

Transport for NSW

Commuter Car Park Program Leppington Station

Review of Environmental Factors



Artist's impression of the proposed Leppington Station Commuter Car Park, subject to change during detailed design.



Leppington Commuter Car Park

Review of Environmental Factors

Commuter Car Park Program
Ref – 6432870

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Document control

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Date of issue:	April 2020
Version:	0.2
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Abbreviations

Term	Meaning
AHIMS	Aboriginal Heritage Information Management System
AS	Australian Standard
ASA	Asset Standards Authority (refer to Definitions)
ASS	Acid Sulfate Soils
BCA	Building Code of Australia
BC Act	<i>Biodiversity Conservation Act 2016 (NSW)</i>
CBD	Central Business District
CEMP	Construction Environmental Management Plan
CCTV	Closed circuit television
CLM Act	<i>Contaminated Land Management Act 1997 (NSW)</i>
CLMP	Community Liaison Management Plan
CNVMP	Construction Noise and Vibration Management Plan
CTMP	Construction Traffic Management Plan
DBH	Diameter Breast Height
DDA	<i>Disability Discrimination Act 1992 (Cwlth)</i>
DoEE	Commonwealth Department of the Environment and Energy
DoS	Degree of Saturation.
DPI&E	NSW Department of Planning, Industry and Environment
DPC	Department of Premier and Cabinet
DSAPT	<i>Disability Standards for Accessible Public Transport (2002)</i>
EES Group	Environment, Energy and Science Group in the Department of Planning, Industry and Environment (formerly known as Office of Environment and Heritage)
EMS	Environmental Management System
EPA	Environment Protection Authority
EP&A Act	<i>Environmental Planning and Assessment Act 1979 (NSW)</i>
EP&A Regulation	<i>Environmental Planning and Assessment Regulation 2000 (NSW)</i>

Term	Meaning
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999 (Cwlth)</i>
EPL	Environment Protection Licence
ESD	Ecologically Sustainable Development (refer to Definitions)
FM Act	<i>Fisheries Management Act 1994 (NSW)</i>
Heritage Act	<i>Heritage Act 1977 (NSW)</i>
ICNG	<i>Interim Construction Noise Guideline (Department of Environment and Climate Change, 2009).</i>
Infrastructure SEPP	<i>State Environmental Planning Policy (Infrastructure) 2007 (NSW)</i>
IS rating	Infrastructure Sustainability rating under ISCA rating tool (v 1.2)
ISCA	Infrastructure Sustainability Council of Australia
LEP	Local Environmental Plan
LGA	Local Government Area
LoS	Level of Service
MCA	Multi-criteria analysis
MSCP	Multi-storey car park
NES	National Environmental Significance (refers to matters of National Environmental Significance under the EPBC Act)
NPW Act	<i>National Parks and Wildlife Act 1974 (NSW)</i>
NSW	New South Wales
PDP	Public Domain Plan
PoEO Act	<i>Protection of the Environment Operations Act 1997 (NSW)</i>
REF	Review of Environmental Factors (this document)
Roads Act	<i>Roads Act 1993 (NSW)</i>
Roads and Maritime	NSW Roads and Maritime Services
SEPP	State Environmental Planning Policy
SHI	State Heritage Inventory
SHR	State Heritage Register
SREP	Sydney Regional Environmental Plan
Transport for NSW	Transport for NSW

Term	Meaning
TPZ	Tree Protection Zone
UDP	Urban Design Plan
WARR Act	<i>Waste Avoidance and Resource Recovery Act 2001 (NSW)</i>
WM Act	<i>Water Management Act 2000 (NSW)</i>

Definitions

Term	Meaning
Asset Standards Authority	The ASA is an independent body within Transport for NSW, responsible for engineering governance, assurance of design safety, and ensuring the integrity of transport and infrastructure assets.
Average Exceedance Probability	The likelihood of occurrence, expressed in terms of percentage, of a flood events occurring. For example, a 1 per cent Annual Exceedance Probability flood is a flood event that has a 1 per cent chance of occurring, or being exceeded, in any one year.
Concept design	The concept design is the preliminary design presented in this REF, which would be refined by the Construction Contractor (should the Proposal proceed) to a design suitable for construction (subject to Transport for NSW acceptance).
Design and Construct Contract	A method to deliver a project in which the design and construction services are contracted by a single entity known as the Construction Contractor. The Construction Contractor completes the project by refining the concept design presented in the REF and completing the detailed design so that it is suitable for construction (subject to Transport for NSW acceptance). The Construction Contractor is therefore responsible for all work on the project, both design and construction.
Determining Authority	A Minister or public authority on whose behalf an activity is to be carried out or public authority whose approval is required to carry out an activity (under the EP&A Act).
Degree of Saturation	The ratio of arrival (demand) flow rate to capacity during a given flow period at an intersection.
Disability Standards for Accessible Public Transport	The Commonwealth <i>Disability Standards for Accessible Public Transport 2002</i> (as amended) are a set of legally enforceable standards, authorised under the Commonwealth <i>Disability Discrimination Act 1992</i> (DDA) for the purpose of removing discrimination 'as far as possible' against people with disabilities. The Standards cover premises, infrastructure and conveyances, and apply to public transport operators and premises providers.
Ecologically Sustainable Development	As defined by clause 7(4) Schedule 2 of the EP&A Regulation. Development that uses, conserves and enhances the resources of the community so that ecological processes on which life depends are maintained, and the total quality of life, now and in the future, can be increased.
Feasible	A work practice or abatement measure is feasible if it is capable of being put into practice or of being engineered and is practical to build given project constraints such as safety and maintenance requirements.
Interchange	Transport interchange refers to the area/s where passengers transit between vehicles or between transport modes. It includes the pedestrian pathways and cycle facilities in and around an interchange.
Level of Service	An index of the operational performance of traffic for a given intersection during a given flow period.

Term	Meaning
Out of hours works	Defined as works <i>outside</i> standard construction hours (i.e. outside of 7am to 6pm Monday to Friday, 8am to 1pm Saturday and no work on Sundays/public holidays).
Proponent	A person or body proposing to carry out an activity under Division 5.1 of the EP&A Act.
Rail possession	Rail possession is the term used by railway building/maintenance contractors to indicate that they have taken possession of the track (usually a block of track) for a specified period, so that no trains operate for a specified time. This is necessary to ensure the safety of workers and rail users.
Reasonable	Selecting reasonable measures from those that are feasible involves making a judgment to determine whether the overall benefits outweigh the overall adverse social, economic and environmental effects, including the cost of the measure.
Sensitive receivers	Land uses which are sensitive to potential noise, air and visual impacts, such as residential dwellings, schools and hospitals.
The Proposal	The construction and operation of the Leppington Commuter Car Park.
Vegetation Offset Guide (Transport for NSW, 2019)	<p>The Transport for NSW guide that applies where there is vegetation clearing proposed, and where the impact of the proposed clearing is not deemed 'significant' for the purposes of Section 5.5 of the EP&A Act.</p> <p>The Guide provides for offset strategies including planting of a minimum of eight trees for each large tree with a diameter at breast height (DBH) of more than 60 cm, four trees where the DBH is 15-60 cm, or two trees where DBH is less than 15 cm.</p>

Executive summary

Overview

Transport for New South Wales (Transport for NSW) is proposing to undertake the Leppington Commuter Car Park (the Proposal) to improve customer experience at this location and in surrounding localities. Transport for NSW is the government agency responsible for the delivery of major transport infrastructure projects in NSW and is the proponent for the Proposal.

The Proposal forms part of the Commuter Car Park Program. The NSW Government is committed to delivering accessible public transport infrastructure, which is why Transport for NSW is providing more commuter car parks where they are needed. The delivery of commuter car parks at key transport interchanges will provide a range of benefits, including:

- improved customer access to the public transport network
- encouraging mode shift away from private vehicles
- improving the flexibility and reliability of customer's 'first and last mile' of their journey
- contributing to reducing congestion on our road network.

The Proposal would aim to provide:

- provide additional commuter car spaces in close proximity to Leppington Station to service the growing demand
- improved safety and security infrastructure
- improved access infrastructure for commuters with disabilities
- accessible parking and motorcycle parking
- electric vehicle charging stations and Opal Park and Ride
- improved pedestrian and driver safety.

This Review of Environmental Factors (REF) has been prepared to assess the environmental impacts associated with the construction and operation of the Proposal under the provisions of Division 5.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

Subject to design and approval, construction is expected to commence in mid-2020 and take around 13 months to complete. A detailed description of the Proposal is provided in Chapter 3 of this REF. An overview of the Proposal is shown in Figure 1 below.

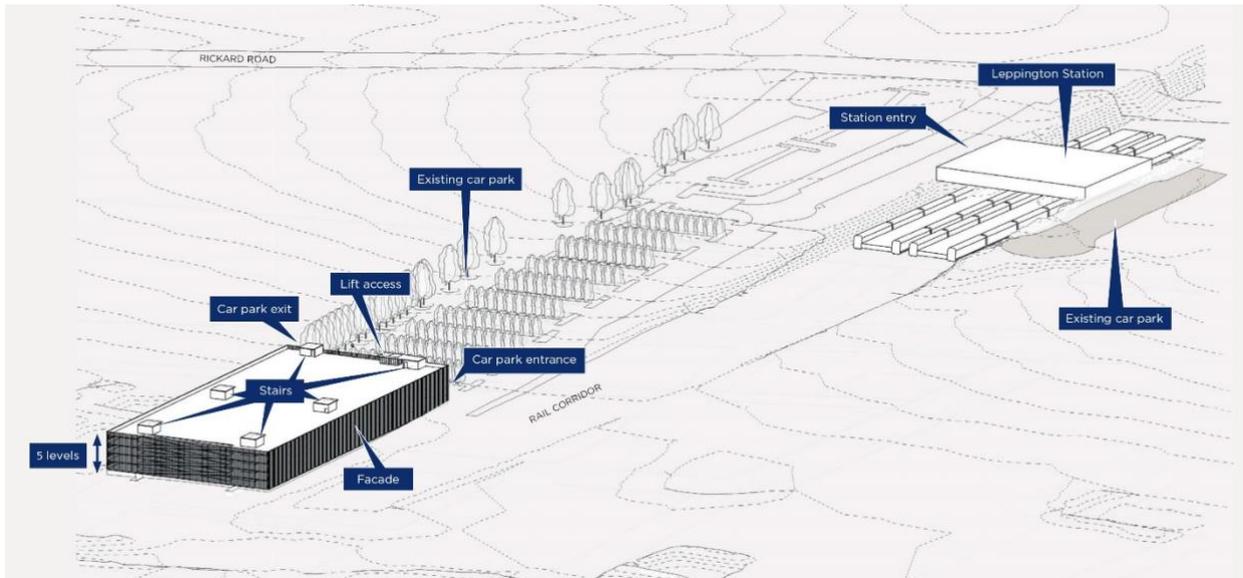


Figure 1 Proposed Leppington Commuter Car park (indicative only, subject to detailed design)

Need for the Proposal

Transport for NSW recognises the critical role Park and Ride plays in improving the quality of access to public transport in the customer's first and last mile, particularly in middle and outer metropolitan areas.

Approximately 73 per cent of workers from the middle and outer urban sectors of Sydney predominantly drive the whole distance to work, with around 46 per cent of those workers commuting 20 kilometres to 60 kilometres daily (Australian Bureau of Statistics, 2016).

The Proposal is designed to drive a stronger customer experience outcome, to deliver improved travel to and between modes, encourage greater public transport use and better integrate interchanges with the role and function of town centres.

The existing at grade commuter car parking facilities at Leppington Station comprises a total of 872 spaces between the northern and southern car parks. These car parks are typically full by 8.00 am on weekdays, and parking surveys have identified that demand exceeds capacity by as much as 37 per cent (320 spaces).

The Proposal would address the existing parking capacity issues and also assist in responding to forecasted growth in the region and as such would support growth in commercial and residential development.

Chapter 2 of this REF further describes the need for the Proposal and outlines the options considered in developing the design.

Community and stakeholder consultation

Community and targeted consultation activities for the Proposal have been undertaken through development of the REF to encourage stakeholder and community involvement and foster interaction between stakeholders, the community and the project team. These activities included:

- consultation with surrounding residences and businesses through door knocking
- distribution of a community notification to both the local community via letterbox drop and rail customers at the station to inform the community about the Proposal. The newsletter was made available to station customers

- consultation with Camden Council, Sydney Trains, NSW State Emergency Services, the Office of Strategic Lands and DPIE
- two community information sessions at Leppington Station targeting commuters and local residents, held on Thursday 12 March and Tuesday 17 March 2020
- a meeting with nearby Leppington Public School, informing them of the Proposal and inviting feedback
- geographically targeted social media advertising via Facebook to inform the community of the Proposal and invite their feedback
- posters at the station providing information on the project and links to the website
- development of a dedicated web page for the project on the Transport for NSW website which can be found at <https://www.transport.nsw.gov.au/leppington>

All comments received from the community during consultation have been captured and will be considered prior to determining the project. Further information about these specific activities is included in Section 5 of this REF.

A Project Infoline (1800 684 490) and email address (projects@transport.nsw.gov.au) has been available for members of the public to make enquiries.

Should the Proposal proceed to construction, the community would be kept informed throughout the duration of the construction period. Figure 2 shows the planning approval and consultation process for the Proposal.

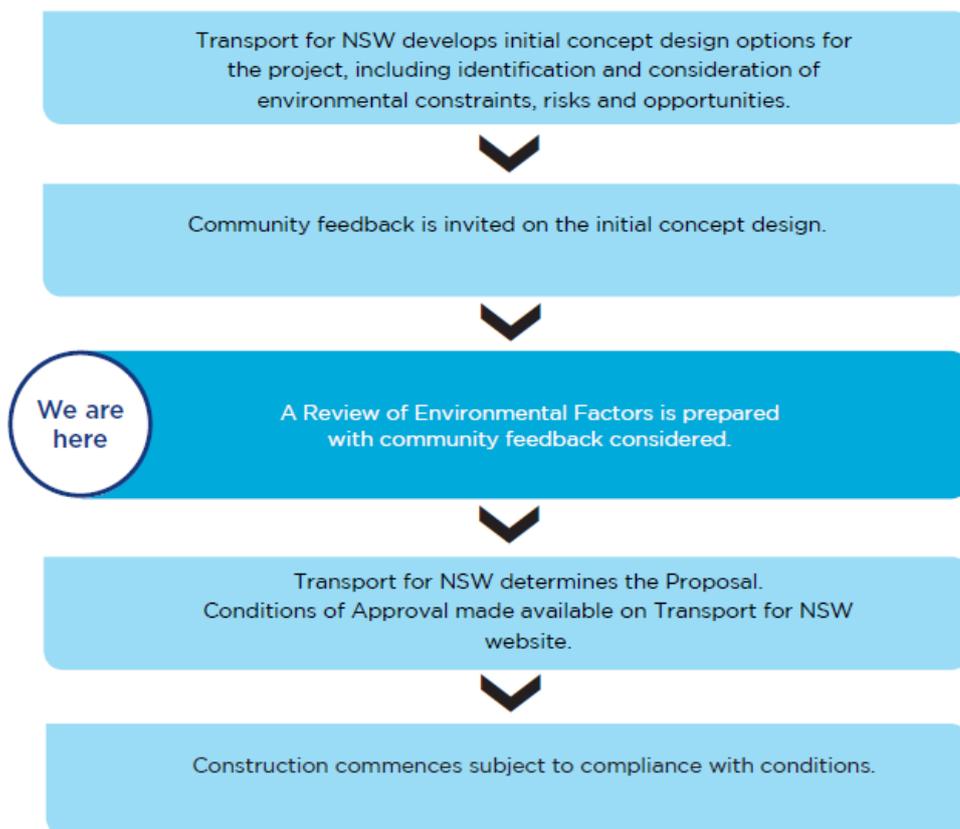


Figure 2 Planning approval and consultation process for the Proposal

Environmental impact assessment

This REF identifies the potential environmental benefits and impacts of the Proposal and outlines the mitigation measures to reduce the identified impacts.

Further information regarding these impacts is provided in Chapter 6 of the REF.

The Proposal would provide the following benefits:

- additional commuter parking in close proximity to Leppington Station facilitating improved opportunities to change modes of transport for the region
- increasing connectivity and convenience to and from Leppington Station potentially increasing the use of public transport
- improved customer experience by providing modern car parking facilities with weather protection for the majority of parking spaces and security features including lighting and CCTV cameras
- reduction in the need for commuters to park in local streets.

The following key impacts have been identified should the Proposal proceed:

- a minor increase in local traffic movements during operation of the proposed car park
- temporary visual, noise and vibration impacts during the construction period
- increased noise and visual impacts to surrounding receivers during operation
- loss of vegetation within the Proposal site, which would be offset in accordance with the Vegetation Offset Guide (Transport for NSW, 2019)
- potential to alter the behaviour of surface water in the vicinity including increasing run-off and increasing flood prone areas directly upstream around the railway waterway crossing
- visual impacts due to introduction of a new structure to the landscape.

Further information regarding these impacts and mitigation measures are provided in Chapter 6 and Chapter 7 of the REF.

Conclusion

This REF has been prepared having regard to Sections 5.5 to 5.7 of the EP&A Act, and clause 228 of the EP&A Regulation, to ensure that Transport for NSW takes into account to the fullest extent possible, all matters affecting or likely to affect the environment as a result of the Proposal.

The detailed design of the Proposal would also be designed in accordance with the Infrastructure Sustainability Council of Australia (ISCA) Infrastructure Sustainability Rating Scheme (v1.2) taking into account the principles of ecologically sustainable development (ESD).

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

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

1 Introduction

Transport for NSW is the lead agency for integrated delivery of public transport services across all modes of transport in NSW. Transport for NSW is the proponent for the Leppington Commuter Car Park (the Proposal).

1.1 Overview

Transport for NSW recognises the critical role Park and Ride plays in improving the quality of access to public transport in the customer's first and last mile, particularly in middle and outer metropolitan areas.

Transport for NSW is committed to delivering accessible public transport infrastructure, which is why we are providing more commuter car parks where they are needed. The Commuter Car Park Program is a NSW Government initiative to provide a better experience for public transport customers by delivering accessible, modern, secure and integrated transport infrastructure.

1.1.1 Objectives of the Commuter Car Park Program

The objective of the Commuter Car Park Program is to extend the reach of the public transport network in middle and outer metropolitan Sydney by intercepting customers earlier in their journey. The delivery of commuter car parks at key transport interchanges aims to provide a range of benefits as outlined in Table 1.

Table 1 Objectives of the Commuter Car Park Program

Category	Objectives
Accessible services	<ul style="list-style-type: none">increase access to public transport for customers in their 'first and last mile' journey.
Successful Places	<ul style="list-style-type: none">complement and integrate with existing and future communities and support economic and place-making objectives in centres.
Efficient connectivity for passengers	<ul style="list-style-type: none">develop efficient transport interchanges to enable people to reach more destinations within and between cities and centres by enabling the 30 minute city through comparative or improved travel time with private vehicle travel.replace car trips to destinations and centres with alternative public and active transport modes.
Safety and Performance	<ul style="list-style-type: none">provide a safe multi-modal transport journey by design.Improve the effectiveness of interchanging.
Adaptability	<ul style="list-style-type: none">support the future needs of customers and consider emerging transport trends, growth and technologies.plan and design infrastructure that is resilient and able to adapt to future alternative uses and scenarios.

Category	Objectives
Sustainability	<ul style="list-style-type: none"> • to deliver whole of life value for money. • limit environmental impacts and contribute to the NSW Government's aspirational target to achieve net-zero emissions by 2050. • maximise the construction phase benefits to the local economy by utilising local businesses and engaging a workforce that reflects the local social demographic of the area.

1.2 The Proposal

The Proposal forms part of the Commuter Car Park Program. The key features of the Proposal are summarised as follows:

- construction of a multi-storey car park, consisting of ground plus four levels (including rooftop) connected by internal circulation ramps, lifts and stairways, with provision of approximately 1,000 commuter car parking spaces
- roadworks to facilitate access and egress for pedestrians and vehicles via the existing at-grade car park
- approximately 20 additional accessible car parking spaces in the station precinct
- way-finding signage for pedestrian circulation
- new fencing where necessary
- ancillary works including services diversion and/or relocation, drainage works, installation of lighting, installation of handrails and balustrades and new infrastructure including CCTV cameras
- consideration of rooftop solar and battery storage to offset operational greenhouse gas emissions (subject to detailed design)
- provision for compatible uses such as electric vehicle charging (subject to detailed design).

Subject to planning approval, construction is expected to commence in mid-2020 and take around 13 months to complete.

A detailed description of the Proposal is provided in Chapter 3 of this Review of Environmental Factors (REF). An overview of the key features of the Proposal is also provided in Figure 1.

1.3 Regional context

The Proposal is located in the suburb of Leppington, NSW, approximately 40 kilometres south west of the Sydney Central Business District (CBD) within the Camden Local Government Area (LGA). Leppington Station was established in 2015 and is serviced by the T2 Inner West and Leppington Line, which provides services to south-west Sydney and the Sydney CBD and the T5 Cumberland Line, which provides services between Richmond and Campbelltown. The regional location of the Proposal is shown in Figure 3

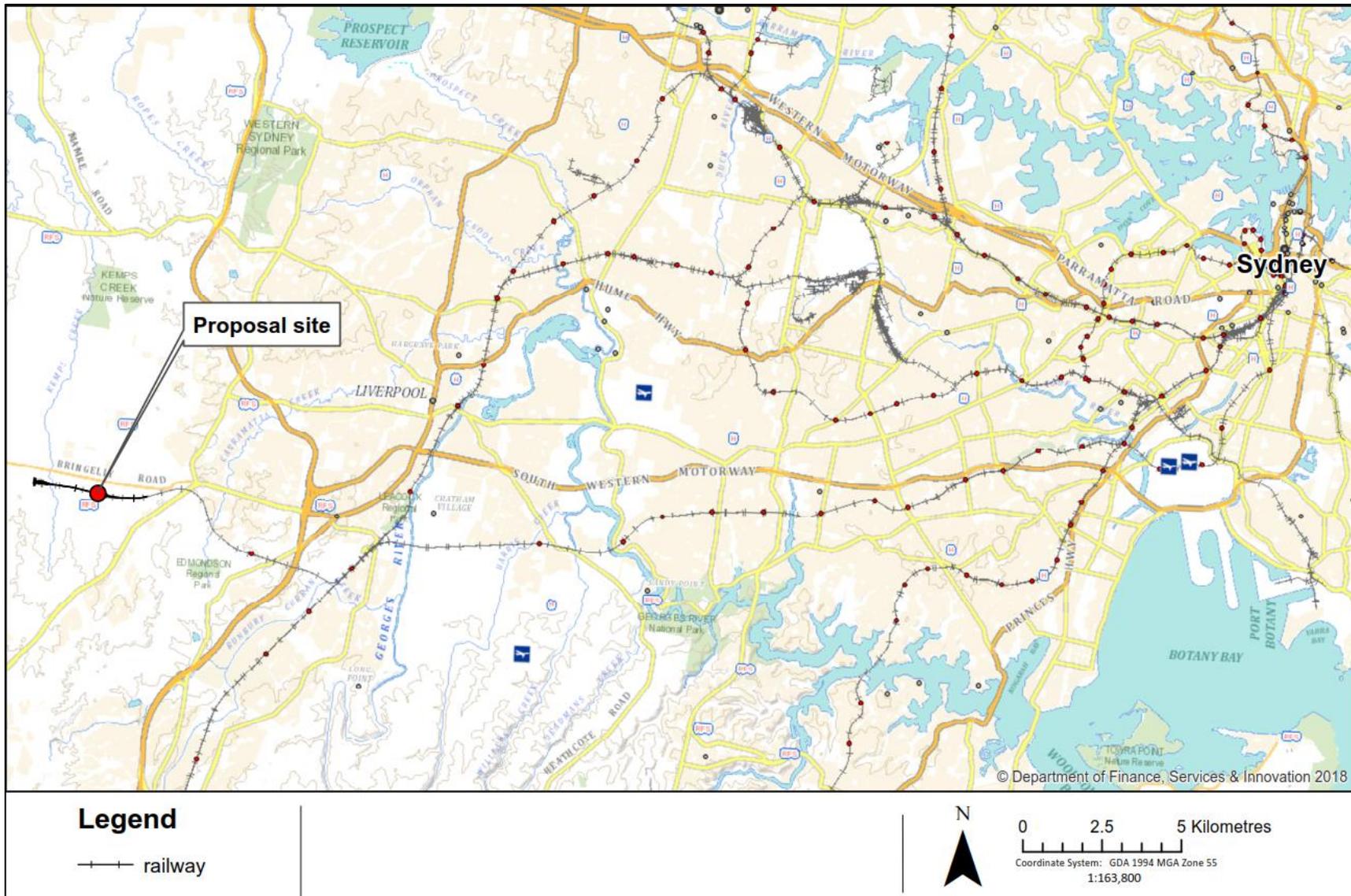


Figure 3 Regional context (map data sourced from Department of Finance and Services 2016)

1.3.1 Planned growth area

The South West Growth Area was established under the *State Environmental Planning Policy (Sydney Region Growth Centres) 2006* to facilitate release of land for residential, employment and other urban development. Areas of Austral and Leppington North have subsequently been rezoned by the NSW Government as part of the South West Priority Growth Area.

It is anticipated that once Austral and Leppington North are developed, the area would accommodate approximately 17,350 homes (Liverpool City Council, 2020). The Proposal is located within the Leppington North, which is forecast to increase by 25,000 persons between 2016 and 2036 (idcommunity, 2017). A town centre is planned around Leppington Station as identified in the Austral and Leppington Precinct Plan prepared by the former Department of Planning and Infrastructure in 2012, with a large proportion of the area around the station zoned as B4-Mixed use. According to the Indicative Layout Plan for the precinct (Department of Planning and Infrastructure, 2012), the Proposal is located on land planned for commuter car parking as shown in Figure 4.

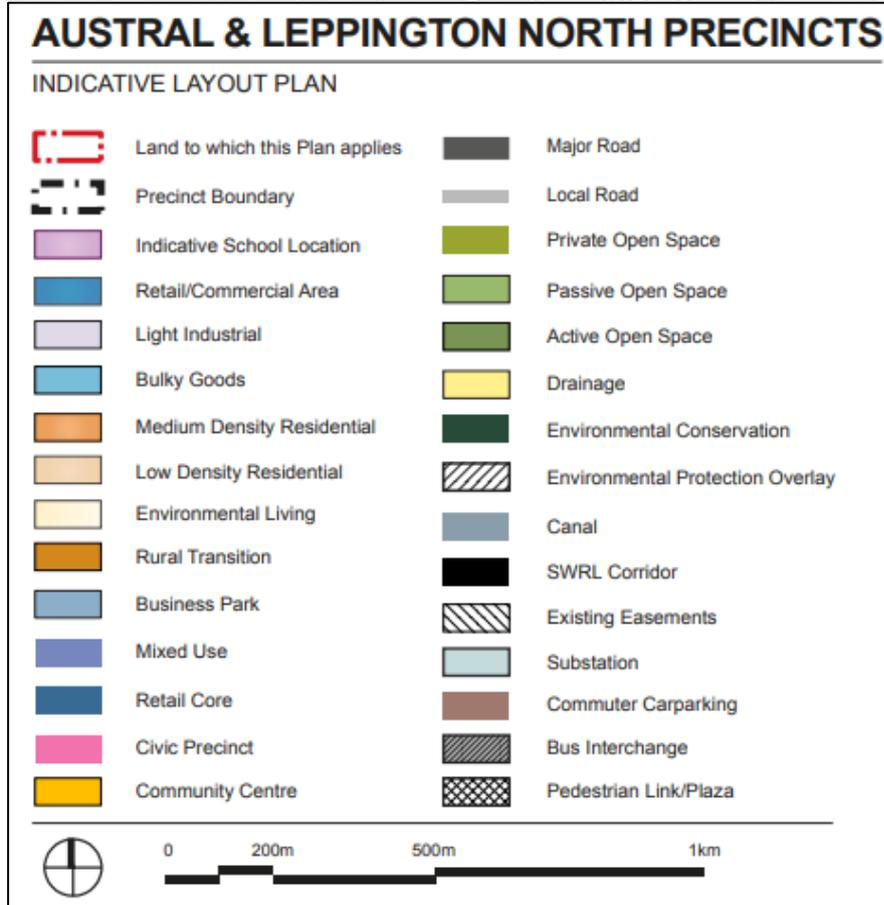


Figure 4 Indicative Layout Plan for Austral and Leppington North Precinct (Department of Planning and Infrastructure, 2012) - Proposal shown in yellow

1.3.2 Existing site and infrastructure

Leppington Station was opened in 2015 as part of the South West Rail Link which provided rail services to the growing south western suburbs of Sydney. At-grade commuter car parks to service Leppington Station are located directly north and south of the station.

The areas to the north and south of the railway corridor are zoned B4 – mixed use and are currently used for low density residential and agricultural purposes. A child care centre is located approximately 230 metres north of the Proposal site, with Leppington Public School approximately 560 metres to the south east on Rickard Road.

The Proposal is located predominantly on a greenfield land parcel west of the existing at-grade commuter car park. Part of the Proposal site would extend over the existing at-grade car park. The site is bounded by a railway corridor to the south, a riparian corridor to the west, greenfield sites to the north and the commuter car park to the east. Access to the Proposal would be from Rickard Road through the existing car park located north of the Leppington Station.

