

Transport for NSW

# Commuter Car Park Program Warwick Farm Station

Review of Environmental Factors



*Artist's impression of the proposed Warwick Farm Station Commuter Car Park Extension, subject to change during detailed design*

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## Abbreviations

Term	Meaning
<b>AGCP</b>	At-Grade Car Park
<b>AHIMS</b>	Aboriginal Heritage Information Management System
<b>AS</b>	Australian Standard
<b>ASS</b>	Acid Sulfate Soils
<b>BC Act</b>	<i>Biodiversity Conservation Act 2016 (NSW)</i>
<b>CBD</b>	Central Business District
<b>CEMP</b>	Construction Environmental Management Plan
<b>CCTV</b>	Closed circuit television
<b>CLM Act</b>	<i>Contaminated Land Management Act 1997 (NSW)</i>
<b>CLMP</b>	Community Liaison Management Plan
<b>CNVMP</b>	Construction Noise and Vibration Management Plan
<b>CTMP</b>	Construction Traffic Management Plan
<b>DBH</b>	Diameter Breast Height
<b>DBYD</b>	Dial Before You Dig
<b>DPIE</b>	NSW Department of Planning, Industry and Environment
<b>ECM</b>	Environmental Controls Map
<b>EES Group</b>	Environment, Energy and Science Group in the Department of Planning, Industry and Environment (formerly known as Office of Environment and Heritage)
<b>EPA</b>	Environment Protection Authority
<b>EP&amp;A Act</b>	<i>Environmental Planning and Assessment Act 1979 (NSW)</i>
<b>EP&amp;A Regulation</b>	<i>Environmental Planning and Assessment Regulation 2000 (NSW)</i>
<b>EPBC Act</b>	<i>Environment Protection and Biodiversity Conservation Act 1999 (Cwlth)</i>
<b>EPL</b>	Environment Protection Licence
<b>ESD</b>	Ecologically Sustainable Development (refer to Definitions)
<b>FM Act</b>	<i>Fisheries Management Act 1994 (NSW)</i>
<b>Heritage Act</b>	<i>Heritage Act 1977 (NSW)</i>
<b>ICNG</b>	<i>Interim Construction Noise Guideline</i> (Department of Environment and Climate Change, 2009).



Term	Meaning
<b>Infrastructure SEPP</b>	<i>State Environmental Planning Policy (Infrastructure) 2007 (NSW)</i>
<b>LEP</b>	Local Environmental Plan
<b>LGA</b>	Local Government Area
<b>LoS</b>	Level of Service
<b>MCA</b>	Multi-criteria analysis
<b>MSCP</b>	Multi Storey Car Park
<b>NES</b>	National Environmental Significance (refers to matters of National Environmental Significance under the EPBC Act)
<b>NML</b>	Noise Management Levels
<b>NPW Act</b>	<i>National Parks and Wildlife Act 1974 (NSW)</i>
<b>NSW</b>	New South Wales
<b>OEH</b>	NSW Office of the Environment and Heritage
<b>PDP</b>	Public Domain Plan
<b>PoEO Act</b>	<i>Protection of the Environment Operations Act 1997 (NSW)</i>
<b>RBL</b>	Rating Background Levels
<b>REF</b>	Review of Environmental Factors (this document)
<b>Roads Act</b>	<i>Roads Act 1993 (NSW)</i>
<b>SEPP</b>	State Environmental Planning Policy
<b>SHI</b>	State Heritage Inventory
<b>SHR</b>	State Heritage Register
<b>SREP</b>	Sydney Regional Environmental Plan
<b>Transport for NSW</b>	Transport for New South Wales
<b>TPZ</b>	Tree Protection Zone
<b>UDP</b>	Urban Design Plan
<b>WARR Act</b>	<i>Waste Avoidance and Resource Recovery Act 2001 (NSW)</i>
<b>WM Act</b>	<i>Water Management Act 2000 (NSW)</i>

## Definitions

Term	Meaning
<b>Average Exceedance Probability</b>	The likelihood of occurrence expressed in terms of percentage, of a flood events occurring. For example, a one per cent Annual Exceedance Probability flood is a flood event that has a one per cent chance of occurring, or being exceeded, in any one year.
<b>Concept design</b>	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).
<b>Construction Contractor</b>	The entity appointed by TfNSW to undertake the construction of the Proposal. The Construction Contractor is therefore responsible for all work on the project, both design and construction
<b>Design and Construct Contract</b>	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.
<b>Determining Authority</b>	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 Division 5.1 of the EP&A Act).
<b>Disability Standards for Accessible Public Transport</b>	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> 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.
<b>Ecologically Sustainable Development</b>	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.
<b>Feasible</b>	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.
<b>Interchange</b>	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.
<b>Kiss and Ride</b>	Dedicated limited-time parking space near a public transport mode for picking up or dropping off customers
<b>Level of Service</b>	Average overall intersection delay measured in seconds per vehicle.
<b>Out of hours works</b>	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).
<b>Proponent</b>	A person or body proposing to carry out an activity under Division 5.1 of the EP&A Act.



Term	Meaning
<b>Rail Possessions / Shutdown</b>	Shutdown is the term used by railway building/maintenance personnel to indicate that they have taken possession of the track (usually a section of track) for a specified period, where no trains operate for a specified time. This is necessary to ensure the safety of workers and rail users.
<b>Reasonable</b>	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.
<b>Sensitive receivers</b>	Land uses which are sensitive to potential noise, air and visual impacts, such as residential dwellings, schools and hospitals.
<b>The Proposal</b>	The construction and operation of the Warwick Farm Commuter Car Park Expansion
<b>Vegetation Offset Guide</b> (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&amp;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

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## Overview

Transport for NSW is proposing to upgrade the Warwick Farm Commuter Car Park (the Proposal) to improve the customer experience through the provision of additional parking and other facilities for commuters. 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
- encourage mode shift away from private vehicles
- improve the flexibility and reliability of customer's 'first and last mile' of their journey
- reducing congestion on our road network.

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).

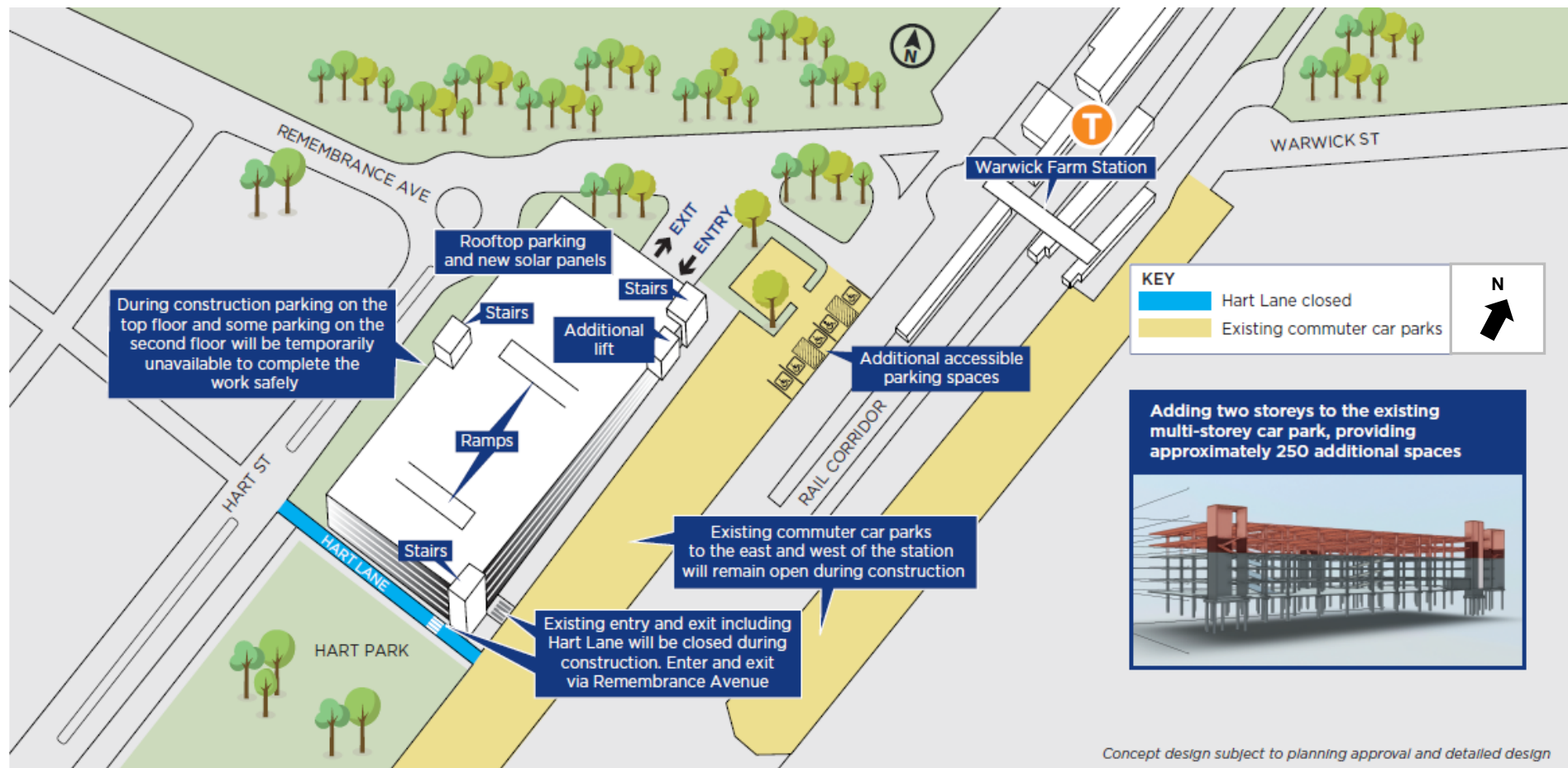
## Description of the Proposal

The Proposal involves the expansion of the existing Warwick Farm multi-storey car park with up to 250 additional commuter car parking spaces directly west of Warwick Farm Station.

The Proposal would include the following key components:

- construction and operation of a multi-storey car park expansion, including an additional two storeys on top of the existing multi-storey car park, connected by lifts, stairs and internal ramps, with a final overall capacity of approximately 732 commuter car parking spaces
- conversion of eight existing at-grade car parking spaces to provide five additional accessible car parking spaces
- ancillary works including services diversion and/or relocation, drainage works, installation of lighting, handrails and balustrades and new infrastructure (including closed circuit television cameras).

Subject to design and approval, construction is expected to commence in early 2021 and be completed in early 2022. A detailed description of the Proposal is provided in Chapter 3 of this REF. An overview of the Proposal is shown in **Figure ES1-1** below.



**Figure ES1-1 Key Features of the Proposed Warwick Farm Commuter Car Park Expansion (indicative only, subject to detailed design)**



**Figure ES1-2 Artist's Impression of the Proposed Warwick Farm Commuter Car Park Expansion (indicative only, subject to detailed design)**

## Need for the Proposal

Transport for NSW recognises the critical role commuter car parks play in improving access to public transport in the first and last part of a customer's journey, particularly in middle and outer metropolitan areas.

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

Transport for NSW is committed to improving the customer experience on the public transport network across NSW. Transport interchanges, train stations and commuter car parks are important gateways to the transport system and play a critical role in shaping the customer experience and perception of public transport.

The Proposal is designed to deliver increased customer satisfaction, improved travel to and between modes, greater public transport use and better integration of interchanges with the role and function of town centres. The Proposal would 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.

The Proposal fulfils the program objectives by proposing to provide:

- improved customer access to the public transport network
- mode shift away from private vehicles
- reduced congestion on our road network.

## Community and stakeholder consultation

Under the Infrastructure SEPP, consultation is required with local councils or public authorities in certain circumstances, including where Council-managed infrastructure is affected.

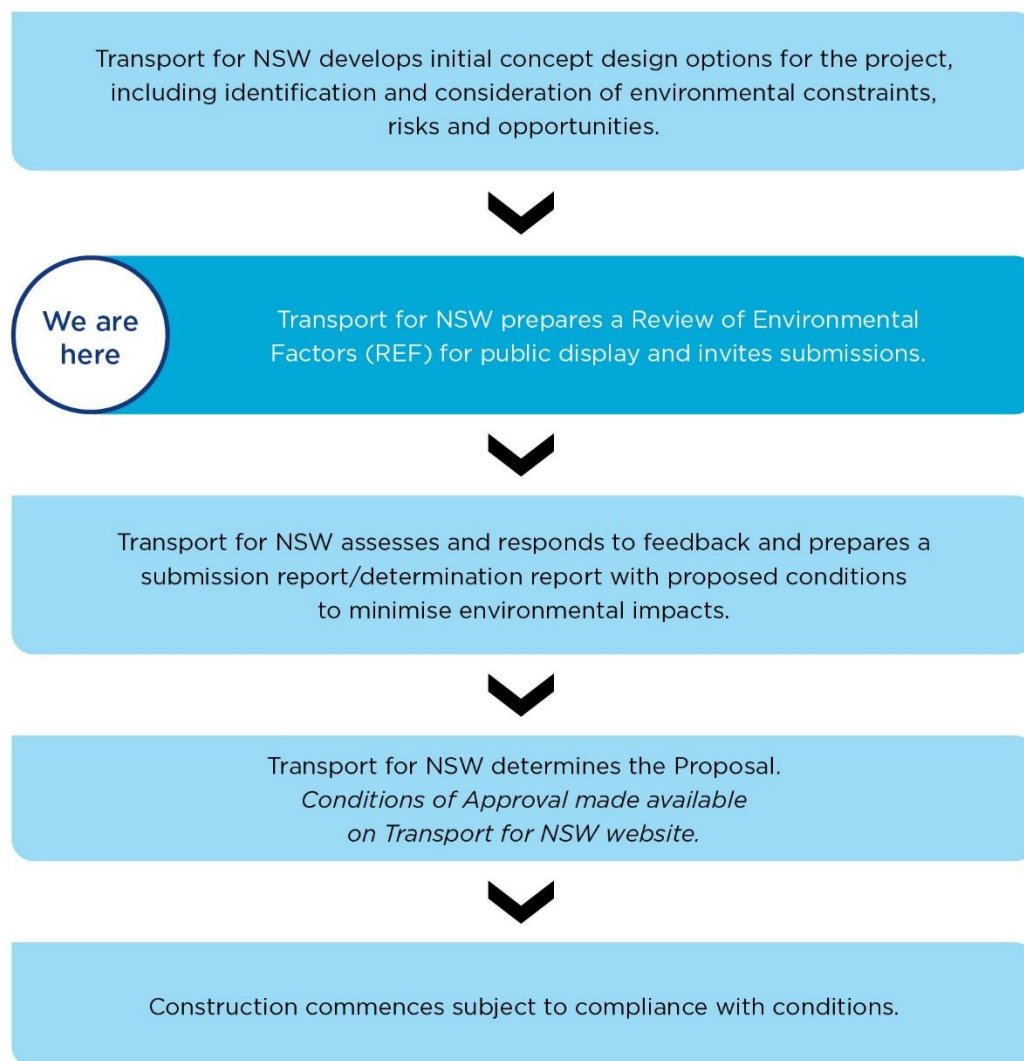
Community consultation activities for the Proposal will be undertaken to inform the surrounding community and stakeholders, seek feedback on proposal and answer questions to help Transport for NSW understand what is important to customers and the community. Further information about these specific activities is included in Section 5 of this REF.

A Project Infoline (1800 684 490), email address ([projects@transport.nsw.gov.au](mailto:projects@transport.nsw.gov.au)) and an online feedback form on the Transport for NSW website have been established to provide members of the public with the tools to make enquiries and submit comments.

Transport for NSW will review and assess all feedback received during the public display period, prior to determining whether or not to proceed with the Proposal.

Should the Proposal proceed to construction, the community would be kept informed throughout the duration of the construction period. Figure ES1-2 shows the planning approval and consultation process for the Proposal.





**Figure ES1-2 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.

The Proposal would provide the following benefits:

- additional commuter parking in close proximity to Warwick Farm Station facilitating improved opportunities to change modes of transport
- increasing accessibility and convenience for travel to and from Warwick Farm Station potentially increasing the use of public transport
- improved customer experience by providing modern car parking facilities with weather protection and security features including lighting and closed-circuit television 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 changes to access arrangements (including pedestrian diversions) and minor delays on the adjacent road network during construction
- temporary reduction in available parking during the construction phase



- loss of vegetation within the Proposal site which would be offset in accordance with the Vegetation Offset Guide (TfNSW, 2019a)
- temporary visual, noise and vibration impacts during the construction period
- a minor increase in local traffic movements during operation of the proposed car park
- noise and visual impacts during operation including overshadowing associated with the new structure

Further information regarding these impacts and mitigation measures are provided in Chapter 6 and Chapter 7 of this 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 TfNSW *Sustainable Design Guidelines – Version 4.0* (TfNSW, 2017a) taking into account the principles of ecologically sustainable development (ESD), and would include additional structural elements to reinforce and support the new levels to meet the current construction code. These structural elements would be designed to complement the existing façade as far as possible.

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 Warwick Farm Commuter Car Park Expansion (the Proposal).

## 1.1 Overview

The Proposal is designed to deliver increased customer satisfaction, improved travel to and between modes, greater public transport use and better integration of interchanges with the role and function of town centres. The Proposal would also assist in responding to forecasted growth in the region and as such would support growth in commercial and residential development.

Transport for NSW is committed to improving the customer experience on the public transport network across NSW and it recognises the critical role commuter car parks play in improving the quality of access to public transport in the customer's first and last mile, particularly in middle and outer metropolitan areas.

### 1.1.1 Objectives of the Commuter Car Park Program

The objective of the Commuter Car Park Program is to provide easier access to the public transport network, reduce congestion on our roads and give customers more choice in how and when they travel. The delivery of commuter car parks at key transport interchanges aims to provide a range of benefits as outlined in Table 1-1.

Table 1-1 Objectives of the Commuter Car Park Program

Category	Objectives
Accessible services	<ul style="list-style-type: none"><li>increase access to public transport for customers in their 'first and last mile' journey.</li></ul>
Successful Places	<ul style="list-style-type: none"><li>complement and integrate with existing and future communities and support economic and place-making objectives in centres.</li></ul>
Efficient connectivity for passengers	<ul style="list-style-type: none"><li>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.</li><li>replace car trips to destinations and centres with alternative public and active transport modes.</li></ul>
Safety and Performance	<ul style="list-style-type: none"><li>provide a safe multi-modal transport journey by design.</li><li>improve the effectiveness of interchanging.</li></ul>
Adaptability	<ul style="list-style-type: none"><li>support the future needs of customers and consider emerging transport trends, growth and technologies.</li><li>plan and design infrastructure that is resilient and able to adapt to future alternative uses and scenarios.</li></ul>

Category	Objectives
Sustainability	<ul style="list-style-type: none"> <li>• to deliver whole of life value for money.</li> <li>• limit environmental impacts and contribute to the NSW Government's aspirational target to achieve net-zero emissions by 2050.</li> <li>• 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.</li> </ul>

## 1.2 The Proposal

The Proposal, which forms part of the Commuter Car Park Program, involves the construction and operation of a multi-storey car park expansion with integration into the existing road and pedestrian network. The existing three-storey car park is located west of Warwick Farm Station. The Proposal would add an additional two storeys.

The Proposal is summarised as follows:

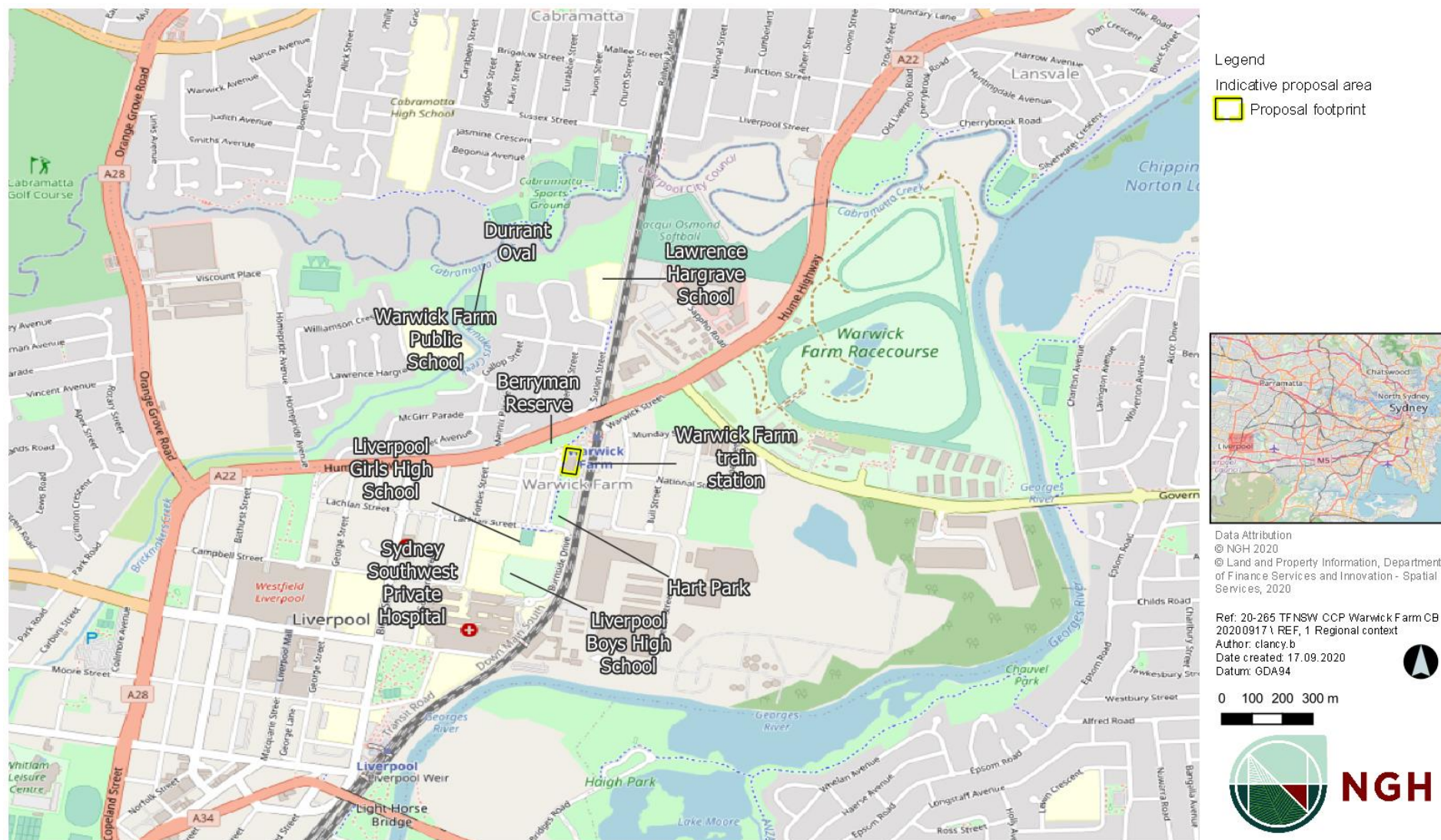
- addition of two storeys to the existing three-storey car park with around 250 additional commuter car parking spaces, including motorcycle parking spaces with lift and stair access
- provision of Park&Ride infrastructure
- provision of additional accessible parking spaces
- installation of closed circuit television (CCTV), lighting and wayfinding signage for improved safety and security
- road pavement and pedestrian pathway upgrades
- addition of solar panels to be installed above the roof top car parking area installation of additional structural elements to reinforce and support the new levels from earthquake events and meet the current construction code. These structural elements would complement the existing façade as far as possible.
- provision for future electric vehicle charging spaces, solar power and
- ancillary works including services diversion and/or relocation, drainage works and landscaping.

