



**Transport
for NSW**

Hornsby Junction Remodelling and Commuter Car Park Project

Determination Report

Transport for NSW

Date 15 April 2016

Status Final

Author TfNSW

Ref. no 4905819

1 Introduction

1.1 Background

Transport for NSW (TfNSW) is responsible for improving the customer experience of transport services, transport policy and regulation, planning and program administration, procuring transport services, and infrastructure and freight.

TfNSW is the proponent for the Hornsby Junction Remodelling and Commuter Car Park project (the Proposed Activity), which forms part of both the Futureways and Transport Access Programs.

1.2 Hornsby Junction Remodelling and Commuter Car Park Project Review of Environmental Factors

TfNSW, as the proponent for the Proposed Activity, undertook the preparation of an REF, which details the scope of works and environmental impacts associated with the proposal (**Appendix 1**).

The REF was prepared in accordance with the *Environmental Planning and Assessment Act 1979* (the EP&A Act) and clause 228 of the *Environmental Planning and Assessment Regulation 2000*.

1.3 Purpose of this Determination Report

Prior to proceeding with the Proposed Activity, the Secretary of TfNSW (or the delegate) must make a determination in accordance with the EP&A Act.

The objectives of this Determination Report are to:

- Assess the environmental impacts with respect to the Proposed Activity, which are detailed in the environmental impact assessment.
- Identify mitigation measures to minimise potential environmental impacts.
- Determine whether potential environmental impacts are likely to be significant.
- Address whether the provisions of the Commonwealth *Environment Protection & Biodiversity Conservation Act 1999* (EPBC Act) applies to the Proposed Activity.

2 Consultation

Consultation about the REF was carried out between 27 January and 10 February 2016 (inclusive) with three public information sessions. These sessions were undertaken during the following times:

- Saturday 30 January 10am to 12pm
- Tuesday 2 February 4pm to 7pm
- Thursday 4 February 4pm to 7pm.

The public display was preceded by a media release conducted on 27 January at Hornsby Station, newspaper advertisements, notification letters to key stakeholders and the distribution of a community newsletter. A total of 92 submissions were received regarding this proposal. Responses to the issues raised in these submissions are provided in the Hornsby Junction Remodelling and Commuter Car Park Submission Report.

The final REF, Submissions Report and Determination Report for the Hornsby Junction Remodelling and Commuter Car Park project are publicly available on the Transport for NSW website.

3 Consideration of Environmental Impacts

The REF, Submissions Report and Determination Report have been examined and considered, as follows:

Environmental Planning and Assessment Act 1979

The REF addresses the requirements of section 111 of the EP&A Act. In considering the Proposed Activity, all matters affecting or likely to affect the environment are addressed in the REF and the Determination Report and associated documentation in accordance with the checklist of matters contained in clause 228 of the *Environmental Planning and Assessment Regulation 2000*.

The likely significance of the environmental impacts of the Proposed Activity have been assessed in accordance with the Department of Planning and Environment's best practice guideline '*Is an EIS Required?*' and is not likely to significantly affect the environment (including critical habitat) or threatened species, populations of ecological communities, or their habitats. An EIS is therefore not required.

Environment Protection and Biodiversity Conservation Act 1999

As part of the consideration of the Proposed Activity, all matters of national environmental significance and any impacts on Commonwealth land for the purposes of the EPBC Act have been assessed. A summary of this is provided in the REF.

It is considered that the Proposed Activity described in the REF is not likely to have a significant impact on any Commonwealth land and is not likely to have a significant impact on any NES matters.

Other legislation

The REF and Determination Report have been prepared with regard to all relevant Commonwealth and NSW legislation.

4 Conditions of Approval

If approved, the Proposed Activity will be allowed to proceed subject to compliance with the Conditions of Approval included in **Appendix 3** of the Determination Report.

5 Conclusion

Having regard to the assessments in the REF it is concluded that the Proposed Activity is not likely to significantly affect the environment (including critical habitat) or threatened species, populations of ecological communities, or their habitats. Additionally, the proposed conditions of approval within this Determination Report would further strengthen the mitigation and management of key impacts of the Proposed Activity.

It is also considered that the Proposed Activity does not trigger the approval regime under Part 3 of the EPBC Act.

In considering the environmental impacts, proposed mitigation and broader project benefits it is recommended that the Proposed Activity be approved. The approval should be subject to the mitigation measures within the Environmental Impact Assessment (REF), Submissions Report and the Conditions of Approval contained in **Appendix 3** of this Determination Report.

ENVIRONMENTAL IMPACT ASSESSMENT

Hornsby Junction Remodelling and Commuter Car Park project

REVIEW OF ENVIRONMENTAL FACTORS AND DETERMINATION REPORT

APPROVAL

I, LOUISE SUREDA, as delegate for the Secretary, Transport for NSW:

1. Have examined and considered the Proposed Activity in the Hornsby Junction Remodelling and Commuter Car Park project Review of Environmental Factors, Hornsby Junction Remodelling and Commuter Car Park project Submissions Report and Hornsby Junction Remodelling and Commuter Car Park Project Determination Report in accordance with section 111 of *the Environmental Planning and Assessment Act 1979*.
2. Determine on behalf of Transport for NSW (the Proponent) that the Proposed Activity may be carried out in accordance with the Conditions of Approval in the Determination Report, consistent with the proposal described in the Hornsby Junction Remodelling and Commuter Car Park Project Review of Environmental Factors and Submissions Report.



LOUISE SUREDA

A/Director – Planning and Environment Services
Transport for NSW

Date: 15.4.16

Appendix 1

Hornsby Junction Remodelling and Commuter Car Park Review of Environmental Factors



Transport
for NSW

Hornsby Junction Remodelling and Commuter Car Park Projects

Review of Environmental Factors



Photomontage of the proposed commuter car park, subject to detailed design

January 2016

Document History

Version	Date of drafting	Author	Reviewer
1	12 November 2015	Adam Moore and Nicole Cook	Philippa Owen and Lana Assaf
2	4 December 2015	Adam Moore and Kirsty Flynn	Philippa Owen and Lana Assaf
Final	18 December 2015	Adam Moore	Philippa Owen and Lana Assaf
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Abbreviations

ABS	Australian Bureau of Statistics
AHIMS	Aboriginal Heritage Information Management System
ARI	Average recurrence interval
ASRIS	Australian Soil Resource Information System
CBD	Central Business District
CCTV	Closed-circuit television
CEMP	Construction Environmental Management Plan
CLP	Community liaison plan
CO	Carbon monoxide
CPTED	Crime Prevention Through Environmental Design
CTMP	Construction Traffic Management Plan
DBH	Diameter at Breast Height
DECC	Former NSW Department of Environment and Climate Change (now the NSW Office of Environment and Heritage)
DECCW	Former NSW Department of Environment, Climate Change and Water (now the NSW Office of Environment and Heritage)
DPI	NSW Department of Primary Industries
ECM	Environmental Control Map
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EMS	Environmental Management System
EPA	NSW Environment Protection Authority
EP&A Act	NSW <i>Environmental Planning and Assessment Act 1979</i>
EP&A Regulation	NSW <i>Environmental Planning and Assessment Regulation 2000</i>
EPBC Act	Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i>
EPL	Environmental Protection Licence
ESD	Ecologically sustainable development
FM Act	NSW <i>Fisheries Management Act 1994</i>
GHG	Greenhouse gas
GST	Galvanised Steel Trough

LALC	Local Aboriginal Land Council
LCZ	Landscape character zone
LEP	Local Environmental Plan
LGA	Local Government Area
MNES	Matter of National Environmental Significance
NO_x	Nitrogen oxides
NPW Act	<i>National Parks and Wildlife Act 1974</i>
NSW	New South Wales
OEH	NSW Office of Environment and Heritage
PAH	Polycyclic aromatic hydrocarbons
PCG	Project Control Group
PCYC	Police-Citizens Youth Club
POEO Act	<i>NSW Protection of the Environment Operations Act 1997</i>
REF	Review of Environmental Factors
Roads Act	<i>NSW Roads Act 1993</i>
RMS	NSW Roads and Maritime Services
SEPP	State Environmental Planning Policy
SO₂	Sulphur dioxide
SREP 20	<i>Sydney Regional Environmental Plan No. 20 – Hawkesbury-Nepean River (No. 2 – 1997)</i>
TAP	Transport Access Program
TCP	Traffic Control Plan
TSC Act	<i>NSW Threatened Species Conservation Act 1995</i>
VIS	Vegetation Information System
WARR Strategy	<i>NSW Waste Avoidance and Resource Recovery Strategy 2014-2021</i>

Definitions

Crossover	A crossover is a connection between two tracks that allows a train travelling on one track to cross over to the other.
Danger zone	The danger zone refers to the area located within three metres of the nearest operating track.
Diamond	A diamond generally refers to a track configuration consisting of two overlapping crossovers that allow four different train movements.
Ecologically sustainable development	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 (refer to Section 4.6).
Light spill	Light spill occurs where light falls outside the area intended to be lit, for instance, by shining over a fence into a neighbouring property.
Points	Points are movable sections of track that are designed to allow a train to either cross over to another track or continue travelling on the same track by physically guiding the train wheels towards either the straight or the diverging track.
The Proposal	The construction and operation of the Hornsby Junction Remodelling and Commuter Car Park works.
Rail loop	A rail loop is a section of track that allows a slow moving train to be overtaken by a faster moving train by enabling the train to move off the main line.
Rail possession	A 'possession' is where a section of railway corridor is restricted from everyday rail operations for a specified period of time. By closing the corridor to normal rail activity, it enables essential track maintenance to be conducted in a fast, efficient and safe environment.
Siding	A siding is a section of track that allows a train to either be parked or moved out of the way of another train.
Slips	A slip is a level-crossing between two tracks that allows a train to either switch tracks (i.e. cross over onto the other rail line) or continue travelling on the same rail line (i.e. cross directly over the other rail line without switching tracks). Single and double slips refer to the number of train movements that could be performed using a particular slip configuration.
Sydney Trains	From 1 July 2013, Sydney Trains replaced RailCorp as a new rail operator created to service the different needs of Sydney and intercity customers.
Turnback facility	A turnback facility consists of track work that allows trains to pass from one track on a diverging path.
Vegetation Offset Guide	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 111 of the <i>Environmental Planning and Assessment Act 1979</i> .

Executive summary

Transport for NSW is the proponent for the Hornsby Junction Remodelling and Commuter Car Park (the Proposal), to be delivered by the Infrastructure and Services Division.

The Proposal comprises two components; track work remodelling and the construction of a commuter car park. The track work is being delivered to increase the capacity of the T1 North Shore Line including supporting the integration of the Sydney Metro Northwest into the existing rail network. The commuter car park is being delivered as part of the Transport Access Program – an initiative to provide a better experience for public transport customers by delivering accessible, modern, secure and integrated transport infrastructure where it is needed most.

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 Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

Description of the Proposal

Hornsby Junction Remodelling

Hornsby Junction Remodelling comprises the reconfiguration of track, signalling and overhead wiring within the existing rail corridor between Waitara and Asquith. The key features of the Hornsby Junction Remodelling would include:

- installation, removal and reconditioning of track work between Hornsby Station and approximately 400 metres north of Bridge Road, Hornsby
- relocation of overhead wires and support structures
- installation, removal and modifications of signalling infrastructure to enable the operation of up to 16 city-bound trains per hour on the T1 North Shore Line. This work would generally be limited to:
 - installing new signals and/or modifying existing signals
 - installing new field equipment including train stops, points and track circuits. Pending signal sighting outcomes, there is also potential for existing warning lights and guard indicators to be relocated or newly installed
 - running new cables within existing galvanised steel trough (GST) to connect the additional signals
- modification of track drainage, combined services routes and other rail infrastructure (such as local cable routes)
- provision of a new train driver's walkway and a train turnback facility located approximately 30 metres south of Bridge Road.

The indicative extent of this work is shown in Figure E-1.

Hornsby commuter car park

The Proposal also comprises the construction and operation of a multi-storey car park at the site of the existing at-grade Hornsby Station commuter car park.

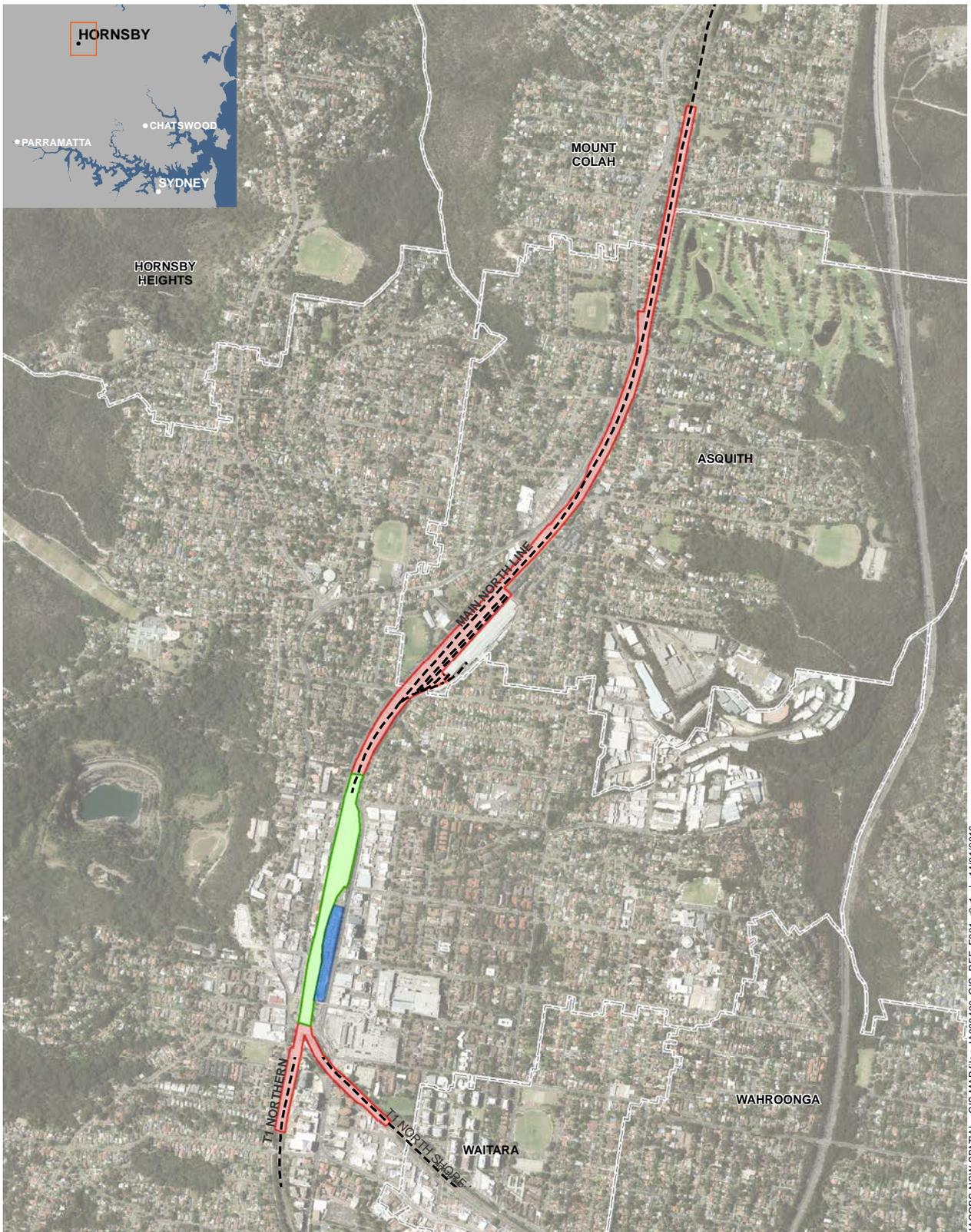
The key features of the proposed Hornsby Station commuter car park would include:

- partial demolition of the existing at-grade commuter car park, including the decommissioning and replacement of an existing on-site stormwater detention storage tank
- construction of a multi-storey car park structure
- provision for approximately 230 additional commuter parking spaces
- provision of vehicular entry and exit from the George Street/Burdett Street intersection (via reconfigured traffic signals); the existing vehicle entry and exit off George Street (south of Burdett Street) would also be retained
- provision of a new retaining wall along the eastern boundary of the commuter car park
- provision of a new retaining wall and planter along the western side of George Street (to replace the existing retaining wall structure that would be demolished to facilitate construction)
- ancillary works including stairs, a lift, perimeter fencing, power and lighting, communications, CCTV camera surveillance, drainage, utilities, line-marking and signage, urban design works and landscaping
- maintaining access to the Sydney Trains maintenance facility via the car park.

A number of other associated works would also be required as part of the proposed commuter car park, comprising:

- relocation of high voltage overhead power lines from the site of the existing commuter car park
- provision of approximately six accessible parking spaces adjacent to the eastern station entrance in accordance with the relevant requirements (to be created from existing unrestricted commuter parking at this location)
- extension of the footpath on the western side of George Street from the George Street/Burdett Street intersection, where it currently terminates, to the northern boundary of the proposed commuter car park, to provide pedestrian access between Hornsby Station and the proposed lifts in the commuter car park
- modification of the George Street/Burdett Street intersection to accommodate the proposed new commuter car park entry
- utility protection works
- vegetation removal from the existing car park site.

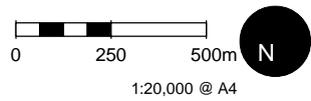
It should be noted that the car park is at an early stage of design and is subject to further modifications.



JACOBS NSW SPATIAL - GIS MAP file : JA088400_GIS_REF_F001_L2V1 | 14/01/2016

Legend

- Proposed Signalling Work
- Proposed Trackwork
- Proposed commuter car park
- Rail line



1:20,000 @ A4

Data sources

- Jacobs 2015
- Ausimage 2014
- LPI 2014

Figure E-1 | Location of the Proposal

Need for the Proposal

The *NSW Long Term Transport Master Plan* sets the direction for transport planning for the next 20 years, providing a framework for transport policy and investment decisions.

An integral component of the *NSW Long Term Transport Master Plan* is *Sydney's Rail Future*, which provides a plan to modernise Sydney's rail network by investing in new services and upgrading existing infrastructure.

The Hornsby Junction is heavily used by passenger and freight rail services and is the junction where the Main North Line and North Shore Line meet. The current complex track configuration through the Hornsby Junction limits the ability to increase the number of rail services operating on the T1 North Shore Line due to speed restrictions and track crossovers. Reconfiguring the existing track would increase train capacity and provide faster turnaround times for T1 North Shore Line services at Hornsby.

Hornsby Station is an attractive interchange for park-and-ride commuters travelling to Sydney from the Central Coast, due to the station's location approximately two kilometres from the southern end of the M1 Pacific Motorway. The Station generates a large demand for unrestricted parking, with the existing commuter car park currently having insufficient capacity to meet this demand (Arup 2015). Increased competition for car parking at Hornsby Station is likely to impact on customer journey times, with park-and-ride commuters forced to either seek alternative parking further away from the station or travel to an alternative station (which may not have the capacity to absorb the increased parking demand). Given that timeliness is a key driver of customer satisfaction, poor customer outcomes are expected to cause a shift away from rail.

Increased demand for unrestricted parking at Hornsby Station also has the potential to adversely affect the accessibility of those businesses, community services and other land uses located around the station as competition for parking between rail and non-rail customers increases.

The proposed Hornsby Station commuter car park forms part of the Transport Access Program. This program is designed to improve customer experience, deliver seamless travel to and between transport modes, encourage greater public transport use and better integrate station interchanges with the role and function of town centres within the metropolitan area and developing urban centres in regional areas of NSW.

By delivering additional commuter car parking at Hornsby Station, the Proposal would contribute to achieving the objectives of the following NSW Government planning strategies:

- *NSW Long Term Transport Master Plan* (Transport for NSW 2012)
- *Sydney's Rail Future* (Transport for NSW 2012)
- *State and Premier priorities*
- *A Plan for Growing Sydney* (NSW Government 2014)
- *Disability Action Plan* (Transport for NSW 2012)
- *Rebuilding NSW: State Infrastructure Strategy 2014* (NSW Government 2014).

The NSW Government is committed to facilitating and encouraging use of public transport by upgrading stations to make them more accessible, providing and upgrading commuter car parks, and improving interchanges around stations with other modes of transport such as buses, bicycles and cars.

Hornsby Station is currently the 18th busiest station on the rail network (based on 2014 data), with over 23,000 customer trips being made to and from this station on a typical weekday (Bureau of Transport Statistics 2015).

Transport for NSW estimates that an additional 143 unrestricted parking spaces will be required to accommodate the forecast 2036 parking demand (Arup 2015). Without further investment in commuter car parking at Hornsby Station, the accessibility of rail services for park-and-ride customers will continue to decrease as competition for limited available unrestricted parking increases.

Statutory considerations

The *Environmental Planning and Assessment Act 1979* (EP&A Act) provides for the environmental impact assessment of development in NSW. Part 5 of the EP&A Act generally specifies the environmental impact assessment requirements for activities undertaken by public authorities, such as Transport for NSW, which do not require development consent under the EP&A Act.

State Environmental Planning Policy (Infrastructure) 2007 (Infrastructure SEPP) is the primary environmental planning instrument relevant to the Proposal. Clause 79 of the Infrastructure SEPP allows for the development of 'rail infrastructure facilities' by or on behalf of a public authority without consent on any land.

As Transport for NSW is a public authority and the proposed activity falls within the definition of rail infrastructure facilities under Infrastructure SEPP, the Proposal is permissible without consent. Consequently the environmental impacts of the Proposal have been assessed by Transport for NSW under Part 5 of the EP&A Act.

This REF has been prepared to assess the construction and operational environmental impacts of the Proposal. The REF has been prepared in accordance with clause 228 of the *Environment Planning and Assessment Regulation 2000* (the EP&A Regulation) and the Department of Urban Affairs and Planning guidelines *Is an EIS Required?* (DUAP 1999).

In accordance with section 111 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 proposed activity.

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, or where local heritage items are affected. Although not mandated under Part 5 of the EP&A Act or the Infrastructure SEPP, Transport for NSW will be undertaking consultation with the surrounding community stakeholders, which will include:

- direct notification to community stakeholders by way of newsletter
- public display of this REF.

Community consultation activities for the Proposal would be undertaken during public exhibition of this REF. The REF would be displayed for a period of two weeks.

During this display period, the REF would be available for viewing at the Hornsby Shire Council office and library and online on the Transport for NSW website and NSW Government 'Have your Say' website. Furthermore, an information line (1800 684 490) would be available for the public to make enquires about the Proposal.

Transport for NSW would 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. See Figure E-2 for the consultation process to be followed for the Proposal.



Figure E-2 Planning approval and consultation process for the Proposal

Environmental impact assessment

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

During the construction period the following key adverse impacts have the potential to occur should the Proposal proceed:

- disruptions to vehicle movements and commuter parking
- tree removal
- noise and vibration
- visual impacts.

Crime Prevention through Environmental Design principles have been incorporated into the design in order to minimise risk to personal safety and asset security, and would be further incorporated at the detailed design phase.

Upon completion of the construction of the Proposal, there would be improved track capacity of the T1 North Shore Line, and increased parking capacity for commuters of Hornsby Station. The provision of additional commuter car parking would improve amenity for Hornsby Station commuters and the general community within the town centre. Improved access would service a growing population in the Hornsby LGA and encourage public transport use to the metropolitan areas of Sydney.

Conclusion

This REF has been prepared having regard to sections 111 and 112 of the EP&A Act, clause 228 of the EP&A Regulation and the Department of Urban Affairs and Planning guidelines *Is an EIS Required?* (DUAP 1999), 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 Proposal has also been designed in accordance with the Transport for NSW's Sustainable Design Guidelines and has taken into account the principles of ecologically sustainable development (ESD).

Key sustainability initiatives include the selection of sustainable materials where possible and incorporation of energy efficient lighting. Sustainability initiatives would be considered further during the detailed design, construction and operational phases of the Proposal.

Should the Proposal proceed, the likely impacts would be appropriately managed in accordance with the mitigation measures outlined in this REF. Transport for NSW has determined that an environmental impact statement is not required for the Proposal, nor is the approval of the Minister for Planning.

1. Introduction

Transport for NSW is the lead agency for integrated delivery of public transport services across all modes of transport in New South Wales (NSW). The Proposal comprises two components; track work remodelling and the construction of a commuter car park. The track work is being delivered to increase the capacity of the T1 North Shore Line including supporting the integration of the Sydney Metro Northwest into the existing rail network. The commuter car park is being delivered as part of the Transport Access Program – an initiative to provide a better experience for public transport customers by delivering accessible, modern, secure and integrated transport infrastructure where it is needed most.

Transport for NSW is the proponent for the Hornsby Junction Remodelling and Commuter Car Park (the Proposal), to be delivered by the Infrastructure and Services Division.

1.1. Overview of the Proposal

1.1.1. Need for additional rail network capacity

The Hornsby Junction is a complex network of interconnected tracks located between the Pacific Highway and Bridge Road in Hornsby's business centre (refer to Figure 1-1). The junction is heavily used by passenger and freight rail services and is the junction where the Main North Line and North Shore Line meet. The current complex track configuration through the Hornsby Junction limits the ability to increase the number of rail services operating on the T1 North Shore Line due to speed restrictions and track crossovers.

Hornsby Junction does not currently have the capacity to enable the operation of additional city-bound T1 North Shore Line train services. To create this capacity, the Hornsby Junction would need to be reconfigured to allow the operation of additional T1 North Shore Line services. This would increase the junction's capacity up to 16 trains per hour.

Further discussion on the need for the Proposal is provided in Section 2.1.1 of this Review of Environmental Factors (REF).

1.1.2. Need for additional commuter car parking

The NSW Government is committed to facilitating and encouraging the use of public transport by upgrading stations to make them more accessible, providing and upgrading car parks, and improving interchanges around stations with other modes of transport such as buses, bicycles and cars.

Hornsby Station is currently the 18th busiest station on the rail network (based on 2014 data), with over 23,000 customer trips being made to and from this station on a typical weekday (Bureau of Transport Statistics 2015). Hornsby Station generates a large demand for unrestricted parking, with the existing commuter car park currently having insufficient capacity to meet this demand (Arup 2015).

Transport for NSW estimates that an additional 143 unrestricted parking spaces will be required to accommodate the forecast 2036 parking demand (Arup 2015). Without further investment in commuter car parking at Hornsby Station, the accessibility of rail services for park-and-ride customers will continue to decrease as competition for limited available unrestricted parking increases.

Increased demand for unrestricted parking at Hornsby Station also has the potential to adversely affect the accessibility of those businesses, community services and other land uses located around the station as competition for parking between rail and non-rail customers increases.

Further discussion on the need for the Proposal is provided in Section 2.1.2 of this REF.

1.1.3. Key features of the Proposal

The key features of the proposed Hornsby Junction Remodelling and Commuter Car Park are outlined in the following sections. A detailed description of the Proposal is provided in Chapter 3 of this Review of Environmental Factors (REF).

Hornsby Junction Remodelling

The key features of the Hornsby Junction Remodelling are shown in Figure 3-1 and would include the installation, removal and reconditioning of track work, overhead wiring and signalling infrastructure between Waitara and Asquith. The Proposal would also include a new train driver's walkway and a train 'turnback' facility located approximately 30 metres south of Bridge Road, Hornsby.

The indicative extent of this work is shown in Figure 1-1 and Figure 1-2. A detailed description of the Proposal is provided in Section 3.1 of this REF.

Subject to planning approval, construction of the proposed Hornsby Junction Remodelling is expected to commence in mid-2016 and is anticipated to take up to 20 months, with completion expected in the first quarter of 2018.

Hornsby commuter car park

The key features of the proposed Hornsby Station commuter car park are shown in Figure 3-2 to Figure 3-4 and would include a new multi-storey commuter car park that provides approximately 230 additional commuter parking spaces. The Proposal would also include a new vehicular entry and exit from the George Street/Burdett Street intersection (via reconfigured traffic signals) and the relocation of the high voltage overhead power lines (owned by Sydney Trains) from the site of the existing commuter car park.

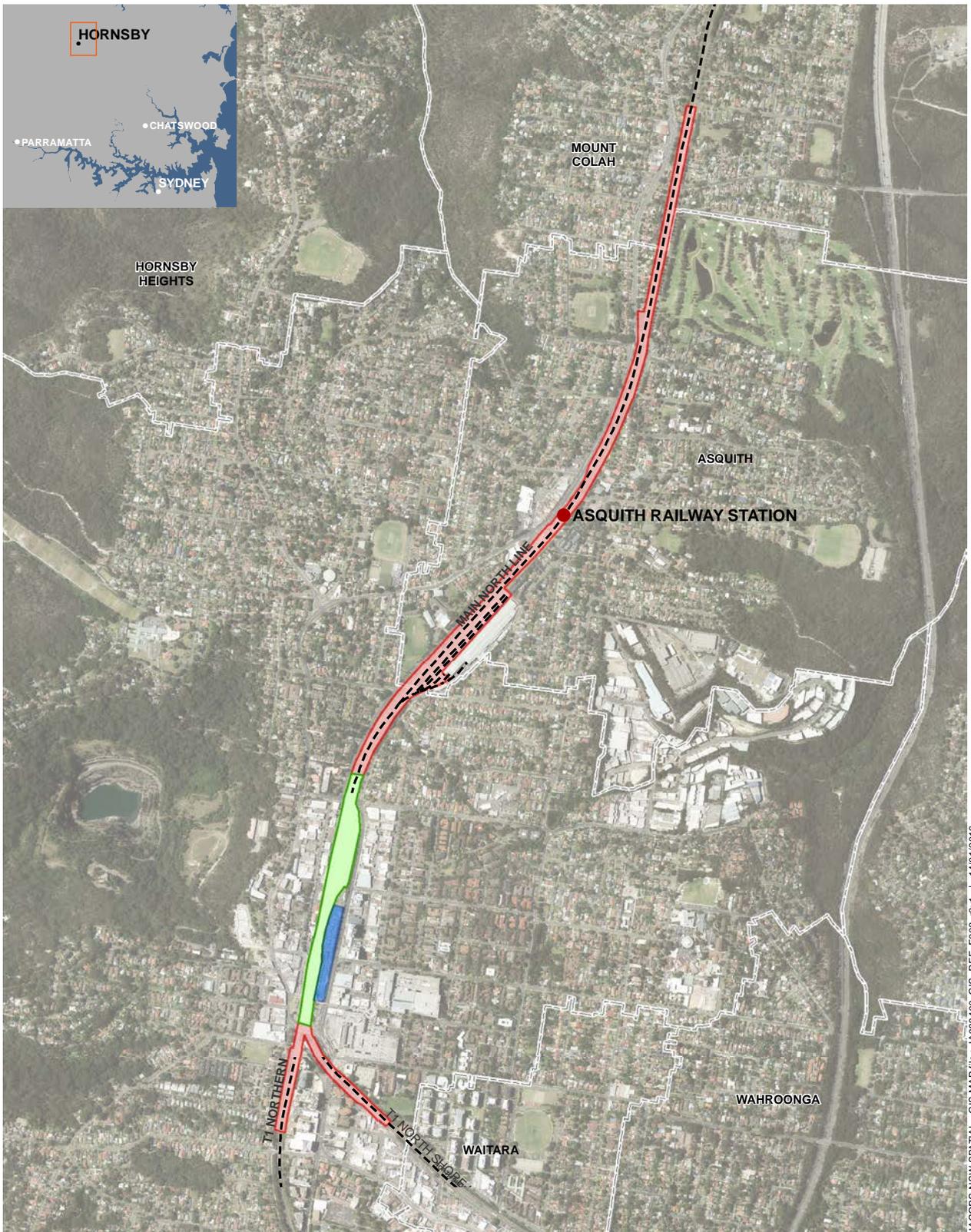
A detailed description of the Proposal is provided in Section 3.1 of this REF.

Subject to planning approval, construction of the Hornsby Station commuter car park is expected to commence in mid-2016 and is anticipated to take up to 18 months to complete. The car park is anticipated to reopen in the first quarter of 2018; however, options to progressively open the car park earlier would be assessed during detailed design and construction. To minimise the duration of commuter car parking impacts at Hornsby Station, Transport for NSW will review the timing and duration of construction works for both elements of the Proposal with the contractor.

1.2. Location of the Proposal

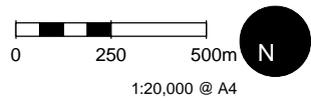
The Proposal is located in the Hornsby Local Government Area (LGA) approximately 21 kilometres northwest of the Sydney CBD. The location of the Proposal is shown in Figure 1-1 and Figure 1-2.

An overview of the existing environment of land directly affected by, and surrounding, the Proposal is provided in the following sections. The existing environment surrounding the Proposal is described in more detail in Chapter 6 of this REF.



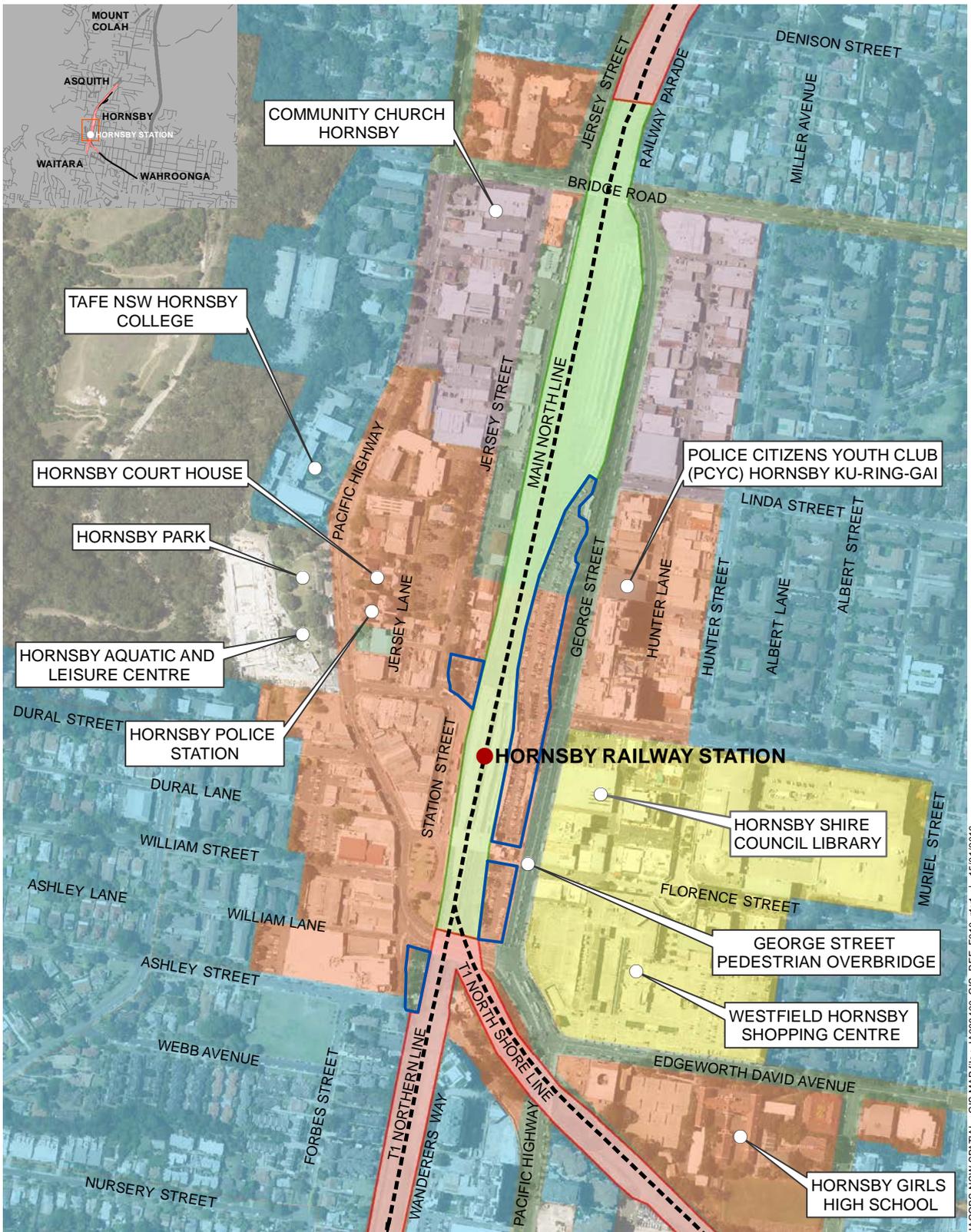
JACOBS NSW SPATIAL - GIS MAP file : JA088400_GIS_REF_F002_12V1 | 14/01/2016

- Legend**
- Proposed Signalling Work
 - Proposed Trackwork
 - Proposed commuter car park
 - Rail line



Data sources
 Jacobs 2015
 Ausimage 2014
 LPI 2014

Figure 1-1 | Location of the Proposal



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Legend

- Proposed Signalling Work
- Proposed Trackwork
- Hornsby Station existing commuter car parks
- Rail line

- LEP Zone**
- Residential
 - Infrastructure
 - Business Development (light industrial / commercial)
 - Mixed Use
 - Commercial Core



Data sources

- Jacobs 2015
- Ausimage 2014
- LPI 2014
- Hornsby LEP 2013

Figure 1-2 | Existing land use and sensitive receivers

1.2.1. Hornsby Junction Remodelling site context

The proposed Hornsby Junction Remodelling would be situated within the existing rail corridor (for the T1 North Shore and T1 Northern lines) between Waitara and Asquith (as shown in Figure 1-1 and Figure 1-2).

This section of the rail corridor traverses through the Hornsby town centre and contains the following key rail related infrastructure:

- Hornsby Station – located within the Hornsby town centre and served by suburban and intercity rail services operating on the T1 North Shore and T1 Northern lines (as summarised in Section 1.1.1). The station has five platforms (comprising two island platforms and one single faced platform) that are connected via the station concourse (at its southern end) and a pedestrian footbridge (at its northern end)
- Hornsby Maintenance Centre – located approximately 240 metres south of Asquith Station on the eastern side of the rail corridor
- Hornsby Up Yard – train stabling facility located on the eastern side of the rail corridor between Hornsby Station and Bridge Road, Hornsby.

Vehicle access into the rail corridor is currently provided via Sydney Trains' maintenance access gates located at:

- George Street, approximately 80 metres south of Bridge Road
- Jersey Street, approximately 100 metres south of Bridge Road
- Government Road, approximately 70 metres south of the Pacific Highway
- the northern end of the Hornsby Station at-grade commuter car park (accessed via Sydney Train's maintenance access facility)
- Railway Parade, approximately 140 metres north of Bridge Road
- Edgeworth David Avenue, approximately 50 metres south of the Pacific Highway.

1.2.2. Commuter car park site context

The proposed Hornsby Station commuter car park would be situated on a parcel of land located immediately adjacent to the rail corridor. This parcel of land is owned by Sydney Trains and forms part of the existing at-grade Hornsby Station commuter car park.

The at-grade Hornsby Station commuter car park currently provides approximately 374 unrestricted parking spaces. Vehicle access to the car park is provided from the northbound traffic lane of George Street via a non-signalised intersection. No vehicle access is provided directly between the car park and the southbound traffic lane of George Street, with right-turns into and out of the car park restricted by a raised concrete median and fencing.

The at-grade commuter car park also provides vehicle access to a Sydney Trains maintenance facility located at the northern end of the site (refer to Figure 1-2). This maintenance facility contains a number of demountable offices and 11 staff parking spaces, which are segregated from the adjacent commuter car park via a locked access gate.

High voltage overhead power lines (owned by Sydney Trains) traverse through the centre of the Hornsby Station commuter car park. These power lines generally run parallel to the rail corridor and are suspended over the car park by seven power poles.

The site of the existing at-grade commuter car park is elevated above George Street, with a vegetated retaining wall providing partial screening of the site from the road and adjacent footpath. The site is overlooked by a number of tall residential apartment complexes, located on the eastern side of George Street.

1.2.3. Surrounding land uses and context

The area immediately surrounding the Proposal forms part of the Hornsby town centre and contains a mixture of commercial, retail, residential, recreational and educational land uses.

The locality is characterised by high volumes of vehicle, pedestrian and cyclist traffic associated with a number of key trip generating/attracting land uses. These include Hornsby Station; Westfield Hornsby Shopping Centre; TAFE NSW's Hornsby College; Hornsby Park; Hornsby Aquatic and Leisure Centre; Hornsby Shire Council; and other commercial and retail premises located within Hornsby town centre.

Land uses and the local road network surrounding the Proposal is shown in Figure 1-2. Key roads providing access to/from and throughout the locality include the Pacific Highway, George Street, Jersey Street, Bridge Road, Edgeworth David Avenue, Burdett Street, Coronation Street and Station Street.

Key pedestrian facilities in the vicinity of the Proposal include:

- the George Street pedestrian overbridge (providing access between Westfield Hornsby Shopping Centre and Hornsby Station)
- footpaths along the George Street, the Pacific Highway, Station Street, Coronation Street and Jersey Street
- signalised pedestrian crossings at the intersections of the Pacific Highway/George Street; George Street/Burdett Street; George Street; Burdett Street; and the Pacific Highway/Coronation Street; and the signalised pedestrian crossing of the Pacific Highway at the southern end of Station Street
- non-signalised pedestrian crossings at the southern ends of Station Street and Jersey Street.

East-west pedestrian access across the rail corridor is provided at the following three locations:

- via the George Street pedestrian overbridge and Hornsby Station concourse
- via the Pacific Highway overbridge
- via the Bridge Road overbridge.

There are a number of street plantings and patches of remnant vegetation located in the vicinity of the Proposal, with the largest concentrations of these occurring at the following locations:

- street plantings located adjacent to the eastern boundary of the Hornsby Station at-grade commuter car park
- street plantings along Jersey Street (between Coronation Street and the northern end of the TAFE NSW's Hornsby College car park)
- remnant vegetation located adjacent to the rail corridor south of the Pacific Highway overbridge. Some of this vegetation has been previously mapped as Blue Gum High Forest, which is listed as critically endangered on the NSW *Threatened Species Conservation Act 1995* (TSC Act) and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)
- remnant vegetation located adjacent to the rail corridor north of Bridge Road.

The nearest sensitive receivers to the Proposal are shown in Figure 1-2 and include:

- residential, retail and commercial properties fronting George Street, Railway Parade, Jersey Street, Station Street, the Pacific Highway, High Street, Forbes Street, Government Road, Pound Road, Leonard Street and Hornsby Street
- Police Citizens Youth Clubs (PCYC) Hornsby Ku-ring-gai
- TAFE NSW's Hornsby College
- Hornsby Shire Council Library
- Hornsby Court House
- Hornsby Police Station
- Hornsby Girls High School
- public recreation areas (e.g. Hornsby Park).

1.3. Purpose of this Review of Environmental Factors

This REF has been prepared by Jacobs Group (Australia) Pty Ltd on behalf of Transport for NSW. For the purpose of these works, Transport for NSW is the proponent and the determining authority under Part 5 of the 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 111 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 EP&A Regulation and the Department of Urban Affairs and Planning guidelines *Is an EIS Required?* (DUAP 1999).

This assessment has also considered the relevant provisions and approval requirements of other relevant environmental legislation, including the *Threatened Species Conservation Act 1995* (TSC Act), *Fisheries Management Act 1994* (FM Act) and the *Roads Act 1993*.

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 significantly impact a matter of national environmental significance (NES) or Commonwealth land and the need to make a referral to the Commonwealth Department of Environment for any necessary approvals under the EPBC Act.

2. Need for the Proposal

Chapter 2 discusses the need and objectives of the Proposal, having regard to the objectives of the Transport Access Program and the specific objectives of the Proposal. This chapter also provides a discussion of the options that have been considered during the development of the Proposal and why the preferred option was selected.

2.1. Strategic justification

The following sections provide an outline of the strategic justification for the Proposal, specifically:

- the need to increase capacity on the T1 North Shore Line
- the need to increase commuter car parking supply at Hornsby Station to accommodate the forecast 2036 parking demand.

2.1.1. Increasing Sydney's rail network capacity

The *NSW Long Term Transport Master Plan* identifies a planned and coordinated set of actions to address transport challenges. It guides the NSW Government's transport funding priorities over the next 20 years.

The *NSW Long Term Transport Master Plan* would meet a number of challenges to building an integrated transport system for Sydney and NSW, including:

- customer-focused integrated transport planning
- integrated modes to meet customer needs
- getting Sydney moving again
- sustaining Growth in Greater Sydney.

An integral component of the *NSW Long Term Transport Master Plan* is *Sydney's Rail Future* (Transport for NSW 2012a). *Sydney's Rail Future* details how the NSW Government will deliver the core elements needed to give Sydney a world-class rail network that can support the city's growth. It aims to improve the customer's experience, improve reliability and increase services across the rail network.

Sydney's Rail Future describes the plan to transform and modernise Sydney's rail network based on a three-tiered system, comprising:

- Tier 1 – Metro: based on 'turn-up-and-go' services and single-deck metro trains
- Tier 2 – Suburban: timetabled services with double-deck trains
- Tier 3 – Intercity: timetabled services with double-deck trains and on-board amenities for long distance commutes.

Delivering network efficiencies on the existing Sydney Trains network (through amongst other things, track infrastructure enhancements) are identified as key actions in both the *NSW Long Term Transport Master Plan* and *Sydney's Rail Future*.

The Hornsby Junction is heavily used by passenger and freight rail services and is the junction where the Main North Line and North Shore Line meet. The current complex track configuration through the Hornsby Junction limits the ability to increase the number of rail services operating on the T1 North Shore Line due to speed restrictions and track crossovers. Reconfiguring the existing track would increase train capacity and provide faster turnaround times for T1 North Shore Line services at Hornsby. In so doing, the Proposal would address the key action of the *NSW Long Term Transport Master Plan* and *Sydney's Rail Future* to deliver network efficiencies on the existing Sydney Trains network.

Objectives of the Hornsby Junction Remodelling Proposal

The specific objectives of the proposed Hornsby Junction Remodelling are to:

- increase the capacity of the of the T1 North Shore Line at Hornsby Junction (this would involve increasing the junction's capacity up to 16 trains per hour on the city-bound track of the T1 North Shore Line.)
- provide a 'turnback' facility for North Shore Line trains to allow terminating Platform 2 trains to move off the main lines while the driver changes ends of the train to turn-back and approach Platform 1 for city bound services
- achieve greater operational independence between the T1 North Shore Line, the T1 Northern Line and the Main North Line
- improve train entry/exit times to/from Hornsby Station Platforms 1 and 2
- reduce asset and configuration issues that impact on reliability, accessibility and maintainability of the rail network (for example, reduce the number of single and double slips in the Hornsby Junction).

2.1.2. Increasing the accessibility of public transport

Improving transport customer experience is the focus of the NSW Government's transport initiatives. Transport for NSW carried out a series of studies to identify suitable locations for improvements to existing interchanges and commuter car parks. The need for additional unrestricted commuter car parking at Hornsby Station was identified.

Hornsby Station is currently the 18th busiest station on the rail network (based on 2014 data), with over 23,000 customer trips being made to and from this station on a typical weekday (Bureau of Transport Statistics 2015). The station is served by both suburban and intercity rail services operating on Sydney Trains' T1 North Shore and T1 Northern lines and NSW TrainLink's Central Coast and Newcastle Line.

Hornsby Station is an attractive interchange for park-and-ride commuters travelling to Sydney from the Central Coast, due to the station's location at the southern end of the M1 Pacific Motorway. The Station generates a large demand for unrestricted parking, with the existing commuter car park currently having insufficient capacity to meet this demand (Arup 2015).

It is expected that without further investment in commuter car parking at Hornsby Station, the accessibility of rail services for park-and-ride customers will continue to decrease as competition for limited available unrestricted parking increases.

Increased competition for car parking at Hornsby Station is likely to impact on customer journey times, with park-and-ride commuters forced to either seek alternative parking further away from the station or travel to an alternative station (which may not have the capacity to absorb the increased parking demand). Given that timeliness is a key driver of customer satisfaction, poor customer outcomes are expected to cause a shift away from rail.

Increased demand for unrestricted parking at Hornsby Station also has the potential to adversely affect the accessibility of those businesses, community services and other land uses located around the station as competition for parking between rail and non-rail customers increases.

The proposed Hornsby Station commuter car park forms part of the Transport Access Program. This program is designed to improve customer experience, deliver seamless travel to and between transport modes, encourage greater public transport use and better integrate station interchanges with the role and function of town centres within the metropolitan area and developing urban centres in regional areas of NSW.

By delivering additional commuter car parking at Hornsby Station, the Proposal would contribute to achieving the objectives of the following NSW Government planning strategies:

- *NSW Long Term Transport Master Plan* (Transport for NSW 2012)
- *Sydney's Rail Future* (Transport for NSW 2012)
- *State and Premier priorities*
- *A Plan for Growing Sydney* (NSW Government 2014)
- *Disability Action Plan* (Transport for NSW 2012)
- *Rebuilding NSW: State Infrastructure Strategy 2014* (Rebuilding NSW; NSW Government 2014).

Further details of how the Proposal addresses the objectives of the above NSW Government policies and strategies are discussed in Section 4.4 of this REF.

Discussion on the specific objectives of the Transport Access Program and the proposed Hornsby Station commuter car park is provided in the following sections.

Objectives of the Transport Access Program

The Transport Access Program is an initiative to provide a better experience for public transport customers by delivering accessible, modern, secure and integrated transport infrastructure. The program aims to provide:

- stations that are accessible to the disabled, ageing and parents with prams
- modern buildings and facilities for all modes that meet the needs of a growing population
- modern interchanges that support an integrated network and allow seamless transfers between all modes for all customers
- safety improvements including extra lighting, help points, fences and security measures for car parks and interchanges, including stations, bus stops and wharves
- signage improvements so customers can more easily use public transport and transfer between modes at interchanges
- other improvements/maintenance such as painting, fencing and roof replacements.

The proposed commuter car park is being delivered as part of the Transport Access Program. Consistent with the above objectives of the Transport Access Program, the proposed commuter car park would improve the customer experience by:

- increasing the number of commuter car parking spaces around Hornsby Station thereby improving the accessibility of rail services for park-and-ride customers
- providing safe car parking through lighting and CCTV
- reducing the number of cars parked on the streets, potentially improving traffic and safety and reducing competition for long-stay parking between rail and non-rail customers
- providing pedestrian access from the proposed car park to existing pedestrian infrastructure
- installing clear and direct way-finding signage between the car park and the station.

Objectives of the Proposal

The specific objectives of the proposed commuter car park are to:

- provide additional commuter car parking spaces within close walking distance of Hornsby Station to accommodate the predicted year 2036 parking demand
- provide safe, accessible and sustainable facilities for commuters and other users from the proposed car park to the station, including lighting
- promote increased use of public transport by increasing convenience and accessibility to and from Hornsby Station
- deliver a commuter car park that is sympathetic with surrounding land uses, including heritage listed items, residential properties and sensitive land uses
- deliver a commuter car park that does not preclude Hornsby Shire Council's plans to rejuvenate Hornsby's 'west side' or Council's plan to replace the existing Hornsby footbridge over George Street (described further in Section 6.11 of this REF)
- deliver a commuter car park that provides a safe connection to the surrounding road network and minimises potential traffic impacts.