Figure 5 shows the local context of the Proposal site.



Figure 5 Site locality map (base map: Nearmap 2020)

The greenfield portion of the Proposal site is mostly vegetated with a mix of native and non-native trees and grasses. The area was disturbed by the recent construction of a rail corridor and station along the southern boundary and the existing at-grade car park to the north of Leppington Station. The riparian corridor to the west of the Proposal follows Scalabrini Creek, which is approximately 40 metres from the Proposal site. Photographs of the greenfield portion of the site are provided in Figure 6 to Figure 7.

The at-grade car park portion of the Proposal site consists of car parking spaces and water sensitive urban design infrastructure (often referred to as “rain gardens”) between and surrounding the car parking rows. A photo of the existing car park is shown in Figure 8.



Figure 6 A view of greenfield part of the site from the north east corner of the site



Figure 7 A view from the middle of the greenfield area looking south towards the railway corridor



Figure 8 View of the at-grade car park from north east corner of the greenfield area

1.4 Purpose of this Review of Environmental Factors

This REF has been prepared by pitt&sherry on behalf of Transport for NSW to assess the potential impacts of the Leppington Commuter Car Park. For the purposes of these works, Transport for NSW is the proponent and the determining authority under Division 5.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

The purpose of this REF is to describe the Proposal, to assess the likely impacts of the Proposal having regard to the provisions of Section 5.5 of the EP&A Act, and to identify mitigation measures to reduce the likely impacts of the Proposal. This REF has been prepared in accordance with clause 228 of the *Environment Planning and Assessment Regulation 2000* (the EP&A Regulation).

This assessment has also considered the provisions of other relevant environmental legislation, including the *Biodiversity Conservation Act 2016* (BC Act), *Fisheries Management Act 1994* (FM Act) and the *Roads Act 1993* (Roads Act).

Having regard to the provisions of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), this REF considers the potential for the Proposal to have a significant impact on matters of National Environmental Significance (NES) or Commonwealth land, and the need to make a referral to the Commonwealth Department of the Environment and Energy for any necessary approvals under the EPBC Act. Refer to Chapter 4 for more information on statutory considerations.

2 Need and options considered

Chapter 2 discusses the need and objectives of the Proposal, having regard to the objectives of the Commuter Car Park Program (refer to Section 1.1.1).

2.1 Strategic justification

Improving transport customer experience is the focus of the NSW Government's transport initiatives. Transport interchanges and train stations are the important gateways to the transport system and as such play a critical role in shaping the customer's experience and perception of public transport.

The Leppington Commuter Car Park, the subject of this REF, forms part of the Commuter Car Park Program. This program is designed to improve customer access to the public transport network, encourage a mode shift away from private vehicles, and mitigate congestion on our road network.

In September 2015, the NSW Government announced a series of State Priorities as part of *NSW: Making It Happen* (NSW Government, 2015). The State Priorities are intended to guide the ongoing actions of the NSW Government across the State, and guide resource allocation and investment in conjunction with the NSW Budget. *NSW: Making it Happen* focuses on 12 key 'priorities' to achieve the NSW Government's commitments. These priorities range across a number of issues including infrastructure, the environment, education, health, wellbeing and safety in addition to Government services.

One of the 12 key priorities relates to investment in building infrastructure. The ongoing development and investment in transport infrastructure is identified as part of the wider building infrastructure priority. The Proposal assists in meeting this priority by improving accessibility and connectivity to public transport and encouraging greater use of public transport.

The NSW Government has developed *Future Transport Strategy 2056* (Transport for NSW 2018a). This plan provides a comprehensive strategy for all modes of transport across NSW over the next 40 years, while also delivering on current commitments.

The Proposal is located in the South West Growth Centre, and a town centre is planned to be developed around Leppington Station. Data forecasts indicate that there would be significant growth in population and employment in the area within the station catchment. The Proposal therefore assists in providing improvements at Leppington Station to accommodate the forecast patronage growth and changing travel patterns.

Public transport is viewed as critical to urban productivity, expanding employment opportunities by connecting people to jobs, reducing congestion, and supporting delivery of urban renewal.

Table 2 provides an overview of NSW Government policies and strategies relevant to the Proposal.

Table 2 Key NSW Government policies and strategies applicable to the Proposal

Policy / Strategy	Overview	How the Proposal aligns
<p><i>Future Transport Strategy 2056</i> (Transport for NSW, 2018a)</p>	<p><i>Future Transport 2056</i> is an update of NSW's Long Term Transport Master Plan. It is a suite of strategies and plans for transport to provide an integrated vision for the state.</p> <p><i>Future Transport 2056</i> identifies 12 customer outcomes to guide transport investment in Greater Sydney. These outcomes include transport providing convenient access, supporting attractive places and providing 30-minute access for customers to their nearest centre by public transport.</p>	<p>The Proposal would deliver on the customer focus and accessible services outcomes. The Proposal would support accessible services (outcome 5) by improving connectivity and accessibility to public transport and creating travel options for more customers. Additionally, by encouraging public transport use the Proposal would support the sustainability objective (outcome 6) by improving affordability for customers and reducing the number of cars on the roads, resulting in less emissions.</p>
<p><i>A Metropolis of Three Cities - Greater Sydney Region Plan</i> (Greater Sydney Commission, 2018)</p>	<p>The <i>Greater Sydney Region Plan</i> is the NSW Government's 40-year land use plan for Sydney. It establishes a vision for a metropolis of three cities – the Eastern Harbour City, Central River City and Western Parkland City.</p> <p>The plan is designed to complement the <i>Future Transport 2056</i> plan and State Infrastructure Strategy by aligning land use, transport and infrastructure planning. It aims to reshape Greater Sydney as three unique but connected cities.</p> <p>The Plan provides information on the strategies to meet the needs of a growing and changing population.</p>	<p>The Proposal particularly supports Direction 6 of the Three Cities Plan, which is to create 'a well-connected city' by ensuring services and infrastructure meet communities' changing needs. The Proposal would be consistent with this direction by providing improved connectivity to the Leppington Railway station and to the planned town centre.</p>
<p><i>Western City District Plan</i> (Greater Sydney Commission, 2018)</p>	<p>The <i>Western City District Plan</i> applies to the Blue Mountains, Camden, Campbelltown, Fairfield, Hawkesbury, Liverpool, Penrith and Wollondilly local government areas. The plan describes the planning priorities and actions for to improve liveability and achieve a productive and sustainable future for the District.</p> <p>The plan is developed to support the objectives of the Greater Sydney Plan including the Western Parkland City.</p>	<p>Leppington is identified as a Planned Precinct, which requires infrastructure to support future development. Of the 22 planning priorities, the Proposal particularly supports the following:</p> <ul style="list-style-type: none"> • Planning Priority W1: Planning for a city supported by infrastructure, • Planning Priority W7: Establishing the land use and transport structure to deliver a liveable, productive and sustainable Western Parkland City

Policy / Strategy	Overview	How the Proposal aligns
<p><i>Building Momentum – State Infrastructure Strategy 2018-2038</i> (Infrastructure NSW, 2018)</p>	<p>The <i>State Infrastructure Strategy 2018-2038</i> makes recommendations for each of NSW's key infrastructure sectors including transport.</p> <p>The strategy sets out the Government's priorities for the next 20 years, and combined with the <i>Future Transport Strategy 2056</i>, the <i>Greater Sydney Region Plan</i> and the <i>Regional Development Framework</i>, brings together infrastructure investment and land-use planning for our cities and regions.</p>	<p>The Proposal supports investment in rail infrastructure and aligns with the need to continue to provide urban public transport to support Sydney's increasing population.</p> <p>The Proposal is also consistent with overall aims and objectives of the <i>Future Transport Strategy 2056</i> to improve transport infrastructure across NSW.</p>
<p><i>Premier's Priorities and State Priorities</i> (NSW Government, 2020)</p>	<p>The NSW Government has identified 12 Premier's Priorities and 18 State Priorities that are focused on growing the NSW economy, delivering infrastructure, protecting the vulnerable and improving health, education and public services across the State.</p>	<p>The Proposal would assist in meeting the key priority to develop well connected communities with quality local environments by invest in transport infrastructure and improving connectivity to public transport and encouraging greater use of public transport.</p>
<p><i>Austral and Leppington North Precinct Plan</i> (DPI 2012)</p>	<p>The Precinct Plan described new planning controls and infrastructure works required to enable urban development in Austral and North Leppington as part of the South West Growth Centre. The Indicative layout plan shown in Figure 4 identifies the planned layout for the area and shows a civic centre is planned to occupy the area around the station.</p>	<p>The Proposal is located on land identified to be commuter car parking in the indicative layout plan.</p>

2.2 Future Transport Context – Sydney's South West

Commuter parking requirements at Leppington Station may look very different in future compared to today. Planning for future parking demand must take into consideration the broader strategic vision for transport in Greater Sydney, as it is likely to considerably change travel patterns and behaviours in Leppington and the surrounding South West region.

Future Transport 2056 (Transport for NSW, 2018a) outlines the NSW Government's vision for a connected roads and public transport network that has higher capacity, and gives people the freedom to choose how and when they get around, no matter where they live and work. It acknowledges that over the next 40 years, Greater Sydney is forecast to grow from a city of 5 million to 8 million people. At the same time, technology advancements will reshape how people and goods move around our city.

The *Future Transport Greater Sydney Services and Infrastructure Plan* as part of the *Future Transport 2056* (Transport for NSW, 2018a) outlines the priorities Transport for NSW need to focus on to address the opportunities and challenges ahead and fundamentally reshape the

city and the way people and goods move. Instead of focusing on one CBD, the Greater Sydney Commission has established a vision for Sydney as a metropolis of three cities (the Western Parkland City, the Central River City and the Eastern Harbour City) where people have access to jobs and services within 30 minutes by public transport.

Transport for NSW's focus is enabling people and goods to move safely, efficiently and reliably around Greater Sydney, including having access to their nearest centre within 30 minutes by public transport, 7 days a week. Achieving this will require more efficient modes of transport – public transport, shared transport and walking and cycling – to play a greater role.

The Western Parkland City at Badgerys Creek will be one of Australia's most connected cities. Innovative public transport, aviation and digital infrastructure will bring residents closer to jobs, centres, education and the world. Some 200,000 new jobs will be created across a wide range of industries over the next 20 years.

The Western Sydney Airport and Aerotropolis will attract infrastructure, investment and knowledge-intensive jobs, and the benefits will flow into health and education, retail, hospitality, and industrial activities that will power the City. To support this, the NSW Government will invest in new transport links, better use existing capacity, prioritise road space for more efficient vehicles and ensure the transport network balances the efficient movement of people and goods and sustains the liveability and sustainability of centres it passes through.

Work is underway to identify and protect corridors of land that can be used to deliver transport infrastructure in the future. The Outer Sydney Orbital is a potential future motorway and freight rail line which would provide a major transport link between the North West and South West Growth Areas, connecting with the Western Sydney Airport and future employment hub. The South West Rail Link Extension and the North South Rail Line (Sydney Metro Greater West) have been identified as future passenger rail lines to provide a major transport link between the North West, Western Sydney Airport, South West and Greater Macarthur Growth Areas. The South West Rail Link Extension is planned to extend from Leppington Station to North Bringelly for connections with the North South Rail Line corridor, which would then connect to the Main West Line near St Marys and the Main South Line near Macarthur.

The Australian and NSW Governments have committed to deliver the first stage of the North South Rail Link to the Western Sydney Airport and the South West Rail Link extension from Leppington as a high priority.

Future Transport 2056 (Transport for NSW, 2018a) also recognises that rapid technology innovation is changing traditional modes of travel. The uptake of services such as ridesharing in recent years indicates that people are early adopters of technology-enabled services. The use of connected and automated vehicles is also predicted to increase considerably over time, with the likelihood of more mobility services delivered to reflect customers' personal preferences. These improvements will support the growth of Sydney by enabling more convenient access to jobs and services across the region.

As more integrated and technology-enabled transport improvements come to fruition, there is likely to be a reduced reliance on private vehicles, and transport demand being more evenly distributed across geographic areas. Customers who currently drive long distances from neighbouring suburbs to catch the train would have greater public transport choices closer to where they live, thus reducing parking demand.

In the nearer term, several initiatives to improve bus services in the south west are planned from mid-2020. These include:

- additional services on routes 859 and 869 serving Edmondson Park
- additional services on route 841 serving Leppington
- additional services on route 896 serving Campbelltown

- new route linking Leppington and Carnes Hill via Austral.

An On Demand transport trial is also operating in Edmondson Park which enables customers to conveniently book a bus to the station from a location near their home using an app.

Transport for NSW will continue to monitor demand in the area and consider opportunities for further transport initiatives, such as active transport links, bus and on-demand services to provide customers with more choice in how they travel to Leppington Station.

2.3 Objectives of the Proposal

The objectives of the Proposal have been prepared with consideration of the overarching objectives of the Commuter Car Park Program (refer to Section 1.1.1)

The specific objectives of the Leppington Commuter Car Park are to provide:

- additional commuter parking in close proximity to Leppington Station to meet increasing demand in the region
- improved accessibility to transport linkages for employment and recreation
- improved customer experience (weather protection, better interchange facilities and visual appearance)
- improved integration with surrounding precinct
- improved customer safety.

2.4 Options considered

Investigations were undertaken to identify potential locations for additional commuter car parking near Leppington Station. Transport for NSW completed a preliminary scoping study in November 2019 which considered the feasibility of three locations for additional commuter parking. Table 3 outlines the options considered for the Proposal.

Table 3 Options considered for the Proposal

Option	Description	Comments
Option 1	<ul style="list-style-type: none"> • multi-storey car park • vacant greenfield site west of the existing at-grade car park to the north of Leppington Station • access from Rickard Road through existing car park 	<ul style="list-style-type: none"> • the area is planned for commuter car parking (DPI, 2012) • construction on a greenfield site would minimise displacement of existing car parking spaces during construction • 300 to 450 metre walk from station entrance • removal of vegetation required • site located within flood prone land.
Option 2	<ul style="list-style-type: none"> • multi-storey car park • existing at-grade commuter car park north of Leppington Station • access from Rickard Road through existing car park 	<ul style="list-style-type: none"> • close proximity to the station entrance • central location at the future town centre • construction would displace existing commuter car parks • removal of landscaped vegetation required.

2.4.1 The 'do-nothing' option

Under a 'do-nothing' option, existing access to the car park would remain the same and there would be no changes to the way the car park currently operates.

The current commuter car parking available around Leppington Station is not enough to meet the current and future demands of commuters using the station. Commuters are currently using on-street parking and in some cases parking illegally.

The 'do nothing' option was not considered a feasible alternative as it is inconsistent with NSW Government objectives, would not help encourage the use of public transport and would not meet the needs of the surrounding community.

2.5 Justification for the preferred option

Option 1, the greenfield site, was identified as the preferred site because it:

- minimises displacement of existing commuter car parking during construction
- is within easy walking distance of Leppington Station
- is located on the edge of the future town centre
- complements the future road network by providing additional access points via Bringelly Road and Dickson Road
- was identified for commuter car parking under the Austral North Leppington Precinct Plan.

Option 2 was not preferred as, whilst being located closer to the station, there is potential for increased traffic congestion within the town centre and the potential to preclude town centre development due to the central location of this site at the town centre core.

The preferred location is in close proximity to the station, providing convenient access to public transport as well as increased commuter connectivity to the town centre for access to the future shopping, dining and entertainment facilities.

Through the development of Option 1, the Proposal footprint was revised to extend slightly into the western end of the existing at-grade commuter car park. This was undertaken to ensure the integration of the two car parks with each other and to align with masterplan and future road arrangements.

The Proposal would provide opportunities to integrate with and enhance the town centre as it develops, as it would be designed in a way that does not preclude potential future uses (e.g. community or retail spaces on the ground floor, subject to separate future planning approvals).

Urban design principles would be used to ensure the Proposal is not only functional, but sustainable and aligned to place-based principles and outcomes to complement the character of the area including aesthetics and streetscapes. Visual elements, such as quality façade treatments and landscaping, would be key factors considered as part of the detailed design process.

3 Proposal description

Chapter 3 describes the Proposal and summarises key design parameters and construction methodology. The description of the Proposal is based on the concept design and is subject to detailed design.

3.1 Scope of works

The Proposal involves the provision of additional commuter car parking for Leppington Station as part of the Commuter Car Park Program. The Proposal involves the construction and operation of a multi-storey car park adjacent to and partially overlapping the existing at-grade commuter car park which is accessed from Rickard Road.

The Proposal would include the following key elements:

- provision of a ground level plus four levels (including rooftop) commuter car park including:
 - approximately 1,000 commuter car parking spaces adjacent Leppington Station
 - internal circulation ramps connecting the levels
 - two lifts and six sets of stairs
 - provision for electric vehicle charging stations
 - Opal Park&Ride infrastructure
 - separate vehicle exit and entry points on the eastern face of the car park
- approximately 20 additional accessible car parking spaces in the station precinct, near the entrance to the station
- roadworks to facilitate access and egress for pedestrians and vehicles via the existing at-grade commuter car park
- installation of renewable energy options such as solar panels and battery storage
- installation of fencing where necessary
- wayfinding signage for traffic and pedestrians
- ancillary works including services diversion and/or relocation, drainage works, landscaping, installation of lighting, installation of handrails and balustrades and new infrastructure including CCTV cameras

Figure 9 shows the footprint of the proposed car park. Figure 10 shows the location and key elements of the concept design.

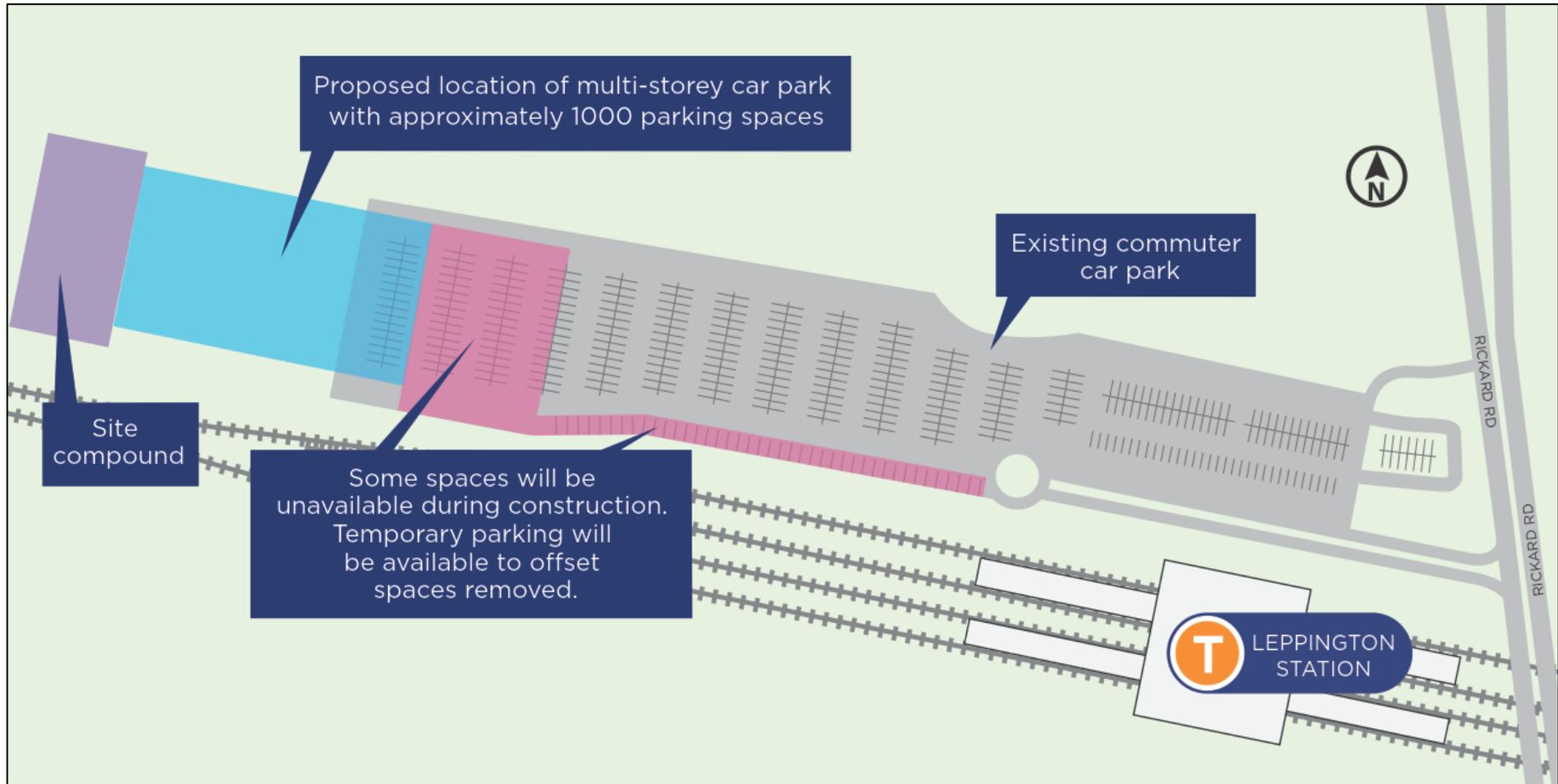


Figure 9 General layout of the Proposal (Indicative only and subject to detailed design).

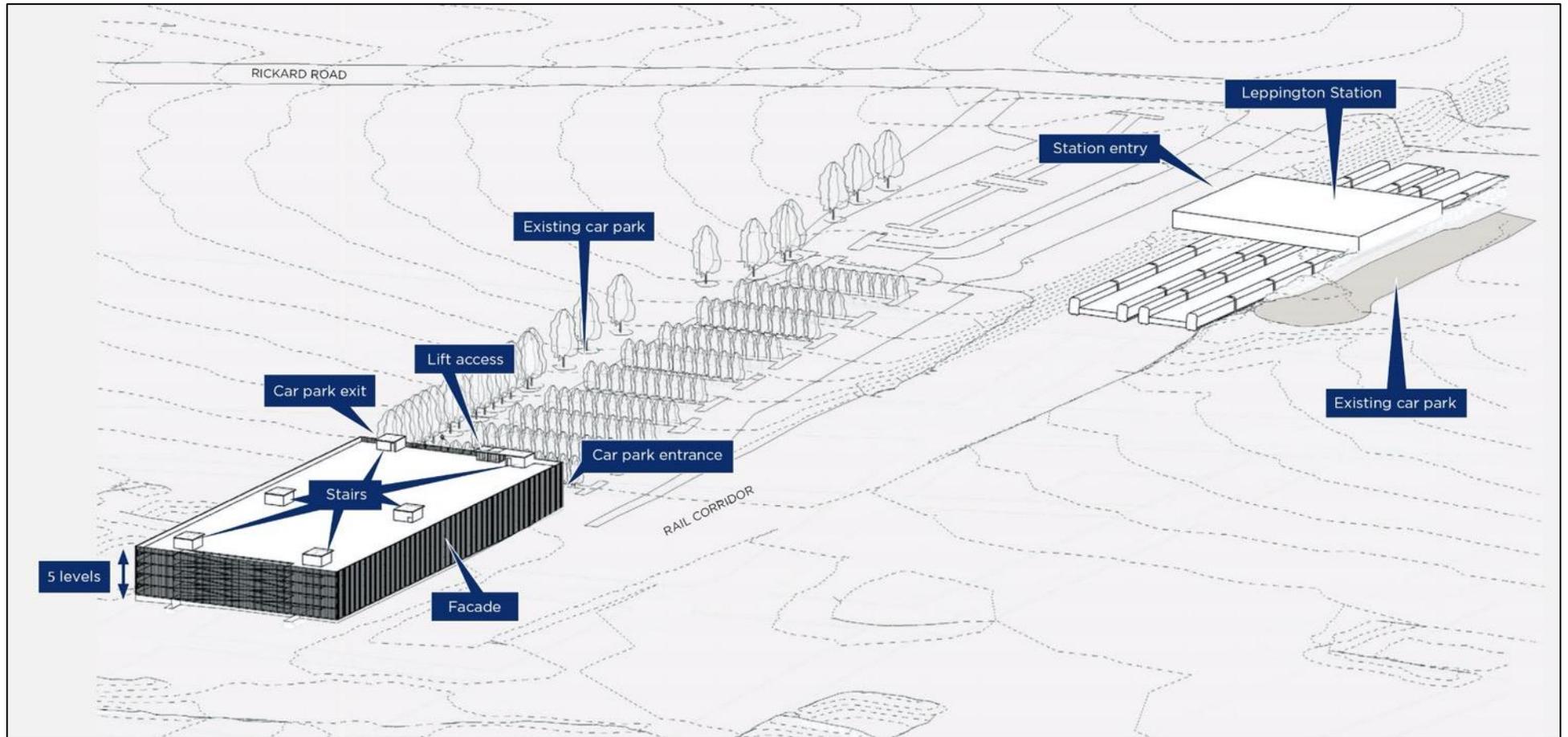


Figure 10 Overview of proposed commuter car park looking from the south west (subject to detailed design)

3.1.1 Materials and finishes

The Proposal involves a ground floor concrete slab with four levels above (including rooftop) for the multi-storey car park.

Selection of materials and finishes would be confirmed as part of the detailed design process, and would include consideration of the following:

- sustainability including low carbon and low urban heat options
- durability, low maintenance and cost effectiveness (including the use of anti-graffiti paint or coatings)
- colour options are most likely to use a natural design scheme – colours and tones to blend the car park with the natural elements of the neighbourhood, and to create a less obtrusive façade
- identify appropriate screening treatments which could be applied to maintain optimum ventilation to comply with the requirements of an open-deck car park.
- availability and constructability criteria to ensure resources are readily available, and for the structure to be constructed with ease and proficiency.

Consideration would also been given to life cycle impacts which are calculated by assessing the environmental impacts of materials from the point of extraction, through to transportation, use, operation and end of life.

3.2 Design development

3.2.1 Engineering and environmental constraints

There are a number of constraints which have influenced the design development of the Proposal.

Existing structures: The placement and integrity of the existing structures and utilities required to be considered during the development of design. These structures include the Leppington Station, existing at-grade car park and the railway corridor.

Sydney Trains' requirements: Modifications for existing structures and new structures in close proximity to the railway line must be designed and constructed with consideration of train impact loads, structural clearances to the track, and safe working provisions. Existing access points to the rail corridor adjacent to the Proposal site would be maintained.

Utilities: A Dial Before You Dig (DBYD) search has identified a number of services and utilities within and in the nearby vicinity of the proposed works as described in Section 3.3.9.

Other considerations:

- access for the construction of the Proposal would be from Rickard Road via the existing at-grade car park to the north of Leppington Station
- adjacent riparian corridor along Scalabrini Creek located west of the Proposal site
- the Proposal site is partially located within a flood prone area (refer to Section 6.3)
- sustainability including solar, battery storage, water sensitive urban design and material selection (subject to detailed design).

3.2.2 Design standards

The Proposal would be designed having regard to the following design standards:

- *Disability Standards for Accessible Public Transport 2002* (issued under the Commonwealth *Disability Discrimination Act 1992*)
- National Construction Code
- relevant Australian Standards
- Asset Standards Authority standards
- Infrastructure Sustainability Council of Australia (ISCA) Infrastructure Sustainability Rating Scheme (v1.2)
- Transport for NSW *Urban Design Guidelines*
- *Guidelines for the Development of Public Transport Interchange Facilities* (Ministry of Transport, 2008).
- Crime Prevention Through Environmental Design (CPTED) principles
- other Transport for NSW policies and guidelines
- relevant council standards.

3.2.3 Sustainability in design

Transport for NSW is committed to minimising the impact on the natural environment and supports ISCA and the Infrastructure Sustainability (IS) rating tool. The IS rating tool was developed and is administered by ISCA. It is an independently verified and nationally recognised rating system for evaluating sustainability across design, construction and operation of infrastructure.

The Proposal is targeting a rating of 'Excellent' using the ISCA IS Rating Tool v1.2. The rating scheme provides an independent and consistent methodology for the application and evaluation of sustainability outcomes in infrastructure projects. The sustainability outcomes address environmental, social, economic and governance aspects.

The IS Rating Scheme is grouped into six key themes:

- management and governance
- using resources
- emissions, pollution and waste
- ecology
- people and place
- innovation.

These sustainability themes are divided into 15 performance categories, against which the Proposal would be independently assessed and assigned a rating level. The Proposal would need to achieve at between 50 and 75 points out of a possible 100 to be certified as 'Excellent'.

3.3 Construction activities

3.3.1 Work methodology

Subject to approval, construction is expected to commence in mid-2020 and take around 13 months to complete. The construction methodology would be further developed during the detailed design of the Proposal by the nominated Construction Contractor in consultation with Transport for NSW.

The proposed construction activities for the Proposal are identified in Table 4. This staging is indicative and is based on the current concept design and may change once the detailed design methodology is finalised. The construction staging is dependent on the contractor's chosen methodology, program and sequencing of work.