Subject to planning approval, construction is expected to commence in early 2021 and is expected to be complete in early 2022.

A detailed description of the Proposal is provided in Chapter 3 of this Review of Environmental Factors (REF). A concept plan of the additional storeys is provided in Figure 1-2.

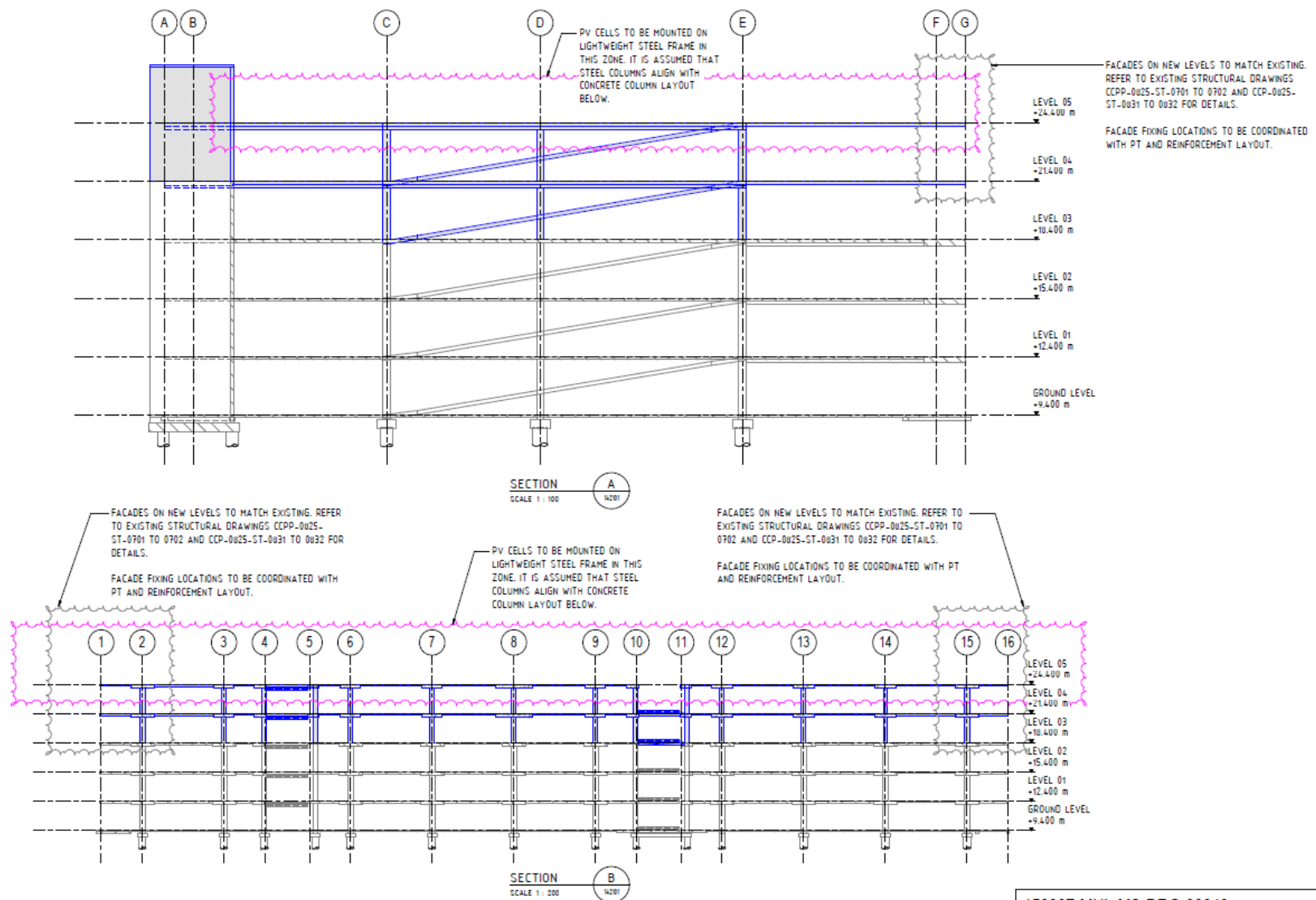
## 1.3 Location and existing infrastructure

The Proposal is located in the suburb of Warwick Farm, NSW, approximately 25 kilometres south west of the Sydney Central Business District (CBD) within the Liverpool Local Government Area (LGA). Warwick Farm is located on the T2 Inner West and Leppington Line, which provides services to south-west Sydney, 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 1-1.



**Figure 1-1 Regional context**





#### LEGEND

**Figure 1-2 Warwick Farm Concept Plan (Works for the Proposal shown in purple)**

### 1.3.1 Existing site

The Proposal is located at the existing multi-storey car park to the west of Warwick Farm Station as shown in Figure 1-3. A general outlook of the existing multi-storey car park is provided in Figure 1-5 and Figure 1-6.

The car park is within a developed area, which consists of high-density residential units to the west, park land to the north and south, and Warwick Farm Station to the east. The nearest residential areas to the Proposal site are 30 metres west of the proposal site, where most of the sensitive receivers have been identified (refer to Figure 1-7).

The Proposal site extends across a number of land titles as follows:

- Lot 112 DP1145941
- Lot 111 DP1145941
- Lot 105 DP1145941
- Lot 104 DP1145941
- Lot 103 DP1145941
- Lot 102 DP1145941
- Lot 101 DP1145941

### 1.3.2 Land Use

The Proposal is located on land zoned Public Recreation RE1 under the *Liverpool Local Environmental Plan 2008* (Liverpool LEP). Berryman Reserve is located to the north of the Proposal site, beyond which lies the Hume Highway. The site immediately abuts Hart Park along its southern boundary, with Liverpool Girls and Liverpool Boys High Schools being located further south. Warwick Farm Station and the main southern rail line are directly opposite the site to the east. The Proposal is also bounded by a High Density Residential area (R4 zoning) to the west, and by a Medium Density Residential area (R2 zoning) east of Warwick Farm station as shown in Figure 1-3 and Figure 1-4 below.

The existing car park currently provides 482 commuter parking spaces and is accessed via Remembrance Avenue to the east of the Proposal site. The existing car park has landscaping in small garden beds containing shrubs and small to medium sized trees. Transport for NSW staff facilities and an accessible toilet block are located in the north west corner of the Proposal site. Pedestrian access to the station is via a pedestrian crossing directly north of the Proposal site.



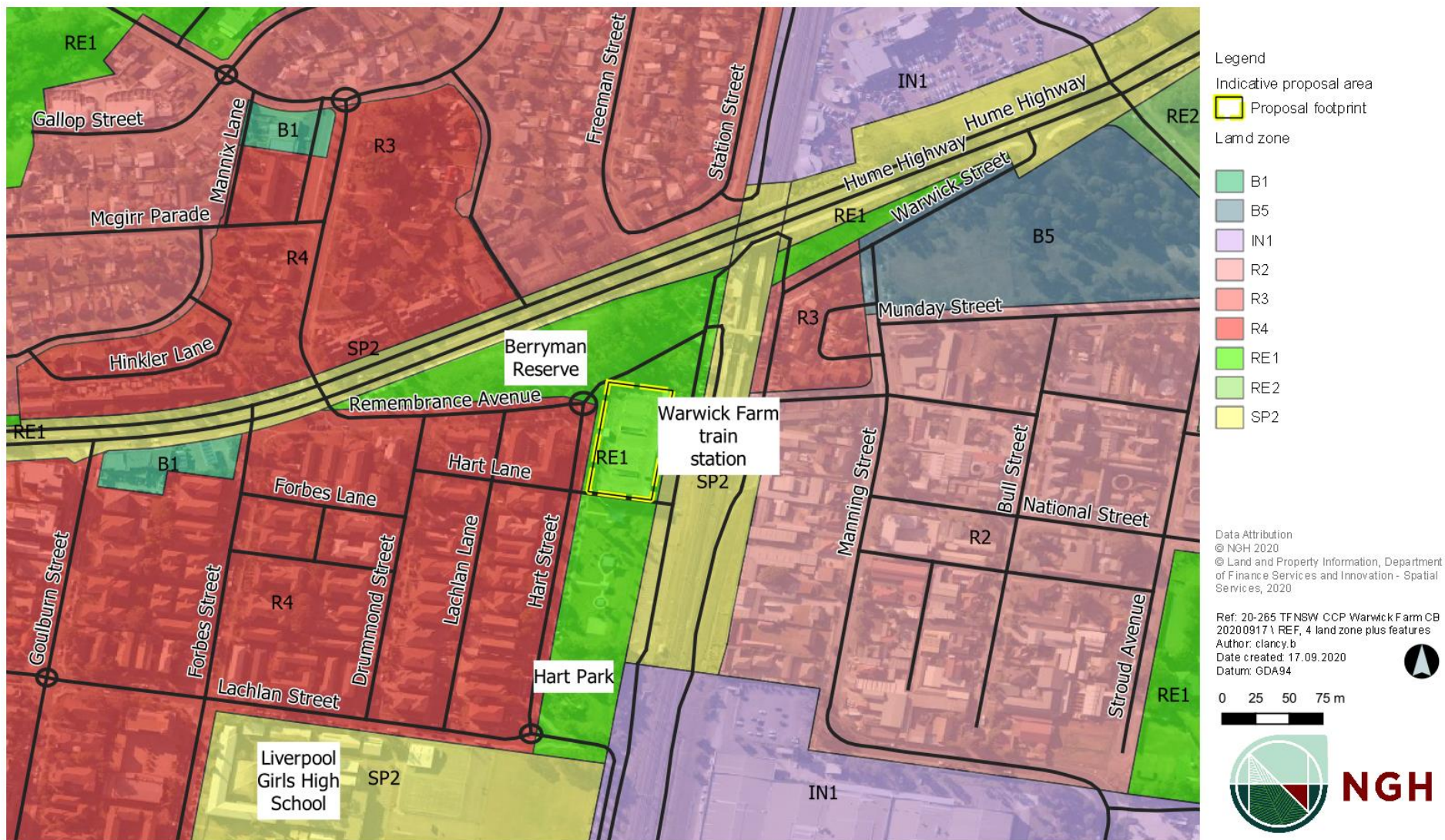
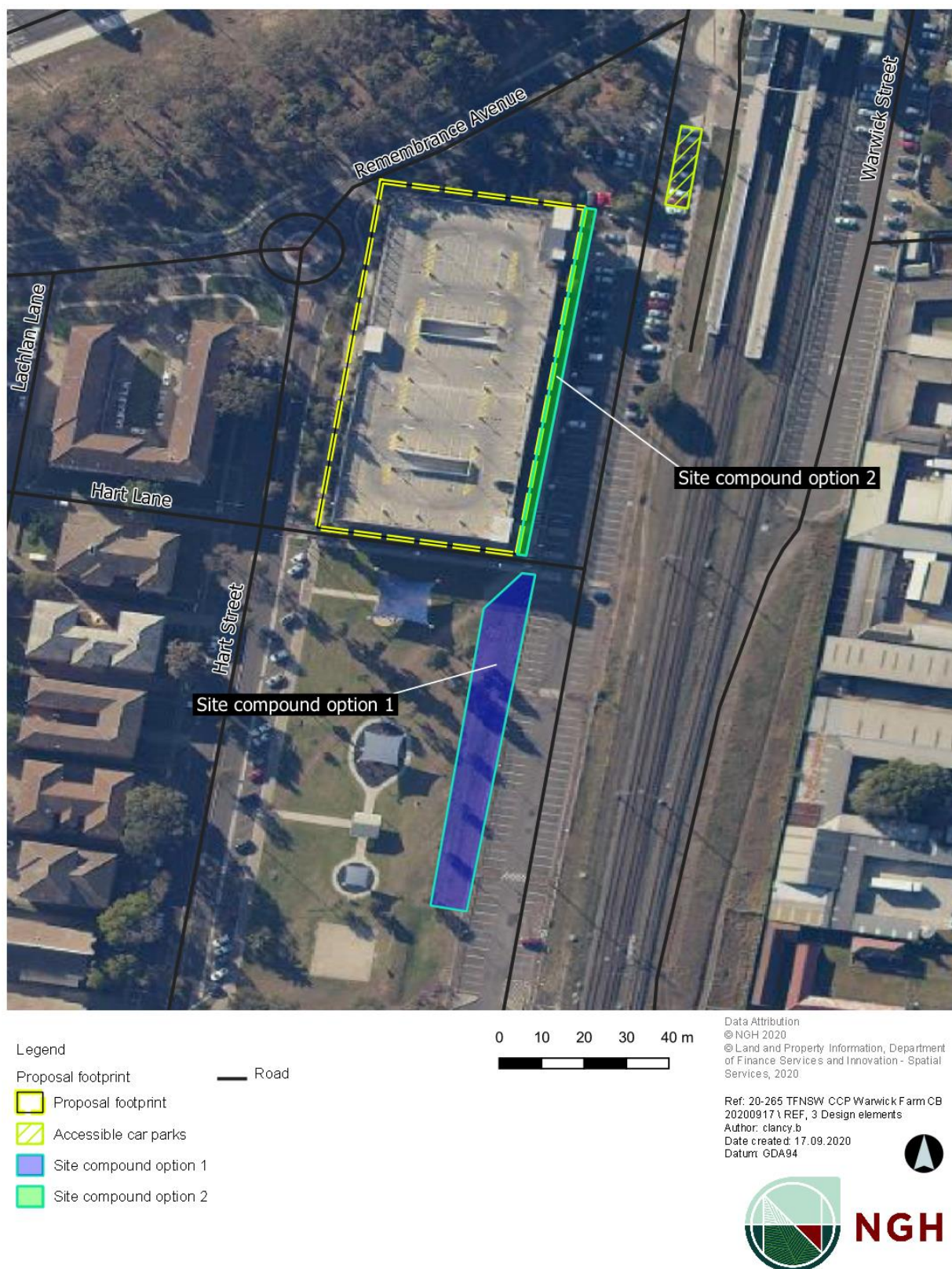


Figure 1-3 Proposal site locality and land zoning map





**Figure 1-4 The Proposal site and surroundings**



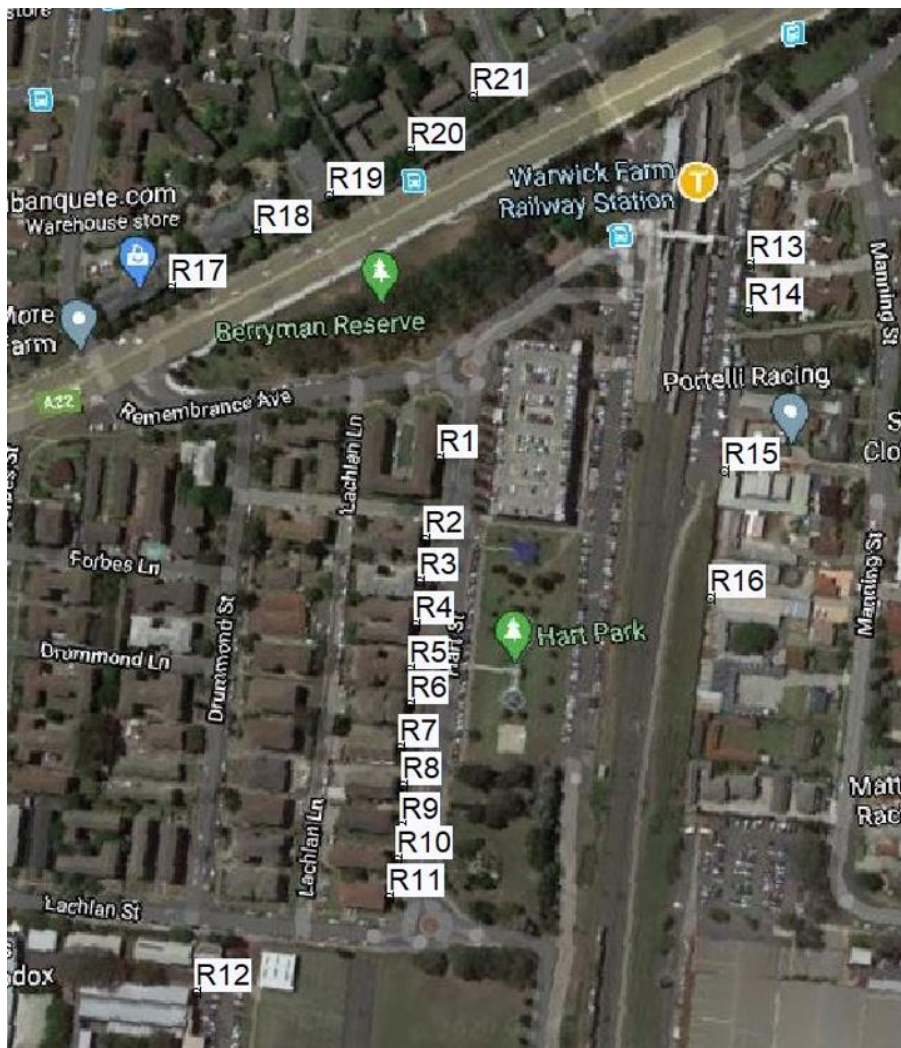


**Figure 1-5 The Proposal site, the existing multi-storey car park looking north towards Berryman Reserve**



**Figure 1-6 The existing car park looking east towards Warwick Farm Station.**





**Figure 1-7 Sensitive receivers surrounding the Proposal**

## 1.4 Purpose of this Review of Environmental Factors

This REF has been prepared by NGH on behalf of Transport for NSW to assess the potential impacts of extending the Warwick Farm Station Commuter Car Park. For the purposes of this work, 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 Agriculture, Water and the Environment for any necessary approvals under the EPBC Act. Refer to Chapter 4 for more information on statutory considerations.

## 2 Need and options considered

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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). This chapter also provides a summary of the options that have been considered during development of the Proposal and why the preferred option has been chosen.

### 2.1 Strategic justification

The NSW Government is committed to improving the customer experience across the transport network. Transport interchanges and train stations are important gateways to the transport system and play a critical role in shaping the customer's experience and perception of public transport.

The proposed Warwick Farm Station Commuter Car Park Expansion, the subject of this REF, forms part of the Commuter Car Park Program.

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 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 the priority by improving accessibility 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 site is located in an area undergoing significant growth and development in population and employment opportunities. The Proposal supports the local area by providing infrastructure improvements required to support the forecast patronage growth and changing travel patterns at Warwick Farm Station.

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 2-1 provides an overview of NSW Government policies and strategies relevant to the Proposal.

**Table 2-1 Key NSW Government policies and strategies applicable to the Proposal**

Policy / Strategy	Overview	How the Proposal aligns
<b><i>Future Transport Strategy 2056</i></b> (Transport for NSW, 2018a)	<p><i>Future Transport 2056</i> is an update of NSW's <i>Long Term Transport Master Plan</i>. It is a suite of strategies and plans for transport to provide an integrated vision for the state. <i>Future Transport 2056</i> identifies 6 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 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 helping to reduce the number of cars on the roads, resulting in (net) less emissions.</p>
<b>NSW State Infrastructure Strategy 2018-2038</b> (NSW Government, 2018)	<p>The <i>NSW State Infrastructure Strategy 2018–2038</i> builds on the NSW Government's major long-term infrastructure plans over the last seven years.</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>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.</p>	<p>The Proposal supports investment in rail infrastructure and aligns with the need to continue to provide urban public transport to support 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>
<b><i>A Metropolis of Three Cities - Greater Sydney Region Plan</i></b> (Greater Sydney Commission, 2018)	<p><i>The 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 Proposal particularly supports Direction 6 of the 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 Warwick Farm Station.</p>



Policy / Strategy	Overview	How the Proposal aligns
<b>Western City District Plan</b> (Greater Sydney Commission, 2018)	<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 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 <i>Greater Sydney Region Plan</i> including the Western Parkland City.</p>	<p>Warwick Farm is identified in the plan as a growth area requiring infrastructure to support future development. Of the 22 planning priorities, the Proposal particularly supports the following:</p> <ul style="list-style-type: none"> <li>• Planning Priority W1: Planning for a city supported by infrastructure</li> <li>• Planning Priority W7: Establishing the land use and transport structure to deliver a liveable, productive and sustainable Western Parkland City.</li> </ul>
<b>Premier's Priorities and State Priorities</b> (NSW Government 2019)	<p>The NSW Government has identified 14 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 investing in transport infrastructure and improving accessibility to public transport and encouraging greater use of public transport.</p>

## 2.2 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 Warwick Farm Station Commuter Car Park Expansion are to:

- provide additional commuter parking in close proximity to Warwick Farm Station to service existing and increasing demand
- provide improved accessibility to transport linkages for employment and recreation
- provide improved customer experience (weather protection, better interchange facilities and visual appearance)
- provide improved integration with surrounding precinct
- provide improved customer safety

## 2.3 Options considered

Transport for NSW completed preliminary scoping studies in December 2019 which considered the feasibility of several locations for additional commuter parking, as well as the needs of both transport customers. Table 2-2 outlines the shortlisted options considered for the Proposal.

**Table 2-2 Options considered for the Proposal**

Option	Description	Scope
Option 1	<ul style="list-style-type: none"> <li>The 'do-nothing' option</li> </ul>	<ul style="list-style-type: none"> <li>The Warwick Farm car park would not be extended</li> </ul>
Option 2	<ul style="list-style-type: none"> <li>Extend the Warwick Farm MSCP and AGCP</li> </ul>	<ul style="list-style-type: none"> <li>Extend the MSCP by 1 level creating 125 spaces</li> <li>Extending the existing at-grade car park on the eastern side of Warwick Farm station toward the south. This would create approximately 125 additional spaces within the rail corridor.</li> </ul>
Option 3 (preferred)	<ul style="list-style-type: none"> <li>Extend Warwick Farm MSCP</li> </ul>	<ul style="list-style-type: none"> <li>Construct an additional two levels on the Warwick Farm multi-storey car park</li> <li>Provide up to 250 additional car parking spaces</li> </ul>

### 2.3.1 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 'do nothing' option would not address the current or future demand for commuter car parking in the area, potentially limiting the use of public transport and adding to vehicular kilometres travelled by increased car trips for commuter journeys.

The 'do nothing' option was not considered a feasible alternative as it would be inconsistent with NSW Government objectives, would not assist in encouraging the use of public transport, and would not meet the immediate needs of the Warwick Farm or Western Sydney community.

## 2.4 Justification for the preferred option

The Warwick Farm Station MSCP expansion would provide relief for local commuters.

Prior to the Covid-19 pandemic, utilisation of car parks at Warwick Farm were high with all spaces occupied by 8am on the average weekday. However, due to the current Covid-19 pandemic and the government restrictions to avoid further spread, the usage of the current car park has reduced as a substantial number of commuters have opted to work from home full time, or travel to work less frequently. Notwithstanding, in the likely event that the Covid-19 pandemic would abate, NSW Health would progressively ease restrictions, commuters would begin to revert back toward their previous travel arrangements and therefore, car park usage would increase toward previous levels as time progresses.

