive investigation or site walkover has been undertaken, the potential of encountering unexpected contaminants cannot be excluded.

Overall, construction impacts to soils, topography and potential contamination are expected to be localised, short-term and temporary, limited to active work areas where excavation and ground disturbance has already previously occurred.

6.2.3 Operational Impacts

Operational impacts are expected to be negligible. The works occur entirely within an existing road corridor, and the final road levels and landform will remain largely unchanged. All disturbed areas will be stabilised upon completion, meaning no exposed soils or altered drainage patterns are expected during operation. As there are no known contamination sources within the Study Area, the Proposal does not introduce new contamination pathways, the risk of contamination impacts during operation is considered negligible. The operational phase is not anticipated to cause measurable change to soil condition, landform or contamination status.



6.2.4 Safeguards and Management Measures

Table 6-10 Topography, Geology and Soils Safeguards and Management Measures

Impact	Environmental safeguards	Responsibility
Erosion and Sedimentation	<p>Erosion and sediment control measures are to be implemented and maintained (in accordance with the <i>Landcom/Department of Housing Managing Urban Stormwater, Soils and Construction Guidelines</i> (the Blue Book)) to:</p> <ul style="list-style-type: none"> ▪ Prevent sediment moving off-site and sediment laden water entering any water course, drainage lines, or drain inlets. ▪ Reduce water velocity and capture sediment on site minimise the amount of material transported from site to surrounding pavement surfaces divert clean water around the site. <p>Areas of exposed soil will be minimised during construction works. Work areas are to be stabilized progressively during the works. Erosion and sediment control measures are not to be removed until the works are complete, and areas are stabilised. All areas disturbed for the works will be restored to pre-works condition, or better and in accordance with Blue Book (Landcom 2004) requirements.</p>	Contractor
Contaminated land	<p>If contaminated areas, including potential and actual Acid Sulfate Soils, are encountered during construction, appropriate control measures will be implemented to manage the immediate risks controls or further actions identified in consultation with the proponent and/or EPA of contamination. All other works that may impact on the contaminated area will cease until the nature and extent of the contamination has been confirmed and any necessary site-specific</p> <p>If suspected contamination is encountered the works would cease, access would be restricted, and the nature and extent of the contamination determined. Contaminated excavated material would be classified in accordance with the Waste Classification Guidelines (EPA, 2014) before any off-site disposal at a suitably licensed waste facility.</p>	Contractor
Accidental spill	A site-specific emergency spill plan will be developed and include spill management measures in accordance with the relevant EPA guidelines. The plan will address measures to be implemented in the event of a spill, including initial response and containment, notification of emergency services and relevant authorities.	Contractor
Erosion and sedimentation from exposed soils, including areas cleared of vegetation and stockpile sites.	<p>The contractor will use dust suppression techniques as required to minimise the transport of soil material from the site.</p> <p>Following the completion of works, the topsoil will be reinstated and the site progressively rehabilitated to minimise the risk of soil and sediment loss</p>	Contractor
Import of material to the site for filling.	In the event any material is imported to the site, it shall be clean and free of contaminants.	Contractor
Accidental spills or leaks of fuel, oils or other	Chemicals will be stored in a suitably bunded / contained storage area.	Contractor



Impact	Environmental safeguards	Responsibility
chemicals during the works.	A spill kit will be kept on site and staff trained in its use. In the event of any accidental spills, works in the affected area will cease immediately and the incident reported to JHR PL immediately. Contaminants would be contained immediately, removed, and treated (if necessary), and disposed of at a suitably licensed facility in accordance with the Waste Classification Guidelines (EPA, 2014).	

6.3 HYDROLOGY, WATER QUALITY AND FLOODING

6.3.1 Existing environment

The Study Area is located within the Parramatta River catchment, positioned between two minor waterways: Girraween Creek, a Strahler order 2 stream situated approximately 100 m to the west, and Pendle Creek, a Strahler order 1 stream approximately 65 m to the east. Both creeks convey flows northwards to Toongabbie Creek, a Strahler order 3 watercourse that forms the main drainage line in the local sub-catchment. Surface water within the Study Area is directed eastwards towards Fitzwilliam Road and Pendle Creek, consistent with the gently graded topography and shallow drainage depressions of the lower Cumberland Plain. The road corridor is serviced by an established urban stormwater drainage system comprising pits and pipes that collect and convey runoff.

Water quality in the locality reflects the urbanised land-use setting, with typical pollutants including sediments, nutrients, hydrocarbons and general road-surface contaminants.

Flooding behaviour in the Study Area is strongly influenced by its position between Girraween and Pendle Creeks. The Fitzwilliam Road / Station Road / Wentworth Avenue intersection is subject to mainstream flooding, with both creek crossings overtopped during the 1% Annual Exceedance Probability (AEP) event. In these conditions, the intersection experiences shallow inundation while the nearby Wentworth Avenue roundabout remains flood-free. Under Probable Maximum Flood (PMF) conditions, both the intersection and the roundabout become inundated, reflecting the catchment's sensitivity to extreme flood events.

No groundwater bores are recorded within 1,000 m of the Study Area, and groundwater interaction with the proposed upgrade is unlikely given the shallow depth of construction and the dominance of surface-water processes within this alluvial floodplain.

6.3.2 Construction Impacts

Construction works within the Study Area, such as excavation, pavement removal, drainage installation and service trenching, could temporarily disturb surface conditions and may alter the way stormwater moves across the area until reinstatement is complete. Given the Study Area's location between Girraween Creek and Pendle Creek, and its drainage connection to Toongabbie Creek, there is the potential for sediment-laden runoff to be conveyed towards these waterways during rainfall events if



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exposed soils coincide with storm conditions. Disturbance of the alluvial soils, which are easily mobilised when wet, may increase the risk of turbidity and fine sediment entering the existing stormwater network.

Localised regrading and temporary stockpiling may cause short-term changes to overland flow paths or shallow ponding within work areas. Works occurring near existing pits and pipes may also increase mobilisation of road-surface pollutants such as hydrocarbons, sediments and debris within the drainage system. As confirmed in the Flooding Feasibility Assessment, the Study Area is already subject to mainstream flooding during the 1% AEP event, with inundation occurring at the Fitzwilliam Road / Station Road / Wentworth Avenue intersection. Construction activities themselves are not expected to alter this behaviour, although temporary obstructions created by equipment or materials could influence shallow overland flows during wet weather if unmanaged.

During the construction-phase, impacts on hydrology, water quality and flooding are expected to be short-lived and localised, limited to periods of active ground disturbance and rainfall.

6.3.3 Operational Impacts

During operation, the upgraded drainage system is expected to function similarly to existing conditions, with only minor improvements to stormwater capture and conveyance within the sealed road corridor. Because the works do not meaningfully alter road levels or flood storage, flood behaviour will remain consistent with existing patterns between Girraween Creek and Pendle Creek, including shallow inundation during a 1% AEP event and full inundation during a PMF event.

Water quality outcomes will reflect typical urban runoff characteristics, with no new pollutant pathways introduced beyond those already present in the surrounding catchment. No interaction with groundwater is expected, as the works do not involve deep excavation or subsurface structures, and no groundwater-dependent ecosystems occur within the Study Area.

6.3.4 Safeguards and Management Measures

Table 6-11 Hydrology, Water quality and Flooding Safeguards and Management Measures

Impact	Environmental safeguards	Responsibility
Soil and water	A Soil and Water Management Plan (SWMP) will be prepared and implemented as part of the CEMP. The SWMP will identify all reasonably foreseeable risks relating to soil erosion and water pollution and describe how these risks will be addressed during construction.	Contractor
	A site-specific Erosion and Sediment Control Plan/s will be prepared and implemented as part of the Soil and Water Management Plan. The Plan will include arrangements for managing wet weather events, including monitoring of potential high-risk events (such as storms) and specific controls and follow-up measures to be applied in the event of wet weather.	
Water Quality	A site-specific Erosion and Sediment Control Plan/s will be prepared and implemented as part of Soil and Water Management in the CEMP. The Plan will include arrangements for managing wet weather events, including monitoring of potential high-risk events (such as storms) and	contractor



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Impact	Environmental safeguards	Responsibility
	<p>specific controls and follow up measures to be applied in the event of wet weather.</p> <p>Wastewater, sediment-laden water and site runoff must not be discharged to stormwater drains, creeks, drainage channels or surrounding land. Any stormwater requiring discharge is to be captured, treated and released only when water quality meets receiving-environment standards, with no release of dirty water to drainage lines or waterways.</p> <p>On-site equipment or vehicle maintenance must be avoided; however, if maintenance is unavoidable, drip trays or suitable containment devices must be used beneath equipment/vehicles to prevent spills or leaks reaching soil or stormwater.</p> <p>Equipment, plant and materials must not be stored within proximity to the culvert, ensuring adequate buffer distances are maintained to avoid obstruction, contamination risk, or impacts to drainage function.</p> <p>Vehicle movements would be restricted to designated roadways and access points where feasible.</p> <p>If dewatering is required, the activity is to be monitored to ensure existing receiving water quality prior to discharge is maintained. Controls may include dewatering onto a vegetated area or filtering through sediment controls such as sediment fence, straw bales, filter bags or sandbags. If visual impacts i.e. discolouration is observed, cease dewatering activity.</p> <p>The storage, handling and use of chemicals and fuel would be in accordance with the <i>Work Health and Safety Act 2011</i> and WorkCover's Storage and Handling of Dangerous Goods Code of Practice.</p>	
Groundwater	The contractor is to develop a groundwater management plan as part of the CEMP detailing methodologies and management measures in case of groundwater interception during construction works.	Contractor
Hydrology and Flooding	Detail design to ensure no change to the wider stormwater system in the locality and no changes to flooding.	Contractor
Accidental spill	A spill response plan would be developed and incorporated in the CEMP. This plan would detail measures for the prevention, containment and clean-up of accidental spills of fuels and chemicals.	Contractor

6.4 ABORIGINAL HERITAGE

A search of the Aboriginal Heritage Information Management System (AHIMS) was completed on 20 February 2026 (ID – 1094358) for the Study Area and did not identify any recorded Aboriginal sites or declared Aboriginal places within or immediately adjacent to the Study Area. Combined with the highly disturbed urban environment, existing road infrastructure, and the surface-level nature of the works, the Proposal is considered unlikely to impact Aboriginal cultural heritage.

A detailed Aboriginal Cultural Heritage Assessment has not been undertaken. Should new information arise during construction, such as the discovery of unexpected artefacts, the Proposal would be varied as required, and appropriate assessment and notification processes would be implemented, as outlined in Table 6-12.



6.4.1 Safeguards and Management Measures

Table 6-12 Aboriginal Heritage Safeguards and Management Measures

Impact	Environmental safeguards	Responsibility
Site Workers	All site workers and contractors should be inducted to the area and informed of their obligations under the National Parks and Wildlife Act 1974.	Contractor
Unexpected finds – artefacts	In the unlikely event that an Aboriginal object is found. Temporary fencing must be placed around the object with a buffer of at least 10 meters. An appropriately qualified archaeologist should be engaged to assess the finding, should the object be determined to be an Aboriginal object Heritage NSW should be informed. Works should not proceed until advice is received from Heritage NSW.	Contractor
Unexpected finds – human remains	In the unlikely event that suspected human remains are encountered during construction, all works should cease immediately and: <ul style="list-style-type: none"> • The location, including a 10 m buffer should be secured using a barrier to avoid further disturbance; • The NSW Police should be contacted immediately; • No further action is to be undertaken until the NSW Police provide advice that it is safe to do so; • If skeletal remains are identified as being Aboriginal, the proponent or their agent must contact Heritage NSW via the Environment Line on 131 555, and representatives of the Local Aboriginal Land Council, and; • No works are to continue until Heritage NSW provides notification to Camp projects or their agent. 	Contractor

6.5 NON-ABORIGINAL HERITAGE

A desktop non-Aboriginal Heritage assessment was undertaken for the Proposal, the results of which are listed below.