Table 4 Indicative construction staging for key activities

Stage	Activities
Site establishment and enabling works	<ul style="list-style-type: none">• establishment of footpath / pedestrian management and traffic controls• establishment of site compound (erect fencing, site offices, amenities and plant/material storage areas etc.)• delivery of construction materials and plant• establishment of environmental control measures such as erosion and sediment controls• identification of trees and vegetation approved for removal• removal of trees and vegetation
Relocation of services and preparation of substructure	<ul style="list-style-type: none">• identification of services for protection or relocation• relocation or protection of services
Construct floor slabs, columns and walls	<ul style="list-style-type: none">• excavation at ground levels, with minor cut and fill earthworks• installation of support structures for the columns and stairs• substructure preparation (preparation of service drainage and foundations)• construction of floor slabs, columns, walls and stair and lift wells• installation of building services including electrical, CCTV and mechanical ventilation• construction of footpaths, ramps, kerbs, islands, fences and surface treatments where required• installation of lighting, signage, internal car park road surface and line marking
Construction of external cladding/façade	<ul style="list-style-type: none">• subject to detailed design

Stage	Activities
Construction of road works to connect car park to road network via the existing at-grade car park	<ul style="list-style-type: none"> • excavation of existing road pavement • lay concrete and asphalt over the external sections of road • installation of new signage and fencing where required • installation or reinstatement of footpaths to service the new car park • kerbing and concrete works • pavement finishing including any surfacing and re-surfacing works • landscaping (subject to detailed design)
Testing and commissioning	<ul style="list-style-type: none"> • various activities to test and commission power supply, lifts and lighting
Decommissioning of temporary facilities and site demobilisation	<ul style="list-style-type: none"> • removal of temporary site facilities • removal of footpath / pedestrian management and traffic controls • removal of environmental control measures • site clean-up and tidying works.

3.3.2 Plant and equipment

An indicative list of plant and equipment that would be required is provided below. Additional equipment that would likely to be used would be identified during detailed design by the Construction Contractor.

- trucks
- generator
- bobcat
- hand tools
- mulcher
- chainsaw
- excavator (with auger)
- crane (20 tonne)
- concrete helicopter (smoothing out concrete)
- rattle gun
- lighting towers
- vibratory roller
- demolition saw
- jack hammer
- grinder
- continuous flight auger rig
- concrete truck and agitator / or Piling rig
- concrete pump
- mobile crane
- small mobile crane
- hand held soil compactor or Wacker rammer
- nail gun
- scissor lift
- paving machine
- coring machine
- grinder
- stump grinder
- elevated working platform

3.3.3 Working hours

Most of the work required for the Proposal would be undertaken during standard (NSW) Environment Protection Authority (EPA) construction hours, which are as follows:

- 7.00 am to 6.00 pm Monday to Friday
- 8.00 am to 1.00 pm Saturdays.

Work outside of standard hours may be required occasionally at night and on weekends if required.

Approval from Transport for NSW would be required for any out of hours work and the affected community would be notified as outlined in the Transport for NSW *Construction Noise and Vibration Strategy* (Transport for NSW, 2018b) (refer to Section 6.3 for further details).

3.3.4 Extended Working Hours during COVID-19

The Minister for Planning and Public Spaces has recently made a number of Orders under Section 10.17 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) in response to the COVID-19 pandemic. This includes the *Environmental Planning and Assessment (COVID-19 Development – Infrastructure Construction Work Days) Order 2020* (the 'Order'), which applies to construction activities for projects which have been subject to a completed assessment under Division 5.1, or approval under Division 5.2 of the EP&A Act.

The Order extends the standard construction hours to allow infrastructure construction work on Saturday, Sunday and Public holidays (7am to 6pm) for projects approved prior to the 9th April 2020 (when the Order commenced).

At the time of finalising this REF for the Proposal, the Order had not been issued. As such, Transport for NSW will consider its position with regard to extending standard construction hours consistent with the intention of the Order through the Determination and/or post approvals process. In the event that Transport for NSW would seek to extend the standard construction hours, the potential environmental impacts of doing so would be further assessed as part of the Determination and/or post approvals process.

3.3.5 Earthworks

Excavations and earthworks would generally be required for the following:

- piling and excavation for car park foundations and support structures
- tie-in works in relation to existing roads and pathways
- other minor civil works, including drainage/stormwater works, and trenching activities for underground service adjustments and relocations.

Excavated material volume is expected to be small and would be reused on site where possible or disposed of in accordance with relevant legislative requirements.

3.3.6 Source and quantity of materials

The source and quantity of materials would be determined during the detailed design phase of the Proposal and would consider the requirements of the ISCA Infrastructure Sustainability Rating Scheme (v1.2). Materials would be sourced from local suppliers where practicable. Reuse of existing and recycled materials would be undertaken where practicable.

3.3.7 Traffic access and vehicle movements

Traffic and transport impacts associated with the Proposal are assessed in Section 6.1 of this REF. The potential traffic and access impacts expected during the construction of the Proposal include:

- temporary parking, which will be subject to a separate planning pathway and approval, would be provided to offset the existing parking spaces displaced during construction
- temporary changes in pedestrian, cyclist and vehicle access and movements around Leppington Station

A detailed construction methodology and associated management plans (such as a Construction Environmental Management Plan (CEMP)) would be developed during the next design phase of the Proposal to manage potential traffic and access impacts.

3.3.8 Temporary site facilities

A temporary construction compound would be required to accommodate a site office, amenities, laydown and storage area for materials. The proposed ancillary facilities is to be located to the east and west of the proposed car park as shown in Figure 11.



Figure 11 Proposed locations of site compound and associated construction areas

3.3.9 Service relocation and adjustments

A Dial Before You Dig (DBYD) search has identified the following utilities to be within the vicinity of the proposed works:

- High voltage power lines (Sydney Trains)
- Sewerage (Sydney Water)

The Proposal would be designed to avoid the relocation of service and utilities where practical, however service location modifications and relocations may be required for the proposed

works. Where utilities require relocation or modification, the service provider would be consulted.

3.4 Property acquisition

Property acquisition is not proposed as part of the works. The Proposal site is owned by the Office of Strategic Lands which is part of the Department of Planning, Industry and Environment (DPIE). Transport for NSW would arrange for an agreement for land transfer between government authorities to utilise this land.

3.5 Operation and maintenance

The proposed operation and maintenance of the proposed commuter car park and associated works is subject to further discussions with Sydney Trains, Transport for NSW and Camden Council. The car park structure constructed under this Proposal would be maintained by Sydney Trains.

4 Statutory considerations

Chapter 4 provides a summary of the statutory considerations relating to the Proposal including a consideration of NSW Government policies/strategies, NSW legislation (particularly the EP&A Act), environmental planning instruments, and Commonwealth legislation.

4.1 Commonwealth legislation

4.1.1 Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places - defined in the EPBC Act as 'matters of National Environmental Significance (NES)'. The EPBC Act requires the assessment of whether the Proposal is likely to significantly impact on matters of NES or Commonwealth land. These matters are considered in full in Appendix A.

To facilitate development of the growth areas to support Sydney's growing population, a strategic assessment of the impacts of developing the identified precincts including the South West Growth area was undertaken under the EPBC Act in 2010. During the strategic assessment, large areas of land were identified for development, offsetting and biodiversity certification (in accordance with the biodiversity certification process under NSW legislation, refer Section 4.2.3 below). The Sydney Growth Centres Strategic Assessment Program Report (2010 DECCW & DoP) was referred to the federal Department of Sustainability, Environment, Water, Population and Communities as a strategic program under the EPBC Act. On 20th December 2012, the Federal Minister for the Department endorsed the program and report.

The endorsement of the program constitutes an approval under section 146B of EPBC Act. Actions approved in accordance with the strategic assessment do not require separate referral, assessment or approval under the EPBC Act. As the Proposal is located partially within Biodiversity Certified land identified in the Strategic Assessment, the vegetation removal within those areas does not require referral, assessment or approval under the EPBC Act.

The small portion of land that is not mapped as biodiversity certified with the Proposal site was assessed by ecologists and it was determined there would be no significant impact to flora, fauna and ecological communities listed under the EPBC Act (see Section 6.5).

Therefore the Proposal would be unlikely to have an impact on any matters of NES or Commonwealth land and a referral to the Commonwealth Minister for the Environment is not required.

4.1.2 Other Commonwealth legislation

Further commonwealth legislation is considered in Table 5.

Table 5 Other Commonwealth legislation applicable to the Proposal

Applicable legislation	Considerations
<i>Aboriginal and Torres Strait Islander Heritage Protection Act 1984</i>	There is an obligation on a person who discovers anything which he or she has reasonable grounds to suspect are Aboriginal remains to report that discovery to the Minister, giving particulars of the remains and their location.
<i>Disability Discrimination Act 1992 (DDA Act)</i>	This Act aims to eliminate as far as possible, discrimination against persons on the ground of disability in areas including access to premises and the provision of facilities, services and land. The Proposal would be designed having regard to the requirements of this Act including the inclusion of approximately 20 additional accessible car parking spaces in the station precinct.

4.2 NSW legislation and regulations

4.2.1 Transport Administration Act 1988

The *Transport Administration Act 1988* establishes Transport for NSW as a public authority who is to exercise its functions in a matter that promotes certain common objectives, including to promote the delivery of transport services in an environmentally sustainable manner.

This REF has been prepared having regard to, among other things, the specific objectives of Transport for NSW under the *Transport Administration Act 1988*:

- a) to plan for a transport system that meets the needs and expectations of the public
- b) to promote economic development and investment
- c) to provide integration at the decision-making level across all public transport modes
- d) to promote greater efficiency in the delivery of transport infrastructure projects
- e) to promote the safe and reliable delivery of public transport and freight services.

4.2.2 Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act 1979* (EP&A Act) establishes the system of environmental planning and assessment in NSW. This Proposal is subject to the environmental impact assessment and planning approval requirements of Division 5.1 of the EP&A Act. Division 5.1 specifies the environmental impact assessment requirements for activities undertaken by public authorities, such as Transport for NSW, which do not require development consent under Part 4 of the Act.

In accordance with Section 5.5 of the EP&A Act, Transport for NSW, as the proponent and determining authority, must examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of the Proposal.

Clause 228 of the *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation) defines the factors which must be considered when determining if an activity assessed under Division 5.1 of the EP&A Act has a significant impact on the environment. Chapter 6 of the REF provides an environmental impact assessment of the Proposal in accordance with clause 228 and Appendix B specifically responds to the factors for consideration under clause 228.

4.2.3 Other NSW legislation and regulations

Table 6 provides a list of other relevant legislation applicable to the Proposal.

Table 6 Other NSW legislation applicable to the Proposal

Applicable legislation	Considerations
<p><i>Aboriginal Land Rights Act 1983</i></p>	<p>Section 36 of the Act permits claims to be made by the NSW Aboriginal Land Councils for certain Crown lands to be transferred to it. Local Aboriginal Land Councils can also make claims for land within their area. The Crown Lands Minister may either grant a claim by transferring the land to the relevant Aboriginal Land Council or refuse to grant a claim.</p> <p>The Local Aboriginal Land Council for the Proposal site is the Tharawal Local Aboriginal Land Council (LALC).</p>
<p><i>Biodiversity Conservation Act 2016 (BC Act)</i></p>	<p>The BC Act establishes a framework for assessing and protecting environmental and public interests.</p> <p>A majority of the Proposal site was biodiversity certified under the Part 7 of Schedule 7 of <i>Threatened Species Conservation Act 1995</i> (TSC Act). The Biodiversity Conservation (Savings and Transitional) Regulation 2017 provides that Part 7 of Schedule 7 of the TSC Act would continue to operate despite the TSC Act being repealed in 2017.</p> <p>Clause 8.4 of the BC Act states that any activities under Part 5 of the EP&A Act carried out on biodiversity certified land are not likely to significantly affect threatened species or ecological communities and the Determining Authority does not need to consider biodiversity impacts on that land.</p> <p>A small portion of the western side of the Proposal site is not biodiversity certified and was assessed in accordance with the BC Act (refer to Section 6.5).</p>
<p><i>Biosecurity Act 2015</i></p>	<p>Clause 22 requires any person who deals with a biosecurity matter has a duty to ensure that in so far as is reasonably practicable, the potential biosecurity risk is prevented, eliminated or minimised. Appropriate management methods would be implemented during construction if declared noxious weeds in the Camden LGA are identified (refer to Section 6.5).</p>
<p><i>Contaminated Land Management Act 1997 (CLM Act)</i></p>	<p>Section 60 of the CLM Act imposes a duty on landowners to notify the EPA, and potentially investigate and remediate land if contamination is above EPA guideline levels.</p> <p>The Proposal site has not been notified under the CLM Act as being contaminated (refer to Section 6.7).</p>
<p><i>Fisheries Management Act 1994</i> (FM Act)</p>	<p>The FM Act requires the Minister of Primary Industries to be consulted about any dredging or reclamation works and a permit may be required under Section 219 of the Act for any works undertaken by a public authority that could result in the temporary or permanent blockage of fish passage.</p> <p>The Proposal would not involve harm to mangroves or other protected marine vegetation, dredging or reclamation, blocking of fish passage and does not involve impact to a Key Fish Habitat waterway. The Proposal would not require a permit issued by the Minister.</p>

Applicable legislation	Considerations
<i>Heritage Act 1977</i> (Heritage Act)	<p>Sections 57 and 60 (approval) where items listed on the State Heritage Register are to be impacted.</p> <p>Sections 139 and 140 (permit) where relics are likely to be exposed.</p> <p>Section 170 where items listed on a government agency Heritage and Conservation Register are to be impacted.</p> <p>The Proposal is not located in the close proximity to any heritage items listed on the local, State or National heritage registers and would be unlikely to impact a heritage item (refer to Section 6.10).</p>
<i>Land Acquisition (Just Terms Compensation) Act 1991</i>	<p>Property acquisition would need to be managed in accordance with the <i>Land Acquisition (Just Terms Compensation) Act 1991</i>.</p>
<i>National Parks and Wildlife Act 1974</i> (NPW Act)	<p>Sections 86, 87 and 90 of the NPW Act require consent from the Environment, Energy and Science (EES) Group for the destruction or damage of Aboriginal objects.</p> <p>Sections 151–153D of the Act specify the uses for which leases, licences or easements can be granted. Section 153 relates to approval for easements which can be granted by the Minister for or for the construction of pipelines, or for the erection of standards, posts, wires and appliances for the conveyance or transmission of electricity, or for any other purpose deemed necessary.</p> <p>The Proposal is unlikely to disturb any Aboriginal objects (refer Section 6.6). However, if unexpected archaeological items or items of Aboriginal heritage significance are discovered during the construction of the Proposal, all works would cease, and appropriate advice sought. An unexpected discoveries protocol would be included in the CEMP.</p>
<i>Protection of the Environment Operations Act 1997</i> (PoEO Act)	<p>The Proposal does not involve a ‘scheduled activity’ under Schedule 1 of the PoEO Act. Accordingly, an Environment Protection Licence (EPL) is not required for the Proposal.</p> <p>However, in accordance with Part 5.7 of the PoEO Act, Transport for NSW would notify the EPA of any pollution incidents that occur onsite. This would be managed in the CEMP to be prepared and implemented by the Construction Contractor.</p>
<i>Roads Act 1993</i> (Roads Act)	<p>Section 138 of the Roads Act requires consent from the relevant road authority for the carrying out of work in, on or over a public road. However, clause 5(1) in Schedule 2 of the Roads Act states that public authorities do not require consent for works on unclassified roads.</p> <p>The Proposal would likely require road works on Rickard Road. Camden Council is the roads authority for Rickard Road and would be consulted during detailed design of the road works (refer to Section 6.1).</p>
<i>Sydney Water Act 1994</i>	<p>The Proposal would not involve discharge of wastewater to the sewer.</p>
<i>Waste Avoidance and Resource Recovery Act 2001</i> (WARR Act)	<p>Transport for NSW would carry out the Proposal having regard to the requirements of the WARR Act. A site-specific Waste Management Plan would be prepared.</p>

Applicable legislation	Considerations
<p><i>Water Management Act 2000</i> (WM Act)</p>	<p>Approval under the WM Act is required for certain types of developments and activities that are carried out in or near a river, lake or estuary. Under section 91E of the WM Act, it is an offence to carry out a controlled activity in, on or under waterfront land unless a controlled activity approval has been issued. However, clause 41 of the Water Management (General) Regulation 2018 provides an exemption for public authorities in relation to all controlled activities on waterfront land.</p> <p>The Proposal would not involve any water use (directly from a natural source such as an aquifer, river), water management works, drainage or flood works, controlled activities or aquifer interference.</p>

4.2.4 Key State Environmental Planning Policies

State Environmental Planning Policy (Infrastructure) 2007 (Infrastructure SEPP)

The Infrastructure SEPP is the key environmental planning instrument which determines the permissibility of a Proposal and under which part of the EP&A Act an activity or development may be assessed.

Clause 79 in Division 15 of the Infrastructure SEPP permits the development of 'rail infrastructure facilities' on any land on behalf of a public authority without consent. The definition of 'rail infrastructure facilities' under Clause 78 includes 'associated public transport facilities for railway stations' which is further defined in Clause 5 to capture 'car parks intended for use by commuters'.

The Proposal is classified as 'rail infrastructure facilities' and therefore does not require development consent. However, the environmental impacts of the Proposal have been assessed in accordance with Part 5, Division 5.1 of the EP&A Act.

Division 1 of the Infrastructure SEPP prescribes the consultation to be undertaken with the Local Council and the relevant public authorities with regards to certain development. Section 5.2 of this REF discusses the consultation undertaken under the requirements of the Infrastructure SEPP.

The Infrastructure SEPP prevails over all other environmental planning instruments except where there is an inconsistency with *State Environmental Planning Policy (State Significant Precincts) 2005* or certain provisions of *State Environmental Planning Policy (Coastal Management) 2018*.

State Environmental Planning Policy No 19—Bushland in Urban Areas

State Environmental Planning Policy No. 19 (Bushland in Urban Areas) requires that public authorities to have regard to the aims of this Policy prior to the disturbance of bushland for a purpose referred to in clause 6(2) of the SEPP. The aims on the SEPP are considered in Table 7.

Table 7 Urban Bushland SEPP considerations

SEPP aims	Comments
<p>The general aim of this Policy is to protect and preserve bushland within the urban areas referred to in Schedule 1 because of:</p> <ul style="list-style-type: none"> (a) its value to the community as part of the natural heritage, (b) its aesthetic value, and (c) its value as a recreational, educational and scientific resource 	<p>Impacts to biodiversity are assessed in Section 6.5 of the REF. A small amount of vegetation would be removed, including one mature tree, from land zoned RE1 Public Recreation. Vegetation removal would be required to facilitate the development of the Proposal and would be subject to offsetting in accordance with the <i>Transport for NSW Vegetation Offset Guide</i> (Transport for NSW 2019) and Biodiversity Certification program.</p>
<p>The specific aims of this policy are:</p>	
<ul style="list-style-type: none"> (a) to protect the remnants of plant communities which were once characteristic of land now within an urban area, 	<p>One mature tree may be removed from land not under biodiversity certification. As described in Section 6.5 it is only a minor impact</p>
<ul style="list-style-type: none"> (b) to retain bushland in parcels of a size and configuration which would enable the existing plant and animal communities to survive in the long term, (c) to protect rare and endangered flora and fauna species, (d) to protect habitats for native flora and fauna, (e) to protect wildlife corridors and vegetation links with other nearby bushland, (f) to protect bushland as a natural stabiliser of the soil surface, 	<p>An ecological assessment (Cumberland Ecology 2020) of the Proposal site was completed and is summarised in Section 6.5. No significant impacts to plant and animal communities, habitats, wildlife corridors and vegetation links were identified.</p>
<ul style="list-style-type: none"> (g) to protect bushland for its scenic values, and to retain the unique visual identity of the landscape, 	<p>A visual impact assessment was undertaken by Envisage for the Proposal (Envisage, 2020) and summarised in 6.2.</p>
<ul style="list-style-type: none"> (h) to protect significant geological features, 	<p>No significant geological features have been identified near the Proposal site.</p>
<ul style="list-style-type: none"> (i) to protect existing landforms, such as natural drainage lines, watercourses and foreshores, 	<p>The Proposal site is located 40 m from a natural waterway. Impacts to the local water would be minimised and are assessed in Section 6.3.</p>
<ul style="list-style-type: none"> (j) to protect archaeological relics, 	<p>A due diligence assessment has identified Aboriginal heritage items are unlikely to occur on the site (see Section 6.6) and no non-aboriginal heritage items are located in close proximity to the Proposal site.</p>
<ul style="list-style-type: none"> (k) to protect the recreational potential of bushland, 	<p>The operation of the Proposal would be confined to land zoned B4 mixed use.</p>

SEPP aims	Comments
(l) to protect the educational potential of bushland, (m) to maintain bushland in locations which are readily accessible to the community, and (n) to promote the management of bushland in a manner which protects and enhances the quality of the bushland and facilitates public enjoyment of the bushland compatible with its conservation.	The land zoned RE1, on and adjacent to the Proposal site, would be maintained during the operation of the Proposal.

State Environmental Planning Policy 55 – Remediation of Land

State Environmental Planning Policy No.55 — Remediation of Land SEPP 55 provides a State-wide approach to the remediation of contaminated land for the purpose of minimising the risk of harm to the health of humans and the environment. While consent for the Proposal is not required, the provisions of SEPP 55 have still been considered in the preparation of this REF.

The potential land contamination and the potential impacts of the Proposal are assessed in Section 6.7 of this REF. It is unlikely that any large-scale remediation (Category 1) work would be required as part of the Proposal.

Sydney Regional Environmental Plan No 20—Hawkesbury-Nepean River (No 2—1997)

The aim of this plan is to protect the environment of the Hawkesbury-Nepean River system by ensuring that the impacts of future land uses are considered in a regional context. The Proposal is located within LGAs managed by the Sydney Regional Environmental Plan (i.e. Camden LGA). The Proposal is not identified as prohibited development under clause 11. The impact of the Proposal on receiving waters including the impacts of stormwater runoff, is considered in Section 6.3.

State Environmental Planning Policy (Sydney Region Growth Centres) 2006

The *State Environmental Planning Policy (Sydney Region Growth Centres) 2006* (Sydney Region Growth Centres SEPP) aims to co-ordinate the release of land for residential, employment and other urban development in the North West Growth Centre, the South West Growth Centre, the Wilton Growth Area and the Greater Macarthur Growth Area. Leppington is part of the South West Growth Area identified in the SEPP.

The planning provisions prescribed by the Sydney Growth Regions SEPP apply in place of a Local Environmental Plan. Although the Infrastructure SEPP prevails over the Sydney Region Growth Centres SEPP, the provision of the Sydney Region Growth Centres SEPP have been considered. Table 8 summarises the relevant aspects of the SEPP applicable to the Proposal. Figure 9 shows the relevant section of the zoning map from the SEPP, with the indicative location of the Proposal.

Table 8 Relevant provisions of the Sydney Region Growth Centres SEPP

Provision description	Relevance to the Proposal
<p>Land Use Zones – Zone B4 Mixed Use & RE1 - Public Recreation</p>	<p>The Proposal is located in land zoned B4 Mixed Use. The objectives of the zone include:</p> <ul style="list-style-type: none"> • to provide a mixture of compatible land uses • to integrate suitable business, office, residential, retail and other development in accessible locations so as to maximise public transport patronage and encourage walking and cycling. • to facilitate active retail, commercial, entertainment and community uses at ground level of mixed use developments. • to provide for residential development that contributes to the vitality of the local centre. • to ensure that residential development adjacent to the centre does not detract from the primary function of the centre being to provide for retail, business, entertainment and community uses. <p>The Proposal is consistent with the objectives of the B4 zone as commuter car parks for Leppington Station would maximise public transport use and support a mixture of surrounding land uses.</p> <p>The car park would be built on land zoned B4 but there is potential for construction activities such as material handling to be undertaken on land zoned RE1 Public Recreation. The objectives of RE1 include:</p> <ul style="list-style-type: none"> • to enable land to be used for public open space or recreational purposes. • to provide a range of recreational settings and activities and compatible land uses. • to protect and enhance the natural environment for recreational purposes. <p>The land zoning is shown in Figure 12.</p>
<p>Clause 19 - Flood prone and major creeks land</p>	<p>Clause 19 provides for consideration of impacts to flooding behaviour and impact on the Proposed development within area identified Flood prone and major creeks land. Part of the site is mapped as Flood prone and major creeks land and assessment of flooding impacts is in Section 6.3.</p>
<p>Appendix 9 (4.3) - Height of buildings</p>	<p>The height of the building would be approximately 14 metres and would not exceed the maximum height of 24 metres prescribed by the Sydney Region Growth Centres SEPP.</p>

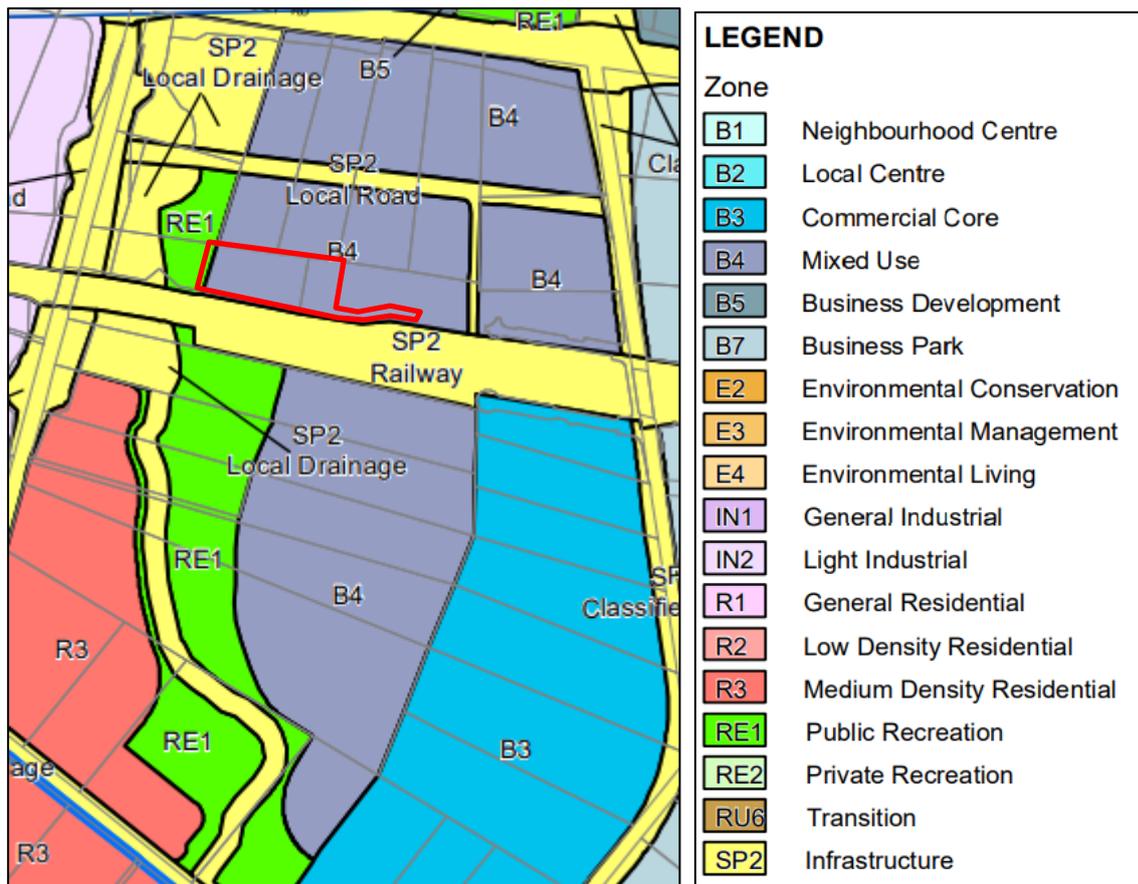


Figure 12 South West Growth Centre Land Zoning Map (Proposal site shown in red)

4.3 Ecologically sustainable development

Transport for NSW is committed to ensuring that its projects are implemented in a manner that is consistent with the principles of ecologically sustainable development (ESD). The principles of ESD are generally defined under the provisions of clause 7(4) of Schedule 2 to the EP&A Regulation as:

- the precautionary principle – If there are threats of serious or irreversible damage, a lack of full scientific uncertainty should not be used as a reason for postponing measures to prevent environmental degradation
- intergenerational equity – the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations
- conservation of biological diversity and ecological integrity – the diversity of genes, species, populations and their communities, as well as the ecosystems and habitats they belong to, should be maintained or improved to ensure their survival
- improved valuation, pricing and incentive mechanisms – environmental factors should be included in the valuation of assets and services.

The principles of ESD have been adopted by Transport for NSW throughout the development and assessment of the Leppington Commuter Car Park. Section 6.13 includes an assessment of the Proposal on sustainability, and Section 7.2 lists mitigation measures to ensure ESD principles are incorporated during the construction phase of the Proposal.

5 Community and stakeholder consultation

Chapter 5 discusses the consultation undertaken to date for the Proposal and the communication with the community and stakeholders proposed for the future. This chapter discusses the consultation strategy adopted for the Proposal.

5.1 Stakeholder consultation during concept design

As part of the concept design development, Transport for NSW held several workshops with key stakeholders to develop and discuss design options and identify a preferred option, including potential locations for offset parking during construction. Representatives from organisations including Camden Council, Department of Planning, Industry and Environment and the Office of Strategic Lands met with Transport for NSW on:

- 27 August 2019
- 14 January 2020
- 11 February 2020
- 15 April 2020
- 22 April 2020.