Option 1 was not preferred as it would not address the future demand for commuter car parking in the area, potentially limiting the use and investment in public transport and adding to vehicular kilometres travelled by increased car trips for commuter journeys.

Option 2 was not preferred as it would:

- only achieve 125 additional spaces and would need to be combined with an expansion of the existing Warwick Farm Station MSCP
- require early works under a rail possession to segregate the site. In addition, in the event that unknown underground services were present and required relocation, this would potentially result in a delay to the project
- increase the length of the 'dead end' section of the car park between the rail corridor and rear of buildings, which may create a perception of an unsafe location.

Notwithstanding, it is noted that Option 2 would have a lesser visual impact (including overshadowing), than Option 3, as the MSCP would only be extended by one level.

Ultimately, Option 3, was preferred as it would:

- have a more direct connection to and from the Hume Highway
- result in minimal impacts to the local road network, being adjacent to the bus interchange, and within a 100m walking distance to Warwick Farm Station
- Option 3 collates all additional car parking spaces in one location, which is more convenient for customers who can minimise the potential of having to drive between multiple locations in search of commuter parking at the station.

The Proposal is considered the best outcome for customers as it would deliver an improved public transport solution for Warwick Farm, and would enable construction to proceed promptly.

## 3 Proposal description

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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

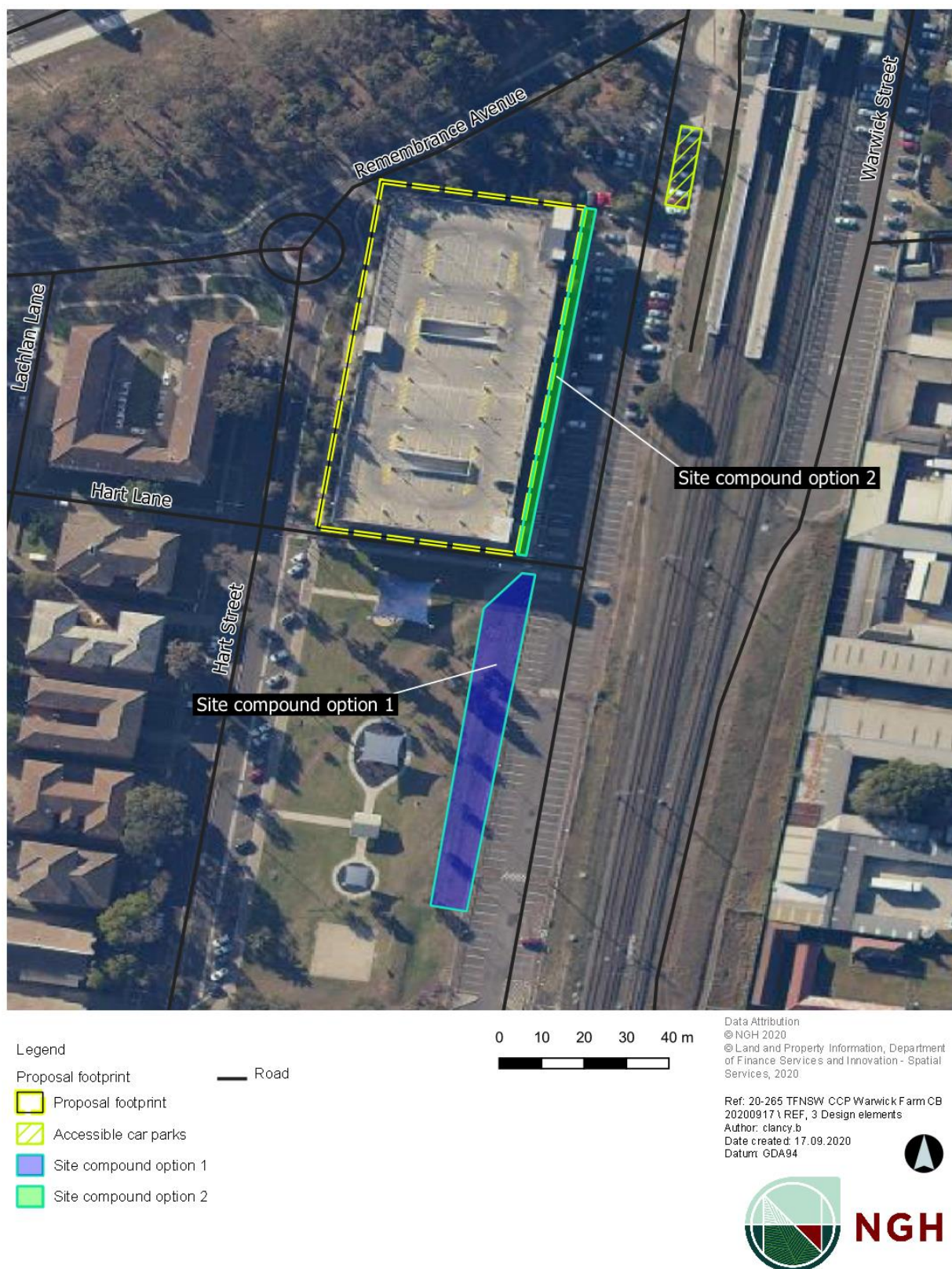
The Proposal involves the construction of an additional two storeys on the existing Warwick Farm MSCP, as part of the Commuter Car Park Program. The upgrade would maintain existing connections to the existing road and pedestrian network. The proposed expansion would provide approximately 250 additional car spaces, increasing the final overall capacity of the MSCP to approximately 730 spaces.

The Proposal would include the following key elements:

- addition of two storeys to the existing three-storey car park with around 250 additional commuter car parking spaces, including motorcycle parking spaces with lift and stair access
- provision of Park&Ride infrastructure
- provision of additional accessible parking spaces
- installation of closed circuit television (CCTV), lighting and wayfinding signage for improved safety and security
- road pavement and pedestrian pathway upgrades
- addition of solar panels to be installed above the roof top car parking area (Refer to Figure 3-2)
- installation of additional structural elements to reinforce and support the new levels to meet the current construction code. These structural elements would be designed to complement the existing façade as far as possible.
- provision for future electric vehicle charging spaces, solar power
- ancillary works including services diversion and/or relocation, drainage works and landscaping.

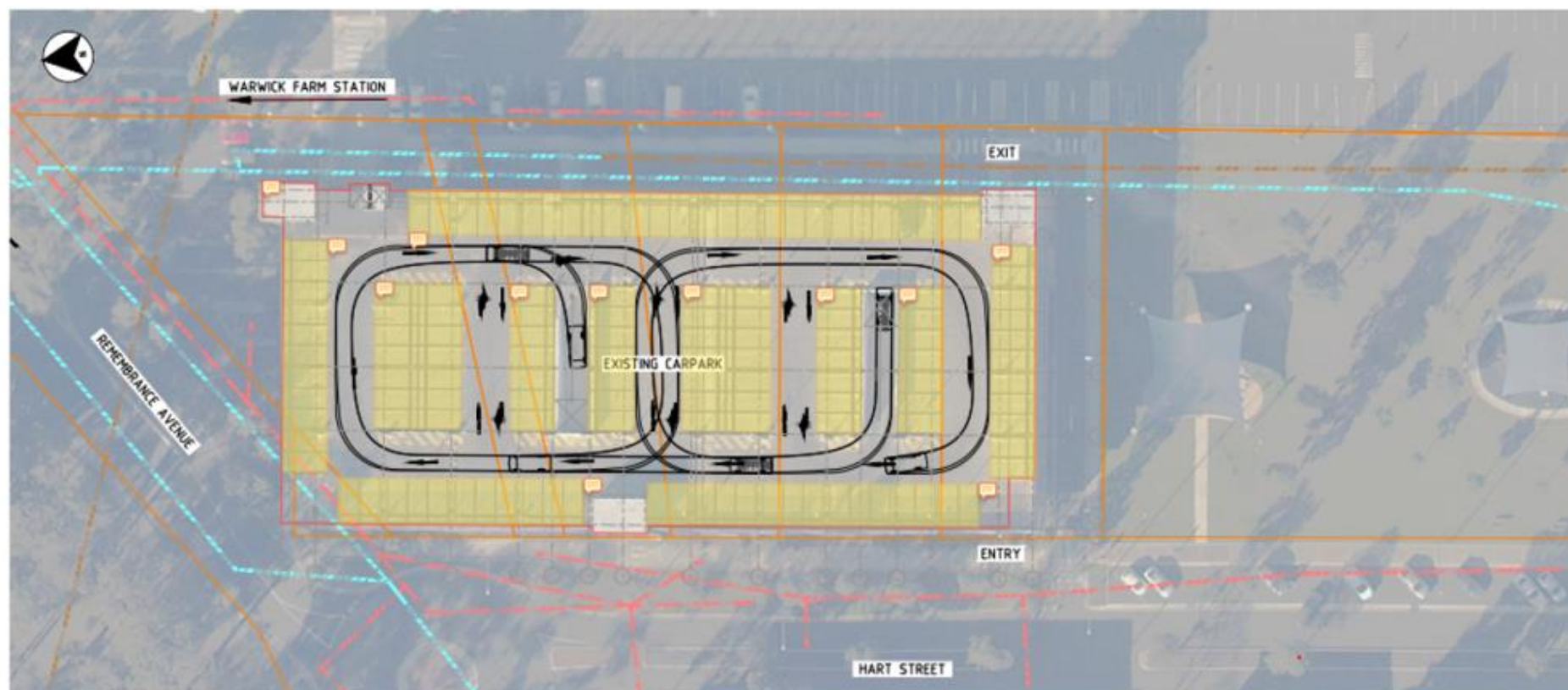
The general layout of key elements for Warwick Farm Station Commuter Car Park Expansion, including ancillary facilities, are shown in Figure 3-1 and Figure 3-2. Photomontages of the proposed works are shown in Figure 3-3, Figure 3-4, Figure 3-5 and Figure 3-6. A key features schematic of the proposal is shown in Figure 3-7.





**Figure 3-1 Proposal footprint (indicative only and subject to detailed design).**





GENERAL ARRANGEMENT PLAN  
SCALE 1:250

**LEGEND**

	PROPERTY BOUNDARY
	VEHICLE AND TURN PATH CONTROL LINE
	EXISTING US WATER EQUALITY 'D'
	EXISTING US LP GAS EQUALITY 'D'
	EXISTING US ELECTRICAL HV EQUALITY 'D'
	EXISTING US ELECTRICAL LV EQUALITY 'D'
	EXISTING US COMMS EQUALITY 'D'
	EXISTING US SEWER EQUALITY 'D'
	EXISTING US STORMWATER EQUALITY 'D'
	EXISTING PIT
	UTILITIES ASSET LABEL - REFER TO DESIGN REPORT FOR FURTHER



Figure 3-2 Proposed solar panels lay out on top level in yellow (indicative only and subject to detailed design).



**Figure 3-3 Three dimensional overview of proposed commuter car park looking from Remembrance Avenue, facing east. Solar panels will be installed on the roof of the car park. Photomontage are indicative only and subject to detailed design.**





**Figure 3-4 Three dimensional overview of proposed commuter car park looking from Hart Park, facing north. Solar panels will be installed on the roof of the car park. Photomontage are indicative only and subject to detailed design.**





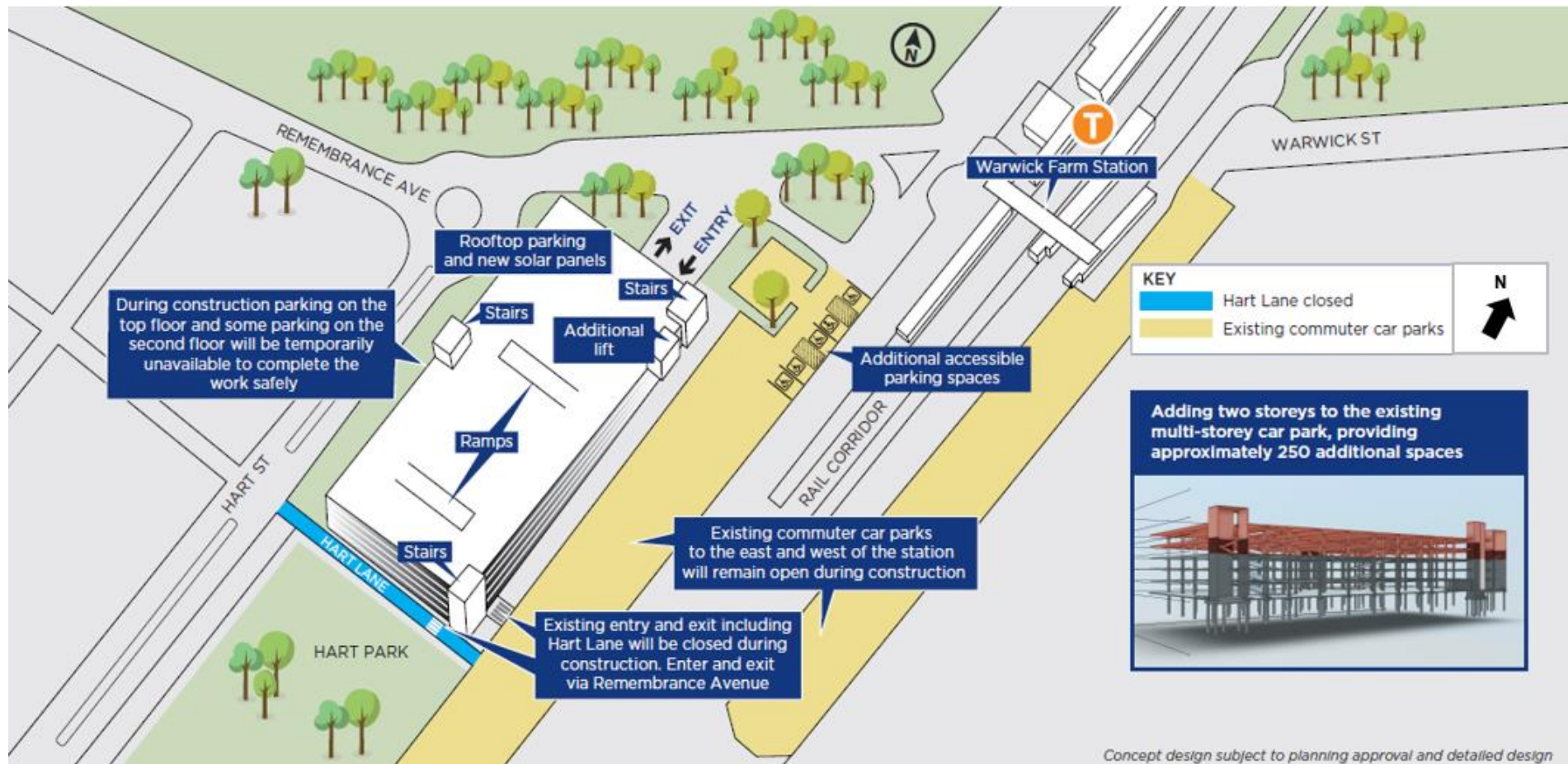
**Figure 3-5 Three dimensional overview of proposed commuter car park looking from Hart Street, facing north-east. Solar panels will be installed on the roof of the car park. Photomontage are indicative only and subject to detailed design.**





**Figure 3-6 Three dimensional overview of proposed commuter car park looking from Warwick Farm Station, facing south-west. Solar panels will be installed on the roof of the car park. Photomontage are indicative only and subject to detailed design.**





**Figure 3-7 Key Features of the Proposed Warwick Farm Commuter Car Park Expansion.** Solar panels will be installed on the roof of the car park. Photomontage are indicative only and subject to detailed design.

### 3.1.1 Materials and finishes

The proposed multi-storey car park expansion involves the construction of two additional levels above the existing 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:

- 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 – neutral 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
- materials are to be selected on the basis of sustainability principles, in particular lower carbon content, use of recycled materials and properties assist with the reduction of the urban heat island effect. Such materials may include recycled glass, lower carbon content concrete and permeable paving
- availability and constructability criteria to ensure resources are readily available, and for the structure to be constructed with ease and proficiency
- consistency with the existing three levels of the Warwick Farm MSCP.

Consideration would also 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.

## 3.2 Design development

### 3.2.1 Engineering and environmental constraints

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

**Existing structure:** the placement and integrity of the existing structure was considered during development of the design t.

**Utilities:** A Dial Before You Dig (DBYD) search has identified a number of utilities in the vicinity of the proposed works as described in Section 3.3.8. However, the Proposal will not impact on the rail corridor.

**Other considerations:**

- minimising impacts to commuter parking and access to Warwick Farm Station
- sustainability including social, economic and environmental sustainability considerations as per Proposal objectives and the *Sustainable Design Guidelines version 4.0* (Transport for NSW, 2017a).

### 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*)
- TfNSW Wayfinding Planning Guide, Car Parks, Dec 2018
- TfNSW Commuter Car Parks Urban Design Guidelines

- Transport Access Program Urban Design Plan Guidelines
- Building Code of Australia
- relevant Australian Standards
- Asset Standards Authority standards
- *TfNSW Sustainable Design Guidelines – Version 4.0* (TfNSW, 2017a)
- Crime Prevention Through Environmental Design (CPTED) principles
- Council standards, where relevant.
- National Construction Code
- other Transport for NSW policies and guidelines

### 3.2.3 Sustainability in design

Transport for NSW is committed to minimising the impact on the natural environment and is committed to the principals of sustainability through the development and use of the *TfNSW Sustainable Design Guidelines version 4.0* (Transport for NSW, 2017a) (Sustainable Design Guidelines).

The Sustainable Design Guidelines seek to deliver sustainable development practices by embedding sustainability initiatives into the planning, design, construction, operations and maintenance of transport infrastructure projects. The development of the guidelines has been influenced by the *TfNSW Environment and Sustainability Policy*. The guidelines incorporate the following key aims:

- Minimising impacts on the environment, whether through transport operations, infrastructure delivery or maintenance.
- Procuring, delivering and promoting sustainable transport options that achieve value for money and reduced life cycle costs.
- Developing, expanding and managing the transport network that is sustainable and climate resilient.

## 3.3 Construction activities

### 3.3.1 Work methodology

Subject to approval, construction is expected to commence in early 2021 and is expected to be complete in early 2022. 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 3-1. This staging is indicative and is based on the current concept design and may change once the detailed design methodology is finalised.

**Table 3-1 Indicative construction staging for key activities**

Stage	Activities
Site establishment and enabling works	<ul style="list-style-type: none"> <li>• footpath/pedestrian management and traffic controls establishment</li> <li>• site compound establishment (erect fencing, site offices, amenities and plant/material storage areas etc.)</li> <li>• environmental control measures establishment of (erosion and sediment controls)</li> <li>• vegetation (landscaped) identification approved for removal</li> <li>• scaffolding and hoarding erection</li> <li>• services identification for protection or relocation</li> <li>• top level temporary closure of the existing Warwick Farm multi-storey car park</li> </ul>
Building and Structural Works	<ul style="list-style-type: none"> <li>• prepare existing multi storey car park for expansion including demolition works</li> <li>• construction of floor slabs, ramps, columns, canopies and walls</li> <li>• Expansion of stairs and lift shaft</li> <li>• Construction of new lift shaft</li> <li>• installation of building services including electrical, mechanical, hydraulic, fire protection and CCTV construction of footpaths, kerbs, islands, fences and surface treatments where required</li> <li>• installation of lighting, signage, internal car park road surface and line marking.</li> </ul>
Construction of external cladding/façade	<ul style="list-style-type: none"> <li>• construction of external cladding/façade (subject to detailed design).</li> <li>• Construction of external structural elements to reinforce and support the additional levels.</li> </ul>
Precinct works (external to the Car Park)	<ul style="list-style-type: none"> <li>• installation of new signage where required</li> <li>• completion of kerbing and concrete works</li> <li>• finishing of pavement including any surfacing and re-surfacing works</li> <li>• completion of landscaping (subject to detailed design).</li> <li>• Installation of footpath and pedestrian crossings</li> </ul>
Testing and commissioning	<ul style="list-style-type: none"> <li>• completion of various activities to test and commission power supply, lifts and lighting.</li> </ul>
Decommissioning of temporary facilities and site demobilisation	<ul style="list-style-type: none"> <li>• removal of temporary site facilities</li> <li>• repair any damage to landscaping and turf including in temporary car parks</li> <li>• removal of footpath / pedestrian management and traffic controls</li> <li>• removal of scaffolding and hoarding</li> <li>• removal of environmental control measures</li> <li>• completion of site clean-up and tidying works.</li> </ul>



### 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)
- cranes
- concrete helicopter trowel (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
- 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

The majority 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.
- no work on Sundays or public holidays.

Out of hours works (OOHW) are required in some cases to minimise disruptions to customers, pedestrians, motorists and nearby sensitive receivers, and to ensure the safety of railway workers and operational assets. OOHW and can be divided into two periods of sensitivity.

OOHW Period 1 is defined as

- Monday to Saturday 6.00pm to 10.00pm
- Saturday 7.00am to 8.00am and 1.00pm to 10.00pm
- Sunday and public holidays 8.00am to 6.00pm.

OOHW Period 2 is defined as

- Monday to Saturday 10.00pm to 7.00am (nights)
- Sundays and public holidays 6.00pm to 8.00am (nights).

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* (TfNSW, 2019b) (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 (7.00 am to 6.00 pm) for projects approved prior to the 9th April 2020 (when the Order commenced).

As the determination of this REF for the Proposal would occur after the commencement of the Order, it does not apply to the Proposal. Notwithstanding, 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 and community 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:

- tie-in work in relation to existing roads and pathways
- other minor civil work, including drainage/stormwater works, and trenching activities for underground service adjustments and relocations.

Excavated material would be reused onsite where possible or disposed of in accordance with relevant legislative requirements.

### **3.3.6 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 displacement of some existing commuter car parking at the Proposal site during construction
- temporary changes in pedestrian, cyclist and vehicle access and movements
- potential temporary road closures during proposed road work
- potential delays to bus services.

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.

### **3.3.7 Temporary site facilities**

A temporary construction compound would be required to accommodate a site office, amenities, laydown and storage area for materials. The site offices, construction laydown and storage area are proposed to be located along the north eastern edge of Hart Park, to the south of the existing multi-storey car park. Further consultation with Council regarding the use of this section of Hart Park is required prior to occupying this site.

In the event that the use of a portion of Hart Park as a compound location is not viable, it is proposed that the footpath and adjacent landscaped area extending along the eastern boundary (nearest to the station) would be used as a backup site (Figure 3-1).

### **3.3.8 Service relocation and adjustments**

A DBYD search was completed for the Proposal site. The following utilities were within the vicinity of the Proposal site:

- Sydney Water (Rising Sewer Main, Recycled Water Main and Sewer Main)
- Endeavour Energy (Power Cables)

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 Proposal. Where utilities require relocation or modification, this would be done in consultation with the applicable service provider(s).

### **3.4 Property acquisition**

Transport for NSW does not propose to acquire any property as part of the Proposal. The proposed car park site is wholly located on land owned by Transport for NSW.

### **3.5 Operation and maintenance**

The operation and maintenance of the proposed commuter car park is subject to further discussions with Sydney Trains, Transport for NSW and Liverpool City Council. The MSCP 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 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.