6.5.1 Methodology

The assessment of non-Aboriginal heritage impacts was undertaken through a desktop review of statutory heritage registers and relevant planning instruments, including:

- NSW State Heritage Register (SHR)
- Commonwealth Heritage List (CHL)
- Parramatta Local Environmental Plan (LEP) 2023
- State Environmental Planning Policy (Precincts - Western Parkland City) 2021

The Study Area for this assessment was defined as a 200 m buffer surrounding the construction footprint, consistent with the environmental constraints mapping adopted for the REF. This extent was considered sufficient to identify any heritage items that could be subject to direct or indirect impacts from the proposed works, given the scale and nature of the activity.



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The assessment also considered archaeological potential based on land use history, disturbance patterns, and available mapping. No physical heritage survey or subsurface testing was undertaken.

6.5.2 Existing environment

A search of Parramatta LEP 2023 was undertaken on 20 February 2026 and the Local Heritage Items found within 1km of the Study Area and are listed in Table 6-13 below.

Table 6-13 Heritage sites within 1km of the Study Area

Item Name	Address	Significance	Listing	Distance to Proposal (m)
Toongabbie Railway Station Group, underbridge and archaeological remains (I247)	Portico Parade, Toongabbie NSW 2146	Toongabbie Railway Station and Underbridge is of local heritage significance for its historic, aesthetic, social, scientific/research, rarity and representative values. The station provides evidence of the railway station redevelopment that took place during the quadruplication of the Main Western Line between Lidcombe and St Marys in 1946. The Greystanes Creek Underbridge has historic significance for its ability to demonstrate the expansion of the railways and the historical stages of railway development in Toongabbie. The station buildings are of aesthetic significance as good examples of mid-20th Century railway construction in an urban context, displaying distinctive elements of the Inter War Stripped Functionalist style. They are competently executed and display many typical stylistic elements of similar station buildings throughout New South Wales and in the western suburbs generally. They are of the same construction as those of the neighbouring stations Pendle Hill, Wentworthville and Westmead (demolished). This group of buildings shows effects of war time financial constraints.	Cumberland LEP 2021	90
Toongabbie Railway Station Group, underbridge and archaeological remains (A16)	Toongabbie Station, Toongabbie NSW 2146	The Toongabbie Underbridge Archaeological Site, located under the Greystanes Creek Underbridge, is of local significance for its historical and research values. The site has the ability to demonstrate the expansion of the railways and the historical stages of railway development in Toongabbie. The archaeological site is of research significance as it provides evidence of previous types of railway bridges used for creek crossings between 1860 and 1946.	Cumberland LEP 2021	105
Portico Park (I248)	12 Portico Parade, Toongabbie NSW 2146	Portico Park is of local heritage significance for its historic values. Portico Park was part of the original 1920 Portico Estate subdivision by Arthur Rickard and Co. Though the park itself has been altered over time with the inclusion of new plantings and amenities, it retains its original layout and use.	Cumberland LEP 2021	185
Willmot Reserve (I713)	14A Willmot Avenue	The Willmot Reserve, at 14A Willmot Avenue, is of significance for the local area for historical, associative, aesthetic and social reasons. The reserve	Parramatta LEP 2023	330



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Item Name	Address	Significance	Listing	Distance to Proposal (m)
	TOONGA BBIE NSW 2146	was established to commemorate local pioneers and to provide recreation space for adjacent residential development and features a memorial with strong associations in the local community.		
St Enda's Church Hall (I246)	27-33 Aurelia Street, Toongabbie NSW 2146	The St Enda's Hall is of local heritage significance for its historic and social values. The Church Hall has been historically associated with the Catholic Church since 1929. It has social and historical associations with the early development of religion in the Toongabbie area. Further, it provides evidence of the evolution of the community and religious facilities since these early years. The place has social significance to the local community as a place for religious activities built by the local community parishioners. The Church and Presbytery retains some aesthetic significance as a twentieth century modernist ecclesiastical building and demonstrates representative qualities of this building type. The aesthetic significance of Edna's Hall has been heavily reduced to the number of modifications that have occurred over time.	Cumberland LEP 2021	350
Wisteria Lodge (I709)	36 Bungaree Road TOONGA BBIE NSW 2146	Wisteria Lodge is of significance for the local area for historic, associative and aesthetic reasons, and as a representative example of Victorian houses in the area. The house was built c.1888 by Arthur Barnett, for Thomas Willmott Junior, the son of notable local government figure and engineer Thomas Willmott Senior. The house is readily identifiable as part of the historic building stock in the area and strongly contributes to the character of the streetscape. The house is a related place (in heritage terms) to Willmott's House at 10 Bethel Street, to which it is almost identical.	Parramatta LEP 2023	525
Willmott's House (I708)	10 Bethel Street TOONGA BBIE NSW 2146	Trafalgar, a.k.a. Willmott's House, is of significance for the local area for historic, associative and aesthetic reasons, and as a representative example of Victorian houses in the area. The house was built c. 1888 by Arthur Barnett, for notable local government figure and engineer Thomas Willmott Senior, the once President of Blacktown Shire Council. The house is readily identifiable as part of the historic building stock in the area and strongly contributes to the character of the streetscape. The house is a related place (in heritage terms) to Wisteria Lodge at 36 Bungaree Road to which it is almost identical.	Parramatta LEP 2023	530
Marist Fathers Seminary (I710)	119 Rausch TOONGA BBIE NSW 2146	Former Marist Fathers Seminary is of significance for the Parramatta area for historical, associative, aesthetic and social reasons. The site has a long association with the Roman Catholic Church and a number of its prominent members. The main building has notable features of Interwar Gothic and Tudor Revival architectural styles.	Parramatta LEP 2023	635



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Item Name	Address	Significance	Listing	Distance to Proposal (m)
School Building - Meadows Public School (I109)	Fuller Street SEVEN HILLS NSW 2147	One of the earlier remaining public buildings in Blacktown, the school is significant as a social focus of the community and a good example of late Victorian school architecture.	Blacktown LEP 2015	810
Cottage (I712)	13 Station Road TOONGA BBIE NSW 2146	The house at 13 Station Road is of significance for the local area for historical reasons, as a representative example of Federation houses in the area, and as a rare surviving example of the original buildings in the Toongabbie area. The house, built c. 1919, makes an important contribution to the streetscape, being readily identifiable as part of the historic building stock.	Parramatta LEP 2023	860
Cottage (I711)	13 Station Road, Toongabbie NSW 2146	Unknown. Unable to obtain relevant information of the significance of this heritage item.	Parramatta LEP 2023	140
Toongabbie Public School (I450)	59 Fitzwilliam Rd, Old Toongabbie NSW 2146	Unknown. Unable to obtain relevant information of the significance of this heritage item.	Parramatta LEP 2023	970

The Proposal is located within the mapped extent of the Sydney Cultural Crescent National Heritage Place, a broad landscape-scale listing that extends across the Sydney Basin and includes numerous significant Aboriginal rock art sites. No National Heritage-listed rock art sites, sandstone shelters, engravings, or other cultural features occur within or near the Proposal area, which is an established and fully urbanised road corridor in Toongabbie.

The National Heritage values of the Sydney Cultural Crescent relate primarily to the presence, distribution and cultural context of Aboriginal rock art, none of which are present within the Study Area. The Proposal involves local road and intersection upgrades within previously disturbed land and will not modify sandstone landforms, alter drainage or landscape settings, affect access to cultural sites, or impact any attributes associated with the National Heritage values.

Accordingly, there is no credible pathway for direct, indirect or cumulative impacts on the National Heritage values of the Sydney Cultural Crescent, and no referral under the EPBC Act is required in relation to National Heritage values.

No State Heritage was found to be within 1km of the Study Area.

Review of historical imagery indicated that the Study Area is highly disturbed from past potential agricultural activities earthworks to fill Bensons Creek, and the development of sports fields, and therefore is unlikely to contain any archaeological potential.



6.5.3 Construction impacts

Construction of the Proposal is not expected to directly impact any listed heritage items, as none are located within or immediately adjoining the construction footprint. The nearest items, primarily the Toongabbie Railway Station Group and underbridge, located approximately 90-105 m from the Study Area, remain well outside the works area and beyond the zone where construction activities could alter their physical fabric or setting. Other heritage items identified within 140-970 m are sufficiently separated such that construction will not affect their access, views or context.

The Study Area has been extensively disturbed by historic agricultural land use, creek alteration, road formation and ongoing urban development, resulting in low archaeological potential. No known archaeological sites or relics occur within the road corridor.

Indirect impacts, including vibration, are also unlikely given the distance between heavy-plant operation areas and known heritage structures. All items lie well outside the minimum working distances established for cosmetic damage from hydraulic hammering and excavator use.

Although heritage risk is low, the possibility of encountering unexpected historical material during excavation cannot be entirely excluded. In such cases, work would cease in the affected area until an appropriate assessment is undertaken.

6.5.4 Operational impacts

No operational impacts to non-Aboriginal heritage are anticipated. The Proposal does not introduce new structures, land-use changes or activities that would alter the setting, significance or integrity of any heritage items identified in the surrounding area. All listed heritage items, including the Toongabbie Railway Station Group and nearby heritage residences, are located well outside the operational footprint and will not be affected by ongoing road use or associated traffic activity.

6.5.5 Safeguards and Management Measures

Table 6-14 Non-Aboriginal Heritage Safeguards and Management Measures

Impact	Safeguards and Mitigation Measures	Responsibility
<p>Previously unidentified heritage items or places discovered</p>	<p>An unexpected finds protocol will be developed and implemented under the CEMP to manage the risk of unexpected archaeological finds. If the works uncover any items of suspected heritage significance, all activity in the immediate area must cease and Council's representative will be notified.</p> <p>A qualified archaeologist is to be contacted to assess the situation and consult with Heritage NSW and/or DPE regarding the most appropriate course of action.</p> <p>Where the find comprises human remains, NSW Police must be contacted in the first instance.</p>	<p>Contractor</p>



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General heritage awareness	Deliver a heritage induction to all site personnel prior to the commencement of works. The induction must include information on the location, significance, and protection requirements of nearby heritage items, the Unexpected Finds Procedure, and reporting protocols. Refresher training will be provided for new staff or if works extend into new areas	Contractor
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6.6 TRAFFIC AND ACCESS

6.6.1 Existing environment

The Study Area includes Wentworth Avenue, Fitzwilliam Road, Station Road and the adjoining Service Road within the Toongabbie Station precinct. These roads form a key local access hub supporting residential areas, the town centre and Toongabbie Station precinct. The posted speed limit is 60 km/h across the corridor.

Traffic conditions are highly constrained, with the Fitzwilliam Road / Station Road / Wentworth Avenue roundabout and nearby intersections experiencing severe peak-period congestion, long queues and poor travel-time reliability. Queue lengths observed in the Traffic Impact Assessment include more than 49 vehicles on Cornelia Road in the morning peak and 46 vehicles on Station Road in the afternoon peak, indicating widespread oversaturation of the network.