5.2 Consultation requirements under the Infrastructure SEPP

Part 2, Division 1 of the Infrastructure SEPP contains provisions for public authorities to consult with local councils and other public authorities prior to the commencement of certain types of development. Clauses 13-16 of the Infrastructure SEPP require that public authorities undertake consultation with councils and other agencies, when proposing to carry out development without consent.

Table 9 provides details of consultation requirements under the Infrastructure SEPP for the Proposal.

Table 9 Infrastructure SEPP consultation requirements

Clause	Clause particulars	Relevance to the Proposal
<p>Clause 13 Consultation with Councils – development with impacts on council related infrastructure and services</p>	<p>Consultation is required where the Proposal would result in:</p> <ul style="list-style-type: none"> • substantial impact on stormwater management services • generating traffic that would place a local road system under strain • involve connection to or impact on a council owned sewerage system • involve connection to and substantial use of council owned water supply • significantly disrupt pedestrian or vehicle movement • involve significant excavation to a road surface or footpath for which Council has responsibility. 	<p>The Proposal includes work that would:</p> <ul style="list-style-type: none"> • require connections or impacts the stormwater system • disrupt pedestrian and vehicle movements • impact on road pavements under Council's care and control • impact on Council-operated footpaths. <p>Consultation with Camden Council has been undertaken and would continue throughout the detailed design and construction phases.</p>
<p>Clause 14 Consultation with Councils – development with impacts on local heritage</p>	<p>Where railway station works:</p> <ul style="list-style-type: none"> • substantially impact on local heritage item (if not also a State heritage item) • substantially impact on a heritage conservation area. 	<p>There is not likely impact to local heritage items. Therefore, consultation with Council is not required in regard to this aspect. Refer to Section 6.10.</p>
<p>Clause 15 Consultation with Councils – development with impacts on flood liable land</p>	<p>Where railway station works:</p> <ul style="list-style-type: none"> • impact on land that is susceptible to flooding – reference would be made to <i>Floodplain Development Manual: the management of flood liable land</i>. 	<p>The Proposal is located on flood prone land. Accordingly, consultation with Council is required in regard to this aspect. Refer to Section 6.3</p>
<p>Clause 15A Consultation with Councils – development with impacts on certain land within the coastal zone</p>	<p>Where railway station works:</p> <ul style="list-style-type: none"> • impact on land within a coastal vulnerability area and is inconsistent with certified coastal management program that applies to that land. 	<p>The Proposal is not located within a coastal vulnerability area. Consultation with Council is not required in regard to this aspect.</p>

Clause	Clause particulars	Relevance to the Proposal
Clause 15AA Consultation with State Emergency Service – development with impacts on flood liable land	Where railway station works: <ul style="list-style-type: none"> • impact on flood liable land – written notice must be given (together with a scope of works) to the State Emergency Service. Any response to the notice received from the State Emergency Service within 21 days after the notice is given must be taken into consideration. 	The Proposal is located on flood prone land. Accordingly, consultation with State Emergency Service is required in regard to this aspect. Refer to Section 6.3.
Clause 16 Consultation with public authorities other than Councils	For <i>specified development</i> which includes consultation with the EES Group for development that is undertaken adjacent to land reserved under the <i>National Parks and Wildlife Act 1974</i> , and other agencies specified by the Infrastructure SEPP where relevant.	The Proposal is not located adjacent to land reserved under the <i>National Parks and Wildlife Act 1974</i> . Accordingly, consultation with the EES Group, which is part of the Department of Planning, Industry and Environment on this matter is not required.
Clause 104 Consultation with Transport for NSW	For <i>traffic-generating development</i> specified in Column 1 of the Table to Schedule 3 that involves new premises of the relevant size or capacity, or an enlargement or extension of existing premises, being an alteration or addition of the relevant size or capacity – written notice of the intention to carry out the development must be given to Roads and Maritime Services in relation to the development. Any response to the notice that is received from Transport for NSW within 21 days after the notice is given must be taken into consideration.	The Proposal is considered a traffic-generating development as it involves an existing car park with over 200 parking spaces. Accordingly, consultation with the relevant roads authority within Transport for NSW is required in regard to this aspect. Refer to Section 6.1.

5.3 Consultation requirements under the Growth Centres SEPP

Under Clause 18A of the Growth Centres SEPP, a public authority, or a person acting on behalf of a public authority, must not carry out development comprising the clearing of native vegetation (within the meaning of the *Native Vegetation Act 2003*) on land that is not subject land (within the meaning of clause 17 of Schedule 7 to the TSC Act) unless the authority or person has—

- a) given written notice of the intention to carry out the development to the Department of Planning and Infrastructure, and
- b) taken into consideration any response to the notice that is received from that Department within 21 days after the notice is given.

A small portion of native vegetation may be removed within the non-biodiversity certified land which is not considered “subject land”. Therefore, in accordance with the Growth Centres SEPP consultation was undertaken with DPIE (formerly known as Department of Planning and Infrastructure) and any response received was considered.

5.4 Consultation strategy

The consultation strategy for the Proposal was developed to encourage stakeholder and community involvement and foster interaction between stakeholders, the community and the project team. The consultation strategy was developed having regard to the requirements of the planning process to ensure that stakeholders, customers and the community are informed of the Proposal and have the opportunity to comment.

The objectives of the consultation strategy are to:

- provide accurate and timely information about the Proposal and REF process to relevant stakeholders and the community
- raise awareness of the various components of the Proposal and specialist environmental investigations
- ensure that the directly impacted community is aware of the REF and consulted where appropriate
- provide opportunities for directly impacted stakeholders and commuters to express their view about the Proposal
- understand and access valuable local knowledge from the community and stakeholders
- record the details and input from community consultation activities
- build positive relations with identified community stakeholders
- ensure a comprehensive and transparent approach
- establish communication channels to enable stakeholders to be kept informed through the project lifecycle
- inform stakeholders about design changes, if required, and how input as a result of consultation has influenced Proposal outcomes.

5.5 Consultation on concept design

Community feedback on the concept design was invited between Thursday 5 March and Monday 23 March 2020.

Community consultation during the preparation of the REF adopted a range of consultation mechanisms, including:

- consultation with surrounding residences and businesses through door knocking
- distribution of a community notification to both the local community via letterbox drop and rail customers at the station to inform the community about the Proposal. The newsletter was made available to station customers
- consultation with Camden Council, Sydney Trains, NSW State Emergency Services, the Office of Strategic Lands and DPIE
- two community information sessions at Leppington Station targeting commuters and local residents, held on Thursday 12 March and Tuesday 17 March 2020

- a meeting with nearby Leppington Public School, informing them of the Proposal and inviting feedback
- geographically targeted social media advertising via Facebook to inform the community of the Proposal and invite their feedback
- posters at the station providing information on the project and links to the website
- development of a dedicated web page for the project on the Transport for NSW website which can be found at <https://www.transport.nsw.gov.au/leppington>

Following consideration of feedback received, Transport for NSW would determine whether to proceed with the Proposal and what conditions would be imposed on the project should it be determined to proceed.

The feedback received from the community and Council during the consultation process has been categorised into the key themes in Table 10.

During the consultation period, Transport for NSW received further feedback about the need to improve transport connections more broadly to support this growing part of Sydney. A range of suggestions such as increased bus and train services, railway extensions, active transport links like cycle ways and upgrades to footpaths and roads surrounding the station.

We are working with a range of teams within Transport for NSW and with Camden Council to assess these suggestions and consider how we can support Sydney's south west with integrated transport options.

5.6 Key themes raised during consultation

Key themes raised by respondents and Transport for NSW's response are in Table 10.

Table 10 Community comments

Comment	Response
<p>Widespread support for the project and requests to proceed as quickly as possible.</p>	<p>Improving commuter parking at Leppington Station is a priority for Transport for NSW. Subject to approval, construction is planned to begin mid-2020 and is expected to be complete mid-2021.</p>
<p>Concern that 1,000 spaces will not cater for current and future demand.</p>	<p>Transport for NSW is aware that customers in Sydney's south west have been calling for more commuter car parking. In 2019, the NSW Government committed to delivering an extra 350 spaces at Leppington Station. After further site investigations and planning Transport for NSW has committed to delivering up to 1,000 additional spaces.</p> <p>The proposal would be built using an adaptable design that would allow for future opportunities to increase capacity if required.</p> <p>The proposed capacity has been designed to accommodate existing, and anticipated growth in customer parking demand while taking into consideration the broader vision for transport across Greater Sydney.</p> <p>Transport for NSW is planning for future growth in South West Sydney through a range integrated road and public transport improvements identified as part of Future Transport 2056.</p> <p>Planning is underway for new rail, road and freight connections to support the booming region, including connections to the new Western Sydney Airport at Badgerys Creek as outlined in Section 2.2 of this REF.</p> <p>In the near term, improvements to several bus services are on the way for the south west from mid-2020, including additional services on route 841 serving Leppington.</p> <p>Transport for NSW is also committed to improving commuter parking at neighbouring Edmondson Park Station, with planning underway to deliver up to 2,000 additional spaces.</p> <p>Transport for NSW will continue to monitor demand in the region and consider further transport initiatives such as active transport links and bus and on-demand transport services to provide customers with more choice in how they travel to the station.</p>
<p>Support for the introduction of motorcycle parking spaces, secure bicycle facilities, accessible and seniors parking, additional kiss and ride drop off zones and more undercover seating.</p>	<p>Motorcycle parking spaces, secure bicycle facilities, seniors parking, additional kiss and ride drop off zones, and undercover seating will be considered during the detailed design process. Additional accessible spaces will be provided in the station precinct.</p>

Comment	Response
<p>Concern about the distance between the station entry and the car park and the need for an undercover walkway.</p>	<p>The car park location was identified following a selection process which considered the needs of transport customers as well as future land uses of the Leppington Town Centre.</p> <p>The preferred location is in close proximity to the station, providing convenient access to public transport as well as increased commuter connectivity to the town centre for access to the future shopping, dining and entertainment facilities.</p> <p>The distance between the station entry and the proposed multi-storey car park is approximately 300 metres which is within Transport for NSW guidelines of 400 metres or less.</p> <p>Additional accessible parking spaces would be provided within the station precinct close to the station entry so that our customers with a disability and/or limited mobility have close and convenient access to the station.</p> <p>Opportunities to build an undercover walkway from the multi-storey car park to the station will be assessed as part of the detailed design process.</p>
<p>More information around the temporary offset parking.</p>	<p>During construction some spaces would be unavailable in order to complete the work safely.</p> <p>Temporary parking would be available for the community to offset the removal of parking spaces during the construction of the new facility.</p> <p>More information will be provided to the community shortly.</p> <p>The existing southern at-grade car park would remain open during construction.</p>
<p>Requests for free parking and unlimited parking on weekends.</p>	<p>The concept design for the multi-storey car park includes 'Transport Park&Ride' facilities, which allows free parking for up to 18 hours when customers tap on with an Opal card to a connecting train journey.</p> <p>For stays longer than 18 hours, charges would apply. These arrangements are in place to discourage long term parking and ensures spaces are freed up for commuters using public transport.</p> <p>Opportunities to lift the 18 hour parking restriction on weekends to help facilitate overnight recreational travel are to be investigated.</p> <p>The existing at-grade car park to the south of the station would be free and untimed as it is now.</p>
<p>Support for the introduction of digital signage with real-time information about available parking spaces.</p>	<p>Digital displays indicating the number of available spaces within the car park will be considered during the detailed design process as part of the Transport Park&Ride system. The signage shows customers in real-time how many spaces are available to prevent unnecessary circling to find a parking spot.</p>

During the consultation period, Transport for NSW received further feedback about the need to improve transport connections more broadly to support this growing part of Sydney. A range of suggestions were provided such as increased bus and train services, railway extensions, active transport links like cycle ways and upgrades to footpaths and roads surrounding the station.

Transport for NSW is working with a range of internal teams and with Camden Council to assess these suggestions and consider how Sydney's south west can be provided with improved integrated transport options.

6 Environmental impact assessment

Chapter 6 of the REF provides a detailed description of the likely environmental impacts associated with the construction and operation of the Proposal. For each likely impact, the existing environment is characterised and then an assessment is undertaken as to how the Proposal would impact on the existing environment.

This environmental impact assessment has been undertaken in accordance with clause 228 of the EP&A Regulation. A checklist of clause 228 factors and how they have been specifically addressed in this REF is included at Appendix B.

6.1 Traffic and transport

A Traffic, Transport and Access Impact Assessment (TTAIA) was prepared by FutureRail in April 2020 (FutureRail, 2020). The results of the TTAIA are summarised below.

6.1.1 Existing environment

Leppington is a major land release area in the South West Growth Area and is bounded by other land release areas to the north including Austral and Leppington North. Other surrounding suburbs include Denham Court to the east, Catherine Field to the south and Rossmore to the west. As a result of these land releases, land use around the Proposal site is under development and currently there are no major trip generators or attractors such as schools or shopping centres within 800 metres.

The Proposal site is located on the western side of Rickard Road in the Leppington Interchange Precinct, north of Leppington Station and adjacent to the existing at-grade car park.

Leppington Station infrastructure

The Leppington Station precinct consists of:

- three entrances via Rickard Road:
 - a northern entry to the Station and car parks
 - a bus entry south of the Station
 - a southern entry to the Station and car parks
- a bus interchange with four connecting bus routes
- two at-grade commuter car parks (872 spaces including 18 dedicated accessible parking spaces)
- accessible “kiss and ride” along northern frontage
- “kiss and ride” within the northern commuter car park (approximately 10 car capacity)
- sheltered bike racks (40 spaces)
- taxi rank along southern frontage (approximately eight taxi capacity).

Existing parking conditions

There is a large demand for unrestricted parking in the local area, as Leppington Station is the end of the line for T2 Inner West and Leppington Line and T5 Cumberland Line. The majority of station users arrive by private vehicle and use the existing at grade car parks or overflow to surrounding roadside parking spaces (legal and illegal). Surveys undertaken in 2018 identified

that 81 per cent of vehicles using the existing car parks originated from 29 local suburbs and 75 per cent of users originated from south of the Station.

The existing at grade commuter car parking facilities at Leppington Station comprises a total of 872 spaces between the northern and southern car parks. These car parks are typically full by 8.00am and parking surveys have identified that demand exceeds capacity by as much as 37 per cent (320 spaces). A map and photos of the existing parking conditions are shown in Figure 13.

A site visit was completed in December 2019 to observe parking and traffic conditions near the site. This is considered to be a conservative time of year and does not reflect peak commuter periods. As such the observations are likely to be less than what is normally experienced at the station. The following was observed as depicted in Figure 13:

- 100-120 vehicles were parked along Byron Road
- 50-70 vehicles parked along the southern unsealed section of Rickard Road (up to 500 metres from the station)
- 15-20 vehicles illegally parked along the eastern side of Rickard Road (up to 250 metres from the Station)
- 5-10 vehicles illegally parked along the eastern kerb of Rickard Road overpass and its approaches.



Accessible Kiss & Ride



Kiss & Ride



Overflow Parking



Cycle Parking Shelters



Overflow Parking



Bus Interchange

Figure 13 Observations of existing conditions in the Leppington Interchange Precinct (noting substantial overflow parking occurs on Byron Road, circled in yellow)

Existing road network

The existing road network in the vicinity of Leppington Station includes Rickard Road, Byron Road and Bringelly Road. Below is a review of the network.

Rickard Road

Rickard Road is a Local Road that provides the main access point for Leppington Station and provides a north-south local road link between the Station and Bringelly Road (State Road network). Rickard Road has a posted speed limit of 60 kilometres per hour and provides one traffic lane in each direction with several turning lanes for access into Leppington Station which are not signal controlled. Adjacent the Station the road is dual carriageway. Vehicle movements range between 400-500 per hour during the morning and evening peaks.

Bringelly Road

Bringelly Road is a State Road located north of Leppington Station running in an east-west direction. This road has a posted speed limit of 60 kilometres per hour and is currently being upgraded to improve access to Leppington town centre and the M5 and M7 motorways. The upgrade would widen the road to a six-lane divided road with a central median, bus priority lanes and cycle facilities.

Byron Road

Byron Road is a local road running east off Rickard Road to the south of the rail corridor. The road has a posted speed limit of 50 kilometres per hour and provides one traffic lane in each direction. No right turn is permitted from Byron Road to Rickard Road, restricting access to Leppington Station and no pedestrian or cycling facilities are available.

Future Road Upgrades

The Austral and Leppington Precinct Plan (DPI, 2012) identifies a planned Town Centre amongst the civic precinct to the north of Leppington Station, confined by Bringelly Road and Rickard Road. The plan also proposes a network of north-south and east-west pedestrian links through streets and public plazas. A second road crossing the rail corridor is planned which will improve permeability and connectivity within the precinct, particularly for low-impact transport users such as pedestrians and cyclists. This new road crossing will also intersect with the main Proposal access to Rickard Road. These proposed roads are depicted in Figure 14.



Figure 14 Austral and Leppington North Indicative Layout Plan - Road Upgrades

A number of road upgrades associated with this road network are currently underway or in planning phases including:

- Outer Sydney Orbital
- Bringelly Road Upgrade
- Rickard Road Upgrade
- Byron Road Upgrade.

These works would improve traffic flows in the vicinity and access to Leppington Station.

Existing intersection performance

Key intersections providing access to Leppington Station were assessed using SIDRA Network 8.0. The assessment indicated that the performance of existing intersections is acceptable with a Level of Service (LoS) rating of C or higher in both peaks as outlined in Table 11.

Table 11 Existing Intersection Performance

Intersection	Type	Morning Delay (sec)	Morning LoS	Morning Degree of Saturation (DoS)	Evening Delay (sec)	Evening LoS	Evening DoS
Rickard Road & Bringelly Road	Traffic control signals	36.4	C	0.66	39.3	C	0.63
Rickard Road and Station Entrance	Give-way	10.3	A	0.28	8.5	A	0.36
Rickard Road & Ingleburn Road	Round-about	8.6	A	0.37	7.5	A	0.44

Access to Public Transport

Trains

Leppington Station is serviced by the T2 Inner West and Leppington Line and T5 Cumberland Line and provides services between Leppington, Parramatta, the Sydney CBD and Richmond. A service departs on average every five to six minutes in the morning peak between 6.00 am and 7.00 am.

A review of Leppington Opal data, for the four months ending August 2019, recorded an average of 2,807 entries/exits during the morning weekday peak period (5am to 9am). This four hour period accounted for 73 per cent (2,040) of all daily station entries. The morning peak hour was recorded in the hour commencing 7am and represents 42 per cent of the morning peak period. Given the station location at the terminus of the T2 and T5 lines and the current surrounding land use, the majority of inbound movements are observed to be in the morning towards employment areas and outbound in the evening on the return journey to Leppington.

Buses

Four bus routes currently operate through Leppington Station:

- bus route 841 – Narellan to Leppington
- bus route 855 – Austral to Liverpool
- bus route 856 – Bringelly to Liverpool
- bus route 858 – Oran Park to Leppington.

The bus stop within the Leppington Interchange Precinct is located south of the Station and includes shelter, seating, timetables, rubbish bins and tactile facilities. Approximately 150 bus arrivals and departures occur daily across the four routes.

Pedestrian Access

Due to the largely undeveloped nature of surrounding areas at the present time, pedestrian connectivity to Leppington Station is poor.

Footpaths are provided on the western side of Rickard Road and a small section (approximately 100 metres) of the eastern side over the railway bridge. There are currently no pedestrian crossing facilities on Rickard Road. Footpaths are provided on both sides of the

internal road network with the Interchange Precinct and provide direct access to the Station and car parks. Pedestrian crossings also link the existing car parks to the station.

Access to the concourse is provided via footpaths to the north and south of the station and from the concourse, two sets of stairs provide access to each island platform (four sets of stairs in total). A lift is also available to each island platform (two lifts in total).

Cycling Access

Due to the largely undeveloped nature of surrounding areas at the present time, cycle connectivity to Leppington Station is poor.

There are limited bicycle routes connecting to Leppington station and the closest network consists of cycle lanes and shared path facilities along Bringelly Road and then 155 metres of on-road cycle lanes along Rickard Road. There are 20 bicycle parking rails provided at Leppington Station in four undercover parking areas, accommodating a maximum of 40 bicycles. These were observed as full during the December 2019 site visit.

6.1.2 Potential impacts

Construction phase

During construction, potential impacts include:

- temporary changes in pedestrian and vehicle movements
- temporary increase in heavy and light vehicle movements.

Construction traffic

Construction of the Proposal would require additional vehicles movements associated with delivery of materials and transport of workers.

Construction vehicles including heavy vehicles would enter and exit via the existing station entrance at Rickard Road, which has turn facilities in both directions (north and south). Part of the western end of the existing at-grade car park would be closed to facilitate access to the construction site. Two lanes would be established along the southern boundary of the existing car park to provide dedicated construction access. Construction traffic management would be in place through the installation of barriers to separate the access by the construction vehicles whilst maintaining continued access for commuter car parking circulation (Figure 15).

Construction traffic associated with the Proposal is expected to peak at 60 heavy vehicles per day during peak over a 20-week period. Due to the existing low traffic volumes on Rickard Road which peak at 620 vehicles per hour (two-way) this increase represents an increase of less than five per cent.

Heavy vehicle construction movements, including materials and concrete deliveries, would be distributed throughout the day. This would result in seven to eight heavy vehicle movements per hour. Movements would be scheduled to avoid local traffic peaks as part of a Construction Traffic Management Plan (CTMP) that would be prepared prior to construction commencing.

Construction of the car park is expected to require a peak workforce of 80 workers per day for a 20-week period. The convenient access to buses and trains would mean the majority of workers would use public transport to get to site. Based on 40 per cent of workers travelling to site in a car with an occupancy rate of 1.5 workers per vehicle the estimated increase demand for parking would be 21 spaces (two per cent of the current capacity).

The volume of construction traffic movements during the morning and afternoon peak periods would likely be minimal. The peak construction traffic movements are mainly generated by staff accessing the site using light vehicles, and these movements are typically generated prior to the peak traffic movements associated with Station use in the morning and in the afternoon.

The existing give-way controlled intersection with Rickard Road is expected to perform at acceptable levels of service with the additional construction worker and delivery vehicle movements outlined above.

Traffic changes associated with construction vehicles and deliveries are expected to be minimal given existing conditions.

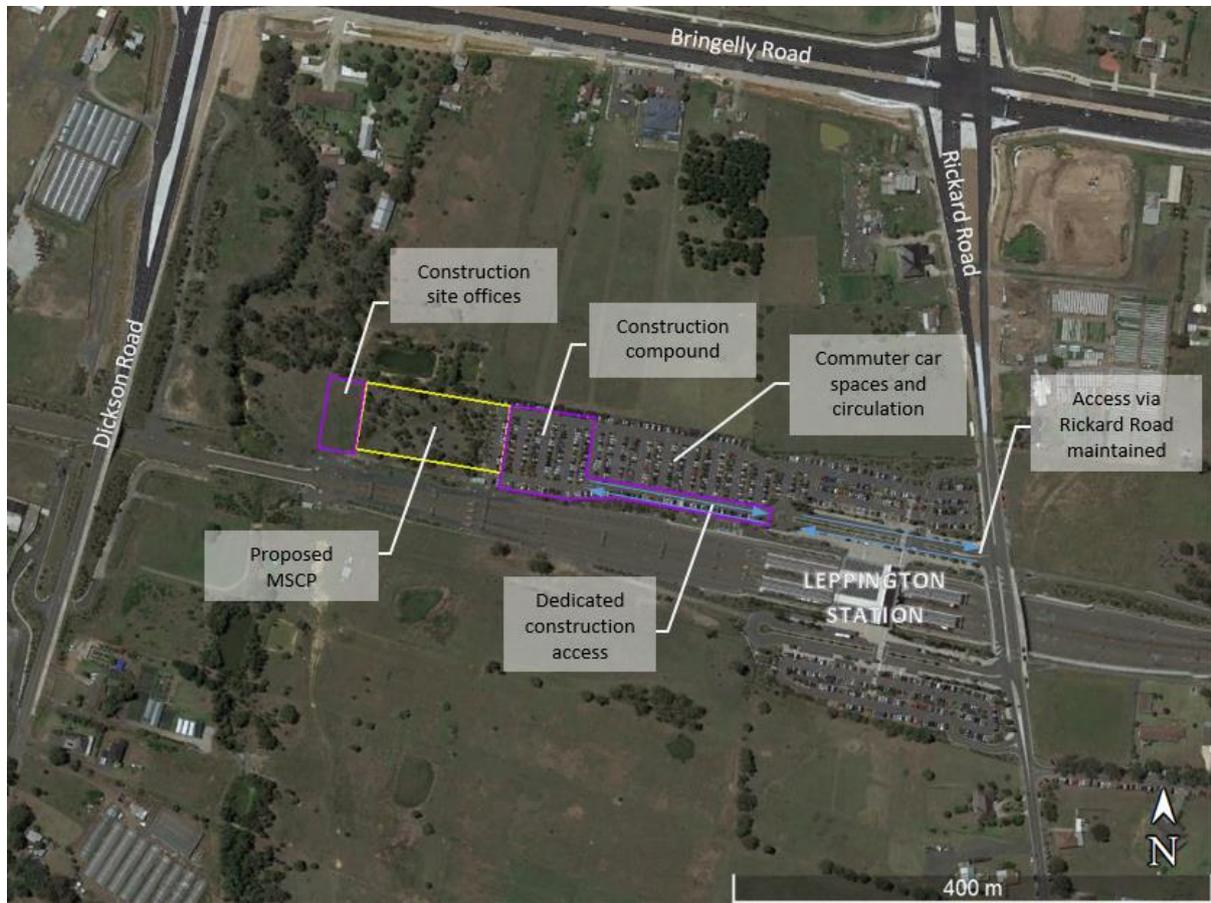


Figure 15 Proposed construction access (subject to construction contractor requirements)

Parking

The Proposal site and road works required to integrate the Proposal with the existing at-grade car park and Rickard Road would result in the displacement of a small portion of the existing commuter car parking spaces during construction. To minimise the disruption to commuters, an area providing offset parking would be provided (subject to a separate planning approval).

Parking of construction vehicles would be accommodated within the eastern end of the Proposal site, inside the site compound area. Should additional parking be required, mitigation measures would be in place during construction to ensure that construction worker parking would not impact on commuter car parking spaces in the area.

Access

During construction of the Proposal access to the Leppington Station for users will be maintained. Pedestrian access may be impacted by increased vehicle movements however heavy vehicle construction traffic would be spread evenly throughout the day and will occur mainly outside peak hour pedestrian arrivals and departures.

Overall, there would be minimal disruption to pedestrian, cycling, kiss and ride, taxi or bus stops during the construction phase. Any measures required for pedestrian, bicycle and vehicle safety during the construction phase would be detailed in the CTMP.

Property Impacts

Construction works are not expected to require any access changes to adjacent properties. There may be temporary impacts on the rail corridor boundary to facilitate ancillary site facilities.

Operation phase

Parking

The Proposal would increase the commuter car parking capacity at Leppington Station by approximately 1,000 spaces (114 per cent). This is expected to reduce informal overflow parking issues throughout the precinct.

Access

Pedestrian, cyclist and bus access to Leppington Station from surrounding areas would remain unchanged during operation of the Proposal.

Traffic generation

The Proposal would result in an approximately 1,000 additional car spaces at Leppington Station which is an increase of over 100 per cent on existing car spaces (872 spaces). These spaces would offset current overflow parking demands which are in the order of 200 to 300 spaces and represent existing traffic generated in the area.

Based on a worst-case scenario of 1,000 additional trips during the morning and evening peaks and correlated with 2019 Opal data for Leppington it is estimated that during operation the new car park would generate an additional 420 inbound movements during the morning peak hour (7.00am – 8.00am) and 340 outbound trips during the evening peak hour (6.00pm – 7.00pm). The majority of these movements would be travelling south (75 per cent) with the remaining travelling north (25 per cent).

Assessment of intersection performance with the additional traffic generated by the new car park were identified to remain acceptable with a LoS rating of C or higher in both peaks as outlined in Table 12.

Table 12 Operational Intersection Performance

Intersection	Scenario	Morning Delay (sec)	Morning LoS	Morning DoS	Evening Delay (sec)	Evening LoS	Evening DoS
Rickard Road & Bringelly Road	Without CCP	36.4	C	0.66	39.3	C	0.63
Rickard Road & Bringelly Road	With CCP	37.1	C	0.81	41.8	C	0.79
Rickard Road and Station Entrance	Without CCP	10.3	A	0.28	8.5	A	0.36
Rickard Road and Station Entrance	With CCP	18.2	A	0.44	15.3	A.	0.76

Intersection	Scenario	Morning Delay (sec)	Morning LoS	Morning DoS	Evening Delay (sec)	Evening LoS	Evening DoS
Rickard Road & Ingleburn Road	Without CCP	8.6	A	0.37	7.5	A	0.44
Rickard Road & Ingleburn Road	With CCP	11.7	A	0.67	9.2	A	0.56

An estimate of boom gate requirements was undertaken based on 15-min peak within the AM and PM peak hours. Boom gate facilities provide an opportunity to discourage long-term parking and ensure spaces are available for commuters catching public transport. Based on a boom gate service rate of four vehicles per minute per gate, the peak 15-min demands for the multi-storey car park will require two entry boom gates and two exit boom gates to service arrivals and departures during peak periods. The location and specification of Opal pass controlled boom-gates at the entry/exit of the car would be considered during detailed design.