2.2. Design development

2.2.1. Hornsby Junction Remodelling

Issues and opportunities with the existing track configuration through the Hornsby Junction have been identified by Transport for NSW. This included:

- constraints imposed by the current track configuration
- locations of existing rail infrastructure and third-party utilities
- locations of environmental constraints.

These issues informed the development of the design criteria and options considered for the Hornsby Junction Remodelling, as discussed in Sections 2.3 and 2.4 of this REF, respectively. Consultation regarding the development of the design has been undertaken with key stakeholders including Sydney Trains during design development.

2.2.2. Commuter car park

In 2013, Hornsby Shire Council commissioned a traffic and parking study (the *Hornsby West Side Traffic Study*; Bitzios Consulting 2013) as part of its review of planning controls for the 'West Side Precinct'. (The West Side Precinct was defined as the commercial area located adjacent to the Pacific Highway in the immediate vicinity of Hornsby Station).

Specific parking issues identified by the *Hornsby West Side Traffic Study* (Bitzios Consulting 2013) included:

- insufficient supply of unrestricted parking in the Hornsby Town Centre for park-and-ride rail commuters
- rail commuters using unrestricted parking areas in the Hornsby Town Centre due to Hornsby Station commuter car park operating at capacity; creating shortages in unrestricted parking for other local workers
- insufficient short stay (up to three hours) parking in the Hornsby Town Centre.

The *TAP Commuter Car Parking Concept Planning – Tranche 1 Concept Design Report – Hornsby Station* (Transport for NSW 2015) identified the issues and opportunities in the immediate area surrounding Hornsby Station. This included:

- availability of vacant land within easy walking distance to the station
- forecast 2036 patronage and parking demand
- existing traffic and transport conditions
- environmental and social constraints.

These issues and opportunities informed the development of the design criteria and options considered for the commuter car park, as discussed in Sections 2.3 and 2.4 of this REF, respectively. Detailed design would be undertaken in consultation with Council, RMS, Sydney Trains and the NSW Government design and sustainability review panel.

2.3. Design criteria

2.3.1. Hornsby Junction Remodelling

The criteria for identifying a revised track configuration through the Hornsby Junction focused on delivering the required increase in rail network capacity (as outlined in Section 2.1.1) minimising impacts to existing rail infrastructure and third-party assets, and minimising impact to the community and environment.

2.3.2. Commuter car park

The criteria for identifying a site for additional commuter car parking at Hornsby Station focussed on delivering the maximum number of spaces, meeting the legislated accessibility requirements and minimising impact to the community and environment.

2.4. Options assessment

2.4.1. Hornsby Junction Remodelling

Options assessment criteria

The performance of each option was assessed against the following criteria:

- ability to increase capacity on the city-bound T1 North Shore track
- addresses the rail network constraint imposed by the points located at the northern end of Hornsby Station Platforms 1 and 2
- provides an alternative turnback location for the purpose of turning T1 North Shore Line trains around
- minimises impacts to other rail infrastructure and third-party assets
- track work to be contained within the existing rail corridor boundary
- potential environmental constraints and amenity considerations
- ability to construct the Proposal without significantly impacting on rail network operations
- feasibility of delivery in terms of timing and construction requirements.

Options assessment

The 'do-nothing' option

The 'do-nothing' option would involve not providing any additional rail network capacity through the Hornsby Junction. The city-bound track of the T1 North Shore Line would continue to operate at its current capacity.

Ultimately the 'do nothing' option would preclude the improved services to city-bound customers through the increased capacity of the T1 North Shore Line services. For this reason, this option was not considered a feasible alternative to the Proposal and was discounted.

Alternative option – Hornsby Junction Remodelling

This option involves removing the 'points' at the northern end of Hornsby Station Platforms 1 and 2 and relocating the existing T1 North Shore Line turnback. The revised turnback facility would enable train turnarounds to be completed at an alternative location that does not result in conflicting train movements with the T1 Northern and Main North lines.

The alternative option (i.e. the Hornsby Junction Remodelling) would increase the capacity of the T1 North Shore Line to allow the operation of up to 16 T1 North Shore Line services per hour. This option would also involve the least amount of track work, with the current positions of the T1 North Shore and Main North tracks being retained. For this reason, the Hornsby Junction Remodelling was identified as the preferred option for the Proposal.

2.4.2. Commuter car park

Options assessment criteria

The performance of each option was assessed against the following criteria:

- proximity to station
- hierarchy of road network
- ownership and availability of land to build the car park
- potential environmental constraints and amenity considerations
- pedestrian accessibility and pedestrian and commuter safety
- ability to construct the car park whilst also minimising impacts to the net parking supply within easy walking distance of Hornsby Station
- feasibility of delivery in terms of timing and construction requirements.
- vehicular access arrangement to the car park to provide a satisfactory level of traffic safety
- impact of the proposed car park on the surrounding road network
- minimising the number of entry and exit points to the car park.

Options assessment

The 'do-nothing' option

The 'do-nothing' option involves not providing any additional commuter car parking at Hornsby Station. Park-and-ride customers would continue to compete for a limited number of unrestricted parking spaces located within easy walking distance of the station.

Increased competition for a limited number of unrestricted parking spaces would continue to impact on customer journey times, with park-and-ride commuters forced to either seek alternative parking further away from the station or travel to an alternative station (which may not have the capacity to absorb the increased parking demand).

Given that timeliness is a key driver of customer satisfaction, poor customer outcomes would likely cause a shift away from rail.

Increased competition for unrestricted commuter car parking could eventually impact on the accessibility of rail services, particularly for those customers who are unable to walk the additional distances required to access alternative unrestricted parking (which is also in short supply). The lack of unrestricted parking could also prevent some customers from making their journey's at their preferred times. This would require these customers to either travel at an alternative time to increase their chances of finding parking; or to choose an alternative mode of transport.

Increased demand for unrestricted parking at Hornsby Station would also continue to adversely affect the accessibility of those businesses, community services and other land uses located around the station as competition for parking between rail and non-rail customers increases.

Overall, the 'do-nothing' option would not provide the additional commuter car parking supply required to accommodate the forecast 2036 patronage growth and would not help encourage the use of public transport. For this reason, the 'do-nothing' option was not considered a feasible alternative to the Proposal and was discounted.

Alternative sites for the proposed car park

Two sites were considered for the location of the commuter car park:

- Option 1 – eastern side of the rail corridor on the site of the existing Hornsby Station commuter car park
- Option 2 – western side of the rail corridor on the site of TAFE NSW's Hornsby College staff/student car park.

The locations of these sites are shown in Figure 2-1. Further discussion on the key constraints and benefits of the two options considered are outlined in Table 2-1.



JACOBS NSW SPATIAL - GIS MAP file : 1A088400_GIS_REF_F003_r1v2 | 14/01/2016

- Legend**
- Car park option 1
 - Car park option 2
 - Hornsby Station existing commuter carparks
 - Rail line



Data sources
 Jacobs 2015
 Ausimage 2014
 LPI 2014

Figure 2-1 | Options considered for the location of the commuter car park

Table 2-1: Key benefits and constraints of the car park options considered

Option	Key benefits of the option	Key constraints for the option
<p>1 (eastern side – existing commuter car park)</p>	<ul style="list-style-type: none"> • Located approximately 150 metres from Hornsby Station • Located entirely on land owned by RailCorp; therefore, no property acquisition would be required • A commuter car park at this location could be configured to provide approximately 230 additional parking spaces • Car park entry could be tied into the existing signalised intersection at George Street/Burdett Street • Car park would not impact on sites on the western side of the rail corridor that could be redeveloped as part of Council’s planned town centre growth • Car park would provide station parking at one location, delivering traffic efficiencies • Car park could beneficially serve parking demand for surrounding businesses, community facilities and land uses, particularly after hours (e.g. at night) when the car park is vacated by rail customers 	<ul style="list-style-type: none"> • Requires the temporary closure of the existing Hornsby Station commuter car park affecting approximately 374 spaces • Construction activities being undertaken parallel to George Street and in close proximity to Hornsby Westfield Shopping Centre and Hornsby Shire Library – an area characterised by high pedestrian, cycling and traffic volumes • Site is located in close proximity to residential properties which would overlook the site • Requires the relocation of high voltage power lines and poles from the site • Prolonged construction amenity impacts to residential properties fronting George Street, which would also be affected by the proposed Hornsby Junction Remodelling
<p>2 (western side – TAFE car park)</p>	<ul style="list-style-type: none"> • Avoids the need to temporarily close the existing Hornsby Station commuter car park • Avoids the need to relocate the high voltage power lines and poles from the existing Hornsby Station commuter car park site • Avoids prolonged construction amenity impacts to residential properties fronting George Street, which would also be affected by the proposed Hornsby Junction Remodelling 	<ul style="list-style-type: none"> • Located further away from Hornsby Station than Option 1 (approximately 350 metres) • Car park would be smaller than Option 1 and, this, would provide fewer parking spaces (approximately 120 spaces) • Would require a leasing arrangement to be established with TAFE NSW to enable a car park to be constructed on top of its staff/student car park • Would result in parking being distributed between two locations (i.e. on eastern and western side of the rail corridor), resulting in additional traffic movements as drivers search for parking between locations. • Would potentially conflict with Council’s broader plans to redevelop land on the western side of the rail corridor

Preferred option for the location of the commuter car park

Based on a review of the benefits and constraints of each option in relation to the option assessment criteria, Option 1 was identified as preferable for the following reasons:

- it would be located entirely on RailCorp land and, thus, would avoid the acquisition of land that could be beneficially used for other redevelopment
- traffic efficiency associated with locating all commuter car parking at the one location
- it would be in close proximity to Hornsby Station
- the car park entry could be tied into the existing signalised intersection at George Street/Burdett Street, which would provide a safe and efficient connection to the surrounding road network
- a car park at this location would maximise the number of spaces that could be provided.

2.5. Preferred option

As outlined in Sections 2.3.1 and 2.3.2, the preferred option for the Proposal comprises:

- the installation, removal and reconditioning of track work, overhead wiring and signalling infrastructure between Waitara and Asquith (known as the Hornsby Junction Remodelling)
- a new commuter car park on the eastern side of the rail corridor, on the site of the existing Hornsby Station commuter car park.

These options were identified to best meet the specific objectives of the Proposal (as outlined in Sections 2.1.1 and 2.1.2) and the Transport Access program and would not result in significant impacts to surrounding land uses. The key features of the preferred option for the Proposal are described further in Chapter 3 of this REF.

3. Description of the Proposal

Chapter 3 describes the Proposal and summarises key design parameters, construction method, and associated infrastructure and activities. The description of the Proposal is based on the design details available at the time of preparing this REF and is subject to refinement during detailed design.

3.1. The Proposal

As described in Section 1.1 of this REF, the Proposal involves the construction and operation of track work and a new commuter car park at Hornsby Station. This work is being delivered as part of the Transport Access Program.

The Proposal comprises two parts:

- Hornsby Junction Remodelling, comprising the reconfiguration of track, signalling and overhead wiring within the existing rail corridor between Waitara and Asquith
- Hornsby Station commuter car park, comprising the construction and operation of a multi-storey car park at the site of the existing at-grade Hornsby Station commuter car park.

An overview of the Proposal is provided in Sections 3.1.1 and 3.1.2.

3.1.1. Overview of Hornsby Junction Remodelling

The key features of the Hornsby Junction Remodelling are shown in Figure 3-1 and would include:

- installation, removal and reconditioning of track work between Hornsby Station and approximately 400 metres north of Bridge Road, Hornsby
- relocation of overhead wires and support structures
- installation, removal and modifications of signalling infrastructure to enable the operation of up to 16 city-bound trains per hour on the T1 North Shore Line. This work would generally be limited to:
 - installing new signals and/or modifying existing signals
 - installing new field equipment including train stops, points and track circuits. Pending signal sighting outcomes, there is also potential for existing warning lights and guard indicators to be relocated or newly installed
 - running new cables within existing galvanised steel trough (GST) to connect the additional signals
- modification of track drainage, combined services routes and other rail infrastructure (such as local cable routes)
- provision of a new train driver's walkway and a train turnback facility located approximately 30 metres south of Bridge Road, Hornsby.

The indicative extent of this work is shown in Figure 1-1 and Figure 1-2.

3.1.2. Overview of Hornsby commuter car park

The key features of the proposed Hornsby Station commuter car park are shown in Figure 3-2 to Figure 3-4 and would include:

- partial demolition of the existing at-grade commuter car park, including the decommissioning and replacement of an existing on-site stormwater detention storage tank
- construction of a multi-storey commuter car park structure
- provision for approximately 230 additional commuter parking spaces
- provision of vehicular entry and exit from the George Street/Burdett Street intersection (via reconfigured traffic signals); the existing vehicle entry and exit off George Street (south of Burdett Street) would also be retained
- provision of a new retaining wall along the eastern boundary of the commuter car park
- provision of a new retaining wall and planter along the western side of George Street (to replace the existing retaining wall structure that would be demolished to facilitate construction)
- ancillary works including stairs, a lift, perimeter fencing, power and lighting, communications, CCTV camera surveillance, drainage, utilities, line-marking and signage, urban design works and landscaping
- maintaining access to the Sydney Trains maintenance facility via the car park.

A number of other associated works would also be required as part of the proposed commuter car park, comprising:

- relocation of high voltage overhead power lines from the site of the existing commuter car park
- provision of approximately six accessible parking spaces adjacent to the eastern station entrance in accordance with the relevant requirements (to be created from existing unrestricted commuter parking at this location)
- extension of the footpath on the western side of George Street from the George Street/Burdett Street intersection, where it currently terminates, to the northern boundary of the proposed commuter car park to provide pedestrian access between Hornsby Station and the proposed lifts in the commuter car park
- modification of the George Street/Burdett Street intersection to accommodate the proposed new commuter car park entry
- utility protection works
- vegetation removal from the existing car park site.

3.1.3. Design Features – Hornsby Junction Remodelling

Track work

The proposed scope of track works within the Hornsby Junction would comprise:

- removal of single and double ‘slips’
- removal and installation of ‘crossovers’
- installation of a standard ‘diamond’
- reconditioning of an existing rail ‘siding’ located approximately 50 metres south of Bridge Road on the eastern side of the rail corridor.

An indicative plan view of the proposed track work is shown in Figure 3-1.

The finished track structure would consist of parallel, continuously welded steel rails tied together by reinforced concrete sleepers, supported and retained by a bed of stone ballast (as per the existing track structure).

Overhead wiring works

The Proposal would require the relocation or replacement of existing overhead wiring to suit the reconfigured track alignment. Existing overhead wiring structures would be retrofitted where possible. Alternatively, new or relocated overhead wiring structures would be installed adjacent to the existing structures.

The Proposal would also involve the removal of an obsolete overhead wiring structure (A-frame structure) located approximately 190 metres north of Hornsby Station (as shown in Figure 6-6). This structure is currently in poor condition (showing extensive signs of rust damage) and has been decommissioned (i.e. the structure is no longer supporting overhead wires).

Signalling works

The Proposal would require the relocation of, and modifications to, existing signalling and communications infrastructure. Signalling work would generally be limited to:

- installing new signals and/or modifying existing signals
- installing new field equipment including train stops, points and track circuits. Pending signal sighting outcomes, there is also potential for existing warning lights and guard indicators to be relocated or newly installed
- running new cables within existing galvanised steel trough (GST) to connect the additional signals.

It is highly unlikely that the signalling work would require vegetation clearing or ground disturbance (e.g. for the purposes of installing new cabling or conduits). The signalling works would be carried out within a short timeframe and would not incorporate high noise emitting activities. Planned access would be provided through established Sydney Train access points.

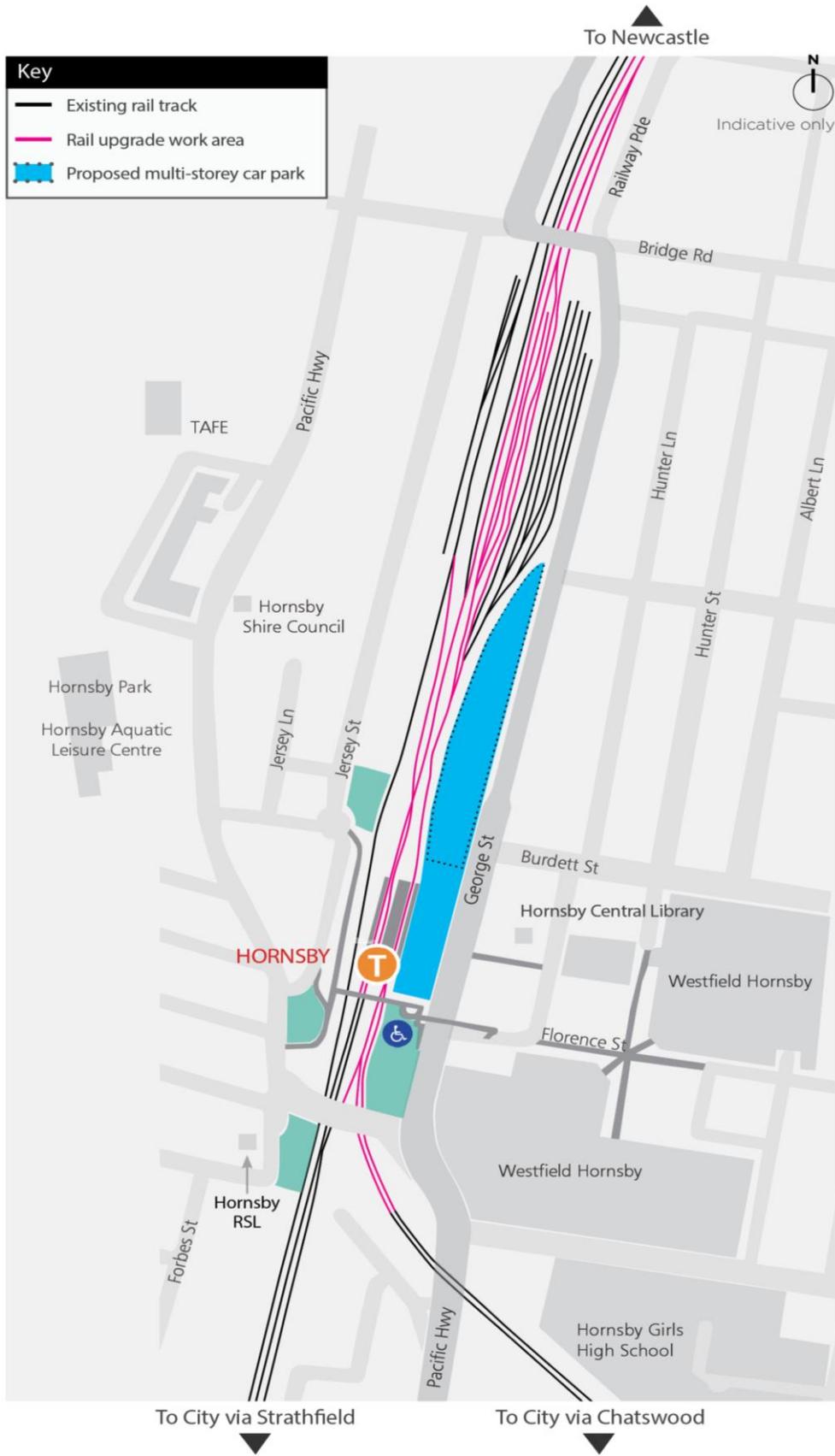


Figure 3-1: Indicative plan view of proposed track work within the Hornsby Junction

Train driver's walkway

The proposed train driver's walkway would consist of a concrete footpath that would allow the train driver to walk from one end of the train to the other along the turnback facility. The walkway would be situated between the proposed reconditioned rail siding and a southbound rail 'loop' for the T1 Northern Line (as shown in Figure 3-1).

The train driver's walkway would be approximately 1.2 metres wide, with fencing to be provided to separate walkway from the 'danger zone' of the adjacent operating track. The walkway would be designed in accordance with RailCorp standards. Key design features of the walkway would include fencing to clearly delineate the edge of the walkway and lighting.

The final design of the Train driver's walkway would be determined during detailed design in consultation with Sydney Trains.

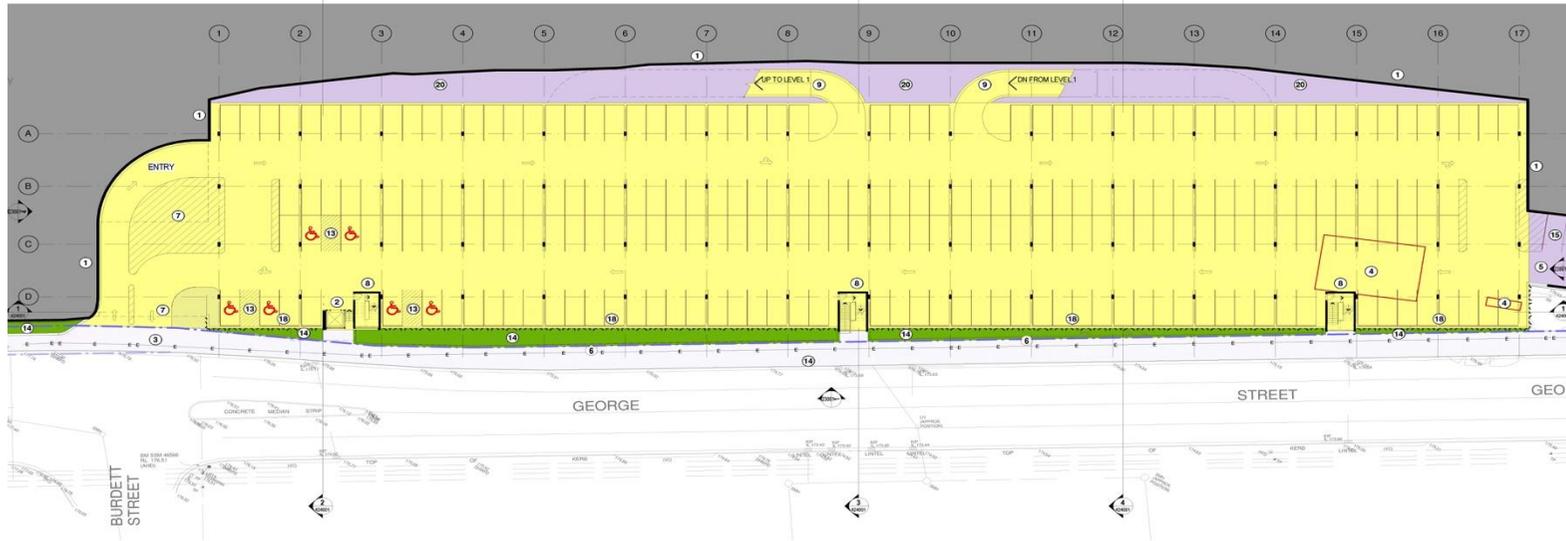
3.1.4. Design Features – Commuter car park

Building footprint and configuration

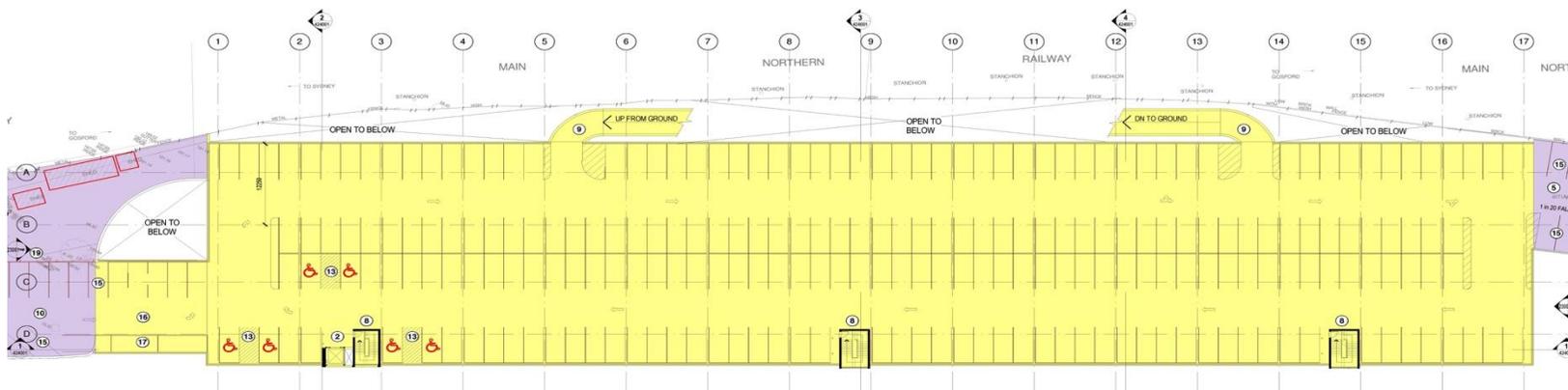
The proposed car park structure would incorporate a two level layout, with the upper and lower level connected by internal ramps. The structure would be situated on top of the existing Hornsby Station commuter car park (as shown in Figure 3-2) and would be approximately 200 metres in length and up to eight metres high (including stair and lift canopies). The upper level of the structure would be open (i.e. there would not be a roof covering this level).

An indicative layout, 3D visualisation and artist's impression of the Proposal is provided in Figure 3-2, Figure 3-3 and Figure 3-4, respectively. It should be noted that the car park is at an early stage of design and is subject to further modifications.

Vehicle circulation through the car park would generally be in a clockwise one-way direction (as shown in Figure 3-2), with the exception of ramps, where vehicles would circulate in an anti-clockwise one-way direction when travelling between car park levels (as shown in Figure 3-2).



(a) Lower-floor layout



(a) Upper-floor layout

Figure 3-2: Indicative plan view of the commuter car park

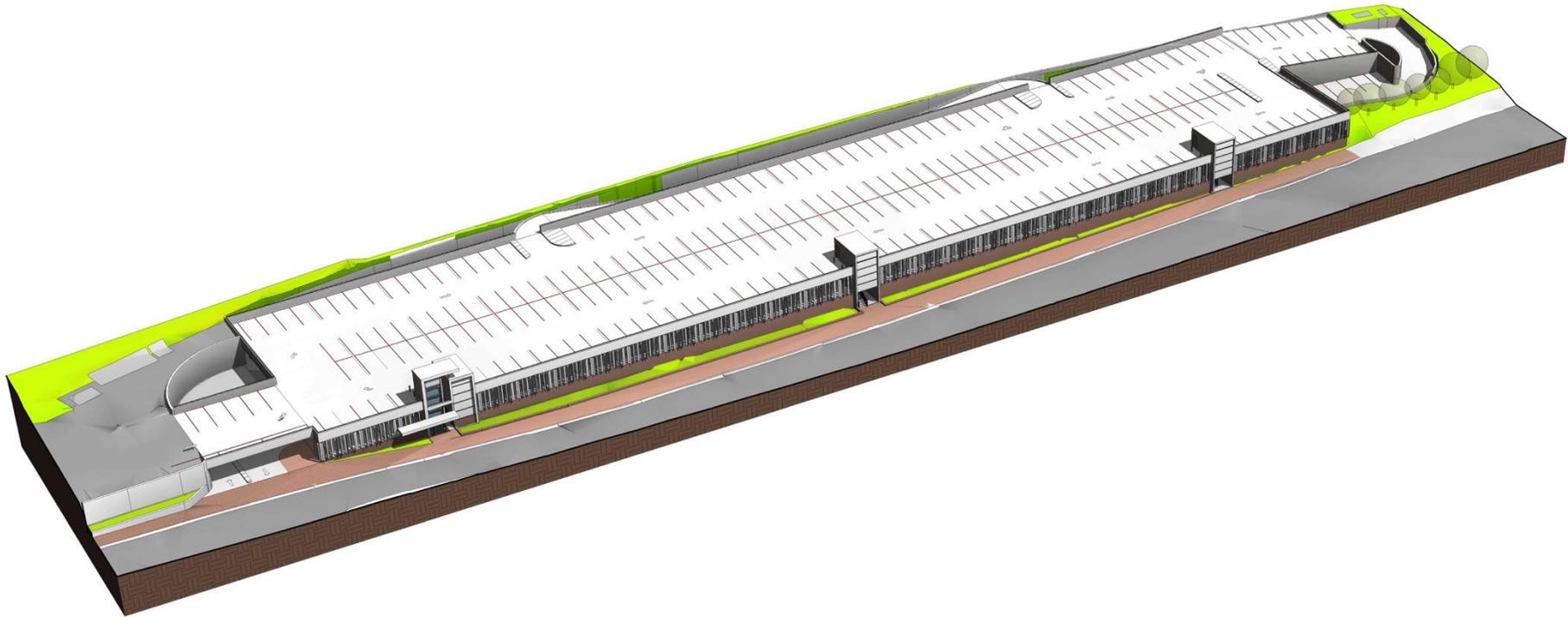


Figure 3-3: Indicative 3D visualisation of the commuter car park



Figure 3-4: Indicative 3D visualisation of the commuter car park

Building façade

The proposed façade treatment would be in line with the existing environment and sustainable design features (as outlined in Section 3.1.3). The final façade would be determined during detailed design and would be subject to urban design requirements.

The building façade would incorporate crash barriers and façade screens. The crash barrier refers to those structural elements of the car park that have been specifically designed to withstand a vehicle collision and, thus, prevent an errant vehicle from crashing through the car park structure. Conversely, the façade screen refers to a non-structural element of the car park that has been designed to improve the overall appearance of the structure and is not designed to withstand a vehicle collision.

The crash barrier would contribute significantly to the entire façade. A visual indicator would be provided to guide cars reversing into the parking bay.

Façade screens would be located where residents could potentially be impacted by light spill from vehicle headlights and/or lighting. Façade screenings would reduce the impact on residents by either completely blocking or by diffusing the impact to soften any light spill.

The following types of vertical screening have been considered for the proposed car park; however, final finishes would be determined during detail design:

- folded aluminium sheets presented in an irregular spacing and shape across the façade for the purposes of creating a contained edge along the façade while also maintaining airflow requirements. This design would also allow passive solar design, air transfer and guards against spill light from car headlights
- seamless mesh designed to provide fall protection, facade cladding, security screening, shading and wind protection and sculptural effects. This mesh offers fresh air circulation, passive surveillance and pedestrian security.

Both types of screening have been used effectively in Transport for NSW commuter car parks with similar constraints:

- solid screening – around 1.3 metres high, provides screening primarily for vehicles turning into the parking bays facing residential sites
- solid or diffusing screening – ceiling-to-floor full height, screens moving vehicles travelling up and down ramps and aisles.

There are some restrictions over how solid the selected screening is in order to maintain the passive ventilation of the Proposal as an open car park.

There is the opportunity to minimise potential impacts as a result of light spill, noise and air quality through the incorporation of prescribed finishes within the façade of the car park. The car park has been designed as an open-deck structure which allows for cross-ventilation by permanent unobstructed openings. Along each façade of the car park, a solid crash barrier would exist from the floor to 1.4 metres high.

The openings above this barrier would allow for cross-ventilation and as such there are some restrictions on the screening which can be placed here. The relevant standards require any additional screening, above this barrier to be no less than 20 per cent perforated to maintain the status of an open-deck car park and therefore reduce the need for mechanical ventilation.

Screenings may be required to mitigate light and noise impacts as a result of operation of the car park.

Crime Prevention Through Environmental Design (CPTED) principles would be incorporated into the design of the commuter car park to reduce the potential for graffiti. Measures that would be adopted to assist with deterring graffiti include CCTV and appropriate lighting levels to increase passive surveillance of the commuter car park. The commuter car park would also include anti-graffiti treatment.

Vehicle access

Vehicle access would consist of:

- a combined entry and exit from the George Street/Burdett Street intersection (which would be modified to accommodate the Proposal)
- a direct entry to the upper level of the car park from the adjacent existing commuter car park (exit from the car park would not be permitted at this location, with vehicles needing to exit via the George Street/Burdett Street intersection).

To accommodate the proposed new entry/exit for the car park, the George Street/Burdett Street intersection would be reconfigured to provide turning bays and traffic signal control from George Street and Burdett Street. The final access arrangements and revised intersection configuration would be determined during detailed design in consultation with Roads and Maritime Services (as the relevant Roads Authority). An indicative arrangement is shown in Figure 3-5.

Wayfinding

In consideration of design information for wayfinding the Proposal considers:

- simple movement patterns for minimal change in direction
- design elements should promote and facilitate way finding
- segregation of vehicle entry/exit spaces and pedestrian access paths
- transport information and timetables located at convenient and accessible locations
- the main pedestrian desire line should provide a clear view of the railway station entry (T) sign.

The final wayfinding strategy adopted for the Proposal would be determined during detailed design.

Safety and security

The design, with architectural, landscaping and urban design features, aims to increase passive security. Crime Prevention Through Environmental Design (CPTED) principles would be incorporated into the design. Features include CCTV, clear sight lines, signage and lighting. Design has considered maximising safety and security for pedestrians and drivers alike.

Lighting

Key features of the lighting design include:

- using available natural light in the daytime to assist in the achievement of adequate lighting levels
- keeping energy consumption through lighting as low as possible while maximising safety throughout the car park and conforming to relevant Standards
- using timers to control lighting on the lower floor of the car park
- using photo-electric cells to control lighting on the upper floor of the car park
- using LED lighting on the upper floor of the car park to achieve suitable illumination levels at night without unduly disturbing adjacent residents
- continually lighting stair wells where appropriate lighting levels cannot be achieved through natural lighting.

Given the car park's location in close proximity to residential dwellings, the design has also considered strategies to minimise the impact of lighting on adjacent properties. This could include:

- the use of non-directional lighting with reduced light spillage
- the provision of amenity screening/light spill containment measures to those car park façades facing visually sensitive receivers to reduce the impact of vehicle headlights (refer to Figure 3-6 for an indicative visualisation of a light spill containment measure that could be provided).

Lighting would be further developed during the detailed design phase.

Landscaping

Landscaping design for the commuter car park would be developed during the detailed design phase.

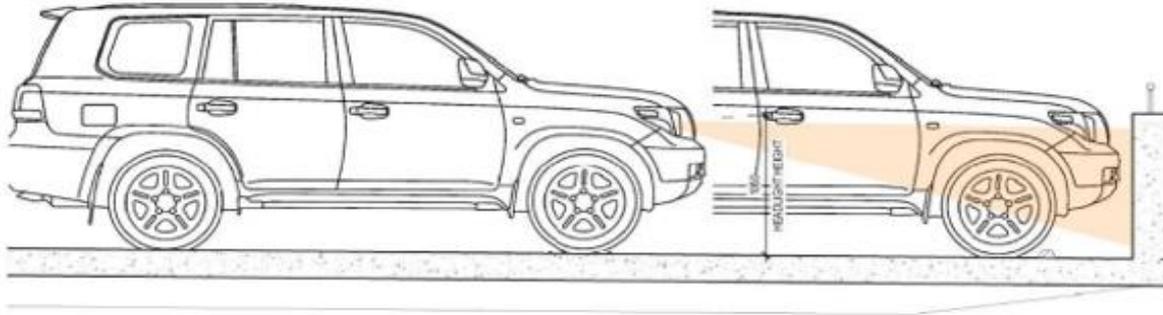


Figure 3-6: Indicative visualisation of a light spill containment measure

Relocation of high voltage power lines

The relocation of Sydney Train’s high voltage power lines would be required. The revised power line route would be determined during the detailed design phase, and would comply with Sydney Trains standards to provide clearance from the proposed commuter car park.

Minor modifications to the George Street high voltage power lines may be required and would be undertaken in consultation with AusGrid.

Accessible parking

Accessible parking is currently provided in the existing commuter car park located on the eastern side of the rail corridor, south of the Hornsby Station. These parking spaces would not be affected by the Proposal.

The Proposal would provide approximately six additional accessible parking spaces adjacent to the eastern station entrance in accordance with the relevant requirements (to be created from existing unrestricted commuter parking at this location).

3.1.5. Design standards

The Proposal has been designed having regard to the following:

- RailCorp Business Requirements
- RailCorp Design Standards
- Transport for NSW Sustainable Design Guidelines
- Disability Standards for Accessible Public Transport (2002) (issued under the Commonwealth Disability Discrimination Act 1992)
- Australian Standard AS2890.1/6: *Off-street Car Parking Standard; Off-street Car Parking – Disabled Standard*
- Australian Standard AS1428.1/2: *Disability Standards for Accessible Public Transport*
- Australian Standard AS4282-1997: *Control of the obtrusive effects of outdoor lighting*
- Crime Prevention through Environmental Design (CPTED) principles
- Building Code of Australia
- Transport for NSW Guidelines for development of transport interchange facilities
- RailCorp Design Guidelines for the upgrade and construction of new and existing stabling yards and turnback sidings (June 2006).

3.1.6. Sustainability in design

The design of the Proposal has been undertaken in accordance with the project targets identified in Transport for NSW's Environmental Management System (EMS) and the Sustainable Design Guidelines (Version 3.0) which groups sustainability into seven themes:

- energy and greenhouse gases
- climate resilience
- materials and waste
- biodiversity and heritage
- water
- pollution control
- community benefit.

Within each theme, potential initiatives are prioritised into two categories of requirements:

- compulsory – the initiative is required to be implemented when applicable to the project as they refer to a corporate target, or are fundamental to the delivery of sustainable assets)
- discretionary – the initiative has benefits to be implemented, however may not be the most appropriate.

The Guidelines also specify a minimum level of compliance within each category: 100 per cent of applicable compulsory initiatives and 50 per cent of the applicable discretionary points are to be adopted on the project to achieve a silver rating.

A selection of the sustainable design initiatives proposed in the concept design include:

- undertake a carbon footprint to inform decision making in design and construction
- design out extreme, high and medium risks as identified in a climate change impact assessment
- ensure at least 95 per cent of construction and demolition waste (by weight) is diverted from landfill
- reduce the absolute quantity of Portland cement by at least 30 per cent
- design car park layout with an efficient circulation pattern with a repetitive pattern and where possible avoid traffic jams
- incorporate energy efficient LED lighting
- design car park to minimise noise during operation (e.g. low noise speed bumps and road surface
- use prefabricated components to reduce construction waste material usage, pollution risks and travel.

3.2. Construction activities

3.2.1. Work methodology

The Proposal is likely to be constructed in the following four stages, with construction anticipated to be completed by March 2018:

- Stage 1: Construction of the Hornsby Junction Remodelling works and high voltage overhead wiring relocation including some car park enabling works.
- Stage 2: Construction of the majority of the new commuter car park including some minor works associated with the Hornsby Junction Remodelling.
- Stage 3: Construction of the majority of the track work for the Hornsby Junction Remodelling.
- Stage 4: Demobilisation and car park opening in March 2018.

An overview of the indicative construction activities anticipated to occur during each of the above four stages of work is provided in Table 3-1. This staging is based on the current preliminary design and may change once the detailed design methodology is finalised. It is anticipated that there would be some overlap between the stages in order to meet the March 2018 construction completion date.

The construction methodology would be further developed during the detailed design of the Proposal by the nominated Contractor in consultation with Transport for NSW.

Table 3-1: Indicative construction methodology and staging

Stage	Main activities	Approx. duration
Construction start		Mid-2016
1	Hornsby Junction Remodelling, HV relocation, car park enabling works <ul style="list-style-type: none"> • Establish offset car parking • Establish site compound, including the closure of approximately 90 car parking spaces • Undertake preliminary Hornsby Junction remodelling works during possession weekends • Relocate existing HV located within the car park in accordance with detailed design • Undertake minor alterations on Ausgrid power lines on George Street if required • Undertake car park enabling works 	9 months

Stage	Main activities	Approx. duration
2	<p>Commuter car park construction, minor Hornsby Junction Remodelling works</p> <ul style="list-style-type: none"> • Full car park closure - establish further temporary commuter car park • Establish site compound/hoarding and construction access • Ground works and site clearance, including removal of existing pavements, selected trees, lighting and services • Drive contiguous piled retaining structure • Excavate commuter car park footprint • Substructure preparation (e.g. preparation for services, drainage and foundations) and construction of car park structure • Car park fit out, including installation of building services (e.g. electrical, communications, CCTV, hydraulics) • Construct internal footpaths, ramps, kerbs, islands and fences • Install street lighting, fencing, signage and line marking • Reconfigure George Street/Burdett Street intersection, including new pavement, kerbs, turning lanes and reconfigured traffic signals • Extend footpath on western side of George Street • Landscaping • Establish new accessible parking spaces adjacent eastern entrance of Hornsby Station 	9 months
3	<p>Main Hornsby Junction Remodelling works</p> <ul style="list-style-type: none"> • Continued full car park closure • Establish site compound/hoarding and construction access • Relocate, divert and/or protect rail and public utilities • Construct signalling infrastructure bases • Track work, including installation, removal and reconditioning of track • Install signalling and overhead wiring systems • Testing and commissioning of railway systems and signals 	4 months
4	<p>Finalisation works, demobilisation, car park opening</p> <ul style="list-style-type: none"> • Post construction demobilising, including removal of temporary construction facilities 	2 months
Construction finish		March 2018

3.2.2. Plant and equipment

An indicative list of plant and equipment that would likely be used to construct the Proposal is provided in Table 3-2. This list is indicative only. The actual plant and equipment used on site and the numbers required would be further refined during the detailed design and construction phases of the project.

Table 3-2: Indicative construction plant and equipment

Plant/equipment	Sound power level (dBA)
Commuter car park	
Excavator (20 tonne)	99
Truck (10 tonne)	98
Wacker Rammer	108
Hand tools	94
Bobcat	104
Jackhammer	108
Dozer	110
Excavator (Breaker)	121
Grader	108
Truck (10 tonne)	98
Concrete Saw	115
Excavator (20 tonne)	99
Jackhammer	108
Generator	101
CFA Rig	98
Truck (HIAB)	98
Concrete Pump	106
Concrete Truck/Agitator	106
Hand Tools	94
Jackhammer	108
Truck (10 tonne)	98
Hand Tools	94
Concrete Pump	106
Concrete Truck/Agitator	106
Paving Machine	104
Grader	108
Mobile Crane (100 tonne)	101
Grinder 4	98
Hand Tools	94

Plant/equipment	Sound power level (dBA)
Hornsby Junction Remodelling	
Excavator (20 tonne)	99
Truck and dog	98
Franna / Truck mounted crane	101
Backhoe	97
Hand tools	94
Crane	106
Front end loader	108
Trucks	98
14 tonne hi-rail dumpers	95
Lighting tower	105
Work trains	89
Water truck	108
Rail saw	107
Thermit welding equipment	110
Tamper regulator	106
Rail grinder	103
Elevated work platform	92
Test locomotive	89
Truck (10 tonne)	98
Wacker Rammer	108

3.2.3. Working hours

Commuter car park

Subject to planning approval, construction of the commuter car park is expected to commence in mid-2016, with works anticipated to take up to 18 months to complete.

The majority of works would be undertaken during the standard (NSW) Environment Protection Authority (EPA) construction hours of:

- 7.00 am to 6.00 pm Monday to Friday
- 8.00 am to 1.00 pm on Saturdays
- no work on Sundays or public holidays.

Exemptions and approval for works outside of the above standard construction hours may be required during the following circumstances to minimise disruptions to traffic, rail customers, pedestrians and nearby residents and businesses (e.g. due to disruptions to utilities):

- relocation of the high voltage overhead power lines from the Hornsby Station commuter car park. The majority of this work would be undertaken outside of standard construction hours to coincide with scheduled weekend track possessions
- works required by utility service providers or where impacts to services cannot be reasonably managed
- oversized deliveries/unloading of machinery that can only travel between hours specified by the police or the NSW Roads and Maritime Services
- emergency works (e.g. due to a damaged utility)
- where works can be undertaken so as to be inaudible at the nearest residential receivers.

The affected community would be advised of any noise intensive works scheduled to occur outside of standard construction hours and mitigation measures would be used in accordance with Transport for NSW's (2012) *Construction Noise Strategy*.

Hornsby Junction Remodelling

Subject to planning approval, construction of the proposed track work is expected to commence in mid-2016 and would be completed in the first quarter of 2018.

The majority of works would be undertaken outside of standard construction hours to coincide with scheduled weekend track possessions (that is, planned periods when Sydney Trains suspend rail services on a segment of the network to enable track maintenance).

Scheduled track possessions normally occur during weekends or holiday periods when patronage demand is traditionally lower and, therefore, expected to result in the least disruption to rail customers.

Construction hours during a scheduled weekend track possession typically extend over a consecutive 48-hour period from 2.00 am Saturday to 2.00 am the following Monday. The proposed track work would be staged to occur over approximately 18 scheduled track possessions.

In addition to the scheduled track possessions, construction of the Proposal would also require a two week shutdown of the Hornsby Junction (that is, a closure of the rail corridor that is specifically required to construct the Proposal). This shutdown is scheduled to coincide with the December 2017-January 2018 holiday period to minimise disruptions to rail customers.

During the commissioning shutdown period, 24 hour construction works would be undertaken, with noisy work activities scheduled to occur during standard construction hours (where practicable) and mitigation measures implemented outside of standard construction hours to minimise impacts to nearby sensitive receivers.

The affected community would be advised of any noise intensive works scheduled to occur outside of standard construction hours and mitigation measures would be used in accordance with Transport for NSW's (2012) *Construction Noise Strategy*.

3.2.4. Earthworks

Approximately 33,000 cubic metres of material is anticipated to require excavation during construction of the Proposal, as summarised in Table 3-3. Fill material would also be required for backfilling. The estimated fill requirements for the Proposal is also summarised in Table 3-3.

As indicated in Table 3-3, the bulk of the excavated material would be generated during construction of the commuter car park. This would be due to the need to remove a large volume of fill to enable an at-grade car park entry from the George Street/Burdett Street intersection, as well as reduce the overall height of the car park (i.e. compared to constructing the structure directly on top of the existing car park).

Table 3-3: Indicative construction plant and equipment

Construction activity	Estimated volume of material to be excavated	Estimated volume of material required for fill	Earthworks balance
Commuter car park	27,000 m ³	0 m ³	27,000 m ³
Track work	6,000 m ³	6,000 m ³	0 m ³
Total	33,000 m³	6,000 m³	27,000 m³

Where feasible, the excavated material would be reworked (if necessary) and used to meet fill material needs. However, this may be impractical if the excavated material is contaminated or unsuitable for the purposes of structural fill. In this case, fill material would need to be imported, and excavated material exported for reuse on other sites or for treatment or disposal.

All waste requiring off-site disposal would be classified in accordance with the *Waste Classification Guidelines* (EPA 2014) prior to disposal at an appropriate waste facility licenced to accept waste of the relevant classification. Refer to section 6.12.4 for further details.

3.2.5. Source and quantity of materials

The source and quantity of materials would be determined during the detailed design phase of the Proposal, and would consider the requirements of Transport for NSW's *Sustainable Design Guidelines*. Materials would be sourced, where practicable, from local suppliers.

3.2.6. Construction vehicle movements

Traffic and transport impacts associated with the Proposal are assessed in detail in Section 6.1 of this REF.

An indicative construction methodology has been developed for the Proposal as outlined in Section 3.2.1. A detailed construction methodology and associated management plan would be developed as part of the detailed design stage of works.

It is estimated that the maximum construction vehicle numbers would be:

- 32 truck movements a day (distributed evenly across an eight hour work day)
- 20 light vehicle movements a day (with a worst case scenario of 10 movements in the am peak hour)

This equates to a maximum of 14 vehicle movements in the AM peak hour (seven vehicles arriving and seven vehicles departing the construction site).

During the peak of construction there would be up to 80-100 construction staff on site. Staff would be encouraged to travel by public transport; however, if they drive they would be required to park outside a 600 metre radius of the construction site. Therefore, construction staff would not impact the operation of the road network in the immediate vicinity of the construction site or commuter car parking.

3.2.7. Site access

Construction access would primarily be via the existing commuter car park access off George Street. The existing traffic island at the car park access would be removed and four existing car parking spaces would be removed directly north of the access to allow heavy vehicles to access and exit the car park. The access location and assumed haulage route is shown in Figure 3-7.

In addition to the main site access point, vehicles would use the following existing Sydney Trains maintenance access gates to enter the rail corridor for track remodelling and signalling works:

- George Street, about 80 metres south of Bridge Road
- Jersey Street, about 100 metres south of Bridge Road
- Government Road, about 70 metres south of the M1 Pacific Highway
- the northern end of the Hornsby Station at-grade commuter car park (accessed via Sydney Train's maintenance access facility)
- Railway Parade, about 140 metres north of Bridge Road.

These accesses would be used less frequently and with a much lower volume of vehicles than the main access at the existing commuter car park. The locations of the above access gates are shown in Figure 4.2 of Technical Paper 1 (Traffic and Transport).

The construction methodology and associated traffic and access routes would be further developed during the detailed design of the Proposal by the nominated Contractor in consultation with Transport for NSW, Roads and Maritime Services and Hornsby Shire Council.

A detailed Construction Traffic Management Plan (CTMP) would be prepared for the Proposal to manage these impacts in consultation with Roads and Maritime Services and Hornsby Shire Council prior to the commencement of construction.

Site-specific traffic management issues would be addressed through the implementation of appropriate Traffic Control Plans (TCPs) developed in consultation with the relevant Roads Authority. The TCPs would outline key details such as advanced warning signage, traffic flow management and pedestrian management measures.

3.2.8. Upgrade of the George Street/Burdett Street intersection

The upgrade of the George Street/Burdett Street intersection is anticipated to occur over a three week period. The works would include the addition of the car park access arm to the intersection, the existing northbound kerbside lane on George Street would become straight ahead and left turn into the car park, kerb upgrades on the western frontage of George Street, upgraded line markings on George Street and Burdett Street and upgraded signalling. It is anticipated that all construction works to upgrade the intersection would be undertaken overnight, therefore minimising disruption to road users.

3.2.9. Ancillary facilities

Construction compound

A construction compound would be established in the existing Hornsby Station commuter car park, as shown in Figure 3-7. The construction compound would include perimeter fencing and security lighting to clearly delineate the site from the adjacent station entry and footpaths and to minimise risks associated with unauthorised site access.

Vehicle access would initially be provided into the construction compound via George Street using the existing commuter car park access located south of Burdett Street (refer to Figure 3-7). Construction access to the compound would be switched to the proposed new car park access off the George Street/Burdett Street intersection once this access has been established.