Public transport use is significant due to the proximity of Toongabbie Railway Station and multiple bus routes operating along Wentworth Avenue and Fitzwilliam Road. Pedestrian activity is also high near the station, but safe crossing opportunities are limited under the existing roundabout configuration. The network is characterised by high demand, constrained capacity and limited pedestrian accessibility, contributing to ongoing congestion throughout the precinct.

6.6.2 Construction Impacts

Construction of the Proposal would generate additional vehicle movements associated with material deliveries, plant mobilisation and workforce access. These activities, combined with the need for partial and temporary lane closures and staged intersection works, are expected to slow traffic along Wentworth Avenue, Fitzwilliam Road and Station Road. Given the existing congestion and long queues recorded in the Traffic Impact Assessment, temporary reductions in capacity may intensify delays during peak periods and increase queue spillback on several approaches.

Short-duration access constraints may occur at residential and commercial driveways while kerb, pavement or utility works are undertaken. Bus services operating through the corridor may experience schedule variability where staging limits turning movements or reduces lane availability. Construction vehicle entry and exit movements may further contribute to intermittent delays near work zones.



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Pedestrian activity around Toongabbie Station, bus stops and Portico Plaza Shopping Centre is high, and works involving footpath reconstruction, trenching or signal installation may require in short, temporary detours or diversions. These changes will remain in place only while active work fronts are operating.

As works occur within a constrained corridor between Girraween and Pendle Creeks, temporary lane reductions or local approach closures may affect the efficiency of the surrounding street network. Emergency-vehicle access must be maintained, though response times may be briefly affected where staging reduces available width along key approaches.

Construction impacts to traffic and access will be temporary but noticeable, reflecting the already constrained performance of the Toongabbie Station precinct.

6.6.3 Operational Impacts

Once operational, the upgraded intersection and lane configuration are expected to improve overall network performance in the Toongabbie Station precinct. Traffic modelling indicates that replacing the roundabout with traffic signals and providing two southbound lanes on Wentworth Avenue would reduce delays, shorten queues and improve travel-time reliability relative to existing conditions, addressing the substantial congestion previously recorded at several approaches.

The new intersection layout will provide clearer movement patterns and improved safety, particularly for pedestrians accessing Toongabbie Station, nearby bus stops and Portico Plaza Shopping Centre. Signal-controlled pedestrian crossings would offer safer and more predictable pedestrian links and crossing opportunities across the corridor. More reliable intersection operation is expected to support improved bus travel times along Wentworth Avenue and Fitzwilliam Road.

Some minor redistribution of traffic may occur when the upgraded intersection becomes operational, as changes to turn priorities and improved flow reduce pressure on existing bottlenecks. These changes are expected to remain localised and consistent with the corridor's role as a primary access route to the station and town-centre land uses. No long-term impacts to property access or surrounding local streets are anticipated.

6.6.4 Safeguards and Management Measures

Table 6-15 Traffic and Access Safeguards and Management Measures

Potential Impact	Safeguard and Mitigation Measure	Responsibility
Traffic and Access	A Traffic Management Plan will be prepared and implemented as part of the CEMP to manage the risk to appropriately manage construction personnel and road users during the works.	Contractor
	Requirements for any changes to local access will be confirmed during detailed design in consultation with the local road authority and any affected landowners.	
	Road users and local communities will be provided with timely, accurate, relevant and accessible information about changed traffic arrangements and delays owing to construction activities.	



Consultation will be undertaken with the local community and road users regarding any potential delays and detours associated with the construction of the Proposal.
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6.7 NOISE AND VIBRATION

6.7.1 Methodology

No baseline noise monitoring has been undertaken for the Study Area. Given the urban context and the short-term nature of construction activities, the assessment has used the Transport for NSW Construction and Maintenance Noise Estimator Tool (refer Appendix B), which predicts construction noise levels based on equipment type, distance to receivers, and working hours. The tool provides indicative results and is suitable for projects where detailed noise and vibration modelling or baseline monitoring is not required.

6.7.2 Existing environment

Noise

The existing noise environment within the Study Area is characteristic of a busy suburban transport corridor, influenced by local road traffic along;

- Wentworth Avenue,
- Fitzwilliam Road, and
- Station Road.

Frequent stopping and acceleration of buses near Toongabbie Railway Station along with train movements on the adjacent rail line, contribute to additional intermittent noise. Pedestrian activity associated with the station precinct and nearby commercial areas also contribute to the overall ambient noise levels.

The surrounding environment is fully urbanised, and ambient noise contains regular peaks from vehicle movements, buses, and commuter activity, with intermittent increases during busy periods near the station and Portico Plaza Shopping Centre. During desktop review and prior site familiarity, the noise environment was assessed as consistent with that of a typical suburban road-rail interface, exhibiting steady background levels with short-duration peaks linked to traffic flow and daytime commercial use.

Taking into consideration the type of development surrounding the Study Area, the representative noise environment has been classified as R3 noise area category based on the Transport's Construction Noise Estimator Tool (version 1/08/2022) (Transport for NSW, 2023). Within this R3 noise area category the rating background level (RBL) for residential receivers is estimated to be:

- 50 dB(A) for standard working hours
- 45 dB(A) for evening
- 40 dB(A) at night.



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The nearest sensitive receivers to the proposed works, categorised by receiver type, are summarised in the Table 6-16 below. The distances between the sensitive receivers and proposed works, identify the extent of potential impacts during construction and operation phases.

Table 6-16 Distance of sensitive receptor summary

Receiver Type	Noise Management Level (L _{Aeq})	Address	Lot/ DP	Distance from activity to receiver (m)
Residential	2 Station Road*	2 Station Road, Toongabbie NSW, 2146	Lot 5/ DP242874	10
Active recreation	Toongabbie Sports Club	12 Station Rd, Toongabbie NSW 2146	Lot 501/ DP1265209	55
Office, retail outlets	Portico Plaza Shopping Centre	17/19 Aurelia St, Toongabbie NSW 2146	Lot 2/ DP1126420	200
Classrooms in schools or other educational facilities	KyongHee Education centre	Floor G, 17/19 Aurelia St, Toongabbie NSW 2146	Lot 2/ DP1126420	350
Place of worship	St Anthony of Padua Catholic Church	27-33 Aurelia St, Toongabbie NSW 2146	Lot 44/ DP10697	450
Medical facility	Blacktown Hospital	18 Blacktown Rd, Blacktown NSW 2148	Lot 3/ DP71010	3,500

* This residential property has been identified as the representative residential receiver to calculate the relevant noise impacts to all adjacent residential properties to the proposed works.

These receivers are considered sensitive under the Interim Construction Noise Guideline (ICNG) (DECC, 2009), which defines sensitive receivers as those more likely to be affected by noise, including residences, childcare centres, hospitals, and educational facilities.

Vibration

The existing vibration environment in the Study Area is typical of an urban road corridor, with low-level, intermittent vibration from general traffic, buses, and nearby rail operations. Residential and commercial properties located along Wentworth Avenue, Station Road and Fitzwilliam Road would experience negligible, short-duration vibration associated with normal vehicle movements. The local alluvial soils dampen vibration effectively, and no vibration-sensitive land uses or structures are present near the Proposal. Overall, baseline vibration levels are negligible, with no significant ongoing sources of ground-borne vibration within or adjacent to the Study Area.



6.7.3 Construction Impacts

Construction activities would result in noise and vibration impacts through the operation of machinery and undertaking of required construction works. The noise and vibration impacts would be temporary and limited to the working hours outlined in Section 3.3.2.

Noise

Construction activities would generate noise from excavation, spoil haulage, pavement removal and the operation of construction plant and equipment. The majority of works are expected to occur during standard daytime construction hours; with night works proposed around the Fitzwilliam Road / Station Road / Wentworth Avenue intersections. The final extent and timing of night works will be confirmed by the authorised contractor prior to construction commencement. The Proposal is expected to be constructed over a 6-to-10-month period, with detailed staging and working hours refined in consultation with the community.

The likelihood of construction-noise impact was initially assessed using Table 2 of the Draft Construction Noise Guideline (EPA, 2020), indicating that the risk of noise impact in this urban town-centre area is medium to high. As a result, a quantitative noise assessment was undertaken using the Transport's Construction Noise Estimator Tool (vAug22) to predict construction noise at sensitive receivers surrounding the Proposal. The assessment focused on the noisiest plant expected to be used, including excavators with hammer attachments, compactors, trucks, and other heavy machinery.

Residential Receivers

The assessment indicates that all residential receivers within 170 m of the construction footprint, and within a line of sight (LoS) of the construction footprint, will be affected to a 'noticeable' level by daytime construction noise, as outlined in Table 6-18. Properties located within 40 m of active work areas are predicted to be highly affected, with construction noise levels exceeding the applicable NML thresholds. Residential receivers within 70 m require pre-construction consultation, given their higher likelihood of experiencing noticeable daytime noise.

During night works (refer Table 6-19), the lower ambient noise environment increases the area of influence. Residential receivers within 590 m may experience noticeable noise impact, while receivers within 40 m are predicted to be highly affected and therefore require the highest level of targeted engagement (notification, phone calls, and respite offers). Sleep disturbances are predicted for properties within 260 m of the construction footprint.

Refer to Table 6-17 below for a description of the additional mitigation measures outlined in the following Table 6-18 and Table 6-19 below.



Table 6-17 Description of additional noise mitigation measures

Abbreviation	Measure	Description
N	Notification (letterbox drop or equivalent)	Advance warning of works and potential disruptions can assist in reducing the impact on the community. The notification may consist of using variable message sign, letterbox drop (or equivalent), web site / social media or a combination to distribute information detailing work activities, time periods over which these will occur, impacts and mitigation measures. Notification should be a minimum of 5 working days prior to the start of works. The approval conditions for projects may also specify requirements for notification to the community about works that may impact on them.
SN	Specific notifications	"Specific notifications are letterbox dropped (or equivalent) to identified stakeholders no later than 5 working days ahead of construction activities that are likely to exceed the noise objectives. The specific notification provides additional information when relevant and informative to more highly affected receivers than covered in general letterbox drops. This form of communication is used to support periodic notifications, or to advertise unscheduled works.
PC	Phone calls	Phone calls detailing relevant information made to identified/affected stakeholders, who have provided their contact details, within seven calendar days of proposed work. Phone calls provide affected stakeholders with personalised contact and tailored advice, with the opportunity to provide comments on the proposed work and specific needs. Where the resident cannot be telephoned then an alternative form of engagement should be used.
IB	Individual briefings	Individual briefings are used to inform stakeholders about the impacts of high noise activities and mitigation measures that will be implemented. Project representatives would visit identified stakeholders at least 48 hours ahead of potentially disturbing construction activities. Individual briefings provide affected stakeholders with personalised contact and tailored advice, with the opportunity to comment on the project. Where the resident cannot be met with individually then an alternative form of engagement should be used.
RO	Respite offer	Respite Offers should be considered where there are high noise and vibration generating activities near receivers. As a guide work should be carried out in continuous blocks that do not exceed 3 hours each, with a minimum respite period of one hour between each block. The actual duration of each block of work and respite should be flexible to accommodate the usage of and amenity at nearby receivers. The purpose of such an offer is to provide residents with respite from an ongoing impact. This measure is evaluated on a project-by-project basis, and may not be applicable to all projects, or when duration respite has been agreed (see below)
R1	Respite Period 1	Out of hours construction noise in out of hours period 1 shall be limited to no more than three consecutive evenings per week except where there is a Duration Respite. For night work these periods of work should be separated by not less than one week and no more than 6 evenings per month
R2	Respite Period 2	Nighttime construction noise in out of hours period 2 shall be limited to two consecutive nights except for where there is a Duration Respite. For night work these periods of work should be separated by not less than one week and 6 nights per month. Where possible, high noise generating works shall be completed before 11pm.