NES matters are considered in full in Appendix A. The Proposal would not require removal of any trees or vegetation listed under the EPBC Act, and is unlikely to have an impact on any matters of NES or Commonwealth land. Accordingly, a referral to the Commonwealth Minister for the Environment is not required.

#### 4.1.2 Other Commonwealth legislation

Table 4-1 Other Commonwealth legislation applicable to the Proposal

Applicable legislation	Considerations
<i>Disability Discrimination Act 1992</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. Accessible parking spaces would be provided on the ground floor as part of the Proposal. The proposed car park would have lift access.

### 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*:

##### 2A Objects of Act

...

- a) to provide an efficient and accountable framework for the governance of the delivery of transport services,
- b) to promote the integration of the transport system,
- c) to enable effective planning and delivery of transport infrastructure and services,
- d) to facilitate the mobilisation and prioritisation of key resources across the transport sector,
- e) to co-ordinate the activities of those engaged in the delivery of transport services.



- f) to maintain independent regulatory arrangements for securing the safety of transport services.

#### *2B Common objectives and service delivery priorities of public transport agencies*

...

- g) *Environmental sustainability*

*To promote the delivery of transport services in an environmentally sustainable manner.*

- h) *Social benefits*

*To contribute to the delivery of social benefits for customers, including greater inclusiveness, accessibility and quality of life.*

### **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 4-2 provides a list of other relevant legislation applicable to the Proposal.

**Table 4-2 Other NSW legislation applicable to the Proposal**

Applicable legislation	Considerations
<i>Biodiversity Conservation Act 2016 (BC Act)</i>	<p>The BC Act establishes a framework for assessing and protecting environmental and public interests.</p> <p>Under Section 2.4 of the BC Act it is an offence to damage the habitat of a threatened species or threatened ecological community, as listed in Schedule 1 and 2 of the Act.</p> <p>The Proposal would not require the removal of trees and vegetation that would affect the habitat of identified threatened species or any threatened ecological community.</p> <p>The Proposal was considered unlikely to result in significant impacts to any threatened species (Refer to Section 6.6).</p>
<i>Biosecurity Act 2015</i>	<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 priority weeds in the Liverpool LGA are identified (refer to Section 6.6).</p>
<i>Heritage Act 1977 (Heritage Act)</i>	<p>Sections 57 and 60 require approvals for works which may have an impact upon items listed on the State Heritage Register.</p> <p>Sections 139 and 140 similarly approval where relics are likely to be exposed or disturbed.</p> <p>For any works which may have an impact upon items listed on a Section 170 heritage and conservation register maintained by a government agency, notification to Heritage NSW may be required.</p> <p>The Proposal is not located in 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 6.5).</p>
<i>Protection of the Environment Operations Act 1997 (PoEO Act)</i>	<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 (Roads Act)</i>	<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 require temporary adjustment of traffic conditions on Hart Street during construction to the west of the Proposal site. Liverpool Council is the roads authority and would be consulted during detailed design (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 (WARR Act)</i>	<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.</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 work, controlled activities or aquifer interference.</p>

#### 4.2.4 Key State Environmental Planning Policies

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

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 include '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 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.

Clause 8 of the Infrastructure SEPP identifies that 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*. The Proposal is not affected by *State Environmental Planning Policy (State Significant Precincts) 2005*, or *State Environmental Planning Policy (Coastal Management) 2018*. Accordingly, no further consideration of either SEPP is required.

##### Greater Metropolitan Regional Environmental Plan No 2—Georges River Catchment

The aim of this plan is to protect the environment of the Georges River Catchment by ensuring that the impacts of future land uses are considered. The Proposal is located within a part of the Liverpool LGA managed by the Greater Metropolitan Regional Environmental Plan. The impact of the Proposal on receiving waters including the impacts of stormwater runoff, is considered in Section 6.8.

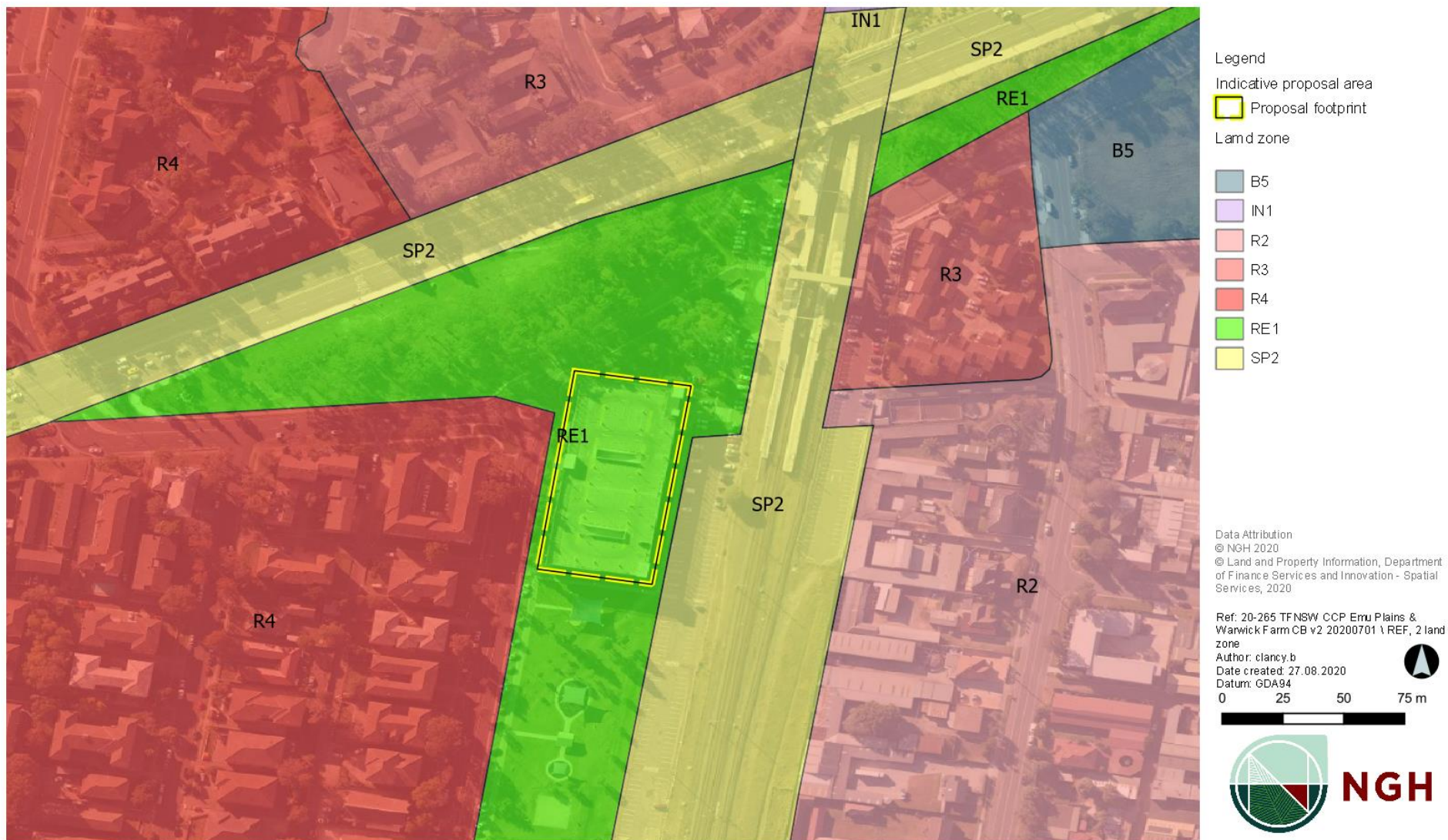
#### 4.2.5 Liverpool Local Environmental Plan 2008

The Proposal is located within the Liverpool LGA. Whilst the Infrastructure SEPP prevails over the provisions of the Liverpool LEP, the consistency of the Proposal with the Liverpool LEP have been considered (refer Table 4-3).

**Table 4-3 Relevant provisions of the Liverpool LEP**

Provision description	Relevance to the Proposal
<p>The proposal is located on land zoned RE1 (Public Recreation) (see Figure 4-1). The objectives of the RE1 zone are;</p> <ul style="list-style-type: none"> <li>• to enable land to be used for public open space or recreational purposes.</li> <li>• to provide a range of recreational settings and activities and compatible land uses.</li> <li>• to protect and enhance the natural environment for recreational purposes.</li> <li>• to provide sufficient and equitable distribution of public open space to meet the needs of residents.</li> <li>• to ensure the suitable preservation and maintenance of environmentally significant or environmentally sensitive land.</li> </ul>	<p>The proposal does not directly align with the objectives of the zone, however as it is an expansion of the existing MSCP, the Proposal would not significantly change the land use patterns in the Proposal site, and would not reduce the land available for recreation during operation.</p>





**Figure 4-1 Liverpool LEP zoning map**

### 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 Warwick Farm Station Car Park Expansion. Section 3.2.3 summarises how ESD has been incorporated in the design development of the Proposal. 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

This chapter discusses the consultation undertaken to date for the Proposal and the consultation proposed for the future. It also discusses the consultation strategy adopted for the Proposal.

### 5.1 Stakeholder consultation during scoping design

As part of the scoping design development, TfNSW has been consulting with key stakeholders on the scope of works, which has included ongoing consultation with Liverpool City Council.

### 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 5-1 provides details of consultation requirements under the Infrastructure SEPP for the Proposal.

**Table 5-1 Infrastructure SEPP consultation requirements**

Clause	Clause particulars	Relevance to the Proposal
<b>Clause 13   Consultation with Councils – development with impacts on council related infrastructure and services</b>	<p>Consultation is required where the Proposal would result in:</p> <ul style="list-style-type: none"> <li>substantial impact on stormwater management services</li> <li>generating traffic that would place a local road system under strain</li> <li>involve connection to or impact on a council owned sewerage system</li> <li>involve connection to and substantial use of council owned water supply</li> <li>significantly disrupt pedestrian or vehicle movement</li> <li>involve significant excavation to a road surface or footpath for which Council has responsibility.</li> </ul>	<p>The Proposal includes work that would:</p> <ul style="list-style-type: none"> <li>require connections or impacts upon the stormwater system (minor)</li> <li>disrupt pedestrian and vehicle movements</li> <li>impact on road pavements under Council's care and control</li> <li>impact on Council-operated footpaths.</li> </ul> <p>Consultation with Liverpool City Council has been undertaken and would continue throughout the detailed design and construction phases.</p>
<b>Clause 14   Consultation with Councils – development with impacts on local heritage</b>	<p>Where the Proposal would:</p> <ul style="list-style-type: none"> <li>substantially impact on local heritage item (if not also a State heritage item)</li> <li>substantially impact on a heritage conservation area.</li> </ul>	<p>There is no proposed impact to local heritage items. Therefore, consultation with Council is not required. Refer to Section 6.5.</p>
<b>Clause 15   Consultation with Councils – development with impacts on flood liable land</b>	<p>Where the Proposal would:</p> <ul style="list-style-type: none"> <li>impact on land that is susceptible to flooding – reference would be made to Floodplain Development Manual: the management of flood liable land.</li> </ul>	<p>The Proposal is not located on flood prone land. Accordingly, consultation with Council is not required in regard to this aspect.</p>

Clause	Clause particulars	Relevance to the Proposal
<b>Clause 15A   Consultation with Councils – development with impacts on certain land within the coastal zone</b>	Where the Proposal would: <ul style="list-style-type: none"> <li>impact on land within a coastal vulnerability area and is inconsistent with certified coastal management program that applies to that land.</li> </ul>	The Proposal is not located within a coastal vulnerability area. Consultation with Council is not required in regard to this aspect.
<b>Clause 15AA   Consultation with State Emergency Service – development with impacts on flood liable land</b>	Where the Proposal would: <ul style="list-style-type: none"> <li>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.</li> </ul>	The Proposal is not located on flood prone land. Accordingly, consultation with the State Emergency Service is not required in regard to this aspect.
<b>Clause 16   Consultation with public authorities other than Councils</b>	For <i>specified development</i> which includes consultation with the Office of Environment and Heritage (OEH) 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 OEH now the Environment, Energy and Science (EES) Group part of the Department of Planning, Industry and Environment (DPIE) on this matter is not required.
<b>Clause 104   Consultation with Relevant roads authority</b>	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 expansion 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 the relevant roads authority in relation to the development. Any response to the notice that is received from the relevant roads authority within 21 days after the notice is given must be taken into consideration.	The Proposal is deemed a traffic-generating development as the car park expansion would generate approximately 250 car additional vehicle movements during the AM and PM peak periods (respectively). Accordingly, consultation with the relevant division of Transport for NSW is required in regard to this aspect. Refer to Section 6.1.

### 5.3 Consultation strategy

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

The objectives of the consultation strategy are to:

- provide accurate and timely information about the Proposal 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 key impacts of the Proposal and consulted where appropriate
- provide an opportunity 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 relationships with identified community stakeholders
- ensure a comprehensive and transparent approach
- establish communication channels to enable stakeholders to be kept informed throughout the Proposal
- inform stakeholders about design changes, if required, and how input as a result of consultation has influenced Proposal outcomes.

## 5.4 Community consultation

In response to the evolving Coronavirus situation, Transport for NSW is following NSW Health advice and changing the way it approaches community consultation for transport infrastructure projects.

It is important for the community to have their say on all transport infrastructure projects and Transport for NSW is ensuring all appropriate community consultation is carried out.

Community consultation would adopt a range of online and non-face-to-face consultation mechanisms to ensure social distancing was practiced to limit the spread of Coronavirus, including:

- targeted consultation with local businesses, schools, aged care facilities and other community groups through phone calls and emails
- a community notification distributed to local residents and businesses via letterbox drop and made available to rail customers at the station to inform the community about the Proposal
- installation of project signage at the station and in the existing commuter car parks
- consultation with key stakeholders such as Liverpool Council, Sydney Trains, and adjacent land holders
- geographically targeted social media advertising via Facebook to inform the community of the Proposal and invite their feedback online
- development of a dedicated web page and online feedback form for the project on the Transport for NSW website which can be found at [www.transport.nsw.gov.au/warwickfarm](http://www.transport.nsw.gov.au/warwickfarm)

The REF will be placed on public display on the TfNSW website, ([www.transport.nsw.gov.au/warwickfarm](http://www.transport.nsw.gov.au/warwickfarm)) with feedback from the community and other stakeholders invited between 12 October and 25 October 2020.

Feedback can be submitted via a feedback form, by emailing [projects@transport.nsw.gov.au](mailto:projects@transport.nsw.gov.au), calling the Project Infoline (1800 684 490) or by post (Transport for NSW, Locked Bag 6501, St Leonards NSW 2065).

**Feedback can be sent to:**

- projects@transport.nsw.gov.au
- Project Infoline (1800 684 490)
- Commuter Car Park Program – Warwick Farm

**Transport for NSW****Locked Bag 6501****St Leonards NSW 2065****Or submitted:**

- via [www.transport.nsw.gov.au/warwickfarm](http://www.transport.nsw.gov.au/warwickfarm)

## 5.5 Next steps and ongoing consultation

At the conclusion of the public display period for this REF, TfNSW would acknowledge receipt of feedback from each respondent. The issues raised by the respondents would be considered by TfNSW before determining whether to proceed with the Proposal.

Should TfNSW determine to proceed with the Proposal, the Determination Report would be made available on the TfNSW website and would summarise the key impacts identified in this REF, demonstrate how TfNSW considered issues raised during the public display period, and include a summary of mitigation measures proposed to minimise the impacts of the Proposal.

Should Transport for NSW determine to proceed with the Proposal, the project team would keep the community, Council and other key stakeholders informed of the process, identify any further issues as they arise, and develop additional measures to minimise the impacts of the Proposal. Further consultation with the community would be undertaken in accordance with a Community Liaison Management Plan to be developed prior to the commencement of construction.

## 6 Environmental impact assessment

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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 Beca (shown in Technical Paper 1) for the Proposal which identified traffic and transport issues and mitigations. This section of the Review of Environmental Factors (REF) includes a summary of the findings of that assessment and additional analysis undertaken subsequent to the TTAIA.

#### 6.1.1 Existing environment

##### Parking

Warwick Farm Station currently provides 805 formal commuter car park spaces as follows:

- 482 spaces at the existing MSCP west of the station
- 212 spaces at the at-grade car park (AGCP) west of the station
- 111 spaces at the AGCP east of the station

The location of these car parks is shown in Figure 6-1.



**Figure 6-1 Existing parking at Warwick Farm Station**

On a typical weekday most of the formal car parking spaces are full by 8.00am, leading to parking overspill onto adjacent roads. This was observed on nearby Warwick Street, Manning Street, Munday Street and Hart Street. However, the COVID-19 pandemic has reduced commuter volumes in recent months.

### Local road network

Vehicular access to the car parks west of Warwick Farm Station is provided via entrances from Remembrance Avenue. The MSCP has two access points, one off Remembrance Avenue, north of the structure, and the second from the AGCP at the south east of the structure. The



primary access routes to Remembrance Avenue are from its intersection with the Hume Highway signalised intersection or via the Hart Street roundabout.

Vehicles exiting the MSCP have two options; a north exit onto Remembrance Avenue and a south exit via an access lane on to Hart Street. These exit points are also utilised by vehicles parked in the AGCP.

Access and egress for the car parks east of Warwick Farm Station is provided via Warwick Street.

### **Rail services**

Warwick Farm Station is served by the T2 Inner West & Leppington, T3 Bankstown and T5 Cumberland Lines, providing train services between Richmond, Parramatta, Leppington and the Sydney CBD.

The T2 Leppington Line services a total of 21 services to the city, and 14 services from the city in the AM and 17 services to the city and 25 services from the city in the PM.

The T3 Bankstown Line services a total of 16 services to the city, and 8 services from the city in the AM and 9 services to the city and 11 services from the city in the PM.

The T5 Cumberland Line services a total of 6 services to Paramatta, and 5 services from Paramatta in the AM and 8 services to Paramatta and 8 services from Paramatta in the PM.

### **Bus services**

Bus stops are located north of the station on Hume Highway, served by bus routes 904 and N50.

The 904 provides a 30-minute service during peak periods and a 60-minute service outside of peak periods in both directions, connecting Liverpool city centre and the suburbs of Lansvale, Cabramatta and Carramar to Warwick Farm Station.

The N50 is an hourly Night Ride service connecting the Sydney CBD to Liverpool city centre via Warwick Farm Station.

### **Taxi, kiss-and-ride, cycling and pedestrians**

There are several pedestrian, cycling, taxi and kiss-and-ride facilities in the vicinity of Warwick Farm Station. While these features are important part of the transport network, users of these facilities are unlikely to combine their journey with use of a commuter car park.

## **6.1.2 Potential impacts**

### **a) Construction phase**

#### **Parking**

The existing roof level of the MSCP would be temporarily closed during construction, reducing car parking capacity by 129 car spaces throughout the duration of the construction program. In addition, there will be further temporary short-term losses. About 40 commuter parking spaces on level 2 will be lost for a total period of up to 24 weeks and 5-10 spaces within the AGCP will be intermittently lost for 1-2 days.

Due to the current COVID-19 pandemic and the government restrictions to avoid further spread, the usage of the current car park has reduced as a substantial number of commuters have opted to work from home full time, or travel to work less frequently. The temporary closure is not considered to have a significant impact as parking at the commuter car parks is down by approximately 50% at the time of preparing this Review of Environmental Factors.

Temporary parking to offset spaces lost during construction would be investigated in consultation with the relevant landowners and stakeholders, should the Covid-19 pandemic restrictions be lifted and patronage at the commuter car park return to pre pandemic levels.

The TTAIA indicates that up to 80 construction site workers per day are expected to commute to the MSCP during construction. Since there is good public transport access to the site via the nearby Warwick Farm Station and bus stops with services to/from Liverpool, an estimated 60 per cent of workers are expected to commute via public transport.

The remaining 40 per cent of workers, assuming a car occupancy rate of 1.5 workers, would require 21 car parking spaces. Workers will not be permitted to park in designated commuter spaces within the station precinct to minimise disruption for commuters. It is anticipated that workers will utilise on street parking in the surrounding local road network.

### **Local road network and traffic performance**

The exit route onto Hart Street, located immediately south of the MSCP structure, would be temporarily closed to allow construction traffic to access the site. Vehicles exiting the car parks would have to exit via Remembrance Avenue. This increase in traffic flows could potentially impact traffic performance on the roundabout at Remembrance Avenue/Hart Street, however it is currently performing at Level of Service (LoS) A and the impact is not expected to result in unsatisfactory performance.

The TTAIA indicates that up to 48 trucks per day would require access to the site during the concrete pours, spread evenly throughout the working day resulting in an average of six trucks per hour. This would occur for the duration of construction of the additional structure, over a 19-week period. The low number of truck movements suggests that the impact of these truck movements on local traffic performance would be minimal.

The access lane onto Hart Street south of the MSCP is approximately 3.25 metres in width, which is only wide enough for one-way traffic movement. If this lane is to be used for construction access, it would need to be widened to 7 metres to enable two-way traffic movement. This would impact on the adjacent Hart Park and require the removal of 2 to 3 on-street parking spaces. This option is still under investigation and would be confirmed as part of the detailed design process, and identified in the Construction Traffic Management Plan (CTMP).

### **Rail, bus, taxi, kiss-and-ride, cycle and pedestrian access**

The Proposal would not impact public transport services during construction. The kiss-and-ride would also continue to operate during construction. Minor road and pedestrian diversions may be required during construction; however these would be temporary and managed through the CTMP.

## **b) Operation phase**

### **Parking**

The proposed project would provide an additional 250 spaces, increasing the capacity of the MSCP to 732 spaces and of all commuter car parking provided at Warwick Farm Station to 1050 spaces.

Variable messaging signs that show the number of spaces available within the carpark would be located at MSCP entrances, providing drivers with real-time information on parking availability, reducing unnecessary circulation within and between commuter car parks as cars look for an empty parking space.

The MSCP is to be future proofed for the installation of electric vehicle (EV) charging equipment to accommodate the expected increase in electric vehicle usage. The overall electrical installation (maximum demand calculations) will provision for the necessary power supply up to five percent of the additional spaces (13 spaces). Additionally, provisions would

be made to have sufficient cable containment to accommodate the installation of EV charging stations for 15% of the additional spaces (38 spaces).

The MSCP and AGCP would be equipped with Opal Card controlled boom gates to discourage their use by non-commuters. This would help reduce private vehicle usage, as only those using public transport would be allowed free access to commuter car parks. Other car park users would be charged a fee.

The proposed additional parking spaces at the MSCP would include five additional accessible parking spaces in accordance with DSAPT requirements. The provisioning of these spaces within the new MSCP spaces would not be ideal, as they would be located some distance away from Warwick Farm Station and on the upper levels of the structure. The five additional accessible parking spaces would be provided closer to the station lifts and overpass, by converting nine existing parking spaces.

### Local road network

The Proposal would not change access to and from the commuter car parking sites and the surrounding road network, with primary access being via Remembrance Drive. The AGCP exit route onto Hart Street located immediately south of the MSCP structure would be reopened after construction has finished, providing a secondary egress route. The road network is shown in Figure 6-2. The intersections where modelling was carried out are also indicated.