The following associated works would need to be undertaken to enable the establishment of the construction compound:

- temporary relocation of Sydney Trains maintenance staff and operations from the existing facility at the northern end of the car park if required. Consultation with Sydney Trains would be undertaken during the detailed design stage to confirm the location of these temporary facilities if needed
- temporary closure of the Hornsby Station commuter car park on George Street and relocation of approximately 370 parking spaces during the construction of the Hornsby Junction Remodelling and commuter car park. This commuter car park is anticipated to be fully closed for approximately 10 months, from January 2017 to October 2017
- temporary relocation of approximately 90 commuter car parking spaces from the existing Hornsby Station car park during the proposed enabling works for the Proposal (refer to Table 3-1). These relocated commuter car parking spaces are anticipated to be required from mid-2016 for approximately nine months
- removal of a traffic island at the commuter car park entry to allow heavy vehicle access.

The construction compound is anticipated to be required for approximately 20 months. The compound would be operated 24 hours a day, with loud works scheduled during standard Environment Protection Authority (EPA) construction hours.

In addition to the operation of this compound, approximately 18 scheduled weekend track possessions (2.00 am Saturday to 2.00 am the following Monday) would be required, and a two week shutdown of the Hornsby Junction coinciding with the December 2017-January 2018 holiday period (as per the working hours specified in Section 3.2.3).

No impacts to the commuter car park on George Street or High Street are anticipated as a result of the construction activities. Following completion of construction works, the compound would be demobilised and reinstated to its former use. Sydney Trains maintenance staff and operations would also be returned to the existing facility if required.

Temporary commuter car parking provisions

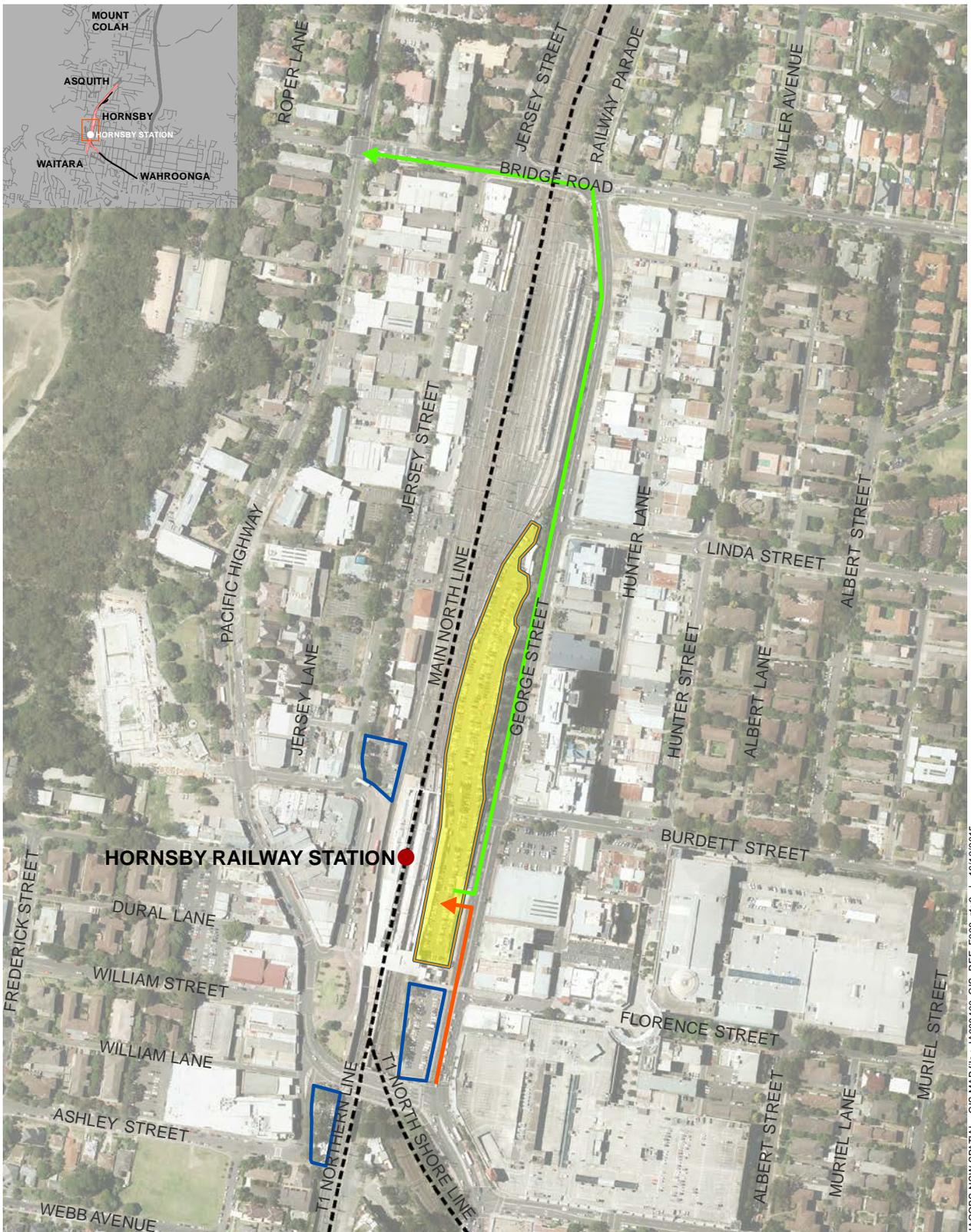
Construction of the Proposal would require the following changes at the existing at-grade Hornsby Station commuter car park:

- temporary closure of the Hornsby Station commuter car park on George Street and relocation of approximately 370 parking spaces during the construction of the Hornsby Junction Remodelling and commuter car park.
- temporary relocation of approximately 90 commuter car parking spaces from the existing Hornsby Station car park during the proposed enabling works for the Proposal (refer to Table 3-1). These relocated commuter car parking spaces are anticipated to be required from mid-2016 for approximately nine months.

To minimise the parking impact associated with these closures, temporary alternative commuter car parking would be provided. Transport for NSW is currently investigating options to increase the number of unrestricted parking spaces available to park-and-ride rail commuters within the locality. These options would require further assessment and consultation with land owners, however could include a combination of the following:

- Leasing privately owned off-street car parks in the vicinity of Hornsby Station. These could include the Northern Sydney Institute (Hornsby TAFE)'s staff and student car parks, Westfield Hornsby customer car park and/or the Hornsby RSL patron car park.
- Reconfiguring existing on-street parking to increase parking supply. Streets that have been identified as being potentially suitable for such work include: Florence Street (between Sherbrook Road and Muriel Street); May Street (between Muriel Street and the dead end of the road); Frederick Street (between Nursery Street and Webb Avenue); and Jersey Street (between the southern TAFE car park driveway and 45 Jersey Street).
- Establishing additional off-street parking on vacant parcels of land. Potential options that have been identified include: a parcel of land at the corner of Peats Ferry Road and Dural Street; a parcel of land at the corner of Forbes Street and Ashley Street.
- Increasing parking supply at Asquith and Waitara stations (with park-and-ride commuters catching trains from these stations as an alternative to using Hornsby Station).

The parking strategy for the Proposal would be finalised during detailed design in consultation with Hornsby Shire Council, the NSW Roads and Maritime Services and any relevant land owners.



JACOBS NSW SPATIAL - GIS MAP file : IA088400_GIS_REF_F008_r1v2 | 16/12/2015

Legend

- Construction compound
- Entry haulage route
- Exit haulage route
- Hornsby Station existing commuter carparks
- Rail line



Data sources

Jacobs 2015
 Ausimage 2014
 LPI 2014

Figure 3-7 | Construction compound

3.3. Public utility adjustments

Preliminary investigations have identified eight third-party utilities that have the potential to be affected by the Proposal. Details of these utilities, including their associated asset owners and anticipated utility works are provided in Table 3-4.

Potential impacts to existing services and utilities would be confirmed during the detailed design phase of the Proposal, with any proposed relocation and/or protection works determined in consultation with the relevant asset owners.

Table 3-4: Utilities potentially affected by the Proposal

Asset owner	Type of utility	Location	Anticipated works required
Sydney Trains	High voltage overhead power lines and poles	Running through the centre of the Hornsby Station commuter car park	Relocation of the power lines and poles, as described in Section 3.1.1
Ausgrid	High voltage overhead power lines and poles	Within western footpath of George Street	Minor modification of four electrical poles at the George Street/Burdett Street intersection
Telstra	Two banks of cable ducts containing telecommunications cables	Along Burdett Street, running west across George Street and the Hornsby Station commuter car park before crossing under rail corridor	Potential impacts would be confirmed during the detailed design stage. Any relocation would be undertaken in consultation with Telstra.
Optus	Fibre optic cables	Running in the shared Telstra cable ducts noted above and the eastern footpath of George Street south of Burdett Street	Potential impacts would be confirmed during the detailed design stage. Any relocation would be undertaken in consultation with Optus.
Sydney Water Corporation	DN150 vitrified clay sewer main, sewer vent line and vent shaft	Running through the Hornsby Station commuter car park	DN150 vitrified clay sewer main to be protected; sewer vent line and vent shaft to be relocated. The extent of relocation works would be confirmed during detailed design and in consultation with Sydney Water Corporation.
	Sewer vent	25 metres south of Burdett Street on the western boundary of George Street	Vent shaft height may need to be adjusted in accordance with Sydney Water Corporation guidelines
Sydney Trains	On site stormwater detention tank and associated main stormwater line	Running through the Hornsby Station commuter car park	On site detention tank to be decommissioned and replaced; main stormwater line to be amended to suit the Proposal
Roads and Maritime Services	Traffic signals and associated infrastructure	George Street/Burdett Street intersection	Reconfiguration of the traffic signals to accommodate an additional intersection leg and turning bays, as described in Section 3.1.1

3.4. Property acquisition

The Proposal is located on land owned by RailCorp. Therefore, Transport for NSW does not propose to permanently acquire any property as part of the Proposal. However, temporary leases of privately owned land may be required for the establishment of temporary offset parking during the construction of the Proposal. Options for offset car parking are currently being investigated and would depend on negotiations with relevant land owners as discussed in Section 3.2.9.

Where such an arrangement is required, a signed lease agreement would be obtained from the land owner prior to the establishment of the temporary offset parking provisions. The lease arrangement would stipulate any specific land owner requirements. After the completion of construction, the leased property would be restored to its pre-construction condition.

3.5. Operational management and maintenance

The management and maintenance of the proposed track work and commuter car park would continue to be the responsibility of Sydney Trains.

4. Statutory considerations

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

4.1. NSW legislation and regulations

4.1.1. Environmental Planning and Assessment Act 1979

The 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 Part 5 of the EP&A Act. Part 5 of the EP&A Act 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 111 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. Having regard to these provisions, Transport for NSW has determined that no significant environmental impact is likely and, therefore, an environmental impact statement is not required.

Clause 228 of the EP&A Regulation defines the factors which must be considered when assessing an activity under Part 5 of the EP&A Act. Chapter 6 of this REF provides an environmental impact assessment of the Proposal in accordance with clause 228 of the EP&A Regulation. Appendix 1 specifically responds to the factors for consideration under clause 228 of the EP&A Regulation.

4.1.2. Other NSW legislation and regulations

Table 4-1 provides an overview of other relevant NSW legislation that is applicable to the Proposal.

Table 4-1: Other relevant NSW legislation applicable to the Proposal

NSW legislation	Requirements for the Proposal
<i>Contaminated Land Management Act 1997</i>	Section 60 of the Act imposes a duty on landowners to notify the NSW Office of Environment and Heritage (OEH), and potentially investigate and remediate land if contamination is above EPA guideline levels. Land that would be affected by the Proposal has not been declared under the Act as being significantly contaminated. Contamination is assessed in Section 6.8 of this REF.
<i>Heritage Act 1977</i>	A section 57 exemption or a section 60 approval is required where items listed on the State Heritage Register are to be impacted. Sections 139 and 140 (permit) are required where archaeological relics are likely to be exposed. Non-Aboriginal heritage is assessed in Section 6.5 of this REF. The Proposal is not located in the vicinity of any items listed on the State Heritage Register. Land that would be disturbed by the Proposal has been assessed as having low to moderate potential to contain an archaeological resource. Excavation works within the former yard for the removal and installation of track work have low to moderate potential to encounter archaeological remains. Potential remains likely to be encountered are considered to be 'works' under the Act and, as such, disturbance of these items would not require heritage approval or notification.

NSW legislation	Requirements for the Proposal
<i>National Parks and Wildlife Act 1974</i>	Sections 86, 87 and 90 of the Act require consent from the NSW Office of Environment and Heritage (OEH) for the destruction or damage of Aboriginal objects. An extensive search of the NSW Office of Environment and Heritage's Aboriginal Heritage Information Management System (AHIMS) was undertaken for the Proposal on 13 October 2015 as part of the <i>Hornsby Junction Remodelling Aboriginal Heritage Due Diligence Assessment</i> . This assessment concluded that the Proposal is unlikely to disturb any Aboriginal objects. Aboriginal heritage is assessed in Section 6.4 of this REF.
<i>Noxious Weeds Act 1993</i>	The Act provides for the declaration of noxious weeds by the Minister for Primary Industries. Weeds may be considered noxious on a national, state, regional or local scale. All private landowners, occupiers, public authorities and councils are required to control noxious weeds on their land under Part 3 Division 1 of the NW Act. Any noxious weed identified on site would be managed in accordance with the regulations set out under the NW Act.
<i>Protection of the Environment Operations Act 1997</i>	Under Schedule 1(33) of the POEO Act, an environment protection licence is required for 'railway systems activities' (including the installation, onsite repair, onsite maintenance or onsite upgrading of track) where the track forms part of, or consists of, a network of more than 30 kilometres of track. Accordingly, an environment protection licence (EPL) would be required for the Proposal. Under Schedule 1(19) of the POEO Act, an environment protection licence is required for any land-based extraction activities that involve the extraction, processing or storage of more than 30,000 tonnes per year of extractive materials. Depending on the volume of spoil excavated during the construction of the Proposal, the requirement for an environment protection licence may also be triggered under Schedule 1(19) of the POEO Act.
<i>Roads Act 1993</i>	In accordance with Section 138 of the Act, consent from the NSW Roads and Maritime Services (RMS) would be required for the carrying out of work in, on or over a public road. George Street is a classified road and, as such, Transport for NSW would need consent from RMS prior to carrying out work on this road.
<i>Threatened Species Conservation Act 1995</i>	A search of the NSW Atlas online database was undertaken on 28 October 2015. This search indicated that the site does not contain suitable habitat for any listed threatened species or community; therefore, the Proposal is unlikely to have a significant impact on any threatened species or community. Biodiversity is assessed in Section 6.7 of this REF.
<i>Waste Avoidance and Resource Recovery Act 2001</i>	This Act encourages the most efficient use of resources in order to reduce environmental harm. Transport for NSW would carry out the construction of the Proposal in accordance with the objects of this Act. Waste management measures would be prepared and implemented during construction through the Construction Environmental Management Plan.
<i>Water Management Act 2000</i>	The Act provides for the protection and management of water resources in NSW. The Act controls the extraction of water, how water can be used, the construction of works such as dams and weirs, and the carrying out of activities on or near water sources. Based on the geomorphological setting and site observations the groundwater level at the site is not expected to be close to ground surface. Potential impacts on groundwater would need to be considered further during the detailed design phase. An aquifer interference approval would be required in instances where an aquifer is intercepted during construction. In addition, any dewatering activities estimated to exceed three mega litres of abstracted water per year would require a water access license under Part 5 of the Act. Transport for NSW would consult with the NSW Office of Water should any approvals be required.

4.2. State Environmental Planning Policies

4.2.1. State Environmental Planning Policy (Infrastructure) 2007

The Infrastructure SEPP is the key environmental planning instrument which determines the permissibility of the Proposal.

Clause 79 of the Infrastructure SEPP allows for the development for the purposes of a 'railway' or 'rail infrastructure facilities' by or on behalf of a public authority without consent on any land (i.e. assessable under Part 5 of the EP&A Act). Clause 78 defines 'rail infrastructure facilities' as including:

- railway tracks, associated track structures, cuttings, drainage systems, fences, tunnels, ventilation shafts, emergency access ways, bridges, embankments, level crossings and roads, pedestrian and cycleway facilities
- signalling, train control, communication and security systems
- power supply (including overhead power supply) systems
- maintenance, repair and stabling facilities for rolling stock
- associated public transport facilities for railway stations' which, under clause 5, includes 'car parks intended to be used by commuters.

Consequently, development consent for the Proposal is not required; however, the environmental impacts of the Proposal have been assessed under the provisions of Part 5 of the EP&A Act.

Part 2 of the Infrastructure SEPP contains provisions for public authorities to consult with local councils prior to the commencement of certain types of development. Under Clause 13 of the Infrastructure SEPP, Transport for NSW may be required to consult with Hornsby Shire Council in instances where the Proposal:

- would have a substantial impact on Council's stormwater management services provided by a council
- is likely to generate traffic to an extent that would strain the capacity of the road system in the Hornsby LGA
- involves connection to, and use of a substantial volume of water from, any part of a water supply system owned by Council
- involves the installation of a temporary structure on, or the enclosing of, a public place that is under a council's management or control that is likely to cause a disruption to pedestrian or vehicular traffic that is not minor or inconsequential
- involves excavation that is not minor or inconsequential of the surface of, or a footpath adjacent to, a road for which a council is the roads authority under the *Roads Act 1993*.

While the Proposal would not trigger the above statutory consultation requirements (due to the anticipated minor nature of the Proposal's impact on the above matters), Transport for NSW would consult with Hornsby Shire Council during the detailed design and construction phases of the Proposal. Section 5.5 of this REF provides further discussion on the consultation that would be undertaken with project stakeholders during the subsequent phases of the Proposal.

It is noted that the Infrastructure SEPP prevails over all other environmental planning instruments except where *State Environmental Planning Policy (Major Development) 2005*, *State Environmental Planning Policy No 14 – Coastal Wetlands* or *State Environmental Planning Policy No 26 – Littoral Rainforest* applies. The Proposal does not trigger the need for these SEPPs to be considered.

4.2.2. Sydney Regional Environmental Plan No 20 – Hawkesbury-Nepean River (No 2 – 1997)

Sydney Regional Environmental Plan No. 20 – Hawkesbury-Nepean River (No. 2 – 1997) (SREP 20) aims to protect the environment of the Hawkesbury-Nepean River system by ensuring that the impacts of future land uses are considered in a regional context. SREP 20 applies to land within the Hornsby Local Government Area (LGA) (among other LGAs located within the Greater Metropolitan Region).

Clause 4 of SREP provides that the general planning considerations (set out in clause 5), as well as specific planning policies and related recommended strategies (set out in Clause 6) are applicable to proposed developments on land to which this plan applies, and must be taken into consideration:

- by a consent authority determining an application for consent to the carrying out of development on land to which this plan applies
- by a person, company, public authority or a company State owned corporation proposing to carry out development which does not require development consent.

The Proposal is located approximately 650 metres southwest of Jimmy Banks Creek, which forms part of the Hawkesbury-Nepean catchment area (Jimmy Banks Creek flows into Berowra Creek, which is a tributary to the Hawkesbury River).

The Proposal would not directly impact on primary watercourses or tributaries. Appropriate water quality measures would be adopted to manage any potential impacts to water quality (which would include the implementation of adequate erosion and sediment control measures). Water quality impacts are described further in Section 6.10 of this REF.

4.3. Commonwealth legislation

4.3.1. Environment Protection and Biodiversity Conservation Act 1999

The Commonwealth EPBC Act requires the assessment of whether the Proposal is likely to significantly impact on matters of National Environmental Significance (matters of NES) or Commonwealth land. A search of the EPBC Protected Matters Search Tool was undertaken on 28 October 2015 and these matters are considered in full in Appendix 2.

The Proposal would not impact on any matters of NES or on Commonwealth land. Therefore, a referral to the Commonwealth Department of the Environment is not required.

4.3.2. Native Title Act 1993

The main objective of the Commonwealth *Native Title Act 1993* is to recognise and protect native title. Section 8 states that the *Native Title Act 1993* is not intended to affect the operation of any law of a State or a Territory that is capable of operating concurrently with the Act.

A search of the register maintained by the National Native Title Tribunal (undertaken on 2 December 2015) identified one native title claim registered with respect to land within the area of the project (Tribunal file no. NC2013/002 – Awabakal and Guringai People). However, as the Proposal is located within an existing operating rail corridor and commuter car park (which are owned by Sydney Trains), the Proposal site is unlikely to be affected by a native title holders or claim.

4.3.3. Disability Discrimination Act 1992

The *Disability Discrimination Act 1992* aims to eliminate as far as possible discrimination against persons on the ground of disability in areas including access to premises and the provision of facilities, services and land. The components of the Proposal that are accessible to the public (i.e. the commuter car park) would be designed to be independently accessible and in compliance with the objectives and requirements of the Act.

4.4. NSW Government policies and strategies

In addition to statutory requirements, several NSW Government policies and strategies are relevant to the Proposal. Table 4-2 summarises the NSW Government policies and strategies applicable to the Proposal.

Table 4-2: Relevant NSW Government policies/strategies

Document	Commitment	Comment
<i>State and Premier priorities</i>	In September 2015 the NSW Premier released 30 'State priorities', including 12 'Premier priorities' to grow the economy, deliver infrastructure, and improve health, education and other services across NSW. Key priorities relevant to the Proposal include 'building infrastructure' and 'creating jobs'.	<p>The Proposal would deliver the following key benefits:</p> <ul style="list-style-type: none"> increase capacity on the T1 North Shore Line to support customer demand increase commuter car parking supply at Hornsby Station to accommodate the forecast 2036 parking demand. <p>In so doing, the Proposal would contribute to economic growth by providing direct benefits to customers in terms of accessibility to public transport, as well as increasing capacity on the T1 North Shore Line.</p>
<i>NSW Long Term Transport Master Plan</i>	<p>The <i>NSW Long Term Transport Master Plan</i> identifies a planned and coordinated set of actions to address transport challenges and guides the NSW Government's funding priorities over the next 20 years. The Plan would address a number of challenges to building an integrated transport system for Sydney and NSW, including:</p> <ul style="list-style-type: none"> customer-focused integrated transport planning integrated modes to meet customer needs getting Sydney moving again sustaining Growth in Greater Sydney. <p>The <i>NSW Long Term Transport Master Plan</i> links to <i>Sydney's Rail Future, A Plan for Growing Sydney</i>, <i>Rebuilding NSW: State Infrastructure Strategy 2014</i>, regional and sub-regional strategies, and national plans.</p>	<p>Key actions of the <i>NSW Long Term Transport Master Plan</i> that would be addressed by the Proposal comprise:</p> <ul style="list-style-type: none"> implement efficiencies across the rail network through track infrastructure enhancement increase park and ride at interchanges <p>The Proposal would implement efficiencies across the rail network by increasing capacity on the T1 North Shore Line. Therefore, the Proposal would contribute to achieving the above key action of the <i>NSW Long Term Transport Master Plan</i>.</p> <p>The Proposal would also increase park and ride at an important transport interchange by delivering additional commuter car parking. In so doing, the Proposal would also contribute to achieving the following key themes of the <i>NSW Long Term Transport Master Plan</i>:</p> <ul style="list-style-type: none"> improving customers' journey experience providing accessible transport to help address social exclusion.

Document	Commitment	Comment
<i>Sydney's Rail Future: Modernising Sydney's Trains</i>	<p><i>Sydney's Rail Future</i> details how the NSW Government will deliver the core elements needed to give Sydney a world-class rail network that can support the city's growth. It describes the plan to transform and modernise Sydney's rail network based on a three-tiered system, comprising:</p> <ul style="list-style-type: none"> • Tier 1 – Metro: based on 'turn-up-and-go' services and single-deck metro trains • Tier 2 – Suburban: timetabled services with double-deck trains • Tier 3 – Intercity: timetabled services with double-deck trains and on-board amenities for long distance commutes. 	<p>Stage 2 of <i>Sydney's Rail Future</i> includes the delivery of network efficiencies on the existing Sydney Trains network through (amongst other things) track infrastructure enhancements.</p> <p>The Proposal would enhance existing track infrastructure by increasing capacity on the T1 North Shore Line. Therefore, the Proposal would contribute to achieving Stage 2 of <i>Sydney's Rail Future</i>.</p>
<i>A Plan for Growing Sydney</i>	<p><i>A Plan for Growing Sydney</i> sets out the NSW Government's strategy for accommodating Sydney's population growth over the next 20 years. The plan consists of goals, directions and actions that provide a framework for strengthening the global competitiveness of Sydney and delivering strong investment and jobs growth in Western Sydney.</p>	<p>Through increasing the capacity of the the T1 North Shore Line at Hornsby, the Proposal would contribute to achieving the following goals of <i>A Plan for Growing Sydney</i>:</p> <ul style="list-style-type: none"> • Goal 1: A competitive economy with world-class services and transport • Goal 2: Sydney's housing choices.
<i>Rebuilding NSW: State Infrastructure Strategy 2014</i>	<p><i>Rebuilding NSW</i> outlines the NSW Government's plan to invest \$20 billion in new productive infrastructure to sustain productivity growth in NSW's major centres and regional communities, as well as to support a forecast population of almost six million people in Sydney and more than nine million in NSW.</p> <p><i>Rebuilding NSW</i> identifies that \$1 billion has been reserved for <i>Sydney's Rail Future</i> Stage 2, which includes the Western Sydney Rail Upgrade program, which will:</p> <ul style="list-style-type: none"> • target capacity constraints on the T1 Western and Northern Lines to deliver more services • upgrade power supplies, to allow improved train operations on the T1 Line • introduce advanced train control systems to improve service frequencies and capacity. 	<p>The Proposal would address a capacity constraint on the T1 North Shore Line at Hornsby.</p> <p>Through addressing a significant capacity constraint on the T1 North Shore Line, the Proposal would contribute to achieving the objectives of <i>Rebuilding NSW</i>.</p>

Document	Commitment	Comment
<i>Disability Action Plan 2012-17</i>	The <i>Disability Action Plan 2012-17</i> (Transport for NSW 2012b) was developed by Transport for NSW in consultation with the Accessible Transport Advisory Committee, which is made up of representatives from peak disability and ageing organisations within NSW. The <i>Disability Action Plan</i> discusses the challenges, the achievements to date, the considerable undertaking that is required to finish the job, and provides a solid and practical foundation for future progress over the next five years.	The Proposal has been developed in consideration of the objectives outlined in this Plan.

4.5. Local environmental planning instruments

4.5.1. Hornsby Local Environmental Plan 2013

The Proposal is located within the Hornsby Local Government Area (LGA). Development within the Hornsby LGA is regulated by the *Hornsby Local Environmental Plan 2013* (Hornsby LEP). However, as outlined in Section 4.2.1, Clause 79 of the Infrastructure SEPP allows development of rail infrastructure facilities to be undertaken by or on behalf of a public authority without consent on any land. The Proposal can therefore be undertaken without consent. Notwithstanding, the Proposal would be designed, constructed and operated in a manner that is sympathetic to existing surrounding land uses.

4.6. 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 Hornsby Junction Remodelling and Commuter Car Park (the Proposal). Section 3.1.3 summarises how ESD has been incorporated in the design development of the Proposal. Section 6.14 includes an assessment of the Proposal on climate change and sustainability, and Section 7.2 lists mitigation measures to ensure ESD principles are incorporated during the construction and operation of the Proposal.

5. Community and stakeholder consultation

Chapter 5 discusses the consultation undertaken to date for the Proposal and the consultation proposed for the future. This chapter discusses the consultation strategy adopted for the Proposal and the results of consultation with the community, relevant government agencies and stakeholders.

5.1. Consultation requirement

Part 2 of the Infrastructure SEPP contains provisions for public authorities to consult with local councils prior to the commencement of certain types of development. Table 5-1 provides details of consultation requirements under the Infrastructure SEPP of relevance to the Proposal.

Table 5-1: Infrastructure SEPP consultation requirements

Consultation with Councils – development with impacts on council related infrastructure and services	Relevance to the Proposal
Where the Proposal would: <ul style="list-style-type: none"> substantially impact on storm water management services place a local road system under strain involve connection to or impact on a council owned sewerage system involve connection to and substantial use of council owned water supply significantly disrupt pedestrian or vehicle movement involve significant excavation to a road surface or footpath for which Council has responsibility. 	The Proposal would not involve these types of work. Accordingly, consultation with Council is not required in regard to this aspect.
Consultation with Councils – development with impacts on local heritage	Relevance to the Proposal
Where the Proposal would: <ul style="list-style-type: none"> substantially impact on a local heritage item (if not also a State heritage item) substantially impact on a heritage conservation area. 	The Proposal would not substantially impact on a local heritage item or heritage conservation area (refer to Section 6.5). Accordingly, consultation with Council is not required in regard to this aspect.
Consultation with Councils – development with impacts on flood liable land	Relevance to the Proposal
Where the Proposal would: <ul style="list-style-type: none"> impact on land that is susceptible to flooding – reference should be made to 'Floodplain Development Manual: the management of flood liable land'. 	The proposed site is not susceptible to flooding. Accordingly, consultation with Council is not required in regard to this aspect.
Consultation with public authorities other than Councils	Relevance to the Proposal
Where the Proposal would involve: <ul style="list-style-type: none"> development adjacent to land reserved under the <i>National Parks and Wildlife Act 1994</i> development adjacent to an aquatic reserve declared under the <i>Marine Parks Act 1997</i> development adjacent to an aquatic reserve declared under the <i>Fisheries Management Act 1994</i> 	The Proposal would not involve these forms of development. Accordingly, consultation with the relevant public authorities is not required in regard to this aspect.

5.2. Consultation strategy

The consultation strategy for the Proposal was developed to encourage stakeholder and community involvement and foster interaction between stakeholders, the community and the project team. The consultation strategy that was developed, having regard to the requirements of the planning process ensures 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 and REF process to relevant stakeholders
- raise awareness of the various components of the Proposal and the specialist environmental investigations
- ensure that the directly impacted community are aware of the REF and consulted where appropriate
- provide opportunities for stakeholders and the community 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 engagement activities
- build positive relations with identified community stakeholders
- ensure a comprehensive and transparent approach.

5.3. Consultation tools and activities

The REF consultation strategy adopts a range of consultation mechanisms, including:

- public display of the REF
- distribution of letterbox drops up to a radius of approximately 500 metres to Hornsby Station to local community and rail commuters, where appropriate, outlining the Proposal and inviting feedback on the REF
- advertisement of REF public display in local newspapers with a link to the Transport for NSW website that includes a summary of the Proposal and information on how to provide feedback
- two community information sessions during the public display period. These sessions aim to provide interested stakeholders with an opportunity to ask questions and discuss the Proposal further
- consultation with Council, Sydney Trains and other non-community stakeholders.

5.4. Public display of the REF

Community consultation activities for the Proposal would be undertaken during the public display of this REF. The display period of the REF would be advertised in the week that the public display commences. The REF would be placed on public display for a period of two weeks at the following locations:

Hornsby Shire Council
296 Peats Ferry Road
Hornsby NSW
Monday to Friday, 8.30 am to 5 pm

Hornsby Central Library
28-44 George Street
Hornsby NSW
Monday to Friday, 10 am to 9 pm
Saturday, 9.30 am to 5 pm
Sunday 2pm to 5pm

The REF would also be available on the TfNSW website: www.transport.nsw.gov.au/projects and on the NSW Government website: www.haveyoursay.nsw.gov.au. Information on the Proposal would be available through the Project Infoline (1800 684 490) or by email (projects@transport.nsw.gov.au).

Feedback on the REF is invited during the public display period. Following consideration of feedback received during the public display period, Transport for NSW would determine whether to proceed with the Proposal.

5.5. Stakeholder consultation

Sydney Trains has been consulted at various stages throughout the development of the Proposal. Key activities that Sydney Trains have been involved with include:

- options assessment and development of the initial concept to achieve the service requirements
- review and approval of the business requirements specification for the Proposal
- development of the concept design for the Proposal (as documented in Chapter 3 of this REF)
- Project Control Group meetings.

Transport for NSW conducted a briefing on the Proposal with the NSW Roads and Maritime Services and Hornsby Shire Council in December 2014. A summary of the issues raised by these stakeholders at this meeting is provided in Table 5-2. Transport for NSW will continue to engage with these stakeholders during the development of the Proposal to resolve the issues raised during the meeting.

Table 5-2: Issues raised by Roads and Maritime and Hornsby Shire Council during initial consultation

Stakeholder	Issue raised
Roads and Maritime Services	Concern raised about establishing a second vehicle access from George Street into the commuter car park; preference for the existing vehicle entry/exit to be used to access the proposed car park
Roads and Maritime Services	Concern raised about the proposed footpath extension along the western side of George Street; preference for existing pedestrian facilities to be used (i.e. using existing footpaths on eastern side of George Street and the signalised pedestrian crossing at Burdett Street)
Hornsby Shire Council	Transport for NSW should consider providing motorbike and bicycle parking as part of the Proposal
Hornsby Shire Council	Concern raised about the maintenance of landscaping or assets not located on Council owned land; this should remain the responsibility of Sydney Trains
Roads and Maritime Services	Proposed landscaping must not interfere with the proposed lines of sight to/from the proposed vehicle entry into the commuter car park. Roads and Maritime would not be responsible for maintaining any vegetation outside the road carriageway

Additional meetings and workshops would be held with key stakeholders during the detailed design process. These would include but not be limited to:

- Hornsby Shire Council
- Roads and Maritime Services
- Sydney Trains
- Rail freight operators.

5.6. Ongoing consultation

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

Should Transport for NSW determine to proceed with the Proposal, the determination report would be made available on the Transport for NSW website and would summarise the key impacts identified in this REF, demonstrate how Transport for NSW 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 mitigation measures to minimise the impacts of the Proposal. The interaction with the community throughout the construction phase would be undertaken in accordance with a community liaison plan (CLP) to be developed prior to the commencement of construction. See Figure 5-1 for the consultation process to be followed for the Proposal.



Figure 5-1: Ongoing consultation process

6. Environmental impact assessment

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

This environmental impact assessment has been undertaken in accordance with clause 228 of the EP&A Regulation and the Department of Urban Affairs and Planning guidelines *Is an EIS Required?* (DUAP 1999). A checklist of clause 228 factors and how they have been specifically addressed in this REF is included at Appendix 1.

6.1. Traffic and transport

A Traffic and Transport assessment was undertaken for the Proposal by Jacobs in December 2015. The full assessment is provided in Technical Paper 1 (Traffic and Transport). The results of the assessment are summarised below.

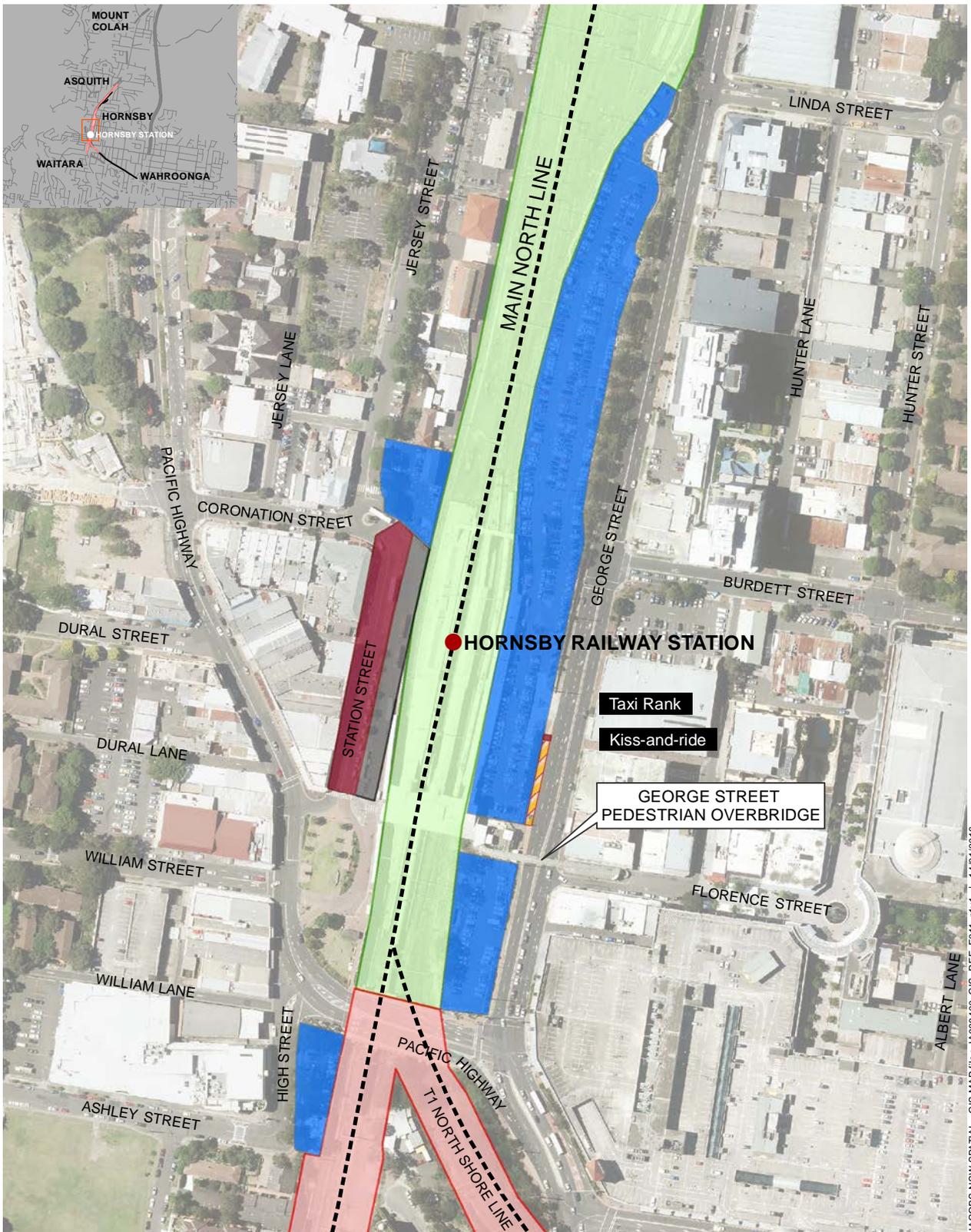
6.1.1. Existing environment

Road network

The local road network surrounding the Proposal is shown in Figure 6-1 and summarised in Table 6-1.

Table 6-1: Key features of the local road network

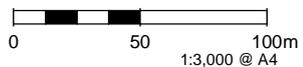
Road	Key features
George Street	An arterial road running north-south between the Pacific Highway and Bridge Road. George Street generally has two lanes in each direction with a sign posted speed limit of 60 kilometres per hour. Signalised intersections on George Street occur at the Pacific Highway, Edgeworth David Avenue, Burdett Street and Bridge Street/Railway Parade.
Burdett Street	A local road running east-west with a speed limit of 50 kilometres per hour. Between George Street and Hunter Street, Burdett Street has two westbound lanes and one eastbound lane that widens to two lanes at the intersection of Burdett Street and Hunter Street. 'No Stopping' zones are implemented throughout this section of Burdett Street. Burdett Street provides entry and exit points to the Westfield shopping centre.
Pacific Highway	A major north-south arterial route with a sign posted speed limit of 60 kilometres per hour in the vicinity of Hornsby Station. The Pacific Highway generally provides two lanes in each direction, narrowing to one traffic lane and one parking lane in each direction north of Station Street.
Edgeworth David Avenue	A collector route running east-west between the Pacific Highway and Junction Road in Waitara. It provides access to the Westfield car park and the road is primarily residential with local amenities such as Hornsby Girls High School at its western end near the Pacific Highway. The road has two lanes in each direction and a speed limit of 50 kilometres per hour, with a 40 kilometre per hour school zone in place between the Pacific Highway and Romsey Street.



JACOBS NSW SPATIAL - GIS MAP file : IA0884400_GIS_REF_F011_r1v1 | 14/01/2016

Legend

- Proposed Signalling Work
- Proposed Trackwork
- Rail line
- Hornsby Station commuter carparks
- Hornsby Taxi Zone
- Kiss-and-ride
- Hornsby Bus Interchange



Data sources
 Jacobs 2015
 Ausimage 2014
 LPI 2014
 Hornsby LEP 2013

Figure 6-1 | Key features of the existing traffic and transport environment

Car parking and other kerbside uses

Commuter car parking

There are currently four commuter car parks located within easy walking distance of Hornsby Station. The locations of these commuter car parks are shown in Figure 6-1 and summarised as follows:

- Main commuter car park off George Street – located on the eastern side of the rail corridor north of the Hornsby Station concourse. The car park provides 374 commuter parking spaces, as well as 11 Sydney Trains staff parking spaces which are segregated from the adjacent commuter car park via a locked access gate.
- Smaller commuter car park off George Street – located on the eastern side of the rail corridor south of the Hornsby Station concourse. The car park provides 53 parking spaces (including six accessible parking spaces).
- Smaller commuter car park off Jersey Street – located on the western side of the rail corridor north of the Coronation Street/Station Street roundabout. The car park provides 22 parking spaces (including one accessible parking space).
- Smaller commuter car park off High Street – located on the western side of the rail corridor, south of the Pacific Highway overbridge. The car park provides 21 parking spaces.

Vehicle access to the commuter car parks on the eastern side of the rail corridor is provided from the northbound traffic lane of George Street via an unsignalised intersection. No vehicle access is provided directly between the car parks and the southbound traffic lane of George Street, with right-turns into and out of the car parks restricted by a raised concrete median and fencing.

Vehicle access to the smaller commuter car park on the western side of the rail corridor is possible from both the northbound and southbound traffic lanes of Jersey Road.

The commuter car parks do not currently have sufficient capacity to meet parking demand (Arup 2015). Observations made during a 2014 parking survey (Arup 2015) identified the main Hornsby Station commuter car park to be fully occupied by 7.00 am, with customers arriving after this time forced to seek limited available unrestricted on-street parking within walking distance of the station.

Unrestricted on-street parking

A 2015 parking occupancy survey (PeopleTrans 2015) identified a total of 1,374 unrestricted on-street parking spaces within 800 metres of Hornsby Station.

The results of the 2015 parking occupancy survey are summarised in Table 6-2. These results indicate that the number of parking spaces available within 800 metres of Hornsby Station varies throughout the day with between 573 spaces (at 7.00 pm) and 236 spaces (at 11.00 am).

Table 6-2: Unrestricted on-street parking survey results

Survey time	Total number of unrestricted on-street parking spaces	Number (%) of unrestricted parking spaces occupied at time of survey	Number (%) of available spaces
7.00 am	1,374	883 (64%)	491 (36%)
9.00 am		1,095 (80%)	279 (20%)
11.00 am		1,138 (83%)	236 (17%)
1.00 pm		1,134 (83%)	240 (17%)
3.00 pm		1,038 (76%)	336 (24%)
5.00 pm		965 (70%)	409 (30%)
7.00 pm		801 (58%)	573 (42%)

Source: Adapted from PeopleTrans (2015)

Kiss-and-ride

Kiss-and-ride facilities are currently provided on the eastern and western sides of the rail corridor, as shown in Figure 6-1. The kiss-and-ride facilities on the eastern side of the rail corridor are located in a layby zone on the western side of George Street adjacent to a taxi rank. The kiss-and-ride facilities on the western side of the rail corridor are located on Station Street outside shops and the Railway Hotel.

Taxi zones

A taxi rank is located on Station Street on the western side of the station approximately 50 metres north of the station entrance (refer to Figure 6-1). The rank operates as a secure taxi rank between the hours of 11.00 pm and 5.00 am on Friday and Saturday. During these times, security guards are stationed at the rank.

An additional taxi zone is provided within a layby on the western side of George Street outside the station entrance, with taxis permitted between the hours of 9.00 am and 12.00 am the following day (i.e. the taxi zone is not in operation between the hours of 12.00 am and 9.00 am each day).

Rail services

Hornsby Station consists of five platforms that are accessible and interconnected via a pedestrian concourse at the southern end of the station and a pedestrian overbridge at the northern end, which provides access between platforms. The station is a major transport interchange servicing three train lines:

- T1 North Shore Line (express and all stations services to City via Gordon)
- T1 Northern Line (all stations service to City via Macquarie Park)
- Central Coast and Newcastle Line (express services to City via Strathfield)

The average stopping frequency on each line during weekday and Saturday peak periods is summarised in Table 6-3.

Table 6-3: Hornsby Station rail service frequencies

Direction	Line	Service frequency		
		Weekday AM peak (7-9 am)	Weekday PM peak (5-7 pm)	Saturday peak (11 am – 1 pm)
Southbound	T1 Northern	15 minutes	15 minutes	15 minutes
	T1 North Shore	5 minutes	7 minutes	15 minutes
	Central Coast and Newcastle	15 minutes	30 minutes	30 minutes
Northbound	T1 Northern	15 minutes	15 minutes	15 minutes
	T1 North Shore	7 minutes	6 minutes	15 minutes
	Central Coast and Newcastle	30 minutes	15 minutes	30 minutes

Hornsby Station is the 18th busiest station on the Sydney Trains network (Bureau of Transport Statistics 2015). 2013 station barrier counts for the weekday morning peak period (6.00 am – 9.30 am) and afternoon peak period (3.00 pm – 6.30 pm) are presented in Table 6-4.

Table 6-4: Hornsby Station barrier counts for 2013

Time	Station entries (number of customers)	Station exits (number of customers)
6.00 – 9.30 am	5,230	2,200
3.00 – 6.30 pm	3,120	4,680

Source: Bureau of Transport Statistics (2014)

Bus services

The Hornsby bus interchange is located on the western side of the station (refer to Figure 6-1). This facility accommodates six bus stands (located on Station Street) as well as additional space for terminating or waiting services. Key bus routes operating in the area include:

- The high-frequency M60 services operating between Hornsby and Parramatta via Castle Hill. M60 services operate from Hornsby approximately every 10 minutes during the morning peak (7.00 am to 9.00 am). Similar service frequencies operate to Hornsby during the afternoon peak (5.00 to 7.00 pm).
- Route 575 services operating between Hornsby and Macquarie University. These services operate from Hornsby approximately every 20 minutes during the morning peak (7.00 am to 9.00 am). Services operate to Hornsby approximately every 30 minutes during the afternoon peak (5.00 pm to 7.00 pm).

A full list of bus routes servicing the Hornsby bus interchange is provided in Tables 2-3 and 2-4 of Technical Paper 1 (Traffic and Transport).

Pedestrian facilities

Hornsby Station is located in a highly developed retail and commercial area, with a large number of pedestrian facilities and crossing opportunities on either side of the station.

On the eastern side of the station, there is stair access from the main concourse to the western side of George Street and the two commuter car parks. A pedestrian bridge is also located across George Street providing direct connections between the station concourse and Florence Street and the retail area. Furthermore, there are signalised pedestrian crossing facilities on George Street at the Pacific Highway (south of the station) and Burdett Street (north of the station). A fence is located along the central reservation to prevent pedestrians crossing George Street between the intersections.

On the western side of the station, the main concourse is easily accessed at ground level via Station Street. In the immediate vicinity there is a two-stage zebra crossing facility at Station Street and a signalised pedestrian crossing is located at the Pacific Highway/Station Street intersection.

East-west pedestrian access across the rail corridor is provided at the following three locations:

- via the George Street pedestrian overbridge and Hornsby Station concourse
- via the Pacific Highway overbridge
- via the Bridge Road overbridge.

Cyclist facilities

There are several bicycle parking facilities in the vicinity of Hornsby Station. These include two secure cycle storage facilities, each containing 12 individual bicycle lockers. These facilities are operated by Transport for NSW and may be hired for three, six, nine or 12 month periods.

The closest bicycle racks are located on Station Street to the west of the station, with combined capacity for 18 bicycles. There are also cycle racks to the east of the station at Burdett Street and in the precinct surrounding Westfield Hornsby. The locations of designated bicycle storage in the vicinity of Hornsby Station are shown in Figure 2-6 of Technical Paper 1 (Traffic and Transport).

6.1.2. Potential impacts

Construction phase

Site access

The construction compound would be accessed via the existing entry and exit point for the Hornsby Station at-grade commuter car park (off George Street). This vehicle entry would continue to operate as a left-in / left-out access point and, as such, there is unlikely to be any visibility concerns associated with construction vehicles entering or exiting the construction compound. The existing traffic island and four car parking spaces to the north of the access would be removed to ensure construction vehicles can access and exit the site safely.

During the network morning peak hour, it is anticipated that up to fourteen construction vehicles would access and exit the site (refer to Table 6-5).

In addition to the main site access point, vehicles would use existing Sydney Trains' maintenance access gates to enter the rail corridor for track remodelling and signalling works. They would be used less frequently and with a much lower volume of vehicles than the main access at the existing commuter car park. The impact of construction vehicles using the additional access gates on the local road network is considered to be negligible given the small number of construction vehicles that are anticipated to infrequently use a given access gate.

Traffic impacts

Existing traffic volumes during the morning peak hour (7.00 am to 8.00 am) at key intersections along the assumed haulage routes and the anticipated construction vehicles are shown in Table 6-5.

Table 6-5: Construction vehicle impacts – morning peak hour

Intersection	Existing traffic conditions		Maximum estimated construction traffic volumes	Increase in traffic relative to existing traffic volumes
	Existing traffic volumes	Level of Service (LoS)		
Pacific Highway/ George Street	2,652	LoS B	14	0.53%
George Street/ Burdett Street	2,034	LoS A	14	0.69%
George Street/ Bridge Road/ Railway Parade	1,924	LoS D	14	0.73%
Bridge Road/ Pacific Highway	2,094	LoS B	14	0.67%

As indicated in Table 6-5, the hourly construction vehicles would represent less than one per cent of the total existing traffic at each of the assessed intersections. It can therefore be concluded that the impact of the anticipated construction traffic of the Proposal is unlikely to have a material impact on the local road network.

It should be noted, however, that the George Street / Bridge Road / Railway Parade intersection currently operates at Level of Service (LoS) D, meaning it is approaching an unstable flow of traffic. Therefore, construction traffic associated with this Proposal would be more likely to have a material impact at this intersection than the other assessed intersections on the local road network.

As discussed in Section 3.2.3, rail operations at Hornsby Station would be required to close for an eight day period around Christmas 2017. During this time replacement bus services would be provided by Sydney Trains. As the replacement bus services would be provided over an eight day period around Christmas, the morning peak hour traffic on the local road network in the vicinity of the station would be expected to be lower than normal. Therefore, the replacement buses would not be expected to cause a material impact on the operation of the above intersections.

Parking impacts

Construction of the Proposal would temporarily impact on the main Hornsby Station commuter car park. These impacts would occur as follows:

- temporary relocation of approximately 90 commuter car parking spaces from the existing Hornsby Station car park during the proposed enabling works for the Proposal (refer to Table 3-1). These relocated commuter car parking spaces are anticipated to be required from mid-2016 for approximately nine months.
- temporary closure of the Hornsby Station commuter car park on George Street and relocation of approximately 370 parking spaces during the construction of the Hornsby Junction Remodelling and commuter car park. This commuter car park is anticipated to be fully closed for approximately 10 months, from January 2017 to October 2017

The three smaller commuter car parks (with a combined capacity of 96 car spaces) would not be affected by the works.