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Abbreviation	Measure	Description
DR	Duration respite	Respite offers and respite periods 1 and 2 may be counterproductive in reducing the impact on the community for longer duration projects. In this instance and where it can be strongly justified it may be beneficial to increase the work duration, number of evenings or nights worked through Duration Respite so that the project can be completed more quickly.
AA	Alternative accommodation	Alternative accommodation options may be offered (as a last resort) to residents living in close proximity to construction works that are likely to experience highly intrusive noise levels. The specifics of the offer will be identified on a project-by-project basis, however an AA offer is unlikely to be made for maintenance works. Additional aspects for consideration shall include whether the highly intrusive activities occur throughout the night or before midnight.
V	Verification	Verification may be required for building or asset condition where works are likely to cause vibration impact or for noise levels following reasonable complaints.

Table 6-18 Affected distance (m) for residential receivers during construction (day)

	Additional mitigation measures for consideration where feasible and reasonable	Mitigation level (dB(A))	Within Mitigation Distance (m)		
			LoS	No LoS (behind solid barrier)	No LoS (behind substantial solid barrier)
5-10 dB(A) over RBL	N	-	-	-	-
10-20 dB(A) over RBL	N, R2, DR	-	-	-	-
20-30 dB(A) over RBL	N, PC, SN, R2, DR	70	110	70	40
>30 dB(A) over RBL	AA, N, PC, SN, R2, DR	75	70	40	25



Table 6-19 Affected distance (m) for residential receivers during construction (night)

	Additional mitigation measures for consideration where feasible and reasonable	Mitigation level (dB(A))	Within Mitigation Distance (m)		
			Los	No LOS (behind solid barrier)	No LoS (behind substantial solid barrier)
5-10 dB(A) over RBL	N	45	870	590	390
10-20 dB(A) over RBL	N, R2, DR	50	590	390	260
20-30 dB(A) over RBL	N, PC, SN, R2, DR	60	260	170	110
>30 dB(A) over RBL	AA, N, PC, SN, R2, DR	70	110	70	40
>75 dB(A) over RBL	N, PC, RO	75	70	40	25

Non-Residential Receivers

The assessment identifies that a nearby classroom receiver may experience a noise increase of <5 dB(A) during daytime construction due to its position within 390 m of the Proposal, as outlined in Table 6-20. As the classroom is located more than 170 m from the construction footprint, consultation under the N/PC/RO thresholds is not required.

Local active recreation areas located within 170 m of the Proposal may also experience construction noise up to 10 dB(A) above background levels. Where these areas fall within 70 m of the construction footprint, they meet the threshold for consultation requirements (N, PC, RO). The indicative construction noise level for open-space receivers is 75 dB(A).

Table 6-20 Distance (m) for non-residential (Developed settlements) during construction hours (day)

Type of Receiver	NML	<10 dB(A) Clearly Audible			10 to 20 dB(A) Moderately Intrusive			LAeq (15 minutes) >75dB(A) Highly Affected		
		Measure	Distance (m)	Mitigation level (dB(A))	Measure	Distance (m)	Mitigation level (dB(A))	Measure	Distance (m)	Mitigation level (dB(A))
Education institutions	55	N	-	-	N	170	65	N, PC, RO	70	75



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Type of Receiver	NML	<10 dB(A) Clearly Audible			10 to 20 dB(A) Moderately Intrusive			LAeq (15 minutes) >75dB(A) Highly Affected		
		Measure	Distance (m)	Mitigation level (dB(A))	Measure	Distance (m)	Mitigation level (dB(A))	Measure	Distance (m)	Mitigation level (dB(A))
Active recreation	65	N, R2, DR	-	-	N	110	70	N, PC, RO	70	75

Given the dense urban environment, proximity of dwellings to the road corridor and the extent of required excavation and intersection works, construction-related noise impacts are expected to be temporary but noticeable, particularly for properties closest to the construction footprint. Night-time works will broaden the influence zone due to lower background noise and will require enhanced communication with affected receivers. These impacts will progressively diminish as construction shifts along the corridor.

Vibration

Construction of the Proposal will generate vibration from activities such as excavation and the use of hydraulic hammers, with the highest levels expected during short-duration hammering works. Based on indicative plant, small hydraulic hammers have minimum working distances of 2 m for cosmetic building damage and 7 m for human comfort, while medium hydraulic hammers require 7 m and 23 m, respectively.

Residential and commercial receivers located closest to the construction footprint may experience perceptible but short-lived vibration, particularly during hammering or compaction. The surrounding alluvial soils are generally effective at dampening vibration, and no heritage-listed or vibration-sensitive structures occur within the immediate vicinity, meaning the risk of structural damage is low.

Vibration impacts are expected to be localised, temporary and primarily confined to properties very near active work areas, with final levels dependent on the specific equipment selected by the contractor.

6.7.4 Operational Impacts

Noise

Operational noise levels associated with the Proposal are expected to remain similar to existing conditions, as the upgraded road will continue to function as a local urban corridor within the Toongabbie Station precinct. While improved intersection efficiency may result in marginally smoother traffic flow, any resulting changes to background noise levels are anticipated to be minor and within the range of typical suburban ambient noise. No fixed or additional noise-generating infrastructure is proposed as part of the completed road upgrade, and therefore no significant operational noise impacts are expected.

Vibration

No operational vibration impacts are anticipated. The Proposal does not introduce vibration-generating infrastructure, and normal vehicle movements along a sealed urban road are not expected to generate perceptible ground-borne vibration at nearby residential or commercial properties. No vibration-sensitive structures are located within proximity that would be affected during ongoing road use.



6.7.5 Safeguards and Management Measures

Table 6-21 Noise and Vibration Safeguards and Management Measures

Potential Impact	Safeguards and Mitigation Measures	Responsibility
Noise and Vibration	All Works to be carried out during standard work hours : <ul style="list-style-type: none"> Monday to Friday 7 am to 6 pm; Saturday 8am to 1 pm; and No work on Sundays or public holidays. <p>The site employees will be responsible for managing noise from their work activities and to work in a manner that will minimise noise emissions.</p>	Contractor
	If night works are required, the following equipment should not be used after midnight: <ul style="list-style-type: none"> Rock breaker Concrete saw Tub grinder/ mulcher Chainsaw 	
	Notification detailing work activities, dates and hours, impacts and mitigation measures, indication of work schedule over the night-time period, any operational noise benefits from the works (where applicable) and contact telephone number.	
	If programmed night work is postponed the work should be re- programmed and the approaches in this guideline apply again.	
	Limit the use of engine compression brakes at night and in residential areas.	
	Avoiding dropping materials from height and avoiding metal to metal contact on material	
	Tool box talks will include specific noise and vibration issues awareness training including, but not limited to, the following: <ul style="list-style-type: none"> Avoiding shouting and slamming doors. Where practical, operating machines at low speed or power and switching off when not being used rather than left idling for prolonged periods. Minimising reversing. 	
	Advance notification of the works will be provided to potentially affected residents and businesses, and contact details provided.	
	A complaints register will be maintained for the duration of the works and any complaints responded to by site management within 24 hours.	
	As per the Construction and Maintenance Noise Estimator Tool (version 1/08/2022), the additional mitigation measures listed within Table 6-17 would be completed to manage noise impacts to the sensitive residential receptors.	
	Distance between noisy plant items and nearby noise sensitive receivers would be maximised and equipment orientated where possible to reduce noise	
	CEMP will include measures to minimise and manage noise impacts, including but not be limited to: <ul style="list-style-type: none"> Nearby sensitive receivers would be notified regarding the commencement and duration of construction activities at least five days prior to the Proposal commencing. Turn off plant that is not being used. Examine, and implement where feasible and reasonable, alternative work practices which generate less noise. 	



Potential Impact	Safeguards and Mitigation Measures	Responsibility
	<ul style="list-style-type: none"> • Ensure plant is regularly maintained, and repair or replace equipment that becomes noisy. • Arrange the work site to minimise the use of movement alarms on vehicles and mobile plant. • Locate noisy plant as far away from potentially noise affected neighbours as possible or behind barriers if available such as sheds or vehicles. • All employees and contractors should receive an environmental induction prior to commencement of works 	

6.8 LANDSCAPE CHARACTER AND VISUAL AMENITY

6.8.1 Existing environment

The Study Area is characterised by a fully urbanised road corridor surrounding Wentworth Avenue, Fitzwilliam Road and Station Road, with established residential streets and small commercial uses forming the dominant built character. The visual environment reflects a mature suburban centre, with sealed pavements, kerb and guttering, footpaths, lighting and overhead utilities typical of a high-activity transport precinct near Toongabbie Station.

Adjacent cul-de-sacs and verge areas contain scattered vegetation and small canopy trees, which provide limited visual softening within an otherwise infrastructure-dominated setting. Vegetation is fragmented and largely confined to roadside pockets, small reserves and landscaped verges, with no continuous natural corridors. The majority of vegetation within the Study Area was a mix of native and exotic planted species that are typical of an urban streetscape (see Figure 6-1).

Built form is predominantly low-scale, comprising single-storey dwellings, small commercial buildings and the station precinct. Visual sensitivity is moderate due to the presence of nearby residents, regular pedestrian movements and commuter activity. Sightlines are generally short to medium range, with built form enclosing views across the corridor.

The Study Area presents a well-established suburban transport landscape, defined by road infrastructure and surrounding residential development, with minor contributions from scattered vegetation and pocket open-space areas.

6.8.2 Construction Impacts

Construction of the Proposal may create temporary visual impacts within the Toongabbie precinct. The presence of construction plant, materials, barriers, and traffic control signage will result in a more visually cluttered and potentially unpleasant streetscape along Wentworth Avenue, Fitzwilliam Road and Station Road. Establishment of laydown areas particularly within the Fitzwilliam Road cul-de-sac and the vegetated pocket near Station Road, will temporarily reduce visual amenity for nearby residents and pedestrians.



Short-term vegetation removal within designated work zones may slightly diminish local visual softening until reinstatement occurs. Construction lighting required for night works may also be visible to nearby dwellings but will be limited to specific stages of activity.

The outlined, potential visual impacts are localised, temporary, and will diminish as construction progresses and temporary elements are removed.

6.8.3 Operation Impacts

The operational phase of the Proposal is expected to have minimal effect on the existing landscape character and visual setting of the Toongabbie precinct. Once works are complete and temporary construction elements are removed:

- The upgraded intersection, pavements and footpaths will blend with the surrounding urban streetscape, consistent with existing transport infrastructure.
- No large or visually intrusive structures are introduced, and no long-term changes to views, built form or landscape features are anticipated.
- Existing vegetation and verge landscaping will continue to provide localised visual softening, maintaining the established suburban character.
- The overall appearance will remain that of a typical urban road corridor, with improved pedestrian and transport function but no material change to visual amenity.