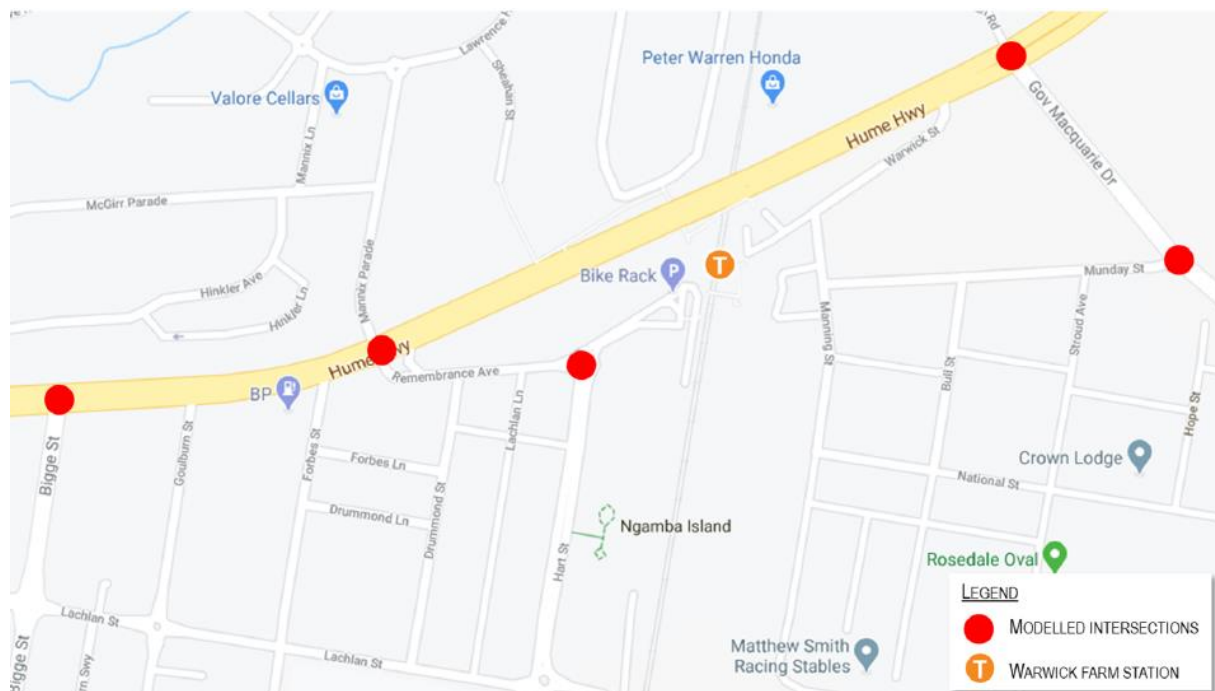


Figure 6-2 Warwick Farm Station local road network

### Traffic performance

The TTAIA indicates that the worst-case scenario assumes that there would be 250 additional trips to the site in the AM peak period from 5.00am to 9.00am and 250 additional trips from the site in the PM peak period from 3.00pm to 7.00pm. Opal data from Warwick Farm Station in 2019 revealed that:

- the AM peak hour for station entries occurred from 7.00am to 8.00am, accounting for 40 per cent of total station entries of the four-hour AM peak period
- the PM peak hour for station exits occurred from 6.00pm to 7.00pm, accounting for 32 per cent of total station exits of the four-hour PM peak period

Therefore, the proposed increased capacity of 250 spaces on the MSCP would generate:

- 99 additional inbound trips during the AM peak hour
- 81 additional outbound trips during the PM peak hour

The TTAIA assumes that traffic from the commuter car parks would be distributed as shown in Figure 6-3.



**Figure 6-3 Traffic distribution of commuter car park users**

The performance of key intersections providing access to Warwick Farm Station was assessed using SIDRA Intersection 8.0 modelling software. This was done for both the AM peak hour (7.15am to 8.15am for the Remembrance Ave / Hart Street intersection and 7.45am to 8.45am for the other intersections) and PM peak hour (4.30pm to 5.30pm for the Remembrance Ave / Hart Street intersection and 5pm to 6pm for the other intersections).

Under the current conditions, the intersections of Hume Highway/Bigge Street and Remembrance Avenue/Hart Street currently perform satisfactorily, with Levels of Service (LoS) of B or better. There is reserve capacity to accommodate future growth. The Governor Macquarie Drive/Munday Street also performs satisfactorily at LoS D in the AM Peak.

Hume Highway/Remembrance Avenue and Hume Highway/Governor Macquarie Drive intersections are performing unsatisfactorily, due to high traffic flows on Hume Highway during both AM and PM peak hours resulting in a LoS F and high delay including delay of over 4 minutes in the PM peak at Governor Macquarie Drive.

After the MSCP expansion, the analysis indicates that the intersection of Hume Highway/Remembrance Avenue would worsen current performance slightly in the AM Peak, with an increase in intersection delay of around 13.2 seconds. The intersection performs at LoS F both before and after the MSCP upgrade.

No other significant operational impacts on local traffic performance were identified.



## **Rail and bus access**

During operation, the Proposal would have a long term, positive impact for accessibility to bus and rail services, by providing additional commuter car parking facilities.

## **Taxi, kiss-and-ride, cycling and pedestrians**

The Proposal would not impact on taxi, kiss-and-ride, cycling and pedestrians during operation.

### **6.1.3 Mitigation measures**

#### **Construction**

- Prior to the commencement of construction, a Traffic Management Plan (CTMP) would be prepared as part of the CEMP and would include at a minimum:
  - 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 accessibility for pedestrians and cyclists
  - ensuring adequate sight lines to allow for safe entry and exit from the site
  - ensuring access to railway stations, businesses, entertainment premises 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 away from stations and busy residential areas and details of how this would be monitored for compliance
  - routes to be used by heavy construction-related vehicles to minimise impacts on sensitive land uses and businesses
  - identification of final site compound, loading zones, and worker and vehicle parking. These activities may be confined to within the construction site to minimise disruption to the local area
  - 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 TMP.
  - scheduling roadworks that would affect the existing local road network outside of peak periods or during the night to minimise the impact on local traffic.
  - scheduling the movement of construction vehicles and deliveries outside of peak periods to minimise the impact on local traffic.
- Consultation with the relevant road authorities would be undertaken during preparation of the TMP. The performance of all project traffic arrangements must be monitored during construction.
- 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.

- Workers will not be permitted to park in designated commuter spaces within the station precinct to minimise disruption for commuters.

## **Operations**

- Future proofing for the installation of electric vehicle charging stations by provisioning the power supply for up to 13 charging stations (to be determined during detailed design), and cable containment for up to 38 spaces within the additional spaces

## **6.2 Landscape and visual amenity**

A Landscape Character and Visual Impact Assessment was prepared by Clouston Associates (refer to Technical Paper 2).

### **6.2.1 Existing environment**

Landscape character is a combination of distinctive qualities of a certain area including readily identifiable elements such as landform, vegetation cover, built-form and architecture, as well as history, seasonal changes, human culture, urban grain, wildlife and land use. Together these elements produce a distinctive character that influences how the landscape is perceived and valued by the community.

### **Topography**

The topography of the Liverpool LGA is predominantly flat, with the exception being Georges River which separates the urban areas of Liverpool and Moorebank and bounds the suburbs of Hammondville, Voyager Point, Chipping Norton, Casula and Pleasure Point. Vistas can be viewed from elevated open space in Miller, West Hoxton, Lurnea, and Cecil Hills towards Sydney CBD.

Based on the topography of the Proposal area, the area induced in green on Figure 6-4 would be visible from the top level of the car park and vice versa, without taking into account blocked views from trees or buildings.



**Figure 6-4 visibility of Proposal based on topography only**

### **Commercial and Industrial Land Use**

To the south and south-west of the site is Liverpool town centre as well as general industrial land. The main shopping area is centred on Macquarie Street, with Westfield Liverpool at the northern end anchoring the major shopping area.

The southern end of the city is zoned for high density commercial developments. Liverpool has a large teaching hospital, two technical colleges and many shopping centres and office buildings.

### **Residential Housing**

A mixture of housing densities surround the site, with low density to the east, medium density to the north and north-east and high density to the west. The high-density housing directly opposite the site on Hart Street is comprised of 4 level brick buildings which continue southwards down the street, with a few buildings of plaster facade located near the end of the street.

### **Heritage**

Remembrance Avenue and Hart Street (directly surrounding the existing MSCP) and Drummond Street (two blocks to the west) form part of the early town centre grid layout and are listed as local heritage items.

Berryman Reserve to the north of the site is listed as a local landscape heritage item with a number of stone monuments with commemorative bronze engraved plaques at the north-western extent of the reserve.

## **6.2.2 Methodology**

The Landscape Character and Visual Impact Assessment aims to ensure that all possible effects of change and development in the landscape, views and visual amenity are taken into account.



It is concerned with how the surroundings of individuals or groups of people may be specifically affected by change in the landscape, both quantitatively and qualitatively.

The assessment followed the steps of the Planning Principles developed by the Commission of the NSW Land and Environment Court, that relate to visual impact assessment. These can be found Technical Paper 2.

Eight viewpoint locations were selected and assessed with respect for the level of impact for each of these sites. These sites are shown in Figure 6-5.



**Figure 6-5 Viewpoint locations**

For each of the viewpoint locations, the level of impact the Proposal would have is assessed based on the impact matrix shown in Table 6-1 Visual Impact Rating as a combination of Sensitivity and Magnitude.



**Table 6-1 Visual Impact Rating as a combination of Sensitivity and Magnitude.**

	HIGH MAGNITUDE	MODERATE MAGNITUDE	LOW MAGNITUDE	NEGLIGIBLE MAGNITUDE
HIGH SENSITIVITY	HIGH	HIGH - MODERATE	MODERATE	NEGLIGIBLE
MODERATE SENSITIVITY	HIGH - MODERATE	MODERATE	MODERATE/ LOW	NEGLIGIBLE
LOW SENSITIVITY	MODERATE	MODERATE/LOW	LOW	NEGLIGIBLE
NEGLIGIBLE	NEGLIGIBLE	NEGLIGIBLE	NEGLIGIBLE	NEGLIGIBLE

Source: Environmental Impact Assessment Practice Note: Guideline for Landscape Character and Visual Impact Assessment (EIA-N04), (Source TfNSW, 2018)

### 6.2.3 Potential impacts

#### a) Construction phase

The Proposal would involve a construction phase, with the following temporary visual impacts likely to occur:

- damage to landscaped areas and turf
- removal of 18 trees currently forming a screen around the existing MSCP
- setting up and use of site compounds
- stockpiling
- formwork and concrete pouring
- site fencing
- increased site traffic including heavy vehicles
- Permanent removal of trees on the northern and western boundaries to make room for scaffolding and hoarding.

During the construction period, many viewpoints studied within this report are likely to have increased visual impacts. Views of site compounds, storage areas and increased site traffic (including trucks) will lead to a temporary reduction in visual amenity.

Impacts would reduce as viewing distance and screening vegetation increase. Furthermore, these visual impacts will be of a temporary nature and would reduce for all viewpoints once the Proposal is complete and the construction areas restored.

#### b) Operation phase

Overall, the following conclusions can be drawn on the Proposal's impacts to visual amenity within the study area:

- the visual catchment of the Proposal is highly limited, and is generally restricted to the immediate area surrounding the existing car park structure
- mature trees (particularly to the west and north of the existing car park) filter views of the existing car park and help break up what would be a continuous built façade if not present, and will play a similar role in helping to mitigate the proposed addition to the car park

- the Proposal will be visually accessible from two public recreation spaces in close proximity to the existing car park (Berryman Reserve and Hart Park) which have recorded the highest visual impacts (High/Moderate) as a result of viewer sensitivity within recreational spaces
- the Proposal is an expansion of the existing multi-storey car park rather than an entirely new structure which helps to mitigate the impact of the Proposal given people's familiarity with the existing structure.

Of the 8 viewpoints selected and analysed the findings are as follows (and shown in Table 6-2):

- three viewpoints have a low rating
- three viewpoints have a moderate/low viewpoint rating
- two viewpoints have a high/moderate rating
- the visual catchment of the site is highly limited as a result of vegetation to the north

**Table 6-2 summary of visual impact findings**

VIEWPOINT LOCATIONS	RECEPTOR SENSITIVITY	MAGNITUDE					IMPACT RATING
		DISTANCE	QUANTUM OF VIEW	PERIOD OF VIEW	SCALE OF CHANGE	OVERALL MAGNITUDE RATING	
1. Pedestrian crossing within the car park	L	H	H	L	M	M	MODERATE/LOW
2. Hart Park Playground	H	H	H	M	M	M	HIGH/MODERATE
3. Footpath outside of 5 Hart Street	L	H	M	L	M	M	MODERATE/LOW
4. Footpath outside of 13 Hart Street	L	M	L	L	L	L	LOW
5. Footpath intersection at Lachlan & Hart Street	L	M	L	L	L	L	LOW
6. Footpath within Berryman Reserve	H	H	H	L	M	M	HIGH/MODERATE
7. Pedestrian Footpath - Hume Highway	L	M	L	L	L	L	LOW
8. Warwick Street Car Park	L	H	M	L	M	M	MODERATE/LOW

For the two high/moderate impacted viewpoints, a detailed description is provided below:

#### Viewpoint 2: Hart playground

The addition of two further levels will result in a substantial increase in the level of built form from this location as a result of its proximity to the multi-storey car park. A large amount of open sky views will be replaced by built-form, which may overshadow the recreational open space immediately to the south of the car park (where the exercise area is visible). Although users of Hart Park would be familiar with the existing car park structure, increasing the height of the structure would have more of a visual impact from this location as it is a local recreational open space.

#### Viewpoint 6: Footpath and Berryman Reserve

The addition of two further levels of parking will be highly visible from this location given the length of the facade. This will result in a portion of the existing open sky views above the current structure being replaced by the multi-storey car park, which will have a corresponding increase the level of built-form perception from this location.

Although not an insignificant increase in vertical height, the expansion is comprised of elements already present within the visual scene (car park levels) which visual receivers in the area are already familiar with which help lessen the visual impact as opposed to an entirely new structure being proposed.

## 6.2.4 Mitigation measures

### Construction

The following mitigation measures are recommended to be implemented to minimise potential landscape and visual impacts during the construction of the Proposal.

- An Urban Design Plan (UDP) would be prepared in consultation with the relevant council, and submitted to TfNSW for endorsement by the Precincts and Urban Design team, prior to finalisation of the detailed design. The UDP, at a minimum, would address the following:
  - a Public Domain Plan and an Urban Design Plan would be prepared which includes replacement planting to address vegetation removed during construction.
  - the appropriateness of the proposed design with respect to the existing surrounding landscape, built form, behaviours and use-patterns (including consideration of Crime Prevention Through Environmental Design principles). This is to include but not be limited to:
    - connectivity with surrounding local and regional movement networks including street networks, other transport modes and active transport networks. Existing and proposed paths of travel for pedestrians should be shown
    - integration with surrounding local and regional open space and or landscape networks. Existing and proposed open space infrastructure/landscape elements should be shown
    - integration with surrounding streetscape including street wall height, active frontages, awnings, street trees, entries, vehicle cross overs etc
    - integration with surrounding built form (existing or desired future) including building height, scale, bulk, massing and land-use
    - design detail that is sensitive to the amenity and character of heritage items located within or adjacent to the Proposal site.
    - minimisation of over-shadowing impacts to nearby residents.
- 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*.
- Worksite compounds would be screened with shade cloth (or similar material, where necessary) to minimise visual impacts from key viewing locations.
- Temporary hoardings, barriers, traffic management and signage would be removed when no longer required.
- During construction, graffiti would be removed in accordance with TfNSW's Standard Requirements.
- Following construction, trees removed during the proposal would be replaced to provide as good or better screening than was provided by the existing trees that would be removed.

## 6.3 Noise and vibration

A Noise and Vibration Assessment was undertaken by RAPT Consulting (Technical Paper 3). The findings of the assessment are summarised in this section.

### 6.3.1 Existing environment

Unattended week long noise monitoring was unable to be undertaken as secure locations could not be established. The units on Hart Street are exposed on the ground floor and were considered insecure locations presenting a high risk of theft or vandalism to monitoring equipment. RAPT consulting was also unable to enter residences residing on the first floor of the apartment blocks due to Covid 19 safety concerns as Liverpool was considered a Covid 19 hotspot at the time of the assessment. RAPT Consulting additionally approached Liverpool Boys High School about placing noise monitoring equipment on their grounds. However, Liverpool Boys High School refused RAPT Consulting access due to Covid 19 concerns.

To establish background and ambient noise levels operator attended measurements were conducted on 21 July 2020 at Hart Park in the vicinity of the Proposal and at the nearest residences to quantify the acoustic environment. As unattended monitoring was not possible, the Australian Standard AS 1055-1997“Acoustics – Description and measurement of Environmental Noise”, was used for application of evening and night time levels.

During the site visit it was noted that existing road traffic, rail, light aircraft, wildlife (birds) and an underlying urban “hum” primarily described the ambient noise environment and is indicative of an urban area.

The monitoring location is shown in Figure 6-6 with the existing car park in the background.



**Figure 6-6 Hart Park Monitoring Location**

Logged data was reviewed and filtered to exclude extraneous data during the monitoring period. The cumulative background and ambient noise results are provided in Table 6-3 below.



**Table 6-3 Summary of Measured Noise Levels 21 July 2020**

Location	Noise Period	Noise Level dB(A)		Noise Sources SPL dB(A) <sup>1</sup>
		L <sub>Aeq</sub> (15min)	L <sub>A90</sub> (15min)	
Hart Park	11:20am – 12:10pm	55	47	Car Pass-by 54 -58
		57	47	Passenger Rail 56 – 62
		57	47	Cargo Rail 72
		57	47	Light Aircraft 65 – 75
				Birds 47 - 50

Notes to table:

1: SPL dB(A) is: a-weighted sound pressure level in decibels

Noise sensitive receivers nearby the proposal are provided in Table 6-4 and shown in Figure 6-7 below.

**Table 6-4 Noise Sensitive Receiver description 21 July 2020**

Receiver ID and address	Receiver Type	
	Residential	Commercial
R1 (24 Remembrance Ave)	√	
R2 (1 Lachlan Ln)	√	
R3 (3 Lachlan Ln)	√	
R4 (5 Lachlan Ln)	√	
R5 (7 Lachlan Ln)	√	
R6 (9 Lachlan Ln)	√	
R7 (11 Lachlan Ln)	√	
R8 (13 Lachlan Ln)	√	
R9 (15 Lachlan Ln)	√	
R10 (17 Lachlan Ln)	√	
R11 (19 Lachlan Ln)	√	
R12 (Liverpool Boys High School)	√	
R13 (1 Manning Street)	√	
R14 (3 Manning Street)	√	
R15 (5 Manning Street)	√	
R16(9 Manning Street)	√	
R17 (33 Mannix Parade)	√	
R18 (21-29 Hume Hwy)	√	
R19 (19 Hume Hwy)	√	
R20 (33 Freeman Street)	√	
R21 (31 Freeman Street)	√	

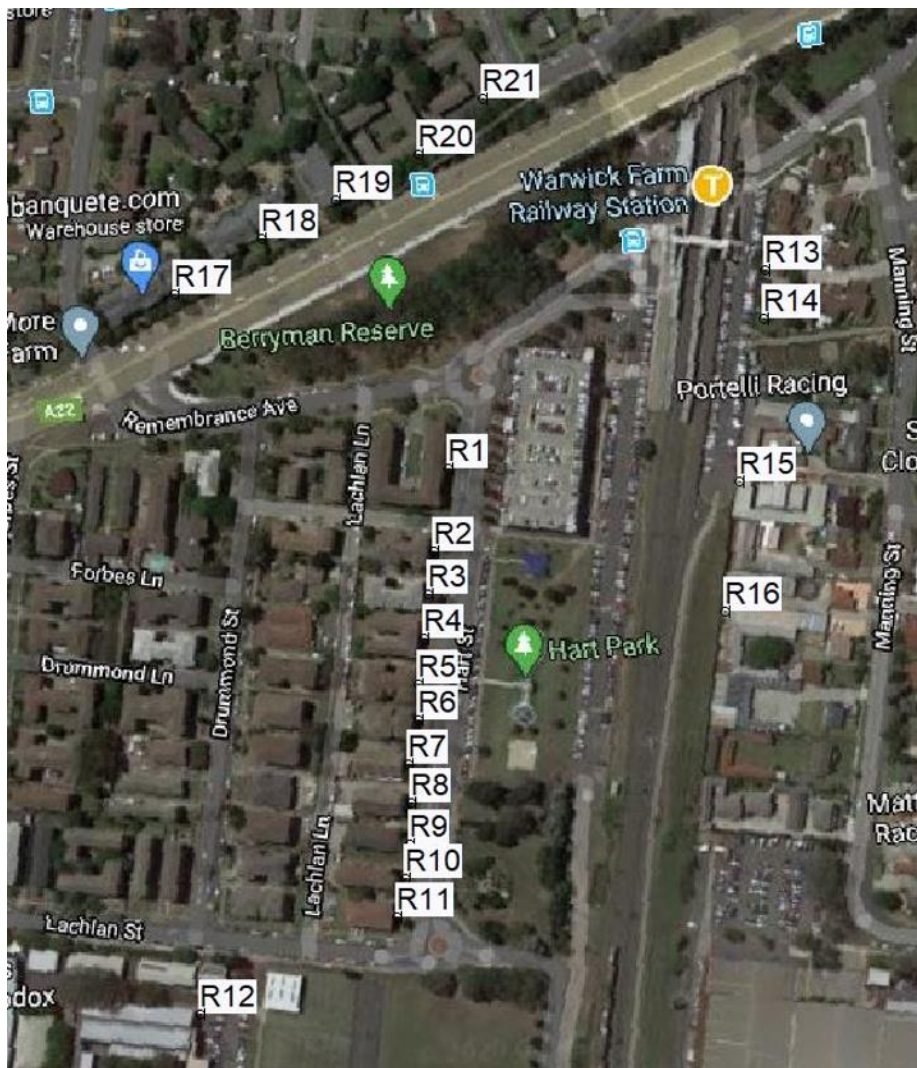


Figure 6-7 Noise sensitive receivers

## 6.3.2 Noise Criteria

### Construction Noise

Construction noise is assessed with consideration to DECCW *Interim Construction Noise Guideline* (ICNG) (July 2009). The ICNG is a non-mandatory guideline that is usually referred to by local councils and other NSW government entities when construction / demolition works require development approval. The ICNG recommends standard hours for construction activity as detailed in Table 6-5.

Table 6-5 ICNG Recommended Construction Hours

Work type	Recommended standard hours of work
Normal construction	Monday to Friday: 7.00 am to 6 .00pm. Saturday: 8.00 am to 1.00 pm. No work on Sundays or Public Holidays.

The ICNG provides noise management levels for construction noise at residential and other potentially sensitive receivers. These management levels are to be calculated based on the adopted rating background level (RBL) at nearby locations, as shown in Table 6-3.