Cumulative traffic impacts are addressed in Section 6.16.

6.1.3 Mitigation measures

A CTMP and associated Traffic Control Plans (TCP) and Pedestrian Management Plans (PMP) would be prepared prior to commencement of construction to address the potential impacts identified in this REF and the TTAIA.

Wherever possible, deliveries would be scheduled outside peak commuter periods.

Should it be required, any additional construction worker parking (in excess of what would fit in the construction compound) is not to impact on the existing commuter parking in the surrounding area.

Refer to Chapter 7 for the full list of proposed mitigation measures for the Proposal. Mitigation measures 8 to 12 in Section 7.2 relate to the management of potential impacts on traffic and transport.

6.2 Landscape and visual amenity

A Landscape Character and Visual Impact Assessment (LCVIA) was undertaken by Envisage for the Proposal (Envisage, 2020). The findings of this assessment as summarised in this Section.

6.2.1 Existing environment

A site visit was carried out on 17 December 2019 to gain an understanding of the existing visual environment within the Proposal corridor and surrounds. Photographs taken during the site visit are included in the LCVIA (Envisage, 2020).

Landscape character

The existing landscape is undergoing rapid and significant re-development. The low-density rural character of the area is in the process of changing to a high-density urban form. Very little of the existing rural character would be retained under the planned Leppington Town Centre development.

Due to the rapidly changing nature of the landscape around the Proposal site, impact on landscape character is assessed in terms of existing landscape character and planned landscape character.

Existing Landscape character

The Proposal site is located adjacent Leppington Station, the associated railway corridor and existing commuter car parking. The Proposal site is densely vegetated and near to Scalabrini Creek. The existing landscape character is rated as having a low sensitivity as the area is undergoing major transformation and has been rezoned for the planned Leppington Town Centre.

Planned Landscape character

The future planned land use surrounding the Proposal site includes mixed use, public recreation, commercial and medium density residential as depicted in Figure 16

The future landscape character is for an attractive and vibrant community with built elements associated with Leppington Town Centre contributing to this (refer Figure 17 and Figure 18). Additionally, a major public recreational corridor is planned surrounding Scalabrini Creek which is intended to hold public events and facilitate pedestrian and cycle networks. This planned landscape would have a moderate sensitivity.

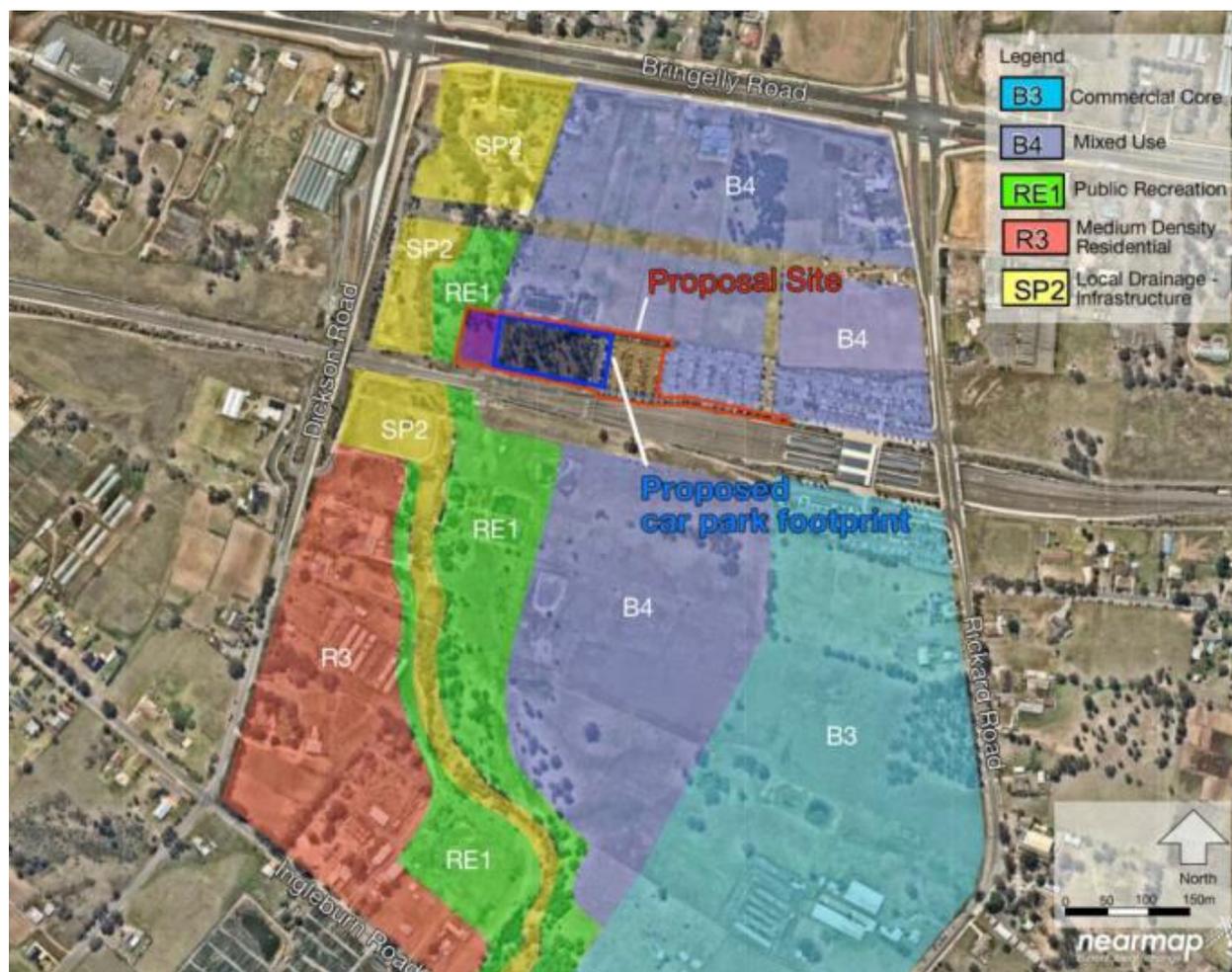


Figure 16 Future Planned Land Use - Zoning around Proposal site



Figure 17 Future Planned Land Use - Rickard Road Looking South



Figure 18 Future Planned Land Use - Medium Density Housing Examples

Visual receivers

Existing viewpoints

The Proposal site is located within a generally flat landform and views from further afield are prevented with the elevation of Leppington Station, Rickard Road and Dickson Road. Existing vegetation also limits views from the north-east. The nearest existing sensitive viewpoints are residences located on Bringelly (approximately 250 metres north), Rickard (approximately 360m north-east) and Ingleburn Road (approximately 900 metres south), Leppington Public School (approximately 775 metres south east) and a child care centre on Bringelly Road as depicted in Figure 19.

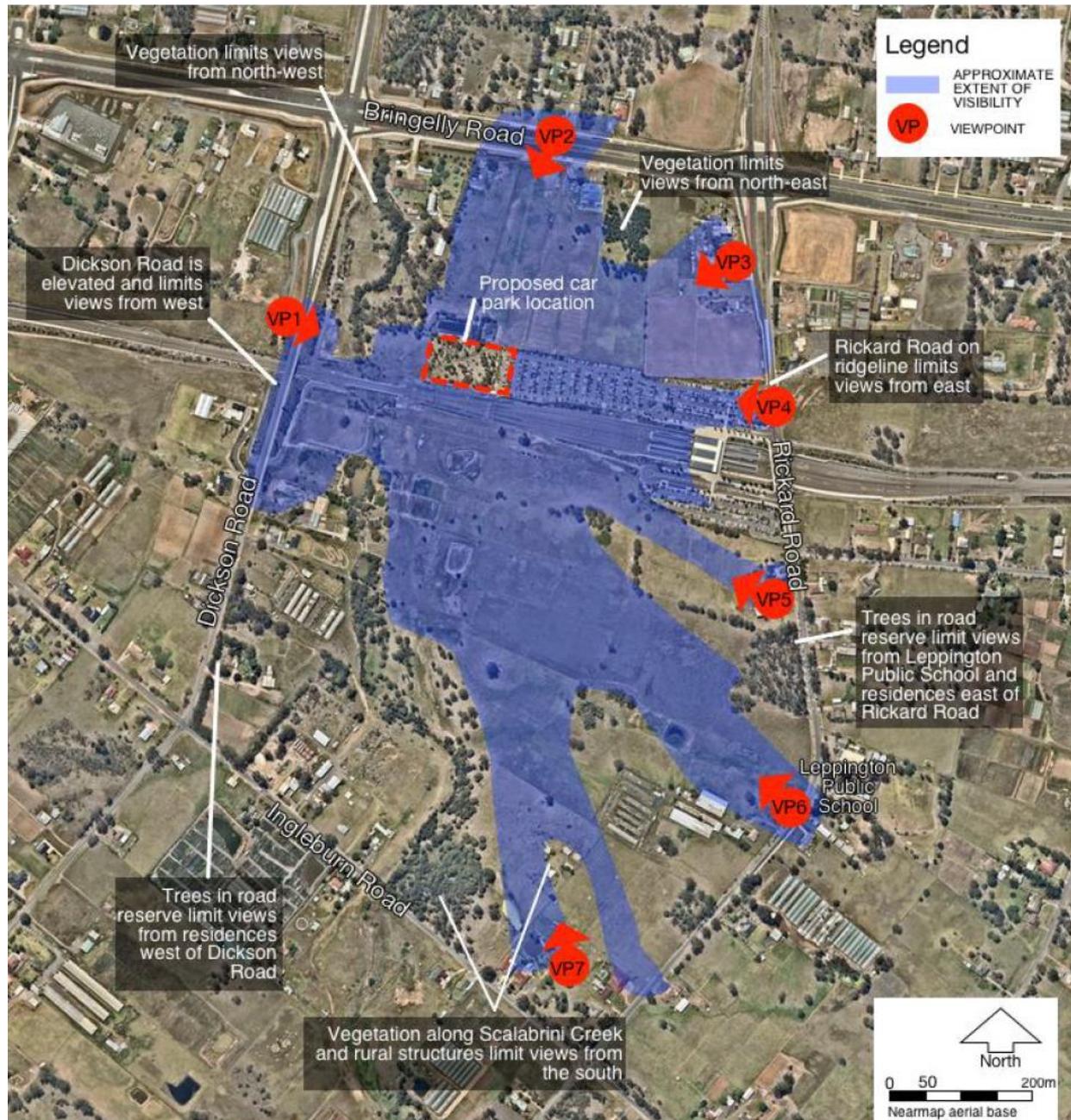


Figure 19 Visual analysis and key viewpoints

Future viewpoints

Due to the surrounding planned land use and current approved maximum building heights, the Proposal would have limited visibility in the future. Views would be limited by proposed development including mixed use development to the north and south, planned health services facility to the north-west, planned civic precinct to the north and the retained vegetation around Scalabrini Creek as depicted in Figure 20.

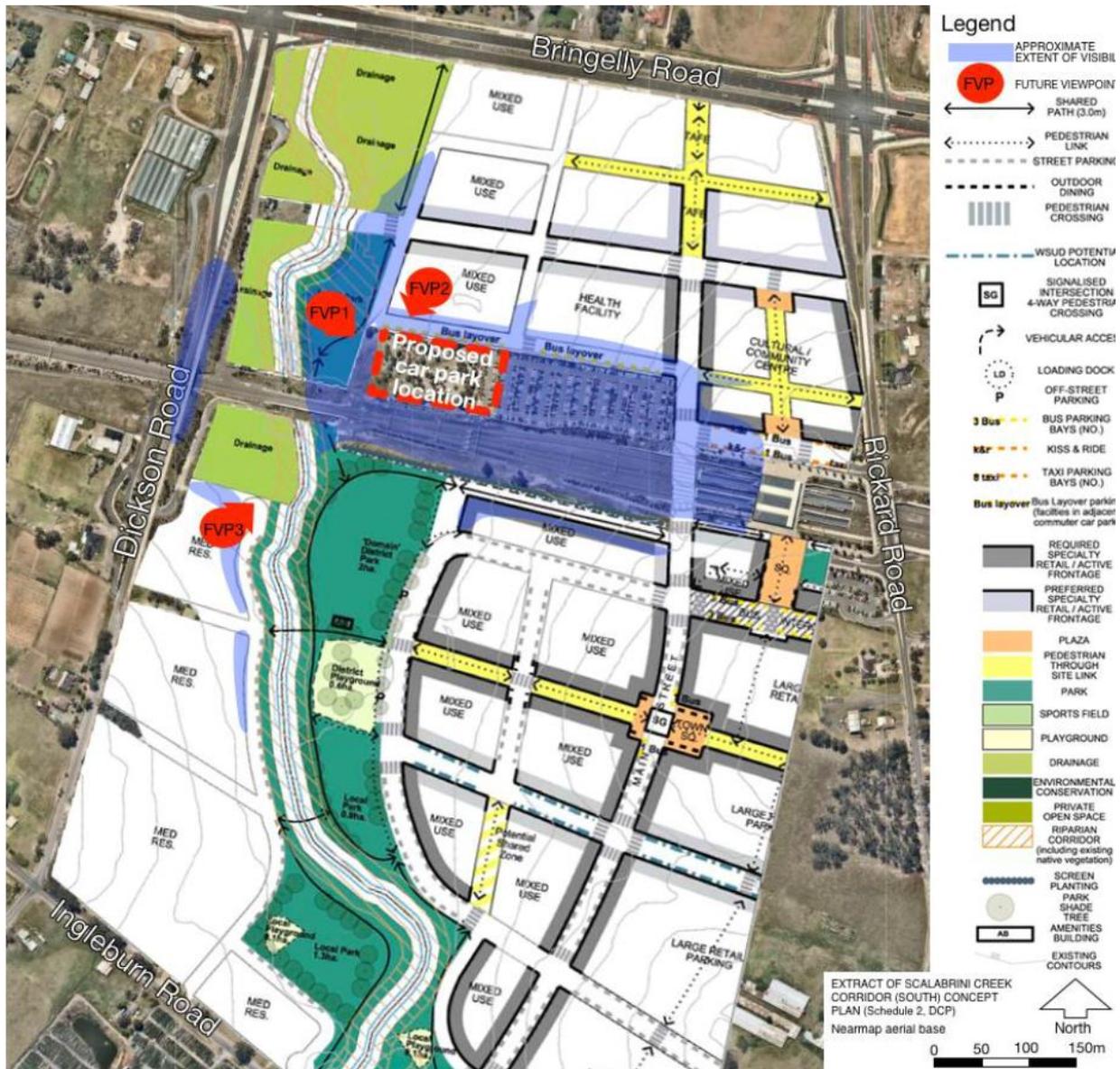


Figure 20 Future visual analysis and view points

6.2.2 Potential impacts

Construction phase

Temporary works associated with construction of the car park would include the use of plant and equipment, establishment of a site compound and stockpiling of materials. These changes would be temporary and therefore would not have a long term visual impact on the existing or future landscape character. Existing vegetation along Scalabrini Creek would partially screen construction activities from viewpoints to the north-west however tall equipment and heavy vehicles would be temporarily seen by residents along Bringley Road and Rickard Road. The

assessed visual impact is low for all viewpoints except for Bringelly Road which is moderate-low.

Operation phase

The Proposal, while similar in scale and form to the station, would be a recognisable new element as a result of the total loss of vegetation at the Site and in being the largest and tallest structure visible at viewpoints in the existing landscape character. As such, the Proposal would temporarily be dominant in scale until planned additional construction commences associated with surrounding development including the Leppington Town Centre. Retained vegetation along Scalabrini Creek would partially screen the Proposal to the north-west particularly the lower levels.

Following development the Proposal would be similar in scale to surrounding development (i.e. mixed-use precinct) and is within the planned building height for the Site. Future residential viewpoints are likely to be from upper levels and glare from rooftop cars may occur however it would also form a small part of a wider view and thus would not be visually dominant. The assessed visual impact is low for the planned residential and mixed-use precinct and moderate to low for the recreational use of Scalabrini Creek corridor.

Photomontages have been prepared for two viewpoints:

- Dickson Road (west of the Proposal) – this is the closest public accessible view of the Site approximately 175 metres to the west and is typical of the view for pedestrians and other road users – see Figure 21 and Figure 22.
- Bringelly Road (north of the Proposal) – this is indicative of the closest residential view (existing). The image is taken from the footpath on the southern side of Bringelly Road. Residents are 60 metres further north and the view would also be obscured by Bringelly Road – See Figure 23 and Figure 24.



Figure 21 Existing view of the Proposal site looking east (VP1)



Figure 22 Photomontage of the Proposal looking east from Dickson Road (VP1), subject to detailed design



Figure 23 Existing view of the Proposal site looking south (VP2)



Figure 24 Photomontage of the Proposal looking south (VP2), subject to detailed design

6.2.3 Mitigation measures

The design for the Proposal has incorporated a number of positive characteristics which would reduce potential landscape character and visual impacts, and these would be refined and confirmed during detailed design. An Urban Design Plan which includes landscaping would also be prepared.

Landscaping would use species endemic to the area where possible and include planting along the railway corridor. Following construction of the Proposal, landscaping would be maintained to a high standard and weeds would be removed.

Detailed design of the facade would consider muted colours and tones to blend the Proposal with the natural elements of the neighbourhood, and to create a less obtrusive façade. The detailed design would include provision of a façade treatment along the frontage with the open space corridor and northern service road.

Refer to Chapter 7 for the full list of proposed mitigation measures for the Proposal.

6.3 Hydrology and water quality

A Technical Note was prepared by FutureRail for the Proposal (FutureRail, 2020). The findings of this assessment as summarised in this Section.

6.3.1 Existing environment

Surface Water

The Proposal is located within the Upper South Creek Catchment. The topography of the Proposal site is on an undulating landscape with a gentle drop towards the west.

The nearest mapped waterway is an unnamed first order tributary of Scalabrini Creek, which passes through the Proposal site as shown in Figure 25. During the site visit no water or evidence of this natural waterway was present on the Proposal site and it has been partially covered by the at-grade car park. The closest existing waterway, Scalabrini Creek, is approximately 40 metres to the west. Two waterbodies (artificial dams) are also present approximately 10 metres north of the Proposal site. Camden Council stormwater drainage infrastructure exists in close proximity to the Proposal site.



Figure 25 Map of waterways within and near the Proposal site

Groundwater

A search of the National Groundwater Information System has been conducted and the mapping indicates that there is no existing or historic groundwater investigation data available in the vicinity of the Proposal site. Whilst there was no site-specific groundwater information available, the location of the Proposal in a topographical low-point and the proximity to a natural waterway indicate potential groundwater seepage may be present within the site.

Flooding

The Proposal site is partially mapped as Flood Prone and Major Creeks Land under the Sydney Region Growth Centres SEPP as shown in Figure 26.

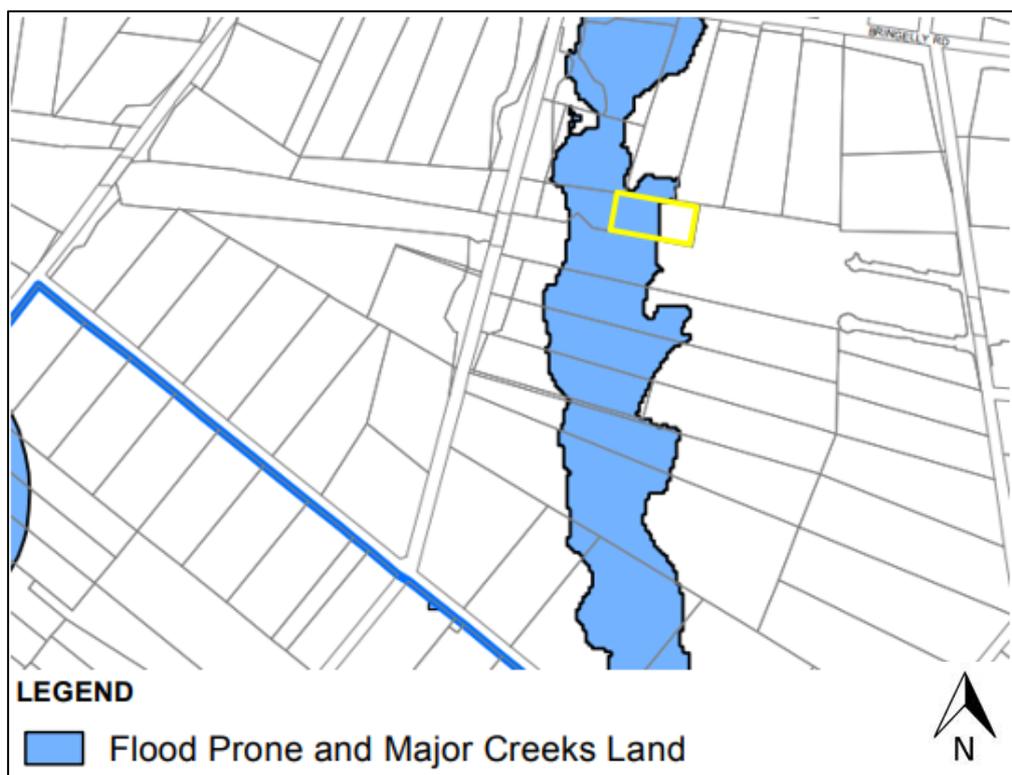


Figure 26 Flood Prone and Major Creeks Land (the proposed car park location shown in yellow)

An Upper South Creek Floodplain Risk Management Study and Plan (FRMS&P) was completed in 2019 by Cardno on behalf of Camden Council. The major creek identified within the FRMS&P that is closest to the Proposal site is Scalabrini Creek which flows south to north crossing under the rail corridor towards Bringelly Road.

Flood Risk Precincts map obtained from the FRMS&P identifies the Proposal site falls within the Medium Flood Risk Category. The FRMS&P also includes a one per cent Annual Exceedance Probability (AEP) Flood Extent Map which shows the potential for flooding at the site as shown in Figure 27.

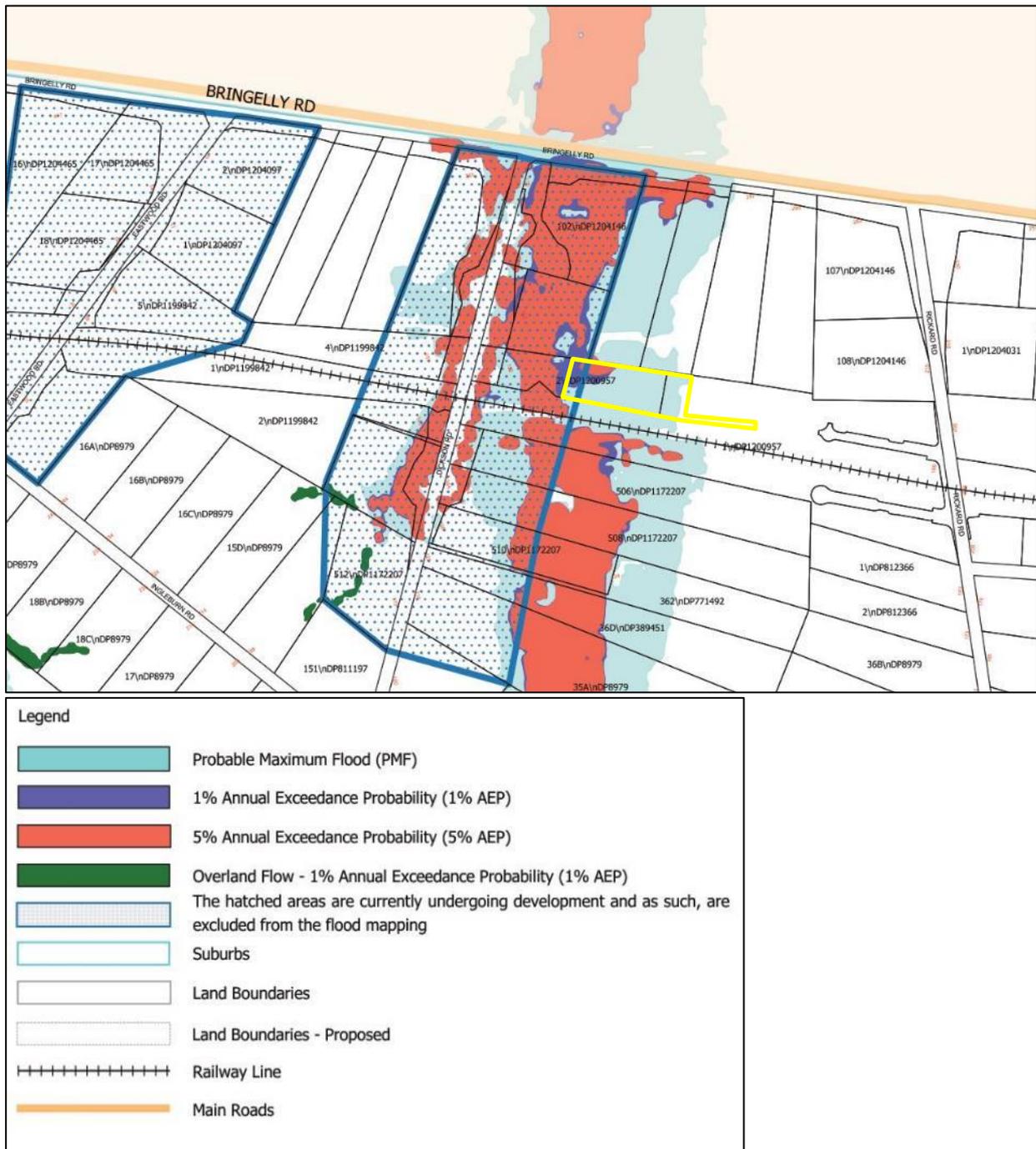


Figure 27 Extract from one per cent AEP Depth and Flood Level Map – Proposal site outlined in yellow (Camden Council, 2019)

The flood mapping shows that a small portion of the west of the Proposal site is affected by a one per cent AEP and a five per cent AEP flood event, and most of the site is mapped in the Probable Maximum Flood (PMF).

The FRMS&P identifies proposed flood mitigation measures on a regional and property scale, which could be implemented to reduce flooding impacts on the development precincts.

6.3.2 Potential impacts

Construction phase

Camden Council stormwater infrastructure is in close proximity to the Proposal site and may be impacted, thus it is proposed that a section of the existing network is to be relocated east within the existing car park to avoid any impacts.

Without appropriate safeguards, pollutants (fuel, chemicals or wastewater from accidental spills, and sediment from excavations and stockpiles) could potentially reach nearby stormwater drains and Kemps Creek. A range of mitigation measures to reduce the incidence of water quality impacts are proposed below and in Section 7.

Activities which would disturb soil during construction work (such as tree removal, excavation for footings, and realignment of kerbing) have the potential to impact upon local water quality as a result of erosion and sedimentation. There is also potential to contaminate local water quality as a result of accidental spills or inadequate fuel and chemical storage practices. Any translocating contaminants would be expected to flow towards the Scalabrini Creek to the west.

The Proposal is located within an area prone to flooding which would be impacted by the one per cent AEP and larger event. Local flooding may impact on construction activities. Moderate to heavy wet weather events may cause localised flooding which could increase the potential for soil erosion and sedimentation impacts and impact on construction activities.

Areas of excavation may need to be locally dewatered as a result of groundwater seepage or rainfall events and runoff. Incorrect dewatering may pose risks to nearby waterways where run-off travels from the site to these areas.

The removal of trees on the Proposal site could potentially have a minor impact on the groundwater levels on the site. However, a majority of the vegetated area would be replaced by hardstand which would reduce direct infiltration of water into the soil.

Mitigation measures have been provided below to minimise the potential for these impacts.

Operational phase

The Proposal is located within an area prone to flooding. The north eastern corner of the Proposal site is subject to flooding for both the five percent AEP and one per cent AEP flood event. The majority of the site is likely to be prone to varying levels of inundation during a peak flood event (Camden Council, 2019). Given the position of the site within the floodplain, the Proposal has the potential to alter flood behaviour in the vicinity including increasing the flood prone area directly upstream around the railway waterway crossing.

Further hydrological assessment would be undertaken to ensure the detailed design would take into consideration stormwater management and flood risks. The detailed design would be developed to minimise impacts to local flooding in surrounding areas and minimise the proposed car park's susceptibility to flooding. Potential impacts of climate change including more frequent and heavy rain events would be considered in the hydrological assessment.

The Camden Flood Risk Management Policy and relevant Camden Council Engineering Specifications would be consulted during detailed design. A Flood Management Plan would be prepared for operation of the car park which addresses risk to car park users from flooding including signage to identify any flood risk areas and management measures in the event of a heavy rainfall event and inundation of the car park.

There would be an increase in impervious areas from approximately 6,300 square metres of hardstand replacing the currently greenfield site. This would result in a change to the drainage of the current area. Therefore, the Proposal has the potential to impact upon Council's drainage infrastructure.

The Proposed multi-storey car park is anticipated to receive most of the rainfall on the top level. The capture of rainfall from the top level would be by downpipes discharging stormwater to the ground level of the site. Proposed car park runoff is to be collected by an existing pit and pipe system along the south-eastern corner of the Proposal site which will discharge into Scalabrini Creek to the west, via a proposed water treatment system and on-site detention.