The Proposal will result in negligible operational visual impacts, with the area retaining its established suburban transport character.

6.8.4 Safeguards and Management Measures

Table 6-22 Visual Amenity Safeguards and Management Measures

Potential Impact	Safeguards and Mitigation Measures	Responsibility
Visual Amenity	Measures to mitigate visual impacts during construction would be included in a CEMP for the Proposal	Contractor
	The Study Area, including the site compound, will be kept in an orderly state throughout the duration of the Proposal.	Contractor
	The Study Area and any adjacent areas will be cleared of all materials and refuse on completion of the Proposal.	Contractor
	The Study Area will be restored to be as close to the original state as possible on completion of the Proposal.	Contractor

6.9 CLIMATE AND AIR QUALITY

6.9.1 Existing environment

The Study Area lies within an established urban environment in Toongabbie, characterised mainly by residential land uses and sealed road surfaces. Climate data sourced from the Bureau of Meteorology, on



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the 19 February 2026, and identified through desktop searches of publicly available information at the Parramatta North (Masons Drive) weather station indicates warm summers, mild winters and a distinct wet period from January to March, with February being the wettest month (around 63 mm). The driest conditions typically occur between July and September, with September recording the lowest average rainfall (about 50 mm).

Regional air quality monitored at the Parramatta North station is generally good, with fine particulate matter (PM_{2.5}) typically meeting national standards. Given the suburban setting, local air quality is influenced primarily by vehicle emissions, minor domestic activities and general urban movement.

Pollutants relevant to the area include PM₁₀, PM_{2.5}, nitrogen dioxide (NO₂) and carbon monoxide (CO), typical of road-based emissions. Local dust levels are usually low due to the prevalence of paved surfaces, though short-term increases can occur during dry weather or nearby construction. Sensitive receivers include adjacent residential properties, pedestrians accessing Toongabbie Station, and nearby bus stops and retail areas.

6.9.2 Construction Impacts

Construction works along the Toongabbie corridor may temporarily reduce local air quality through the generation of dust during excavation, trenching, material handling and vehicle movements. Disturbance of the dry alluvial soils within the road reserve may increase dust levels, particularly during hotter, drier periods or higher winds, as indicated in Bureau of Meteorology climate data for the Parramatta North area.

Minor exhaust emissions from construction machinery, trucks and generators will also occur, contributing short-term increases in pollutants typical of road-upgrade works, including particulate matter and nitrogen oxides. These emissions will be localised around active work zones and may be noticeable to sensitive receivers such as nearby residences, pedestrians accessing Toongabbie Station, and users of adjacent bus stops and retail areas.

Given the urban setting and the generally good background air quality recorded at the Parramatta North monitoring station, construction-related air-quality impacts are expected to be temporary and limited to the immediate vicinity of work activities.

6.9.3 Operational Impacts

During operation, the upgraded intersection and road corridor are expected to function similarly to existing conditions, with no material increase in traffic demand or land-use intensity. As a result, no measurable change in local air quality is anticipated, and background conditions, classified as good at the Parramatta North monitoring station, are expected to remain unchanged. Vehicle emissions will continue to be the primary pollutant source, but are not expected to increase beyond current levels, and dust generation will remain low within the sealed urban environment.



6.9.4 Safeguards and Management Measures

Table 6-23 Air Quality Safeguards and Management Measures

Impact	Safeguards and Mitigation Measures	Responsibility
Air Quality - General	<p>An Air Quality safeguards and management measures will be prepared and implemented as part of the CEMP. These include measures to address potential risks to air quality arising from the works and will include, but not be limited to the following:</p> <ul style="list-style-type: none"> • Air quality management objectives to be consistent with relevant EPA guidelines. • Measures to minimise dust on site such as covering or watering exposed areas to suppress airborne particles. • Not carrying out dust generating activities during strong winds or other adverse weather conditions; • Vehicles transporting waste, fill or other materials to be covered during transportation; and • Management of stockpiled materials. <p>Construction plant and equipment will be maintained in good working condition to limit impacts on air quality.</p> <p>Where practicable vehicles will be fitted with pollution reduction devices and will be switched off when not in use.</p>	Contractor
Dust from exposed surfaces and stockpiles	Apply water regularly to exposed soil and stockpiles, particularly during dry or windy conditions, to suppress dust emissions.	Contractor
Dust during transport of materials	Cover all stockpiles and waste during storage and transport to prevent airborne particles.	Contractor
Emissions from idling vehicles and machinery	Enforce a no-idling policy for all vehicles and equipment to reduce unnecessary emissions.	Contractor
Emissions from poorly maintained machinery	Conduct regular maintenance and servicing of all machinery and vehicles to ensure optimal performance and minimal emissions.	Contractor
Dust generation during adverse weather	Implement a 'Stop Works' protocol during high winds or inclement weather to prevent excessive dust dispersion.	Contractor
Ongoing dust from construction activities	Monitor dust levels throughout construction and apply additional suppression measures as needed based on visual or measured indicators.	Contractor
Long-term dust from disturbed soils	Stabilise and landscape all exposed soils promptly after construction to prevent erosion and dust generation.	Contractor



6.10 SOCIO-ECONOMIC

6.10.1 Existing environment

The Study Area is situated within an established suburban centre characterised by a mix of residential dwellings, small businesses and transport-oriented activity associated with Toongabbie Railway Station. The precinct forms part of the wider Central River City as identified in strategic planning for Greater Sydney, which emphasises walkable town centres and improved public transport accessibility. The surrounding land use is predominantly low- to medium-density residential, with commercial activity focused on Portico Plaza Shopping Centre and the station interchange.

According to the latest ABS Census, Toongabbie has a population of 16,177 residents, with a near-even gender distribution (50.7% male, 49.3% female) and a median age of 35, reflecting a primarily working-age community. Household characteristics indicate 5,829 private dwellings and an average of 2.9 people per household, consistent with a family-oriented suburb with strong ties to employment centres accessible via rail. Income levels remain moderate, with a median weekly household income of \$2,106, while car ownership averages 1.7 vehicles per dwelling, indicating reliance on both private transport and public transport for daily travel.

The social environment surrounding the Proposal includes a variety of community facilities, retail services and high pedestrian activity associated with daily commuter movements. Local businesses depend on access to the station, passing trade and short-stay parking within the town-centre grid. Residential properties line key frontages along Wentworth Avenue, Station Road and Fitzwilliam Road, forming the primary group of sensitive socio-economic receptors.

Toongabbie functions as a well-established and stable suburban community rather than an emerging growth precinct. As such, major land-use changes are not anticipated in the short term; however, local planning objectives continue to prioritise town-centre accessibility, public transport integration and safety improvements for pedestrians and cyclists. The Study Area's socio-economic setting is therefore defined by high day-to-day use, strong commuter reliance, and a concentration of residential and commercial activity around a constrained transport hub.

6.10.2 Construction Impacts

Construction of the Proposal will generate temporary socio-economic impacts within the busy town-centre environment. Partial lane closures and staged works at the Fitzwilliam Road / Station Road / Wentworth Avenue intersection are expected to increase delays for residents, commuters and customers, especially during peak periods when the network already experiences significant congestion. Short-duration interruptions to driveway access may occur for adjacent homes and businesses during kerb, pavement or utility works. The pedestrian access to Toongabbie Station, Portico Plaza Shopping Centre and nearby bus stops may be diverted during footpath and crossing upgrades.

The use of laydown areas will introduce additional localised impacts. Laydown Site 1 in the Fitzwilliam Road cul-de-sac will require partial closure of the no-through street and removal of on-street parking, reducing convenience and amenity for nearby residents. Laydown Site 2, requiring clearance of a



vegetated area and potential minor intrusion into Lot 5 / DP242874, may reduce visual screening and place construction activity closer to adjoining properties. Laydown Site 3, on a grassed area near a flooding swale, is more separated but may still temporarily affect informal open-space use and pedestrian movement.

Local businesses may experience reduced foot traffic where access, parking or footpath connections are temporarily restricted, and bus services may face short-term delays where staging reduces lane availability. Given the strong commuter function of the precinct and concentration of residential and commercial activity near the station, these impacts will be noticeable but temporary, diminishing as construction progresses through the corridor.

6.10.3 Operational impacts

During operation, the upgraded intersection and improved pedestrian connections are expected to enhance day-to-day accessibility within the Toongabbie Station precinct. More reliable traffic flow and safer crossing opportunities will support local residents, commuters and businesses by improving access to the station, Portico Plaza Shopping Centre and surrounding services. These upgrades are consistent with Toongabbie's role as an established suburban centre and are expected to contribute to improved convenience and overall amenity for the community.

Minor changes to how individual properties interface with the road such as updated kerb alignments or revised pedestrian paths, may occur but are expected to be small-scale and consistent with the existing urban environment. The Proposal does not introduce new land uses or intensify development, and therefore no substantial long-term socio-economic impacts are anticipated.

Overall, the operational phase is expected to provide net benefits through improved connectivity, safer movements and strengthened access to key local destinations, with no significant adverse socio-economic effects expected.

6.10.4 Safeguards and Management Measures

Table 6-24 Socio-economic Safeguards and Management Measures

Potential Impact	Safeguard and Mitigation Measure	Responsibility
Socio-economic – General	<p>Consultation will be carried out with potentially affected residents before and throughout construction work, where required. Consultation will include but not limited to door knocks, newsletters or letter box drops providing information on the Project, working hours and a contact name and number for more information or to register complaints.</p> <p>Existing access for nearby and adjoining properties is to be maintained at all times during the works unless otherwise agreed to by the affected property owner.</p>	Contractor
Temporary access disruption (i.e., properties, station and shops)	Prepare and implement a Traffic and Access Management Plan that maintains pedestrian and vehicle access wherever practicable, including staged works around the station precinct and commercial areas.	Contractor



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Reduced pedestrian connectivity near Toongabbie Station and Portico Plaza	Provide clearly signed pedestrian detours, temporary crossing points and safe access routes around active work fronts.	Contractor
Laydown Site 1 – reduced parking and amenity	Notify affected residents in advance; limit duration of on-street parking removal; maintain access for local vehicles and waste collection.	Contractor
Laydown Site 2 – clearing vegetation and proximity to residences	Minimise extent of cleared vegetation; position site compounds to reduce visual intrusion; maintain safe separation from adjoining properties.	Contractor
Laydown Site 3 – temporary loss of open space	Restrict compound footprint to essential areas; maintain surrounding pedestrian movement paths where feasible.	Contractor
Local business activity (i.e., reduced foot traffic or parking restrictions)	Provide advance notice of staging near commercial areas; maintain short-stay parking or alternative customer access where practicable.	Contractor
Public transport impacts	Coordinate work staging with bus operators; ensure bus stop access remains safe and functional during works.	Contractor
Emergency service access	Maintain access for emergency vehicles at all times and incorporate emergency-service requirements in the Traffic and Access Management Plan.	Contractor
Cumulative impacts within the station precinct	Coordinate timing and staging of works with nearby council or utility projects to minimise overlap of disruptions.	Contractor / Council

6.11 WASTE MANAGEMENT

6.11.1 Existing Environment

The Toongabbie Study Area contains typical waste streams associated with an established urban road corridor. Minor roadside litter, food packaging and commuter waste are present around the station precinct, bus stops and commercial frontages. Routine council and utility maintenance also generates small quantities of vegetation trimmings, street-sweeping debris, and excavated road material from repairs or service reinstatement. No significant stockpiles or known waste-storage areas occur within the corridor, and overall waste generation is consistent with a busy suburban transport environment.