To manage potential parking impacts during construction of the Proposal, Transport for NSW is currently preparing a car parking offset strategy to identify temporary parking options during the closure of the commuter car park. Various options are currently being considered to address the loss of approximately 370 parking spaces from the commuter car park, including:

- changes to angle of car parking in Florence Street, May Street, Frederick Street and Jersey Street to gain additional on-street parking
- provide additional off-site parking on private property.

The car parking offset strategy would be further developed during detailed design; and further assessment of impacts would be undertaken as required.

As discussed in Section 3.2.6, up to 80-100 construction staff are anticipated to access the construction compound during the peak construction works. Staff would be encouraged to travel by public transport; however, if they drive they would be required to park outside a 600 metre radius of the construction site. Therefore, construction staff would not impact the operation of the road network in the immediate vicinity of the construction site or commuter car parking.

Impacts to rail services

As discussed in Section 3.2.3, rail operations at Hornsby Station would be required to close for an eight day period around Christmas 2017. During this period, the anticipated train passenger journey numbers are expected to be approximately 50 per cent or less of the standard peak weekday passenger numbers. This is due to the Christmas period where the number of customers travelling to and from work decreases.

During this time replacement bus services would be provided by Sydney Trains. Buses would be provided to meet the anticipated demand during the shutdown period and would align with the current train timetable times.

Pedestrian and cycling impacts

Impacts on pedestrians, including along the pedestrian desire line to the east of the station, are anticipated to be minimal. Pedestrians would continue to use the footbridge over George Street or the crossing facilities on Station Street on the western side of the station. Therefore pedestrians are not anticipated to be directly impacted from the construction vehicles and their anticipated haulage routes.

Cyclists would continue to use the cycle parking facilities on the western side of the station and therefore the construction traffic, using the eastern side of the station, would cause minimal impacts to cyclists accessing the station.

Cumulative impacts

Hornsby Shire Council is partially filling Hornsby Quarry with clean excavated material from the NorthConnex tunnel. It has been identified that this would occur over a two year period from late 2015 for approximately 28 months and would result in 380 truck movements per day along George Street. It has been assumed these would occur 24 hours a day and therefore result in 16 trucks per hour that would use the same haulage route as the junction remodelling works to access the quarry via Bridge Road.

The cumulative number of vehicle movements associated with the Proposal and the filling of Hornsby Quarry has the potential to affect the performance of the local road network, particularly George Street, which would be used as a haulage route for both of these developments.

An assessment of the cumulative traffic impact that would occur during the construction of the Proposal is provided in Table 6-6.

Table 6-6: Cumulative construction vehicle impacts – morning peak hour

Intersection	Existing traffic conditions		Maximum estimated construction traffic volumes		Increase in traffic relative to existing traffic volumes
	Existing traffic volumes	Level of Service (LoS)	The Proposal	Hornsby Quarry	
Pacific Highway/ George Street	2,652	LoS B	14	16	1.1%
George Street/ Burdett Street	2,034	LoS A	14	16	1.5%
George Street/ Bridge Road/ Railway Parade	1,924	LoS D	14	16	1.6%
Bridge Road/ Pacific Highway	2,094	LoS B	14	16	1.4%

As indicated in Table 6-6, the cumulative impact of construction vehicles on the assessed intersections would be less than 2 per cent of the existing traffic volumes. This is unlikely to result in a material impact on the operation of these intersections. Notwithstanding, potential cumulative traffic impacts would be managed by the Construction Contractor through the development and implementation of a detailed Construction Traffic Management Plan, which would include measures to address cumulative traffic impacts. Transport for NSW would coordinate activities with the proponents of these other major project to minimise potential cumulative impacts.

The increase in heavy vehicle movements on the local road network could also increase the rate of road pavement deterioration. To manage this impact, a road condition survey would be undertaken prior to the commencement of construction to document the existing condition of the road surface on local streets. Should damage occur to the road surface as a direct result of the construction of the Proposal, the construction contractor would be required to 'make good' any damage sustained.

Hornsby Shire Council plan to upgrade the pedestrian footbridge between the station and Florence Street. Construction is anticipated to occur this year and the new bridge would be open early to mid-2016. It is therefore anticipated that the bulk of the footbridge construction would be completed prior to the junction remodelling construction and therefore would result in minimal cumulative impacts.

Operational phase

Hornsby Junction Remodelling

The operation of the proposed Hornsby Junction Remodelling is not expected to generate additional traffic to the Sydney Trains maintenance facilities, located at the northern end of the car park. Therefore, the operational implications on the local road network for Sydney Trains operations would be negligible.

It is assumed that the additional train patronage associated with the Hornsby junction remodelling would be aligned generally to the predicted patronage increase (32 per cent increase in year 2036 + 15 per cent) at Hornsby Station. Additional car journeys would therefore be included in the additional car parking numbers provided below.

Commuter car park

The commuter car park is anticipated to generate an additional 44 two-way trips in the morning and afternoon peak hours (Arup 2015). During the morning peak hour (the worst case scenario), the following proportion of trips are anticipated:

- 30 per cent from the north
- 20 per cent from the east
- 20 per cent from the south
- 30 per cent from the west.

In order to accommodate the commuter car park, the George Street/Burdett Street intersection would be upgraded to become a four-armed signalised intersection. Entry to the commuter car park from George Street (north) would not be permitted.

The traffic generated by the proposed car park during the morning peak hour is anticipated to have a negligible impact on the George Street/Burdett Street intersection relative to the existing operation.

Road network

The Traffic and Transport Assessment (Arup 2015) refers to the Hornsby Westside Traffic and Parking Study (Bitzios 2013) to identify critical intersections during peak traffic periods. The Pacific Highway/George Street and Bridge Road/George Street intersections were identified as critical intersections during the peak traffic periods. The traffic volumes at these intersections were compared with the development traffic during the morning peak hour to assess the impact of the additional trips generated by the proposed car park on these key intersections.

The assessment concludes that as the development traffic is less than one per cent of the existing traffic volume at both intersections, the impact on the operation of each intersection is negligible.

The proposed upgraded intersection of George Street/Burdett Street was modelled using SIDRA to analyse the performance during the operation of the car park. With the upgraded intersection design, the traffic generated by the proposed car park during the morning peak hour would have a negligible impact relative to the existing operation. The afternoon peak hour would experience slightly worse conditions during the future scenario. However, the assessment concludes the additional trips would have a minimal impact on the intersection performance.

6.1.3. Mitigation measures

The following mitigation measures are proposed to manage the potential impacts of the Proposal on traffic and transport (refer to Table 7-1):

- a detailed Construction Traffic Management Plan (CTMP) would be prepared for the Proposal to manage and minimise construction impacts. The CTMP would be produced in consultation with Transport for NSW, Roads and Maritime Services and Hornsby Shire Council prior to commencement. The CTMP would include but not be limited to the following:
 - timing of proposed works
 - hours of construction activities
 - number of construction vehicles to be used
 - designation of construction routes
 - mitigation and management measures including use of traffic control signals, construction vehicle access and traffic circulation arrangements
 - designation of temporary parking during construction works (for both the commuters and project personnel)
 - contact details for key onsite construction personnel
- site-specific traffic management issues would also be addressed through the implementation of appropriate Traffic Control Plans (TCPs) developed in consultation with the relevant Roads Authority. The TCPs would outline key details such as advanced warning signage, traffic flow management and pedestrian management measures
- maintain pedestrian access to and from Hornsby Station at all times

- where practicable, minimise the use of local and town centre roads for construction vehicle access to and from the site, with major regional roads being used for construction haulage where practicable
- where practicable, avoid the delivery of construction materials during peak commuter travel periods and school drop off/pick up times
- minimise the total number of deliveries required during construction by providing enough storage within the construction compound for stockpiling materials
- scheduling oversized deliveries and other significant traffic disrupting activities to occur at night using vehicles fitted with non-tonal reversing alarms
- avoid a net loss in accessible parking spaces at the eastern Hornsby Station entrance by relocating existing commuter parking spaces
- road occupancy licences for temporary closure of roads would be obtained, where required
- traffic management plans would be prepared and provided to the relevant roads authority as required
- heavy vehicles would be restricted to specified routes, with the aim of avoiding local streets, high pedestrian areas and school zones. Where feasible, route markers would be installed for heavy vehicles along designated routes
- limit off-site construction vehicle parking to designated areas. Areas of temporary on-street parking during peak construction events would be identified in the traffic management plans to minimise the impact on surrounding properties and businesses. Construction worker parking would not be permitted within 600 metres of the construction site
- the queuing and idling of construction vehicles in residential streets would be minimised
- an emergency response plan would be developed for construction traffic incidents
- where required, public communications would be conducted to warn the community and local residents of vehicle movements and anticipated effects on the local road network relating to site works in accordance with the CEMP
- access to all private properties adjacent to the works would be maintained during construction, unless otherwise agreed by relevant property owners
- during project inductions, all heavy vehicle drivers would be provided with the emergency response plan for construction traffic incidents
- Should damage occur to the road surface as a direct result of the construction of the Proposal, the construction contractor would be required to 'make good' any damage sustained.

6.2. Urban design, landscape and visual amenity

A Visual Impact Assessment was undertaken for the proposed Hornsby Station commuter car park by Spackman Mossop and Michaels in November 2015. (The proposed Hornsby Junction Remodelling would result in a negligible visual change in respect of the existing rail corridor and, as such, was not included in the Visual Impact Assessment.) The assessment was prepared in accordance with the *Guideline for Landscape Character and Visual Impact Assessment* (Roads and Maritime 2013). The full assessment is provided in Technical Paper 2 (Landscape and Visual Amenity). The results of the assessment are summarised below.

The study area was divided into four landscape character zones, classified based on land use and urban character. Eight key representative viewpoints from where the Proposal could potentially be visible were used to determine the Proposal’s visual impact. The Proposal’s landscape character and visual impacts were assessed using the impact assessment grading matrix (refer to Figure 6-2).

		MAGNITUDE			
		High	Moderate	Low	Negligible
SENSITIVITY	High	High Impact	High-Moderate	Moderate	Negligible
	Moderate	High-Moderate	Moderate	Moderate-Low	Negligible
	Low	Moderate	Moderate-Low	Low	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

Adapted from the *Guideline for Landscape Character and Visual Impact Assessment* (Roads and Maritime 2013)

Figure 6-2 Impact assessment grading matrix

6.2.1. Existing environment

Visual catchment

The Proposal is located in the Hornsby town centre within a highly urbanised context. The study area contains a mixture of commercial, retail, residential, recreational and educational land uses. The study area is influenced by topography, vegetation, and infrastructure. Views to the Proposal are generally constrained by the infrastructure surrounding the existing commuter car park. The visual receivers of the Proposal include residents, shoppers, workers, pedestrians, cyclists and motorists. The visual envelope map is shown in Figure 6-3.



Figure 6-3 Visual envelope map and key representative viewpoints

Landscape character zones

A description of each of the landscape character zones adopted for the purpose of informing the visual impact assessment is provided in Table 6-7. The locations of the landscape character zones are shown in Figure 6-4.

Table 6-7: Landscape character zones

Landscape character zone (LCZ)	Description	Sensitivity
LCZ 1 – Commercial/residential (high density) zone	<p>LCZ 1 is located on the eastern side of the railway line. The zone is the most visually prominent LCZ within the Hornsby area.</p> <p>The LCZ is a busy commercial centre, dominated by the Westfield Hornsby Shopping Centre. A pedestrian mall leads into the shopping centre and links the Hornsby Library. A series of light industrial stores, workshops and garages are located between Bridge Road and Burdett Street. There are three residential apartment blocks within this zone, which are up to thirteen stories high.</p> <p>Multi-level office buildings are also located within this zone. The area is fed directly via a pedestrian foot bridge descending from Hornsby Station, which accentuates the sense of movement of workers, shoppers and vehicles throughout the area.</p> <p>The zone contains minimal vegetation, with scattered planter beds and some small street trees located throughout the zone.</p> <p>Views to the proposed car park would be possible for some of the higher stories of the commercial and residential properties within the zone.</p>	<p>LCZ 1 was assessed to have a low sensitivity due to the highly commercial and homogenous urban character of the zone.</p>
LCZ 2 – Residential (low to medium density) zone	<p>LCZ 2 is located on the eastern side of the railway line. The zone includes varying types of residential built forms, comprising medium sized apartment blocks, units and detached housing, and single lane streets. Grassed verges and layers of shrubbery on property boundaries and beneath mature street trees create a suburban character.</p> <p>LCZ 2 is adjacent to LCZ 1 and most views to the proposed car park are screened by the buildings in LCZ1.</p>	<p>LCZ 2 was assessed to have a moderate sensitivity due to the residential nature of the zone.</p>

Landscape character zone (LCZ)	Description	Sensitivity
<p>LCZ 3 – Hornsby town centre zone</p>	<p>LCZ 3 is located on the western side of the railway line. The zone consists of a traditional shopping village. Antique lamp posts are preserved along a small section of the highway and alfresco dining is located near established, mature trees. On-street parking slows traffic through the space and allows ease of pedestrian access to the variety of stores.</p> <p>The police station, court house and Hornsby Shire Council Chambers reflect architecture dating to 1915, and add to the historic sense of place of the area. Hornsby Park, Hornsby Aquatic Centre and Hornsby TAFE also contribute to the character of the zone. A small park and war memorial is located immediately outside the police station entrance and which also serves as a meeting place or drop off/pick up area.</p>	<p>LCZ 3 was assessed to have a moderate sensitivity due to heritage aspects and the quieter nature of the zone.</p>
<p>LCZ 4 – Infrastructure road and rail zone</p>	<p>LCZ 4 is located on the western side of the railway line. The zone includes the transport network and bisects LCZ 1, LCZ 2, and LCZ 3. The zone includes Hornsby Railway Station, the rail lines, the existing commuter car park, the bus stops, the taxi rank, and the road network.</p> <p>LCZ 4 is predominantly functional, consisting of hardwearing materials such as asphalt, concrete and steel. Overhead wires occupy the airspace immediately above the existing commuter car park and railway and feed into the stabling yard and large railway workshop at the northern end.</p> <p>Pedestrian movement around the zone is regimented and desire lines are restricted by fences and signalised intersections.</p> <p>A large area of mixed vegetation exists on the eastern car park batter slope which meets ground level on George Street, adjacent to the northbound travel lane. Tall trees and dense shrub occur amidst a variety of groundcovers.</p>	<p>LCZ 4 was assessed to have a low sensitivity.</p>

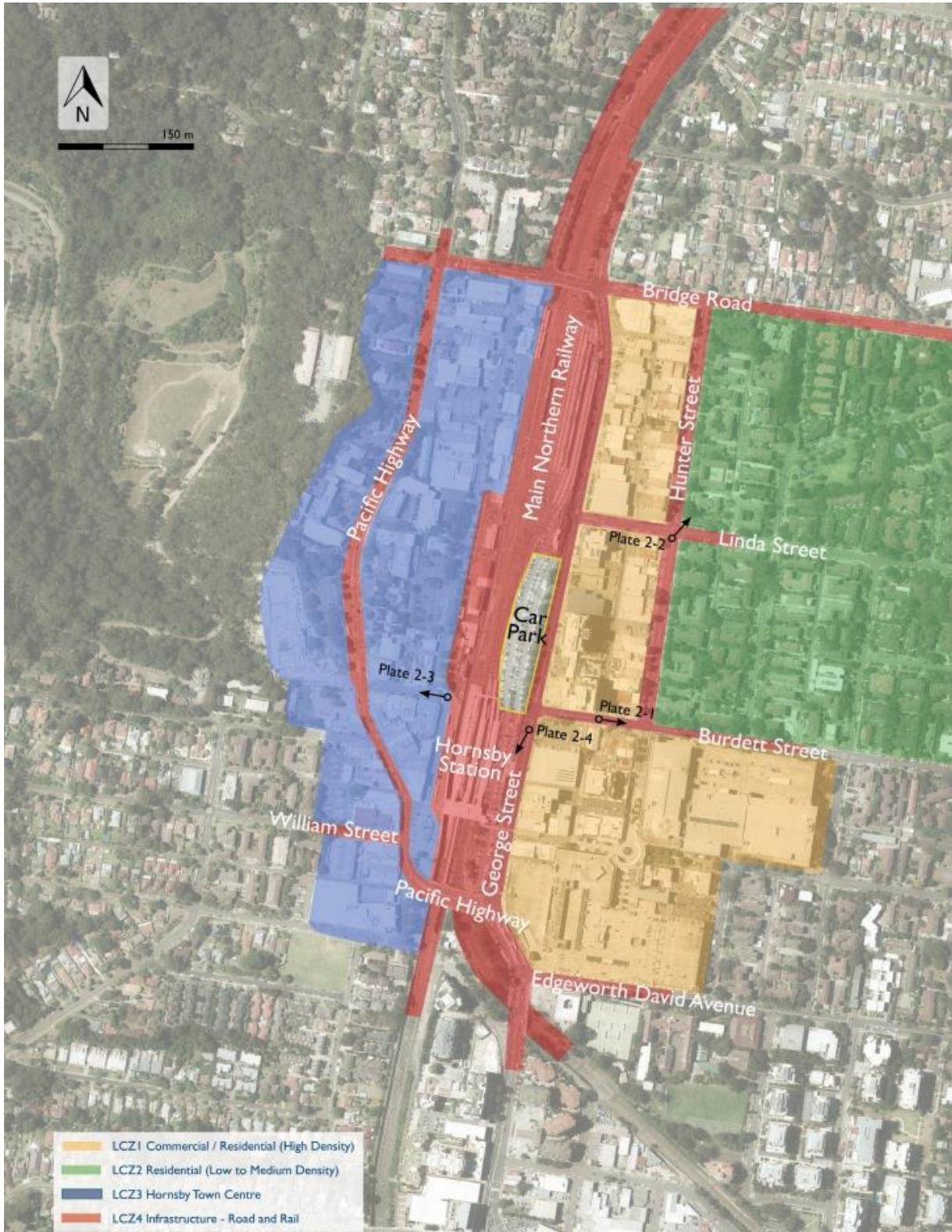


Figure 6-4 Landscape character zones

6.2.2. Potential impacts

Construction phase

The construction of the Proposal may cause temporary adverse visual amenity impacts for surrounding sensitive receivers (listed in Section 1.2.3 of this REF) due to:

- the establishment of the construction compound, stockpile sites and worksites
- erection of fencing, barricades, gates and lighting for the provision of safe and secure worksites
- construction vehicle movements within construction sites and along haulage routes
- traffic disruption associated with construction traffic
- visual impacts associated with the removal of existing street plantings, earthworks and the parking/use of construction plant and vehicles.

The impact of the Proposal on individual sensitive receivers would be dependent on the stage of the construction, their location and severity of the impact. Visual amenity impacts would be greatest at locations where sensitive receivers have an unscreened view of the construction site. Over time, impacts would be reduced through the gradual reinstatement of the site. In general, it is anticipated that the majority of sensitive receivers located within close proximity to the construction works, construction compound, stockpile sites and construction access routes would experience a temporary reduction in visual amenity.

Construction of the proposed commuter car park is anticipated to be highly visible due to the height of the proposed structure and the topography of the surrounding landscape. Light spill from construction sites would also affect the visual amenity of adjacent land uses. During construction, security lighting would be required at the construction compound to prevent and discourage the unauthorised access by members of the public. Lighting would also be required during scheduled night-works.

Safeguards and management measures that would be implemented to manage visual amenity impacts on surrounding heritage items are outlined in Section 6.2.3.

Operational phase

Landscape character assessment

The Proposal would have a moderate to low impact on the surrounding landscape, with improvements to the urban character of the area through the formalisation of additional parking and a better integrated design along George Street that fits with the urban character of the area and should provide an improved aesthetic view. During operation, the following structures would contribute to the visual impact of the Proposal:

- proposed commuter car park
- permanent façade and fencing
- landscaping and removal of vegetation
- traffic lights at the George Street intersection.

Generally the visual impact from the Proposal would be moderate to low. Potential impacts of the Proposal on each of the landscape character zones are summarised in Table 6-8.

Visual impact assessment

The potential impact of the Proposal on visual amenity was assessed for eight key representative viewpoints. These impacts are summarised in Table 6-9 and include:

- a low visual impact at three viewpoints
- a moderate to low visual impacts to four viewpoints
- a moderate visual impact at one viewpoint.

Table 6-8: Potential impacts on landscape character zones

Landscape character zone	Sensitivity of zone	Magnitude of change	Description of operation impacts	Landscape character impact
Landscape character zone 1	Low	Moderate	<p>The Proposal would have a visual impact within this zone. However, the new commuter car park would reflect the predominantly built character of the zone.</p> <p>The zone's eastern edge currently has views onto the existing car park and would look directly onto the proposed commuter car park. This edge of the zone would be exposed to the change in formation, particularly the shops and light industry to the northern end.</p> <p>Although no viewpoints were taken from the apartment blocks located on George Street, Burdett Street and Hunter Lane, it is evident through the height of the three buildings, that views onto the car park would be affected in every storey above ground floor. The formalisation of the car park would provide a better integrated design along George Street that fits with the urban character of the area and should provide an improved aesthetic view from the apartments, particularly through the removal of the overhead wiring above the existing car park. The finish to the wall of the car park may however have the potential to reflect glare and heat from the morning sun into the resident's apartments.</p> <p>The green edge which screens the existing car park, provides a softening function to the edge of landscape character zone 1 and landscape character zone 4, and may be appreciated by the residents of the apartment blocks. The removal of the existing vegetation would alter the view from this zone; however, the provision of new landscaping and the urban design would reduce the visual impact of the Proposal.</p>	Moderate to low
Landscape character zone 2	Moderate	Low	<p>The majority of the zone would experience negligible impact as a result of the car park development. The residential zone would be unaffected by the Proposal due to the screening effect of the buildings in landscape character zone 1, which are located between this zone and the proposed commuter car park. There is potential increased traffic on Burdett Street due to the proposed phasing of the traffic lights at the George Street intersection, which may affect traffic up to the start of landscape character zone 2 at Hunter Street.</p>	Moderate to low

Landscape character zone	Sensitivity of zone	Magnitude of change	Description of operation impacts	Landscape character impact
Landscape character zone 3	Moderate	Low	<p>The Proposal has negligible impact in this zone. The top floor car park level sits marginally above the existing car park level. The vehicle barrier, top of stairwell and elevator housing sit 2.5 metres above the first floor, and although they may potentially be visible from landscape character zone 3, the series of cables, fencing and rail components spread across the rail infrastructure would make it difficult to view.</p> <p>The removal of the existing vegetation on the site would have a minor visual impact from landscape character zone 3. The canopy of some of the larger trees can be seen from the bus terminal and Railway Hotel on Station Street.</p>	Moderate to low
Landscape character zone 4	Low	Moderate	<p>The existing commuter car park is in high demand, with cars using space not formally designated for parking. The new design would formalise the layout and provide an ease of entry and exit on to George Street. Phasing the traffic lights at Burdett Street with vehicle entry and exit from the car park would allow a more efficient and safe transition onto the road.</p> <p>The proposed design would give the car park a definitive edge, where it would meet street level and frame the extent of RailCorp land. Opportunities exist to return the existing vegetation to George Street and soften the impervious, functional zone.</p>	Moderate to low

Table 6-9: Visual impact assessment

Viewpoint	Sensitivity	Magnitude	Impact
<p>Viewpoint 1 – 108 George Street (visible to pedestrians, cyclists and motorists)</p> 	<p>Low</p>	<p>Moderate</p> <p>The Proposal would be prominent from this view, yet would sit within the current context of the zone. The Proposal is an upgrade of the existing car park.</p> <p>Replacement planting along the verge next to the Proposal would mitigate the magnitude of the impact of the works, as the vegetation matures.</p> <p>It is unlikely that the visual impact of the site establishment or construction machinery would be of high magnitude.</p>	<p>Moderate to low</p>
<p>Viewpoint 2 – Burdett Street and Hunter Street intersection (visible to workers, residents, motorists, and pedestrians)</p> 	<p>Low</p>	<p>Low</p> <p>As the site would remain as a commuter car park, the magnitude of change on the current form would be low. No clearing of vegetation would take place from this view.</p>	<p>Low</p>

Viewpoint	Sensitivity	Magnitude	Impact
<p>Viewpoint 3 – Corner of George Street and Burdett Street (visible to motorists, pedestrians, and cyclists)</p> 	<p>Low</p>	<p>Moderate</p> <p>A notable change to the current form would take place if vegetation is not replaced. Replacement planting would mitigate the magnitude of the works, as they mature.</p> <p>During construction, the temporary concrete safety barriers and fencing to create a safe work zone would be visible.</p>	<p>Moderate to low</p>
<p>Viewpoint 4 – Pedestrian footbridge (visible to pedestrians)</p> 	<p>Moderate</p>	<p>Moderate</p> <p>Elements of the Proposal would be visible from this view as the vegetation along George Street would be removed. However, replacement planting would mitigate the impact as they mature.</p> <p>Temporary fencing and storage facilities, stockpile areas, site buildings and other facilities may be visible.</p>	<p>Moderate</p>

Viewpoint	Sensitivity	Magnitude	Impact
<p>Viewpoint 5 – Hornsby town centre, west side of the railway (visible to pedestrians, park users, motorists, and bus and taxi patrons)</p> 	Moderate	<p>Negligible</p> <p>The Proposal would have a negligible effect on the magnitude of change from this viewpoint. The elevator shafts and stairwells would potentially be visible.</p>	Low
<p>Viewpoint 6 – Station Street outside Railway Hotel (visible to pedestrians, workers, Railway Hotel, and café patrons)</p> 	Moderate	<p>Low</p> <p>The current view from The Railway Hotel and cafe is of the railway and commuter car park. The Proposal is synonymous with the existing land use and would only slightly differ in height, causing a low magnitude rating.</p>	Moderate to low

Viewpoint	Sensitivity	Magnitude	Impact
<p>Viewpoint 7 – Hornsby Railway Station, eastern side of the railway, Platform 1 stairway landing (visible to rail customers)</p> 	Low	<p>Moderate</p> <p>The change in car park form would be evident from this view; however the appearance of the car park would be very similar to the existing view, particularly during construction. The new formalised arrangement of vehicles and removal of overhead wiring would have a positive impact.</p>	Low to moderate
<p>Viewpoint 8 – Jersey Street, western side of the railway (visible to pedestrians)</p> 	Low	<p>Negligible</p> <p>The magnitude of change to the current view would be negligible. Construction of the Proposal would result in the removal of vegetation only sighted from the viewpoint through gaps in fencing and buildings.</p>	Low

6.2.3. Mitigation measures

The following design principles are proposed to protect and enhance the existing visual character of Hornsby Junction and its surrounds, where possible (refer to Table 7-1):

- anti-graffiti coating would be provided to elements of the buildings and wall finishes which are accessible to the public
- layered planting, including the provision of medium height trees, would be provided along the eastern edge of the Proposal to:
 - provide visual amenity for the road user, pedestrian and residents
 - provide shade to pedestrians and parked cars
 - mitigate the hard surface character and magnitude of works, as the vegetation matures
- about 80 square metres of redundant footpath at the northern part of George Street, from the stair shaft to the extent of works boundary can be redesigned to allow for replacement of vegetation in this area and the mitigation of the visual impact of the structure
- the following building facades are proposed; however, would be determined during detailed design:
 - the long facade of the building which borders George Street would be finished with vertical, irregular spaced aluminium sheets, to assist breaking up the monotonous form of the Proposal and help soften its edge by allowing air and light through the structure
 - the finish of the ground level wall would be of a textured pattern, or tactile appearance of either an exposed aggregate or tile cladding
 - the upper parapet can be concrete finish, concrete with an added oxide, or painted concrete to provide a look of formalised capping to the Proposal
 - the parapet would be finished with a double rail which spans the length of the building. This galvanized rail would have the effect of reducing the apparent height of the structure as well as prevent the public from walking along the top of the wall.

The following mitigation measures are proposed to manage the potential construction landscape character and visual impacts of the Proposal (refer to Table 7-1):

- detail design and documentation drawings would define the extent of all construction activity including temporary works in order to protect the area of vegetation immediately adjacent during construction
- construction facilities would be contained within the construction works zone boundary and occupy the minimum area practicable for their intended use
- prior to construction, provide suitable barriers, such as shade cloth or a similar material, to screen views from adjacent areas during construction
- existing trees to be retained within construction facilities areas would be identified, protected and maintained
- minimise light spill from the rail corridor into adjacent visually sensitive properties by directing construction lighting into the construction areas and ensuring the site is not over-lit. This includes the sensitive placement and specification of lighting to minimise any potential increase in light pollution
- heritage items should be protected
- once construction is complete, or progressively throughout the works where possible, return compound sites to at least their pre-construction state.

6.3. Noise and vibration

A Noise and Vibration Impact Assessment was undertaken for the Proposal by Jacobs in November 2015. The full assessment is provided in Technical Paper 3 (Noise and Vibration). The results of the assessment are summarised below.

6.3.1. Existing environment

Background noise

The Proposal is located within and immediately adjacent to an existing operating rail corridor (used for both passenger and freight train operations). Rail and road traffic noise and noise from station operations are likely to be key factors influencing background noise levels in the vicinity of the Proposal.

Background noise levels were monitored at the following sensitive receiver locations between the 13 and 26 November 2015:

- Monitoring Location 1: residential property on level 2 of the Avanti units (88-90 George Street, Hornsby).
- Monitoring Location 2: residential property on level 12 of the Avanti units (88-90 George Street, Hornsby).
- Monitoring Location 3: residential property at Jersey Street, Hornsby.

The locations of these monitoring sites are shown in Figure 6-5. These monitoring locations were used to provide representative noise levels for the following three basic noise environments:

- George Street – street level (based on Monitoring Location 1)
- George Street – high level units (based on Monitoring Location 2)
- other residential areas (based on Monitoring Location 3)

The results of the background noise monitoring are presented in Appendix B of Technical Paper 3 (Noise and Vibration) and summarised in Table 6-10.

The three primary noise metrics used to describe construction noise emissions include:

- L_{A1} – the ‘typical maximum noise level’ for an event, used in the assessment of potential sleep disturbance during night-time periods. Alternatively, assessment may be conducted using the L_{Amax} or maximum noise level
- L_{Aeq} – the ‘energy average noise level’ evaluated over a specified time period (for example 15 minutes). The $L_{Aeq(15\text{ minute})}$ parameter is used to assess the potential construction noise impacts
- Rating Background Level (RBL) – the ‘background noise level’ in the absence of construction activities. This parameter represents the average minimum noise level during the daytime, evening and night-time periods respectively (also referred to as L_{A90}). The $L_{Aeq(15\text{ minute})}$ construction Noise Management Levels (NMLs) are based on the L_{A90} background noise levels.

The subscript ‘A’ indicates that the noise levels are filtered to match normal human hearing characteristics (i.e. A-weighted).

Table 6-10: Summary of background noise monitoring results

Monitoring location	Time period	L _{Aeq} dB(A)	L _{A1} dB(A)	RBL dB(A)
Monitoring Location 1: Avanti units - Level 2	Day (7 am to 6 pm)	68.7	75.5	58.8
	Evening (6 pm to 10 pm)	65.8	72.7	49.2
	Night (10 pm to 7 am)	62.7	71.5	40.0
Monitoring Location 2: Avanti units - Level 12	Day (7 am to 6 pm)	62.8	71.3	43.1
	Evening (6 pm to 10 pm)	63.6	71.5	55.8
	Night (10 pm to 7 am)	62.2	70.4	44.6
Monitoring Location 3: Jersey Street	Day (7 am to 6 pm)	61.8	70.1	46.6
	Evening (6 pm to 10 pm)	61.1	69.0	43.9
	Night (10 pm to 7 am)	58.0	67.5	35.6

The results in Table 6-10 indicate that the existing noise environment is influenced by rail and road traffic noise. For example, while 'background noise levels' (represented in Table 6-10 as RBL) decrease considerably during the night-time period the corresponding 'energy average noise levels' (L_{Aeq}) remain considerably high. This data is indicative of a night-time noise environment that is dominated by short term relatively loud noises, such as a passing train and/or noisy road vehicle. During daytime hours, noise levels are influenced by a variety of long and short term noise sources.

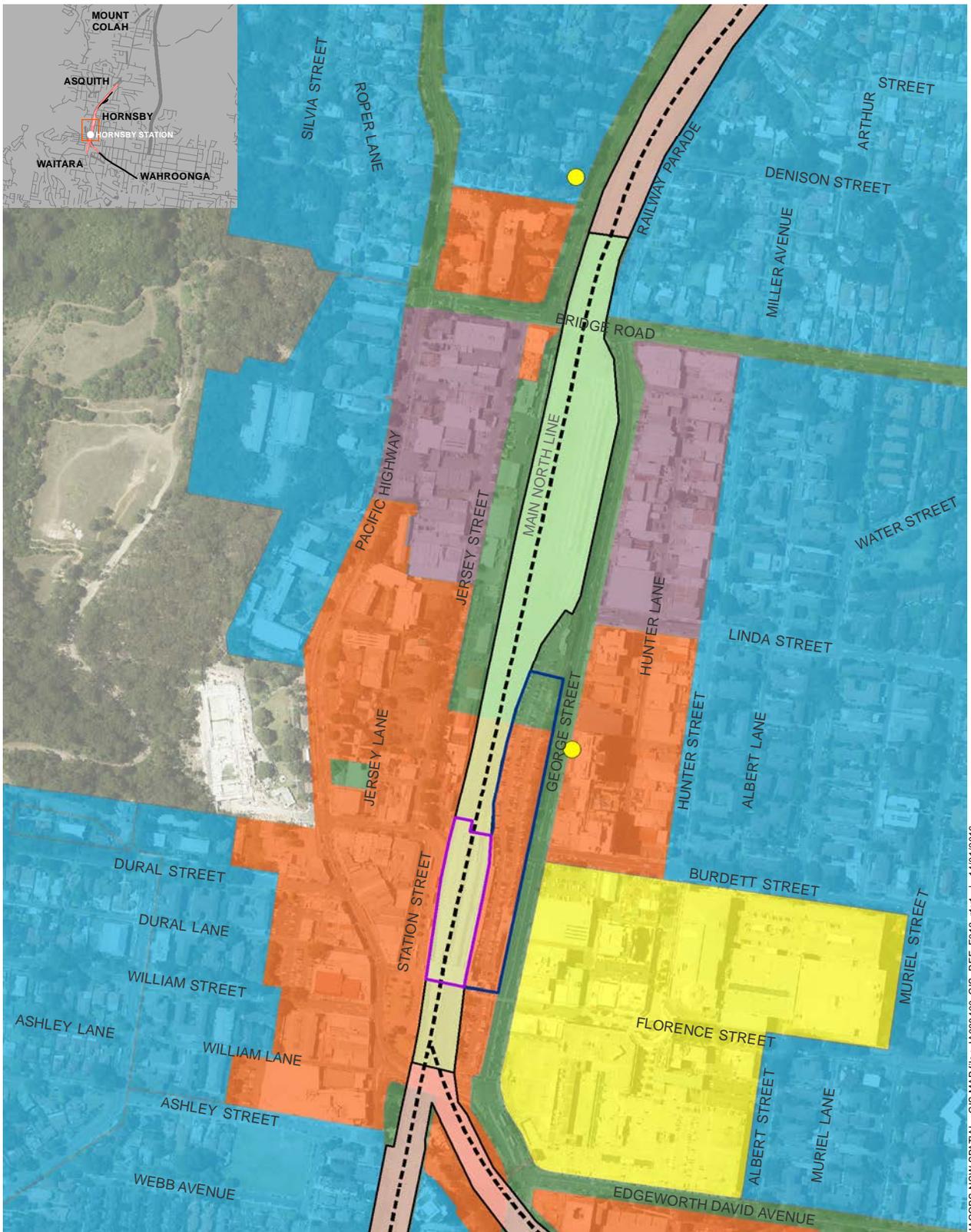
The results in Table 6-10 also show that the L_{Aeq} dB(A) noise levels at higher levels of the George Street units remain largely unchanged throughout the 24 hour daytime period. These properties are exposed to a wider field of background noise and, as such, night time background noise levels (L_{A90}) do not show the extent of decrease that is apparent at street level.

Sensitive receivers

Noise sensitive receivers

There are a number of noise sensitive land uses within the vicinity of the Proposal, including residential dwellings, commercial premises (e.g. cafes, restaurants and retail/commercial buildings), educational facilities (e.g. TAFE NSW's Hornsby Collage) and public recreation areas (e.g. Hornsby Park and Hornsby Aquatic and Leisure Centre).

The nearest sensitive receivers comprise residential properties located along the northern end of Jersey Street and large residential units located on George and Hunter streets (refer to Figure 6-5). Land uses in the vicinity of the Proposal are shown in Figure 6-5.



JACOBS NSW SPATIAL - GIS MAP file : JA088400_GIS_REF_F012_r1v1 | 14/01/2016

Legend

- Proposed Signalling Work
- Proposed Trackwork
- Hornsby Station
- Hornsby Station multi-storey commuter car park
- Monitoring location
- Rail line

- LEP Zone**
- Residential
 - Infrastructure
 - Business Development (light industrial / commercial)
 - Mixed use (commercial and residential)
 - Commercial Core



Data sources
 Jacobs 2015
 Ausimage 2014
 LPI 2014
 Hornsby LEP 2013

Figure 6-5 | Surrounding land uses and background noise monitoring locations

Vibration sensitive receivers

As outlined in Section 6.5, there are a number of heritage items of local significance located within the study area. Heritage structures can be particularly susceptible to damage from ground vibration. The nearest vibration sensitive heritage items are listed in Table 6-11. The locations of these items are shown in Figure 6-5.

Table 6-11: Vibration sensitive receivers

Receiver	Approximate distance from nearest works
Hornsby Railway Station	Within work zone
SRA electricity plant and signal box	5 – 10 metres
Peats Ferry Road precinct	100 metres
WWI War memorial	180 metres
Jersey Street shops	50 metres
The Browsery cottage	50 metres
TAFE buildings K&M	100 metres

6.3.2. Noise and vibration assessment criteria

Construction noise

Residential receivers

The *Interim Construction Noise Guideline* (ICNG) sets out ways to deal with the impacts of construction noise on residences and other sensitive land uses. It does this by presenting assessment approaches that are tailored to the scale of construction projects.

For construction work during standard daytime hours, a $L_{Aeq(15\text{minute})}$ noise management level (NML) of the rating background level (RBL) + 10 dBA applies for residential receivers. This is aimed to represent the level above which there may be some community reaction to construction noise.

Refer to Table 6-12 for the NMLs at the nearest residential receivers.

Table 6-12: Summary of existing background noise monitoring results and NMLs

Location	Parameter	Construction NMLs – $L_{Aeq(15\text{ minute})}$ dB(A)		Sleep disturbance
		Day (7 am – 6 pm)	Night (10 pm – 7 am)	$L_{A1(1\text{ minute})}$ dB(A)
George Street – street level	RBL	59	45	45
	Allowance	+10	+5	+15
	NML	69	50	60
George Street – high units	RBL	43	52	52
	Allowance	+10	+5	+15
	NML	53	57	67
Other residential areas	RBL	47	40	40
	Allowance	+10	+5	+15
	NML	57	45	55

Where the predicted levels exceed the NML, all feasible and reasonable work practices would be applied to minimise the potential noise impacts. Where $L_{Aeq(15\text{minute})}$ construction noise levels are predicted to exceed 75 dBA, a receiver may be considered 'highly noise affected' and additional measures, such as the implementation of respite periods, may be implemented.

The ICNG and *Road Noise Policy* (DECCW 2011) also set out ways to deal with the impacts of construction noise on sleep disturbance. Residents are usually most annoyed by work at night-time as it has the potential to disturb sleep. Factors that may be important in assessing the extent of impact on sleep include how often high noise events occur at night, the predicted maximum noise levels at night, whether there are times when there is a clear change in the noise environment (such as early morning shoulder periods), and the degree of maximum noise levels above the background levels at night.

Refer to Table 6-12 for the sleep disturbance NMLs at the nearest residential receivers.

Commercial Receivers

The ICNG explains that due to the broad range of sensitivities that commercial or industrial land can have to noise from construction, the process of defining management levels is separated into three categories:

- industrial premises: external $L_{Aeq(15\text{minute})}$ 75 dBA
- offices, retail outlets: external $L_{Aeq(15\text{minute})}$ 70 dBA
- other businesses that may be very sensitive to noise, where the noise level is project specific as discussed below.

The above noise management levels apply only when the property is in use.

Other Sensitive Land Uses

Noise management levels applicable to other sensitive land uses are summarised as follows:

- classrooms and other educational institutions: $L_{Aeq(15\text{ minute})}$ 55 dB(A) (internal)
- passive recreation areas (quiet recreation): $L_{Aeq(15\text{ minute})}$ 60 dB(A)

The above noise management levels apply only when the receiver is in use.

Construction vibration

The effects of vibration in buildings can be divided into three main categories: those in which the occupants or users of the building are inconvenienced or possibly disturbed, those where the building contents may be affected and those in which the integrity of the building or the structure itself may be prejudiced.

Guidance on appropriate plant and equipment and associated recommendations for safe working distances is provided in a number of publications, as detailed below.

The recommended safe working distances for building structural damage and human comfort are identified in the EPA's *Assessing Vibration: a technical guideline* (DEC, 2006).

The *Construction Noise Strategy* (TfNSW, 2012a) recommends the minimum safe working distances for large hydraulic hammers to be 22 metres for cosmetic damage and 73 metres for human response.

The EPA's *Assessing Vibration: a technical guideline* (DEC, 2006) provides guideline values for continuous, transient and intermittent events that are based on a Vibration Dose Value (VDV) rather than a continuous vibration level. The VDV is dependent upon the level and duration of the short-term vibration event, as well as the number of events occurring during the daytime or night-time period.

Guidance is also provided in the German Standard (DIN4150:3) for the effects of long term vibration.

The relevant vibration criteria are provided in Tables 6-13 and 6-14.

Table 6-13: DIN4150:3 guideline vibration velocity values for evaluating effects of long term vibration

Type of structure	Vibration at horizontal plane of highest floor
Dwellings and buildings of similar design and/or occupancy	5mm/s
Buildings used for commercial purposes, industrial buildings, and buildings of similar design	10mm/s
Structures that, because of their particular sensitivity to vibration, cannot be classified under lines 1 and 2 and are of great intrinsic value (e.g. listed buildings under preservation order)	2.5mm/s

Notes: Guideline values presented at Peak Particle Velocity (PPV)
Vibration at horizontal plane of highest floor applies to all frequencies.

Table 6-14: Recommended safe working distances for vibration intensive plant

Plant item	Rating/description	Cosmetic damage (BS7385)	Human response (DEC)
Small hydraulic hammer	300 kg (5 to 12T) excavator	2 metres	7 metres
Medium hydraulic hammer	900 kg (12 to 18T) excavator	7 metres	23 metres
Large hydraulic hammer	1600 kg (18 to 34T) excavator	22 metres	73 metres
Vibratory pile driver	Sheet piles	2 to 20 metres	20 metres
Pile boring	≤ 800 mm	2 metres (nominal)	n/a
Jackhammer	Handheld	1 metre (nominal)	Avoid contact with structure

Notes: Table data reproduced from TfNSW's Construction Noise Strategy
BS 7385 – British Standard 7385 Evaluation and measurement for vibration in buildings
DEC = Department of Environment and Conservation NSW (now EPA)

Operational rail noise

For airborne noise created by the operation of surface track, the NSW Rail Infrastructure Noise Guidelines (RING) provides noise trigger levels for rail infrastructure projects, including for the 'redevelopment of an existing railway line'.

The noise trigger levels for residential and non-residential noise sensitive receiver locations are provided in Tables 6-15 and 6-16, respectively.

Table 6-15: RING noise trigger levels for residential receivers

Type of development	Noise trigger levels (external) dB(A)	
	Day (7am to 10pm)	Night (10pm to 7am)
Redevelopment of existing train line	Development increases existing $L_{Aeq(Period)}$ rail noise levels by 2dB or more (or existing L_{Amax} rail noise levels by 3dB or more) AND predicted rail noise levels exceed:	
	65 $L_{Aeq(15\text{ hour})}$	60 $L_{Aeq(9\text{ hour})}$
	85 $L_{Amax(Fast)}$	85 $L_{Amax(Fast)}$

Table 6-16: RING noise trigger levels for non-residential land uses

Land use (when in use)	Noise trigger levels, redevelopment of existing rail line – dB(A)
	Development increases rail noise by 2dB(A) or more in any hour and rail noise exceeds:
Schools, educational facilities and child care centres (internal)	45 $L_{Aeq(1\text{ hour})}$
Places of worship (internal)	45 $L_{Aeq(1\text{ hour})}$
Hospitals wards	40 $L_{Aeq(1\text{ hour})}$
Hospitals – other uses	65 $L_{Aeq(1\text{ hour})}$
Open space – passive use	65 $L_{Aeq(15\text{ hour})}$
Open space – active use	65 $L_{Aeq(24\text{ hour})}$

Operational traffic noise

Noise from commuter car park site

The noise limits for the operational noise emissions from the proposed commuter car park are derived from the NSW EPAs *Industrial Noise Policy* (INP).

The INP provides criteria for the assessment of noise impacts associated with industrial activities. It aims to balance the need for industrial activity with the desire for quiet within the community. The INP sets two separate noise criteria: one to account for intrusive noise and the other to protect the amenity of particular land uses. These criteria are to be met at the most-affected boundary of the receiver property.

To provide for protection against intrusive noise, the INP states that the L_{Aeq} noise level of the source, measured over a period of 15 minutes, should not be more than 5 dB above the ambient (background) L_{A90} noise level (or RBL), measured during the daytime, evening and night-time periods at the nearest sensitive receivers.

To provide protection against impacts on amenity, the INP specifies suitable maximum noise levels for particular land uses and activities during the daytime, evening and night-time periods. For this assessment, the existing residences in the vicinity of the commuter car park have been defined as ‘urban residential’.

A summary of the specific noise limits for the proposed commuter car park are presented in Table 6-17.

Table 6-17: INP noise criteria for the proposed commuter car park

Receiver	Time of day	Intrusive noise criteria	Amenity noise criteria	Applicable INP noise criteria
Avanti units - Level 2	Day (7 am to 6 pm)	64	60	60
	Evening (6 pm to 10 pm)	64	50	50
	Night (10 pm to 7 am)	45	45	45
Avanti units - Level 12	Day (7 am to 6 pm)	48	60	48
	Evening (6 pm to 10 pm)	61	50	50
	Night (10 pm to 7 am)	50	45	45
Jersey Street	Day (7 am to 6 pm)	52	60	52
	Evening (6 pm to 10 pm)	49	50	49
	Night (10 pm to 7 am)	41	45	41

Operational traffic noise along road network

The NSW Road Noise Policy (RNP) provides the following guidance for the consideration of additional road traffic noise generated by a development: *'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. Potential impacts

Construction phase

To provide detailed assessment of potential noise impacts from construction works, a noise propagation model was established using the CONCAWE algorithm with SoundPLAN (version 7.3) software.

The predictions represent worst-case scenarios, as the predicted noise levels include the cumulative impact from all works occurring at the same time. It is also noted that the works would not be likely to be continuous for extended periods of time, noise levels would be expected to be lower than the calculated levels.

Daytime construction noise impacts

A summary of the predicted daytime construction noise impacts at the three assessed representative receiver locations (shown in Figure 6-5) is provided in Table 6-18. A comparison with the relevant NMLs is also presented.

A worst case exceedance of the daytime (standard construction hours) $L_{Aeq(15minute)}$ background noise level of up to 21 dBA is predicted at the most affected sensitive receiver during piling works for the car park. It is noted that these works are restricted to the daytime periods only.

Several receivers surrounding the construction works are expected to potentially be 'highly noise affected' during the following activities:

- high voltage power line relocation
- ground works and site clearance for the proposed commuter car park
- driven sheet piling for the proposed commuter car park
- earthworks for the proposed commuter car park.

In order to minimise the potential noise and vibration impacts upon nearby sensitive receivers, most construction works associated with the commuter car park would be undertaken during standard daytime construction periods (7.00 am to 6.00 pm Monday to Friday, and 8.00 am to 1.00 pm on Saturdays).

Out-of-hours construction noise impacts

A summary of the predicted night-time construction noise impacts at the three assessed representative receiver locations (shown in Figure 6-5) is provided in Table 6-18. A comparison with the relevant NMLs is also presented.

Some works would be undertaken outside of standard construction hours. It is anticipated that approximately 18 track possessions would be required to undertake the project, and these would be likely to require works to be undertaken out of standard daytime construction hours.

During proposed night time works, exceedences of up to 25dB(A) may be experienced at locations along Jersey Street during removal of the existing railway track. Similar exceedences are predicted along Jersey Street during installation of new track, and to a lesser extent during track conditioning works.

During the relocation of the high voltage power line, receivers on George Street may be 'highly noise affected' during night time activities.

It is likely that some deliveries may also take place outside standard daytime construction hours. Due to the low existing background noise levels, and the proximity of the site offices to the George Street units, deliveries outside standard construction hours may potentially exceed the out of hours NMLs. Implementation of all reasonable and feasible measures identified in the *Construction Noise Strategy* (TfNSW 2012) would see impacts as a result of noise and vibration minimised where possible.