**Table 6-6 Recommended Construction Noise Management Levels**

Period	Management Level $L_{Aeq(15\text{ min})}$
Residential Recommended standard hours	Noise affected level: RBL + 10 Highly noise affected level: 75 dB(A)
Residential Outside recommended standard hours	Noise affected level: RBL + 5
Classrooms at schools and other educational institutions	Internal Noise Level 45 dB(A) (applies when properties are being used)
Hospital wards and operating theatres	Internal Noise Level 45 dB(A) (applies when properties are being used)
Places of worship	Internal Noise Level 45 dB(A) (applies when properties are being used)
Active recreation areas (characterised by sporting activities and activities which generate their own noise or focus for participants, making them less sensitive to external noise intrusion)	External noise level 65 dB(A)
Passive recreation areas (characterised by contemplative activities that generate little noise and where benefits are compromised by external noise intrusion, for example, reading, meditation)	External noise level 60 dB(A)
Offices, retail outlets	70 dB(A)

The above levels apply at the boundary of the most affected residences / offices or within 30 metres from the residence where the property boundary is more than 30 metres from the residence.

The *noise affected level* represents the point above which there may be some community reaction to noise. Where the *noise affected level* is exceeded, all feasible and reasonable work practices to minimise noise should be applied and all potentially impacted residents should be informed of the nature of the works, expected noise levels, duration of works and a method of contact. The *noise affected level* is the background noise level plus 10 dB(A) during recommended standard hours and the background noise level plus 5 dB(A) outside of recommended standard hours.

The *highly noise affected level* represents the point above which there may be strong community reaction to noise and is set at 75 dB(A). Where noise is above this level, the relevant authority may require respite periods by restricting the hours when the subject noisy activities can occur, considering:

- Times identified by the community when they are less sensitive to noise (such as mid-morning or mid-afternoon for works near residences).
- If the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.

It is understood most works required for the Proposal would be undertaken during standard construction hours. Based on the above and the RBL (shown in Table 6-3) determined from site monitoring, construction noise management levels have been derived for residential receivers to be 57 dB(A)  $L_{eq(15\text{min})}$ . Approval from Transport for NSW would be required for any out of hours work and the affected community would be notified as outlined in Transport for NSW's *Construction and Vibration Noise Strategy* (2019).

## Operational Noise Criteria

The NSW *Road Noise Policy* (RNP) recommends various criteria for different road and residential developments and uses. Although it is not mandatory to achieve the noise assessment criteria in the RNP, proponents would need to provide justification if it is not considered feasible or reasonable to achieve them. Based on the definitions in the RNP, the Hume Highway is an Arterial Road and Remembrance Avenue is a Local Road. The following noise goals are provided in Table 6-7 Below.

**Table 6-7 Road Noise Policy Goals**

Road Category	Day	Night
<b>Freeway/ arterial/ sub-arterial roads:</b> Existing residences affected by additional traffic on existing freeways/arterial/sub-arterial roads generated by land use developments.	60 L <sub>Aeq</sub> (15hr) (External)	55 L <sub>Aeq</sub> (9hr) (External)
<b>Local roads:</b> Existing residences affected by additional traffic on existing local roads generated by land use developments	55 L <sub>Aeq</sub> (1 hour) (External)	50 L <sub>Aeq</sub> (1 hour) (External)
<b>School Classrooms</b>	40 L <sub>Aeq</sub> , (1 hour) (internal) when in use	-
<b>Hospital Wards</b>	35 L <sub>Aeq</sub> , (1 hour) (internal)	35 L <sub>Aeq</sub> , (1 hour) (internal)
<b>Places of Worship</b>	40 L <sub>Aeq</sub> , (1 hour) (internal)	40 L <sub>Aeq</sub> , (1 hour) (internal)
<b>Open space (active use)</b>	60 L <sub>Aeq</sub> , (15 hour) (external) when in use	--
<b>Open space (passive use)</b>	55 L <sub>Aeq</sub> , (15 hour) (external) when in use	--

For existing residences and other sensitive land uses affected by additional traffic on existing roads generated by land use developments, any increase in the total traffic noise level should be limited to 2 dB above that of the corresponding 'no build option'.

### 6.3.3 Vibration Guidelines

Vibration during construction and operational activity is expected to primarily originate from trucks and machinery during stages of construction and activities. Blasting and heavy ground impact activities are not expected to occur during the construction works.

### Human Exposure

Vibration goals during the were sourced from the DECCW's *Assessing Vibration: a technical guideline* (2006), which is based on guidelines contained in British Standard (BS) 6472–1992, *Evaluation of human exposure to vibration in buildings (1–80 Hz)*.

Intermittent vibration is assessed using the vibration dose value (VDV), fully described in BS 6472 – 1992. Acceptable values of vibration dose are presented in Table 6-8.



**Table 6-8 Acceptable Vibration Values for Intermittent Vibration (m/s1.75)**

Location	Daytime <sup>1</sup>		Night-time <sup>1</sup>	
	Preferred value	Maximum value	Preferred value	Maximum value
Critical areas <sup>2</sup>	0.10	0.20	0.10	0.20
Residences	0.20	0.40	0.13	0.26
Offices, schools, educational institutions and places of worship	0.40	0.80	0.40	0.80
Workshops	0.80	1.60	0.80	1.60

### Building Damage

Currently, there is no Australian Standard that sets the criteria for the assessment of building damage caused by vibration. Guidance of limiting vibration values is attained from reference to the following International Standards and Guidelines:

- British Standard BS7385.2 - 1993 *Evaluation and Measurement for Vibration in Buildings*, Part 2 - Guide to damage levels from ground borne vibration; and
- German Standard DIN 4150-3: 1999-02 Structural Vibration – Part 3: *Effects of vibration on structures*.

DIN 4150-3: 1999-02 is utilised in this case in the assessment of potential building damage resulting from ground borne vibration produced by the proposed activity.

The recommended Peak Particle Velocity (PPV) guidelines for the possibility of vibration induced building damage are derived from the minimum vibration levels above which any damage has previously been encountered and are presented in Table 6-9.

**Table 6-9 Guideline values for vibration velocity to be used when evaluating the effects of short-term vibration on structures**

Type of Structure	Peak Component Particle Velocity, mm/s			
	Vibration at the foundation at a frequency of			Vibration of horizontal plane of highest floor at all frequencies
	1 Hz to 10 Hz	10 Hz to 50 Hz	50 Hz to 100 Hz*	
Buildings used for commercial purposes, industrial buildings, and buildings of similar design	20	20-40	40-50	40
Dwellings and buildings of similar design and/or occupancy	5	5-15	15-20	15
Structures that, because of their sensitivity to vibration, do not correspond to those listed in lines 1 and 2 of table 5-7 and are of great intrinsic value (e.g. buildings that are under a preservation order)	3	3 to 8	8 to 10	8

### 6.3.4 Potential impacts

#### a) Construction phase

Acoustic modelling was undertaken using Bruel and Kjaer's "Predictor" to predict the effects of site noise. Predictor is a computer program for the calculation, assessment and prognosis of noise propagation. Terrain topography, ground absorption, atmospheric absorption and relevant shielding objects are taken into account in the calculations.

The calculated noise levels would inevitably depend on the number and type of plant items and equipment operating at any one time and their precise location relative to the receiver of interest. In practice, the noise levels would vary due to the fact that plant and equipment would move about the worksites and would not all be operating concurrently.

In some cases, reductions in noise levels would occur when plant are located behind obstacles or even other items of equipment. Predicted noise levels have been assessed from each of the work scenarios outlined above with the site establishment and compound to the south in Hart Park.

- Results of the predicted construction noise levels are provided in

Table 6-10 (for standard construction hours) Table 6-11 (for out of hours day construction) and Table 6-12 (for night construction). The noise levels are representative of the worst-case impact, for a given receiver type and are intended to give an indication of the possible noise levels from construction work when work is at their closest.

For most construction activities, it is expected that construction noise levels would frequently be lower than predicted at the most exposed receiver. A general description of NML exceedance groups are provided below. The impact of these potential exceedances depends on the period in which they were to occur (generally night-time is more sensitive than daytime or evening for most receivers).

- Noise levels 1 – 10 dB(A) above NML – Impact generally marginal to minor
- Noise Levels 11 – 20 dB(A) above NML – Impact generally moderate
- Noise Levels > 20 dB(A) above NML – Impact generally high

**Table 6-10 Predicted Construction Noise Levels SPL dB(A)  $L_{eq(15min)}$  and exceedances for standard daytime construction (exceedances shown in red)**

Receiver	Site Establishment	Superstructure construction	Site Demobilisation	Standard Daytime NML 57 dB(A) $L_{Aeq,15min}$	Highly Affected Noise Level 75 dB(A)	Exceeds Highly Affected Noise Level?
R1 (24 Remembrance Ave)	49	65	46	57	75	No
R2 (1 Lachlan Ln)	70	72	67	57	75	No
R3 (3 Lachlan Ln)	68	70	65	57	75	No
R4 (5 Lachlan Ln)	66	68	63	57	75	No
R5 (7 Lachlan Ln)	64	66	61	57	75	No
R6 (9 Lachlan Ln)	63	65	60	57	75	No
R7 (11 Lachlan Ln)	61	64	58	57	75	No
R8 (13 Lachlan Ln)	60	63	57	57	75	No
R9 (15 Lachlan Ln)	59	62	56	57	75	No
R10 (17 Lachlan Ln)	59	61	56	57	75	No
R11 (19 Lachlan Ln)	58	61	55	57	75	No
R12 (Liverpool Boys High School)	36	39	33	57	75	No
R13 (1 Manning Street)	34	55	31	57	75	No
R14 (3 Manning Street)	34	55	31	57	75	No
R15 (5 Manning Street)	46	52	43	57	75	No
R16(9 Manning Street)	55	58	52	57	75	No
R17 (33 Mannix Parade)	44	53	41	57	75	No
R18 (21-29 Hume Hwy)	32	57	29	57	75	No
R19 (19 Hume Hwy)	32	57	29	57	75	No
R20 (33 Freeman Street)	33	55	30	57	75	No
R21 (31 Freeman Street)	32	54	29	57	75	No

Table 6-11 Predicted Construction Noise Levels SPL dB(A)  $L_{eq}(15min)$  and exceedances for out of hours daytime construction (exceedances shown in red)

Receiver	Site Establishment	Superstructure	Demobilisation	Out of hours daytime NML 52 dB(A) $L_{Aeq,15min}$	Highly Affected Noise Level 75 dB(A)	Exceeds Highly Affected Noise Level?
R1 (24 Remembrance Ave)	49	65	46	52	75	No
R2 (1 Lachlan Ln)	70	72	67	52	75	No
R3 (3 Lachlan Ln)	68	70	65	52	75	No
R4 (5 Lachlan Ln)	66	68	63	52	75	No
R5 (7 Lachlan Ln)	64	66	61	52	75	No
R6 (9 Lachlan Ln)	63	65	60	52	75	No
R7 (11 Lachlan Ln)	61	64	58	52	75	No
R8 (13 Lachlan Ln)	60	63	57	52	75	No
R9 (15 Lachlan Ln)	59	62	56	52	75	No
R10 (17 Lachlan Ln)	59	61	56	52	75	No
R11 (19 Lachlan Ln)	58	61	55	52	75	No
R12 (Liverpool Boys High School)	36	39	33	52	75	No
R13 (1 Manning Street)	34	55	31	52	75	No
R14 (3 Manning Street)	34	55	31	52	75	No
R15 (5 Manning Street)	46	52	43	52	75	No
R16(9 Manning Street)	55	58	52	52	75	No
R17 (33 Mannix Parade)	44	53	41	52	75	No
R18 (21-29 Hume Hwy)	32	57	29	52	75	No
R19 (19 Hume Hwy)	32	57	29	52	75	No
R20 (33 Freeman Street)	33	55	30	52	75	No
R21 (31 Freeman Street)	32	54	29	52	75	No



Table 6-12: Predicted Construction Noise Levels SPL dB(A)  $L_{eq(15min)}$  and exceedances for out of hours night construction (exceedances shown in red)

Receiver	Site Establishment	Superstructure	Demobilisation	Out of hours evening NML 50 dB(A) $L_{Aeq,15min}$	Highly Affected Noise Level 75 dB(A)	Exceeds Highly Affected Noise Level?
R1 (24 Remembrance Ave)	49	65	46	50	75	No
R2 (1 Lachlan Ln)	70	72	67	50	75	No
R3 (3 Lachlan Ln)	68	70	65	50	75	No
R4 (5 Lachlan Ln)	66	68	63	50	75	No
R5 (7 Lachlan Ln)	64	66	61	50	75	No
R6 (9 Lachlan Ln)	63	65	60	50	75	No
R7 (11 Lachlan Ln)	61	64	58	50	75	No
R8 (13 Lachlan Ln)	60	63	57	50	75	No
R9 (15 Lachlan Ln)	59	62	56	50	75	No
R10 (17 Lachlan Ln)	59	61	56	50	75	No
R11 (19 Lachlan Ln)	58	61	55	50	75	No
R12 (Liverpool Boys High School)	36	39	33	50	75	No
R13 (1 Manning Street)	34	55	31	50	75	No
R14 (3 Manning Street)	34	55	31	50	75	No
R15 (5 Manning Street)	46	52	43	50	75	No
R16(9 Manning Street)	55	58	52	50	75	No
R17 (33 Mannix Parade)	44	53	41	50	75	No
R18 (21-29 Hume Hwy)	32	57	29	50	75	No
R19 (19 Hume Hwy)	32	57	29	50	75	No
R20 (33 Freeman Street)	33	55	30	50	75	No
R21 (31 Freeman Street)	32	54	29	50	75	No

The predicted noise levels presented in Table 6-11 and Table 6-12 is a worst-case scenario which assumes that all items of plant would be operating at their maximum sound power levels simultaneously. In reality, this is unlikely to occur and actual received sound levels due to construction are expected to be lower than is reported in this assessment. However, in the event this does occur, noise management levels are expected to be exceeded at receivers R2 – R11 during site establishment and R1 – R11 and R16 during construction of the superstructure.

Noise emissions are also predicted to be less than the applicable highly affected noise levels at all assessed locations. While actual noise levels are not expected to be of this magnitude, it is recommended a construction noise and vibration management plan (CNVMP) be implemented as part of this Proposal to manage and minimise construction noise and vibration.

Deliveries to/from the site would peak at 48 trucks per day during the concrete pours, and would be spread evenly throughout the day (six trucks per hour). This peak impact would occur for the duration of construction of the car park superstructure, over a 40-week period. This is not expected to impact existing road network noise conditions.

## **b) Operation phase**

### **Roads**

For existing residences and other sensitive land uses affected by additional traffic on existing roads generated by land use developments, any increase in the total traffic noise level should be limited to 2 dB above that of the corresponding 'no build option'. The proposed expansion of Warwick Farm MSCP is anticipated to generate an approximate additional 99 vehicle movements during the AM peak hour and 81 vehicle movements during the PM peak hour (refer to Section 6.1).

Based on information provided in the abovementioned assessment this would result in an approximate traffic increase of 15 per cent during AM peak hour and 18 per cent during PM peak hour. An  $L_{Aeq}$  noise level increase of more than 2 dB(A) is equivalent to approximately a 60 percent increase in total road traffic. As such, it is unlikely the Proposal would increase road noise levels by 2dB(A).

Additionally, the key intersections of the Hume Highway/Remembrance Avenue and Hume Highway/Governor Macquarie Drive intersections suggest the proposed additional 250 car park spaces would contribute less than 3% of the total traffic at these two intersections. Therefore, compliance with operational road traffic noise levels outlined in Table 2 is expected.

### **Carpark**

To assess the potential noise impacts associated with the operation of the proposal, two key scenarios were assessed:

- general operational noise from normal car park usage within the carpark; and
- transient noise events such as car door slams, boot slams or horn emissions.

For the assessment of operational noise, a sound power for general car usage (i.e. car movement and engine noise) of 75dB(A)  $Leq(15min)$  was adopted. Wheel squeal from vehicles manoeuvring in the CCP has not been assessed as the proposal can be designed to minimise or eliminate this type of noise emission. To assess the impact transient noise events such as door or boot slams a sound power level of 85dB(A)  $L_{max}$  was adopted.

Predicted noise levels from the general operation of the car park are less than 42dB(A)  $Leq(15min)$  at all existing identified residential receivers, satisfying the minimum applicable night time NPfI trigger level of 43dB(A)  $Leq(15min)$ . Predicted maximum noise level events are less than 52dB(A)  $L_{max}$  at all existing identified residential receivers, which would also satisfy the operational maximum noise trigger levels.

### 6.3.5 Construction Vibration

The relationship between vibration and the probability of causing human annoyance or damage to structures is complex. This complexity is mostly due to the magnitude of the vibration source, the particular ground conditions between the source and receiver, the foundation-to-footing interaction and the large range of structures that exist in terms of design (e.g. dimensions, materials, type and quality of construction and footing conditions). The intensity, duration, frequency content and number of occurrences of vibration, are all important aspects in both the annoyances caused and the strains induced in structures.

Energy from construction equipment is transmitted into the ground and transformed into vibrations, which attenuates with distance. The magnitude and attenuation of ground vibration is dependent on the following:

- the efficiency of the energy transfer mechanism of the equipment (i.e. impulsive; reciprocating, rolling or rotating equipment)
- the Frequency content
- the impact medium stiffness
- the type of wave (surface or body)
- the ground type and topography.

Due to the above factors, there is inherent variability in ground vibration predictions without site-specific measurement data.

Generally, piling is not expected to be used in this Proposal but is included for information purposes. Based on distances from the Proposal to nearest receivers which are approximately 30 metres away and items of plant to be used, vibration goals are not expected to be exceeded.

The use of any vibration generating equipment would be undertaken in accordance with the minimum working distances specified in the for NSW *Construction Noise and Vibration Strategy* (TfNSW, 2019b).

As a guide, minimum working distances from sensitive receivers for typical items of vibration intensive plant are listed in Table 12, based on cosmetic damage, heritage items and human response. The minimum working distances are indicative and will vary depending on the particular item of plant and local geotechnical conditions. They apply to cosmetic damage of typical buildings under typical geotechnical conditions.

**Table 6-13 Recommended Minimum Safe Working Distances for Vibration Intensive Plant from Sensitive Receiver**

Plant Item	Rating / Description	Minimum Distance Cosmetic Damage		Minimum Distance Human Response (NSW EPA Guideline)
		Residential and Light Commercial (BS 7385)	Heritage Items (DIN 4150, Group 3)	
Vibratory Roller	<50 kN (1-2 tonne)	5m	11m	15m to 20m
	<100 kN (2-4 tonne)	6m	13m	20m
	<200 kN (4-6 tonne)	12m	15m	40m
	<300kN (7-13 tonne)	15m	31m	100m
	>300kN (13-18 tonne)	20m	40m	100m
	>300kN (>18 tonne)	25m	50m	100m
Small Hydraulic Hammer	300kg (5 to 12 t excavator)	2m	5m	7m
Medium Hydraulic Hammer	900kg (12 to 18 t excavator)	7m	15m	23m
Large Hydraulic Hammer	1600kg (18 to 34 t excavator)	22m	44m	73m
Vibratory Pile Driver	Sheet Piles	2m to 20m	5m to 40m	20m
Pile Boring	< 800mm	2m (nominal)	5m	4m
Jack Hammer	Hand Held	1m (nominal)	3m	2m

Given the nearest residential receptors are approximately 30 metres from the project, where vibratory rollers are proposed it is recommended <100 kN (2-4 tonne) be utilised.

Additionally, if hydraulic hammering were to occur, it is recommended no larger than medium 900kg (12 to 18 t excavator) be utilised.



### 6.3.6 Mitigation measures

As compliance with operational noise levels is expected once the Proposal is fully operational, no operational mitigation measures are required.

However, 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* (TfNSW, 2019b) and the Noise and Vibration Impact Assessment for the Proposal (RAPT 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.

#### Construction

- The CNVMP would outline mitigation measures to be implemented to reduce the noise impact from construction activities including:
  - 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 noise
  - avoiding any unnecessary noise when carrying out manual operations and when operating plant
  - ensuring spoil is placed and not dropped into awaiting trucks
  - avoiding/limiting simultaneous operation of noisy plant and equipment within discernible range of a sensitive receiver where practicable
  - switching off any equipment not in use for extended periods e.g. heavy vehicles engines would be switched off whilst being unloaded
  - avoiding deliveries at night/evenings wherever practicable
  - no idling of delivery trucks
  - keeping truck drivers informed of designated vehicle routes, parking locations and acceptable delivery hours for the site
  - minimising 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.
- 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:
  - maximising the offset distance between noisy plant and adjacent sensitive receivers and determining safe working distances
  - using the most suitable equipment necessary for the construction works at any one time
  - directing noise-emitting plant away from sensitive receivers
  - regularly inspecting and maintaining plant to avoid increased noise levels from rattling hatches, loose fittings etc
  - using 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 works
  - use of quieter and less vibration emitting construction methods where feasible and reasonable.

- Works 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). Any works outside these hours may be undertaken if approved by TfNSW and the community is notified prior to these works commencing. An Out of Hours Work application form would be prepared by the Construction Contractor and submitted to TfNSW for approval for any works outside standard hours.
- Works would be undertaken in accordance with the TfNSW *Construction Noise and Vibration Strategy* (TfNSW, 2019b).
- As per the *Construction Noise and Vibration Strategy* (TfNSW, 2019b), construction activities with special audible characteristics (high noise impact, intensive vibration, impulsive or tonal noise emissions) would be limited to standard hours, starting no earlier than 8.00 am; and to continuous blocks not exceeding three hours each with a minimum respite from those activities and works of not less than one hour between each block, unless otherwise approved by TfNSW.
- As the distance to the nearest residential receptor is 30m:
  - If needed, <100 kN (2-4 tonne) vibratory rollers are recommended
  - If needed, <900kg (12 to 18 t excavator) hydraulic hammers are recommended
- 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.
- Vibration resulting from construction and received at any structure outside of the Proposal area would be managed in accordance with:
  - for structural damage vibration - German Standard DIN 4150: Part 3 – 1999 Structural Vibration in Buildings: Effects on Structures and British Standard BS 7385-2:1993 Guide to Evaluation of Human Exposure to Vibration in Buildings (1 Hz to 80 Hz)
  - for human exposure to vibration the acceptable vibration - values set out in the Environmental Noise Management Assessing Vibration: A Technical Guideline (Department of Environment and Conservation, 2006) which includes British Standard BS 7385-2:1993 Guide to Evaluation of Human Exposure to Vibration in Buildings (1 Hz to 80 Hz).
- A noise monitoring program would be included in the CNVMP and implemented to quantify noise emissions from construction activities and guide practical reasonable and feasible noise control measures.
- Design carpark in such a way as to minimise tyre squeal.

## 6.4 Aboriginal heritage

### 6.4.1 Existing environment

A search of the Aboriginal Heritage Information Management System (AHIMS) resulted in no records within 200 metres of the Proposal area.

The Proposal site has low archaeological potential, and it is considered unlikely that any Aboriginal heritage items would be located in the vicinity of the Proposal due to the history of disturbance.

### 6.4.2 Potential impacts

#### a) Construction phase

The Proposal would involve limited ground disturbance. The disturbance would occur on land that has previously been disturbed. There are no AHIMS sites within 200 metres of the Proposal site. As such, it is considered unlikely that Aboriginal heritage items would be encountered.