6.11.2 Construction Impacts

Construction of the Proposal will generate a variety of waste streams typical of road-upgrade works in an urban corridor. Activities such as excavation, pavement removal, drainage installation and vegetation clearing will produce:

- Excavated spoil and unsuitable material
- Asphalt, concrete and surplus construction materials
- Green waste from trimming or removal of vegetation
- Packaging and general waste from site operations
- Small quantities of potentially contaminated soil where older utilities or disturbed road-base materials are encountered

Improper handling, storage or transport of these materials could temporarily affect local amenity or contribute to pollution within the surrounding stormwater system. Waste generation will be short-term and concentrated around active work fronts.

Any spoil or material unsuitable for reuse would require classification in accordance with the NSW Waste Classification Guidelines (EPA, 2021) before being transported for off-site recycling or disposal at an appropriately licensed facility.

6.11.3 Operation Impacts

Waste generation during operation of the Proposal is expected to remain minimal and consistent with existing conditions. Typical operational waste will continue to comprise roadside litter, food packaging, and small quantities of waste associated with routine council maintenance such as vegetation trimmings or minor pavement repairs. As the Proposal does not alter land use or introduce new waste-producing activities, no measurable increase in waste generation is anticipated, and long-term waste characteristics of the area will remain unchanged.

6.11.4 Safeguards and Management Measures

Table 6-25 Waste Management Safeguards and Management Measures

Impact	Safeguards	Responsibility
<p>Waste materials generated during construction</p>	<p>A Waste Management Plan (WMP) would be prepared and implemented as part of the CEMP. The WMP would include (but not be limited to):</p> <ul style="list-style-type: none"> • measures to avoid and minimise waste associated with the project • classification of wastes and management options (re-use, recycle, stockpile, disposal) • statutory approvals required for managing on- and off-site waste, or application of any relevant resource recovery exemptions • procedures for storage, transport and disposal • monitoring, record keeping and reporting. 	<p>Contractor</p>



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	All wastes would be managed and disposed of in accordance with the POEO Act, WARR Act, POEO Waste Regulation and NSW Waste Classification Guidelines (EPA, 2014). All wastes and excess material would be disposed of at an appropriately licensed facility.	Contractor
	Excavated material would be reused on site where feasible and suitable for the intended reuse. Where excavated material cannot be used on site, opportunities for reuse on nearby projects would be investigated.	Contractor
Inductions	Site induction would include waste management and disposal requirements and facilities.	Contractor
Importing waste materials	Any additional fill material required would be sourced from appropriately licensed facilities and/or other construction projects wherever possible. Additional fill material would be sourced and verified as suitable for use in accordance with relevant EPA guidelines.	Contractor
	Resource management hierarchy principles would be followed: <ul style="list-style-type: none"> • avoid unnecessary resource consumption as a priority • avoidance is followed by resource recovery (including reuse of materials, reprocessing, recycling and energy recovery) disposal is undertaken as a last resort.	Contractor
Waste - reuse	If vegetation is to be mulched and transported off site for beneficial reuse, it would be assessed for the presence of weeds, pest, and other disease and a Mulch Management Plan prepared in accordance with the NSW EPA Mulch Order and Exemption.	Contractor
	There is to be no disposal or re-use of construction waste on to other land.	Contractor
Waste disposal	Waste is not to be burnt on site.	Contractor
Waste maintenance	Working areas are to be maintained, kept free of rubbish and cleaned up at the end of each working day.	Contractor
Waste - approvals	A review would be undertaken during detailed design to determine if an Environmental Protection Licence under the POEO Act is required for the Proposal.	Transport

6.12 CUMULATIVE IMPACTS

A qualitative review of potential cumulative impacts was undertaken to identify whether the Proposal may interact with other known or anticipated developments in the Toongabbie area. A search of the NSW DPIE Major Projects Register confirmed no major State projects within 100 m of the Proposal. Three projects were identified at distances ranging from 1,200 m to 2,500 m from the site (Old Windsor Road, Binalong Road, and Toongabbie Road, Girraween); however, these are located well outside the immediate road corridor and are unlikely to interact spatially with the Proposal.

Approximately 130 m south-west of the Proposal along Wentworth Avenue, a proposed local road network enhancement to the Toongabbie Bridge, along Wentworth Avenue is proposed by the Cumberland City Council (Toongabbie Bridge Proposal). Given its proximity and alignment on the same road corridor, this project represents the most relevant cumulative-impact consideration, particularly if construction timelines overlap. Cumberland City Council state that the proposed Toongabbie Bridge Proposal construction will commence in 2027.



6.12.1 Potential Construction-Phase Cumulative Impacts

If the Toongabbie Bridge Proposal and this Proposal proceed concurrently, localised cumulative effects may include:

- **Traffic and Access Impacts:** Concurrent Lane closures or alternating traffic control along Wentworth Avenue may compound congestion, reduce detour capacity and increase travel-time variability for residents, commuters, and station users.
- **Pedestrian Network Disruption:** Staged pedestrian diversions from both projects, particularly near the station precinct and Wentworth Avenue crossing points, may create short-term complexity in navigation for pedestrians and reduce accessibility.
- **Noise and Amenity:** Overlapping construction activity could increase the frequency and duration of construction noise and reduce overall amenity for nearby residents, especially where both proposals employ heavy machinery or night works.
- **Construction Logistics:** Simultaneous works could increase demand on haulage routes, material suppliers, parking availability and staging locations, although impacts would remain manageable due to the constrained footprint of each individual proposals.

Despite these risks, the two proposals do not share physical work zones, and their impacts would remain localised rather than compounding at a regional scale. The Proposal is confined to the Fitzwilliam Road / Station Road intersection and adjoining verges, whereas the Toongabbie Bridge Proposal focuses on structural and roadway works further south along Wentworth Avenue.

No cumulative impacts are expected to arise from vegetation removal, heritage disturbance, hydrological changes or contamination.

6.12.2 Operational-Phase Cumulative Impacts

Operational cumulative impacts are expected to be positive or negligible. Both proposals aim to improve:

- Corridor efficiency along Wentworth Avenue
- Access to Toongabbie Station and surrounding land uses
- Pedestrian and cycling safety
- Local network resilience and drainage performance

The combined effect of these upgrades is likely to improve overall network performance and safety, rather than generate adverse cumulative impacts.

6.12.3 Overall Conclusion on Cumulative Impacts

With the exception of the nearby Toongabbie Bridge Proposal, which may temporarily overlap with construction staging, the Proposal is unlikely to result in significant cumulative impacts due to its small footprint, urban setting, and the absence of other proposals/projects in immediate proximity. Any cumulative construction effects would be temporary, manageable and confined to local traffic and amenity, while operational cumulative effects are expected to be neutral or beneficial.



7.0 ENVIRONMENTAL MANAGEMENT

7.1 ENVIRONMENTAL MANAGEMENT PLANS

7.1.1 Construction Environmental Management Plan

A CEMP will be prepared by the construction contractor to include all the safeguards and management measures listed in this REF as well as any relevant conditions under any permits, licenses or other approvals obtained for the Proposal.

The CEMP would provide a framework for establishing how these measures would be implemented and who would be responsible for their implementation and would be prepared prior to the construction of the Proposal. The CEMP will be a working document, subject to ongoing change and updates as necessary to respond to specific requirements.



7.2 SUMMARY OF SAFEGUARDS AND MANAGEMENT MEASURES

Table 7-1 Summary of Safeguards and Management Measures

	Impact	Environmental Safeguards	Responsibility
Biodiversity	Removal of native vegetation	Vegetation to be removed must be identified and limited to the Study Area. No other native remnant vegetation is to be removed as a result of the project.	Contactor
	Wildlife Protection	Stop-work procedure, on the chance encounter of any dispersing wildlife during works, should be implemented to avoid death or injury. Ensure that a suitably qualified ecologist is present during the removal of all trees and man-made structures to act as a spotter-catcher that can relocate any captured wildlife. Ensure that all captured animals are relocated into the nearest suitable native vegetation. Ensure that all injured animals are taken to a local wildlife carer for treatment.	Contactor
	Introduction of new weed species and pathogens	Strict weed management, monitoring and control practices should be implemented as part of the CEMP to minimise the spread of exotic species into natural areas within and outside of the Study Area. In particular, Priority Weeds (PW), High Threat Weeds (HTW) and Weeds of National Significance (WoNS) species should be targeted in accordance with the NSW DPI WeedWise recommended control measures (DPI 2022). It is noted that under the NSW Biosecurity Act 2015, all landowners have the obligation to manage weeds as per the General Biosecurity Duty which states “All plants are regulated with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable”.	Contactor
	Sediment migration from areas of unconsolidated, exposed soil during works into waterbodies/drainage	Drainage lines outside the Study Area are to be fenced off, sedimentation controls implemented and labelled as No-Go areas to prevent: Accidental indirect impacts downstream into drainage channels and creek lines outside the Study Area Introduction of pathogens, such as <i>Batrachochytrium dendrobatidis</i> . Erosion and sediment control measures should be implemented as part of the CEMP and monitored and maintained to prevent impacts on adjacent	Contactor



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Impact	Environmental Safeguards	Responsibility
	<p>areas, particularly following erosion and sediment mobilisation from rain events. Stockpiles are to be located on level ground.</p>	
<p>Topography, geology and soils</p>	<p>Erosion and Sedimentation</p> <p>Erosion and sediment control measures are to be implemented and maintained (in accordance with the <i>Landcom/Department of Housing Managing Urban Stormwater, Soils and Construction Guidelines</i> (the Blue Book)) to:</p> <p>Prevent sediment moving off-site and sediment laden water entering any water course, drainage lines, or drain inlets.</p> <p>Reduce water velocity and capture sediment on site minimise the amount of material transported from site to surrounding pavement surfaces divert clean water around the site.</p> <p>Areas of exposed soil will be minimised during construction works.</p> <p>Work areas are to be stabilized progressively during the works.</p> <p>Erosion and sediment control measures are not to be removed until the works are complete, and areas are stabilised.</p> <p>All areas disturbed for the works will be restored to pre-works condition, or better and in accordance with Blue Book (Landcom 2004) requirements.</p>	<p>Contractor</p>
	<p>Contaminated land</p> <p>If contaminated areas, including potential and actual Acid Sulfate Soils, are encountered during construction, appropriate control measures will be implemented to manage the immediate risks controls or further actions identified in consultation with the proponent and/or EPA of contamination. All other works that may impact on the contaminated area will cease until the nature and extent of the contamination has been confirmed and any necessary site-specific.</p> <p>If suspected contamination is encountered the works would cease, access would be restricted, and the nature and extent of the contamination determined. Contaminated excavated material would be classified in accordance with the Waste Classification Guidelines (EPA, 2014) before any off-site disposal at a suitably licensed waste facility.</p>	<p>Contractor</p>
	<p>Accidental spill</p> <p>A site-specific emergency spill plan will be developed and include spill management measures in accordance with the relevant EPA guidelines. The plan will address measures to be implemented in the event of a spill, including initial response and containment, notification of emergency services and relevant authorities.</p>	<p>Contractor</p>
	<p>Erosion and sedimentation from exposed soils, including areas cleared of vegetation and stockpile sites.</p>	<p>The contractor will use dust suppression techniques as required to minimise the transport of soil material from the site.</p>