Table 6-18: Predicted construction noise impacts

Construction activity	Receiver location	Predicted noise – dB(A)	Predicted daytime impact – dB(A)		Predicted night-time impact – dB(A)		Comments
			NML	Exceedance	NML	Exceedance	
Commuter car park							
Ancillary Compound	Avanti units - Level 2	50	69	–	50	–	Noise levels are expected to comply with NMLs at all locations during daytime hours. Where full operation is underway during night time hours, some impacts may occur at west facing receivers along George Street, particularly at the lower levels of the units.
	Avanti units - Level 12	46	53	–	57	–	
	Jersey Street	37	57	–	45	–	
High voltage overhead wire relocation	Avanti units - Level 2	>75	69	Highly noise affected	50	Highly noise affected	Some noise impacts may extend to receivers on Jersey Street; however, most noise impacts would be limited to residential properties on George and Hunter Streets. Receivers at the lower levels of the west facing George Street units may be 'highly noise affected'. During night time hours, these impacts are likely to extend further to the east, into properties along Albert Street and possibly receivers further beyond this location.
	Avanti units - Level 12	72	53	19	57	15	
	Jersey Street	50	57	–	45	5	
Ground works and site clearance	Avanti units - Level 2	>75	69	Highly noise affected	50	Highly noise affected	Some noise impacts may extend to receivers on Jersey Street; however, most noise impacts will be limited to residential properties on George and Hunter Streets. Receivers at the lower levels of the west facing George Street units may be 'highly noise affected'. If this work is required during night time, these impacts are likely to extend further to the east, into properties along Albert Street and possibly receivers further beyond this location.
	Avanti units - Level 12	73	53	20	57	16	
	Jersey Street	50	57	–	45	5	

Construction activity	Receiver location	Predicted noise – dB(A)	Predicted daytime impact – dB(A)		Predicted night-time impact – dB(A)		Comments
			NML	Exceedance	NML	Exceedance	
Driven sheet piling	Avanti units - Level 2	>75	69	Highly noise affected	50	Highly noise affected	Some noise impacts may extend to receivers on Jersey Street; however, most noise impacts would be limited to residential properties on George and Hunter Streets. Receivers at the lower levels of the west facing George Street units may be 'highly noise affected'. If this work is required during night time, these impacts are likely to extend further to the east, into properties along Albert Street and possibly receivers further beyond this location.
	Avanti units - Level 12	74	53	21	57	17	
	Jersey Street	50	57	–	45	5	
Earthworks	Avanti units - Level 2	>75	69	Highly noise affected	50	Highly noise affected	Some noise impacts may extend to receivers on Jersey Street; however, most noise impacts will be limited to residential properties on George and Hunter Streets. Receivers at the lower levels of the west facing George Street units may be 'highly noise affected'. If this work is required during night time, these impacts are likely to extend further to the east, into properties along Albert Street and possibly receivers further beyond this location.
	Avanti units - Level 12	73	53	20	57	16	
	Jersey Street	50	57	–	45	5	
Construct base car park structure	Avanti units - Level 2	75	69	6	50	25	Some noise impacts may extend to receivers on Jersey Street; however, most noise impacts would be limited to residential properties on George and Hunter Streets. If this work is required during night time, these impacts are likely to extend further to the east, into properties along Albert Street and possibly receivers further beyond this location.
	Avanti units - Level 12	71	53	18	57	14	
	Jersey Street	42	57	–	45	–	

Construction activity	Receiver location	Predicted noise – dB(A)	Predicted daytime impact – dB(A)		Predicted night-time impact – dB(A)		Comments
			NML	Exceedance	NML	Exceedance	
Car park and street infrastructure and fit out	Avanti units - Level 2	75	69	6	50	25	Some noise impacts may extend to receivers on Jersey Street; however, most noise impacts would be limited to residential properties on George and Hunter Streets. If this work is required during night time, these impacts are likely to extend further to the east, into properties along Albert Street and possibly receivers further beyond this location.
	Avanti units - Level 12	71	53	18	57	14	
	Jersey Street	42	57	–	45	–	
Roadwork at George Street / Burdett Street intersection	Avanti units - Level 2	68	69	-	50	18	Noise levels arising from roadwork activities in the vicinity of the George / Burdett Street intersection are expected to comply with NMLs at all ground level locations during daytime hours. Minor exceedences may occur at higher floors of the George Street units. Where full operation is underway during night time hours, some impacts may extend to residential receivers along George and Burdett Street.
	Avanti units - Level 12	64	53	11	57	7	
	Jersey Street	40	57	–	45	–	
Fit out of reconfigured George Street / Burdett Street intersection	Avanti units - Level 2	45	69	–	50	–	Noise levels are expected to comply with NMLs at all locations during day and night time hours.
	Avanti units - Level 12	41	53	–	57	–	
	Jersey Street	Inaudible	57	–	45	–	

Construction activity	Receiver location	Predicted noise – dB(A)	Predicted daytime impact – dB(A)		Predicted night-time impact – dB(A)		Comments
			NML	Exceedance	NML	Exceedance	
<i>Hornsby Junction Remodelling</i>							
Ancillary Compound	Avanti units - Level 2	50	69	–	50	–	Noise levels expected to comply with NMLs at all locations during daytime hours. Some night-time impacts may occur at west facing receivers along George Street.
	Avanti units - Level 12	46	53	–	57	–	
	Jersey Street	37	57	–	45	–	
Relocation of public utilities	Avanti units - Level 2	57	69	–	50	7	Where the relocation of public utilities is carried out during daytime hours, project NMLs may be exceeded at properties throughout the northern residential areas (Jersey Street, Railway Parade and Bridge Road) on both sides of the track and extending several blocks back. During night time hours, construction noise may also impact receivers on George and Hunter Streets, both at street level and at higher floors.
	Avanti units - Level 12	53	53	–	57	–	
	Jersey Street	60	57	3	45	15	
Removal of track	Avanti units - Level 2	67	69	–	50	17	During daytime work, removal of track may generate noise levels in excess of the project NMLs at northern residential areas on both sides of the track and extending several blocks back in addition to residential properties on George Street. Noise levels at the TAFE may also approach the identified NMLs. Where this work is carried out during night time hours, potential noise impacts are likely to extend to Hunter Street on the eastern side of the track. Noise impacts would extend slightly further throughout the northern residential areas.
	Avanti units - Level 12	63	53	10	57	6	
	Jersey Street	70	57	13	45	25	

Construction activity	Receiver location	Predicted noise – dB(A)	Predicted daytime impact – dB(A)		Predicted night-time impact – dB(A)		Comments
			NML	Exceedance	NML	Exceedance	
Installation of new track	Avanti units - Level 2	65	69	–	50	15	Noise impacts during the installation of the new track are expected to be largely similar to those generated during the track removal.
	Avanti units - Level 12	60	53	7	57	3	
	Jersey Street	69	57	12	45	24	
Track conditioning	Avanti units - Level 2	64	69	–	50	14	Where track conditioning is carried out during daytime hours, project NMLs may be exceeded at properties throughout the northern residential areas on both sides of the track (Jersey Street, Railway Parade and Bridge Road) and extending several blocks back. During night time hours, construction noise may also impact receivers on George and Hunter Streets, both at street level at higher floors.
	Avanti units - Level 12	60	53	7	57	3	
	Jersey Street	66	57	9	45	21	

Construction vibration impacts

Predicted vibration levels based on the types of vibration intensive equipment proposed to be used during construction are shown in Table 6-19 (building damage) and Table 6-20 (human comfort). Predicted exceedences of the applicable vibration criteria are illustrated in red text. These predicted vibration levels are based on typical ground conditions and provide an indication of the expected vibration impacts during construction works.

Table 6-19: Estimated construction vibration levels – building damage

Plant description	Vibration level (mm/s) ¹				
	5 metres	10 metres	25 metres	50 metres	100 metres
<i>Building damage criteria: 5 mm/s (typical) and 3 mm/s (heritage)</i>					
Vibratory roller (3-8 tonne) ²	7	3	0.7	0.3	0.1
Vibratory roller (8-13 tonne) ²	19	9	2	1	0.4
Vibratory roller (13-18 tonne) ²	22	10	3	1	0.4
Vibratory roller (>18 tonne) ²	28	13	4	1	0.5
Hydraulic hammer	6	2	0.5	0.2	0.1
Impact Pile driver ³	76	30	9	3.8	1.5
Pile boring	6	2	0.5	0.2	0.1
Jackhammer (hand held)	2	0.8	0.2	<0.1	–

Notes: 1: Calculated in accordance with BS5228 – Code of practice for noise and vibration control on construction and open sites (95% confidence) / FTA Guidance Manual for Transit Noise and Vibration Impact Assessment
2: Mid amplitude setting
3: Assumes soft ground, 380kJ per stroke (30T Ram, 1.3m stroke)

Table 6-20: Estimated construction vibration levels – Human comfort

Plant description	Vibration level eVDV (mm/s ^{1.75}) ¹				
	5 metres	10 metres	25 metres	50 metres	100 metres
<i>Human comfort criteria: 0.2 mm/s^{1.75} daytime and 0.13 mm/s^{1.75} night-time</i>					
Vibratory roller (3-8 tonne) ²	5.9	2.3	0.6	0.2	0.1
Vibratory roller (8-13 tonne) ²	16.2	7.3	2.2	0.8	0.3
Vibratory roller (13-18 tonne) ²	18.2	8.2	2.5	0.9	0.3
Vibratory roller (>18 tonne) ²	23.7	10.7	3.2	1.2	0.4
Hydraulic hammer	5	1.8	0.5	0.2	0.1
Impact Pile driver ³	65	26	8	3.2	1.3
Pile boring	5	1.8	0.5	0.2	0.1
Jackhammer (hand held)	1.9	0.7	0.2	<0.1	–

Notes: 1: Calculated in accordance with Appendix B2 'Assessing vibration a technical guideline' and assumes 6 hrs per day of intermittent vibration
2: Mid amplitude setting
3: Assumes soft ground, 380kJ per stroke (30T Ram, 1.3m stroke)

As shown in Table 6-19 (building damage), potential exceedances of the heritage criteria have been identified for heritage items located within 5 metres of rockbreaking and within 10 metres of a medium vibratory roller. Use of this equipment would be avoided in the vicinity of the SRA electricity plant / signal box and Hornsby Station platforms.

Where structures that do not have a heritage rating are considered, structural damage limits may be increased to 5 mm/s, and shows a risk to building structures located within 30 metres of piling works and 15 metres of most other vibration intensive activities. This is a conservative estimate and may be increased further, depending upon the frequency spectrum of the equipment in use. This spectrum and site specific operating distances may be determined through vibration monitoring.

The nearest residential receivers are located approximately 30 metres from the nearest work area of both the track reconfiguration works and the multi-storey car park. Where impact piling or medium to large vibratory rollers are used within 100 metres of these receivers, potential exceedances of Human Comfort Criteria may occur at ground level locations. Hydraulic hammers may exceed the criteria where used within 25 metres of these properties. Vibration levels above ground floors are highly complex and relate to building structure and design. Potential human comfort impacts at these locations would be considered as they arise.

These predicted vibration levels indicate that structural damage may occur at residential buildings where vibratory rollers are used within 10m of a structure or where impact piling is carried out within 25 metres of the building.

For the Proposal, a building condition survey and vibration monitoring would be undertaken where residences are within approximately 50 metres of the works.

Potential human comfort impacts would be quantified with a vibration monitoring survey during the initial phase of the works to account for actual site conditions and distances to the works at the closest locations.

Operational phase

Operational rail noise

The proposed reconfiguration of track work within Hornsby Junction is not anticipated to result in substantial changes in the location of train movements within the rail corridor (i.e. tracks would not move substantially closer to residential properties). Therefore, this track work is unlikely to affect the overall noise level generated by each train passby at the nearest sensitive receivers.

As outlined in Section 2.1, one of the objectives of the Proposal is to increase the capacity of Hornsby Junction up to 16 trains per hour. This increase in rail traffic has the potential to increase airborne noise emissions along the T1 North Shore Line.

The predicted change in airborne noise associated with the proposed increase in rail traffic on the T1 North Shore Line is provided in Table 6-21. The applicable noise trigger levels for residential and non-residential noise sensitive receiver locations are provided in Tables 6-15 and 6-16, respectively.

Table 6-21: Potential change in airborne rail noise

Train sound power level	$L_{Aeq(9 \text{ hour})}$ dB(A) 12 trains per hour	$L_{Aeq(9 \text{ hour})}$ dB(A) 16 trains per hour	Increase dB(A)
85 dB(A) ¹	60.2	61.4	1.2

Note 1: Sourced from Transport for NSW's train noise database (average of all Tangara trains)

The calculations provided in Table 6-21 show that the proposed increase in train numbers is likely to result in a potential increase in train noise of approximately 1.2 dB(A). This increase would apply at all locations and is independent of existing base noise levels. Although this calculation is represented as an hourly figure, as it is an L_{Aeq} , this increase would also be representative of the increase during day (15 hour) and night time (9 hour) time periods.

An increase of 1.2 dB(A) is well below the allowable 2 dB(A) increase, and as such the Proposal is not expected to exceed the RING guidelines and further assessment of total rail noise levels is not required.

It is also noted that the proposed track work would allow a small increase in passenger train travel speeds as they approach Hornsby Station. Current typical approach speeds are in the order of 12 km/hr; which may increase to 25 km/hr following the proposed track work. In terms of train noise emissions, this increase in speed is not likely to affect overall train noise levels, and is not expected to be noticeable at surrounding receiver locations.

Operational traffic noise from the commuter car park site

The movement of vehicles around the car park has the potential to contribute to noise impacts at surrounding sensitive receivers. The extent of potential operational traffic noise impacts has been modelled using the CONCAWE algorithm within SoundPLAN (version 7.3) software.

The predicted operational noise impact of the proposed commuter car park on surrounding sensitive receivers is identified in Table 6-22.

Table 6-22: Predicted operational noise impacts from the commuter car park

Receiver location and height	Maximum $L_{Aeq}(1hr)$	INP noise criteria – $L_{Aeq}(Day)$	Complies with criteria?
88 – 90 George Street (Avanti apartments)			
40 m elevation	50.0	48	No
20 m elevation	51.5	60	Yes
10 m elevation	51.0	60	Yes
1.5 m elevation	49.5	60	Yes
1c Burdett Street (Avanti apartments)			
40 m elevation	46.5	48	Y
20 m elevation	47.6	60	Y
10 m elevation	47.4	60	Y
1.5 m elevation	43.8	60	Y
25 – 29 Hunter Street (The Madison apartments)			
20m elevation	39.9	60	Y
10m elevation	40.6	60	Y
1.5m elevation	38.3	60	Y

As shown in Table 6-22, noise levels from the commuter car park are expected to comply with the operational INP noise criteria at most nearby locations during peak usage of the car park (representing the worst case scenario). It is possible that under these conditions, noise levels at the upper floors of the George Street units may marginally exceed INP criteria. Although this assessment considers a worst case noise level, which may last for only peak hour periods of the day, it is important that transmission paths between internal areas of the car park and the higher levels of the Avanti units are considered during detailed design.

Note that this noise modelling does not consider polished concrete, which is used in some car park facilities. This floor type generates substantial tyre noise and is the source of most car park noise complaints. It is recommended that polished concrete is not used in this facility.

During normal operations, it is expected that the loudest noise event during cars entering and exiting the multi-story car park would be from doors opening and closing. For a typical light vehicle, this event has an L_{Amax} of approximately 61 dB(A).

A noise event of this level is of a similar level to typical pass by noise as vehicles move along George Street, and well below the sleep disturbance criteria outlined in Section 6.1.2. As such, it is not expected that the car park would generate any sleep disturbance impacts during normal operations.

Occasional events such as horns or aggressive driving around the site may generate higher noise levels than those outlined above, however these are expected to be very infrequent and as such not result in significant sleep disturbance impacts.

Operational traffic noise along road network

The proposed commuter car park has the potential to increase traffic noise on the local road network due to the increased number of vehicles travelling to and from the site.

The predicted change in road traffic noise along primary roads leading to the proposed car park site is outlined in Table 6-23. This change in road traffic noise was calculated based on the UK's Department of Environment, Calculation of Road Traffic Noise (CORTN) algorithms.

Table 6-23: Predicted change in road traffic noise

Location	Predicted increase in road traffic noise – dB(A)		Complies with RNP criteria?	
	Morning peak	Evening peak	Morning peak	Evening peak
<i>Allowable RNP increase: +2 dB(A)</i>				
George Street	0.7	0.0	Yes	Yes
Bridge Road	0.1	0.0	Yes	Yes
Pacific Highway	0.2	0.1	Yes	Yes
Burdett Street	0.1	0.2	Yes	Yes
Linda Street	0.0	0.2	Yes	Yes
Edgeworth David Avenue	0.2	0.1	Yes	Yes

As shown in Table 6-23, the predicted increase in road traffic noise on the local road network is likely to remain below 1 dB(A) at all locations and, therefore, would comply with the allowable noise level increase of 2 dB(A). For this reason, the proposed commuter car park is considered unlikely to have a substantial traffic noise impact on sensitive receivers surrounding these roads.

6.3.4. Mitigation measures

The following mitigation measures are proposed to manage the potential noise and vibration impacts of the Proposal (refer to Table 7-1):

- a Construction Noise and Vibration Management Plan (CNVMP) would be prepared as part of the Construction Environmental Management Plan. Measures documented in the CNVMP would be consistent with the mitigation measures outlined in the Transport for NSW Construction Noise Strategy and the Interim Construction Noise Guideline where practicable. These measures may include (but would not be limited to):
 - letter box drops, individual briefings, respite periods, or where highly intrusive noise levels are anticipated, alternative accommodation for specific construction activities
 - use of localised acoustic hoarding around significant noise generating items of plant
 - briefing of the work team in order to create awareness of the locality of sensitive noise receivers and the importance of minimising noise emissions
 - planning the higher-noise activities and work near residential noise receivers to be undertaken predominantly during less sensitive periods
 - ensuring spoil is placed and not dropped into awaiting trucks
 - use of less noise-intensive equipment
 - noise monitoring
- all construction plant and vehicles would be fitted with non-tonal reversing alarms
- operational traffic noise impacts associated with the proposed commuter car park would be considered further during detailed design, with the aim of minimising impacts to residential properties within the Avanti units on George Street. Measures that could be considered include avoiding the use of polished concrete in the car park and minimising gaps in traffic barriers along the George Street façade.

6.4. Aboriginal heritage

An Aboriginal Heritage Due Diligence Assessment was undertaken for the Proposal by Artefact Heritage in October 2015. The assessment was prepared in accordance with the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (OEH, 2010). The assessment included a search of the Aboriginal Heritage Information Management System (AHIMS) (undertaken on 13 October 2015), a review of previous archaeological studies, and a site inspection (undertaken on 13 October 2015). The results of the assessment are summarised below.

6.4.1. Existing environment

Historical background

Evidence of Aboriginal occupation in NSW dates back to around 50,000 to 60,000 years at Lake Mungo (in NSW's south-western region, approximately 110 kilometres northeast of Mildura) and up to 30,000 years at Parramatta. The traditional owners of the Hornsby LGA were the Aboriginal people of the Darug and Guringai language group (Hornsby Shire Council 2014).

Previously registered Aboriginal heritage sites

No previously recorded Aboriginal heritage sites were identified in the vicinity of the Proposal during the extensive AHIMS search. The closest previously recorded Aboriginal heritage site identified during the extensive AHIMS search is located approximately 1.2 kilometres north-west of the Proposal.

Aboriginal heritage sites identified during the site inspection

No Aboriginal objects or areas of archaeological potential were identified within the study area during the site inspection.

Archaeological potential

The study area has been significantly disturbed by the construction and maintenance of the railway over an extended period. The potential for intact archaeological deposits across the study area is considered low. Following the NSW Office of Environment and Heritage due diligence guidelines the landscape features within the study area do not indicate that Aboriginal objects are likely to occur in subsurface deposits. Significant levels within the study area indicate that the natural landform has been completely modified.

6.4.2. Potential impacts

Construction phase

Construction of the Proposal would not impact on any previously recorded Aboriginal heritage sites. As outlined in Section 6.4.1, the closest previously recorded Aboriginal heritage site is located approximately 1.2 kilometres north-west of the Proposal.

The potential for previously unrecorded Aboriginal heritage items to be impacted by the Proposal is considered to be low (due to the low archaeological potential of the study area) and would be manageable through the application of the measures documented in Section 6.4.3 of this REF.

Operational phase

Aboriginal heritage would not be impacted during the operation of the Proposal as widespread ground disturbance/excavation would be restricted to the construction phase.

6.4.3. Mitigation measures

The following mitigation measures are proposed to manage the potential impacts of the Proposal on Aboriginal heritage (refer to Table 7-1):

- all construction staff would receive basic training 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 both the Aboriginal and non-Aboriginal community, as well as the legal implications of removal, disturbance and damage to any Aboriginal cultural heritage material and sites
- if Aboriginal objects are located during works, all works would stop in the vicinity of the find, and the OEH, Local Aboriginal Land Council (LALC) and an archaeologist would be notified. Where required, further archaeological investigations and an Aboriginal Heritage Impact Permit would be obtained before works recommence
- if the project design is changed, and areas not surveyed are to be impacted, further archaeological assessment would be undertaken. Should any Aboriginal heritage items be found, they would be identified on the construction contractor's environmental control maps.

6.5. Non-Aboriginal heritage

A Non-Aboriginal Heritage Impact Assessment was carried out for the Proposal by Artefact Heritage in October 2015. The assessment was prepared using the *Statement of Heritage Impact* (NSW Heritage Office 2002) as a guideline and included a search of non-Aboriginal heritage registers, a review of background information, and a site inspection. The results of the assessment are summarised below.

6.5.1. Existing environment

History of the study area

The Hawkesbury River provided the major transport route for early settlers. During the 1800s, the region was largely rural with land holdings primarily utilised for agriculture. The fruit growing industry commenced in the 1830s and was the main industry within the region. During the 1890s, Dural and the Hills district was the chief supplier of citrus fruit for most of Australia. As well as growing fruit for sale in the Sydney market, local growers also entered the market as suppliers of seeds and seedlings of ornamental and fruit bearing plants.

Rail transport became important to the development of the colony during the 1800s. This made the area accessible to settlers and squatters who established industries, such as sheep farming. In 1849, the Sydney Railway Company was formed, and was purchased by the State government in 1854. The first Sydney station was constructed by the Sydney Railway Company in 1855.

The first railway junction was built in 1893, linking the main northern railway line to Newcastle with the North Shore Line at Hornsby. The construction of the railway altered the course of the development of Hornsby, providing access to markets for the local farmers and transport options for the increasing population.

With the development of additional transport routes, the district changed from a predominantly agricultural district to one characterised by commuters and orchardists. Most of the development within Hornsby followed the railway lines. Hornsby became the centre of the district due to its association with the railway junction, providing work for railway employees, shopkeepers and publicans. Hornsby also became a popular residential area for families.

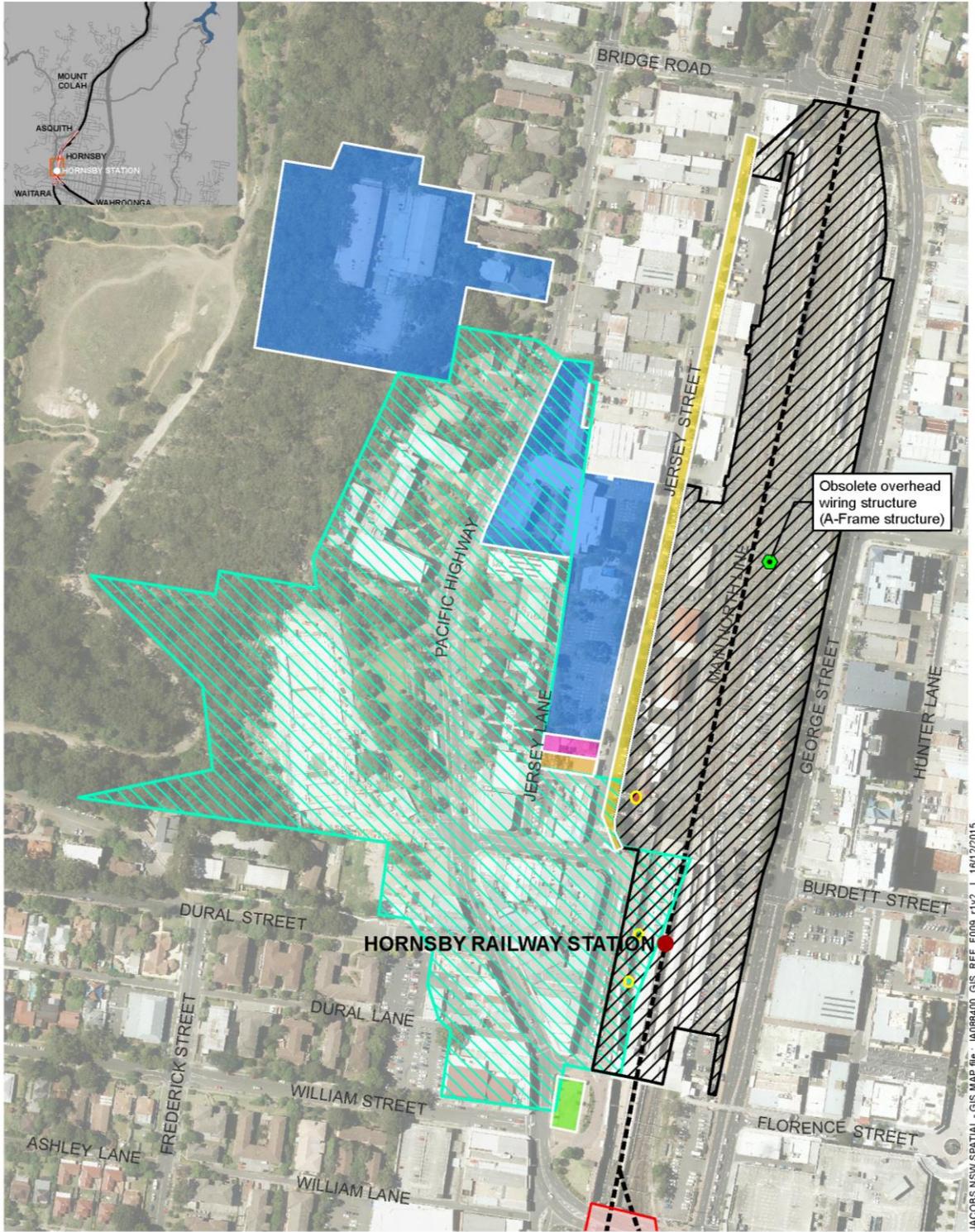
Listed heritage items

Nine listed heritage items of local significance are located within the study area. These items are listed in Table 6-24. The locations of these items are shown in Figure 6-6.

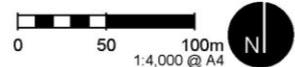
No items listed on the State Heritage Register, Commonwealth Heritage List, or National Heritage List are located within the study area.

Table 6-24: Listed heritage items in the vicinity of the Proposal

Heritage item	Register(s) listed	Heritage significance	Distance from the Proposal
Hornsby Railway Station Group and Barracks	RailCorp (now Sydney Trains) s170 register Hornsby LEP	Local	Within the extent of construction works
SRA electricity plant and signal box	Hornsby LEP	Local	Within the extent of construction works
Railway cloak room buildings	Hornsby LEP	Local	Within the extent of construction works
Peats Ferry Road Precinct, Hornsby West Side Heritage Conservation Area	Hornsby LEP	Local	Partially within the study area
Street trees	Hornsby LEP	Local	55 metres west of the study area, along Jersey Street
War Memorial and Palms	Hornsby LEP	Local	60 metres south west of the study area
Shops	Hornsby LEP	Local	70 metres west of the study area
“The Browsersy Cottage”	Hornsby LEP	Local	70 metres west of the study area
TAFE college – Buildings “K” and “M” and grounds (excluding other buildings)	Hornsby LEP	Local	70 metres west of the study area at its closest



- Legend**
- Hornsby Junction Remodelling
 - Rail line
- Heritage listed items**
- A51 - Railway station
 - A52 - Railway cloak room buildings
 - 485 - SRA electricity plant and signal box
 - C5 - Peats Ferry Road Precinct, Hornsby West Side Heritage Conservation Area
 - 484 - Street trees
 - 486 - Shops
 - 487 - 'The Browsery Cottage'
 - 503 - War Memorial and Palms
 - 521 - TAFE College Buildings 'K' and 'M' and grounds (excluding other buildings)
 - A50 - SRA electricity plant and signal box



Data sources
 Jacobs 2015
 Ausimage 2014

Figure 6-6 Listed heritage items located near the Proposal

Archaeological potential

The Proposal area was assessed to have a nil to low potential of containing archaeological remains pre-dating the construction of the North Shore Railway Line and Hornsby Railway Station.

The portion of the study area located within the Hornsby Railway yard has potential to encounter evidence of earlier rail infrastructure, including the former goods platform and sheds, the former locomotive depot, water tanks, water columns and turntable. It is also possible that evidence of earlier track work and rail configurations are buried within the yard (such as tracks and ballast). Overall, there is low to moderate potential that archaeological remains associated with earlier phases of the Hornsby Railway yard would be encountered within the Proposal area.

6.5.2. Potential impacts

Construction phase

The proposed works would not impact on fabric associated with the Hornsby Railway Station, or with the signal box. An early steel A-frame within the eastern portion of the railway yard, located within the heritage curtilage, would require removal (refer to Figure 6-6). The A-frame has not been specifically included in the description of the heritage item; however, as a rare survivor of earlier rail infrastructure within the curtilage of a listed heritage item, it is considered to be an element of moderate heritage significance within the overall heritage rail context. Removal would result in a minor impact to heritage fabric.

Construction of the Proposal also has the potential to indirectly impact on the following four heritage items during vibration intensive construction works:

- Hornsby Railway Station Group and Barracks
- SRA electricity plant and signal box
- Railway cloak room buildings.

Safeguards and management measures that would be implemented to manage construction vibration impacts on surrounding heritage items are outlined in Section 6.3.3.

Operational phase

The establishment of the proposed new commuter car park would have a moderate visual impact on the following two items of local heritage significance:

- The Hornsby Railway Station group and Barracks, listed on the RailCorp (now Sydney Trains) section 170 register: The proposed commuter car park is likely to result in a moderate visual impact to the heritage railway station through the introduction of a structure currently occupied by ground-level car parking. As the view corridor between the former barracks building and the proposed car park is limited, the new car park would result in a minor visual impact to the former barracks building.
- The State Rail Authority (SRA) electricity plant and signal box, listed on the Hornsby Local Environmental Plan 2013 (Hornsby LEP): Construction of the proposed commuter car park would result in a moderate visual impact to the heritage item, as it would introduce a structure where currently car parking is at ground level only. The introduction of the proposed car park would alter the current landscape of the car park and railway station, and be directly visible from the SRA electricity plant and signal box.

An additional two heritage items of local significance would also be subject to negligible visual impacts primarily due to the commuter car park. These comprise:

- The Railway cloak room building, listed as item A52 on the Hornsby LEP
- The Peats Ferry Road Precinct, Hornsby West Side Heritage Conservation Area and street trees on the eastern side of Jersey Street, listed as item C5 on the Hornsby LEP.

6.5.3. Mitigation measures

The following mitigation measures are proposed to manage the potential impacts of the Proposal on non-Aboriginal heritage (refer to Table 7-1):

- non-Aboriginal heritage items would be identified on the construction contractor's environmental control maps
- if any unanticipated archaeological deposits are identified within the Proposal area during construction, work likely to impact on the deposit would cease immediately and the NSW Heritage Council and a heritage consultant would be contacted. Where required, further archaeological work and/or consents would be obtained for the unanticipated archaeological deposits prior to works recommencing at the location
- a heritage induction would be provided to workers before construction begins, informing them of the location of known heritage items and guidelines to follow if unanticipated heritage items or deposits are located during construction
- design of the commuter car park is to consider the heritage context of the Hornsby Railway Station, and aim to minimise the potential for adverse impact on the setting of the surrounding heritage item. The design would aim to be low in form where possible, to avoiding competing with unmodified elements of Hornsby Station visible from street level, such as the current platform canopies. The façade fronting George Street would be finished in a suitable material and colour that is consistent with the existing visual context
- consultation would be carried out with Sydney Trains and Hornsby Shire Council in relation to potential impacts on locally listed heritage items listed on RailCorp's s170 register and the Hornsby LEP, respectively
- a program of archival recording would be carried out prior to the removal of the existing A-frame in the Hornsby rail yard. The recording would include a photographic record of the A-frame to be replaced in the yards and on the platforms, and be carried out in accordance with the *How to Prepare Archival Records of Heritage Items* guidelines (OEH 1998). The recording would meet the minimum requirements for archival recording.

6.6. Socio-economic impacts

A desktop analysis of publicly available information, such as local and State government documents and statistics from the Australian Bureau of Statistics (ABS) 2011 Census, was carried out in October 2015 to assess the potential socio-economic impacts of the Proposal. The results of the assessment are presented below.

6.6.1. Existing environment

The Hornsby LGA is located approximately 21 kilometres north-west of the Sydney CBD. At the 2011 Census, the Hornsby LGA had a population of 156,847 people (ABS 2011). The proportion of people under 14 years of age and over 65 years of age was relatively consistent with that of NSW (refer to Table 6-25). The Hornsby LGA had a high proportion of people who used the train as the primary method of travel to work at 14.4 per cent, compared to 6.2 per cent of NSW (ABS 2011).

There were approximately 41,501 people working in the Hornsby LGA at the 2011 Census (ABS 2011). In 2011, approximately 6.9 per cent of people working in the Hornsby LGA travelled by train for all or part of their journey to work, compared to 9.4 per cent in NSW as a whole.

The *Plan for Growing Sydney* (NSW Government 2014) identified Hornsby as one of Sydney's Strategic Centres, which is also located within the Global Economic Corridor. The Global Economic Corridor is a strategic location for intensive development to sustain and expand the economy and support more jobs closer to where people live. The Sydney Strategic Centres are identified as priority locations for employment, retail, housing, services and mixed-uses.

Table 6-25: Socio-economic characteristics of Hornsby LGA

Socio-economic characteristics	Hornsby LGA	New South Wales
Total population	156,847	6,917,658
Median age	39 years	38 years
Family households	80.1%	71.9%
Average people per household	2.9	2.6
Single (or lone) person households	17.7%	24.2%
Households with no vehicles	7.2%	10.4%
Households with two or more vehicles	54.9%	48.6%
Median weekly household income	\$1,824	\$1,237
Full-time employment	60.3%	60.2%
Travel to work, car as driver (employed aged 15 years and over)	51.4	57.6
Travel to work, train (employed aged 15 years and over)	14.4	6.2
Travel to work, car as passenger (employed aged 15 years and over)	3.0	3.7
Travel to work, bus (employed aged 15 years and over)	3.0	3.7
Travel to work, walked only (employed aged 15 years and over)	2.8	4.1

Social infrastructure assists in catering for the needs of the local community by providing a range of community services and facilities, such as education facilities; health, medical and emergency services; sport, recreation and leisure facilities; and community and cultural facilities. The area immediately surrounding the Proposal forms part of the Hornsby town centre and contains a mixture of commercial, retail, residential, recreational and educational land uses (refer to Figure 1-2). Social infrastructure located near the Proposal is listed in Table 6-26.

Table 6-26: Social infrastructure located near the Proposal

Facility	Location	Type
TAFE NSW Hornsby College	Peats Ferry Road, Hornsby	Education
Benowie Walking Track (which forms part of the Great North Walk)	Access via Rosemead Road, Hornsby	Sport and recreation
Hornsby Mountain Bike Trail	Quarry Road, Hornsby	Sport and recreation
Hornsby Aquatic and Leisure Centre	Peats Ferry Road, Hornsby	Sport and recreation
Kim Warwick Tennis Academy	Edgeworth David Avenue, Hornsby	Sport and recreation
Hornsby Central Library	George Street, Hornsby	Community facility
Hornsby Function Centre	High Street, Hornsby	Community facility
PCYC	George Street, Hornsby	Community facility
Summers Avenue Medical Practice	Summers Avenue, Hornsby	Health
Three Bears Kindergarten	Railway Parade, Hornsby	Childcare facility
Community Church Hornsby	Jersey Street, Hornsby	Place of worship
Hornsby Fire Station	Bridge Road, Hornsby	Emergency services
Hornsby Park	Peats Ferry Road, Hornsby	Park
Berowra Valley Regional Park	Rosemead Road, Hornsby	Park
Hornsby Police Station	Pacific Highway, Hornsby	Emergency services
Hornsby Girls High School	Edgeworth David Avenue, Hornsby	Education
Hornsby Station Medical Practice	Pacific Highway, Hornsby	Health
The Madison Practice	Hunter Street, Hornsby	Health
Hornsby Fountain Medical Centre	Hunter Street, Hornsby	Health
Hornsby Mall Medical Centre	Florence Street, Hornsby	Health
Hornsby Medical Practice	Florence Street, Hornsby	Health
Hornsby Ku-Ring-Gai Community College	Hunter Street, Hornsby	Education
St Peter's Anglican Church Hornsby	Pacific Highway, Hornsby	Place of worship
Hornsby Children's Centre	Peats Ferry Road, Hornsby	Childcare facility
Community Church Hornsby	Jersey Street, Hornsby	Place of worship

A number of community events within the Hornsby LGA are held at these facilities. Examples of past and current events located near the Proposal include:

- Let's Light Westside, at the Hornsby Council Chambers in November 2015
- Christmas Spectacular, at Hornsby Park in December 2015
- The Glee Club Christmas Fun Show, at Hornsby Central Library in December 2015
- The West Side Vibe, in Dural Lane in April 2015.

In addition, the Westfield Hornsby Shopping Centre is located on the Pacific Highway, immediately adjacent to the Proposal. The Westfield Hornsby Shopping Centre contains approximately 335 store and services including retail stores, restaurants, and a cinema.

6.6.2. Potential impacts

Construction phase

Temporary disruptions to rail services

The Proposal would require various rail track possessions during construction of the Hornsby Junction Remodelling. This includes a two-week shutdown period of Hornsby Junction, which is scheduled to coincide with the December 2017 – January 2018 holiday period to minimise disruptions to rail customers.

During rail track possessions, rail services would be suspended and replacement buses would operate. These rail track possessions would have a short-term temporary negative impact on rail customers who would normally travel via Hornsby Junction during this time, including people travelling to work, or accessing social infrastructure within the study area, as no trains would service Hornsby Station during this period. This may also cause disruptions to rail customers accessing the Hornsby Westfield Shopping Centre during the Christmas period. To manage this impact, rail customers would be provided with adequate notification of the scheduled track possessions to allow them to plan their journey during this period.

Temporary disruptions to commuter car parking

Construction of the Proposal would require the following changes at the existing at-grade Hornsby Station commuter car park:

- temporary closure of the Hornsby Station commuter car park on George Street and relocation of approximately 370 parking spaces during the construction of the Hornsby Junction Remodelling and commuter car park. This commuter car park is anticipated to be fully closed for approximately 10 months, from January 2017 to October 2017
- temporary relocation of approximately 90 commuter car parking spaces from the existing Hornsby Station car park during the proposed enabling works for the Proposal (refer to Table 3-1). These relocated commuter car parking spaces are anticipated to be required from mid-2016 for approximately nine months.

The three smaller commuter car parks (with a combined capacity of 96 car spaces) would not be affected by the works.

As discussed in Section 6.1.2, Transport for NSW is currently preparing a car parking offset strategy to identify temporary parking options during the closure of the commuter car park. Various options are being considered to address the temporary loss of commuter car parking from the existing at-grade commuter car park including:

- changes to angle of car parking in Florence Street, May Street, Frederick Street and Jersey Street to gain additional on-street parking
- provide additional off-site parking on private property.

The car parking strategy is to be further developed during detailed design; and further assessment of impacts would be undertaken as required. Rail customers would be provided with adequate notification of alternative parking provisions during the temporary closure of the commuter car park to allow them to plan their journey during this period.

Temporary local amenity impacts

Construction of the Proposal has the potential to result in temporary adverse local amenity impacts due to construction noise, traffic, dust and visual changes associated with construction works (e.g. lighting, stockpiling etc.). Impacts of the Proposal on traffic and transport, noise and vibration, air quality and visual amenity are discussed in Section 6.1, Section 6.3, Section 6.10, and 6.2 respectively.

Operational phase

During operation, the Proposal is expected to have a number of positive impacts on access and connectivity for the local and regional community. The Proposal would provide increased capacity on the T1 North Shore Line, and provide increased commuter parking supply at Hornsby Station.

6.6.3. Mitigation measures

Measures to manage impacts associated with traffic and transport, noise and vibration, landscape character and visual amenity, and air quality are identified in Table 7-1. In addition, the following mitigation measures are proposed to manage the potential socio-economic impacts of the Proposal (refer to Table 7-1):

- a Community Liaison Plan would be prepared for the Proposal. The plan would identify all potential stakeholders and the 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 Proposal
- rail customers would be provided with adequate notification of the scheduled track possessions and any temporary closures of the existing commuter car park to allow them to plan their journey during these periods
- newsletters and other communication tools would be distributed to keep the community informed of construction progress, activities and impacts. This would especially outline the need to undertake out of hours works and the process for the community to register complaints in relation to the works
- 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.

6.7. Biodiversity

A biodiversity assessment was undertaken for the proposed commuter car park by Biosis in June 2015. The assessment was undertaken as part of the concept design report prepared by Arup and informed the selection of the preferred option (Arup, 2015). The biodiversity assessment included a desktop search of the following databases:

- OEH Vegetation Information System (VIS) Mapping through the Spatial Information eXchange (SIX) Vegetation Map Viewer (OEH 2013)
- OEH BioNet Atlas of NSW Wildlife for TSC Act listed threatened flora, fauna and ecological communities (biota) (OEH 2015)
- Department of Environment (DoE) Environment Protection and EPBC Act Protected Matters Search Tool (DoE 2015)
- NSW Department of Primary Industries (DPI) *Noxious Weeds Act 1993* (NW Act) listed weeds for Hornsby LGA (DPI 2015).

A field investigation was also undertaken of the proposed commuter car park site on 30 October 2015.

These results of the biodiversity assessment are summarised below.

6.7.1. Existing environment

Vegetation

The field investigation determined that vegetation within the study area was predominantly planted native and exotic vegetation, including Sydney Red Gum, Camphor Laurel, Wattle, Sweet Pittosporum, Coast Banksia, Brush Box, Bottlebrush, and Willow-leaved crowea. The understorey consisted of a high proportion of exotic weeds. Natives such as Cassia, Castor Oil Plant, Morning Glory and Mat-rush were also present.

Three exotic species listed to be noxious within the Hornsby LGA (DPI 2015) were identified during the field investigation. These include Camphor Laurel, Castor Oil Plant, and Morning Glory.

Threatened species

Threatened fauna searches identified 134 recent records for the Powerful Owl (Vulnerable, TSC Act) with the closest record being within one kilometre from the study area. The study area also has the potential to provide some foraging habitat for Powerful Owl.

Threatened flora searches identified records for *Tetratheca glandulosa* (Vulnerable, TSC Act) within one kilometre from the study area. However, this small, spreading shrub is generally found on ridgetops, upper-slopes and to a lesser extent mid-slope sandstone benches (OEH 2013). Given a lack of suitable habitat existing within the study area, it is unlikely that *Tetratheca glandulosa* would be present.

6.7.2. Potential impacts

Construction phase

Construction of the Proposal would result in the removal of all vegetation from the site of the proposed commuter car park. As outlined in Section 6.7.1, vegetation to be removed from the site comprises planted native and exotic vegetation.

It is unlikely that the Proposal would disturb threatened ecological communities, threatened species and migratory species listed under the TSC Act and EPBC Act to any significant degree. Vegetation removal as part of the Proposal is unlikely to pose any significant impact on the Powerful Owl as there is better quality habitat within the broader area (OEH 2014).

Operational phase

The Proposal is not considered to have a significant effect on threatened species, populations or ecological communities during operation.

6.7.3. Mitigation measures

The following mitigation measures are proposed to manage the potential impacts of the Proposal on biodiversity (refer to Table 7-1):

- all workers would be provided with an environmental induction prior to commencing work on-site
- disturbance of vegetation would be limited to the minimum amount necessary to construct the Proposal. The clearing of mature, native trees would be minimised as far as practicable
- the principal mechanism to reduce impacts on biodiversity values within the study area would be to minimise removal of native vegetation and fauna habitat by restricting the encroachment of the works on adjacent native vegetation. This would be achieved through the following:
 - there would be no disturbance or damage to threatened species, endangered ecological communities, or critical habitat
 - any vegetation to be removed that has not been assessed in this REF would be subject to separate approval in accordance with Transport for NSW's *Application for Removal or Trimming Vegetation* (Form PE-FO-078/5.0)
- weed control measures would be developed and included in the CEMP to manage the dispersal and establishment of weeds during the construction phase of the Proposal. This would include the management and disposal of weeds found to be noxious within the Hornsby LGA, as well as the following weeds that are known to occur within the rail corridor:
 - exotic perennial grasses, such as *Chloris gayana*, *Melinis repens* and *Pennisetum clandestinum*
 - exotic vines, such as *Asparagus aethiopicus*, *Asparagus asparagoides*, *Hedera helix*, *Ipomoea indica* and *Tradescantia fluminensis*
 - noxious weeds of *Ageratina adenophora*, *Ambrosia tenuifolia*, *Asparagus asparagoides*, *Lantana camara* and *Rubus fruticosus*, in accordance with the NW Act
- individual species or groups of trees within the Proposal area found to have a Diameter at Breast Height (DBH) greater than 15 centimetres which require removal, would require offset in accordance with the Transport for NSW Vegetation Offset Guide 9TP-ST-149. Quantities for offset to be determined during the detailed design stages of works.

6.8. Landform, geology, soils and contamination

A desktop analysis of publicly available information was carried out in October 2015 to assess potential impacts of the Proposal on landform, geology, soils and contamination. Outcomes of the concept design report for the proposed commuter car park (Transport for NSW 2015) were also considered. The results of the assessment are presented below.

6.8.1. Existing environment

The Proposal area has been highly modified due to the construction of the existing car park, the railway station, and other infrastructure. The landform of the Proposal area is generally flat.

Geology

The project is located within the Sydney Basin, a large depositional geological feature that spans from Batemans Bay to the south, Newcastle to the north and Lithgow to the west. The Sydney 1:100,000 Geological Series Sheet 9130 (Geological Survey of NSW Department of Mineral Resources 1983) indicates the study area is underlain by:

- Ashfield Shale of the Wianamatta Group – generally consisting of black to dark grey shale and laminate
- Hawkesbury Sandstone – generally consisting of medium to coarse-grained quartz sandstone, very minor shale and laminate lenses.

Soils

The *Sydney 1:100,000 Soil Landscape Series Sheet 9130* (Chapman and Murphy, 1989) indicates that the Proposal is located within the following soil landscapes:

- Glenorie – these soils generally exhibit high soil erosion hazard
- Lucas Heights – these soils generally exhibit stony soil, low soil fertility and low available water capacity.

Acid sulphate soils

The desktop geotechnical investigation (ARUP 2015) prepared to inform the concept design for the proposed commuter car park (Transport for NSW 2015) considered the likelihood for acid sulphate soils to occur within the Proposal area. Based on acid sulphate soils risk maps, the investigation identified no known occurrence of acid sulphate soils to be present within the Proposal area. The closest location of known acid sulphate soils is at Cockle Creek and Cowan Creek, approximately 6.5 kilometres northeast of the Proposal area.

Contamination risks

A search of the OEH Contaminated Land Record of Notices, and list of NSW contaminated sites notified to EPA in October 2015 identified the following sites located near the Proposal:

- Shell Coles Express, 194/206 Pacific Highway on the western side of the rail corridor
- Midas Car Care Centre, 2A Linda Street, which is currently under assessment and is located approximately 70 metres east of the Proposal near to the junction of Linda Street and George Street.

A search of the *Protection of the Environment Operations Act 1997* public register identified the following licenced operations to be located near the Proposal:

- Hornsby Aquatic Centre (Swimming Pool), located 170 metres west of the Proposal
- Readymix Hornsby Quarry (Hard-Rock Gravel Quarrying) located 360 metres west of the Proposal.

In addition, a preliminary site investigation (Environmental Earth Sciences 2015) was prepared to inform the concept design for the proposed commuter car park (Transport for NSW 2015). The preliminary site investigation was undertaken at Hornsby Railway Station (Part Lot 164, DP1043781). The site inspection identified some fill material present along the eastern boundary, along with old railway sleepers. Fill material may have been derived from onsite or imported in the past.

Potential for contamination at the site is associated with the unverified fill material, as well as any spills or leaks that may have occurred during historical site uses. The unverified fill material is considered to pose a moderate contamination risk.

6.8.2. Potential impacts

Construction phase

The Proposal would result in the exposure and disturbance of soils through the junction upgrade and utility adjustments within the railway corridor and the construction of the car park, which would involve excavations to a depth of approximately two to three metres below existing ground levels.

The Proposal would not involve excavation within the vicinity of known contaminated land; however, the Proposal could result in the exposure and disturbance of unknown contaminated materials, if present. Ground disturbance activities also have the potential to disturb acid sulphate soils. The soils likely to be encountered on site are identified as having a high erosion hazard. Therefore impacts associated with earthworks include the erosion of exposed soils and stockpile materials and increased sediment loads entering the adjacent stormwater system.

Operational phase

The Proposal would not result in any impacts to contaminated land, geology or soils. The landform would be altered by the inclusion of a new multistorey car park. However impacts associated with this would be minor.

6.8.3. Mitigation measures

The following mitigation measures are proposed to manage the potential impacts of the Proposal on landform, geology, soils and contamination (refer to Table 7-1):

- if hazardous or contaminated materials are found during construction, work would stop immediately and the Project Manager would be contacted. Following this, a hygienist would identify if hazardous materials are present. If so, these would be removed by a licensed contractor
- any contaminated waste would be classified according to the *Waste Classification Guidelines* (EPA 2014) prior to removal offsite. Should any contaminated material be uncovered during redevelopment works that exceeds the relevant land use guidelines then further delineation works may be required
- assessment of any soil exposed during the construction of Phase 2 of the Proposal would be carried out to assist in quantifying any potential contamination risks
- procedures for handling asbestos contaminated materials, including licensed contractor involvement as required, record keeping, site personnel awareness and waste disposal would be undertaken in accordance with WorkCover requirements.

6.9. Hydrology and water quality

A desktop analysis of publicly available information, such as local government documents, was carried out in November 2015 to assess the potential impacts of the Proposal on hydrology and water quality. Outcomes of the concept design report for the proposed commuter car park (Transport for NSW 2015) were also considered. The results of the assessment are presented below.

6.9.1. Existing environment

Four major water catchments are located within the Hornsby LGA, including Berowra Creek, Cowan Creek, Hawkesbury River, and Lane Cove River (Hornsby Shire Council 2014).

The Proposal is located within the Berowra Creek catchment area. Berowra Creek is located approximately 2.2 kilometres west of the Proposal and is approximately 22 kilometres in length. Berowra Creek drains in a northerly direction into the Hawkesbury River.

The main impacts to water quality within the Berowra Creek result from the discharge of tertiary treated sewage from the West Hornsby and Hornsby Heights Wastewater Treatment Plants into the tributaries of Waitara Creek and Calna Creek (Hornsby Shire Council 2015). Water quality within the Berowra Creek is also influenced by urban stormwater run-off (Hornsby Shire Council 2015).

Other waterbodies which are located near the Proposal include Waitara Creek, Old Mans Creek, and Jimmy Banks Creek. Waitara Creek is located approximately 1.6 kilometres west of the Proposal and extends for approximately three kilometres. Waitara Creek flows into Berowra Creek. The *Water Quality Companion Technical Report, Water quality report card* (Hornsby Shire Council 2014) identified water quality within the Waitara Creek to have an overall poor health grading. Old Mans Creek is located approximately 1.4 kilometres west of the Proposal. Old Mans Creek extends for approximately 840 metres and flows into Waitara Creek. Jimmy Banks Creek is the closest waterbody to the Proposal. Jimmy Banks Creek is located approximately 300 metres west of the Proposal and flows into Waitara Creek.