The stormwater and drainage infrastructure including on-site detention would be designed in accordance with the relevant Transport for NSW, Sydney Water and Council standards and requirements. The implementation of these standards and recommendations is expected to ensure that the works do not adversely impact upon Council's drainage infrastructure.

The stormwater from the Proposal would collect contaminants such as heavy metals or fuel left by vehicles using the car park, which could potentially be conveyed to nearby waterways. A proposed measure to mitigate this impact would be to redirect the stormwater captured through stormwater quality improvement systems before discharging into the local stormwater system. The development is not required to comply with Camden Council standards, however various water quality improvement devices and Water Sensitive Urban Design (WSUD) would be considered for the Proposal. Considerations include provision of gross pollutant traps for primary treatment of water and a separate oil and sediment separating devices. The outcome of the integration of WSUD devices would be provided in the detailed design.

6.3.3 Mitigation measures

The following mitigation measures would be implemented to minimise hydrological and water quality impacts:

- a detailed flood impact assessment would be undertaken during detailed design to confirm the potential changes to flooding risks for areas within the Proposal site, and surrounding properties which have potential to be affected by changes in flood levels and behaviour as a result of the Proposal
- adequate measures are to be provided to ensure that the Proposal would (as far as practicable) avoid any increase in existing flood impacts to surrounding areas/properties and minimised flood risks within the car park. The potential impacts of climate change on flooding shall be considered to ensure safe access and infrastructure is maintained.
- consultation with Camden Council and incorporation of relevant council standards regarding stormwater drainage and flooding, Council's Floodplain Risk Management Policy, Council's Engineering Specification and Camden Flood Risk Management Policy where practicable.
- opportunities to employ WSUD would be investigated and reported on, along with identification of options to reduce the runoff burden to the existing drainage system
- stockpiles would be located outside flood prone areas and away from existing waterways, where possible, in order to reduce the potential impacts to surface water systems
- if the flood impact assessment identifies that inundation of the car park is predicted to occur (for events up to and including the one per cent AEP), an Operational Flood Management Plan would be prepared which addresses flood risks to car park users, including signage to identify any flood risk areas, access restrictions during a flood event, evacuation procedures and emergency access routes.

Refer to Chapter 7 for a list of proposed mitigation measures.

6.4 Noise and vibration

A Noise and Vibration Impact Assessment (NVIA) report by Muller Acoustic Consulting was prepared in April 2020, with results summarised below.

6.4.1 Existing environment

The area around the Proposal site is predominantly made up of greenfield and low density residential properties. The Proposal site is located adjacent to an existing at-grade commuter car park and a railway corridor. The receivers which may be sensitive to noise surrounding the Proposal site have been identified and are shown in Figure 28. The type of sensitive receivers in Figure 28 are identified as follows:

- R for residential
- AR for active recreation
- CC for Child Care
- CH for commercial
- S for school or education/school facility.



Figure 28 Map of Proposal site, receivers, general area of works and compounds

To quantify existing noise levels, long-term unattended noise monitoring was undertaken at representative receiver locations near the project. The locations at which the existing noise levels were monitored, L1 and L2, are shown in Figure 28. The locations are representative of the receivers in surrounding area being of a similar offset from the railway and Rickard Road. The unattended noise monitoring survey was conducted in general accordance with the procedures described in *Australian Standard AS 1055-2018, "Acoustics - Description and Measurement of Environmental Noise"*.

Rating Background Noise Levels (RBLs) are determined from the measurement of L_{A90} noise levels (representing the ambient noise level exceeded for 90 per cent of the monitoring period). The RBLs, are determined based on the results of the noise monitoring. The equivalent continuous sound level (L_{Aeq}) is the average of the varying noise over the sample period. The results of the unattended noise measurements for both monitoring locations, including derived RBLs are summarised in Table 13.

Table 13 Unattended noise monitoring results

Monitoring Location	Period ¹	Measured Background Noise Level (L_{A90}), dB	Measured dB L_{Aeq} (period)
L1	Day	40	58
L1	Evening	40	57
L1	Night	33	54
L2	Day	36	57
L2	Evening	37	52
L2	Night	31	50

Note

1. Standard hours are 7:00 am to 6:00 pm (Monday to Friday); 8:00 am to 1:00 pm (Saturday) and at no work on Sundays and public holidays

The Proposal site is accessed from Rickard Road. The closest residential receivers to the Proposal site on the southern side of the railway on Rickard Road are R02 and R03. These receivers are approximately 18 metres and 17 metres respectively from the centreline of Rickard Road and the road traffic noise levels (measured at L2) have been adjusted to account for offset distance and façade reflection. Similarly, for R19, the closest receiver on the northern side of Rickard Road, the road traffic noise levels (measured at L1) have been adjusted to account for offset distance and façade reflection. The existing road traffic noise levels for receivers R02, R03 and R19 are presented in Table 14.

Table 14 Existing road traffic noise levels

Receiver	Period	Measured Existing Road Traffic Noise Level
R02 Rickard Road South (18 metres from road centreline)	Day	59.2dB L_{Aeq} (15 hour)
	Night	53.5dB L_{Aeq} (9 hour)
R03 Rickard Road South (17 metres from road centreline)	Day	59.4dB L_{Aeq} (15 hour)

Receiver	Period	Measured Existing Road Traffic Noise Level
	Night	53.1dB LAeq(9 hour)
R19 Rickard Road North (30 metres from road centreline)	Day	56.7dB LAeq(15 hour)
	Night	52.8dB LAeq(9 hour)

6.4.2 Potential impacts

Construction phase

Construction noise

The assessment includes identification of potentially affected assessment locations, description of activities involved in the project, derivation of the construction noise criteria for standard and Out of Hours (OOH) periods and quantification of potential noise impacts at receivers.

The assessment and management of noise from construction works is completed using the *NSW Interim Construction Noise Guideline (ICNG)* (Department of Environment and Climate Change, 2000). The ICNG is specifically aimed at managing noise from construction works regulated by DPIE and is used to assist in setting statutory conditions in licences or other regulatory instruments.

The ICNG provides a framework to consider the impacts of construction noise on residences and other sensitive land uses and the Noise Management Levels (NML) provide noise criteria for construction. The application of the ICNG criteria is outlined in Table 15.

Table 15 ICNG Recommended NMLs

Provision description	NML (LAeq 15 minutes)	Application
Recommended standard hours: Monday to Friday 7.00am to 6.00pm Saturday 8.00am to 1.00pm No work on Sunday or Public Holidays ¹	Noise affected RBL + 10dBA	The noise affected level represents the point above which there may be some community reaction to noise. Where the predicted or measured LAeq,15min is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to minimise noise. The proponent should also inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.

Provision description	NML (L_{Aeq} 15 minutes)	Application
Monday to Friday 7.00am to 6.00pm Saturday 8.00am to 1.00pm No work on Sunday or Public Holidays ¹	Highly noise affected 75dBA	The highly noise affected level represents the point above which there may be strong community reaction to noise. Where noise is above this level, the proponent should consider very carefully if there is any other feasible and reasonable way to reduce noise to below this level. If no quieter work method is feasible and reasonable, and the works proceed, the proponent should communicate with the impacted residents by clearly explaining the duration and noise level of the works, and by describing any respite periods that would be provided.
	Noise affected RBL + 5dB	A strong justification would typically be required for works outside the recommended standard hours. The proponent should apply all feasible and reasonable work practices to meet the noise affected level. Where all feasible and reasonable practices have been applied and noise is more than 5dBA above the noise affected level, the proponent should negotiate with the community.

NMLs for construction activities have been developed for receivers during standard construction hours and out of hours periods and are summarised in Table 16. OOH periods are divided into two categories:

- Period 1 (evening/low risk period):
 - Monday to Friday – 6.00pm to 10.00pm,
 - Saturdays – 1.00pm to 6.00pm
 - Sundays and Public Holidays – 8.00am to 6.00pm
- Period 2 (night/medium to high risk period):
 - Monday to Friday – 10.00pm to 7.00am
 - Saturdays, Sundays and Public Holidays – 6.00pm to 7.00am (8.00am on Sunday mornings and Public Holidays).

Table 16 NMLs at surrounding receivers

Location	Assessment Period	RBL, dBA	NML dB $L_{Aeq15min}$
Residential receivers Rickard Road North/Bringelly Road (L1)	Day (Standard Hours)	40	50 (RBL+10dBA)
	Evening (OOH Period 1)	40	45 (RBL+5dBA)
	Night (OOH Period 2)	33	38 (RBL+5dBA)

Location	Assessment Period	RBL, dBA	NML dB L _{Aeq15min}
Residential receivers Rickard Road South/ Dickson Road (L2)	Day (Standard Hours)	36	46 (RBL+10dBA)
	Evening (OOH Period 1)	37	42 (RBL+5dBA)
	Night (OOH Period 2)	31	36 (RBL+5dBA)
Industrial Premises	When in use	N/A	75 (external)
Commercial - offices, retail	When in use	N/A	70 (external)
School classrooms	When in use	N/A	45 (internal)
Places of Worship	When in use	N/A	40 (internal)
Active recreation areas	When in use	N/A	65 (external)

A computer model was developed to predict and quantify project noise emissions to neighbouring receivers for typical construction activities and operations.

Predicted L_{Aeq(15min)} noise emissions at all non-residential receiver types are predicted to satisfy the NMLs for all construction periods.

Noise emissions are predicted to be above NMLs for standard construction hours at receivers nearby along Bringelly Road and Rickard Road near the Proposal site by more than 10dB during relocation of services, installation of external facade and road works.

The highest predicted noise levels are associated with roads works as outlined in Table 17.

Table 17 Predicted Noise Levels - Roadworks

Location	Construction Hours	NML dB L _{Aeq(15min)}	Predicted Noise Level dB L _{Aeq(15min)}	Number of receivers above NML
Bringelly Road 25 receivers	Standard	46	41 - 56	0
Bringelly Road 25 receivers	Period 1	41	41 - 56	16
Bringelly Road 25 receivers	Period 2	36	41 - 56	25
Dickson Road 10 receivers	Standard	50	47 - 52	0

Location	Construction Hours	NML dB LA _{eq} (15min)	Predicted Noise Level dB LA _{eq} (15min)	Number of receivers above NML
Dickson Road 10 receivers	Period 1	45	47 - 52	4
Dickson Road 10 receivers	Period 2	38	47 - 52	10
Rickard Road North 4 receivers	Standard	46	54 - 62	1
Rickard Road North 4 receivers	Period 1	41	54 - 62	4
Rickard Road North 4 receivers	Period 2	36	54 - 62	4
Rickard Road South 18 receivers	Standard	50	41 - 62	0
Rickard Road South 18 receivers	Period 1	45	41 - 62	8
Rickard Road South 18 receivers	Period 2	38	41 - 62	16

For all other scenarios, predicted noise levels are either below the NML or within NML 10dB for standard construction hours. Noise emissions are predicted to be above the OOH NMLs at identified receivers by more than 5dB for all scenarios. OOH construction activities occurring during the night time have the potential to generate noise emissions that may cause sleep disturbance at receivers in proximity to the construction work.

To manage and minimise impacts from construction noise, measures and strategies would be included in the CEMP and implemented. Noise management strategies in this standard may result in the following noise attenuation of up to 10dBA or more.

Where exceedances of the NML are anticipated, a combination of mitigation, management and consultation with the local communities would be implemented.

Construction road traffic

Construction road traffic (noise and vibration) impacts from the project are not anticipated (i.e. from additional vehicles on the public road network). The proposed route via Rickard Road to Bringelly Road would generate approximately two to four (project related) heavy vehicle movements per hour. This is considered negligible and is not expected to increase existing road traffic noise levels at receivers along the route. Furthermore, the project is not expected

to generate a significant increase in vehicles on the surrounding road network compared to the existing vehicle flows.

Vibration

The *Construction Noise and Vibration Strategy* (Transport for NSW, 2018b) sets out safe working distances to achieve the human response criteria for vibration. For a hydraulic hammer, the Construction Noise Strategy sets a safe working distance of 73 metres to achieve the residential human response criteria for continuous vibration. The nearest receivers to the construction area are approximately 200 metres from the project and human exposure to vibration is anticipated to be minimal. Furthermore, where the human response criteria are satisfied, the structural or cosmetic criteria for sensitive receivers will be achieved. Therefore, vibration impacts are not considered to be a significant issue and have not been considered further in this assessment.

Operation phase

A review of the operational noise emissions associated with the car park has been completed to quantify the potential impact on surrounding noise sensitive receivers. The assessment calculated the noise emissions associated with car movements within the car park, including maximum noise events such as door slams engine starting.

Car park noise

The potential noise impacts associated with operation of the Proposal considered general operational vehicle noise (car movement and engine noise) and transient noise events (car door slams, boot slams and horn emissions).

For the assessment of operational noise, a sound power for general car usage (i.e. car movement and engine noise) of 75dB $L_{Aeq(15min)}$ was adopted. To assess the impact of transient noise events such as door or boot slams a sound power level of 85dB L_{Amax} was adopted.

Predicted noise levels from the general operation of the car park are less than 25dB $L_{Aeq(15min)}$ at all identified receivers. Predicted maximum noise level events are less than 30dB L_{Amax} at all identified receivers.

Operational noise levels were calculated to a receiver location directly adjacent and north of the Proposal to assess potential impacts for future residential receivers. Calculations show that a minimum set back of 25 metres will be required to meet the minimum applicable night time NPI criteria of 35dB $L_{Aeq(15min)}$. Wheel squeal was not considered as a potential noise source due to the ability to mitigate this potential noise through the design process.

Road Traffic

The TTAIA for the Proposal (FutureRail, 2020) identifies the largest potential for increases in road traffic would occur along Rickard Road from additional vehicles generated by the Proposal (see Section 6.1).

NSW Road Noise Policy (RNP) defines the road noise assessment criteria for developments. The assessment criteria is shown in Table 18.

Table 18 Measured road traffic

Road category	Type of project/development	Assessment Criteria – dBA Day (7am to 10pm)	Assessment Criteria – dBA Night (10pm to 7am)
Freeways/arterial/sub-arterial Roads	Existing residences affected by additional traffic on freeways/arterial/sub-arterial roads generated by land use developments	60dB LAeq(15hr)	55dB LAeq(9hr)
Local roads	Existing residences affected by additional traffic on local roads generated by land use developments	55dB LAeq(1hr)	50dB LAeq(1hr)
School Classrooms	Proposed road projects and traffic generating developments	40dB LAeq(1hr) (internal)	N/A
Open Space (active use)	Proposed road projects and traffic generating developments	60dB LAeq(1hr)	N/A
Open Space (passive use)	Proposed road projects and traffic generating developments	55dB LAeq(1hr)	N/A

Additionally, the RNP states where existing road traffic noise criteria are already exceeded, any additional increase in total traffic noise level should be limited to 2dBA, which is generally accepted as the threshold of perceptibility to a change in noise level.

For receivers on Rickard Road, the additional road traffic from the Proposal will result in an increase in road traffic noise levels of up to 1.5dB during the daytime period and up to 1.8dB increase during the night time period. However, as the change in noise levels are less than 2dB the objectives of the RNP are satisfied at all identified residential receivers.

6.4.3 Mitigation measures

During detailed design consideration will be given to ensuring the car park design, including materials and finishes mitigates the potential for wheel squeal generated during operation of the car park.

Prior to commencement of works, a Construction Noise and Vibration Management Plan (CNVMP) would be prepared and implemented in accordance with the requirements of the *Interim Construction Noise Guideline* (Department of Environment and Climate Change, 2009), *Construction Noise and Vibration Strategy* (Transport for NSW, 2018b) and the Noise and Vibration Assessment for the Proposal (MAC Consulting, 2020). The CNVMP would take into consideration measures for reducing the source noise levels of construction equipment by construction planning and equipment selection where practicable. Refer to Chapter 7 for a full list of proposed mitigation measures.

6.5 Biodiversity

An Ecological Assessment was prepared by Cumberland Ecology based on a desktop review of existing information and site visits conducted on 21 January 2020 and 12 March 2020.

Government databases were reviewed on 16 August 2019, to identify potential threatened species, populations and ecological communities of the study area. The databases included:

- the NSW NPWS Wildlife Atlas database (OEH 2019)
- the EPBC Act Protected Matters Search Tool (DoEE 2015).

6.5.1 Existing environment

The Proposal is situated partially on a greenfield site previously used as agricultural land near the Scalabrini Creek riparian corridor and partially over the existing at-grade car park directly north of Leppington Station.

The greenfield part of the Proposal site consists of native trees and exotic grasses. Cumberland Plains Woodland (CPW) was identified in this part of the site and is listed as a Critically Endangered Ecological Community (CEEC) under both the BC Act and the EPBC Act. However the CPW within the Proposal site is in moderate condition and conforms to the BC Act listing but does not conform to the Commonwealth listing under the EPBC Act.

Two priority weeds and weeds of national significance were identified within the site including Scotch Thistle (*Onopordum acanthium*) and Fireweed (*Senecio madagascariensis*), which is listed under the *Biosecurity Act 2015*. A photo showing the vegetation present in the greenfield part of the Proposal site is shown in Figure 29.



Figure 29 Vegetation present in the greenfield part of the Proposal site

The existing at-grade car park to the north of Leppington Station was completed in 2015 and consists of garden beds around and between car parking rows comprising of planted native species. The trees planted within the at-grade car park contributed toward offsetting the vegetation removed during construction of the South West Rail link.

The ecological assessment identified three vegetation communities across the Proposal site as shown in Table 19 and Figure 32.

Table 19 Vegetation present within the Proposal site

Vegetation	Area (hectares)
Cumberland Plain Woodland	0.52
Exotic Grassland	0.48
Planted gardens and cleared land	1.11

Biodiversity certification

The South West Growth Centre underwent biodiversity certification, which is a streamlined biodiversity assessment process for areas proposed for development. Land within Leppington as part of the South West Growth Centre was biodiversity certified under the Part 7 of Schedule 7 of TSC Act in 2008. The TSC Act was repealed in 2017 and replaced by the BC Act. However, the *Biodiversity Conservation (Savings and Transitional) Regulation 2017* provided that Part 7 of Schedule 7 of the TSC Act would continue to operate despite the Act being repealed.

Biodiversity certified land is identified on the map titled South West Growth Centre - Biodiversity Certification Amendment No. 2 dated 12 June 2015. The Proposal occurs mostly in the biodiversity certified land with a small portion on non-biodiversity certified land on the western end as shown in Figure 30.



Figure 30 Biodiversity certified land (Cumberland Ecology, 2020)

Leppington Commuter Car Park Review of Environmental Factors – April 2020

Clause 8.4 of the BC Act states that any activities under Part 5 of the EP&A Act carried out on biodiversity certified land are not likely to significantly affect threatened species or ecological communities and the Determining Authority does not need to consider biodiversity impacts on that land. Therefore further ecological assessment is not required on the biodiversity certified land.

As part of the biodiversity certification of the Sydney Growth Centres and Strategic Assessment approval under the EPBC Act, measures to offset the impacts of development were identified. In accordance with the biodiversity certification requirements, \$530 million has been set aside to purchase areas of high conservation value or to enter into private conservation agreements, both inside and outside the Growth Centres. The Growth Centres Biodiversity Offset Program was established to manage the offsets and protect high conservation value bushland in Western Sydney. The Program receives funding annually from the NSW Government at the same rate at which development is expected to occur in the Growth Centres.

Non-Biodiversity Certified land

The ecological assessment considered the small portion of land which was not biodiversity certified, on the western end of the Proposal site (see Figure 30).

The field survey identified CPW within the area, which is represented by a *Eucalyptus moluccana* (Grey Box) individual as shown in Figure 31. Cumberland Plain Woodland occupies an area of approximately 0.005 hectares and the remaining area of 0.17 hectares consists of exotic grasslands (see Figure 32). No threatened flora species were identified as having the potential to occur on the site due to the degraded condition of the majority of the vegetation.



Figure 31 CPW present in the non-biodiversity certified land

The CPW occurs on the southern edge of a larger patch of CPW that stretches northward to Bringelly Road. The patch contains areas that are 100 metres in width as well as areas that are less than 50 metres and represents a riparian corridor associated with Scalabrini Creek.

The non-biodiversity certified area provides limited habitat for fauna species due to the degraded nature of the vegetation. There are some areas of potential habitat for urban adapted species and small reptiles. The potential habitat is not considered to be a reliable resource and it is most likely to be used for foraging by urban adapted bird species such as the Noisy Miner (*Manorina melanocephala*) and Rainbow Lorikeet (*Trichoglossus haematodus*). The area is considered to constitute marginal foraging habitat for a range of highly mobile threatened fauna species that may utilise the site as part of a much larger foraging range. No habitat features were found to occur within the subject site during the survey period.



Figure 32 Map of vegetation present with the Proposal site (Cumberland Ecology, 2020)

6.5.2 Potential impacts

Construction phase

Vegetation removal and trimming would be required where the car park and associated infrastructure is proposed. The exotic grasses and CPW, as shown in Figure 32, would be removed to facilitate construction of the Proposal. The planted vegetation as part of the at-grade car park would likely need to be cleared to allow for establishment of the laydown, storage and worker parking during construction. The Proposal and construction site establishment would be designed to avoid the need for vegetation removal and trimming as much as possible.

There is potential for indirect impacts to aquatic species within Scalabrini Creek by erosion and sediment entering the waterway during construction. Impacts to water quality have been considered in Sections 6.3 and 6.6.

A Flora and Fauna Management Plan (FFMP) would be developed, which would identify vegetation within the Proposal site to be protected during construction and specific measures to minimise and avoid impacts to vegetation and fauna. Priority weeds observed during construction activities would be managed in accordance with the *Biosecurity Act 2015* and mitigation measures to control the spread of priority weeds would be included in the FFMP.

Non – Biodiversity Certified land

The Proposal may require non-biodiversity certified land to be cleared for temporary use of the area for the site compound and ancillary infrastructure during construction. Vegetation removal in the non-biodiversity certified area would include up to 0.005 ha of CPW and 0.17 ha of exotic grassland. Minimal disturbance to CPW vegetation community in the form of removal of one mature *Eucalyptus moluccana* (Grey Box) individual would not be significant. No threatened flora species would be removed during vegetation clearing.

Although some threatened fauna species may utilise the area occasionally and opportunistically for foraging, none are likely to solely rely on the subject site and therefore the impacts would be minor.

The construction of the Proposal would not significantly impact threatened species, populations or ecological communities or their habitats, within the meaning of the *Biodiversity Conservation Act 2016* or *Fisheries Management Act 1994* and therefore a Species Impact Statement is not required. Nor is it likely to significantly impact threatened species, populations, ecological communities or migratory species, within the meaning of the *EPBC Act*.

After construction works in the area have finished, all disturbed areas would be stabilised, vegetation protection measures would be removed, and landscaping or revegetation measures as identified during detailed design would be implemented. These activities would be undertaken in accordance with the FFMP and Transport for NSW's *Vegetation Management (Protection and Removal) Guideline* (Transport for NSW 2019a).

The vegetation removed in the non-biodiversity certified area would be offset in accordance with the Transport for NSW *Vegetation Offset Guide* (TRANSPORT FOR NSW 2019). The guide specifies the ratios required for replacement planting for the removal of single or a group of trees. The recommended offsetting ratios required for tree removal based on trunk Diameter at Breast Height (DBH) associated with the Proposal are shown in Table 20. A total of 14 trees would need to be planted.

Table 20 Tree Replacement Planting Ratio for non- biodiversity certified land

DBH (cm)	Number of trees removed	Planting Ratio	Replacement Plantings
>60	1	8:1	8
15-60	0	4:1	0
<15	3	2:1	6
Total	4		14

Biodiversity Certified Land

As part of the biodiversity certification process, the impacts of vegetation removal have already been considered and no further ecological assessment is required. The impacts to biodiversity certified land are offset through the BC Act and do not require additional offsets by proponents.

However, as the trees planted within the at-grade car park were originally part of the offset plantings for the South West Rail Link, Transport for NSW would apply the *Vegetation Offset Guide*. All planted vegetation removed within the at-grade car park as shown in Figure 32 would be offset in accordance with the *Vegetation Offset Guide* (Transport for NSW, 2019). A total of 422 trees would need to be planted should all the planted vegetation within the Proposal site be removed as outlined in Table 21.

Table 21 Tree Replacement Planting Ratio for planted vegetation

DBH (cm)	Number of trees removed	Planting ratio	Replacement plantings
>60	0	8:1	0
15-60	6	4:1	24
<15	199	2:1	398
Total	206		422

Operation phase

Landscaping for the operation of the Proposal would consider the local flora and fauna and include native species endemic to the area. The landscaping within the at-grade car park would be replaced where possible. WSUD would be incorporated into the design to address water quality impacts to Scalabrini Creek from the operational car park as outlined Section 6.3.

6.5.3 Mitigation measures

The biodiversity impacts of the Proposal and for the surrounding land would be minimised by a range of mitigation measures as outlined in Chapter 7. An FFMP would be developed to identify vegetation to be removed and protected and measures to minimise impacts to vegetation and fauna during construction. Disturbance of vegetation would be limited to the minimum amount necessary to construct the Proposal and would be clearly demarcated onsite prior to construction, to avoid unnecessary vegetation removal. Trees to be retained would be protected through temporary protection measures.

Construction of the Proposal must be undertaken in accordance with Transport for NSW's *Vegetation Management (Protection and Removal) Guideline* (Transport for NSW, 2018c) and Transport for NSW's *Fauna Management Guideline* (Transport for NSW, 2018d).

Any vegetation removed within the at-grade car park and the non-biodiversity certified area of the Proposal site would be offset in accordance with Transport for NSW's *Vegetation Offset Guide* (Transport for NSW, 2019). There may be opportunity to undertake primary or secondary offsetting. There is potential for plantings to provide an opportunity for the enhancement of habitat connectivity on the northern side of the station throughout the surrounding area of CPW with the reinstatement of native trees. Other areas identified as suitable for tree planting include garden beds. The locations of all plantings will be determined during the detailed design phase of the Proposal.

6.6 Aboriginal heritage

EMM Consulting completed an Aboriginal heritage due diligence assessment (AHDDA) Statement of in January 2020 (EMM, 2020) to identify potential heritage constraints on multiple sites considered for development.

6.6.1 Existing environment

A search of Aboriginal heritage information management system (AHIMS) Web Services was undertaken on 19 November 2019 and a site inspection by a qualified archaeologist was conducted on 26 November 2019.

The Proposal site is within 200 metres of a major 3rd order creek which is considered to pre-date European landscape modification. Therefore, the site is located nearby a landscape feature likely to indicate the presence of Aboriginal objects in accordance to the Due Diligence Code. An AHIMS search identified one isolated Aboriginal object, in close proximity to the site however it is identified as destroyed.

The site inspection did not identify any evidence of cultural material, and disturbance was observed from previous agricultural practices, installation of the car park east of the Proposal site and potentially from construction of the T2 Inner West and Leppington Train Line.

Due to the observed disturbance and destruction of the existing AHIMS site, it is considered that there would be a low risk of Aboriginal objects being within the Proposal site.

6.6.2 Potential impacts

Construction phase

The AHDDA identified the Proposal site as having low risk of Aboriginal objects being present within the site boundaries due to the history of disturbance. Therefore, it is considered unlikely that any Aboriginal heritage items would be harmed during construction of the Proposal.

The AHDDA recommended that the Proposal could proceed with caution and in the event any unexpected Aboriginal items are uncovered, works would cease, and further advice would be sought.

Operation phase

As no known Aboriginal objects or sites are located within the Proposal site, works and the potential for unknown Aboriginal heritage items is low, the Proposal is unlikely to affect Aboriginal heritage during operation.

6.6.3 Mitigation measures

All construction staff would undergo an induction in the recognition of Aboriginal cultural heritage. This training would include information such as the importance of Aboriginal cultural heritage material and places to the Aboriginal community, as well as the legal implications of removal, disturbance and damage to any Aboriginal cultural heritage material and sites.

If unforeseen Aboriginal objects are uncovered during construction, the procedures contained in Transport for NSW's *Unexpected Heritage Finds Guideline* (Transport for NSW, 2016a) would be followed, and works within the vicinity of the find would cease immediately.

The Construction Contractor would immediately notify the Transport for NSW Project Manager and Transport for NSW Environment and Planning Manager so they can assist in co-ordinating next steps which are likely to involve consultation with an Aboriginal heritage consultant, the Environment, Energy and Science Group in the Department of Planning, Industry and Environment (formerly known as Office of Environment and Heritage) and the Local Aboriginal Land Council.

If human remains are found, work would cease, the site secured and the NSW Police and the EES Group would be notified. Where required, further archaeological investigations and an Aboriginal Heritage Impact Permit would be obtained prior to works recommencing at the location.

6.7 Contamination, geology and soils

A preliminary site investigation was carried out by FutureRail to provide a preliminary targeted assessment of the engineering properties including soil and groundwater conditions. The report prepared by FutureRail dated 6 January 2020 included geotechnical, contamination and service location findings (FutureRail 2020a).

6.7.1 Existing environment

Soils and geology

The Proposal site comprises a rectangular lot of undeveloped land which is adjacent onto the rail corridor to the south, agricultural land to the north, undeveloped land to the west and a continuation of the existing car park to the east.

The site investigation found the underground condition generally comprised of a two metres to five metres residual soil of thick, high plasticity silty, moist clay underlain by four metres to eight metres thick of Bringelly Shale which is overlain of moderately and slightly weathered Bringelly Shale.