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Impact	Environmental Safeguards	Responsibility
	Following the completion of works, the topsoil will be reinstated and the site progressively rehabilitated to minimise the risk of soil and sediment loss.	
Import of material to the site for filling.	In the event any material is imported to the site, it shall be clean and free of contaminants.	Contractor
Accidental spills or leaks of fuel, oils or other chemicals during the works.	Chemicals will be stored in a suitably bunded / contained storage area. A spill kit will be kept on site and staff trained in its use. In the event of any accidental spills, works in the affected area will cease immediately and the incident reported to JHR PL immediately. Contaminants would be contained immediately, removed, and treated (if necessary), and disposed of at a suitably licensed facility in accordance with the Waste Classification Guidelines (EPA, 2014).	Contractor
Hydrology, water quality and flooding	Soil and water	Contractor
	Water Quality	contractor



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Environmental Management

Impact	Environmental Safeguards	Responsibility
	<p>Equipment, plant and materials must not be stored within proximity to the culvert, ensuring adequate buffer distances are maintained to avoid obstruction, contamination risk, or impacts to drainage function.</p> <p>Vehicle movements would be restricted to designated roadways and access points where feasible.</p> <p>If dewatering is required, the activity is to be monitored to ensure existing receiving water quality prior to discharge is maintained. Controls may include dewatering onto a vegetated area or filtering through sediment controls such as sediment fence, straw bales, filter bags or sandbags. If visual impacts i.e. discolouration is observed, cease dewatering activity.</p> <p>The storage, handling and use of chemicals and fuel would be in accordance with the <i>Work Health and Safety Act 2011</i> and WorkCover's Storage and Handling of Dangerous Goods Code of Practice.</p>	
Groundwater	The contractor is to develop a groundwater management plan as part of the CEMP detailing methodologies and management measures in case of groundwater interception during construction works.	Contractor
Hydrology and Flooding	Detail design to ensure no change to the wider stormwater system in the locality and no changes to flooding.	Contractor
Accidental spill	A spill response plan would be developed and incorporated in the CEMP. This plan would detail measures for the prevention, containment and clean-up of accidental spills of fuels and chemicals.	Contractor
Aboriginal Heritage		
Site Workers	All site workers and contractors should be inducted to the area and informed of their obligations under the National Parks and Wildlife Act 1974.	Contractor
Unexpected finds – artefacts	In the unlikely event that an Aboriginal object is found. Temporary fencing must be placed around the object with a buffer of at least 10 meters. An appropriately qualified archaeologist should be engaged to assess the finding, should the object be determined to be an Aboriginal object Heritage NSW should be informed. Works should not proceed until advice is received from Heritage NSW.	Contractor
Unexpected finds – human remains	<p>In the unlikely event that suspected human remains are encountered during construction, all works should cease immediately and:</p> <p>The location, including a 10 m buffer should be secured using a barrier to avoid further disturbance;</p> <p>The NSW Police should be contacted immediately;</p> <p>No further action is to be undertaken until the NSW Police provide advice that it is safe to do so;</p>	Contractor



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Environmental Management

Impact	Environmental Safeguards	Responsibility
	<p>If skeletal remains are identified as being Aboriginal, the proponent or their agent must contact Heritage NSW via the Environment Line on 131 555, and representatives of the Local Aboriginal Land Council, and;</p> <p>No works are to continue until Heritage NSW provides notification to Camp projects or their agent.</p>	
Non-Aboriginal Heritage	<p>Previously unidentified heritage items or places discovered</p> <p>An unexpected finds protocol will be developed and implemented under the CEMP to manage the risk of unexpected archaeological finds. If the works uncover any items of suspected heritage significance, all activity in the immediate area must cease and Council's representative will be notified.</p> <p>A qualified archaeologist is to be contacted to assess the situation and consult with Heritage NSW and/or DPE regarding the most appropriate course of action.</p> <p>Where the find comprises human remains, NSW Police must be contacted in the first instance.</p>	Contractor
	<p>General heritage awareness</p> <p>Deliver a heritage induction to all site personnel prior to the commencement of works. The induction must include information on the location, significance, and protection requirements of nearby heritage items, the Unexpected Finds Procedure, and reporting protocols. Refresher training will be provided for new staff or if works extend into new areas</p>	Contractor
Traffic and Access	<p>Traffic and Access</p> <p>A Traffic Management Plan will be prepared and implemented as part of the CEMP to manage the risk to appropriately manage construction personnel and road users during the works.</p> <p>Requirements for any changes to local access will be confirmed during detailed design in consultation with the local road authority and any affected landowners.</p> <p>Road users and local communities will be provided with timely, accurate, relevant and accessible information about changed traffic arrangements and delays owing to construction activities.</p> <p>Consultation will be undertaken with the local community and road users regarding any potential delays and detours associated with the construction of the Proposal.</p>	Contractor
Noise and Vibration	<p>Work hours</p> <p>All Works to be carried out during standard work hours:</p> <ul style="list-style-type: none"> • Monday to Friday 7 am to 6 pm; • Saturday 8am to 1 pm; and • No work on Sundays or public holidays. 	



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Impact	Environmental Safeguards	Responsibility
	The site employees will be responsible for managing noise from their work activities and to work in a manner that will minimise noise emissions.	
Nightwork prohibited equipment	<p>If night works are required, the following equipment should not be used after midnight:</p> <ul style="list-style-type: none"> • Rock breaker • Concrete saw • Tub grinder/ mulcher • Chainsaw 	
Stakeholder notification	Notification detailing work activities, dates and hours, impacts and mitigation measures, indication of work schedule over the night-time period, any operational noise benefits from the works (where applicable) and contact telephone number.	
	If programmed night work is postponed the work should be re-programmed and the approaches in this guideline apply again.	
	<p>Advance notification of the works will be provided to potentially affected residents and businesses, and contact details provided.</p> <p>A complaints register will be maintained for the duration of the works and any complaints responded to by site management within 24 hours.</p>	
	As per the Construction and Maintenance Noise Estimator Tool (version 1/08/2022), the additional mitigation measures listed within Table 6-17 would be completed to manage noise impacts to the sensitive residential receptors.	
On-site noise reduction practices	Limit the use of engine compression brakes at night and in residential areas.	
	Avoiding dropping materials from height and avoiding metal to metal contact on material.	
	<p>Toolbox talks will include specific noise and vibration issues awareness training including, but not limited to, the following:</p> <p>Avoiding shouting and slamming doors.</p> <p>Where practical, operating machines at low speed or power and switching off when not being used rather than left idling for prolonged periods.</p> <p>Minimising reversing.</p>	
	Distance between noisy plant items and nearby noise sensitive receivers would be maximised and equipment orientated where possible to reduce noise	



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Environmental Management

	Impact	Environmental Safeguards	Responsibility
	Construction Environmental Management Plan (CEMP) conditions.	<p>CEMP will include measures to minimise and manage noise impacts, including but not be limited to:</p> <ul style="list-style-type: none"> Nearby sensitive receivers would be notified regarding the commencement and duration of construction activities at least five days prior to the Proposal commencing. Turn off plant that is not being used. Examine, and implement where feasible and reasonable, alternative work practices which generate less noise. Ensure plant is regularly maintained, and repair or replace equipment that becomes noisy. Arrange the work site to minimise the use of movement alarms on vehicles and mobile plant. Locate noisy plant as far away from potentially noise affected neighbours as possible or behind barriers if available such as sheds or vehicles. All employees and contractors should receive an environmental induction prior to commencement of works. 	
Landscape Character and Visual Amenity	Construction Environmental Management Plan (CEMP) conditions.	Measures to mitigate visual impacts during construction would be included in a CEMP for the Proposal	Contractor
	General site maintenance	The Study Area, including the site compound, will be kept in an orderly state throughout the duration of the Proposal.	Contractor
		The Study Area and any adjacent areas will be cleared of all materials and refuse on completion of the Proposal.	Contractor
		The Study Area will be restored to be as close to the original state as possible on completion of the Proposal.	Contractor
Climate and Air Quality	Air Quality - General	<p>An Air Quality safeguards and management measures will be prepared and implemented as part of the CEMP. These include measures to address potential risks to air quality arising from the works and will include, but not be limited to the following:</p> <p>Air quality management objectives to be consistent with relevant EPA guidelines.</p> <p>Measures to minimise dust on site such as covering or watering exposed areas to suppress airborne particles.</p> <p>Not carrying out dust generating activities during strong winds or other adverse weather conditions;</p> <p>Vehicles transporting waste, fill or other materials to be covered during transportation; and</p>	Contractor



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Environmental Management

Impact	Environmental Safeguards	Responsibility
	<p>Management of stockpiled materials.</p> <p>Construction plant and equipment will be maintained in good working condition to limit impacts on air quality.</p> <p>Where practicable vehicles will be fitted with pollution reduction devices and will be switched off when not in use.</p>	
Dust from exposed surfaces and stockpiles	Apply water regularly to exposed soil and stockpiles, particularly during dry or windy conditions, to suppress dust emissions.	Contractor
Dust during transport of materials	Cover all stockpiles and waste during storage and transport to prevent airborne particles.	Contractor
Emissions from idling vehicles and machinery	Enforce a no-idling policy for all vehicles and equipment to reduce unnecessary emissions.	Contractor
Emissions from poorly maintained machinery	Conduct regular maintenance and servicing of all machinery and vehicles to ensure optimal performance and minimal emissions.	Contractor
Dust generation during adverse weather	Implement a 'Stop Works' protocol during high winds or inclement weather to prevent excessive dust dispersion.	Contractor
Ongoing dust from construction activities	Monitor dust levels throughout construction and apply additional suppression measures as needed based on visual or measured indicators.	Contractor
Long-term dust from disturbed soils	Stabilise and landscape all exposed soils promptly after construction to prevent erosion and dust generation.	Contractor
Socio-economic	<p>Socio-economic – General</p> <p>Consultation will be carried out with potentially affected residents before and throughout construction work, where required. Consultation will include but not limited to door knocks, newsletters or letter box drops providing information on the Project, working hours and a contact name and number for more information or to register complaints.</p> <p>Existing access for nearby and adjoining properties is to be maintained at all times during the works unless otherwise agreed to by the affected property owner.</p>	Contractor
Temporary access disruption (i.e., properties, station and shops)	Prepare and implement a Traffic and Access Management Plan that maintains pedestrian and vehicle access wherever practicable, including staged works around the station precinct and commercial areas.	Contractor
Reduced pedestrian connectivity near Toongabbie Station and Portico Plaza	Provide clearly signed pedestrian detours, temporary crossing points and safe access routes around active work fronts.	Contractor