Groundwater

A search of the NSW Office of Water groundwater database was undertaken as part of the preliminary site investigation for the Proposal (Environmental Earth Sciences 2015). The search indicated that no registered monitoring bores are located within 500 metres of the Proposal.

6.9.2. Potential impacts

Construction phase

Construction has the potential to adversely affect water quality in nearby watercourses and receiving catchments through the pollution of stormwater runoff with sediments, fuel and other hazardous materials from construction sites. These impacts would be adequately managed with standard environmental management measures. These measures would be consistent with the principles and practices detailed in *Managing Urban Stormwater: Soils and Construction* (Landcom, 2004).

Operational phase

The operation of the Proposal would not result in a substantial impact on local hydrology or water quality. While the Proposal has the potential to result in a minor increase in the risk of stormwater contamination (due to an increased risk of fuel, oil and chemical leaks from vehicles), this risk would be adequately managed through the adoption of appropriate stormwater treatment measures into the design of the commuter car park (to be identified during the detailed design phase).

Additionally, the Proposal would reinstate the existing on site stormwater detention storage tank that would be affected (at the site of the existing at-grade commuter car park) during construction.

The detailed design would take into consideration appropriate drainage and stormwater management measures. The Proposal would be designed in accordance with the relevant Sydney Trains, Sydney Water and Council standards and requirements.

6.9.3. Mitigation measures

The following mitigation measures are proposed to manage the potential impacts of the Proposal on hydrology and water quality (refer to Table 7-1):

- soil and water management measures would be identified, consistent with the principles and practices detailed in *Managing Urban Stormwater: Soils and Construction* (Landcom 2004)
- no stockpiles of materials or storage of fuels or chemicals would be located within high/medium flood risk areas or adjacent to existing culverts
- vehicles and machinery would be properly maintained to minimise the risk of fuel/oil leaks
- routine inspections of all construction vehicles and equipment would be undertaken for evidence of fuel/oil leaks
- all fuels, chemicals and hazardous liquids would be stored within an impervious bunded area in accordance with Australian Standards and EPA Guidelines
- emergency spill kits would be kept on-site at all times. All staff would be made aware of the location of the spill kit and be trained in its use
- construction plant, vehicles and equipment would be refuelled off-site, or in a designated re-fuelling area
- site offices and staff facilities would be located above the 100-year ARI flood level, where practicable
- the existing RailCorp and Council drainage systems would remain operational throughout the construction of the Proposal
- groundwater encountered during the construction of the Proposal would be managed in accordance with the requirements of the *Waste Classification Guidelines* (EPA 2014) and *Water Discharge and Reuse Guideline* (Transport for NSW 2015)
- clean water would be diverted around the work site in accordance with *Managing Urban Stormwater: Soils and Construction* (Landcom 2004)
- erosion and sediment control measures would be regularly inspected (particularly following rainfall events) to ensure their ongoing functionality
- erosion and sediment control measures would be left in place until the works are complete and areas are stabilised
- works would be managed during rainfall (or whilst the ground remains sodden) to minimise plant and vehicle disturbance to the topsoil
- adequate water quality and hazardous material procedures (including spill management procedures, use of spill kits and procedures for refuelling and maintaining construction vehicles/equipment) would be implemented during the construction of the Proposal
- disturbed surfaces would be reinstated as quickly as practicable after construction
- all stockpiled materials would be covered when not in use, and stored in bunded areas and kept away from waterways to avoid sediment entering the waterways

- erosion and sediment control plans would be prepared in accordance with *Volume 2D of Managing Urban Stormwater: Soils and Construction* (DECC 2008). The erosion and sediment control plans would be established prior to the commencement of construction and be updated and managed throughout as relevant to the activities during the construction phase
- sediment would be prevented from moving off-site and sediment laden water prevented from entering any watercourse, drainage line or drainage inlet
- temporary scour protection and energy dissipation measures would be designed and implemented to protect receiving environments from erosion.

6.10. Air quality

A desktop analysis of publicly available information was carried out in October 2015 to assess potential impacts of the Proposal on air quality. The results of the assessment are presented below.

6.10.1. Existing environment

The Proposal is located in a relatively disturbed environment, comprised of road and rail infrastructure, and a mix of commercial and residential land uses. Local emission sources that are likely to affect air quality within the locality include exhaust emissions from vehicles using the road network, exhaust emissions from diesel freight and passenger trains operating on the rail network and particulate emissions (dust) from wind erosion of exposed surfaces.

A search of the Commonwealth Department of the Environment's National Pollutant Inventory database identified that three industries reported air emissions from within the Hornsby LGA during the 2013-2014 reporting period. The nearest facility is The Wrigley Company, which is located approximately two kilometres north-east of the Proposal, in Asquith.

6.10.2. Potential impacts

Construction phase

During construction, local air quality may be temporarily affected by particulate (dust) and gaseous emissions (such as emissions from the combustion of fuels and storage of volatile organic compounds). These impacts are described in the following sections.

Dust

The main potential air quality impacts during construction of the Proposal would be associated with the generation of dust, which would include pollutants such as deposited dust, total suspended solids (TSP) and particulate matter with an aerodynamic diameter less than 10 microns (PM₁₀) and 2.5 microns (PM_{2.5}).

Construction activities with the greatest potential to generate dust would include:

- excavation, handling, stockpiling, loading/unloading and transport of spoil
- demolition of structures, and the handling, stockpiling and transport of demolition materials
- transport, loading/unloading, stockpiling and handling of imported construction materials such as imported fill
- creation of exposed surfaces through the stripping of topsoil and other overlying structures (such as road pavement at the existing commuter car park site), which would increase the potential for dust emissions to be generated by wind erosion
- movement of construction plant, vehicles and equipment along unsealed surfaces.

Without the implementation of adequate management measures, dust emissions from the above activities could result in reduced local air quality and dust deposition at the nearest potentially affected receivers.

The volume of dust generated during a typical work day would vary depending on the types of activities occurring at each work site and prevailing weather conditions (for example, dry windy conditions increase the potential for wind erosion). Dust emissions would also be expected to increase during unfavourable weather, such as dry windy conditions.

Overall, the volume of dust emissions would be comparable to volumes generated by other similar infrastructure projects and the impacts readily manageable through standard mitigation measures, such as wetting stockpiles and exposed surfaces and minimising dust-generating works during adverse weather conditions.

Exhaust emissions

Exhaust emissions would generally be restricted to minor localised emissions of carbon monoxide, oxides of nitrogen, sulfur dioxide and volatile organic compounds. These pollutants would be generated during the combustion of fuel in construction plant, machinery and equipment, as well as from the handling and/or onsite storage of fuel and other chemicals. Minor emissions of these pollutants would not significantly affect local air quality at the nearest sensitive receivers and would be adequately managed with standard mitigation measures.

Operational phase

Air quality impacts associated with the operation of the Proposal would be minimal. The main air quality impact during operation would be associated with exhaust emissions from private vehicles using the car parking. Exhaust emissions from these vehicles would be localised and, given the relatively low level of additional traffic likely to be generated by the Proposal, are unlikely to significantly affect sensitive receptors.

6.10.3. Mitigation measures

The following mitigation measures are proposed to manage the potential impacts of the Proposal on air quality (refer to Table 7-1):

- methods for management of emissions would be incorporated into the CEMP, inductions, training and pre-start talks
- activities with the potential to cause substantial emissions, such as material delivery and load out and earthworks, would be identified in the CEMP. Work practices which minimise emissions during these activities would be investigated and applied where reasonable and feasible
- visually monitor dust and where necessary implement the following measures:
 - apply water (or alternate measures) to exposed surfaces that are causing dust generation. Surfaces may include unpaved roads, stockpiles, hardstand areas and other exposed surfaces (for example recently graded areas)
 - appropriately cover loads on trucks transporting material to and from the construction site. Securely fix tailgates of road transport trucks prior to loading and immediately after unloading
 - prevent where possible, or remove, mud and dirt being tracked onto sealed road surfaces.
- ensure plant and machinery is regularly checked and maintained in a proper and efficient condition. This would reduce the likelihood of exceeding relevant emissions standards.

6.11. Cumulative impacts

A desktop analysis of publicly available information was carried out in November 2015 to assess potential cumulative impacts of the Proposal. The results of the assessment are presented below.

Cumulative impacts have the potential to occur when two or more projects are constructed within the same timeframe and locality. As a result of the construction of multiple projects within a locality, the potential for impacts, such as traffic, noise and air quality, would be greater than those identified for the Proposal in isolation.

A search of the Major Projects Register (NSW Department of Planning and Environment 2015) on 5 November 2015 identified the Road Construction Spoil Management Project proposed by Roads and Maritime Services to be potentially occurring within the same timeframe as the Proposal. The project is anticipated to commence late 2015 and be completed in the third quarter of 2018.

The project includes the partial infill of Hornsby Quarry, which is located approximately 650 metres west of the Proposal, with excavated rock and spoil from the construction of the NorthConnex project. As discussed in Section 6.1.2, the cumulative number of vehicle movements associated with the Proposal and the filling of Hornsby Quarry has the potential to affect the performance of the local road network, particularly George Street, which would be used as a haulage route for both of these developments.

An assessment of the cumulative traffic impact is provided in Section 6.1.2. In summary, the cumulative impact of construction vehicles on the assessed intersections would be less than 2 per cent of the existing traffic volumes. This is unlikely to result in a material impact on the operation of these intersections.

In addition, Council is proposing to replace the existing Hornsby footbridge over George Street. Construction of the bridge has commenced and is anticipated to be completed in mid-2016. It is therefore anticipated that the bulk of the footbridge construction would be completed prior to the junction remodelling construction and as such there would be minimal cumulative impacts.

During construction the works would be coordinated with any other construction activities in the area with Hornsby Council, Sydney Trains and any other developments identified to minimise cumulative construction impacts such as traffic and noise. Traffic associated with the construction works is not anticipated to have a significant impact on the surrounding road network. Operational traffic and transport impacts would have minimal impact on the performance of the surrounding road network.

Based on this assessment it is anticipated that the cumulative impacts would be minor provided that consultation with relevant stakeholders and mitigation measures in Chapter 7 of this REF are implemented. 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.

6.11.1. Mitigation measures

The following mitigation measures are proposed to manage the potential impacts of the Proposal on cumulative impacts (refer to Table 7-1):

- 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.

6.12. Climate change

6.12.1. Greenhouse gas emissions

In line with the *NSW Sustainable Design Guidelines – Version 3.0* (Transport for NSW 2012), a Carbon Footprint Assessment would be undertaken for the Proposal during the detailed design stage. It would be undertaken in accordance with Transport for NSW's *Greenhouse Gas Inventory Guide for Construction Projects*.

This assessment would inform a number of greenhouse gas (GHG) mitigation strategies to be included as part of the detailed design phase. These strategies fall within the following broad categories:

- avoiding – GHG emissions associated with the Proposal that can be avoided
- reducing – behaviour or processes that can be modified to achieve GHG emission reductions
- switching – fuel and energy source switching that can be used to reduce GHG.

Construction of the Proposal would result in increased GHG emissions associated with the materials required to build the commuter car park and reconfigured track work, the transport of materials to the site, and the fuel consumption of construction plant and equipment. Due to the scale and temporary nature of the construction works, GHG emissions are not expected to be significant.

The operation of the Proposal would result in minor additional GHG emissions associated with lighting and other services required for the commuter car park, as well as the operation of new signalling infrastructure.

Notwithstanding, the increase in car parking capacity would encourage people to use public transport instead of driving to destinations, which may result in a reduction in GHG emissions.

6.12.2. Climate change

The dynamic nature of our climate system indicates a need to focus attention on how to adapt to changes in the climate and understand the limitations of adaptation. The effects of climate change on the Sydney region can be assessed in terms of weather changes, storm intensity, flooding and increased risk of fire. Climate change could lead to an increase in the intensity of rainfall events, whereby the rainfall expected to occur in a 100-year average recurrence interval flood event would occur more frequently.

The detailed design would take into account the outcomes of a climate change impact assessment that includes an assessment of the likely climate change impacts such as extreme weather events to the Proposal. This assessment would inform a number of relevant climate adaptation measures to minimise and avoid these impacts to be included as part of the detailed design phase.

6.12.3. Sustainability

The design of the Proposal has been based on the principles of sustainability, including the *NSW Sustainable Design Guidelines – Version 3.0* and Transport for NSW's Environmental Management System.

Section 3.1.3 provides a summary of the sustainable design features which have been considered for incorporation into the Proposal.

6.12.4. Waste

A variety of solid and liquid wastes would be generated during construction of the Proposal. These would include:

- green waste from cleared vegetation
- spoil comprising imported fill and virgin excavated natural material
- concrete slurry, concrete waste, timber formwork
- asphalt
- oil, grease and other liquid wastes from the maintenance of construction plant and equipment
- sediment-laden and/or potentially contaminated wastewater, sewage and grey water
- packaging materials from items delivered to site, such as pallets, crates, cartons, plastics and wrapping materials
- waste from the construction compound and staff amenities, including putrescibles, paper, cardboard, plastics, glass and printer cartridges.

The quantity of waste generated by the Proposal would be comparable to similar infrastructure projects and would be adequately managed with standard waste management measures, to be developed as part of the Construction Environmental Management Plan. These measures would include:

- managing construction waste through the waste hierarchy established under the *Waste Avoidance and Recovery Act 2001*
- establishing targets for the beneficial reuse of spoil, wastewater and other construction wastes in accordance with the project's sustainability
- developing procedures for the assessment, handling, stockpiling and disposal of potentially contaminated materials and wastewater, in accordance with the NSW Office of Environment and Heritage's *Waste Classification Guidelines* (DECCW 2009).

Overall, construction waste from the Proposal is not anticipated to result in significant adverse environmental impacts.

Operation of the Proposal would not increase the amount or change the type of waste generated within the Proposal area.

7. Environmental management

Chapter 7 identifies how the environmental impacts of the Proposal would be managed through environmental management plans and mitigation measures. Section 7.2 lists the proposed mitigation measures for the Proposal to minimise the impacts identified in Chapter 6.

7.1. Environmental management plans

A construction environmental management plan (CEMP) for the construction phase of the Proposal would be prepared in accordance with the requirements of Transport for NSW's Environmental Management System (EMS). The CEMP would provide a centralised mechanism through which all potential environmental impacts relevant to the Proposal would be managed, and a framework of procedures and controls for managing environmental impacts during construction.

The CEMP would incorporate as a minimum all environmental mitigation measures identified in Section 7.2 of this REF, any conditions from licences or approvals required by legislation, and a process for demonstrating compliance with such mitigation measures and conditions.

Mitigation measures for environmental impacts occurring during the operational phase of the Proposal would be addressed through the design of the Proposal (e.g. measures to address visual amenity impacts) and/or Sydney Train's EMS.

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.

Table 7-1: Proposed mitigation measures

ID no.	Mitigation measures	Applicable Proposal component
General		
G.1	An appropriately qualified and experienced site based environment manager would be appointed prior to the commencement of construction.	All
G.2	A project risk assessment including environmental aspects and impacts would be undertaken prior to the commencement of construction. The risk assessment would be used to inform the development of the CEMP and ECM(s).	All
G.3	Inspections would be undertaken on a weekly basis and after heavy rainfall to monitor environmental compliance and performance during construction.	All
G.4	Prior to the commencement of construction, all contractors would be inducted on the key project environmental risks, mitigation measures and conditions of approval. The ECM(s) would form part of the induction.	All

ID no.	Mitigation measures	Applicable Proposal component
Community engagement		
C.1	Rail customers would be provided with adequate notification of the scheduled track possessions and any temporary closures of the existing commuter car park to allow them to plan their journey during these periods.	All
C.2	Newsletters and other communication tools would be distributed to keep the community informed of construction progress, activities and impacts..	All
C.3	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.	All
Traffic and transport		
T.1	<p>A detailed Construction Traffic Management Plan (CTMP) would be prepared for the Proposal to manage and minimise construction impacts. The CTMP would include but not be limited to the following:</p> <ul style="list-style-type: none"> • timing of proposed works • hours of construction activities • number of construction vehicles to be used • designation of construction routes • mitigation and management measures including use of traffic control signals, construction vehicle access and traffic circulation arrangements • designation of temporary parking during construction works (for both the commuters and project personnel) • contact details for key onsite construction personnel. 	All
T.2	Site-specific traffic management issues would also be addressed through the implementation of appropriate Traffic Control Plans (TCPs) developed in consultation with the relevant Roads Authority. The TCPs would outline key details such as advanced warning signage, traffic flow management and pedestrian management measures.	All
T.3	Maintain pedestrian access to and from Hornsby Station at all times.	All
T.4	Where practicable, minimise the use of local and town centre roads for construction vehicle access to and from the site, with major regional roads being used for construction haulage where practicable.	All
T.5	Where practicable, avoid the delivery of construction materials during peak commuter travel periods and school drop off/pick up times.	All
T.6	Minimise the total number of deliveries required during construction by providing enough storage within the construction compound for stockpiling materials.	All
T.7	Scheduling oversized deliveries and other significant traffic disrupting activities to occur at night using vehicles fitted with non-tonal reversing alarms.	All
T.8	Avoid a net loss in accessible parking spaces at the eastern Hornsby Station entrance by relocating existing commuter parking spaces.	All

ID no.	Mitigation measures	Applicable Proposal component
T.9	Road occupancy licences for temporary closure of roads would be obtained, where required.	All
T.10	Limit off-site construction vehicle parking to designated areas. Areas of temporary on-street parking during peak construction events would be identified in the traffic management plans to minimise the impact on surrounding properties and businesses. Construction worker parking would not be permitted within 600 metres of the construction site.	All
T.11	The queuing and idling of construction vehicles in residential streets would be minimised.	All
T.12	An emergency response plan would be developed for construction traffic incidents.	All
T.13	Where required, public communications would be conducted to warn the community and local residents of vehicle movements and anticipated effects on the local road network relating to site works in accordance with the CEMP.	All
T.14	Access to all private properties adjacent to the works would be maintained during construction, unless otherwise agreed by relevant property owners.	All
T.15	During project inductions, all heavy vehicle drivers would be provided with the emergency response plan for construction traffic incidents.	All
T.16	Should damage occur to the road surface as a direct result of the construction of the Proposal, the construction contractor would be required to 'make good' any damage sustained.	All
Urban design, landscape and visual amenity		
U.1	Anti-graffiti coating would be provided to elements of the buildings and wall finishes which are accessible to the public.	Commuter car park
U.2	Layered planting, including the provision of medium height trees, would be provided along the eastern edge of the Proposal to: <ul style="list-style-type: none"> • provide visual amenity for the road user, pedestrian and residents • provide shade to pedestrians and parked cars • mitigate the hard surface character and magnitude of works, as the vegetation matures. 	Commuter car park
U.3	About 80 square metres of redundant footpath at the northern part of George Street, from the stair shaft to the extent of works boundary can be redesigned to allow for replacement of vegetation in this area and the mitigation of the visual impact of the structure.	Commuter car park

ID no.	Mitigation measures	Applicable Proposal component
U.4	<p>The following building facades are proposed; however, would be determined during detailed design:</p> <ul style="list-style-type: none"> the long facade of the building which borders George Street would be finished with vertical, irregular spaced aluminium sheets, to assist breaking up the monotonous form of the Proposal and help soften its edge by allowing air and light through the structure the finish of the ground level wall would be of a textured pattern, or tactile appearance of either an exposed aggregate or tile cladding the upper parapet can be concrete finish, concrete with an added oxide, or painted concrete to provide a look of formalised capping to the Proposal the parapet would be finished with a double rail which spans the length of the building. This galvanized rail would have the effect of reducing the apparent height of the structure as well as prevent the public from walking along the top of the wall. 	Commuter car park
U.5	Detail design and documentation drawings would define the extent of all construction activity including temporary works in order to protect the area of vegetation immediately adjacent during construction.	All
U.6	Construction facilities would be contained within the construction works zone boundary and occupy the minimum area practicable for their intended use.	All
U.7	Prior to construction commencement provide suitable barriers, such as shade cloth or a similar material, to screen views from adjacent areas during construction.	All
U.8	Existing trees to be retained within construction facilities areas would be identified, protected and maintained.	All
U.9	Minimise light spill from the rail corridor into adjacent visually sensitive properties by directing construction lighting into the construction areas and ensuring the site is not over-lit. This includes the sensitive placement and specification of lighting to minimise any potential increase in light pollution.	All
U.10	Once construction is complete, or progressively throughout the works where possible, return compound sites to at least their pre-construction state.	All

ID no.	Mitigation measures	Applicable Proposal component
Noise and vibration		
N.1	<p>A Construction Noise and Vibration Management Plan (CNVMP) would be prepared as part of the Construction Environmental Management Plan. Measures documented in the CNVMP would be consistent with the mitigation measures outlined in the Transport for NSW Construction Noise Strategy and the <i>Interim Construction Noise Guideline</i> where practicable. These measures may include (but would not be limited to):</p> <ul style="list-style-type: none"> • letter box drops, individual briefings, respite periods, or where highly intrusive noise levels are anticipated, alternative accommodation for specific construction activities • use of localised acoustic hoarding around significant noise generating items of plant • briefing of the work team in order to create awareness of the locality of sensitive noise receivers and the importance of minimising noise emissions • planning the higher-noise activities and work near residential noise receivers to be undertaken predominantly during less sensitive periods • ensuring spoil is placed and not dropped into awaiting trucks • use of less noise-intensive equipment • noise monitoring. 	All
N.2	All construction plant and vehicles would be fitted with non-tonal reversing alarms.	All
N.3	Operational traffic noise impacts associated with the proposed commuter car park would be considered further during detailed design, with the aim of minimising impacts to residential properties within the Avanti units on George Street. Measures that could be considered include avoiding the use of polished concrete and minimising gaps in traffic barriers along the George Street façade.	All
Aboriginal heritage		
A.1	All construction staff would receive basic training 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 both the Aboriginal and non-Aboriginal community, as well as the legal implications of removal, disturbance and damage to any Aboriginal cultural heritage material and sites.	All
A.2	If Aboriginal objects are located during works, all works would stop in the vicinity of the find, and the OEH, Local Aboriginal Land Council and an archaeologist would be notified. Where required, further archaeological investigations and an Aboriginal Heritage Impact Permit would be obtained before works recommence.	All
A.3	If the project design is changed, and areas not surveyed are to be impacted, further archaeological assessment would be undertaken. Should any Aboriginal heritage items be found, they would be identified on the construction contractor's environmental control maps.	All

ID no.	Mitigation measures	Applicable Proposal component
Non-Aboriginal heritage		
H.1	Non-Aboriginal heritage items would be identified on the construction contractor's environmental control maps.	All
H.2	If any unanticipated archaeological deposits are identified within the Proposal area during construction, work likely to impact on the deposit would cease immediately and the NSW Heritage Council and a heritage consultant would be contacted. Where required, further archaeological work and/or consents would be obtained for the unanticipated archaeological deposits prior to works recommencing at the location.	All
H.3	A heritage induction would be provided to workers before construction begins, informing them of the location of known heritage items and guidelines to follow if unanticipated heritage items or deposits are located during construction.	All
H.4	Design of the commuter car park is to consider the heritage context of the Hornsby Railway Station, and aim to minimise the potential for adverse impact on the setting of the surrounding heritage item. The design would aim to be low in form where possible, to avoiding competing with unmodified elements of Hornsby Station visible from street level, such as the current platform canopies. The façade fronting George Street would be finished in a suitable material and colour that is consistent with the existing visual context.	Commuter car park
H.5	A program of archival recording would be carried out prior to the removal of the existing A-frame in the Hornsby rail yard. The recording would include a photographic record of the A-frame to be replaced in the yards and on the platforms, and be carried out in accordance with the <i>How to Prepare Archival Records of Heritage Items</i> guidelines (OEH 1998). The recording would meet the minimum requirements for archival recording.	Hornsby Junction Remodelling
Biodiversity		
B.1	All workers would be provided with an environmental induction prior to commencing work on-site.	All
B.2	Disturbance of vegetation would be limited to the minimum amount necessary to construct the Proposal. The clearing of mature, native trees would be minimised as far as practicable.	All
B.3	Any vegetation to be removed that has not been assessed in this REF would be subject to separate approval in accordance with Transport for NSW's <i>Application for Removal or Trimming Vegetation</i> (Form PE-FO-078/5.0).	All

ID no.	Mitigation measures	Applicable Proposal component
B.4	<p>Weed control measures would be developed and included in the CEMP to manage the dispersal and establishment of weeds during the construction phase of the Proposal. This would include the management and disposal of weeds found to be noxious within the Hornsby LGA, as well as the following weeds that are known to occur within the rail corridor:</p> <ul style="list-style-type: none"> • exotic perennial grasses, such as <i>Chloris gayana</i>, <i>Melinis repens</i> and <i>Pennisetum clandestinum</i> • exotic vines, such as <i>Asparagus aethiopicus</i>, <i>Asparagus asparagoides</i>, <i>Hedera helix</i>, <i>Ipomoea indica</i> and <i>Tradescantia fluminensis</i> • noxious weeds of <i>Ageratina adenophora</i>, <i>Ambrosia tenuifolia</i>, <i>Asparagus asparagoides</i>, <i>Lantana camara</i> and <i>Rubus fruticosus</i>, in accordance with the NW Act. 	All
B.5	Native vegetation that is removed as a result of the Proposal would be offset in accordance with the Transport for NSW Vegetation Offset Guide 9TP-ST-149. Quantities for offset to be determined during the detailed design stages of works.	All
Landform, geology, soils and contamination		
L.1	If hazardous or contaminated materials are found during construction, work would stop immediately and the Project Manager would be contacted.	All
L.2	Any contaminated waste would be classified according to the <i>Waste Classification Guidelines</i> (EPA 2014) prior to removal offsite. Should any contaminated material be uncovered during redevelopment works that exceeds the relevant land use guidelines then further delineation works may be required.	All
L.3	Assessment of any soil exposed during the construction of Phase 2 of the Proposal would be carried out to assist in quantifying any potential contamination risks.	All
L.4	Procedures for handling asbestos contaminated materials, including licensed contractor involvement as required, record keeping, site personnel awareness and waste disposal would be undertaken in accordance with WorkCover requirements.	All
Hydrology and water quality		
W.1	Soil and water management measures would be identified, consistent with the principles and practices detailed in <i>Managing Urban Stormwater: Soils and Construction</i> (Landcom 2004).	All
W.2	No stockpiles of materials or storage of fuels or chemicals would be located within high/medium flood risk areas.	All
W.3	Vehicles and machinery would be properly maintained to minimise the risk of fuel/oil leaks.	All
W.4	Routine inspections of all construction vehicles and equipment would be undertaken for evidence of fuel/oil leaks.	All
W.5	All fuels, chemicals and hazardous liquids would be stored within an impervious bunded area in accordance with Australian Standards and EPA Guidelines.	All

ID no.	Mitigation measures	Applicable Proposal component
W.6	Emergency spill kits would be kept on-site at all times. All staff would be made aware of the location of the spill kit and be trained in its use.	All
W.7	Construction plant, vehicles and equipment would be refuelled off-site, or in a designated re-fuelling area.	All
W.8	Site offices and staff facilities would be located above the 100-year ARI flood level, where practicable.	All
W.9	The existing RailCorp and Council drainage systems would remain operational throughout the construction of the Proposal.	All
W.10	Groundwater encountered during the construction of the Proposal would be managed in accordance with the requirements of the <i>Waste Classification Guidelines</i> (EPA 2014) and <i>Water Discharge and Reuse Guideline</i> (Transport for NSW 2015).	All
W.11	Erosion and sediment control measures would be regularly inspected (particularly following rainfall events) to ensure their ongoing functionality.	All
W.12	Erosion and sediment control measures would be left in place until the works are complete and areas are stabilised.	All
W.13	Works would be managed during rainfall (or whilst the ground remains sodden) to minimise plant and vehicle disturbance to the topsoil.	All
W.14	Adequate water quality and hazardous material procedures (including spill management procedures, use of spill kits and procedures for refuelling and maintaining construction vehicles/equipment) would be implemented during the construction of the Proposal.	All
W.15	Erosion and sediment control plans would be prepared in accordance with <i>Volume 2D of Managing Urban Stormwater: Soils and Construction</i> (DECC 2008). The erosion and sediment control plans would be established prior to the commencement of construction and be updated and managed throughout as relevant to the activities during the construction phase.	All
W.16	Disturbed surfaces would be reinstated as quickly as practicable after construction.	All
W.17	All stockpiled materials would be stored in bunded areas and kept away from waterways to avoid sediment entering the waterways.	All
W.18	Sediment would be prevented from moving off-site and sediment laden water prevented from entering any watercourse, drainage line or drainage inlet.	All
W.19	Temporary scour protection and energy dissipation measures would be designed and implemented to protect receiving environments from erosion.	All

ID no.	Mitigation measures	Applicable Proposal component
Air quality		
AQ.1	Methods for management of emissions would be incorporated into the CEMP, inductions, training and pre-start talks.	All
AQ.2	Activities with the potential to cause substantial emissions, such as material delivery and load out and earthworks, would be identified in the CEMP. Work practices which minimise emissions during these activities would be investigated and applied where reasonable and feasible.	All
AQ.3	Visually monitor dust and where necessary implement the following measures: <ul style="list-style-type: none"> • apply water (or alternate measures) to exposed surfaces that are causing dust generation. Surfaces may include unpaved roads, stockpiles, hardstand areas and other exposed surfaces (for example recently graded areas) • appropriately cover loads on trucks transporting material to and from the construction site. Securely fix tailgates of road transport trucks prior to loading and immediately after unloading • prevent where possible, or remove, mud and dirt being tracked onto sealed road surfaces. 	All
AQ.4	Ensure plant and machinery is regularly checked and maintained in a proper and efficient condition. This would reduce the likelihood of exceeding relevant emissions standards.	All
Cumulative impacts		
CI.1	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.	All

8. Conclusion

This REF has been prepared in accordance with the provisions of section 111 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:

- increased capacity of Hornsby Junction to increase the capacity and reliability of the T1 North Shore Line
- provision of a turnback facility for North Shore Line trains to allow terminating Platform 2 trains to move off the main lines while the driver changes ends of the train to turn-back and approach Platform 1 for city bound services
- greater operational independence between the T1 North Shore Line, the T1 Northern Line and the Main North Line
- improvements to the train entry/exit times to/from Hornsby Station Platforms 1 and 2
- reduced assets and configuration issues that impact on reliability, accessibility and maintainability of the rail network.

The key likely impacts of the Proposal are as follows:

- increased construction traffic, disruptions to access, and track possessions
- increased noise from construction activities near sensitive receivers
- temporary loss of commuter parking in the George Street Commuter car park
- moderate visual impacts on the Hornsby Railway Station Group and a minor visual impact on the Barracks building due to the construction and operation of the commuter car park
- moderate visual impact on the SRA electricity plant and signal box due to the construction and operation of the commuter car park
- impacts during track possessions and car park closures to commuters using the T1 Northern and T1 North Shore Lines for work or recreational purposes.

This REF has considered and assessed these impacts in accordance with clause 228 of the EP&A Regulations, the Department of Urban Affairs and Planning guidelines *Is an EIS Required?* (DUAP 1999) and the requirements of the EPBC Act (refer to Chapter 7, and Appendices 1 and 2). Should the project proceed, these impacts would be effectively managed by the Hornsby Junction Remodelling and Commuter Car Park CEMP, mitigation measures (refer to Chapter 8) and the conditions of approval. As a result, these environmental impacts are not considered to be significant. Accordingly an EIS is not required, nor is the approval of the Minister for Planning.

The Proposal has also taken into account the principles of ESD (refer to Section 3.1.5). These would be considered further during the detailed design and construction phases of the Proposal. This would ensure the Proposal is delivered in a manner that provides maximum benefit to the community is cost effective and minimises any adverse impacts on the environment.

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Appendix 1 – Consideration of Clause 228 factors

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>Any environmental impact on a community?</p> <p>Comment: The Proposal has the potential to result in short-term negative impacts during the construction phase due to increased noise and dust from construction activities, construction traffic, changes to access (including track possessions), and visual impacts.</p> <p>Operation of the Proposal would result in long-term positive impacts due to improved transport customer experience, additional rail network capacity, and the provision of additional car parking spaces.</p>	<input checked="" type="checkbox"/> minor <input checked="" type="checkbox"/> negative <input checked="" type="checkbox"/> short term
<p>Any transformation of a locality?</p> <p>The Proposal would result in the establishment of a new commuter car park at Hornsby Station, as the site of an existing at-grade commuter car park. Overall, the Proposal is unlikely to have any significant transformation of the locality surrounding Hornsby Station.</p>	<input checked="" type="checkbox"/> minor <input checked="" type="checkbox"/> negative <input checked="" type="checkbox"/> long term
<p>Any environmental impact on the ecosystem of the locality?</p> <p>Comment: With the proposed mitigation conditions in place, the Proposal is unlikely to impact the local ecosystem as confirmed in Chapter 6. Some tree removal would be required but such impacts are not expected to adversely affect any local ecosystems.</p>	<input checked="" type="checkbox"/> minor <input checked="" type="checkbox"/> negative <input checked="" type="checkbox"/> short term
<p>Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality?</p> <p>Comment: During construction, the Proposal would result in short-term impacts to the aesthetic and recreational quality of the locality due to construction noise and traffic, and visual impacts.</p>	<input checked="" type="checkbox"/> minor <input checked="" type="checkbox"/> negative <input checked="" type="checkbox"/> short term
<p>Any effect on a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or other special value for present or future generations?</p> <p>The Proposal would result in a minor impact to the heritage fabric of one listed item of local heritage significance. The Heritage Impact Assessment completed for the Proposal concluded that the Proposal would not have a significant impact on the heritage significance on this item or other heritage items in the vicinity of the works.</p>	<input checked="" type="checkbox"/> minor <input checked="" type="checkbox"/> negative <input checked="" type="checkbox"/> short term
<p>Any impact on the habitat of protected fauna (within the meaning of the National Parks and Wildlife Act 1974)?</p> <p>Comment: The Proposal would result in the removal of planted native and exotic vegetation. The vegetation to be removed would not constitute habitat of protected fauna.</p>	<input checked="" type="checkbox"/> minor <input checked="" type="checkbox"/> negative <input checked="" type="checkbox"/> short term
<p>Any endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air?</p> <p>Comment: The Proposal is not anticipated to endanger any species of animal, plant or other form of life, whether living on land, in water or in the air.</p>	Nil

Factor	Impacts
<p>Any long-term effects on the environment? Comment: The Proposal is not anticipated to have any long-term effects on the environment.</p>	Nil
<p>Any degradation of the quality of the environment? Comment: The Proposal is not anticipated to result in the degradation of the quality of the environment.</p>	Nil
<p>Any risk to the safety of the environment? Comment: Construction of the Proposal would be managed in accordance with a CEMP to reduce any risks to the environment.</p>	<input checked="" type="checkbox"/> minor <input checked="" type="checkbox"/> negative <input checked="" type="checkbox"/> short term
<p>Any reduction in the range of beneficial uses of the environment? Comment: The Proposal is not anticipated to have any reduction in the range of beneficial uses of the environment.</p>	<input checked="" type="checkbox"/> minor <input checked="" type="checkbox"/> negative <input checked="" type="checkbox"/> short term
<p>Any pollution of the environment? Comment: During construction, the Proposal has the potential to result in short-term noise, air and water pollution. These impacts would be managed in accordance with the mitigation measures outlined in Table 7-1. Operation of the Proposal is unlikely to result in pollution of the environment.</p>	<input checked="" type="checkbox"/> minor <input checked="" type="checkbox"/> negative <input checked="" type="checkbox"/> short term
<p>Any environmental problems associated with the disposal of waste? Comment: The Proposal is unlikely to result in any environmental problems associated with the disposal of waste. All waste requiring off-site disposal would be classified in accordance with the Waste Classification Guidelines (EPA 2014) prior to disposal at an appropriate waste facility licenced to accept waste of the relevant classification.</p>	<input checked="" type="checkbox"/> minor <input checked="" type="checkbox"/> negative <input checked="" type="checkbox"/> short term
<p>Any increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply? Comment: The Proposal would not increase demands on resources (natural or otherwise) that are, or are likely to become, in short supply.</p>	Nil
<p>Any cumulative environmental effect with other existing or likely future activities? Comment: The Proposal may have cumulative impacts due to the construction of other known developments within the locality. These impacts are expected to be minor and would be limited to the construction phase.</p>	<input checked="" type="checkbox"/> minor <input checked="" type="checkbox"/> negative <input checked="" type="checkbox"/> short term
<p>Any impact on coastal processes and coastal hazards including those under projected climate change conditions? Comment: The Proposal is not located on the coastline and has not been identified as within an area that would be subjected to increased sea level rise.</p>	Nil

Appendix 2 – 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 the Commonwealth Department of the Environment.

Factor	Impacts
Any impact on a World Heritage property? Comments: There are no World Heritage properties in the vicinity of the Proposal.	<input checked="" type="checkbox"/> nil <input type="checkbox"/> minor <input type="checkbox"/> significant
Any impact on a National Heritage place? Comments: There are no National Heritage places in the vicinity of the Proposal.	<input checked="" type="checkbox"/> nil <input type="checkbox"/> minor <input type="checkbox"/> significant
Any impact on a wetland of international importance? Comments: There are no wetlands of international significance in the vicinity of the Proposal.	<input checked="" type="checkbox"/> nil <input type="checkbox"/> minor <input type="checkbox"/> significant
Any impact on a listed threatened species or communities? Comments: The Proposal is unlikely to significantly affect listed threatened species or communities.	<input checked="" type="checkbox"/> nil <input type="checkbox"/> minor <input type="checkbox"/> significant
Any impacts on listed migratory species? Comments: The Proposal is unlikely to significantly affect listed migratory species.	<input checked="" type="checkbox"/> nil <input type="checkbox"/> minor <input type="checkbox"/> significant
Any impact on a Commonwealth marine area? Comments: The Proposal is not in the vicinity of a Commonwealth marine area.	<input checked="" type="checkbox"/> nil <input type="checkbox"/> minor <input type="checkbox"/> significant
Does the Proposal involve a nuclear action (including uranium mining)? Comments: The Proposal does not involve a nuclear action.	<input checked="" type="checkbox"/> nil <input type="checkbox"/> minor <input type="checkbox"/> significant
Water resource, in relation to coal seam gas development and large coal mining development? Comments: The Proposal does not involve a coal seam gas development or a large coal mining development.	<input checked="" type="checkbox"/> nil <input type="checkbox"/> minor <input type="checkbox"/> significant
Additionally, any impact (direct or indirect) on Commonwealth land? Comments: The Proposal would not be undertaken on or in the vicinity of Commonwealth land.	<input checked="" type="checkbox"/> nil <input type="checkbox"/> minor <input type="checkbox"/> significant

Appendix 2

Hornsby Junction Remodelling and Commuter Car Park Submissions Report



Transport
for NSW

Hornsby Junction Remodelling and Commuter Car Park Projects

Submissions Report



Indicative only, subject to design and consultation

April 2016

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Abbreviations and Glossary

Abbreviation	Definition
ARI	Average recurrence interval
ASRIS	Australian Soil Resource Information System
BSA	Bureau of Statistical Analytics
CBD	Central Business District
CCTV	Closed-circuit television
CEMP	Construction Environmental Management Plan
CNVMP	Construction Noise and Vibration Management Plan
CPTED	Crime Prevention Through Environmental Design
CSEP	Community and Stakeholder Engagement Plan
CTMP	Construction Traffic Management Plan
ECM	Environmental Control Measures
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPBC Act	<i>Commonwealth Environment Protection and Biodiversity Conservation Act 1999</i>
Feasible and reasonable	Feasible relates to the engineering considerations and what is practical to build. Reasonableness relates to the application of judgement in arriving at a decision taking into account the nature and extent of mitigation benefit, the cost of mitigation and community views.
Frangible planting	Planting which breaks under the impact of a motor vehicle (and hence helps to stop a vehicle). Generally trees and shrubs with a mature trunk diameter of less than 100mm at around 500mm above ground level are considered frangible.
ICNG	Interim Construction Noise Guideline
Infrastructure SEPP	<i>State Environmental Planning Policy (Infrastructure) 2007</i>
INP	NSW Industrial Noise Policy 1999
LED	Light emitting diode
LEP	Local Environment Plan
LGA	Local Government Area
LoS	Level of Service
NSW	New South Wales
OEH	NSW Office of Environment and Heritage
REF	Review of Environmental Factors
RNP	NSW Road Noise Policy 2011
Roads and Maritime	Roads and Maritime Services
TAP	Transport Access Program
TCP	Traffic Control Plan
UDLP	Urban Design and Landscaping Plan

Document History

Revision	Date	By	Review
01	7/03/16	Kirsty Flynn and Philippa Owen	Lana Assaf
02	30/03/16	Kirsty Flynn and Philippa Owen	Lana Assaf
03	4/04/16	Kirsty Flynn and Philippa Owen	Lana Assaf
04	07/04/16	Kirsty Flynn and Philippa Owen	Lana Assaf

Executive summary

Background

Transport for NSW is the proponent for the Hornsby Junction Remodelling and Commuter Car Park (the Proposal), located in Hornsby, New South Wales and is to be delivered by Transport for NSW.

The Proposal comprises two components; track work remodelling and the construction of a commuter car park. The track work is being delivered to increase the capacity of the T1 North Shore Line including supporting the integration of the Sydney Metro Northwest into the existing rail network. The commuter car park is being delivered as part of the Transport Access Program (TAP) – an initiative to provide a better experience for public transport customers by delivering accessible, modern, secure and integrated transport infrastructure where it is needed most.

A Review of Environmental Factors (REF) was prepared to assess the environmental impacts associated with the construction and operation of the Proposal under the provisions of Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

The REF was placed on public display from 27 January 2016 to 10 February 2016 and the community were invited to comment on the Proposal in person at the three information sessions held at Hornsby Station on 30 January, 4 February and 9 February 2016 and on the project website.

Summary of the Proposal

Hornsby Junction Remodelling

Hornsby Junction Remodelling comprises the reconfiguration of track, signalling and overhead wiring within the existing rail corridor between Waitara and Asquith. This would include the installation, removal and reconditioning of track work, overhead wiring and signalling infrastructure between Waitara and Asquith. The Proposal would also include a new train driver's walkway and a train 'turnback' facility located approximately 30 metres south of Bridge Road, Hornsby.

Hornsby commuter car park

The Proposal also comprises the construction and operation of a multi-storey car park at the site of the existing at-grade Hornsby Station commuter car park on George Street, which would include the partial removal of the existing at-grade commuter car park and construction of a new multi-storey car park structure.

Purpose of this report

This Submissions Report outlines and responds to community and stakeholder submissions received by Transport for NSW in response to the public display of the REF.

As part of the public display of the REF, Transport for NSW undertook consultation with the community and stakeholders. This included a community newsletter which was distributed to commuters at the station, and issued to all residents and businesses in a one kilometre radius of Hornsby Station. Three staffed pop-up information kiosks were

held at Hornsby Station on 30 January, 4 February and 9 February 2016 (refer to Section 2).

Figure E-1 shows the progress of the Proposal through the planning approval and consultation process.



Figure E-1 Planning approval and consultation process for the Proposal

Overview of submissions

A total of 93 submissions were received during the public display of the Hornsby Junction Remodelling and Commuter Car Park REF. These included:

- 92 submissions from individual community members – including 26 feedback forms received by Transport for NSW at the pop-up information kiosks at Hornsby Station; and
- one submission from local government (Hornsby Shire Council). The Council submission is identified in this report as response number 88.

All written feedback received during the public display period along with the contact details of those people who submitted the feedback was recorded in Transport for NSW consultation database.

Each submission received was assigned a unique submission number and categorised according to the key issues raised. A response letter has been sent to each stakeholder or community member who made a submission, to inform them of their individual submission number so they can locate where their issue has been addressed in the Submissions Report. Individual submissions have been categorised and grouped with others where similar issues were raised.

Modifications to the Proposal

Transport for NSW has made modifications to the Proposal since the public display of the REF. The most notable changes include:

- a new design for the multi-storey car park to change it from being an excavated two-level structure to an at grade three storey structure (ground level plus two additional storeys)
- modification of the combined entry and exit at the south end of the car park at the intersection of George Street and Burdett Street, into an entry only point from George Street at the existing combined entry and exit point, and provision of a new single lane exit only onto George Street at the north end of the car park, near to the Linda Street intersection.
- the intersection of George Street and Burdett Street is no longer proposed as an access point to the car park
- updated construction activities to accommodate the above design changes
- addition of three construction compounds to cater for site access, materials storage and prefabrication.

Section 4 of the Submissions Report provides a detailed description of modifications to the Hornsby Commuter Car Park, and assesses the environmental impacts of these changes. All proposed modifications have been assessed in accordance with Section 111 of the EP&A Act, and the modifications were found to be unlikely to result in a significant impact to the environment.

A number of additional or revised management measures are proposed to mitigate the likely impacts from the modified Proposal. These are outlined in Section 5 of this Submissions Report.

Conclusion and next steps

This Submissions Report responds to submissions received during the public display of the REF, and provides Transport for NSW's response to the submissions.

Transport for NSW will now review the REF and this Submissions Report and determine whether the requirements for assessment under Part 5 of *the Environmental Planning and Assessment Act 1979* (EP&A Act) have been met. It will then make a determination as to whether to proceed with the Hornsby Junction Remodelling and Commuter Car Park Proposal.

Should the Hornsby Junction Remodelling and Commuter Car Park Proposal be approved, Transport for NSW would continue to consult with community members, government agencies and other stakeholders to manage impacts during construction and operation.

1 Introduction

1.1 Background

1.1.1 Need for additional rail network capacity

The Hornsby Junction is a complex network of interconnected tracks located within the rail corridor between the Pacific Highway and Bridge Road in Hornsby's business centre. The junction is heavily used by passenger and freight rail services and is the junction where the Main North Line and T1 North Shore Line meet. The current track configuration through the Hornsby Junction limits the ability of Sydney Trains to increase the number of rail services operating on the T1 North Shore Line due to speed restrictions and track crossovers.

Hornsby Junction does not currently have the capacity to enable the operation of additional city-bound T1 North Shore Line train services. To create this capacity, the Hornsby Junction would need to be reconfigured to allow the operation of additional T1 North Shore Line services. This would increase capacity to 16 trains per hour at Hornsby Station.

1.1.2 Need for additional commuter car parking

The NSW Government is committed to facilitating and encouraging the use of public transport by upgrading stations to make them more accessible, providing and upgrading car parks, and improving interchanges around stations with other modes of transport such as buses, bicycles and cars.

Hornsby Station is currently the 18th busiest station on the rail network (based on 2014 data), with over 23,000 customer trips being made to and from this station on a typical weekday (Bureau of Transport Statistics 2015). Hornsby Station generates a large demand for unrestricted parking, with the existing commuter car park currently having insufficient capacity to meet this demand (Arup 2015).

The Bureau of Statistical Analytics (BSA) has predicted that patronage levels at Hornsby Station will increase by 32 per cent by 2036. Demand for car parking is expected to increase at the same rate, and so Transport for NSW estimates that approximately 220 additional unrestricted parking spaces will be required to accommodate the forecast 2036 parking demand. Without additional commuter car parking at Hornsby Station, the accessibility of rail services for park-and-ride customers will continue to decrease as competition for limited available unrestricted parking increases.

Increased demand for unrestricted parking at Hornsby Station also has the potential to adversely affect the accessibility of those businesses, community services and other land uses located around the station as competition for parking between rail and non-rail customers increases.

1.2 Overview of the Hornsby Junction Remodelling and Commuter Car Park

1.2.1 Hornsby Junction Remodelling

The key features of the proposed Hornsby Junction Remodelling would include:

- installation, removal and reconditioning of track work between Hornsby Station and approximately 400 metres north of Bridge Road, Hornsby
- relocation of overhead wires and support structures
- installation, removal and modifications of signalling infrastructure to increase the capacity of the T1 North Shore Line at Hornsby.
- modification of track drainage, combined services routes and other rail infrastructure (such as local cable routes)
- provision of a new train driver's walkway and a train turnback facility located approximately 30 metres south of Bridge Road, Hornsby.

1.2.2 Hornsby Commuter Car Park

The key features of the proposed Hornsby Station Commuter Car Park include:

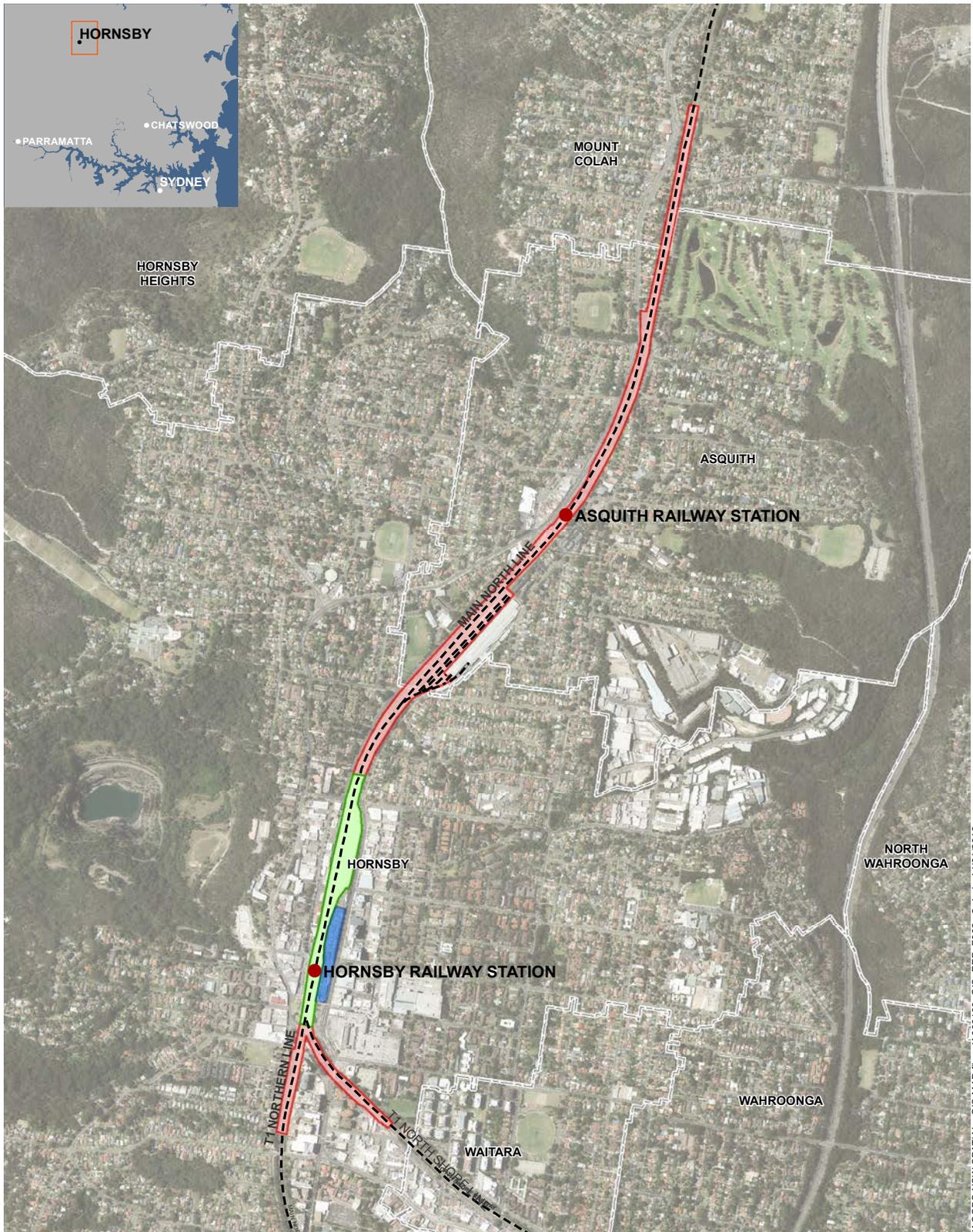
- partial removal of the existing at-grade commuter car park, including modification of an existing on-site stormwater detention storage tank
- construction of a multi-storey commuter car park structure
- provision for approximately 230 additional commuter parking spaces
- provision of a vehicular entry only lane from George Street at the existing combined entry and exit at the southern end of the commuter car park
- provision of a single lane exit only onto George Street at the northern end of the car park, in the vicinity of the Linda Street intersection
- provision of a new retaining wall and planter along the eastern side of the car park (to replace the existing retaining wall structure that would be demolished to facilitate construction)
- provision of a three metre high deflection wall and anti-climb fencing between the rail corridor and the length of the western façade of the multi-storey car park, if deemed necessary by a risk assessment.
- ancillary works including stairs, a lift, perimeter fencing, power and lighting, communications, CCTV camera surveillance, drainage, utilities, line-marking and signage, urban design works and landscaping
- maintaining access to the Sydney Trains maintenance facility via the car park.