The 1:100,000 Soil Landscape Series for Sydney map identifies the Proposal site as being within the Blacktown (bt) soil landscape group and South Creek (sc) soil landscape. The Blacktown soil group is typically dominated by silt and fine alluvial materials. The topsoil is generally described as a silty clay loam or a dark brown silt loam. The pH ranges from neutral to slightly acidic. Below topsoil there is a hard setting clay loam to light grey mottled saline clay. The pH ranges from moderately acidic to slightly acidic.

Soils in the Birrong group typically have high organic content and moderate fertility. The erodibility of the top soil is generally low. The erosion hazard ranges from low to moderate for concentrated flows.

Landform

The Proposal site is located on lightly undulating ground approximately 76 metres (relative level to Australian Height Datum) above mean sea level. Locally the undulating ground gently

drops towards the west. The nearest water body is Scalabrini Creek approximately 40 metres west of the Proposal site.

Acid Sulfate Soil

The Sydney Growth Centres SEPP and Camden Local Environmental Plan does not have any Acid Sulfate Soils (ASS) mapped within one kilometre surrounding the Proposal site.

Contamination

The area within the Proposal site partly greenfield and partly on an at-grade car park. Potentially contaminating land uses surrounding the proposed works include:

- Leppington Station and rail corridor located to the south
- road corridor and historical or current spills / leaks from vehicles or vehicle crashes
- mechanic located about 350 metres north east
- fire brigade located about 650 metres south west.

A review of the NSW EPA contaminated land register and the POEO Act public register on 23 January 2020 indicates the Proposal site is not listed as a contaminated site, nor has the site been subject to any regulation under the *Contaminated Land Management Act 1997*.

A review of the POEO Act public register for existing or former Environmental Protection Licences (EPL) did not identify any existing or former licences issued for commercial premises adjacent to the Proposal corridor, however, there is an existing EPL held by Koala Petroleum located approximately 500 metres to the south for petroleum products storage. There are also three existing EPLs located about one kilometre to the south-west for the construction of Camden Valley Way upgrade Stage 3 Camden Valley Way and Cowpasture Road to Ingleburn Road Leppington (surrendered 2016).

Site investigations and a desktop contamination review did not identify any obvious soil contamination issues or potential soil contamination sources for the majority of the Proposal site. However, it identified a small section of the western end of the Proposal site which may have been previously subject to excavation and a possible pit.

6.7.2 Potential impacts

Construction phase

The Proposal would require excavation work for foundations and footings and pits for lift shafts. Other trenching, excavation or grading would be required for installing services, drainage works, new paving, and tree removal.

Due to the relatively flat area of the Proposal site impacts to soils would be minimal during construction. It is not expected that potential or actual ASS would be disturbed during the ground levelling as there is no ASS mapped near the Proposal. An ASS Management Plan would therefore not be required.

Potential risks associated with the proposed works may include:

- fuel or oil spills or leaks from plant, equipment or vehicles
- dust generation whilst levelling the ground for the multi storey car park.

In the unlikely event, contamination is encountered during construction, appropriate control measures would be implemented to manage the immediate risks. All other work that may

impact on the contaminated area would cease until the nature and extent of the contamination has been confirmed and any necessary site-specific controls or further actions identified in consultation with the Transport for NSW Project Manager and Transport for NSW Environment and Planning Manager and /or the EPA.

In the absence of appropriate management measures, there is a risk that new contaminants may be introduced to the local environment during construction works, for example through fuels and oils used in construction equipment and plant. These construction activities have the potential to impact upon local water quality and drainage as a result of erosion through runoff and sedimentation downstream.

Given the relatively flat terrain, some vegetation to the north while in the south surrounding roads and car park consisting of mainly sealed surfaces. There is relatively low risk of erosion through runoff. Regardless, erosion risks would be adequately managed through the implementation of standard measures as outlined in the 'Blue Book' - *Managing Urban Stormwater: Soils and Construction* (Landcom, 2004) plus the Construction Environmental Management Plan (CEMP) and Erosion and Sediment Control Plan would ensure suitable erosion control measures are put in place and maintained correctly during construction.

There is also potential for activities to result in the contamination of soil through accidental fuel or chemical spills from construction plant and equipment. In order to minimise potential risks designated fuelling areas would be established and contractors would be informed of correct fuelling techniques and proper handling techniques for potential contaminating materials. Fuelling areas and chemical storage areas would be equipped with spill kits.

Operation phase

The operation of the Proposal would have no material change to geology, soils, hazardous materials or contamination.

Use of the car park may result in negligible spills and leaks from cars during operation however these would be managed as part of the water sensitive urban design elements of the Proposal.

6.7.3 Mitigation measures

A CEMP would be developed which includes mitigation measures to manage erosion and sediment control. A site-specific Erosion and Sediment Control Plan would be prepared in accordance with the 'Blue Book' *Managing Urban Stormwater: Soils and Construction* (Landcom, 2004) and updated throughout construction so it remains relevant to the activities.

Adequate water quality and hazardous materials procedures (including spill management procedures, use of spill kits and procedures for refuelling and maintaining construction vehicles/equipment) would be implemented in accordance with relevant EPA guidelines and the Transport for NSW Chemical Storage and Spill Response Guidelines.

An appropriate Unexpected Finds Protocol, considering asbestos containing materials and other potential contaminants, would be also included in the CEMP.

Refer to Table 22 for a list of proposed mitigation measures.

6.8 Waste and resources

6.8.1 Existing environment

Minimal waste is generated on the Proposal site as it is currently partially a vegetated greenfield site and partially an at-grade car park. The waste generated includes personal waste from commuters using the existing car park.

6.8.2 Potential impacts

The waste regulatory framework is administered under the principal legislation of the POEO Act and the *Waste Avoidance and Resource Recovery Act 2001* (WARR Act). The purpose of these Acts are to prevent degradation of the environment, eliminate harmful wastes, reduce the amount of waste generated and establish priorities for waste reuse, recovery and recycling. The WARR Act establishes a waste hierarchy, which comprises the following principles:

- avoidance of waste – minimising the amount of waste generated during construction by avoiding unnecessary resource consumption (avoiding the use of inefficient plant and construction equipment and avoiding materials with excess embodied energy, waste and excessive packaging)
- resource recovery – reusing, reprocessing and recycling waste products generated during construction to minimise the amount of waste requiring disposal
- disposal – where resources cannot be recovered, they would be appropriately disposed of to minimise the potential adverse environmental impacts likely to be associated with their disposal.

By adopting the WARR Act principles and considering the requirements of the ISCA Infrastructure Sustainability Rating Scheme (v1.2), Transport for NSW encourages the most efficient use of resources and reduces cost and environmental harm in accordance with the principles of ecologically sustainable development, as outlined in Section 8 of this REF.

Construction phase

The quantities of waste generated during construction of the Proposal are not likely to be substantial. Waste streams likely to be generated during the construction stage include:

- excavated soil, sediment and rock
- vegetation mulched native and exotic vegetation including weeds
- asphalt and concrete
- surplus building materials
- building wastes including metals, timbers, plastics, concrete, packaging
- general waste, including food, glass, plastic, paper and other wastes generated by construction workers.

The quantities and types of wastes expected to be generated, are not likely to pose any unusual or problematic waste management issues. Approximately 90 per cent of construction waste and demolition waste (by weight) would aim to be diverted from landfill. All usable spoil would be to be beneficially reused on site where possible. Waste generated on site would be recycled where possible or otherwise disposed of in accordance with EPA guidelines.

Resource use on site during construction would be minimised where possible. Water consumption during construction would be monitored and reported on and consumption of potable water would be reduced where practicable.

Materials to be used in the construction of the car park would be selected with consideration of life cycle impacts calculated by assessing the environmental impacts of materials from the point of extraction, through to transportation, use, operation and end of life.

Operation phase

Minimal waste is expected to be generated from use of the Proposal. The main waste generated during the Proposal would be from commuters disposing of personal waste.

6.8.3 Mitigation measures

Waste management would be undertaken in accordance with the WARR Act and in consideration of the ISCA Infrastructure Sustainability Rating Scheme (v1.2). A Waste Management Plan (WMP) would be developed as part of the CEMP to manage waste reduction, reuse and disposal during construction. All wastes generated by the Proposal would be managed in accordance with the PoEO Act.

6.9 Air quality

6.9.1 Existing environment

The existing air quality in the area surrounding the Proposal is predominantly influenced by emissions from motor vehicles from the surrounding road and rail network. In addition to Leppington Station to the south, surrounding minor roads include Rickard Road, and Dickson Road and major roads include Bringelly Road. Other local sources of air emissions would include residential and commercial land uses, particularly petrol storage commercial businesses and mechanics.

Sensitive receivers identified within and surrounding the area include residences, businesses, an early learning centre, church, memorial park and several schools. Most of the area consists of large lot residential properties, which are generally located adjacent to the northern and southern sides of Leppington Station.

Based on a review of the existing land uses surrounding the Proposal, the existing air quality is considered to be characteristic of an urban environment, with particular industrial and transport emission influences.

DPIE undertakes air quality monitoring across NSW. The Proposal site is located within the Sydney south-east monitoring region with air quality monitored at fixed sites. Bringelly, Sydney South West is the closest monitoring site to the Proposal. A search of the daily regional air quality index for the Sydney south-west region showed that the region generally experienced 'Good' air quality values with some outlying values of 'Poor' and 'Hazardous'. Poor and hazardous air quality was recorded in November 2019, December 2019 and parts of January 2020 due to smoke from widespread bushfires in NSW.

A search of the National Pollutant Inventory database (NPI) 2017/18 data within Leppington (postcode 2179) indicates that there are no nearby facilities that are monitored for air quality. The closest facilities which has reported pollution is over two kilometres away and is the Austral Main Line Valve in Austral and the Raby Road Main Line Value in Leppington owned by Jemena Eastern Gas Pipelines.

Other sources of localised air pollution within proximity of the Proposal are likely to be car / truck exhaust fumes and diesel locomotives.

Potentially affected receptors within the vicinity of the site include the following:

- users of the adjacent commercial and recreational areas
- local residents

- pedestrians and commuters within the local area.

6.9.2 Potential impact

Air pollution can cause a wide range of health symptoms, from coughing, wheezing and shortness of breath, to more serious impacts for those with pre-existing respiratory and cardiac conditions.

Construction phase

An increase in greenhouse gas emissions, primarily carbon dioxide, would be expected during construction of the Proposal. Much of this would be from embedded energy within materials, followed by plant/equipment use. The greatest opportunities for reducing greenhouse gas emissions associated with the Proposal are likely to be in material selection.

Operation of stationary plant and equipment would generate exhaust emissions during the construction phase, although it is unlikely that these would result in adverse air quality given the context of works along an existing heavily trafficked rail line and road network. The works would be located in close proximity to residents, commuters and other sensitive receivers and dust emissions from moving plant and equipment have the potential to cause disturbance and affect human health. All construction vehicles and equipment are expected to be maintained in a serviceable condition such that exhaust emissions are reduced to manufacturer specified levels.

Particulate emissions would be associated with a number of stationary and mobile sources as well as potential wind erosion of exposed soil.

Anticipated sources of dust and dust generating activities include:

- loading and transfer of material from trucks
- stockpiling activities
- excavation and preparation of the columns and footings, lift pits, tree removal, drainage works and road works
- general construction works.

The total amount of dust generated would depend on the demolition methodology and soil properties (silt and moisture content), the activities undertaken and the prevailing meteorological conditions.

The operation of plant, machinery and trucks may also lead to increases in exhaust emissions in the local area; however, these impacts would be minor and short-term.

The likely airborne dust load generated during a typical construction day would be small and therefore would be unlikely to result in reduced local air quality at the nearest potentially affected receptors, given the relatively small construction footprint, and with the implementation of proposed control measures.

The Proposal would have a minimal impact on air quality as it would not involve extensive excavation or other land disturbance with the potential to generate significant quantities of dust. Appropriate measures would be established to manage dust emissions from demolition works.

Operation phase

It is estimated that during operation the Proposal would generate 420 inbound movements during the morning peak hour and 340 outbound trips during the evening peak hour.

Conversely, increased patronage of the rail system would likely reduce commuter vehicle movements on local roads and therefore reduce vehicle emissions in the long term, which would have some relative beneficial effects on local and regional air quality.

Overall impacts of air quality during the operation of the Proposal are considered minimal. The provision of additional parking spaces would increase the number of vehicles operating within the immediate vicinity of the Proposal. In the context of the local environment and existing vehicle patterns and number, however, this change is expected to be minimal.

Furthermore renewable energy options such a solar panels would be investigated during detailed design and would minimise the Proposal's contribution to greenhouse gas production.

6.9.3 Mitigation measures

Air quality management and monitoring for the Proposal would be undertaken in accordance with Transport for NSW's *Air Quality Management Guideline* (Transport for NSW, 2018f). The following mitigation measures would be implemented:

- turn machinery off rather than left to idle when they are not in use
- maintain vehicles to manufacturer's standards
- cover stockpiles with geofabric or equivalent
- use watercarts during high wind weather events and dry conditions

Refer to Chapter 7 for a list of proposed mitigation measures.

6.10 Non-Aboriginal heritage

This chapter details the non-Aboriginal heritage impacts that have the potential to occur during the construction and operation of the Proposal.

A desktop non-Aboriginal heritage assessment was conducted for the Proposal area. The assessment considered the Proposal's impact on all heritage-listed items and potential subsurface archaeology within and adjacent to the Proposal site. The following databases were searched on 31 January 2020:

- Australian Heritage Database (Australian Government, 2020)
- State Heritage Inventory (DPIE, 2020)
- Camden LEP
- Liverpool LEP
- Section 170 Heritage and Conservation Registers of Transport for NSW.

The results of the database searches are discussed in the following Sections.

6.10.1 Existing environment

The Proposal is in an area that has undergone transformation over the past two centuries. The built heritage reflects the area's post European settlement, agricultural past and development history. While the area is historically important, the existing built heritage is limited. Table 6 identifies the listed heritage items identified in proximity of the Proposal.

Table 6 shows the location of the local built non-Aboriginal heritage (Camden and Liverpool LEP Schedule 5) items in proximity to the Proposal. The database search results found no State or Commonwealth listed items within close proximity to the Proposal.

Table 6 Built non-Aboriginal heritage items

ID	Item and listing reference	Location	Significance	Distance from site (approximate)
117	Bringelly Road Cultural Landscape Area	Bringelly Rd between King St and Cowpasture Rd Leppington NSW 2179	Local (Liverpool LEP Schedule 5 Environmental Heritage)	300 metres north
16	Scott Memorial Park	380 Bringelly Rd, Leppington NSW 2179	Local (Liverpool LEP Schedule 5 Environmental Heritage)	350 metres north east
19	Leppington Public School	144 Rickard Rd, Leppington NSW 2179	Local (Camden LEP Schedule 5 Environmental Heritage)	560 metres south east

6.10.2 Potential impacts

Construction phase

Given the works would be entirely restricted to the Proposal site which has a low likelihood of archaeological items and there are no heritage items located in close proximity, it is considered unlikely the Proposal would impact identified local heritage places and items.

Operation phase

No impacts to non-Aboriginal heritage items in the vicinity of the Proposal are anticipated during operation of the Proposal.

6.10.3 Mitigation measures

In the event that any unexpected archaeological deposits are identified within the Proposal site during construction, the procedures contained in Transport for NSW's *Unexpected Heritage Finds Guideline* (Transport for NSW, 2016a) would be followed, and works within the vicinity of the find would cease immediately.

6.11 Socio-economic impacts

6.11.1 Existing environment

As outlined in Section 1.3.2, the Proposal is located within the suburb of Leppington within the South West Growth Centre, a major land release area approximately 40 kilometres south west of the CBD.

The areas to the north and south of the railway corridor are currently used for low density residential and formerly agricultural purposes. A child care centre is located approximately 230 metres north of the Proposal site and Leppington Public School is located approximately 560 metres south east of the Proposal site on Rickard Road.

The population of Leppington was 3,498 people in 2016 according to the Census conducted in 2016. A high majority of residents lived in separate houses and only a very small number of residents lived in apartments (ABS 2016a).

The land within the South West Growth Centre is being released for residential, employment and other urban development including the establishment of town centres. The land around Leppington Station is planned to be developed into a civic centre and includes mostly land zoned B4 Mixed Use which has not yet been developed.

The redevelopment of the land surrounding the Proposal site and broader area will comprise attractive and vibrant communities including built elements for residential, retail and commercial use. The Precinct Plan for Austral and Leppington North outlines the various proposed land uses adjacent the Proposal site including green space adjacent Scalabrini Creek, Mixed Use and a Health Facility to the north and retention of transport corridors of road and rail to the east and south.

The population for Leppington North is forecast to increase by 25,000 persons between 2016 and 2036 (idcommunity, 2017) and accessible, safe and connected transport options are a key infrastructure component for this developing community. Currently the commuter parking demand around Leppington Station exceeds the existing capacity. Commuters are struggling to find parking within a reasonable distance from the station during morning peak commuter period.

6.11.2 Potential impacts

Construction phase

During construction, the surrounding area of the Proposal may be affected by minor increase in traffic, reduction in parking and changes to access arrangements including pedestrian access as outlined Section 6.1.

Existing residents may also be temporarily impacted by changes in the visual landscape (Section 6.2) and noise (Section 6.4).

Construction activities would predominantly be confined within the Proposal site. Construction would require the temporary closure of a portion of the existing at-grade car park, resulting in the temporary displacement of available parking spaces. To minimise the disruption to commuters, offset parking would be provided (the construction of which is subject to a separate planning approval).

The child care centre, Leppington Public School, surrounding residents, businesses, Council and Sydney Trains would be notified of the works, and where practicable, consulted about construction timing, alternative parking arrangements and any traffic management arrangements including detours if required.

It is not anticipated that any temporary acquisitions would be required for the construction stage of the Proposal.

Sustainability criteria for the Proposal would be established to encourage the Construction Contractor to purchase goods and services locally, helping to ensure the local community benefits from the construction of the Proposal.

Operation phase

The Proposal would result in an approximately additional 1,000 new commuter parking spaces and improvement in accessibility, safety and connectivity for surrounding residents and users of Leppington Station and surrounding facilities.

The Proposal would encourage public transport use and the increased patronage would provide long term social and economic impacts for existing and future businesses in the growing suburb of Leppington. The provision of accessible, safe and connected transport infrastructure is in accordance with the Commuter Car Park Program objectives.

6.11.3 Mitigation measures

Mitigation and management measures would be implemented to avoid, minimise or manage potential socio-economic impacts. These mitigation and management measures have been identified in Table 22. Specific measures to manage impacts associated with traffic, noise, air quality and visual amenity are outlined in the following Sections:

- Section 6.1– traffic and transport
- Section 6.1 – parking and access
- Section 6.4 – noise and vibration
- Section 6.9 – air quality
- Section 6.2 – visual amenity.

A Community Liaison Management Plan (CLMP) would be prepared prior to construction to identify all potential stakeholders and best practice methods for consultation with these groups during construction. The plan would also encourage feedback and facilitate opportunities for the community and stakeholders to have input into the project, where practicable.

Contact details for a 24-hour construction response line, Project Infoline and email address would be provided for ongoing stakeholder contact throughout the construction phase.

The community would be kept informed of construction progress, activities and impacts in accordance with the CLMP to be developed prior to construction.

6.12 Bushfire risk

6.12.1 Existing environment

Bushfire prone land, as identified on the eplanning spatial viewer map (DPIE, 2020), has three categories:

- 'Vegetation Category 1', which is the most hazardous vegetation category generally refers to forest, woodlands
- 'Vegetation Category 2' refers to vegetated areas such as moist forests, shrublands, open woodlands, grasslands, and is considered less at risk than category 1 land.
- 'Vegetation Buffer' is area between 30 metres and 100 metres of the above two categories.

The north west corner of the Proposal site is mapped as vegetation buffer and is adjacent the Vegetation Category 2 land.

6.12.2 Potential impacts

Construction phase

Some construction activities may cause or increase the risk of bushfire include:

- site preparation activities such as mowing, slashing, and use of power tools
- undertaking 'hot works' (i.e. use of oxy acetylene equipment, and welding equipment)
- operating a petrol, liquefied petroleum gas or diesel-powered vehicles or plants near land containing combustible material

- operating plant fitted with power hydraulics on land containing combustible material
- storage of fuel.

High risk activities would be undertaken with care or avoided where possible during high risk bushfire weather.

Operation phase

The majority of existing vegetation on site would be removed for the purpose of constructing a multi-storey commuter car park. There will be some minor landscaping following construction and vegetation offsets however the location is to be determined.

Further development of the area in line with the Austral and Leppington North Precinct Plan will further reduce bushfire risk. The Proposal would be unlikely to increase bushfire risk in the vicinity.

6.12.3 Mitigation measures

Mitigation measures would be incorporated in the CEMP to minimise risk of bushfire from construction activities.

6.13 Sustainability

The design of the Proposal would be based on the principles of sustainability, including aiming for an excellent rating as a program under the ISCA Infrastructure Sustainability Rating Tool Version 1.2 and the Transport for NSW Environmental Management System (EMS). These guidelines require a number of mandatory and discretionary initiatives to be applied. Refer to Section 3.2 for more information regarding the application of these guidelines.

Electric vehicle charging stations would be provisioned for in the Proposal to support alternative vehicle use. Renewable energy options such as rooftop solar panels and batteries would be investigated in detailed design. WSUD would also be considered as identified in Section 6.3 to minimise impacts from stormwater runoff from the Proposed car park.

Approximately 90% of construction waste and demolition waste (by weight) would aim to be diverted from landfill. All usable spoil would be to be beneficially reused on site where possible. Water consumption during construction would be monitored and reported on and consumption of potable water would be reduced where practicable.

Materials to be used in the construction of the car park would be selected carefully. Consideration would be given to life cycle impacts which are calculated by assessing the environmental impacts of materials from the point of extraction, through to transportation, use, operation and end of life.

Further positive impacts in relation to climate change and sustainability associated with the Proposal includes encouraging a reduction in private vehicle use and increasing the accessibility of public transport services.

6.14 Climate change

The dynamic nature of our climate system indicates a need to focus attention on how to adapt to the changes in climate and understand the limitation of adaptation. The effects of climate on the Sydney region can be assessed in terms of weather changes, storm intensity, flooding and increased risk of fire.

Climate change could lead to an increase in the intensity of rainfall events, whereby the rainfall expected to occur in a one per cent AEP flood event would occur more frequently. The

potential changes to rainfall and flooding would be considered in the hydrological assessment proposed in Section 6.3.

Climate change could lead to an increase in frequency and severity in bushfires. The Proposal is partially situated on land mapped as vegetation buffer to bush fire prone land and would be designed with appropriate fire protection measures.

6.15 Greenhouse gas emissions

An increase in greenhouse gas emissions, primarily carbon dioxide, would be expected during construction of the Proposal due to exhaust emissions from construction machinery and vehicles transporting materials and personnel to and from site.

The detailed design process would undertake an AS 14064-2 (Greenhouse Gases - project level) compliant carbon foot printing exercise in accordance with Transport for NSW's *Greenhouse Gas Inventory Guide for Construction Projects* (Transport for NSW, 2013). The carbon footprint would be used to inform decision making in design and construction.

Due to the scale of the Proposal and the short term temporary nature of the individual construction works, it is considered that greenhouse gas emissions resulting from the construction of the Proposal would be minor. Furthermore, greenhouse gas emissions generated during construction would be kept to a minimum through the implementation of the standard mitigation measures detailed in Table 25.

It is anticipated that, once operational, the Proposal may result in an increase in use of public transport and a relative decrease in use of private motor vehicles by commuters to travel to and from Leppington Station. A modal shift in transport usage may reduce the relative amount of fuel consumed by private motor vehicles with a corresponding relative reduction in associated greenhouse gas emissions in the local area.

6.16 Cumulative impacts

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

A search of the following registers in March 2020 identified the following major development applications are listed in Camden LGA and the suburb of Leppington:

- DPIE's Major Projects Register
 - Bunnings Warehouse Leppington – Lot 3 Bringelly Road Business Hub approximately 3 kilometres from the Proposal site - currently being assessed by DPIE
 - New East Leppington Primary School – Corner Commissioners Drive and Elkhorn Street approximately 4 kilometres from the Proposal site – currently being assessed by DPIE
 - Amity College Primary and Secondary School – 85 Byron Road and 63 Ingleburn Road approximately 1.5 kilometres from the Proposal site – currently being assessed by DPIE.
- Sydney Western City Planning Panel Development and Planning Register – Under assessment (no projects were determined for approval in 2019 or 2020)
 - 182 Byron Road – Residential flats

- 120 Ingleburn Road – Mixed Use Shop Top Housing Development
- 32 Dwyer Road – St Yosip Parish, New Church, Hall and Early Learning Centre
- 28 Ingleburn Road – Residential flats and six storey residential development
- 283 Bringelly Road – Development of a mixed use development
- 47 Ingleburn Road – Three residential flat buildings
- 297 Bringelly Road– Mixed use development
- 202 Byron Road – Staged mixed use development
- Camden Application Register – Development Applications on exhibition in March 2020:
 - 6 Leslie Way – New two storey dwelling
 - 10 Leslie Way – Two storey dwelling with attached secondary dwelling
 - 35 Byron Road – Subdivision
 - 182 Byron Road – Demolition and construction of 386 apartments
 - 431 Bringelly Road – Service Station

The following road upgrades have been identified in the vicinity of the Proposal site:

- Bringelly Road Upgrade – second stage between King Street, Rossmore and The Northern Road is due for completion in in 2020
- Rickard Road between Bringelly Road, Leppington and Oran Park Drive, Catherine Fields is proposed to be upgraded.

As evident from the above proposed developments, Leppington is undergoing significant growth and development including transport infrastructure, commercial development and residential developments including multi-storey apartments and subdivisions. It is reasonable to consider that some of these developments, or other determined projects which have not yet commenced construction may be in the construction phase concurrently with this Proposal.

As none of these developments occur in close proximity to the Proposal site, the potential for cumulative impacts is minimised. There is potential for cumulative traffic impacts associated with vehicle movements on arterial roads and connecting roads in particular developments located on Byron Road which may also use Rickard Road as an access point from Bringelly Road.

Due to the limited number of residential receivers currently residing in proximity to the Proposal it is considered that other impacts upon amenity such as noise, dust or visual would not be significant.

It is anticipated that the cumulative impacts could be adequately managed through implementation of consultation with relevant stakeholders during preparation of management plans including the CTMP and associated mitigation measures in Chapter 7.

The potential cumulative impacts associated with the Proposal would be further considered as the design develops and as further information regarding the location and timing of potential developments is released. Environmental management measures would be developed and implemented as appropriate. Consultation with nearby construction sites would be undertaken where necessary.

7 Environmental management

This chapter of the REF identifies how the environmental impacts of the Proposal would be managed through environmental management plans and mitigation measures.

7.1 Environmental management plans

A CEMP for the construction phase of the Proposal would be prepared in accordance with the requirements of the Transport for NSW EMS. The CEMP would provide a centralised mechanism through which all potential environmental impacts relevant to the Proposal would be managed and outline a framework of procedures and controls for managing environmental impacts during construction.

The CEMP would incorporate but not be limited to the following key sub plans:

- Construction Noise and Vibration Management Plan
- Construction Traffic Management Plan
- Soil and Water Management Plan
- Erosion and Sediment Control Plan
- Flora and Fauna Management Plan
- Waste Management Plan

The CEMP would also include at a minimum all environmental mitigation measures identified below in Section 7.2 any conditions from licences or approvals required by legislation, and a process for demonstrating compliance with such mitigation measures and conditions.

7.2 Mitigation measures

Mitigation measures for the Proposal are listed in Table 22. These proposed measures would minimise the potential adverse impacts of the Proposal identified in Chapter 6 should the Proposal proceed.

Table 22 Proposed mitigation measures

No.	Mitigation measure
General	
1.	A Construction Environmental Management Plan (CEMP) would be prepared by the Construction Contractor in accordance with the relevant requirements of <i>Guideline for Preparation of Environmental Management Plans</i> , Department of Infrastructure, Planning and Natural Resources, 2004) for approval by Transport for NSW, prior to the commencement of construction and following any revisions made throughout construction.
2.	A project risk assessment including environmental aspects and impacts would be undertaken by the Construction Contractor prior to the commencement of construction and documented as part of the CEMP.
3.	An Environmental Controls Map (ECM) would be developed by the Construction Contractor in accordance with Transport for NSW's <i>Guide to Environmental Controls Map</i> (Transport for NSW, 2017b) for approval by Transport for NSW, prior to the commencement of construction and following any revisions made throughout construction.