#### b) Operation phase

The Proposal is not expected to cause any impacts on Aboriginal heritage during operations.

### 6.4.3 Mitigation measures

#### Construction

- 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.
- If unforeseen Aboriginal objects are uncovered during construction, the procedures contained in TfNSW's *Unexpected Heritage Finds Guideline* (TfNSW, 2016a) would be followed, and works within the vicinity of the find would cease immediately. The Construction Contractor would immediately notify the TfNSW Project Manager and TfNSW 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 OEH and the Local Aboriginal Land Council. If human remains are found, work would cease, the site secured and the NSW Police and the OEH notified. Where required, further archaeological investigations and an Aboriginal Heritage Impact Permit would be obtained prior to works recommencing at the location.

## 6.5 Non-Aboriginal heritage

### 6.5.1 Existing environment

A desktop assessment was undertaken to identify potential non-Aboriginal heritage items within the vicinity of the Proposal. The assessment included a review of the following online databases:

- National Heritage List
- NSW State Heritage Register
- *Liverpool Local Environmental Plan 2008*

The assessment did not identify any national or state listed heritage items within the site boundaries.

The following items are listed on the RailCorp s170 Heritage register:

- Warwick Farm Railway Station Group, located immediately to the west of the Proposal, historically associated with the Warwick Farm racecourse army camp

Liverpool LEP 2008 heritage items (refer to Figure 6-8):

- Berryman Reserve is a war memorial, located immediately to the north of the Proposal site. The site is associated with the Remembrance Driveway, and the Warwick Farm Racecourse Group.
- Warwick Farm Railway Station Group, located immediately to the west of the Proposal, historically associated with the Warwick Farm racecourse army camp
- Plan of Town of Liverpool (early town centre street layout, Hoddle 1827), the significance of the foundation and settlement of the town of Liverpool is strongly associated with the Macquarie period.





**Figure 6-8 Heritage items surrounding the Proposal site**

## 6.5.2 Potential impacts

### a) Construction phase

The construction phase of the Proposal would not cause any direct impacts to the heritage items in the vicinity of the Proposal area.

### b) Operation phase

The operational phase of the Proposal would not cause any direct impacts to the heritage items in the vicinity of the Proposal area.

## 6.5.3 Mitigation measures

### Construction

- In the event that any unanticipated archaeological deposits are identified within the project site during construction, the procedures contained in TfNSW's *Unexpected Heritage Finds Guideline* (TfNSW, 2016a) would be followed, and works within the vicinity of the find would cease immediately.
- The Construction Contractor would immediately notify the TfNSW Project Manager and the TfNSW Environment and Planning Manager so they can assist in co-ordinating the next steps which are likely to involve consultation with an archaeologist and OEH. Where required, further archaeological work and/or consents would be obtained for any unanticipated archaeological deposits prior to works recommencing at the location.

## 6.6 Biodiversity

### 6.6.1 Existing environment

An assessment of the Proposal site in accordance with the Transport for NSW *Vegetation Offset Guide* (2019a) was undertaken by NGH ecologists based on a desktop review of existing information and a site visit conducted on 9 July 2020.

Seven (7) species of flora were identified within the study area which included six (6) natives and one (1) exotic. A number of the native species identified on site were typically utilised as landscape canopy trees and/or street trees. The overall assemblage of species within the landscape is typical of a landscaped vegetation area, which includes *Corymbia maculata* (Spotted Gum), *Corymbia citriodora* (Lemon Scented Gum) and *Syncarpia glomulifera* (Turpentine). As such, this area has been mapped as 'Urban/Exotic Vegetation'.

### Habitat assessment

No trees containing habitat features including hollows, nests or dreys were observed during the site visit. A dense mid storey was absent as was coarse woody debris and dense leaf litter on the ground. The site may occasionally provide a roosting resource or a foraging resource for some woodland birds.

### Threatened ecological communities

As the vegetation was mapped as 'Urban/Exotic Vegetation', no Threatened Ecological Communities occur within the study area.

### Threatened Flora

Downy Wattle *Acacia pubescens* (flora, EPBC vulnerable, BC vulnerable) has been previously recorded within 500 metres of the Proposal, however no threatened flora was observed during the site visit of the study area.



## Threatened Fauna

Fauna that has been previously recorded within 500 metres of the Proposal include Grey-headed Flying Fox *Pteropus poliocephalus* (EPBC vulnerable, BC vulnerable), Regent Honeyeater *Anthochaera phrygia* (EPBC critically endangered, BC critically endangered).

Despite no threatened fauna being observed within the study area during the site visit, the area may occasionally be utilised as a roosting/ foraging resource for threatened fauna.

### 6.6.2 Potential impacts

#### a) Construction phase

Transport for NSW has prepared a *Vegetation Offset Guide* (TFNSW, 2019a) to assist in meeting biodiversity sustainability targets and provide a consistent approach for offsetting impacts to vegetation on Transport for NSW projects.

The Proposal would clear 18 young trees, as shown in Figure 6-9. These trees are Lemon-scented Gum (*Corymbia citriodora*) and Spotted Gum (*Corymbia maculata*), or hybrids thereof. These trees are common landscape planting, and are outside their natural range at Warwick Farm, with the species typically being associated with areas north of greater Sydney. While this vegetation would form a Plant Community Type within its natural range (north of Sydney), the planted individuals on site are not considered to conform to a Plant Community Type description. The trees are considered “Native Vegetation” under the *Vegetation Offset Guide*, as they are native to NSW. These trees may provide marginal foraging habitat for some woodland birds. However, due to better alternative habitat available nearby, the young age of the trees, these trees are not considered habitat for threatened entities. Additionally, during construction, a small amount of landscaped areas, landscaped shrubs and turf areas would be impacted within the development footprint. Due to the minor to negligible nature of the biodiversity impacts proposed, offsets are not required under the BC Act.

The TFNSW *Vegetation Offset Guide* (2019a) provides offsets requirements where the vegetation proposed to be cleared has an impact on non-threatened vegetation (i.e. plant communities that are not listed as threatened ecological communities on the BC and/or EPBC Acts). As the vegetation proposed to be cleared is part of landscaping, is considered “Native Vegetation” and will pose an impact to a non-threatened vegetation, offsets will be required.

Although the *Vegetation Offset Guide* (2019a) indicates that for native species secondary offsets would be required, given that there a total of 18 trees would be cleared by the proposed works, the single tree calculator from the *Vegetation Offset Guide* (2019a) was used. Consequently, the removal of the native vegetation would require an offset ratio of 4:1 (diameter of each tree is less than 60cm). A total of 72 native plants will be required for offset.

No Priority Weeds (listed under the *Biosecurity Act 2015*) were observed during the site visit; however these species may be present as dormant propagules.

Importation of materials and plant and equipment used on other sites could import priority weeds to the Proposal site.

Although they may occur on occasion, due to the lack of habitat features such as nests, dreys, and hollows, the removal of trees is unlikely to cause a significant impact to threatened fauna species.

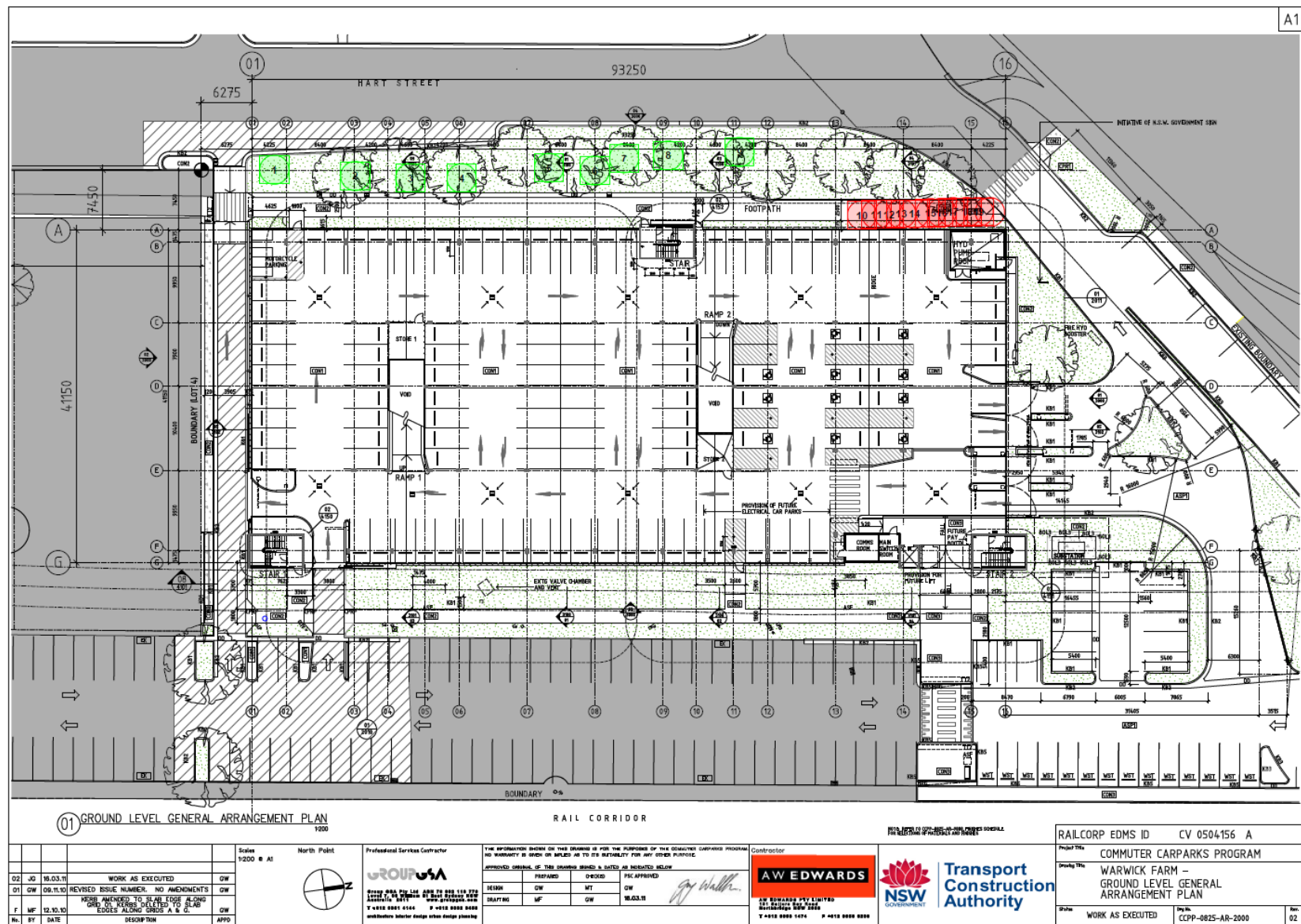


Figure 6-9 Trees to be cleared by the proposal (shown in red)



## b) Operation phase

The operational phase of the Proposal would not cause any direct impacts to the flora and fauna of the area.

### 6.6.3 Mitigation measures

#### Construction

- Construction of the Proposal would be undertaken in accordance with TfNSW's *Vegetation Management (Protection and Removal) Guideline* (TfNSW, 2018c) and TfNSW's *Fauna Management Guideline* (TfNSW, 2019d).
- 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.
- Disturbance of vegetation would be limited to the minimum amount necessary to construct the Proposal. Trees/vegetation nominated to be removed for the proposal 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.
- Tree Protection Zones (TPZs) would be established around trees to be retained, as nominated in the Flora and Fauna Assessment Report (RPS, 2018)). Tree protection would be undertaken in line with AS 4970-2009 Protection of Trees on Development Sites and would include exclusion fencing of TPZs.
- A total of 18 trees would be cleared by the proposed works. As per the TfNSW *Vegetation Offset Guide* 2019a, the removal of the native vegetation would require an offset ratio of 4:1 (diameter of each tree is less than 60cm). A total of 72 native plants will be required for offset.
- In the event of any tree to be retained becoming damaged during construction, the Construction Contractor would immediately notify the TfNSW Project Manager and TfNSW Environment and Planning Manager to coordinate the response which may include contacting an arborist to inspect and provide advice on remedial action, where possible.
- 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 TfNSW's Tree Removal Application Form and submit it to TfNSW for approval.
- Weed control measures, consistent with TfNSW's *Weed Management and Disposal Guideline* (TfNSW, 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 Biosecurity Act 2015. Additionally, plant and equipment would be cleaned prior to accessing the Proposal site.

## **6.7 Socio-economic impacts**

### **6.7.1 Existing environment**

A mixture of housing densities surround the site, with low density to the east, medium density to the north and north-east and high density to the west. The high-density housing directly opposite the site on Hart Street is comprised of 4 level brick apartment buildings which continue southwards down the street, with a few buildings of plaster facade located near the end of the street.

Warwick Farm Station is an important transport hub for a range of commuters traveling to and from Sydney City and Paramatta.

### **6.7.2 Potential impacts**

#### **a) Construction phase**

During construction, the Proposal would have transport and noise and vibration impacts, as described in 6.1. These impacts would have socio-economic consequences; temporarily reducing parking spaces during construction and potentially disturbing nearby residences, particularly if residents are working from home.

#### **b) Operation phase**

It is anticipated that, once operational, the provision of additional parking spaces would increase the number of vehicles operating within the immediate vicinity of the Proposal. However, as identified in the TTAIA, the additional traffic will be limited to peak periods.

There would be an improvement in the connectivity of Warwick Farm Station for commuters as well as an improvement in safety by reducing potential illegal parking and parking in local streets. The new parking facilities would help to encourage more people to use public transport. As a result, it is expected that the Proposal would have a positive impact on existing and planned nearby businesses.

### **6.7.3 Mitigation measures**

#### **Construction**

- 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.
- A Community Liaison Management Plan 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 Community Liaison Management Plan to be developed prior to construction.

## 6.8 Contamination, geology and soils

### 6.8.1 Existing environment

The Proposal site is comprised of a reinforced concrete multi-storey car park. The proposed construction would disturb a small landscaped area.

Due to the site history of previous multi-storey car park construction, urban development and rail construction, the Proposal site is expected to be on disturbed land comprised of fill materials.

Ancillary facilities such as the site compound and temporary parking may expose surface soils in Hart Park, west of Burnside Drive and north of Munday Street. These sites, based on their current land use of recreational parks, are not expected to hold contamination at surface levels.

There are no mapped acid sulfate soils within the Proposal site. The nearest site notified to the EPA under the *Contaminated Land Management Act 1997* is greater than 500 metres away.

### 6.8.2 Potential impacts

#### a) Construction phase

During construction, ground disturbance around the MSCP, site compound and temporary car parks could result in erosion and sediment impacts. Stockpile areas could be a source of sediment during rain events.

Vehicle movements, particularly of off-road machinery, could cause tracking of sediment across asphalt areas.

These impacts are readily manageable and are therefore considered to be minor and short term.

#### b) Operation phase

The operational phase of the Proposal would not cause any direct impacts or contamination to soils and geology.

### 6.8.3 Mitigation measures

#### Construction

- Prior to commencement of works, 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. The Erosion and Sediment Control Plan measures would be implemented prior to commencement of works and maintained throughout construction.
- Erosion and sediment control measures would be established prior to 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.
- Stockpiles would be located outside of drainage paths and away from drainage lines.

## 6.9 Hydrology and water quality

### 6.9.1 Existing environment

The Proposal would be located on an existing multi-storey car park, constructed from concrete. This area has very low erosion potential. The Proposal site is gently sloping to flat, likely draining north towards Brickmasters Creek and Cabramatta Creek, 490 metres to the north of the Proposal site and potentially to the Georges River 830 metres south of the Proposal site. There are no mapped Freshwater Fish Communities or flood prone land nearby to Proposal site.

### 6.9.2 Potential impacts

#### a) Construction phase

The greatest risk to hydrology and water quality during construction is from the release of oils, fuel and other hazardous chemicals during construction. Equipment failures such as hydraulic hose failures have the potential to release fuel and oil into the environment, which can then be washed into waterways.

During construction, improperly stored hazardous chemicals such as adhesives, paint and solvents have the potential to be released into the environment. Releases of this kind can have an impact to receiving water quality.

These impacts are readily avoidable and manageable and are therefore considered to be minor and short term.

#### b) Operation phase

As exposed hard surface will remain unchanged the Proposal is not expected to increase run off from hard stand areas and is not expected to have a hydrological impacts during construction.

### 6.9.3 Mitigation measures

#### Construction

- 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.
- 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 TfNSW's *Chemical Storage and Spill Response Guidelines* (TfNSW, 2018e).
- 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 TfNSW *Chemical Storage and Spill Response Guidelines* (TfNSW, 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.
- In the event of a pollution incident, works would cease in the immediate vicinity and the Construction Contractor would immediately notify the TfNSW Project Manager and TfNSW Environment and Planning Manager. The EPA would be notified by TfNSW if required, in accordance with Part 5.7 of the POEO Act.
- The existing drainage systems would remain operational throughout the construction phase.



## 6.10 Air quality

### 6.10.1 Existing environment

The Proposal site is located with high density residential sites to the west, a train-station to the east and recreational parks to the north and south. Each of these sites are considered sensitive air quality receivers. About 300 metres south of the Proposal site is Liverpool Boys and Girls high school.

The air quality at the Proposal site would be influenced by the Hume Highway, about 70 metres north of the Proposal site, which experiences high volumes of traffic. The National Pollutant Inventory does not show any sites within 500 m of the Proposal site.

### 6.10.2 Potential impacts

#### a) Construction phase

During construction, the Proposal would cause some minor air quality impacts.

During construction, machinery used to complete the proposed works would generate low levels of emissions. Given the location of the site on a road contribution is expected to be negligible.

The proposed construction activities and stockpiles may result in dust emissions during construction. Given these impacts are considered readily manageable, this impact is considered short term and minor.

#### b) Operation phase

The Proposal would result in marginally higher volume of traffic accessing the Warwick Farm MSCP which would increase the air quality impacts during peak times. In the overall context of the site, this impact is minor given the high volumes of traffic that use the nearby Hume Highway.

The Proposal would promote the use of public transport and may result in less commuters journeying via car for their whole commute. This may have a long-term positive air quality impact.

### 6.10.3 Mitigation measures

#### Construction

- Air quality management and monitoring for the Proposal would be undertaken in accordance with TfNSW's *Air Quality Management Guideline* (TfNSW, 2018f).
- Methods for management of emissions would be incorporated into project inductions, training and pre-start/toolbox talks.
- 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.
- Vehicle and machinery movements during construction would be restricted to designated areas and sealed/compacted surfaces where practicable.
- To minimise the generation of dust from construction activities, the following measures would be implemented:
  - 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.

## 6.11 Waste and resources

### 6.11.1 Potential impacts

#### a) Construction phase

Construction activities would generate waste from the following streams:

- demolition waste (predominantly comprised of concrete and some reinforcing steel)
- packaging transportation materials
- surplus and wasted construction materials
- concrete washout
- food and household waste from construction personnel

#### b) Operation phase

The operational phase of the Proposal is not expected to cause additional waste to be generated or resources to be used.

### 6.11.2 Mitigation measures

#### Construction

- The CEMP (or separate Waste Management Plan, if necessary) must address waste management and would at a minimum:
  - 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.
- All spoil and waste must be classified in accordance with the Waste Classification Guidelines Part 1: Classifying waste (EPA, 2014) prior to disposal.
- Any concrete washout would be established and maintained in accordance with TfNSW's *Concrete Washout Guideline* (TfNSW, 2018g) with details included in the CEMP and location marked on the ECM.

## 6.12 Bushfire risk

### 6.12.1 Existing environment

The Proposal areas is highly urbanised, and the site has not been identified as bush fire prone land or poses significant extent of contiguous vegetation.

### 6.12.2 Potential impacts

#### Construction phase

Some construction activities that may cause or increase the risk of bush fire include:

- site preparation activities such as vegetation removal and use of power tools
- operating a petrol, gas or diesel-powered vehicles or plants near land containing combustible material
- operating plant fitted with power hydraulics on land containing combustible material
- undertaking 'hot' works (for example welding, use of oxy acetylene torches)
- storage of fuel.

Due to the distance from the vegetation to the west of the site, the increased risk would be minimal.

#### Operation phase

The Proposal would be unlikely to increase bushfire risk in the vicinity of the Proposal. The Proposal would not increase bushfire fuel volumes or increase the risk of ignition of vegetation.

### 6.12.3 Mitigation measures

#### Construction

- 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.
- To minimise risk from bushfires to the Proposal during operation the following would be considered during detailed design:
  - limited use of timber
  - urban design is to limit selection of large canopy trees close to buildings
  - adequate ventilation to minimise risk of bushfire smoke impacts.

## 6.13 Sustainability

The design of the Proposal would be based on the principles of sustainability, including the application of the Transport for NSW Environmental Management System, which includes the use of the) benchmarking tool, *TfNSW Climate Change Risk Assessment Guidelines* (TfNSW, 2016b), *TfNSW Sustainable Design Guidelines Version 4.0* (TfNSW, 2017a) and the *TfNSW Carbon Estimation and Reporting Tool* (TfNSW, 2017d).

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. Water consumption during construction would be monitored and reported on and consumption of potable water would be reduced where practicable.

The Proposal would provision for future electric vehicle charging stations. This would include cable containment for 38 electric vehicle charging stations and ensuring sufficient power supply electric vehicle charging stations (up to 13, to be determined in detailed design). The Proposal will target additional levels of sustainability in accordance with the *TfNSW Sustainable Design Guidelines – Version 4.0* (TfNSW, 2017a).

### 6.13.1 Mitigation measures

#### Construction

- Investigation of renewable energy options during detailed design to be incorporated into the operation of the car park.
- All new electrical equipment for the car park to be at least market average star rating. In categories where no star ratings are available, equipment purchased should be recognised as high efficiency either by being ENERGY STAR accredited, in a high efficiency band under Australian Standards or being above-average efficiency of Greenhouse and Energy Minimum Standards (GEMS) registered products.

### 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.

A climate Risk Assessment was undertaken for the Commuter Car Park Program (Transport for NSW, 2020), which identified the following key risks:

- extreme temperature events
- extreme rainfall events
- storms and strong winds
- bushfires.

Climate change could lead to an increase in the intensity of rainfall events, whereby the rainfall expected to occur in a one per cent Annual Exceedance Probability (AEP) flood event would occur more frequently. The Proposal site is not located in an identified flood prone area however Water Sensitive Urban Design options would be investigated during development of detailed design of the Proposal, along with identification of options to reduce the runoff burden to the existing drainage system.

Detailed design would consider inclusions to minimise impacts of extreme heat, including selection of materials for durability in extreme conditions and that minimise heat retention, urban design elements that provide adequate shade (such as rooftop shading provided by solar panels), and minimise water use. Furthermore, the detailed design would consider relevant wind codes, surface water modelling and asset protection from hail and lightning.

While climate change cause challenges for the transport network at large, the Proposal is not expected to be threatened by climate change in any specific way. This is because; the Proposal is not located on flood liable land, in an area of coastal vulnerability, or subject to bushfire risk.

### 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 a carbon foot printing exercise in accordance with Transport for NSW's *Carbon Estimate and Reporting Tool Manual* (TfNSW, 2017). The



carbon footprint would be used to inform decision making in design and construction. Materials used in construction the Proposal would be selected on the basis of sustainability principles, in particular lower carbon content and use of recycled materials to minimise generation of greenhouse gases.