A number of other associated works would also be required as part of the proposed commuter car park, comprising:

- relocation of high voltage overhead power lines from the site of the existing commuter car park
- provision of approximately six accessible parking spaces adjacent to the eastern station entrance in accordance with the relevant requirements (to be created from existing unrestricted commuter parking at this location)

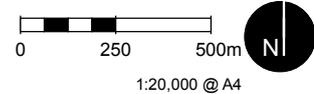
- extension of the footpath on the western side of George Street from the George Street/Burdett Street intersection, where it currently terminates, to the northern boundary of the proposed commuter car park, to provide pedestrian access between Hornsby Station and the proposed lifts / stairs in the commuter car park
- utility protection works
- installation of wayfinding signage
- vegetation removal and replacement landscaping within the existing car park site.

The location and indicative extents of the Proposal are shown in Figure 1-1.



JACOBS NSW SPATIAL - GIS MAP file : IA088400_GIS_REF_F002_r2v1 | 14/01/2016

- Legend**
- Proposed Signalling Work
 - Proposed Trackwork
 - Proposed commuter car park
 - Rail line



Data sources

Jacobs 2015
 Ausimage 2014
 LPI 2014

Figure 1-1 | Location of the Proposal

1.3 Review of environmental factors

1.3.1 Likely impacts of the Proposal

Environmental investigations were undertaken during the preparation of the REF to assess the potential environmental impacts. Significant environmental impacts are unlikely to arise as a result of the Proposal. The main potential impacts that would require further consideration during detailed design, construction and operation are summarised below.

Traffic and transport

The main construction access would be via the existing combined entry and exit to the commuter car park at the intersection of George Street and Burdett Street. The works would be undertaken in accordance with a detailed Construction Traffic Management Plan (CTMP) and it is not expected that the local road network would be materially affected by construction traffic generation. Pedestrian access to and from Hornsby Station would be maintained throughout construction.

Car parking spaces at the station would be temporarily removed during construction. Transport for NSW will work with its delivery partners to develop a car parking offset strategy to identify temporary parking options during the closure of the commuter car park.

Replacement bus services would be provided by Sydney Trains during a thirteen consecutive day rail shutdown for track remodelling likely to occur in early January 2018.

The additional vehicles generated by the commuter car park during the operation phase are expected to have minimal impacts on the local road network.

Urban design, landscape and visual amenity

The construction of the Proposal is anticipated to cause temporary adverse visual amenity impacts for surrounding sensitive receivers, mostly notably associated with the establishment of the construction compound, stockpile sites and worksites; the removal of existing street plantings; earthworks; construction of the proposed commuter car park; and the use of lighting during scheduled night works and for security. Controls to minimise impacts include the containment and screening of construction compounds and work areas through the use of suitable screens or barriers; the sensitive placement and specification of lighting to minimise any potential increase in light spill; and the reinstatement of the compound site and work areas.

Once operational, the Proposal would generally have a moderate to low impact on the surrounding landscape and visual amenity. A high to moderate impact would occur at one viewpoint (refer to Section 4.2.1 of this report).

An Urban Design and Landscaping Plan (UDLP) would be prepared to minimise visual impacts during the operation of the commuter car park.

Noise and vibration

Construction noise and vibration has the potential to impact nearby sensitive receivers, including residential and commercial receivers. Exceedances in noise management levels are predicted for residential properties on George Street and Hunter Street during some construction works especially associated with the ground works and site clearance, earth works, overhead wiring installation and sheet pile driving. During night works, these impacts are likely to extend further to the east, along properties on Albert

Street and possibly beyond. For works associated with the Hornsby Junction Remodelling, exceedances are expected during the relocation of public utilities, track removal, installation and conditioning works. Construction vibration may occur from use of hydraulic hammers, jackhammers and piling. Appropriate mitigation measures would be considered during detailed design and a Construction Noise and Vibration Management Plan (CNVMP) would be prepared to reduce impacts of construction noise and vibration. *Transport for NSW Construction Noise Strategy* would be implemented to manage noise and vibration impacts on nearby sensitive receivers.

Operational noise associated with potential increases in train frequency and approach speed is not expected to be noticeable at surrounding receiver locations. Operational traffic noise impacts at higher floors of residential units on George Street are predicted to potentially exceed NSW Industrial Noise Policy 1999 (INP) operational criteria by a small margin of 2dB(A). These predictions are based on conservative assumptions for the busiest possible one hour period, and are based on external noise levels (i.e. noise that would be experienced on the balconies of these residential units).

Where doors and windows are left open, a reduction of approximately 10dB(A) would be expected to occur across the building façade. This would lead to maximum internal levels of operational noise in the order of 38dB(A). Given that doors and windows will not always be open these predicted internal noise levels are within the allowable range of design sound levels and are considered acceptable.

Heritage

Construction of the Proposal would not impact on any previously recorded Aboriginal heritage sites and the potential of encountering previously unrecorded Aboriginal heritage items is considered to be low.

The proposed new commuter car park would have a moderate visual impact on two items of local heritage significance, namely the Hornsby Railway Station Group and Barracks, and the State Rail Authority (SRA) electricity plant and signal box through the introduction of a new structure where there is currently ground-level car parking. The location of listed heritage items located near the Proposal is provided in Figure 6-6 of the REF. Vibration intensive construction works could indirectly impact on these two heritage items as well as the Railway cloak room buildings. Safeguards and management measures would be implemented to manage construction vibration impacts on surrounding heritage items, as outlined in Section 5.

The Proposal would require the removal of a steel A-frame within the eastern portion of the railway yard, which is located within the heritage curtilage of the Hornsby Railway Station. Archival recording would be carried out prior to the removal this item, as outlined in the REF.

The heritage context of the Hornsby Railway Station would be considered as part of design development of the new commuter car park. The façade fronting George Street would be finished in a suitable material and colour that is consistent with the existing visual context.

Socio-economic impacts

Construction of the Proposal has the potential to result in temporary adverse local amenity impacts due to construction noise, traffic, dust and visual changes associated with construction works (e.g. lighting, stockpiling etc.).

During operation, the Proposal is expected to have a number of positive impacts on access and connectivity for the local and regional community. The Proposal would

provide increased capacity on the T1 North Shore Line, and provide increased commuter parking supply at Hornsby Station.

Biodiversity

Construction of the Proposal would result in the removal of planted native and exotic vegetation from the site of the proposed commuter car park. The clearing of mature, native trees would be minimised as far as practicable, and would be offset in accordance with the Transport for NSW Vegetation Offset Guide as appropriate. No impacts to threatened ecological communities, threatened species and migratory species are expected during construction or operation of the Proposal.

Other impacts

Construction activities have the potential to impact on local air quality including particulate (dust) and gaseous emissions, and on water quality through the pollution of stormwater runoff with sediments, fuel and other hazardous materials. Ground works also have the potential to disturb acid sulphate soils and unknown contaminated materials. These impacts are expected to be minor and temporary, and would be managed in the Construction Environment Management Plan (CEMP).

Operational impacts to air, watercourses, and soils would be minimal.

Sustainability

The design of the Proposal has been based on the principles of sustainability, including the *NSW Sustainable Design Guidelines – Version 3.0* and Transport for NSW's Environmental Management System. Sustainable design initiatives proposed in the concept design and to be progressed in design development include efficient car park circulation, energy efficient lighting, prefabricated components and undertaking a carbon footprint and climate change impact assessment.

1.3.2 Statutory compliance

Section 4 of the REF outlines the statutory planning and approvals process for the Proposal. Clause 79 of the *State Environmental Planning Policy (Infrastructure) 2007* (Infrastructure SEPP) allows for the development for the purposes of a 'railway' or 'rail infrastructure facilities' by or on behalf of a public authority without consent on any land. As such, the Proposal is permissible without development consent and is assessable under Part 5 of the EP&A Act.

As the Proposal is not expected to have a significant impact on matters of national environmental significance or Commonwealth land, a referral to the Commonwealth Department of Environment under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) would not be required.

The construction and operation of the Proposal would comply with all relevant legislative requirements identified in Section 4 of the REF.

1.3.3 Conclusions of the REF

Once complete the Proposal would result in improved track capacity of the T1 North Shore Line at Hornsby, and increased parking capacity for commuters of Hornsby Station. The provision of additional commuter car parking would increase the number of spaces for Hornsby Station commuters. Improved access would service a growing population in the Hornsby LGA and encourage public transport use to the metropolitan areas of Sydney. The main construction impacts associated with the upgrade are temporary and would be managed in accordance with the mitigation measures outlined

in the REF. Operational visual impacts would be mitigated through landscaping and the incorporation of urban design principles through detailed design.

It is considered that the Hornsby Junction Remodelling and Commuter Car Park Proposal is unlikely to significantly affect the environment. Accordingly, an Environmental Impact Statement under Part 5.1 of the EP&A Act is not required.

In addition, approval under the EPBC Act is not required.

1.4 Purpose and structure of this report

This Submissions Report has been prepared to:

- summarise and respond to issues raised during the public display of the REF
- identify any changes to the Proposal and the potential impact of those changes
- summarise the mitigation measures for the Proposal.

The Submissions Report has a number of key sections. These include:

- description of community and stakeholder consultation activities undertaken during the REF preparation and public display period (Section 2)
- responses to issues raised in submissions by the community and stakeholder agencies (Section 3)
- details of design changes and modifications to the Proposal (Section 4)
- updated mitigation and management measures (Section 5).

Conclusions to the report are provided in Section 6.

2 Consultation

2.1 Community and Stakeholder Engagement Plan

A Community and Stakeholder Engagement Plan (CSEP) consistent with Transport for NSW's *Community Engagement Policy* was prepared for the Proposal. The plan:

- provides background information about the Proposal
- identifies the community and key stakeholders with the potential to be affected by the Proposal
- identifies the potential nature and extent of stakeholder issues/concerns and relevant strategies to manage these proactively
- defines key messages, and identifies the communication tools and techniques to disseminate information and provide opportunities for feedback
- documents the policies and procedures implemented to record and respond to enquiries, complaints, and issues
- identifies and allocates roles and responsibilities
- provides an overview of how the effectiveness of the strategy will be evaluated.

The CSEP provides for consultation to be undertaken in two stages:

- during REF preparation
- during the public display of the REF.

An overview of the activities undertaken for each stage of consultation is provided in the following sections.

2.2 Consultation during REF preparation

2.2.1 Consultation activities

Table 2-1 lists the key engagement activities and tools, outlines their purpose, and describes how each tool/activity has been used to engage with the community and stakeholders.

Table 2-1 Consultation during REF preparation

Activity	Purpose and detail
Meetings with Roads and Maritime and Hornsby Shire Council	A briefing was provided to NSW Roads and Maritime Services and Hornsby Shire Council to seek feedback on the Proposal including landscaping, vehicular and pedestrian access and parking provision. Transport for NSW has continued to engage with these stakeholders during the development of the Proposal.
Meetings and reviews with Sydney Trains	Meetings and document reviews were held with Sydney Trains to review the business requirements and early options studies, and to discuss the concept design.

2.2.2 State Environmental Planning Policy (Infrastructure) consultation

Part 2 of the Infrastructure SEPP contains provisions for public authorities to consult with local councils prior to the commencement of certain types of development. During preparation of the REF it was established that the Proposal would not trigger the statutory consultation requirements due to the anticipated minor nature of the Proposal's impact on the above matters.

Transport for NSW has nonetheless consulted with Hornsby Shire Council during the REF preparation process and will continue to do so through the detailed design and construction phases of the Proposal.

In accordance with Clause 14 of the Infrastructure SEPP, consultation with Councils is to be undertaken where works would have more than a minor or inconsequential impact on local heritage item (if not also a State heritage item). Transport for NSW have submitted a formal notification to Hornsby Shire Council under this clause to advise of the potential heritage impact in accordance with Infrastructure SEPP requirements, Council was provided with 21 days to respond. Council was provided with 21 days to respond. No response has been received in this period.

2.3 Consultation during public display

The REF was publically displayed from 27 January to 10 February 2016 at the following locations:

- Hornsby Shire Council, 296 Peats Ferry Road, Hornsby – Monday to Friday, 8.30am-5pm
- Hornsby Central Library, 28-44 George Street, Hornsby – Monday to Friday, 10am-9pm; Saturday, 9.30am-5pm and Sunday, 2pm-5pm
- Transport for NSW and the Have Your Say websites.

2.3.1 Consultation activities

Table 2-2 lists the key engagement activities and a tool used during the public display, outlines their purpose, and describes how each tool/activity has been used to engage with the community and stakeholders.

Table 2-2 Consultation during public display

Activity	Purpose and detail
Stakeholder contact	The Project Infoline (1800 684 490) and email address (projects@transport.nsw.gov.au) were available during the display period for stakeholders and the community to ask questions or provide feedback about the Proposal. All details of community members and stakeholders who contacted the Proposal team, issues raised, and responses provided were recorded in the consultation database.
Community newsletter	The community newsletter issued in January 2016 included information on the status of the Proposal, details of the public display locations, and how to make a submission. The community newsletter was made available on the website and distributed to commuters at Hornsby Station and letterboxed to residents and businesses in a one kilometre radius of Hornsby Station.

Activity	Purpose and detail
Website	Information about the public display of the REF was posted on the Transport for NSW (transport.nsw.gov.au/projects) and Have Your Say (haveyoursay.nsw.gov.au) websites.
Letters to government agencies	A letter was distributed to both Hornsby Shire Council and Roads and Maritime Services to provide them with information on the public display of the REF and to invite submissions.
Advertisement	Advertisements were placed in local newspapers to provide information about the public display locations and how to make a submission, including Hornsby Advocate and Northern District Times.
Pop-up information kiosks	Pop-up information kiosks were available at Hornsby Station to provide an opportunity for community members and rail customers to view the plans and talk to members of the Proposal team. These were held on: <ul style="list-style-type: none"> • Saturday 30 January 2016, 10am-12pm • Thursday 4 February 2016, 4pm-7pm • Tuesday 9 February 2016, 4pm-7pm.

2.4 Future consultation

Should Transport for NSW determine to proceed with the Proposal, Transport for NSW would continue to engage and inform the community and key stakeholders during construction regarding potential impacts and opportunities to provide further feedback. The consultation activities would ensure that:

- stakeholders and the community have a high level of awareness of the key processes and activities associated with the Proposal
- accurate and accessible information is made available
- timely responses are given to issues and concerns raised by the community
- feedback from the community is encouraged
- opportunities for input are provided
- customers are informed of changes in a timely manner.

The Project Infoline (1800 684 490), 24-hour Construction Response Line (1800 775 465) and email address (projects@transport.nsw.gov.au) would be available during construction. Targeted consultation and communication such as letters, notifications, advertisements and signage would continue to occur. The website would also include regular updates on the progress of the Proposal.

3 Consideration of REF submissions

3.1 Overview

Each submission received was assigned a unique submission number and categorised according to the key issues raised. A letter has been sent to each stakeholder or community member who made a submission, to inform them of their individual submission number so they can locate where their issue has been addressed in this Submissions Report. Individual submissions have been categorised and grouped with others where the same issue has been raised.

A total of 93 submissions were received during the period of public display. These included:

- 92 submissions from individual community members – including 26 feedback form submissions from the pop-up information kiosks at Hornsby Station
- one submission from local government (Hornsby Shire Council). The Council submission has been provided response number 88.

All written feedback received during the public display period along with contact details was recorded in the consultation database.

Of the 93 submissions, 23 submissions stated their general support for the Proposal and three objected to the Proposal. The remainder did not state whether they supported or objected to the Proposal, although raised concerns with aspects of the Proposal.

Issues raised in each submission have been categorised according to the key issues raised. A summary of the issues identified by category is provided in Section 3.2 of this report. Transport for NSW responses to the issues raised are provided in Section 3.3 and Section 3.4.

3.2 Summary of issues raised

A breakdown of the key issues raised in submissions is provided in Table 3-1, which are not listed in order of importance. Since most submissions raised more than one issue, the number of issues identified is greater than the total number of submissions received. Section 3.3 provides more detailed responses to frequently raised matters in submissions.

Table 3-1 Overview of key issues raised in submissions

Key issue category	Number of times raised within the submissions
Car park capacity	73
Car park design	49
Proposal description and scope	34
Station access	29
Traffic and transport	24
Wider transport network	23
Alternative car parking facilities (construction)	23

Key issue category	Number of times raised within the submissions
Other	16
Noise and vibration	14
Visual and urban design	12
Sustainability	5
Air Quality	1

3.3 Detailed responses to frequently raised matters

3.3.1 Car park capacity – general (Issue CC1)

A number of respondents suggested that the Proposal should provide more than 230 additional car parking spaces for commuters. It was suggested by respondents that the current commuter car park is full by between 6.30am and 7.30am and unrestricted street parking within proximity to the station is limited. It was stated among respondents that more car parking spaces are required due to Hornsby's status as a major hub which attracts commuters from other surrounding areas due to the frequency of rail services and the availability of express trains. It was also suggested that parking issues in the Hornsby area were exacerbated by a number of reasons, including poor services to other train stations in the area and poor bus links and options for alternative travel modes to the station, meaning that more people needed to drive.

Transport for NSW has reviewed the parking demand figures and has concluded that 230 additional spaces are considered adequate to meet demand to 2036. This investigation considered current commuter car parking facilities, existing levels of demand and projected levels of commuter car parking demand based on forecasted growth of patronage at Hornsby Station. Below is a summary of the investigations that have been undertaken to identify the number of car parking spaces required:

Existing commuter car park demand

To establish the existing car park demand, counts of car parking spaces at existing commuter car parking facilities and of the number of on-street untimed car parking spaces which were available within a 400 metres radius of the station were undertaken (Arup, 2015).

There are currently four commuter car parks located within easy walking distance of Hornsby Station, which include:

- main commuter car park off George Street
- commuter car park off George Street
- commuter car park off Jersey Street
- commuter car park off High Street.

These car parks provide a combined total of 470 commuter car parking spaces, including seven accessible parking spaces.

A further 90 spaces, which are used by commuters at the Westfield shopping centre (as identified via consultation with the Westfield Group) was included in the calculations, as summarised in Table 3-2. In total, there is currently demand for 660 car parking spaces.

Table 3-2 Existing commuter car parking demand

Off-street		On-street		Total
Rail car parks	Westfield Shopping centre	90 degree along rail corridor	Parallel parking on-street	
470	90	0	100	660

Projected commuter car park demand

The existing station patronage and predicted 2036 + 15% patronage is shown in Table 3-3. These numbers are based on projections from Bureau of Statistical Analytics (BSA). Typically BSA's projections are based on land use changes, growth in residential population, employment, service (public transport) changes, and other factors such as provision of other public transport and private modes/facilities (e.g. toll changes, motorway/highway capacity changes etc.), and as such has taken in to consideration the effects of population and employment growth in the surrounding areas and demand at Hornsby Station due to constraints in public transport services in other areas.

Based on this level of patronage increase, commuter car parking is assumed to grow at the same rate. This increases commuter car parking demand by 212 cars to 872 cars.

Table 3-3 Future car parking demand increase

Existing patronage 2011/2012	Predicted patronage 2036+15%	% increase	Predicted car park demand 2036 + 15%
22,980	30,349	32%	660 x 32% = 212 additional car spaces

The proposed multi-storey commuter car park would provide approximately 230 additional spaces, which would exceed the predicted car park increase of 212 spaces. It is important to note that the car park has been designed to accommodate potential future expansion if required.

Alternative travel modes to Hornsby Station

As discussed in the REF, the proposed Hornsby Station commuter car park forms part of the Transport Access Program (TAP). This program is designed to improve customer experience, deliver seamless travel to and between transport modes, encourage greater public transport use and better integrate station interchanges with the role and function of town centres within the metropolitan area and developing urban centres in regional areas of NSW.

The TAP therefore aims to support alternative modes to the car, including public and active transport. The additional 230 spaces will complement other modes of transport to the station including bus services, kiss-and-ride, and cycling.

Transport for NSW will continue to work with Hornsby Shire Council and other stakeholders to look for opportunities to provide multimodal improvements across the road, rail, public and active transport network, which in turn can be expected to reduce the levels of car parking demand.

3.3.2 Car park capacity – additional levels (Issue CC2)

In addition to respondents requesting that the Proposal provide more than 230 car parking spaces, a number of respondents provided suggestions for ways in which the car park design could be expanded to increase capacity. Suggestions included that the car park be extended upwards to provide additional levels, or utilise the entire footprint of the existing at grade car park.

The car park design has been revised in order to achieve a more efficient and visually appealing outcome while reducing construction impacts. As a result, the car park will be constructed as a ten metre high structure on a slightly narrower footprint and would still provide approximately 230 additional car parking spaces. The height of the car park is determined by the forecast car parking demand and the available building footprint. The design of the proposed car park will enable the provision of additional levels of parking in the future should these be required, without the need for any demolition works. In this instance, the proposed ramps and stair/lift cores would be extended for the additional levels.

A detailed assessment was undertaken to determine the best location of the additional commuter car parking spaces, with options confined to land owned by RailCorp. It is not considered viable to provide a deck car park on the smaller at-grade car park at the southern end of the station, due to the considerable costs, inconvenience and impacts involved for a relatively small gain in parking spaces. In addition, it was not considered viable to extend the proposed car park along the full length of the existing commuter car park, as it narrows significantly at either end, which presents significant constraints for construction.

The addition of further car spaces at the existing commuter car parking site could result in additional impacts to the environment and community including:

- impacts to road network and air quality associated with encouraging car travel to the station
- impacts to buried and overhead utilities and infrastructure.

3.3.3 Car park capacity – future growth (Issue CC3)

Respondents have raised concerns that the Proposal has not factored in the planned development occurring with the wider Hornsby area and the increase in parking demand this will create.

It is expected that commuters who live within 800 metres of a railway station would walk to the station, and so would not generate additional parking demand for commuter car parking at Hornsby Station. Through the TAP and other initiatives, a wide number of alternative transport modes are available to residents more than 800 metres from the station. Design of the car park has also included provision for additional levels to be added in the future should these be required.

3.3.4 Car park design - passenger drop off facilities (Issue CD 7 and CD8)

Respondents enquired what provisions would be made for passenger drop off / kiss-and-ride facilities as part of the Proposal. Kiss-and-ride facilities are currently provided on the eastern and western sides of the rail corridor. The kiss-and-ride facilities on the eastern side of the rail corridor are located in a layby zone on the western side of

George Street adjacent to a taxi rank. The kiss-and-ride facilities on the western side of the rail corridor are located on Station Street outside the shops and Railway Hotel.

Construction of the Proposal would not impact on existing kiss and ride facilities. The provision of additional kiss and ride facilities on the western side of the station is not included as part of the Proposal due to space constraints and operational bus requirements. A formalised kiss and ride facility on the eastern side of the station within the existing car park would be considered as part of the detailed design and will be included if available space is sufficient to provide a safe facility for all users. This would comply with the *Disability Discrimination Act 1992* requirements.

While the Proposal focuses on upgrading the physical infrastructure at the car park and tracks north of the station, ongoing improvements to kiss and ride facilities may be considered as part of Transport for NSW's ongoing TAP activities.

3.3.5 Wider transport network (Issue WT1)

A number of submissions were received which related to the wider transport network. These submissions included suggestion of upgrades to services and car parks beyond Hornsby Station, and so are not directly within the scope of the Proposal. To address these comments and provide context of upgrade works that are being undertaken across the network, this section provides a summary of works undertaken to date or planned under the TAP program. These upgrade works provide both direct and indirect benefits to Hornsby Station and are outlined below in Table 3-4.

Table 3-4 TAP Commuter car park upgrades relevant to Hornsby Station

Project	Distance from Hornsby Station	Description	Status
Asquith Commuter Car Park	2 km	Provision of around 40 additional spaces along Jersey Street North. This will encourage commuters from this area to park closer to home rather than travelling to Hornsby for services and parking.	Planning stage
West Pennant Hills Commuter Car Park	9 km	Provision of around 275 additional spaces near the Oakes Road major bus interchange. While this project provides commuter parking for bus services operating along the Hills M2 Motorway, it will contribute to easing the parking demand at Hornsby Station as commuters from neighbouring areas change transport modes and park closer to their homes.	Planning stage
Gordon Commuter Car Parks and Interchange	10 km	Approximately 260 commuter parking spaces were provided at two commuter car parks at Gordon Station between April 2014 and June 2015.	Complete
Unlocking rail staff car spaces for customers	Various	Approximately 100 stations across the rail network were changed from rail staff parking to commuter parking resulting in the release of some 1,200 car parking spaces to the public. Hornsby Station has benefitted from this project with the introduction of around 25 additional spaces on the western side of the station. Other stations along the T1 Northern, T1 North Shore and Central Coast and Newcastle Line has also benefitted from this project, therefore providing alleviation to parking conditions at Hornsby as commuters park closer to their home.	Complete
Berowra Commuter Car Park	11 km	Completed in December 2010, the Berowra Commuter Car Park provides approximately 130 spaces.	Complete
Baulkham Hills Commuter Car Park	17 km	183 car spaces and a 30 space bicycle rack have been provided at a new car park on the corner of Windsor Road and Torrs Street, Baulkham Hills in January 2015. While this project provides commuter parking for bus services passing through Baulkham Hills, it will contribute to easing the parking demand at Hornsby Station as commuters from neighbouring areas change transport modes and park closer to their homes.	Complete
Gosford Commuter Car Parks	50 km	Two new commuter car parks were constructed in October 2015 on Mann Street, Gosford, to provide 86 additional commuter parking spaces in close proximity to Gosford Station.	Complete
Woy Woy Commuter Car Park	55 km	Completed in April 2011 and constructed above the existing Deepwater Plaza car park located off George Street, the car park provides an additional three levels of parking with approximately 300 additional spaces.	Complete

3.3.6 Station access – additional assess (Issues SA1 and SA2)

It was suggested in submission responses that a second entrance onto the platform at the northern end of the station be incorporated into the design. The reasons behind these suggestions included to improve accessibility generally, to relieve congestion during peak hours at the ticket gates, to avoid the need for commuters to walk the length of the car park to gain access to the station therefore improving access for parents with prams and customers with accessibility needs, to provide a time saving and safer access (by preventing the need to walk through the car park). Respondents noted that the current congestion levels at the ticket gates and the southern end of platforms are highly constrained and perceived to be unsafe during peak hours.

Additional suggestions included that the existing northern overpass be extended to provide direct access between the proposed car park, platforms and the bus/taxi rank on the western side of the station.

Under the new car park design, pedestrians would access the existing station entrance via a pedestrian footpath. The footpath would run along the western side of George Street and be accessed from the multi-storey car park via stairs and lifts.

In response to the comments, Transport for NSW has consulted with Sydney Trains to discuss the feasibility of creating a secondary access point at the northern end of the station platforms. These discussions will continue as part of design development. The potential benefits of providing alternative access would need to be balanced with the additional infrastructure and staffing required to provide a secure, well maintained facility. The viability of this would be determined during detailed design.

3.3.7 Alternative parking facilities (construction) (Issue AP1)

A number of submissions expressed concern about the provision of alternative parking facilities during construction. In particular a number of respondents raised concerns and enquiries about where, and in what number, alternative parking would be provided during construction. Respondents noted that alternative parking should be provided in proximity to the station and that the Proposal should consider impacts on commuters who already have long commutes.

Construction of the Proposal will result in the following impacts on existing parking:

- temporary relocation of approximately 90 commuter car parking spaces from the existing Hornsby Station car park during the proposed enabling works for the Proposal. These relocated commuter car parking spaces are anticipated to be required from mid-2016 for approximately nine months.
- temporary closure of the Hornsby Station commuter car park on George Street and relocation of approximately 370 parking spaces during the construction of the Hornsby Junction Remodelling and Commuter Car Park. This commuter car park is anticipated to be fully closed for approximately 10 months, from January 2017 to October 2017.

The three smaller commuter car parks (with a combined capacity of 96 car spaces) would not be affected by the works. It is anticipated that at its highest, construction would result in the loss of up to 370 parking spaces. As such alternative parking would be required to provide temporary parking for at least this number during construction.

For the provision of the additional 370 car parking spaces, a number of alternative locations were identified, including:

- creating additional on-street parking supply through changes to angle of car parking in Florence Street, May Street, Frederick Street and Jersey Street
- providing additional off-site parking on private property.

A number of respondents suggested the following locations for alternative parking be considered:

- street parking at the east side of Jersey street between Coronation Street and Bridge Road
- Hornsby Shire Council parking in Coronation street available to general public with at least four hours for parking
- lease and convert the land in Dural Street (at the moment a vacant land)
- lease and convert the land in the corner of Ashley Street and Forbes Street (at the moment a vacant land in front of RSL) in a commuter car park during the duration of the project
- make existing car parks in Westfield centre or the TAFE available to commuters.

Each of these options has been investigated, with some options still under consideration, and others being discounted for a variety of reasons. For example, vacant land in front of the RSL was found to be unsuitable as the grade of the land is too steep to meet standard parking requirements and so the site would require significant excavation and regrading to make it suitable for purpose. The use of the TAFE car park would create conflict with the Hornsby Quarry Road Construction Spoil Management project currently being undertaken by Roads and Maritime and Council, and so is not deemed as a safe option for commuters.

Leasing spaces at Westfield Hornsby would require approval from Scentre Group (the operator of Westfield shopping centres) and Hornsby Shire Council. Further investigations will be undertaken to determine the feasibility of this.

Respondents also suggested a shuttle bus service be provided during construction. The provision of a satellite car park and park and ride service was investigated. However no suitable replacement locations were identified within an appropriate distance of the station, and so this option was discounted.

Transport for NSW will work with its delivery partner, Council and relevant stakeholders to provide commuter parking spaces, as close to the station as possible and within walking distances (10 minutes or 800 metres), as a minimum. Transport for NSW will keep customers informed prior to any changes being made to parking arrangements. No rebate would be provided to commuters who use paid parking facilities during construction.

3.4 Responses to submissions

Table 3-5 Response to submissions

3.4.1 Car park capacity

Item	Issue	Summary of issue	Stakeholder number	Response
CC1	Car park capacity (general)	<p>230 additional car parking spaces is inadequate to meet the demand associated with the additional train services proposed on the T1 North shore Line and Hornsby's status as a major hub which attracts commuters from surrounding areas due to the frequency of rail services and the availability of express trains. The demand estimates are inaccurate.</p> <p>The current commuter car park is full by between 6.30am and 7.30am and unrestricted street parking within proximity to the station is limited.</p> <p>The track reconfiguration would enable more trains to operate on the T1 North Shore Line, which will only exacerbate problems associated with the car park, because there will be more commuters.</p>	1, 3, 12, 14, 18, 25, 26, 27, 37, 43, 45, 46, 48, 49, 50, 55, 58, 64, 68, 69, 71, 74, 77, 80, 82, 86, 90, 92	<p>The TAP is responsible for identifying locations where car parking facilities are required and determining the parking demand for the construction of new commuter car parks.</p> <p>Transport for NSW has reviewed the parking demand figures and has concluded that 230 additional spaces are considered adequate to meet demand up to 2036 +15%. The number of commuter car parking spaces is determined by a number of factors including demand, site location and constraints, forecasted growth in patronage, and traffic impact assessment.</p> <p>Commuters will use a variety of traffic interchange modes at the station, including connecting trains, buses, walking and cycling. Additionally, projects being carried out at other stations along the line would reduce demand at Hornsby Station.</p> <p>A detailed response to this issue has been provided in Section 3.3.1.</p> <p>The design of the proposed car park will enable the provision of additional levels of parking in the future should these be required, without the need for any demolition works, thereby minimising any future impacts and costs associated with providing additional car parking.</p>
CC2	Car park capacity (additional levels)	<p>Increase the height of the car park to three or four storeys to provide more parking. This would lower the environmental impact and it would be more cost effective and less disruptive to build the additional levels now.</p> <p>The car park should be built to also accommodate additional levels at a later date.</p> <p>If the height of the car park was an issue, then the design should involve excavating down to allow the required heights allowing level access from George Street.</p>	3, 6, 11, 14, 26, 27, 37, 41, 56, 58, 68, 69, 70, 71, 74, 75, 86, 90, 93	<p>The car park design has been revised in order to achieve a more efficient and visually appealing outcome while reducing construction impacts. As a result, the car park will be constructed as a three metre high structure on a slightly narrower footprint and would still provide approximately 230 additional car parking spaces. Further details of the modified Proposal are provided in Section 4.2.1. The height of the car park has been determined by the forecast car parking demands and the available building footprint. Additionally, the impact on the adjacent residential dwellings has been considered with impacts such as overshadowing avoided.</p>

Item	Issue	Summary of issue	Stakeholder number	Response
				The modified Proposal would be built at ground level, meaning that excavation of the car park would be minimised therefore reducing the volume of spoil that would be generated during construction. This would lead to fewer impacts relating to construction noise, energy use, transport off-site and disposal. It would also minimise construction costs.
CC3	Car park capacity (future growth)	<p><i>The Proposal has not factored in the planned development occurring with the wider Hornsby area and the resulting increase in commuter parking demand this will create, with more local residents driving to the station. Specific developments include:</i></p> <ul style="list-style-type: none"> <i>The improvement of the Waitara Oval.</i> <i>140 units approved and more projected with the current zoning in Mount Colah</i> <p><i>The modelling of commuter car parking requirements does not take into consideration continued growth in the area, which in turn would result in more of the on-street parking facilities being used. In particular it was noted that barrier counts used in the assessment date from 2013. This is not reflective of continued and forecast residential growth in the area.</i></p>	3, 11, 12, 13, 14, 17, 19, 20, 22, 23, 25, 26, 29, 34, 36, 52, 58, 59, 62, 63, 69, 75, 83, 85, 90, 93	Commuter car parking requirements have taken into consideration the BSA projected growth in patronage for Hornsby Station up to 2036, which includes consideration of land use changes, growth in residential population and other factors (refer Section 3.3.1).
CC4		<i>Suggested developing another car park close to the station or buying and developing the council car parks at the corner of George and Burdett Streets and/or between Dural and William Streets to provide additional capacity.</i>	69	<p>The Hornsby Shire Council car parks would not be purchased for the purpose of commuter parking as they provide parking to service local businesses and is required for that purpose to avoid significant impacts to the businesses and business patrons.</p> <p>For the rationale behind the number of car parking spaces provided, see Section 3.3.1.</p>
CC5	Unrestricted street parking	<i>Hornsby Shire Council is changing the provision of unrestricted street parking in the area. The overall effect is less street parking which will place additional pressure and demand on parking at Hornsby Station.</i>	25	The scope of the Proposal is to provide car parking for commuters only, and does not include discussion with Council regarding their policy towards street parking.

3.4.2 Proposal description and scope

Item	Issue	Summary of issue	Stakeholder number	Response
PD1	Junction remodelling	<i>An additional station platform and track should be provided for terminating trains, or to allow for additional services. This would increase capacity and reduce delays to express/limited stop trains, especially those travelling north. Track reconfiguration should lead to more efficient travel times.</i>	9, 13, 15, 16, 22, 55	<p>The complex junction where the T1 Northern and North Shore Lines meet at Hornsby is being remodelled and upgraded as part of the Proposal. The changes will provide overall improvements to speed and efficiency of train services using Hornsby Station, particularly the arriving northbound services which will no longer experience delays entering the station as part of normal operations.</p> <p>Additionally, the design has assessed the projected demand from additional train services and the existing constraints to develop an optimum solution. The Proposal would increase train capacity and reliability on the T1 North Shore Line at Hornsby.</p> <p>The Proposal includes the provision of a train turnback facility located approximately 30 metres south of Bridge Road, which would allow trains to pass from one track onto a diverging path. This facility would support turnback for up to 16 trains per hour on the T1 North Shore Line. The Proposal does not preclude future construction of an additional platform if required in the future.</p>
PD2	Junction remodelling	<i>With the removal of one track where does Sydney Trains intend to store spare trains. There are currently spare trains stored on the platforms. What efficiency would be gained with one less track as shown in the diagrams?</i>	61	<p>The Proposal would not result in the removal of a track. Sydney Trains operations and train stabling will not be directly affected during the operational phase of the Proposal.</p>
PD3	Junction remodelling	<i>The T1 North Shore Line trains should be allowed access to Platform 3 at Hornsby to manage congestion and reduce delays.</i>	68	<p>The Proposal has been designed to allow for an increase in train movements to 16 per hour on the T1 North Shore Line. Junction remodelling has been undertaken to ensure the efficient management of additional trains on the North Shore Line without degrading services on other train lines.</p> <p>Providing trains with access to Platform 3 when travelling north would lead to congestion on the T1 North Shore Line, causing delays.</p>
PD4	Junction remodelling	<i>Previous planning documents for the Hornsby Station show the requirement for additional tracks. Development of additional track on the eastern side of the station would affect existing commuter parking supply, and additional track on the western side may affect the existing bus interchange. This may necessitate consideration of an</i>	21, 88	<p>It is assumed that this submission is referring to the addition of extra platforms at the station. Construction of an additional platform is not part of the Proposal. The Proposal would not impact the supply of car parking at Hornsby Station, nor would it preclude an extra platform from being constructed at a future date as part of a separate project, if</p>

Item	Issue	Summary of issue	Stakeholder number	Response
		<p><i>alternative commuter parking and bus interchange arrangements or facilities for Hornsby Station.</i></p> <p><i>Does the Proposal allow for the provision of an additional platform in the future?</i></p>		<p>required.</p> <p>There are currently no plans to develop the rail corridor further to the west of the existing rail corridor boundary. Therefore the existing bus interchange would not experience any impacts and alternative arrangements are not necessary.</p>
PD5	Bus shelters	<p><i>Redesign and expand the existing bus station at Hornsby Station as part of the works. They currently offer little shelter from the weather and poor visibility of approaching buses.</i></p>	38, 55, 88	<p>Bus shelters are delivered as part of the TAP. TAP projects are planned and delivered under a prioritisation assessment framework that ensure the community can have confidence that works will be delivered where and when they are needed most. There are no current plans to redesign and expand the existing bus station at Hornsby Station as per this framework. However, the provision of a bus station upgrade at Hornsby Station will continue to be considered as part of the program's ongoing prioritisation process.</p>
PD6	Bus interchange	<p><i>Provide a new covered bus interchange for commuters on the eastern side of the railway.</i></p>	88	<p>Bus interchange upgrades do not form part of the Proposal. A bus interchange is currently provided on the western side of the station from which connecting bus services operate from. This is considered sufficient for the current level of bus services.</p>
PD7	Station design	<p><i>Update Hornsby Station in accordance with the following:</i></p> <ul style="list-style-type: none"> <i>• a multi-storey 'over-platform development' over the station (similar to those in Chatswood and North Sydney)</i> <i>• an Asquith side entrance and footbridge to cross George Street</i> <i>• an underground subway for pedestrians to access the station beneath George Street</i> <i>• remodelling the station to provide covered platforms and a café space</i> <i>• provision of underground track and platforms.</i> <p><i>Suggestion provided for a number of reasons, including creating more usable space inside the station, and improving pedestrian safety.</i></p>	16, 30, 31, 32, 43, 55	<p>In the higher density areas of Chatswood and North Sydney, development for the purpose of commercial and residential uses has been developed over the railway line due to the high demand of land in these areas and the related land value which allows the costs and impacts associated with that type of development to be viable. Additionally, major impacts would be experienced at Hornsby Station during the construction of over-rail development which would result in the Proposal not being viable.</p> <p>The provision of additional entrances to the station will be negotiated with Sydney Trains during detailed design. Sydney Trains have expressed concern over the implementation of additional entrances due to the need to provide fairly extensive infrastructure including an awning and sign boards, CCTV security cameras and Opal card readers as well as the need to provide staff at the entrance.</p> <p>Due to limited space available on the platforms it is not possible to include a café within the paid concourse area. Additionally, it is not considered viable due to the highly transient nature of the station with people in the area for a short time only as well as the number of cafés available in the immediately surrounding area.</p>

Item	Issue	Summary of issue	Stakeholder number	Response
				<p>The Proposal focuses on upgrading the physical infrastructure at the car park and tracks north of the station. The Proposal will not consider any underground development and connections to Westfield Shopping Centre.</p> <p>The pedestrian footbridge over George Street currently provides safe east-west pedestrian connections to the station. Hornsby Shire Council plan to upgrade the footbridge between the station and Florence Street, improving the existing facility. Therefore it was not considered necessary to provide underground pedestrian connections beneath George Street to access the station.</p>
PD8	Signage	<i>Additional signage including platform indicators at the entrance from the new car park levels to the station, car park displays with the number of available spaces, green/red lights to indicate where empty car spaces are, larger/clearer car park entry signs, and bridge signage should be provided.</i>	54, 90, 91	<p>Wayfinding and signage would be designed to be consistent with the Transport for NSW Wayfinding Program, which is being progressively rolled out across the Transport network. Signage would be consistent in appearance with existing railway signage and would be compliant with Sydney Trains standards the <i>Disability Discrimination Act 1992</i> requirements.</p> <p>Specific signage provisions would be determined during detailed design.</p>
PD9	Other	<i>There was a lack of unrestricted on street parking for people working or living in Hornsby due to commuters, and likewise for commuters due to non-commuters (residents and workers) occupying the unrestricted street parking.</i>	26, 59, 69	<p>The Proposal will result in the provision of an additional 230 parking spaces for commuters, which will reduce pressure on the existing on street parking within Hornsby.</p> <p>Parking facilities are also being upgraded in the surrounding areas to help alleviate demand on Hornsby Station and the surrounding area, as outlined in Section 3.3.1.</p>
PD10		<i>Recommended that an overall master plan of Hornsby Station be prepared before a final commuter parking solution is decided. This should also consider the potential for future airspace development above the railway line.</i>	88	<p>Transport for NSW are not proposing any airspace development above the railway line. This Proposal does not include any alterations to Hornsby Station and considers the provision of commuter parking and rail upgrade works only. Development of a master plan for the precinct is not required as part of the Proposal as there are no land use changes and all impacts to surrounding land uses have been considered.</p> <p>As discussed in Section 2.1 of the REF, the delivery of additional car parking facilities for commuters has been identified as a strategic objective in a number of NSW Government planning strategies, including:</p>

Item	Issue	Summary of issue	Stakeholder number	Response
				<ul style="list-style-type: none"> • NSW Long Term Transport Master Plan (Transport for NSW 2012a) • Sydney's Rail Future (Transport for NSW 2012b) • State and Premier priorities • A Plan for Growing Sydney (NSW Government 2014) • Disability Action Plan (Transport for NSW 2012) • Rebuilding NSW: State Infrastructure Strategy 2014 (NSW Government 2014). <p>In addition, the Proposal is consistent with NSW Government's commitment to deliver an efficient and effective transport system around Sydney and NSW as detailed in NSW 2021 – A Plan to Make NSW Number One (Department of Premier and Cabinet 2011).</p>
PD11		<i>The Proposal does little to achieve the objectives of the Transport Access Program, which are to "improve customer experience" or "deliver seamless travel to and between transport modes".</i>	89	<p>The TAP is a NSW Government initiative to provide a better experience for public transport customers by delivering accessible, modern, secure and integrated transport infrastructure where it is needed most. The proposed track works will noticeably improve travel times into Hornsby Station, therefore helping to improve customer experience, while the additional commuter car, motorcycle and bicycle spaces will allow easier access for those who drive or ride to the station, and facilitate intermodal travel for customers.</p> <p>Further information about upgrades to railway stations across NSW are currently being considered within Transport for NSW as part of TAP. Further details of these upgrades are provided in Section 3.3.5.</p>
PD12		<i>Upgrade to include a fully-staffed office for people wanting to travel intercity/state.</i>	91	<p>Staffed offices are located on the station concourse and on Platform 5. Additional offices are not included as part of the Proposal.</p>
PD13		<i>Alighting at the Hornsby Railway Maintenance Centre or access to the minivan that runs 24 hours a day from the Maintenance Centre to the Hornsby Station would reduce the need for parking spaces for commuters that live near the Railway Maintenance Centre.</i>	65	<p>There are currently no commuter facilities available to enable safe access to rail services at the Hornsby Maintenance Centre. As this site is for the use of industrial activities, it cannot be used for the purpose of commuters accessing train services due to significant safety risks.</p> <p>The Hornsby Maintenance Centre is located approximately 1.2 kilometres north of the station which equates roughly to a 15 minute walk. This is considered a reasonable distance for the majority of commuters to walk, use existing bus services, or access kiss and ride facilities at the station. A commuter minivan service is not proposed from this location.</p>

3.4.3 Wider transport network

Item	Issue	Summary of issue	Stakeholder number	Response
WT1	Wider network	<p><i>The following changes should be made to services within the wider network:</i></p> <ul style="list-style-type: none"> <i>Additional fast trains to Sydney CBD;</i> <i>More frequent services at Mount Colah, Mount Kuring-gai, Asquith, Berowra, and Waitara.</i> <i>all the trains which continue on to Berowra should stop at Mount Colah and Mount Kuring gai.</i> <p><i>Reasons being that train trips are delayed, with trains stuck behind slower 'all station' trains and that poor service in the surrounding network is leading to additional demand and pressure at Hornsby.</i></p>	1, 4, 13, 30, 58, 68, 69, 90	<p>The NSW Government is committed to addressing transport challenges as described under the NSW Long Term Transport Master Plan, Sydney's Rail Future, A Plan for Growing Sydney, Rebuilding NSW: State Infrastructure Strategy 2014, regional and sub-regional strategies, and national plans.</p> <p>Although the NSW Government tries to meet the travel needs of all customers, it is not always possible.</p> <p>The Proposal focuses on upgrading the physical infrastructure at the car park and tracks north of the station, and would allow for more services to operate on the T1 North Shore Line. The proposed track works will increase the capacity of the T1 North Shore Line at Hornsby, thereby easing train congestion, while the additional commuter parking spaces will allow easier access for those who drive to the station.</p> <p>The TAP program has provided upgrades to a number of stations across the network, as outlined in Section 3.3.5.</p>
WT2	Parking facilities at other stations	<p><i>Parking facilities at Berowra, Mount Kuring-gai, Mount Colah, Pennant Hills and Asquith should be improved to reduce pressure at Hornsby.</i></p>	1, 68, 69, 82, 83, 87	<p>The TAP is responsible for identifying locations where car parking facilities are required and determining the parking demand for the construction of new commuter car parks. As outlined in Section 3.3.5, a number of projects are planned or have been completed under the TAP program of works that provide direct and indirect benefits to the parking situation at Hornsby Station.</p>
WT3	New railway stations	<p><i>Multiple new suburban stations should be built along existing rail alignment.</i></p>	42	<p>The Proposal focuses on upgrading the physical infrastructure at the car park and tracks north of Hornsby Station. Transport for NSW is not currently investigating the addition of new stations.</p>
WT4	Bus Services	<p><i>Revise bus timetabling to provide better connections from the surrounding areas to Hornsby station and better connections with the trains.</i></p> <p><i>Provide additional buses to the station. It was noted that poor bus service creates additional demand for parking at the station.</i></p>	16, 26, 38, 41, 82, 93	<p>The Proposal focuses on upgrading the physical infrastructure at the car park and tracks north of the station. Buses are considered to be an integral part of the transport network, however no changes are currently proposed to the existing bus timetables for services around Hornsby Station. Sydney Buses operations will not be directly affected during the operational phase of the Proposal.</p> <p>Submissions relating to bus services have been forwarded to the relevant Transport for NSW department for their consideration in planning for future projects and service reviews.</p>