No.	Mitigation measure
4.	Prior to the commencement of construction, all contractors would be inducted on the key project environmental risks, procedures, mitigation measures and conditions of approval.
5.	Site inspections to monitor environmental compliance and performance would be undertaken during construction at appropriate intervals.
6.	Service relocation would be undertaken in consultation with the relevant authority. Contractors would mark existing services on the ECM to avoid direct impacts during construction.
7.	Any modifications to the Proposal, if approved, would be subject to further assessment and approval by Transport for NSW. This assessment would need to demonstrate that any environmental impacts resulting from the modifications have been minimised.
Traffic and transport	
8.	<p>Prior to the commencement of construction, a CTMP would be prepared as part of the CEMP and would include at a minimum:</p> <ul style="list-style-type: none"> • ensuring adequate road signage at construction work sites to inform motorists and pedestrians of the work site ahead to ensure that the risk of road accidents and disruption to surrounding land uses is minimised • maximising safety and connectivity for pedestrians and cyclists • ensuring adequate sight lines to allow for safe entry and exit from the site • ensuring access to railway stations, businesses, and residential properties (unless affected property owners have been consulted and appropriate alternative arrangements made) • managing impacts and changes to on and off-street parking and requirements for any temporary replacement provision • parking locations for construction workers within the construction site or away from stations and busy residential areas and details of how this will be monitored for compliance • routes to be used by heavy construction-related vehicles to minimise impacts on sensitive land uses and businesses • details for rail replacement bus stops if required, including appropriate signage to direct patrons, in consultation with the relevant bus operators. Particular provisions would also be considered for the accessibility impaired • measures to manage traffic flows around the area affected by the Proposal, including as required regulatory and direction signposting, line marking and variable message signs and all other traffic control devices necessary for the implementation of the CTMP. <p>Consultation with the relevant roads authorities would be undertaken during preparation of the CTMP. The performance of all project traffic arrangements must be monitored during construction.</p>
9.	Communication would be provided to the community and local residents to inform them of changes to parking, pedestrian access and/or traffic conditions including vehicle movements and anticipated effects on the local road network relating to site works.
10.	Road Occupancy Licences for temporary road closures would be obtained, where required.
11.	Wherever possible, deliveries would be scheduled outside peak commuter periods.
12.	Should it be required, any additional construction worker parking (in excess of what would fit in the construction compound) is not to impact on the existing commuter parking in the surrounding area.

No.	Mitigation measure
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Landscape and visual amenity	
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13. An Urban Design Plan is to be submitted to Transport for NSW and endorsed. The Urban Design Plan is to address the fundamental design principles as outlined in Transport for NSW's Urban Design Guidelines. The Urban Design Plan shall:
- demonstrate a robust understanding of the site through a comprehensive site analysis to inform the design direction, demonstrate connectivity with street networks, transport modes, active transport options, and pedestrian distances
 - identify opportunities and challenges
 - establish site specific principles to guide and test design options
 - demonstrate how the preferred design option responds to the design principles established in Transport for NSW's Urban Design Guidelines, including consideration of Crime Prevention through Environmental Design Principles.

The Urban Design Plan is to include the Public Domain Plan for the chosen option and will provide analysis of the:

- Landscape design approach including design of pedestrian and bicycle pathways, interchange facilities, new planting and opportunities for public art
- Materials Schedule including materials and finishes for proposed built works, colour schemes, paving and lighting types for public domain, fencing and landscaping
- An Artist's Impression or Photomontage to communicate the proposed changes to the precinct

The following design guidelines are available to assist and inform the Urban Design Plan for the Proposal:

- *"Around the Tracks" Urban Design Guidelines*, Transport for NSW Interim 2016
- *TAP Urban Design Plan, Guidelines*, Transport for NSW, Draft 2018
- *Commuter Car Parks, urban design guidelines*, Transport for NSW, Interim 2017
- *Managing Heritage Issues in Rail Projects Guidelines*, Transport for NSW, Interim 2016
- *Creativity Guidelines for Transport Systems*, Transport for NSW, Interim 2016
- *Water Sensitive Urban Design Guidelines for Transport for NSW Projects*, 2016.

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14. All permanent lighting would be designed and installed in accordance with the requirements of standards relevant to *AS 1158 Road Lighting* and *AS 4282 Controlling the Obtrusive Effects of Outdoor Lighting*.

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15. Worksite compounds would be screened with shade cloth (or similar material, where necessary) to minimise visual impacts from key viewing locations.

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16. Temporary hoardings, barriers, traffic management and signage would be removed when no longer required.

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17. During construction, graffiti would be removed in accordance with Transport for NSW's Standard Requirements.

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18. Detailed design of the facade would consider muted colours and tones to blend the Proposal with the natural elements of the neighbourhood, and to create a less obtrusive façade. The detailed design would include provision of a façade treatment along the frontage with the open space corridor and northern service road.

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19. Landscaping would use species endemic to the area where possible and include planting along the railway corridor. Following construction of the Proposal, landscaping would be maintained to a high standard and weeds would be removed.
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No.	Mitigation measure
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Noise and vibration	
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| 20. | Prior to commencement of works, a Construction Noise and Vibration Management Plan (CNVMP) would be prepared and implemented in accordance with the requirements of the <i>Interim Construction Noise Guideline</i> (Department of Environment and Climate Change, 2009), <i>Construction Noise and Vibration Strategy</i> (Transport for NSW, 2018b) and the Noise and Vibration Assessment for the Proposal (MAC Consulting, 2020). The CNVMP would take into consideration measures for reducing the source noise levels of construction equipment by construction planning and equipment selection where practicable. |
| 21. | <p>The CNVMP would outline measures to reduce the noise impact from construction activities. Reasonable and feasible noise mitigation measures which would be considered, include:</p> <ul style="list-style-type: none">regularly training workers and contractors (such as at the site induction and toolbox talks) on the importance of minimising noise emissions and how to use equipment in ways to minimise noiselocating site compound and worker amenities away from sensitive receiversavoiding any unnecessary noise when carrying out manual operations and when operating plantensuring spoil is placed and not dropped into awaiting trucksavoiding/limiting simultaneous operation of noisy plant and equipment within discernible range of a sensitive receiver where practicableswitching off any equipment not in use for extended periods e.g. heavy vehicles engines would be switched off whilst being unloadedavoiding deliveries at night/evenings wherever practicableno idling of delivery truckskeeping truck drivers informed of designated vehicle routes, parking locations and acceptable delivery hours for the siteminimising talking loudly; no swearing or unnecessary shouting, or loud stereos/radios onsite; no dropping of materials from height where practicable, no throwing of metal items and slamming of doors. |
| 22. | <p>The CNVMP would include measures to reduce the construction noise and vibration impacts from mechanical activities. Reasonable and feasible noise mitigation options which would be considered, include:</p> <ul style="list-style-type: none">maximising the offset distance and shielding between noisy plant and adjacent sensitive receivers and determining safe working distancesusing the most suitable equipment necessary for the construction works at any one timedirecting noise-emitting plant away from sensitive receiversregularly inspecting and maintaining plant to avoid increased noise levels from rattling hatches, loose fittings etc.where practicable avoid the concurrent use of noisy equipment/plantusing non-tonal reversing/movement alarms such as broadband (non-tonal) alarms or ambient noise-sensing alarms for all plant used regularly onsite (greater than one day), and for any out of hours worksuse of quieter and less vibration emitting construction methods where feasible and reasonable. |
| 23. | A noise monitoring program would be included in the CVMP and implemented to quantify noise emissions from construction activities and guide practical reasonable and feasible noise control measures. |

No.	Mitigation measure
24.	<p>Work would generally be carried out during standard construction hours (i.e. 7.00 am to 6.00 pm Monday to Friday; 8.00 am to 1.00 pm Saturdays).</p> <p>Any work outside these hours may be undertaken if approved by Transport for NSW and the community is notified prior to these works commencing. An Out of Hours Work application form would need to be prepared by the Construction Contractor and submitted to the Transport for NSW Environment and Planning Manager for any works outside normal hours.</p>
25.	<p>Where the $L_{Aeq(15\text{minute})}$ construction noise levels are predicted to exceed 75 dBA and/or 30 dBA above the Rating Background Level at nearby affected sensitive receivers, respite periods would be observed, where practicable, and in accordance with Transport for NSW's <i>Construction Noise and Vibration Strategy</i> (Transport for NSW, 2018b). This would include restricting the hours that very noisy activities can occur.</p>
26.	<p>Work would be conducted behind temporary hoardings/screens wherever practicable. The installation of construction hoarding would take into consideration the location of residential receivers to ensure that 'line of sight' is broken, where feasible.</p>
27.	<p>Vibration resulting from construction and received at any structure outside of the Proposal area would be managed in accordance with:</p> <ul style="list-style-type: none"> • for structural damage vibration - the vibration objectives outlined in Transport for NSW's <i>Construction Noise and Vibration Strategy</i> (7TP-ST-157/4.0) which includes <i>British Standard BS 7385-2:1993 Evaluation and measurement for vibration in buildings Part 2</i> • for human exposure to vibration the acceptable vibration - values set out in the <i>Environmental Noise Management Assessing Vibration: A Technical Guideline</i> (Department of Environment and Conservation, 2006) which includes <i>British Standard BS 7385-2:1993 Guide to Evaluation of Human Exposure to Vibration in Buildings (1 Hz to 80 Hz)</i>.
28.	<p>Property conditions surveys would be completed prior to piling, excavation of bulk fill or any vibratory works including jack hammering and compaction for all buildings/structures/roads with a plan distance of 20 metres from the works (unless otherwise determined following additional assessment they are not likely to be adversely affected).</p>
29.	<p>Affected child care centres, schools and other identified sensitive receivers are to be consulted in relation to noise mitigation measures to identify any noise sensitive periods.</p>
Aboriginal heritage	
30.	<p>All construction staff would undergo an induction in the recognition of Aboriginal cultural heritage material. This training would include information such as the importance of Aboriginal cultural heritage material and places to the Aboriginal community, as well as the legal implications of removal, disturbance and damage to any Aboriginal cultural heritage material and sites.</p>
31.	<p>If unforeseen Aboriginal objects are uncovered during construction, the procedures contained in Transport for NSW's <i>Unexpected Heritage Finds Guideline</i> (Transport for NSW, 2016a) would be followed, and works within the vicinity of the find would cease immediately. The Construction Contractor would immediately notify the Transport for NSW Project Manager and Transport for NSW Environment and Planning Manager so they can assist in co-ordinating next steps which are likely to involve consultation with an Aboriginal heritage consultant, the EES Group and the Local Aboriginal Land Council. If human remains are found, work would cease, the site secured and the NSW Police and the EES Group notified. Where required, further archaeological investigations and an Aboriginal Heritage Impact Permit would be obtained prior to works recommencing at the location.</p>

No.	Mitigation measure
Non-Aboriginal heritage	
32.	In the event that any unanticipated archaeological deposits are identified within the project site during construction, the procedures contained in Transport for NSW's <i>Unexpected Heritage Finds Guideline</i> (Transport for NSW, 2016a) would be followed, and works within the vicinity of the find would cease immediately. The Construction Contractor would immediately notify the Transport for NSW Project Manager and the Transport for NSW Environment and Planning Manager so they can assist in co-ordinating the next steps which are likely to involve consultation with an archaeologist and EES Group. Where required, further archaeological work and/or consents would be obtained for any unanticipated archaeological deposits prior to works recommencing at the location.
Hydrology and water quality	
33.	A detailed Flood Impact Assessment would be undertaken to confirm the potential changes to flooding impacts for areas within the Proposal site, and surrounding properties which have potential to be affected by changes in flood levels and behaviour as a result of the Proposal.
34.	Adequate measures are to be provided to ensure that the Proposal would (as far as practicable) avoid any increase in existing flood impacts to surrounding areas/properties and minimised flood risks within the car park. The potential impacts of climate change on flooding shall be considered to ensure safe access and infrastructure is maintained.
35.	Consultation with Camden Council and incorporation of relevant council standards regarding stormwater drainage and flooding, Council's Floodplain Risk Management Policy, Council's Engineering Specification and Camden Flood Risk Management Policy, where practicable.
36.	Opportunities to employ WSUD would be investigated and reported on, along with identification of options to reduce the runoff burden to the existing drainage system.
37.	If the Flood Impact Assessment identifies that inundation of the car park is predicted to occur (for events up to and including the one per cent AEP), an Operational Flood Management Plan would be prepared which addresses flood risks to car park users, including signage to identify any flood risk areas, access restrictions during a flood event, evacuation procedures and emergency access routes.
Biodiversity	
38.	Prior to commencement of works, a Flora and Fauna Management Plan (FFMP) would be prepared in accordance with Transport for NSW's <i>Vegetation Management (Protection and Removal) Guideline</i> (Transport for NSW 2019a), Transport for NSW's <i>Fauna Management Guideline</i> (Transport for NSW 2019b) and the Ecological Assessment for the Proposal (Cumberland Ecology 2020). The FFMP would take into consideration measures to minimise and avoid impacts to vegetation and fauna during construction:
39.	All workers would be provided with an environmental induction prior to commencing work onsite. This induction would include information on the protection measures to be implemented to protect vegetation, penalties for breaches and locations of areas of sensitivity.
40.	Disturbance of vegetation would be limited to the minimum amount necessary to construct the Proposal. Trees/vegetation nominated to be removed in the FFMP would be clearly demarcated onsite prior to construction, to avoid unnecessary vegetation removal. Trees to be retained would be protected through temporary protection measures discussed below.

No.	Mitigation measure
41.	Tree Protection Zones (TPZs) would be established around trees to be retained, as nominated in the FFMP. Tree protection would be undertaken in line with <i>AS 4970-2009 Protection of Trees on Development Sites</i> and would include exclusion fencing of TPZs.
42.	In the event of any tree to be retained becoming damaged during construction, the Construction Contractor would immediately notify the Transport for NSW Project Manager and Transport for NSW Environment and Planning Manager to coordinate the response which may include contacting an arborist to inspect and provide advice on remedial action, where possible.
43.	Pre-clearance surveys will be conducted in all areas of vegetation that are required to be cleared or altered. An ecologist will supervise the removal of any habitat items (e.g. nests, tree hollows) identified in the pre-clearance surveys.
44.	Should the detailed design or onsite works determine the need to remove or trim any additional trees, which have not been identified in the REF, the Construction Contractor would be required to complete Transport for NSW's Tree Removal Application Form and submit it to Transport for NSW for approval.
45.	Weed control measures, consistent with Transport for NSW's <i>Weed Management and Disposal Guideline</i> (Transport for NSW 2015), would be developed and implemented as part of the CEMP to manage the potential dispersal and establishment of weeds during the construction phase of the project. This would include the management and disposal of weeds in accordance with the <i>Biosecurity Act 2015</i> .
46.	A vegetation offset plan is to be prepared for the Proposal. Any vegetation removed within the at-grade car park and the non-biodiversity certified area of the Proposal site would be offset in accordance with Transport for NSW's <i>Vegetation Offset Guide</i> (Transport for NSW 2019), Department of Planning, Industry and Environment (DPIE) requirements and in consultation with the relevant council, and/or the owner of the land upon which the vegetation is to be planted.
Socio-economic	
47.	Sustainability criteria for the Proposal would be established to encourage the Construction Contractor to purchase goods and services locally, helping to ensure the local community benefits from the construction of the Proposal.
48.	Feedback through the consultation process would be encouraged to facilitate opportunities for the community and stakeholders to have input into the project, where practicable.
49.	A CLMP would be prepared prior to construction to identify all potential stakeholders and best practice methods for consultation with these groups during construction. The plan would also encourage feedback and facilitate opportunities for the community and stakeholders to have input into the project, where practicable.
50.	Contact details for a 24-hour construction response line, Project Infoline and email address would be provided for ongoing stakeholder contact throughout the construction phase.
51.	The community and identified stakeholders would be kept informed of construction progress, activities and impacts in accordance with the CLMP to be developed prior to construction.
Soils and water	

No.	Mitigation measure
52.	Prior to commencement of works, a site-specific Erosion and Sediment Control Plan would be prepared in accordance with the <i>'Blue Book' Managing Urban Stormwater: Soils and Construction</i> (Landcom, 2004) and updated throughout construction so it remains relevant to the activities. The Erosion and Sediment Control Plan measures would be implemented prior to commencement of works and maintained throughout construction.
53.	Erosion and sediment control measures would be established prior to any clearing, grubbing and site establishment activities and would be maintained and regularly inspected (particularly following rainfall events) to ensure their ongoing functionality. Erosion and sediment control measures would be maintained and left in place until the works are complete and areas are stabilised.
54.	Vehicles and machinery would be properly maintained and routinely inspected to minimise the risk of fuel/oil leaks. Construction plant, vehicles and equipment would also be refuelled offsite, or in a designated refuelling area.
55.	All fuels, chemicals and hazardous liquids would be stored away from drainage lines, within an impervious bunded area in accordance with Australian Standards, EPA Guidelines and Transport for NSW's <i>Chemical Storage and Spill Response Guidelines</i> (Transport for NSW, 2018e).
56.	Adequate water quality and hazardous materials procedures (including spill management procedures, use of spill kits and procedures for refuelling and maintaining construction vehicles/equipment) would be implemented in accordance with relevant EPA guidelines and the Transport for NSW <i>Chemical Storage and Spill Response Guidelines</i> (Transport for NSW, 2018e) during the construction phase. All staff would be made aware of the location of the spill kits and be trained in how to use the kits in the case of a spill.
57.	In the event of a pollution incident, works would cease in the immediate vicinity and the Construction Contractor would immediately notify the Transport for NSW Project Manager and Transport for NSW Environment and Planning Manager. The EPA would be notified by Transport for NSW if required, in accordance with Part 5.7 of the POEO Act.
58.	In the unlikely event, contamination is encountered during construction, appropriate control measures would be implemented to manage the immediate risks. All other work that may impact on the contaminated area would cease until the nature and extent of the contamination has been confirmed and any necessary site-specific controls or further actions identified in consultation with the Transport for NSW Project Manager and Transport for NSW Environment and Planning Manager and/or the EPA.
59.	Should groundwater be encountered during excavation works, groundwater would be managed in accordance with the requirements of the <i>Waste Classification Guidelines</i> (EPA, 2014) and Transport for NSW's <i>Water Discharge and Reuse Guideline</i> (Transport for NSW, 2017c).
60.	Stockpiles would be located outside flood prone areas and away from existing waterways, where possible, in order to reduce the potential impacts to surface water systems
Air quality	
61.	Air quality management and monitoring for the Proposal would be undertaken in accordance with Transport for NSW's <i>Air Quality Management Guideline</i> (Transport for NSW, 2018f).
62.	Methods for management of emissions would be incorporated into project inductions, training and pre-start/toolbox talks.

No.	Mitigation measure
63.	Plant and machinery would be regularly checked and maintained in a proper and efficient condition. Plant and machinery would be switched off when not in use, and not left idling.
64.	Vehicle and machinery movements during construction would be restricted to designated areas and sealed/compacted surfaces where practicable.
65.	<p>To minimise the generation of dust from construction activities, the following measures would be implemented:</p> <ul style="list-style-type: none"> • apply water (or alternate measures) to exposed surfaces (e.g. unpaved roads, stockpiles, hardstand areas and other exposed surfaces) • cover stockpiles when not in use • appropriately cover loads on trucks transporting material to and from the construction site and securely fix tailgates of road transport trucks prior to loading and immediately after unloading • prevent mud and dirt being tracked onto sealed road surfaces.
Waste and contamination	
66.	<p>A Waste Management Plan is to be prepared as part of the CEMP to address waste management and would at a minimum:</p> <ul style="list-style-type: none"> • identify all potential waste streams associated with the works and outline methods of disposal of waste that cannot be reused or recycled at appropriately licensed facilities • detail other onsite management practices such as keeping areas free of rubbish • specify controls and containment procedures for hazardous waste and asbestos waste • outline the reporting regime for collating construction waste data.
67.	An appropriate Unexpected Finds Protocol, considering asbestos containing materials and other potential contaminants, would be included in the CEMP. Procedures for handling asbestos containing materials, including licensed contractor involvement as required, record keeping, site personnel awareness and waste disposal to be undertaken in accordance with WorkCover requirements.
68.	All spoil to be removed from site would be tested to confirm the presence of any contamination. Any contaminated spoil would be disposed of at an appropriately licensed facility.
69.	All spoil and waste must be classified in accordance with the <i>Waste Classification Guidelines Part 1: Classifying waste</i> (EPA, 2014) prior to disposal.
70.	Any concrete washout would be established and maintained in accordance with Transport for NSW's <i>Concrete Washout Guideline</i> – (Transport for NSW, 2018g) with details included in the CEMP and location marked on the ECM.
71.	Approximately 90 per cent of construction waste and demolition waste (by weight) would aim to be diverted from landfill. All usable spoil would be to be beneficially reused on site where possible.

No.	Mitigation measure
Bushfire Risk	
72.	Bushfire risk management measures would be incorporated in the CEMP to minimise risk of bushfire from construction activities particularly during high risk days. High risk activities would be undertaken with care or avoided where possible during high risk bushfire weather.
Sustainability, climate change and greenhouse gases	
73.	Detailed design and construction of the Proposal is to be undertaken in accordance with the ISCA Infrastructure Sustainability Rating Scheme (v1.2).
74.	The detailed design process would undertake an AS 14064-2 (Greenhouse Gases - project level) compliant carbon footprinting exercise in accordance with Transport for NSW's <i>Greenhouse Gas Inventory Guide for Construction Projects</i> (Transport for NSW, 2013). The carbon footprint would be used to inform decision making in design and construction.
75.	During detailed design, investigation of renewable energy option including incorporation of rooftop solar and battery storage.
Cumulative	
76.	The potential cumulative impacts associated with the Proposal would be further considered as the design develops and as further information regarding the location and timing of potential developments is released. Environmental management measures would be developed in the CEMP and implemented as appropriate. Consultation with nearby construction sites would be undertaken where necessary.

8 Conclusion

This REF has been prepared in accordance with the provisions of Section 5.5 of the EP&A Act, taking into account to the fullest extent possible, all matters affecting or likely to affect the environment as a result of the Proposal.

The Proposal would provide the following benefits:

- additional commuter parking in close proximity to Leppington Station facilitating improved opportunities to change modes of transport
- increasing connectivity and convenience to and from Leppington Station potentially increasing the use of public transport
- improved customer experience by providing modern car parking facilities with weather protection for the majority of parking spaces and security features including lighting and CCTV cameras
- reduction of the need for commuters to park in local streets, potentially improving traffic and road safety.

The following key impacts have been identified should the Proposal proceed:

- temporary visual, noise and vibration impacts during the construction period
- a minor increase in local traffic movements during operation of the proposed car park
- increased noise and visual impacts to surrounding receivers during operation
- loss of vegetation within the Proposal site which will be offset in accordance with the *Vegetation Offset Guide* (Transport for NSW, 2019)
- potential to alter the behaviour of surface water in the vicinity including increasing run-off and increasing flood prone areas directly upstream around the railway waterway crossing
- visual impacts due to introduction of a new structure to the landscape.

This REF has considered and assessed these impacts in accordance with clause 228 of the EP&A Regulation and the requirements of the EPBC Act (refer to Chapter 6, Appendix A and Appendix B). Based on the assessment contained in this REF, it is considered that the Proposal is not likely to have a significant impact upon the environment or any threatened species, populations or communities. Accordingly, an EIS is not required, nor is the approval of the Minister for Planning.

The Proposal has also taken into account the principles of ESD and sustainability (refer to Section 4.3 and Section 6.13). These would be considered further during the detailed design, construction and operational phases of the Proposal. This would ensure the Proposal is delivered to maximum benefit to the community, is cost effective and minimises any adverse impacts on the environment.

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Appendix A Consideration of matters of National Environmental Significance

The table below demonstrates Transport for NSW's consideration of the matters of NES under the EPBC Act to be considered in order to determine whether the Proposal should be referred to Commonwealth Department of the Environment and Energy.

Matters of NES	Impacts
<p>Any impact on a World Heritage property? There are no World Heritage properties within 1km of the Proposal.</p>	Nil
<p>Any impact on a National Heritage place? There are no National Heritage places within 1km of the Proposal.</p>	Nil
<p>Any impact on a wetland of international importance? There are no wetlands of international importance within 1km of the Proposal.</p>	Nil
<p>Any impact on a listed threatened species or communities? It is unlikely that the development of the Proposal would significantly affect listed threatened species or communities (see Section 6.5).</p>	Negligible
<p>Any impacts on listed migratory species? It is unlikely that the development of the Proposal would significantly affect any listed migratory species.</p>	Nil
<p>Does the Proposal involve a nuclear action (including uranium mining)? The Proposal does not involve a nuclear action.</p>	Nil
<p>Any impact on a Commonwealth marine area? There are no Commonwealth marine areas in the vicinity of the Proposal.</p>	Nil
<p>Does the Proposal involve development of coal seam gas and/or large coal mine that has the potential to impact on water resources? The Proposal is for a rail infrastructure facility and is not related to coal seam gas or coal mining.</p>	Nil
<p>Additionally, any impact (direct or indirect) on Commonwealth land? The Proposal would not be undertaken on or near any Commonwealth land.</p>	Nil

Appendix B Consideration of clause 228

The table below demonstrates Transport for NSW's consideration of the specific factors of clause 228 of the EP&A Regulation in determining whether the Proposal would have a significant impact on the environment.

Factor	Impacts
<p>(a) Any environmental impact on a community?</p> <p>There would be some temporary impacts to the community during construction, particularly in relation to noise, traffic, access and visual amenity. The temporary displacement of the existing car parks would be an inconvenience to commuters, local shoppers, and owners of commercial premises. However to minimise this impact offset parking would be provided under a separate approval. Mitigation measures outlined in 6.11 would be implemented to manage and minimise adverse impacts.</p>	Minor
<p>(b) Any transformation of a locality?</p> <p>The Proposal would include the introduction of new visible elements in the landscape through the construction of a new multi-storey car park adjacent to the existing at-grade commuter car park near Leppington Station. Vegetation removal will be required to facilitate the development of the Proposal and would be subject to offsetting in accordance with the Transport for NSW Vegetation Offset Guide (Transport for NSW, 2019)</p> <p>The Proposal would have a positive contribution to the locality by helping to address the high demand for commuter car parking spaces. The Proposal also provides infrastructure that supports potential growth and provides improved public transport facilities.</p>	Minor
<p>(c) Any environmental impact on the ecosystem of the locality?</p> <p>Due to the removal of vegetation within the Proposal site, the Proposal would have a minor impact on the local ecosystem as discussed in Section 6.5.</p>	Minor
<p>(d) Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality?</p> <p>Some short-term impacts during construction would be anticipated, particularly in relation to noise, traffic and access and visual amenity. There would be some minor impacts to visual amenity in particular for residents in the vicinity.</p> <p>During operation the Proposal would have positive impacts to the community through providing a modern low rise car park structure with improved access, lighting and safety measures (such as CCTV).</p>	Minor
<p>(e) Any effect on a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or other special value for present or future generations?</p> <p>The Proposal site is not located in close proximity to registered heritage items and Aboriginal Heritage items are unlikely to be harmed by the Proposal. The visual impacts from the Proposal are anticipated to be moderately low.</p> <p>A landscape and visual impact assessment was completed and is summarised in Section 6.2.</p>	Minor

Factor	Impacts
<p>(f) Any impact on the habitat of protected fauna (within the meaning of the <i>National Parks and Wildlife Act 1974</i>)?</p> <p>The impact on the habitat of protected fauna is likely to be low as identified in the ecological assessment (Cumberland Ecology, 2020). One mature tree and some minor native vegetation is likely to be removed in the non-biodiversity certified area (see Section 6.5).</p>	Nil
<p>(g) 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>The Proposal is unlikely to endanger species as identified in the ecological assessment (Cumberland Ecology 2020). One mature tree and some minor native vegetation may be removed in the non- biodiversity certified area (see Section 6.5).</p>	Nil
<p>(h) Any long-term effects on the environment?</p> <p>The Proposal is unlikely to have any long-term effects on the environment.</p>	Nil
<p>(i) Any degradation of the quality of the environment?</p> <p>The Proposal will result in the removal of vegetation and minor earthworks. Impacts from the Proposal will be minimised by the implementation of the mitigation measures identified in Section 7.2.</p>	Minor
<p>(j) Any risk to the safety of the environment?</p> <p>Construction of the Proposal would be managed in accordance with the mitigation measures outlined in this REF and a CEMP. The Proposal is unlikely to cause risks to the safety of the environment provided the recommended mitigation measures are implemented.</p>	Minor
<p>(k) Any reduction in the range of beneficial uses of the environment?</p> <p>The Proposal is unlikely to have any reduction in the range of beneficial uses of the environment.</p>	Nil
<p>(l) Any pollution of the environment?</p> <p>The Proposal is unlikely to cause any pollution to the environment provided the recommended mitigation measures are implemented.</p>	Minor
<p>(m) Any environmental problems associated with the disposal of waste?</p> <p>The Proposal is unlikely to cause any environmental problems associated with the disposal of waste.</p> <p>All waste would be managed and disposed of in accordance with the EPA Waste Classification Guidelines (EPA, 2014). Mitigation measures would be implemented to ensure waste is reduced, reused or recycled where practicable.</p>	Nil
<p>(n) Any increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply?</p> <p>The Proposal is unlikely increase demands on resources that are or are likely to become in short supply.</p>	Nil

Factor	Impacts
<p>(o) Any cumulative environmental effect with other existing or likely future activities?</p> <p>The cumulative effects of the Proposal are described in Section 6.16. Where feasible, environmental management measures would be coordinated to reduce any cumulative construction impacts. The Proposal is unlikely to have any significant adverse long-term impacts.</p>	Nil
<p>(p) Any impact on coastal processes and coastal hazards, including those under projected climate change conditions?</p> <p>The Proposal is not located in the coastal zone and would not affect or be affected by any coastal processes or hazards.</p>	Nil