Greenhouse gas emissions resulting from the construction activities of the Proposal would be short-term and temporary. Furthermore, greenhouse gas emissions generated during construction would be kept to a minimum through the implementation of the standard mitigation measures detailed in Chapter 7.

It is anticipated that, once operational, the provision of additional parking spaces would increase the number of vehicles operating within the immediate vicinity of the Proposal however many of these vehicles already travel to the station and park either in the existing car park or on the surrounding streets. However longer trips to major employment areas such as the CBD may be reduced through uptake of public transport. A modal shift in transport usage may reduce the amount of fuel consumed by private motor vehicles with a corresponding relative reduction in associated greenhouse gas emissions in the local area.

Furthermore, solar panels would be investigated during detailed design and incorporated where possible into the Proposal. By adopting solar panels, the operational car park would be less reliant on electricity from the grid; and would therefore result in benefits including and not limited to:

- Reducing the car park's demand for grid electricity during peak times and therefore result in reduced loads on the electricity network;
- Reducing the operations greenhouse gas emissions, consequently reducing the car park's carbon footprint and therefore contributing to the NSW's Governments net-zero emissions by 2050 target;
- Contributing to the decarbonisation of the electricity network as a result of any excess energy produced from solar being fed back in to the local electricity grid;
- Reducing the heat load on the building's roof and in the building as a whole and contributing to lower summer temperatures at the car park, as a result of the shadowing from solar panels; and
- Reducing the risk of exposure to escalating energy costs and carbon pricing in the future; as well as cost savings in grid electricity bills over the life of the car park.

Solar panels may have a visual impact to surrounding residents and park users, however given the existing height of the car park it is considered this will have a minimal impact and would be further considered through detailed design and Urban Design Plan.

During operation, if the Proposal successfully diverts commuters from traveling via personal vehicles and onto public transport. In addition, the Proposal would involve installing the wiring necessary to construct 39 electrical vehicle charging locations. If these aspects are realised, the Proposal would contribute to assisting in the reduction of greenhouse gas emissions.

## **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 were to be 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 DPIE's Major Projects Register, Liverpool City Council Panel Development and Planning Register, and Liverpool City Council Development Application Register in August 2020 identified that two major development applications, that are not yet determined, are listed

in about 400 metres south of the site. These developments have not yet been approved and are:

- New Liverpool Primary School
- Private Hospital, Liverpool

These developments are likely to generate traffic, noise and visual impacts. The Liverpool Primary School project is expected to commence from mid-2021. Construction of this proposal and the Liverpool Primary School may occur concurrently. The Liverpool Primary School would be constructed to the south of Hart Park. It may use the same local roads as this proposal for haulage and construction transport. Depending on the construction footprint, timing and construction methods, the Liverpool Primary School proposal construction may result in cumulative noise impacts. Overall, this is expected to cause minor cumulative impacts due to the distance between the two proposals (being about 400 metres).

The Liverpool Private Hospital is unlikely to be constructed concurrently with this Proposal.

Based on this assessment, it is anticipated that the cumulative impacts would be minor, with the implementation of consultation with relevant stakeholders and associated mitigation measures detailed 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.

#### **6.16.1 Mitigation measures**

##### **Construction**

- 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 relevant stakeholders undertaking development in the vicinity of the Proposal would be undertaken prior to finalisation of the detailed design.

## 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 Environmental Management System. 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
- Erosion and Sediment Control 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 7-1: These proposed measures would minimise the potential adverse impacts of the Proposal identified in Chapter 6 should the Proposal proceed.

**Table 7-1: Proposed mitigation measures**

No.	Mitigation measure
<b>General</b>	
1.	A Construction Environmental Management Plan (CEMP) would be prepared by the Construction Contractor in accordance with the relevant requirements of <i>Environmental Management Plan Guidelines: Guideline for Infrastructure Projects</i> (NSW Department of Planning, Industry and Environment, 2020) ) 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> (TFNSW, 2017b) for approval by Transport for NSW, prior to the commencement of construction and following any revisions made throughout construction.
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.

No.	Mitigation measure
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 a services plan included with 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.
<b>Traffic and transport</b>	
8.	<p>Prior to the commencement of construction, a Construction Traffic Management Plan (CTMP) would be prepared as part of the CEMP and would include at a minimum:</p> <ul style="list-style-type: none"> <li>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</li> <li>maximising safety and accessibility for pedestrians and cyclists</li> <li>ensuring adequate sight lines to allow for safe entry and exit from the site</li> <li>ensuring access to railway stations, businesses, entertainment premises and residential properties (unless affected property owners have been consulted and appropriate alternative arrangements made)</li> <li>managing impacts and changes to on and off-street parking and requirements for any temporary replacement provision</li> <li>parking locations for construction workers away from stations and busy residential areas and details of how this would be monitored for compliance</li> <li>routes to be used by heavy construction-related vehicles to minimise impacts on sensitive land uses and businesses</li> <li>identification of final site compound, loading zones, and worker and vehicle parking. These activities may be confined to within the construction site to minimise disruption to the local area</li> <li>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</li> <li>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.</li> <li>scheduling roadworks that would affect the existing local road network outside of peak periods or during the night to minimise the impact on local traffic.</li> <li>scheduling the movement of construction vehicles and deliveries outside of peak periods to minimise the impact on local traffic.</li> </ul>
9.	Consultation with the relevant road authorities would be undertaken during preparation of the CTMP. The performance of all project traffic arrangements must be monitored during construction.



No.	Mitigation measure
10.	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.
11.	Workers will not be permitted to park in designated commuter spaces within the station precinct to minimise disruption for commuters.
12.	Future proofing for the installation of electric vehicle charging stations by provisioning the power supply for up to 13 charging stations (to be determined during detailed design), and cable containment for up to 38 spaces within the additional spaces

### Landscape and visual amenity

13.	<p>An Urban Design Plan (UDP) would be prepared in consultation with the relevant council, and submitted to TfNSW for endorsement by the Precincts and Urban Design team, prior to finalisation of the detailed design. The UDP, at a minimum, would address the following:</p> <ul style="list-style-type: none"> <li>• a Public Domain Plan and an Urban Design Plan would be prepared which includes replacement planting to address vegetation removed during construction.</li> <li>• the appropriateness of the proposed design with respect to the existing surrounding landscape, built form, behaviours and use-patterns (including consideration of Crime Prevention Through Environmental Design principles). This is to include but not be limited to:</li> <li>• connectivity with surrounding local and regional movement networks including street networks, other transport modes and active transport networks. Existing and proposed paths of travel for pedestrians should be shown</li> <li>• integration with surrounding local and regional open space and or landscape networks. Existing and proposed open space infrastructure/landscape elements should be shown</li> <li>• integration with surrounding streetscape including street wall height, active frontages, awnings, street trees, entries, vehicle cross overs etc</li> <li>• integration with surrounding built form (existing or desired future) including building height, scale, bulk, massing and land-use</li> <li>• design detail that is sensitive to the amenity and character of heritage items located within or adjacent to the Proposal site</li> <li>• minimisation of over-shadowing impacts to nearby residents</li> </ul>
14.	All permanent lighting would be designed and installed in accordance with the requirements of standards relevant to <i>AS 1158 Road Lighting</i> and <i>AS 4282 Controlling the Obtrusive Effects of Outdoor Lighting</i> .
15.	Worksite compounds would be screened with shade cloth (or similar material, where necessary) to minimise visual impacts from key viewing locations.
16.	Temporary hoardings, barriers, traffic management and signage would be removed when no longer required.

No.	Mitigation measure
17.	During construction, graffiti would be removed in accordance with TfNSW's Standard Requirements.
18.	Following construction, trees removed during the proposal would be replaced to provide as good or better screening than was provided by the existing trees that would be removed.
<b>Noise and vibration</b>	
19.	<p>The Construction Noise and Vibration Management Plan (CNVMP) would outline mitigation measures to be implemented to reduce the noise impact from construction activities including:</p> <ul style="list-style-type: none"> <li>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 noise</li> <li>avoiding any unnecessary noise when carrying out manual operations and when operating plant</li> <li>ensuring spoil is placed and not dropped into awaiting trucks</li> <li>avoiding/limiting simultaneous operation of noisy plant and equipment within discernible range of a sensitive receiver where practicable</li> <li>switching off any equipment not in use for extended periods e.g. heavy vehicles engines would be switched off whilst being unloaded</li> <li>avoiding deliveries at night/evenings wherever practicable</li> <li>no idling of delivery trucks</li> <li>keeping truck drivers informed of designated vehicle routes, parking locations and acceptable delivery hours for the site</li> <li>minimising 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.</li> </ul>
20.	<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"> <li>maximising the offset distance between noisy plant and adjacent sensitive receivers and determining safe working distances</li> <li>using the most suitable equipment necessary for the construction works at any one time</li> <li>directing noise-emitting plant away from sensitive receivers</li> <li>regularly inspecting and maintaining plant to avoid increased noise levels from rattling hatches, loose fittings etc</li> <li>using 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 works</li> <li>use of quieter and less vibration emitting construction methods where feasible and reasonable.</li> </ul>

No.	Mitigation measure
21.	Works 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). Any works outside these hours may be undertaken if approved by TfNSW and the community is notified prior to these works commencing. An Out of Hours Work application form would be prepared by the Construction Contractor and submitted to TfNSW for approval for any works outside standard hours.
22.	Works would be undertaken in accordance with the <i>TfNSW Construction Noise and Vibration Strategy</i> (TfNSW, 2019b).
23.	As per the <i>Construction Noise and Vibration Strategy</i> (TfNSW, 2019b), construction activities with special audible characteristics (high noise impact, intensive vibration, impulsive or tonal noise emissions) would be limited to standard hours, starting no earlier than 8.00 am; and to continuous blocks not exceeding three hours each with a minimum respite from those activities and works of not less than one hour between each block, unless otherwise approved by TfNSW.
24.	As the distance to the nearest residential receptor is 30m: <ul style="list-style-type: none"> <li>• If needed, &lt;100 kN (2-4 tonne) vibratory rollers are recommended</li> <li>• If needed, &lt;900kg (12 to 18 t excavator) hydraulic hammers are recommended</li> </ul>
25.	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.
26.	Vibration resulting from construction and received at any structure outside of the Proposal area would be managed in accordance with: <ul style="list-style-type: none"> <li>• for structural damage vibration - German Standard DIN 4150: Part 3 – 1999 <i>Structural Vibration in Buildings: Effects on Structures</i> and British Standard BS 7385-2:1993 <i>Guide to Evaluation of Human Exposure to Vibration in Buildings (1 Hz to 80 Hz)</i></li> <li>• 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 British Standard BS 7385-2:1993 <i>Guide to Evaluation of Human Exposure to Vibration in Buildings (1 Hz to 80 Hz)</i>.</li> </ul>
27.	A noise monitoring program would be included in the CNVMP and implemented to quantify noise emissions from construction activities and guide practical reasonable and feasible noise control measures.
28.	Design carpark in such a way as to minimise tyre squeal.
<b>Aboriginal heritage</b>	
29.	All construction staff would undergo an induction in the recognition of Indigenous cultural heritage material. This training would include information such as the importance of Indigenous cultural heritage material and places to the Indigenous community, as well as the legal implications of removal, disturbance and damage to any Indigenous cultural heritage material and sites.

No.	Mitigation measure
30.	If unforeseen Indigenous objects are uncovered during construction, the procedures contained in TfNSW's <i>Unexpected Heritage Finds Guideline</i> (TfNSW, 2016a) would be followed, and works within the vicinity of the find would cease immediately. The Construction Contractor would immediately notify the TfNSW Project Manager and TfNSW 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 OEH and the Local Aboriginal Land Council. If human remains are found, work would cease, the site secured and the NSW Police and the OEH notified. Where required, further archaeological investigations and an Aboriginal Heritage Impact Permit would be obtained prior to works recommencing at the location.
<b>Non-Aboriginal heritage</b>	
31.	In the event that any unanticipated archaeological deposits are identified within the project site during construction, the procedures contained in TfNSW's <i>Unexpected Heritage Finds Guideline</i> (TfNSW, 2016a) would be followed, and works within the vicinity of the find would cease immediately.
32.	The construction contractor would immediately notify the TfNSW Project Manager and the TfNSW Environment and Planning Manager so they can assist in co-ordinating the next steps which are likely to involve consultation with an archaeologist and OEH. Where required, further archaeological work and/or consents would be obtained for any unanticipated archaeological deposits prior to works recommencing at the location.
<b>Biodiversity</b>	
33.	Construction of the Proposal would be undertaken in accordance with <i>TfNSW's Vegetation Management (Protection and Removal) Guideline</i> (TfNSW, 2018c) and <i>TfNSW's Fauna Management Guideline</i> (TfNSW, 2019d).
34.	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.
35.	Disturbance of vegetation would be limited to the minimum amount necessary to construct the Proposal. Trees/vegetation nominated to be removed for the proposal 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.
36.	Tree Protection Zones (TPZs) would be established around trees to be retained, as nominated in the Flora and Fauna Assessment Report (RPS 2018)). Tree protection would be undertaken in line with AS 4970-2009 <i>Protection of Trees on Development Sites</i> and would include exclusion fencing of TPZs.
37.	In the event of any tree to be retained becoming damaged during construction, the Construction Contractor would immediately notify the TfNSW Project Manager and TfNSW Environment and Planning Manager to coordinate the response which may include contacting an arborist to inspect and provide advice on remedial action, where possible.



No.	Mitigation measure
38.	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 TfNSW's <i>Tree Removal Application Form</i> and submit it to TfNSW for approval.
39.	Weed control measures, consistent with TfNSW's <i>Weed Management and Disposal Guideline</i> (TfNSW, 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> . Additionally, plant and equipment would be cleaned prior to accessing the proposal site.
<b>Socio-economic</b>	
40.	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.
41.	A Community Liaison Plan 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.
42.	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.
43.	The community would be kept informed of construction progress, activities and impacts in accordance with the Community Liaison Plan to be developed prior to construction.
<b>Soils and water</b>	
44.	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.
45.	Erosion and sediment control measures would be established prior to 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.
46.	Stockpiles would be located outside of drainage paths and away from drainage lines.

No.	Mitigation measure
<b>Hydrology and water quality</b>	
47.	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.
48.	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 TfNSW's <i>Chemical Storage and Spill Response Guidelines</i> (TfNSW, 2018e).
49.	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 TfNSW <i>Chemical Storage and Spill Response Guidelines</i> (TfNSW, 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.
50.	In the event of a pollution incident, works would cease in the immediate vicinity and the Construction Contractor would immediately notify the TfNSW Project Manager and TfNSW Environment and Planning Manager. The EPA would be notified by TfNSW if required, in accordance with Part 5.7 of the POEO Act.
51.	The existing drainage systems would remain operational throughout the construction phase.
<b>Air quality</b>	
52.	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).
53.	Methods for management of emissions would be incorporated into project inductions, training and pre-start/toolbox talks.
54.	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.
55.	Vehicle and machinery movements during construction would be restricted to designated areas and sealed/compacted surfaces where practicable.

No.	Mitigation measure
56.	<p>To minimise the generation of dust from construction activities, the following measures would be implemented:</p> <ul style="list-style-type: none"> <li>• apply water (or alternate measures) to exposed surfaces (e.g. unpaved roads, stockpiles, hardstand areas and other exposed surfaces)</li> <li>• cover stockpiles when not in use</li> <li>• 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</li> <li>• prevent mud and dirt being tracked onto sealed road surfaces.</li> </ul>
<b>Waste and contamination</b>	
57.	<p>The CEMP (or separate Waste Management Plan, if necessary) must address waste management and would at a minimum:</p> <ul style="list-style-type: none"> <li>• 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</li> <li>• detail other onsite management practices such as keeping areas free of rubbish</li> <li>• specify controls and containment procedures for hazardous waste and asbestos waste</li> <li>• outline the reporting regime for collating construction waste data.</li> </ul>
58.	<p>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.</p>
59.	<p>Any concrete washout would be established and maintained in accordance with TfNSW's <i>Concrete Washout Guideline</i> (TfNSW, 2018g) with details included in the CEMP and location marked on the ECM.</p>
<b>Waste and resources</b>	
60.	<p>The CEMP (or separate Waste Management Plan, if necessary) must address waste management and would at a minimum:</p> <ul style="list-style-type: none"> <li>• 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</li> <li>• detail other onsite management practices such as keeping areas free of rubbish</li> <li>• specify controls and containment procedures for hazardous waste and asbestos waste</li> <li>• outline the reporting regime for collating construction waste data.</li> </ul>
61.	<p>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.</p>
62.	<p>Any concrete washout would be established and maintained in accordance with TfNSW's <i>Concrete Washout Guideline</i> (TfNSW, 2018g) with details included in the CEMP and location marked on the ECM.</p>

No.	Mitigation measure
<b>Bushfire Risk</b>	
63.	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.
64.	<p>To minimise risk from bushfires to the Proposal during operation the following would be considered during detailed design:</p> <ul style="list-style-type: none"> <li>• limited use of timber</li> <li>• urban design is to limit selection of large canopy trees close to buildings</li> <li>• adequate ventilation to minimise risk of bushfire smoke impacts.</li> </ul>
<b>Sustainability, climate change and greenhouse gases</b>	
65.	Investigation of renewable energy options during detailed design to be incorporated into the operation of the car park.
66.	All new electrical equipment for the car park to be at least market average star rating. In categories where no star ratings are available, equipment purchased should be recognised as high efficiency either by being ENERGY STAR accredited, in a high efficiency band under Australian Standards or being above-average efficiency of Greenhouse and Energy Minimum Standards (GEMS) registered products.
<b>Cumulative</b>	
67.	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.
68.	Consultation with relevant stakeholders undertaking development in the vicinity of the Proposal would be undertaken prior to finalisation of the detailed design.



## 8 Conclusion

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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:

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

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

- minor increases in local traffic movements during operation of the proposed car park
- moderate noise and visual impacts including overshadowing associated with the car park expansion
- temporary reduction in parking capacity within the existing car park, changes to access arrangements (including pedestrian diversions) and minor delays on the adjacent road network during construction
- temporary visual, noise and vibration impacts during the construction period
- removal of 18 trees which would be replaced in accordance with the *TfNSW Vegetation Offset Guide* (TfNSW, 2019a).

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 and Public Spaces.

The Proposal has also taken into account the principles of ESD and sustainability (refer to 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 Agriculture, Water and the Environment.

Matters of NES	Impacts
<b>Any impact on a World Heritage property?</b> There are no World Heritage properties within 1km of the Proposal.	Nil
<b>Any impact on a National Heritage place?</b> There are no National Heritage places within 1km of the Proposal	Nil
<b>Any impact on a wetland of international importance?</b> There are no wetlands of international importance within 1km of the Proposal.	Nil
<b>Any impact on a listed threatened species or communities?</b> It is unlikely that the development of the Proposal would significantly affect listed threatened species or communities (see Section 6.6)	Nil
<b>Any impacts on listed migratory species?</b> It is unlikely that the development of the Proposal would significantly affect any listed migratory species.	Nil
<b>Does the Proposal involve a nuclear action (including uranium mining)?</b> The Proposal does not involve a nuclear action.	Nil
<b>Any impact on a Commonwealth marine area?</b> There are no Commonwealth marine areas in the vicinity of the Proposal.	Nil
<b>Does the Proposal involve development of coal seam gas and/or large coal mine that has the potential to impact on water resources?</b> The Proposal is for a transport facility and does not relate to coal seam gas or mining.	Nil
<b>Additionally, any impact (direct or indirect) on Commonwealth land?</b> The Proposal would not be undertaken on or near any Commonwealth land.	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><b>(a) Any environmental impact on a community?</b></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 reduction of parking spaces at the existing car park would be an inconvenience to commuters. Mitigation measures outlined in Chapter 7 would be implemented to manage and minimise adverse impacts.</p>	Minor
<p><b>(b) Any transformation of a locality?</b></p> <p>The Proposal would change a visible element through the expansion of a multi-storey car park at Warwick Farm Station.</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><b>(c) Any environmental impact on the ecosystem of the locality?</b></p> <p>Due to the removal of planted vegetation within the site, the Proposal would have a negligible impact on the local ecosystem as discussed in Section 6.5. Vegetation removal would be subject to offsetting in accordance with the Transport for NSW <i>Vegetation Offset Guide</i> (Transport for NSW, 2019).</p>	Negligible
<p><b>(d) Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality?</b></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 moderate impacts to visual amenity in particular for future residents adjacent the Proposal site.</p> <p>The visual impacts from the Proposal are anticipated to be moderate for adjacent residents during operation. A landscape and visual impact assessment was completed and is summarised in Section 6.2.</p>	Moderate
<p><b>(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?</b></p> <p>The Proposal site is not located in close proximity to any 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 moderate.</p> <p>During operation the Proposal would have positive impacts to the community through providing a modern car park structure with improved access, lighting and safety measures (such as CCTV). The car park would be consistent with the form and scale of adjacent developments.</p>	Minor

Factor	Impacts
<p><b>(f) Any impact on the habitat of protected fauna (within the meaning of the <i>National Parks and Wildlife Act 1974</i>)?</b></p> <p>The impacts on the habitat of protected fauna is likely to be negligible (see Section 6.5). Vegetation removal would be required to facilitate the development of the Proposal and would be subject to offsetting in accordance with the Transport for NSW <i>Vegetation Offset Guide</i> (Transport for NSW, 2019).</p>	Negligible
<p><b>(g) Any endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air?</b></p> <p>The Proposal is unlikely to endanger species (see Section 6.5). Vegetation removal would be required to facilitate the development of the Proposal and would be subject to offsetting in accordance with the Transport for NSW <i>Vegetation Offset Guide</i> (Transport for NSW, 2019).</p>	Negligible
<p><b>(h) Any long-term effects on the environment?</b></p> <p>The Proposal is unlikely to have any long-term effects on the environment.</p>	Nil
<p><b>(i) Any degradation of the quality of the environment?</b></p> <p>The Proposal would result in the minor removal of vegetation. Impacts from the Proposal would be minimised by the implementation of the mitigation measures identified in Chapter 7.</p>	Minor
<p><b>(j) Any risk to the safety of the environment?</b></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><b>(k) Any reduction in the range of beneficial uses of the environment?</b></p> <p>The Proposal is unlikely to have any reduction in the range of beneficial uses of the environment.</p>	Nil
<p><b>(l) Any pollution of the environment?</b></p> <p>The Proposal is unlikely to cause any pollution to the environment provided the recommended mitigation measures are implemented.</p>	Minor
<p><b>(m) Any environmental problems associated with the disposal of waste?</b></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 <i>Waste Classification Guidelines</i> (EPA, 2014). Mitigation measures would be implemented to ensure waste is reduced, reused or recycled where practicable.</p>	Negligible
<p><b>(n) Any increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply?</b></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><b>(o) Any cumulative environmental effect with other existing or likely future activities?</b></p> <p>The cumulative effects of the Proposal are described in Section 6.16. Where feasible, environmental management measures would be co-ordinated to reduce any cumulative construction impacts. The Proposal is unlikely to have any significant adverse long-term impacts.</p>	Moderate
<p><b>(p) Any impact on coastal processes and coastal hazards, including those under projected climate change conditions?</b></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