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Environmental Management

	Impact	Environmental Safeguards	Responsibility
	Laydown Site 1 – reduced parking and amenity	Notify affected residents in advance; limit duration of on-street parking removal; maintain access for local vehicles and waste collection.	Contractor
	Laydown Site 2 – clearing vegetation and proximity to residences	Minimise extent of cleared vegetation; position site compounds to reduce visual intrusion; maintain safe separation from adjoining properties.	Contractor
	Laydown Site 3 – temporary loss of open space	Restrict compound footprint to essential areas; maintain surrounding pedestrian movement paths where feasible.	Contractor
	Local business activity (i.e., reduced foot traffic or parking restrictions)	Provide advance notice of staging near commercial areas; maintain short-stay parking or alternative customer access where practicable.	Contractor
	Public transport impacts	Coordinate work staging with bus operators; ensure bus stop access remains safe and functional during works.	Contractor
	Emergency service access	Maintain access for emergency vehicles at all times and incorporate emergency-service requirements in the Traffic and Access Management Plan.	Contractor
	Cumulative impacts within the station precinct	Coordinate timing and staging of works with nearby council or utility projects to minimise overlap of disruptions.	Contractor / Council
Waste Management	Waste materials generated during construction	A Waste Management Plan (WMP) would be prepared and implemented as part of the CEMP. The WMP would include (but not be limited to): measures to avoid and minimise waste associated with the project classification of wastes and management options (re-use, recycle, stockpile, disposal) statutory approvals required for managing on- and off-site waste, or application of any relevant resource recovery exemptions procedures for storage, transport and disposal monitoring, record keeping and reporting.	Contractor
		All wastes would be managed and disposed of in accordance with the POEO Act, WARR Act, POEO Waste Regulation and NSW Waste Classification Guidelines (EPA, 2014). All wastes and excess material would be disposed of at an appropriately licensed facility.	Contractor
		Excavated material would be reused on site where feasible and suitable for the intended reuse. Where excavated material cannot be used on site, opportunities for reuse on nearby projects would be investigated.	Contractor



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 Environmental Management

Impact	Environmental Safeguards	Responsibility
Inductions	Site induction would include waste management and disposal requirements and facilities.	Contractor
Importing waste materials	Any additional fill material required would be sourced from appropriately licensed facilities and/or other construction projects wherever possible. Additional fill material would be sourced and verified as suitable for use in accordance with relevant EPA guidelines.	Contractor
	Resource management hierarchy principles would be followed: avoid unnecessary resource consumption as a priority avoidance is followed by resource recovery (including reuse of materials, reprocessing, recycling and energy recovery) disposal is undertaken as a last resort.	Contractor
Waste - reuse	If vegetation is to be mulched and transported off site for beneficial reuse, it would be assessed for the presence of weeds, pest, and other disease and a Mulch Management Plan prepared in accordance with the NSW EPA Mulch Order and Exemption.	Contractor
	There is to be no disposal or re-use of construction waste on to other land.	Contractor
Waste disposal	Waste is not to be burnt on site.	Contractor
Waste maintenance	Working areas are to be maintained, kept free of rubbish and cleaned up at the end of each working day.	Contractor
Waste - approvals	A review would be undertaken during detailed design to determine if an Environmental Protection Licence under the POEO Act is required for the Proposal.	Transport



7.3 LICENSING AND APPROVALS

The Proposal is not anticipated to require any further approvals for construction.



8.0 CONCLUSION

This chapter provides the justification for the Proposal, considering social, biophysical, economic factors and public interests. The Proposal is also considered in the context of the objectives of the EP&A Act.

8.1 JUSTIFICATION

The Proposal is justified on the basis that it delivers essential safety and network-performance improvements within a critical transport node of the Toongabbie Station precinct. The existing intersection of Fitzwilliam Road, Station Road and Wentworth Avenue experiences severe congestion, long queues and poor operational performance, which are expected to worsen under future traffic conditions. The Proposal directly addresses these issues by providing an upgraded intersection arrangement, improved lane configuration and safer pedestrian movements, resulting in more reliable access to Toongabbie Railway Station, local businesses and surrounding residential areas.

The works also respond to identified flooding and resilience constraints, ensuring the upgraded intersection maintains existing flood behaviour while improving stormwater conveyance through updated drainage infrastructure. The Proposal remains within an already disturbed urban road corridor and avoids impacts to sensitive environmental or heritage values, with construction-phase impacts being temporary and manageable through standard safeguards.

In operation, the upgrades will enhance the efficiency, safety and connectivity of the surrounding transport network without introducing new environmental risks or altering local land use. The Proposal aligns with local and regional planning objectives that emphasise safe, accessible, well-connected centres and supports the long-term functioning of Toongabbie as an important transport and community hub.

The Proposal is considered necessary, proportionate and environmentally acceptable, with clear public-benefit outcomes and no anticipated significant adverse environmental impacts.

8.2 OBJECTS OF THE EP&A ACT

8.2.1 Ecologically sustainable development

The Precautionary Principle

The precautionary principle upholds that if there are any threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

When applying the precautionary principle, public and private decisions should be guided by:

- Careful evaluation to avoid, wherever practicable, serious, or irreversible damage to the environment
- An assessment of risk-weighting consequences of various options



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Conclusion

- A precondition for the operation of the precautionary principle is that there are threats of serious or irreversible environmental damage. This REF has demonstrated that such threats are not present for the Proposal.

Regardless, the Proposal has sought to take a precautionary approach to minimise environmental impacts. This has also been applied for the development of safeguard and management measures listed in Section 1.1. The best available technical information, environmental standards and measures have been used to minimise identified environmental risks for the Proposal.

Intergenerational Equity

The principle of intergenerational equity upholds that the present generation should ensure that the health, diversity, and productivity of the environment are maintained or enhanced for the benefit of current and future generations.

The Proposal has integrated short and long-term social, financial, and environmental considerations so that any likely impacts are not left to be addressed by future generations. Issues with potential long-term effects such as soil, noise, traffic changes, waste disposal, visual amenity and biodiversity impacts have been avoided and/or minimised through the application of safeguards and management measures described in Section 1.1 of this REF.

Conservation of biological diversity and ecological integrity

Preserving biological diversity and ecological integrity requires that ecosystems, species, and biological diversity are maintained. As concluded in the biodiversity assessment (refer to **Section 6.1**), the Proposal would not significantly impact on threatened species, communities, populations, or their associated habitat. Therefore, biological diversity and ecological integrity would be conserved by the Proposal.

Improved valuation, Pricing and incentive mechanisms

This principle upholds that environmental factors should be included in the valuation of assets and services, such as:

- Polluter pays, that is, those who generate pollution and waste should pay the cost to manage it.
- The users of goods and services should pay prices based on the full life cycle of costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste.
- Environmental goals, having been established, should be pursued in the most cost-effective way, by establishing incentive structures, including market mechanisms that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.
- Environmental issues have been considered for the Proposal and an options assessment process undertaken. The environmental goals of the Proposal have been pursued in the most cost-effective way through the detailed design and construction planning process. Mitigation measures for environmental impact during construction and operation are to be implemented.



8.2.2 Significance of impact under NSW legislation

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

8.2.3 Significance of impact under Commonwealth legislation

The Proposal is not likely to have a significant impact on matters of national environmental significance nor the environment of Commonwealth land within the meaning of the EPBC Act. A referral to the Australian Department of Climate Change, Energy, the Environment and Water is not required.



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APPENDICES

Review of Environmental Factors

APPENDIX A - CONSIDERATION OF SECTION 171 FACTORS AND MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE AND COMMONWEALTH LAND

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

Factor	Impact
<p>Any environmental impact on a community? Potential short-term cumulative impacts if construction overlaps with the Toongabbie Bridge Local Road Network Enhancements (traffic, noise, temporary visual clutter). No significant operational cumulative impacts anticipated.</p>	<p>Short-term: negative Long-term: positive</p>
<p>Any transformation of a locality? The Proposal involves minor upgrades within an existing, highly urbanised road corridor and does not alter land use, development character or the functioning of the Toongabbie Station precinct. No permanent change to the locality's character or structure would occur.</p>	<p>Nil.</p>
<p>Any environmental impact on the ecosystems of the locality? The Proposal occurs entirely within a highly urbanised road corridor with no native vegetation or fauna habitat present. Vegetation removal is limited to small areas of exotic groundcover within temporary laydown areas. No native ecosystems or ecological communities would be affected.</p>	<p>Short-term: Negative (minor vegetation disturbance) Long-term: Neutral</p>
<p>Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality? Temporary visual impacts would occur from construction fencing, machinery and laydown areas. No public open space or recreational assets would be removed or downgraded. Intersection upgrades will improve pedestrian safety, access and local amenity.</p>	<p>Short-term: negative Long-term: positive</p>
<p>Any effect on a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or other special value for present or future generations?</p>	<p>Nil.</p>
<p>Any impact on the habitat of protected fauna (within the meaning of the <i>National Parks and Wildlife Act 1974</i>)?</p>	<p>Nil.</p>
<p>Any endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air?</p>	<p>Nil.</p>
<p>Any long-term effects on the environment? Long-term beneficial effects are expected through improved traffic flow, drainage upgrades and safer pedestrian connectivity. No ongoing adverse environmental effects are anticipated.</p>	<p>Long-term: Positive</p>



<p>Any degradation of the quality of the environment? Minor temporary degradation may occur during construction from noise, dust or sediment mobilisation. Managed through standard safeguards. No long-term degradation is expected.</p>	<p>Short-term: negative Long-term: neutral/positive</p>
<p>Any risk to the safety of the environment? Construction activities pose low, manageable risks (e.g. spills, noise, sediment). No environmental safety risks are expected during operation.</p>	<p>Short-term: negative (low risk) Long-term: neutral</p>
<p>Any reduction in the range of beneficial uses of the environment? No reduction in beneficial uses. The Proposal enhances pedestrian access, safety and transport efficiency.</p>	<p>Short-term: neutral Long-term: positive</p>
<p>Any pollution of the environment? Potential minor short-term pollution risks from dust, noise and construction waste; mitigated by standard controls. No operational pollution expected.</p>	<p>Short-term: negative Long-term: neutral</p>
<p>Any environmental problems associated with the disposal of waste? Construction waste will be managed under a Waste Management Plan. No unusual or hazardous waste streams anticipated.</p>	<p>Short-term: neutral/low negative Long-term: neutral</p>
<p>Any increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply? Resource use is limited to typical road-construction materials and does not involve significant consumption of scarce resources. No long-term resource demand.</p>	<p>Short-term: neutral Long-term: neutral</p>
<p>Any cumulative environmental effect with other existing or likely future activities? Potential short-term cumulative impacts if construction overlaps with the Toongabbie Bridge Local Road Network Enhancements (traffic, noise, temporary visual clutter). No significant operational cumulative impacts anticipated.</p>	<p>Short-term: negative Long-term: positive/neutral</p>
<p>Any impact on coastal processes and coastal hazards, including those under projected climate change conditions?</p>	<p>Nil.</p>
<p>Applicable local strategic planning statements, regional strategic plans or district strategic plans made under the Act, Division 3.1. The Proposal supports strategic objectives for safe, accessible, resilient transport and centre-based movement networks in the <i>Parramatta Community Strategic Plan</i>.</p>	<p>Long-term: positive</p>
<p>Other relevant environmental factors. Minor temporary construction impacts (noise, access restriction, pedestrian diversions) are expected. These impacts are short-term and manageable through standard safeguards.</p>	<p>Short-term: negative Long-term: neutral/positive</p>

Matters of Environmental significance and Commonwealth Land

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

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



Factor	Impact
Any impact on a World Heritage property?	Nil.
Any impact on a National Heritage place?	Nil.
Any impact on a wetland of international importance?	Nil.
Any impact on a listed threatened species or communities?	Nil.
Any impacts on listed migratory species?	Nil.
Any impact on a Commonwealth marine area?	Nil.
Does the Project involve a nuclear action (including uranium mining)?	Nil.
Additionally, any impact (direct or indirect) on the environment of Commonwealth land?	Nil.



APPENDIX B – NOISE IMPACT ASSESSMENT (CONSTRUCTION AND MAINTENANCE NOISE ESTIMATOR)