3.4.4 Car park design

Item	Issue	Summary of issue	Stakeholder number	Response
CD1	Cyclist facilities	<i>What provisions for bicycles would be included in the design? Bicycle access and storage to be provided as part of the Commuter Car Park. It was noted that this would allow the Proposal to be integrated into the objectives of the Transport Access Program.</i>	8, 27, 33, 54, 88, 89	<p>There are currently 24 secure bicycle lockers at Hornsby Station, and bicycle racks on Station Street with combined capacity for 18 bicycles. Additional secure facilities with capacity for an extra 40 bicycles will also be provided at Hornby Station as part of the bike shed program. Use of the new bike sheds will be free for cyclists and accessed using Opal cards.</p> <p>These facilities are being provided under the TAP, which is delivering bike sheds at over 40 locations around Sydney and surrounding regions.</p> <p>Installation of the bike sheds at Hornsby Station is expected to start next year (Hornsby Advocate, 2015).</p>
CD2	Motorcycle facilities	<i>Provide a dedicated area for motorcycle parking.</i>	6, 33	<p>Motorbike spaces will be provided as part of the car park redevelopment where possible. These may be located at corner spaces or in spaces that cannot accommodate a standard vehicle. Motorbike spaces would be designed in accordance with the relevant Australian and Transport for NSW Standards. Motorbike parking provisions would be finalised during detailed design and the final number and location of parking spaces would be determined at that stage.</p>
CD3	Design modifications	<i>Modifications to the proposed car park to include the extension of the car park up to the existing pedestrian footbridge, or beyond towards Bridge Road, the provision of a multi-storey car park over the top of the train lines and/or station, providing a deck car park at the smaller existing car park south of the station, a below ground car park with direct access to George Street, relocating the car park to the Jersey Street or a shorter design abutting the station concourse, which could then be extended northwards in the future. Residential units above the car park should also be included.</i>	17, 22, 29, 30, 36, 39, 55, 56, 68, 69, 76	<p>A detailed assessment was undertaken to determine the best location of the additional commuter car parking spaces as well as the offset parking location. Based on consultation with relevant authorities, high level traffic considerations and commuter convenience considerations it was determined, that locating the commuter car park at the current location was the best option for the long term provision of additional parking spaces. No further commuter car parks will be developed in Hornsby at this stage.</p> <p>The multi-deck section of the car park is proposed to be constructed on the widest section of the existing car park as this provides the most efficient building footprint. At either end of the multi-deck section, the existing car park narrows to an extent where it is not viable to build additional levels.</p> <p>It is not considered viable to provide a deck car park on the smaller at-grade car park at the southern end due to the considerable cost, inconvenience and impacts involved for a relatively small gain in</p>

Item	Issue	Summary of issue	Stakeholder number	Response
				<p>parking spaces.</p> <p>The location of the current Commuter Car Park Proposal is the most cost effective solution for the current development situation in Hornsby. In the higher density areas of Chatswood and North Sydney, development for the purpose of commercial and residential uses has been developed over the railway line due to the high demand of land in these areas and the related land value which allows the costs and impacts associated with that type of development to be viable. Additionally, major impacts would be experienced at Hornsby Station during the construction of over-rail development which would result in the Proposal not being viable.</p>
CD4		<i>Develop the roof of the car park as a park, garden or green roof. This would help to reduce the visual impact of the car park and reduce risk of wind tunnelling around the station. A roof would also protect cars from storm damage.</i>	2, 41, 60	<p>The design of the car park has been developed to provide enough parking spaces to meet demand and minimise construction impacts, whilst keeping the height of the structure to a minimum and also allowing for the provision of additional levels in the future if necessary. The use of the top level of the car park as a green space would reduce the proposed capacity of the car park by about one third, which would provide insufficient parking for the station. Measures to reduce the visual impact of the car park would include an urban design and landscape plan, which would be developed prior to the construction phase of the Proposal and submitted to Transport for NSW for approval. The landscape plan would consider potential locations to plant vegetation to minimise visual impacts of the commuter car park whilst not impacting on the number of car parking spaces.</p> <p>The design of the car park includes a permeable façade, meaning that the structure would not result in wind tunnelling around the station.</p>
CD5		<i>Make the car park open sided to provide increased ventilation and light and more visibility into the car park.</i>	74	<p>The proposed car park has been redesigned in order to provide a more visually appealing and efficient solution with less construction impacts. There are many considerations when designing the car park façade including security, visual appeal, impacts to residential dwellings located opposite the car park, functionality, standard requirements for aspects such as air flow and durability with minimal maintenance requirements. The façade shown in the REF and this Submissions Report is indicative only and is subject to change as items are considered further in depth and with a range of stakeholders. Mitigation has been included for the car park design</p>

Item	Issue	Summary of issue	Stakeholder number	Response
				to undergo the Transport for NSW Design Review Panel process. This process includes input from experienced urban designers to ensure all aspects of car park design, functionality and potential impacts are considered and the best available solution is achieved.
CD6	Passenger drop off and collection	<i>Provide the facility to drive a car from its parking spot back to the pedestrian entrance to the station to pick up passengers without having to exit the parking station.</i>	18	The flow of traffic within the car park would be determined during detailed design and would aim to achieve maximum benefits to car park users while not impacting on surrounding traffic conditions. This suggestion would be considered during the detailed design process. It is recognised that a facility that enables drivers to collect their car before picking up fellow passengers would be beneficial to commuters, and this has been included as an additional requirement for the design (see Section 5).
CD7		<i>The area provided for passenger drop off and collection should be increased. The current arrangement creates congestion and hazards beside the station stairs and on George Street.</i>	22, 30, 35	A formalised kiss and ride facility on the eastern side of the station within the existing car park would be considered as part of the detailed design and will be included if available space is sufficient to provide a safe facility for all users while not impacting traffic flow. If incorporated, the kiss and ride facility would be compliant with the <i>Disability Discrimination Act 1992</i> . This suggestion would be considered during the detailed design process.
CD8		<i>An additional area for passenger drop off should be provided on the western side of Hornsby Station for traffic travelling south. There is no provision on the western side of the car park for mobility impaired drop off or collection.</i>	17, 18, 27	The provision of a kiss and ride facility on the western side of the station is not included as part of this Proposal due to space constraints and operational bus requirements. A formalised kiss and ride facility on the eastern side of the station within the existing car park would be considered as part of the detailed design as described above. If incorporated, the kiss and ride facility would be compliant with the <i>Disability Discrimination Act 1992</i> and would need to be constructed as to not disrupt traffic flow.
CD9		<i>The area for passenger drop off should be increased during construction</i>	27	During construction of the Proposal, passengers would continue to be able to be dropped off in the southern car park, and on the western side of the station. No expansion to drop off facilities are proposed but, further details on alternative parking facilities during construction are provided in Section 3.3.4
CD10	Security	<i>The car park design to include sufficient lighting and CCTV security cameras for commuters arriving late at night.</i>	22, 23, 74	Lighting and CCTV security cameras will be provided within the car park and car park access areas. Provision of lighting will be in accordance with relevant Australian Standards and Transport for NSW standards as well as comply with the <i>Disability Discrimination</i>

Item	Issue	Summary of issue	Stakeholder number	Response
				<i>Act 1992</i> . CCTV security cameras will be provided where required as determined by a Proposal specific risk assessment.
CD11	<i>Controlled car park</i>	<p>Create a controlled car park to prevent non-commuters from parking there.</p> <p>Install a boom gate that is linked to the use of Opal cards, which is time restricted and with charges incurred for non-commuters to ensure no parking beyond a 24 hour period.</p> <p>Provide access from commuters travelling later in the day or who want to leave vehicles for shorter periods.</p>	22, 23, 30, 37, 46, 51, 62, 65	Commuter car parking at train stations is currently provided by the NSW Government at no cost to the customer and without any time restrictions. The Proposal does not currently include the provision of boom gates or access control equipment. However in accordance with the Transport for NSW <i>Technical Specification for multi-storey car park design</i> , adequate aisle width and setback from George Street has been allowed to enable later installation of access control equipment if required.
CD12	<i>Additional information</i>	<i>The full length of the existing car park should be used.</i>	3	As outlined in Section 4.2, the modified Proposal will provide a car park with a smaller footprint, on the current grade of the existing commuter car park. The smaller footprint of the car park will mean that additional urban design outcomes can be incorporated into the detailed design. The existing commuter car park narrows significantly at either end which presents constraints for building above it at these areas. It is not considered viable to build the multi-storey car park at these narrow sections of car park.
CD13		<i>What access will be provided for mobility impaired from the car park to the station concourse?</i>	17	<p>Connection of the car park into the station will be further investigated during the detailed design of the Proposal. Access will be constructed to be compliant with the <i>Disability Discrimination Act 1992</i>. This submission has been forwarded onto the car park designers for consideration in the detailed design process as a mitigation measure.</p> <p>At this stage, it is envisaged that dedicated disabled parking spaces would be provided within the southern commuter car park on George Street. Access arrangements from this car park to the station would not be changed as a result of this Proposal.</p>

3.4.5 Station access

Item	Issue	Summary of issue	Stakeholder number	Response
SA1	Additional access	<i>A second entrance onto the platform at the northern end of the car park should be incorporated into the design to improve accessibility generally, to avoid the need for commuters to walk the length of the car park to gain access to the station therefore improving accessibility for parents with prams and the or mobility impaired, to provide a time saving and to provide a safer access (with the prevention of the need to traverse the car park).</i>	5, 18, 22, 27, 30, 48, 54, 65, 74, 78, 80, 89, 90	A northern access gate will be considered with Sydney Trains during detailed design. Sydney Trains have expressed concern over the implementation of an entrance at this location due to the need to provide fairly extensive infrastructure including an awning and sign boards, CCTV security cameras and Opal card top up machines as well as the need to provide staff at the entrance. Additional information regarding station access arrangements are provided in Section 3.3.5.
SA2	Additional access	<i>The existing northern overpass should be extended to provide direct access between the proposed car park, platforms and the bus/taxi rank on the western side of the station.</i>	30	There are currently no plans to extend the existing northern overpass to connect the proposed car park, platforms and western side of the station. Ongoing discussions with Sydney Trains would be undertaken during the detailed design to discuss the viability of this suggestion.
SA3	Congestion due to limited access	<i>An additional station entry and exit should be provided to alleviate congestion within the station and at the ticket gates. Currently the southern ends of the platforms are highly constrained and are perceived to be unsafe.</i>	9, 31, 50, 52	Changes to current access/egress arrangements at Hornsby Station are not part of the Proposal. Where appropriate, submissions that are not part of the Proposal will be considered during detailed design or forwarded to the relevant departments within Transport for NSW. It is anticipated that the provision of more frequent train services would help to alleviate congestion on the platforms.
SA4	Accessibility	<i>Install escalators within the station as accessibility is currently only through stairs or one small, slow elevator. Escalators also requested to be provided at the station entrance to enhance station access for the less mobile.</i>	4, 6, 7, 67	Access between the station concourse and all platforms at the station is available via lifts and stairs. Inclusion of escalators at the station is not part of the Proposal. Transport for NSW is committed to constructing transport facilities that accommodate the needs of the wider population. The Proposal would be designed and constructed in accordance with the <i>Disability Discrimination Act 1992</i> .
SA5	Accessibility	<i>An additional ramp or connection to be provided from the new car park level into the station</i>	84	Connection of the car park into the station will be further investigated during the detailed design of the Proposal. This suggestion will be considered as part of this process in the context of the overall design and building and access requirements.

Item	Issue	Summary of issue	Stakeholder number	Response
SA6	<i>Pedestrian walkways</i>	<i>Undercover pedestrian access be provided from the car park to the station platforms. It was noted that this would be consistent with the objectives of the TAP which aims to "improve customer experience"</i>	55, 70, 74, 89	Provision of a covered pathway for pedestrians would be considered during detailed design.

3.4.6 Alternative car parking facilities – construction

Item	Issue	Summary of issue	Stakeholder number	Response
AP1	Alternative locations	<p>Where and in what number would alternative parking be provided during construction? Alternative parking should be provided in proximity to the station and that the Proposal should consider impacts on commuters who already have long commutes.</p> <p>A number of locations for construction parking solutions were recommended:</p> <ol style="list-style-type: none"> 1) Convert to 12 hours the street parking at the east side of Jersey street between Coronation Street and Bridge Road 2) Make the Hornsby Shire Council parking in Coronation street available to general public with at least four hours for parking. 3) Lease and convert the land in Number 2 in Dural Street (at the moment vacant land) in a commuter car park during the construction of the Proposal 4) Lease and convert the land in the corner of Ashley Street and Forbes Street (at the moment vacant land in front of RSL) into a commuter car park for the duration of Proposal construction 5) Make existing car parks in Westfields or the TAFE available to commuters. 	26, 27, 33, 44, 59, 62, 63, 65, 69, 86	<p>Transport for NSW will work with its delivery partner, Council and relevant stakeholders to provide commuter parking spaces, as close to the station as possible and within walking distances (10-minutes or 800 metres), as a minimum. Transport for NSW will keep customers informed prior to any changes being made to parking arrangements.</p> <p>All offset parking would be free and will offset at least as many parking spaces as would be occupied for construction. Additional information regarding the provision of alternative parking during construction is provided in Section 3.3.7.</p>
AP2	Traffic management	<p>Concerned about the effect of additional cars parking on the street during construction, suggesting that the staging of construction be considered to minimise impacts on traffic and parking.</p>	26, 33, 44, 65	<p>Details on how parking during construction would be managed are provided in Section 3.3.7 Construction of the Proposal would be staged to minimise the amount of time that the existing parking at Hornsby Station is closed, as outlined in Section 6.1.3 of the REF. Offset parking will be provided to an equivalent number of spaces occupied for construction purposes, leading to no net increase in street parking demand from construction as a result of the Proposal.</p> <p>A detailed Construction Traffic Management Plan (CTMP) would be developed for the works in consultation with Hornsby Shire Council and Roads and Maritime. This will identify locations for alternative parking during construction to try and minimise the effect of construction on the local road network.</p>
AP3		<p>Traffic management around the station and congested roads would be critical during construction</p>	69	<p>A CTMP would be prepared as part of the Construction Environmental Management Plan prior to construction. The CTMP would aim to avoid any traffic impacts and provide a plan to redirect traffic during construction to avoid congestion and ensure safe traffic conditions. The CTMP will ensure access to all land uses and facilities are maintained, traffic is directed in a safe, appropriate and</p>

Item	Issue	Summary of issue	Stakeholder number	Response
				<p>efficient manner and heavy vehicles related to construction are provided a designated route to avoid impacting on local traffic conditions.</p> <p>The CTMP would be developed in consultation with Hornsby Shire Council and Roads and Maritime where appropriate.</p>
AP4	Consultation	<i>Construction work would impact on commuters and affect street parking. Queried what consultation has been undertaken with car park commuters and authorities regarding temporary construction parking.</i>	33, 62	<p>The REF consultation process included the public display of the REF and three community information sessions during the public display period to provide interested stakeholders with an opportunity to ask questions and discuss the Proposal further. Hornsby Shire Council and Roads and Maritime have been consulted on the Proposal and consultation with the community and relevant stakeholders will continue throughout the detailed design and construction period.</p>
AP5		<i>Noted that any temporary parking would require the approval of the Local Traffic Committee.</i>	88	<p>As outlined in Section 5.5 of the REF, consultation with Hornsby Shire Council (as well as with other key stakeholders) would be undertaken throughout the detailed design process. This would include consultation with the Local Traffic Committee, via Hornsby Shire Council, regarding temporary parking provisions during construction.</p>
AP6	Other	<i>Construction workers would occupy street parking during construction. How would mitigation measures make construction staff park more than 600 metres from the station be enforced.</i>	69	<p>Construction traffic including workers' vehicles would be managed as part of the CTMP in accordance with the specified mitigation measures as outlined in Section 6.1 of the REF. Staff would be encouraged to travel by public transport. By preventing parking within 600 metres of the construction site, staff would not impact the operation of the road network or commuter car parking in the immediate vicinity of the works. Any concerns during construction regarding breaches of the mitigation measures can be reported to Transport for NSW via the 24-hour Construction Response Line, Project Infoline or Proposal email address.</p>

3.4.7 Traffic and transport

Item	Issue	Summary of issue	Stakeholder number	Response
TT1	<i>Vehicular entry and exit to car park</i>	<i>A right hand entry and right hand exit should be provided at the George Street and Burdett Street intersection entry to ease congestion in the surrounding roads.</i>	11, 30, 69, 88	<p>Modifications to the design have removed the George Street and Burdett Street intersection for access to the car park. The revised car park will provide entry from the existing car park access and a new exit will be provided at the northern end of the car park (north of Burdett Street). Further details of the modified Proposal are provided in Section 4.2.2.</p> <p>Providing a right hand turn lane southbound on George Street would reduce southbound vehicles to one lane and generate queuing.</p>
TT2	<i>Vehicular entry and exit to car park</i>	<i>Traffic accessing the car park should be contained to the State Road network. Design should consider using a direct connection to the signalised intersection of George Street / Linda Street.</i>	88	<p>As per Section 6.1.2 of the REF (and Section 4.2 of this report) the Traffic Assessment has predicted that the proposed traffic arrangement would not impact significantly on key road intersections in the vicinity of the Proposal.</p> <p>Introduction of additional intersections, signalling and road widening would result in additional impacts and disruptions to commuters and residents during the construction phase.</p>
TT3	<i>Vehicular entry and exit to car park</i>	<i>The entrance and exit to the station car park could be integrated with the existing set of traffic lights at the George Street / Burdett Street intersection. This would improve traffic flow and negate the sometimes dangerous exits commuters make leaving the car park.</i>	68	<p>As part of the modification of the design, the George Street / Burdett Street intersection has been removed. The car park entry will remain in the same location, but the exit will be onto George Street, in the vicinity of the Linda Street intersection. Further details of the modified Proposal are provided in Section 4.2.</p>
TT4	<i>Vehicular entry and exit to car park</i>	<p><i>The following suggestions for entry and exit arrangements into the car park should be considered. Each of these suggestions includes the provision for cars to travel both north and south from the car park, noting that the current arrangement creates a bottleneck, which leads to frustration and traffic congestion and takes a lot of time:</i></p> <ul style="list-style-type: none"> <i>• car park should have at least two entry points, which allow access for commuters driving from the north or south along George Street</i> <i>• one entrance at Burdett Street and one exit at Linda Street be provided for the car park with three lanes allowing cars to go right, left or straight ahead.</i> <i>• one access point to the car park be provided with three lanes</i> 	30, 90	<p>As outlined in Section 4.2.2, as part of design development the existing combined entry and exit point would be converted into an entry point only. A new single lane exit point to George Street would be provided to the north, in the vicinity of the Linda Street intersection.</p> <p>This arrangement is consistent with the second suggestion which recommended that one entrance and one exit at Linda Street be provided for the car park. The entry and exit points would not provide cars with the ability to go right, left or straight ahead. Entry and exit would be left hand turn only.</p> <p>The provision of a right hand turn from or into the car park would require significant remodelling of George Street at both the exit point and the Burdett Street intersection, leading to additional</p>

Item	Issue	Summary of issue	Stakeholder number	Response
		<i>for both entry and exit, providing the ability to turn left, right and straight ahead.</i>		construction impacts, and would result in queuing from cars waiting to turn right which would affect the overall performance of the network.
TT5	<i>Vehicular entry and exit to car park</i>	<i>An additional car park exit at the northern end of the car park should be included, so that the evening peak is distributed between two exits, one of which is further away from the central Hornsby traffic.</i>	70	A new single lane exit point to George Street would be provided to the north, in the vicinity of the Linda Street intersection.
TT6		<i>Once operational, the Proposal would result in unmanageable pedestrian and vehicle congestion levels on George Street.</i>	39	<p>As outlined in Section 4.2.2, the modified Proposal is expected to result in a less than one per cent increase in development traffic volumes during peak traffic periods (Arup, 2015). The Pacific Highway / George Street intersection is expected to experience a 1.2 per cent increase of the base traffic during the morning peak hour. The assessment concludes that once operation, the Proposal is expected to result in a negligible impact on the operation of George Street.</p> <p>Pedestrian access from George Street to the station would continue to be via the signalised crossing at the George Street / Burdett Street intersection and the pedestrian footbridge across George Street. Hornsby Shire Council has plans to replace the current footbridge with a higher capacity footbridge in the future.</p>
TT7	<i>Assessment scope and approach</i>	<p><i>The Traffic Assessment should consider the following:</i></p> <ul style="list-style-type: none"> <i>- Impact from the total number of spaces (579) rather than just the additional spaces (234);</i> <i>- Trips generated by 'kiss & drop' activities and circulating vehicles that exit the car park when there are no vacant spaces; and</i> <i>- Modelling should be based on actual traffic generation using recent surveys rather than relying on the 2013 GHD study.</i> <p><i>It was also noted that the location of temporary commuter car parking should not be selected until an update to the Traffic Assessment had been completed.</i></p> <p><i>Does the modelling of the number of cars coming to Hornsby station considered cars travelling from the surrounding areas.</i></p>	82, 88	<p>The scope of the Traffic and Transport Assessment (Jacobs, 2016) is to assess the impact of the Proposal and therefore the potential increase in car spaces only. Cars using existing parking spaces and kiss and ride facilities are already travelling on the road network and are therefore captured within the base traffic data.</p> <p>The Traffic and Transport Assessment has used the most recent data available. It is considered to be at an acceptable level of tolerance for the purpose of the study and given the low relative number of cars compared to the baseline (approximately 1 per cent).</p> <p>Impacts associated with temporary commuter car parking would be temporary in nature and the construction methodology would aim to minimise the number and duration of loss of commuter car parking. The location of temporary commuter car parking will be selected with consideration to existing traffic volumes. An assessment of the impact of temporary commuter car parking would be undertaken once the location of this parking had been confirmed.</p>

Item	Issue	Summary of issue	Stakeholder number	Response
TT8	Commuter transport modes	Residents of new apartment blocks on the fringes of Hornsby wouldn't walk to the station, as traffic modelling assumed.	50	Typical walking catchments are recognised internationally as approximately 800 metres or a comfortable 10 minute walk. The traffic modelling has assumed that all residents within 800 metres of the station would walk.
TT9	Pedestrian crossings and safety	An additional signalised pedestrian crossing over George Street should be provided, based on the increased numbers of pedestrians who will be crossing George Street to access the station.	57, 88	There are two existing crossings across George Street in the vicinity of the car park and train station - the footbridge (to be replaced by Hornsby Shire Council with a higher capacity footbridge) and the crossing at the George Street / Burdett Street intersection.
TT10	Pedestrian crossings and safety	How would pedestrians accessing the station through the car park be protected? Would there be any pedestrian crossings, or traffic lights?	67	<p>The existing pedestrian access to the station from the car park utilises the car park aisle. This will continue to be utilised by commuters parking in the retained parking areas. The main pedestrian access for the new multi-storey car park is proposed along George Street utilising the existing footpath, running parallel to the station. There is currently no pedestrian footpath on George Street at the northern end of the proposed car park. The existing footpath will be extended to connect to the proposed stair access points to the car park.</p> <p>Within the car park, pedestrians would be required to walk through the car park utilising the car park aisles.</p> <p>Pedestrians accessing the station from George Street would continue to use the signalised crossing at the George Street / Burdett Street intersection and the pedestrian footbridge across George Street.</p>
TT11		The car park entry ramp should be designed to prevent pedestrians from using it to access the station.	35	The next stage of design will assess accessibility and safety for motorists, pedestrians and other users in and around the new car park to provide an optimum solution. This query has been forwarded onto the car park design team for consideration during detailed design, and the solution would likely involve the provision of signage directing pedestrians to the footpath on George Street. The design of the car park would be subject to a road safety audit, which would include consideration of pedestrian and vehicle interactions.

Item	Issue	Summary of issue	Stakeholder number	Response
TT12	Consultation	<i>Prior to the commencement of construction, a detailed Construction Traffic Management Plan (CTMP) should be prepared in consultation with Roads and Maritime Services and Hornsby Shire Council.</i>	88	<p>A Construction Traffic Management Plan (CTMP) would be prepared as part of the Construction Environmental Management Plan prior to construction. The CTMP would aim to avoid any traffic impacts and provide a plan to redirect traffic during construction to avoid congestion and ensure safe traffic conditions. The CTMP will ensure access to all land uses and facilities are maintained, traffic is directed in a safe, appropriate and efficient manner and heavy vehicles related to construction are provided with a designated route to avoid impacting on local traffic conditions.</p> <p>The CTMP would be developed in consultation with Hornsby Shire Council and Roads and Maritime where appropriate.</p>

3.4.8 Noise and vibration

Item	Issue	Summary of issue	Stakeholder number	Response
NV1	Construction noise	Concerned about the construction noise impacts on shift workers, residents with young children and offices (including meetings), and requested additional information about how noise levels would be controlled during construction, and how mitigation would be triggered when noise management levels were exceeded. It was suggested that mitigation be provided prior to construction to prevent these noise management levels from being exceeded.	61, 72, 79	<p>A construction noise and vibration assessment has been prepared for the Proposal based on potential construction scenarios, which are considered to represent the worst case scenarios for work activities, as discussed in Section 6.1.2 of the REF.</p> <p>A number of noise sensitive land uses within the vicinity of the Proposal were identified, including residential dwellings, commercial premises (e.g. cafes, restaurants and retail/commercial buildings), educational facilities (e.g. TAFE NSW's Hornsby College) and public recreation areas (e.g. Hornsby Park and Hornsby Aquatic and Leisure Centre). In accordance with the <i>Interim Construction Noise Guideline (ICNG)</i>, specific noise management levels have been applied based on the sensitivity of receivers, with classrooms and other education institutions being provided the most rigorous level of noise management (LAeq(15 minute) 55 dB(A)).</p> <p>A 24hour project line will be in place from construction commencement and will be advertised on the Transport for NSW website and at the construction site.</p> <p>All works will be carried out in accordance with the mitigation measures specified in the REF, Transport for NSW Construction Noise Strategy, the Construction Noise and Vibration Management Plan (CNVMP) and this Submissions Report to avoid impacts from occurring.</p>
NV2	Construction noise (reverse alarms)	Non-acoustic reversing alarms are not used during regular track work, even though these are identified as mitigation. A condition enforcing the use of acoustic reversing alarms should be included in the construction contract.	61, 72	<p>Reversing alarms are required on all plant and equipment under safe working requirements. Reversing alarms can be either tonal or non-tonal. The use of non-tonal reversing alarms on all construction plant and vehicles is identified as a requirement in Section 6.3.4 of the REF. This would be incorporated in the CNVMP, which the contractor would be required to adhere to.</p> <p>Under the ICNG, tonal reversing beepers are classified as having 'annoying characteristics'. In addition they are subject to a 5dB(A) penalty during all noise monitoring and assessment. The tonal nature stands out from background noise more than other noise sources and is more difficult for receivers to ignore. Alternatives include non-tonal alarms (squawkers or broadband</p>

Item	Issue	Summary of issue	Stakeholder number	Response
				style), proximity activated alarms, spotters (dedicated staff member) or reversing cameras. Non-tonal alarms will 'blend' into background noise more readily, whilst the remaining options reduce or remove the frequency of the alarms. The site and work methods would be arranged to reduce or eliminate the need for frequent reversing and thereby reduce the frequency of reversing alarms.
NV3		<i>Recommended that acoustic barriers, such as an EchoBarrier Echo H3 or similar, be installed to limit the impact on high noise activities such as pile drivers, scrapers and compactors.</i>	72	<p>The use of temporary shielding may be addressed during preparation of a Construction Noise and Vibration Management Plan (CNVMP). The use of acoustic hoarding has been identified as a potential mitigation measure in the REF, which would help to reduce noise impacts of high noise activities on ground level receivers along George Street. Acoustic screening would not provide benefit to receivers at higher floors of apartments on George Street, and the use of additional mitigation measures such as staging noisy activities during the day time would be used to minimise impacts.</p> <p>A CNVMP would be prepared as part of the Construction Environmental Management Plan, and all mitigation measures documented in the CNVMP would be consistent with the mitigation measures outlined in the Transport for NSW Construction Noise Strategy and the Interim Construction Noise Guideline where practicable.</p>
NV4	<i>Construction vibration</i>	<i>Requested a dilapidation report both prior to and after cessation of works</i>	61	As outlined in Section 5, property condition surveys will be undertaken prior to construction activities commencing. Surveys will be offered for properties identified within 50 metres of the works designation boundary and heritage listed items within 150 metres of the works. Prior to undertaking the survey, a risk assessment will be undertaken by a suitably qualified independent geotechnical and construction engineering expert to determine whether buildings may be affected. For those properties identified as being potentially affected, owners will be offered for a survey to be undertaken.
NV5	<i>Operational noise (train movements)</i>	<i>The new turnaround point should not result in an increase (and ideally reduce) in operational noise (the 'tooting' of the horns that the trains make when they pull out of the centre).</i>	65	Sydney Trains operations will not be directly affected during the operational phase of the Proposal. Concern regarding the use of train horns has been forwarded to the relevant Transport for NSW department.

Item	Issue	Summary of issue	Stakeholder number	Response
NV6	<i>Operational noise (train movements)</i>	<i>Requested a review of the acoustics during operation around the proposed car park, as if properly considered the construction can act in a noise reducing capacity (direct and indirect) generated from the movement of freight trains through the station.</i>	61	<p>A noise and vibration assessment has been undertaken, which assesses the impacts from both the construction and operation of the Proposal. The assessment of operational impacts associated with the track remodelling works concluded that the proposed increase in train numbers is likely to result in a potential increase in train noise below the allowable 2 dB(A) increase, and as such the Proposal is not expected to exceed the NSW <i>Rail Infrastructure Noise Guidelines</i>. Therefore further assessment of total rail noise levels would not be required.</p> <p>It is also noted that the configuration will allow a small increase in the speeds used by passenger trains approaching Hornsby Station. Current typical approach speeds are in the order of 12 km/hr, this may increase to 25 km/hr following the remodelling. In terms of train noise emissions, this increase in speed is not likely to affect overall train noise levels, and is not expected to be noticeable at any surrounding receiver locations.</p> <p>The design of the multi-storey car park has been revised, as outlined in Section 4.2.1, and will now be constructed as a ten metre high structure. The modified Proposal provides the necessary car parking spaces to meet projected demand, while minimising construction impacts. The car park structure may provide some screening of operational noise from train movements and operations at the station for receivers to the east of the junction. Although it is noted that as the façade of the proposed car park is not likely to be solid any reduction is likely to be marginal.</p>
NV7	<i>Operational noise (car park)</i>	<i>Concerned that noise from the car park cannot be mitigated with the use of open type steel wire mesh as a façade.</i>	73	<p>The façade shown in the REF and this Submissions Report is indicative only and is subject to change as items are considered further in depth and with a range of stakeholders.</p> <p>The results of the Noise and Vibration Assessment (Jacobs, 2016), which considered the use of open type steel wire mesh indicated that, as a worst case scenario and during peak use, operational noise levels would only be potentially exceeded by a small margin of 2dB(A) at the higher floors of residential units on George Street, from the uncovered upper levels of the car park. Any operational noise from the lower levels of the car park would be negligible, and so the use of open steel wire mesh as a façade would be sufficient to mitigate noise where installed.</p>

Item	Issue	Summary of issue	Stakeholder number	Response
NV8	<i>Operational vibration (train movements)</i>	<i>Can the Proposal improve the lines for the freight trains, to reduce vibration levels on surrounding buildings?</i>	65	Sydney Trains Maintenance Directorate is responsible for maintaining the existing track. The Proposal does not impact on freight lines however this submission has been forwarded to the relevant Transport for NSW department.

3.4.9 Air quality

Item	Issue	Summary of issue	Stakeholder number	Response
AQ1	Construction	Concerned that upgrade works would create dust impacts	79	<p>As outlined in Section 6.10 of the REF, during construction, local air quality may be temporarily affected by particulate (dust) and gaseous emissions. These impacts would be temporary and readily manageable through standard mitigation measures and controls.</p> <p>Controls to manage dust during construction would include the following, where necessary:</p> <ul style="list-style-type: none"> • apply water (or alternate measures) to exposed surfaces that are causing dust generation. Surfaces may include unpaved roads, stockpiles, hardstand areas and other exposed surfaces (for example recently graded areas) • appropriately cover loads on trucks transporting material to and from the construction site. Securely fix tailgates of road transport trucks prior to loading and immediately after unloading • prevent where possible, or remove, mud and dirt being tracked onto sealed road surfaces. <p>These measures would be incorporated into the Construction Environmental Management Plan (CEMP), inductions, training and pre-start talks, as a minimum. Where activities have the potential to cause substantial emissions, such as material delivery and load out and earthworks, these would be identified in the CEMP. Work practices which minimise emissions during these activities would be investigated and applied where reasonable and feasible.</p>

3.4.10 Sustainability

Item	Issue	Summary of issue	Stakeholder number	Response
S1	Material selection	Contractors should be required to use at least 30% less cement or use concrete alternatives in construction to reduce greenhouse gas and improve sustainability. It was also suggested that the use of concrete alternatives be considered.	61,72	<p>Transport for NSW welcome sustainable ideas for use on projects. Several requirements have been included as part of the Sustainable requirements for the Proposal. These include:</p> <ul style="list-style-type: none"> • Reduce the absolute quantity of Portland cement by at least 30 per cent, as an average across all concrete mixes, by substituting it with supplementary cementitious materials (such as a fly ash, ground granulated blast furnace slag or alkali activated cements) subject to meeting strength and durability requirements. • Make sure that the mix water for concrete contains at least 50 per cent non-potable water. Substitute aggregates to the following levels (but only if Portland cement content does not increase by more than 5 kg/m³): <ul style="list-style-type: none"> ○ At least 40 per cent of coarse aggregate is crushed concrete aggregate or alternative materials. ○ At least 25 per cent of fine aggregates (sand) are manufactured sand or alternative materials. • Use interiors that avoid the need for large quantities of paint and/or cement render surface textures. <p>As outlined in Section 1.3.1, the design of the Proposal has been based on the principles of sustainability, including the NSW Sustainable Design Guidelines – Version 3.0 and Transport for NSW’s Environmental Management System. Sustainability initiatives will be developed in subsequent design stages and submitted to Transport for NSW for approval.</p>
S2	Solar panels	Respondents suggested that solar panels be used on the top floor of the car park, which would also protect cars. It was noted that these panels shouldn’t reflect light into surrounding buildings.	61,72	<p>Transport for NSW welcome sustainable ideas for use on projects. The use of solar panels has been considered in numerous Transport for NSW projects. Generally, it is found that the inclusion of solar panels is not commercially viable. Specific to this Proposal, the commuter car park would not result in a large power draw due to the implementation of alternative sustainability measures including the installation of LED lights which have been proven to reduce energy consumption significantly. This suggestion will be investigated further during detailed design.</p>

Item	Issue	Summary of issue	Stakeholder number	Response
S3	<i>Car charging facilities</i>	<i>Recommended that provision for dedicated car charging spaces be provided based on a needs assessment.</i>	88	Transport for NSW welcome sustainable ideas for use on projects, and this suggestion has been included as a mitigation measure for consideration during detailed design. The provision for dedicated car charging spaces will require further detailed investigation to ensure that appropriate standards are achieved and Sydney Trains operations are not compromised. In accordance with Transport for NSW Technical Specifications, the design of the multi-storey car park would include consideration of future electric car charging systems in its design.

3.4.11 Visual and urban design

Item	Issue	Summary of issue	Stakeholder number	Response
VU1	<i>Additional assessment</i>	<i>Requested additional information and assessment of the visual impacts of the car park, with respondent specifically requesting information about the impacts on 90 George Street and west facing balconies in 1 Burdett Street.</i>	24, 66, 72	<p>Five additional viewpoints have been assessed in response to submissions and the design modifications. The additional viewpoints include Level 8 of 90 George Street and Level 3 of 1C Burdett Street. A visualisation of the proposed car park has been prepared for the viewpoint from Level 8 of 90 George Street to further inform the assessment.</p> <p>Additional details regarding the updated visual impact assessment are provided in Section 4.2.1.</p>
VU2	<i>Visual impact assessment</i>	<i>Highlighted an inaccuracy in the Visual Impact Assessment, with the visual impacts on a 3 storey building one street away being assessed as 'moderate', while the impact on the high rise building adjacent to the station was assessed as having a low impact.</i>	72	<p>The Visual Impact Assessment provides an assessment of the likely impacts of the Proposal by combining the sensitivity of a receiver and magnitude of change, to ascertain what the overall impact would be. For example, if the sensitivity of a receiver was assessed as low, but the magnitude of change was high, then the overall impact would be assessed as moderate. This approach is in accordance with the <i>Guideline for Landscape Character and Visual Impact Assessment</i> (Roads and Maritime, 2013).</p> <p>The buildings in question were given low and moderate ratings relating to their sensitivity, rather than the overall impact of the Proposal. The area adjacent to George Street, which contains the high rise residential buildings in question, is within a landscape character zone that was assessed to be of low sensitivity (landscape character zone 1). This is due to the area being a highly commercial area with a homogenous urban character. Landscape character zone 2 on the other hand, which is located to the east of Hunter Street, was assessed as being moderately sensitive due to its residential nature. Further details of the methodology used for the Visual Impact Assessment are provided in Section 6.2.1 of the REF.</p>
VU3	<i>Light spill</i>	<i>Concerned that light spill from the car park cannot be mitigated with open type steel wire mesh. Shielding should be provided to prevent any light spill from the car park lighting and vehicles. The current design shows less than 100% coverage. The aluminium sheeting proposed for the car park façade should obscure the interior 100% when viewed from across the road, but be angled at 45 degrees or more so light/air can still enter/exit from the south.</i>	61, 73	<p>There are many considerations when designing the car park façade including security, visual appeal, impacts to residential dwellings located opposite the car park, functionality, standard requirements for aspects such as air flow and durability with minimal maintenance requirements. The façade shown in the REF and this Submissions Report is indicative only and is subject to change as items are considered further in depth and with a range of stakeholders. The car park design would undergo the Transport for NSW Design Review Panel process. This process includes input from experienced urban</p>

Item	Issue	Summary of issue	Stakeholder number	Response
				designers to ensure all aspects of car park design, functionality and potential impacts are considered and the best available solution is achieved. Concerns regarding light spill would be included in the Design Review Panel process.
VU4	Landscaping	<i>The Proposal should provide additional planting and green spaces around Hornsby.</i>	41, 81	<p>The Proposal would impact on existing landscape vegetation on the eastern side of the rail corridor along George Street. A landscape plan would be developed prior to construction commencing that identifies suitable mature native trees, shrubs and groundcover. Mitigation measures will be implemented that ensure vegetation removed as part of the Proposal is replaced in accordance with the Transport for NSW Vegetation Offset Guide 9TP-ST-149. Following car park completion, the area along George Street would be revegetated, in consultation with Sydney Trains and Hornsby Shire Council, with appropriate vegetation including mature trees where possible.</p> <p>Additional green spaces around Hornsby is not included as part of the Proposal.</p>
VU5	Landscaping	<i>Concerned that upgrade would destroy surrounding gardens.</i>	79	Impacts of the Proposal would be confined to the study area. There would be no direct or indirect impacts on surrounding gardens.
VU6	Landscaping	<i>The smaller car park at the southern end of the station should have the hedge removed and replaced with something which is much lower in height (or removed altogether) to allow passing cars to see if there is a space in this car park</i>	90	Works associated with the southern car park are not within the scope of this Proposal. However suggestions regarding landscaping have been passed on to Sydney Trains for consideration.
VU7	Landscaping	<i>Future agreement regarding the maintenance of any landscaping should be further discussed with Council.</i>	88	<p>Following car park completion, the area along George Street would be revegetated, in consultation with Sydney Trains and Hornsby Shire Council, with appropriate vegetation including mature trees where possible.</p> <p>Sydney Trains would be responsible for the ongoing maintenance of vegetation during the operation of the car park.</p>

3.4.12 Other

Item	Issue	Summary of issue	Stakeholder number	Response
O1	Consultation	<i>The consultation period of 14 days was too short, and it was suggested that Transport for NSW does not want to receive feedback on the Proposal.</i>	72, 90, 92	Plans for the Proposal were on public display from 27 January to the 10 February, and a two week period for submissions was allowed for in accordance with Transport for NSW procedure. Transport for NSW have accepted and considered all submissions received at the time this report was finalised. Each submission has been categorised and addressed in this report.
O2	Consultation	<i>Any comments made which are not within Transport for NSW's remit should be forwarded onto appropriate departments and/or bodies.</i>	90	All responses have been provided to the appropriate departments of Transport for NSW for consideration. In addition, where responses or suggestions have been provided which relate to car park designs, these have been forwarded onto the car park design team for consideration.
O3	Car parking fees	<i>Cost of the Proposal could be subsidised by a low all day parking rate, which would dissuade non-commuters from using the car park. Provide more information and clarification on fees for car parking</i>	29, 63	Commuter car parking at train stations is currently provided by the NSW Government at no cost to the customer and without any time restrictions. It is not intended to introduce car parking fees as part of the Proposal. Offset parking provided during construction would be provided free of charge to commuters.
O4	Overhead wiring	<i>Concerned that overhead wiring above the station and surrounding area creates a fire hazard.</i>	39	As outlined in Section 3.1.1 and Section 3.3 of the REF the Proposal will include adjustments to a number of public utilities, including high voltage overhead power lines and poles to suit the reconfigured track alignment. Where possible, these wires would be retrofitted but where this is not possible, new or relocated structures would be installed adjacent to the existing structures. Overhead wiring above the existing car park would also be removed. All overhead wiring is designed in accordance with industry guidelines.
O5	Contamination	<i>Would a Remediation Action Plan be made available for the Proposal?</i>	10	A Remediation Action Plan is not required for the site. A geotechnical desktop assessment and site investigation was undertaken by Environmental Earth Sciences (2015) to inform the development of the concept design (Transport for NSW, 2015). The investigation identified fill materials present along the eastern boundary of the Hornsby Station, along with old railway sleepers. The unverified fill material was considered to pose a moderate contamination risk, however the findings of the site investigation found that the site was suitable to continue as a

Item	Issue	Summary of issue	Stakeholder number	Response
				<p>commuter car park without the need for a further detailed site investigation or remediation. Furthermore, the modified Proposal would not involve excavation within the vicinity of the identified fill material identified by Environmental Earth Sciences (2015). Therefore in accordance with the recommendations of this assessment, no remediation action plan is proposed.</p> <p>However, as outlined in Section 6.8.3 of the REF, procedures would be implemented to manage the risk of encountering unexpected contaminated materials. These measures are provided in Section 5.</p> <p>The design of the proposed multi-storey car park has been modified, and as such would require less excavation works than originally anticipated. This would reduce the risk of exposing unknown contaminated materials to some extent, although not completely.</p>
O6	Staging	<i>Why wasn't Hornsby Station upgraded before Gordon and Berowra stations</i>	86	<p>TAP projects are planned and delivered under a prioritisation assessment framework. The prioritisation framework ensures the community can have confidence that works will be delivered where and when they are needed most. This framework is based on evidence-based criteria including:</p> <ul style="list-style-type: none"> • current and future patronage, • the needs and demographics of customers who use the location, • whether important services such as hospitals or education facilities are nearby, and • the accessibility of other nearby transport interchanges and facilities. <p>As a result, projects are carried out in order deemed necessary.</p>
O7	Additional assessment	<i>Assessment and management of impacts should extend beyond construction into the operation of the project, and also consider design shortcomings.</i>	72	<p>The operational impacts of the Proposal were assessed in Section 6 of the REF. Further to this, the car park design has been revised in order to achieve a more efficient and visually appealing outcome while reducing construction impacts. The modified Proposal will enable the provision of additional levels of parking in the future should these be required, without the need for any demolition works, thereby minimising any future impacts associated with construction works. Further details are provided in Section 4.2.</p>

Item	Issue	Summary of issue	Stakeholder number	Response
O8	Program	<i>Why would construction works take 18 months to complete?</i>	80	The Hornsby Junction Remodelling and Commuter Car Park would be constructed in four stages and activities are restricted due to safety and train movement requirements. The majority of works would be undertaken during scheduled track work weekends and rail line shutdown periods, when train movements are limited. This allows for works on the train track to be undertaken safely and with minimal disruption to train services. Track work weekends and rail line shutdowns are scheduled by Sydney Trains to ensure maintenance requirements can be carried out with minimal service disruptions and the Proposal is limited by the availability of these. Car park construction works would be coordinated with the track work construction to minimise construction impacts.
O9	NorthConnex	<i>Raise queries of the planning approval process for the NorthConnex project.</i>	87	The Hornsby Junction Remodelling and Commuter Car Park project will increase train capacity through Hornsby Station and provide additional commuter car parking. NorthConnex is a separate road based project that has been determined by the NSW Minister for Planning. The project was declared to be critical State significant infrastructure and the appropriate planning approval process was followed (you can add more here if the issue requires it). For further information on this project or details on how to contact the NorthConnex project team please refer to the project website at http://northconnex.com.au/ .
O10	Business impacts	<i>Concerned that construction of the Proposal would impact on local businesses.</i>	91	During construction, only businesses within the station would be affected by the proposed works. Access to the station would be maintained throughout construction, with the exception of during the scheduled rail shutdown required for track remodelling, which is likely to occur in early January 2018. This would result in a short term and temporary impact on businesses within the station. Once operational, the Proposal will facilitate increased patronage, resulting in more passing trade for businesses within the station.
O11	Supportive comments	<i>Supports the Proposal, specifically noting congestion and parking issues in the area have needed to be addressed for some time. Positive response about the design of the car park and track reconfiguration should it lead to more efficient services.</i>	3, 5, 8, 13, 17, 19, 27, 28, 29, 31, 34, 40, 45, 47, 49, 56, 60, 61, 68, 69, 70, 85, 88	Noted. Modifications of the Proposal have been undertaken, which are outlined in Section 4.2. The modified Proposal would provide the same number of car parking spaces with lower environmental and construction impacts. Track reconfiguration works would enable more trains to operate on the T1 North Shore Line.

4 Additional investigations and modifications to the Proposal

4.1 Overview

This section documents and assesses the design changes that Transport for NSW proposes to make to the Hornsby Junction Remodelling and Commuter Car Park Proposal since the public display of the REF. The updated design is referred to as the modified Proposal. These design changes were identified as a result of ongoing design development, issues raised by stakeholders and the community during the REF public display period, as well as further refinement of the constructability of the Proposal. Section 4.2 outlines these modifications and assesses the potential environmental impacts of the changes. This includes additional assessments in response to issues raised by stakeholders and the community where appropriate.

An assessment of the difference in environmental impact for the modified Proposal demonstrates that, collectively, they would represent a positive outcome or can be adequately managed through the application of suitable environmental management measures (refer to Section 5 for updated mitigation measures).

4.2 Modifications to the Proposal

4.2.1 Commuter car park design

Since the public display of the REF, Transport for NSW has confirmed that the car park design has been modified as part of design development. The updated design provides a number of advantages including:

- avoids significant excavation and therefore generates less spoil which would require transporting off site
- reduces service relocations and risk to underground utilities
- avoids disturbing unverified fill material along the eastern boundary of the Hornsby Station
- narrower footprint, which provides more opportunity to incorporate urban design principles into the car park design.
- potential for reduced temporary car park closure impacts (through shorter construction period and smaller construction footprint)
- avoids changes and consequential impacts to the road network (see Section 4.2.2)
- better value for money.

The car park would provide approximately 230 additional parking spaces, as per the previous design.

The modified Proposal would incorporate three levels (existing grade plus two floors). The structure would be situated on top of the existing Hornsby Station commuter car park (see Figure 4-3) and would be about 150 metres in length, 35 metres wide and up to 10 metres high (including stair and lift canopies). A single lane entry to the car park would be provided via the existing combined entry/ exit point from George Street, and

exit would be via a single lane exit onto George Street at the northern end of the car park near to the intersection with Linda Street.

The modified Proposal also includes a deflection wall, which would provide a continuous protective face between the railway line and the western façade of the car park (in the event of accidents such as a train derailment). The wall would be approximately three metres high and be constructed of reinforced concrete.

Vehicles would access the above ground car park levels via ramps. Stairs and a lift would be provided for pedestrian access and would be designed in accordance with accessibility requirements and Australian Standards.

The 3D visualisation and cross section of the modified Proposal are provided in Figure 4-1 and Figure 4-2 respectively. The proposed façade treatment would include features such as vertical, irregular spaced aluminium sheets, to assist breaking up the form of the Proposal and help soften its edge by allowing air and light through the structure (as outlined in Section 3.1.4 of the REF). Photomontages of the modified Proposal are shown in Figure 4-4 to Figure 4-6. Existing vegetation along George Street would be replaced with suitable landscaping comprising mature native trees and shrubs and appropriate ground cover. Landscaping shown in Figure 4-4 to Figure 4-6 is indicative only and would be confirmed through the development of an Urban Design and Landscape Management Plan to be prepared prior to construction. This will ensure that appropriate landscaping is provided as part of the Proposal. It should be noted that the car park is at an early stage of design and is subject to further modifications.

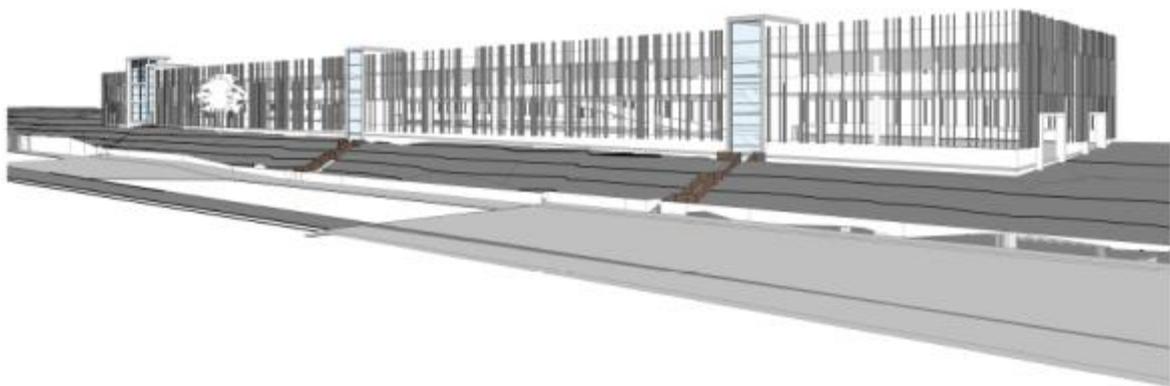


Figure 4-1 : Indicative 3D visualisation of the modified Commuter Car Park

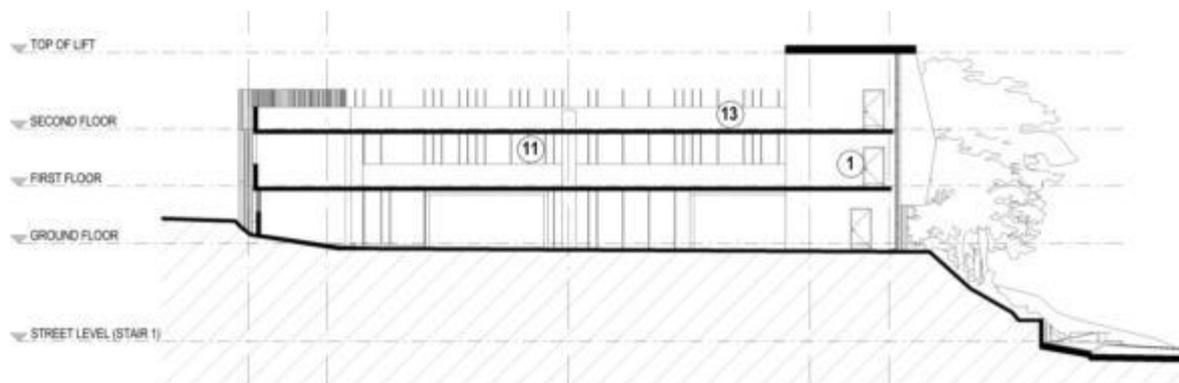
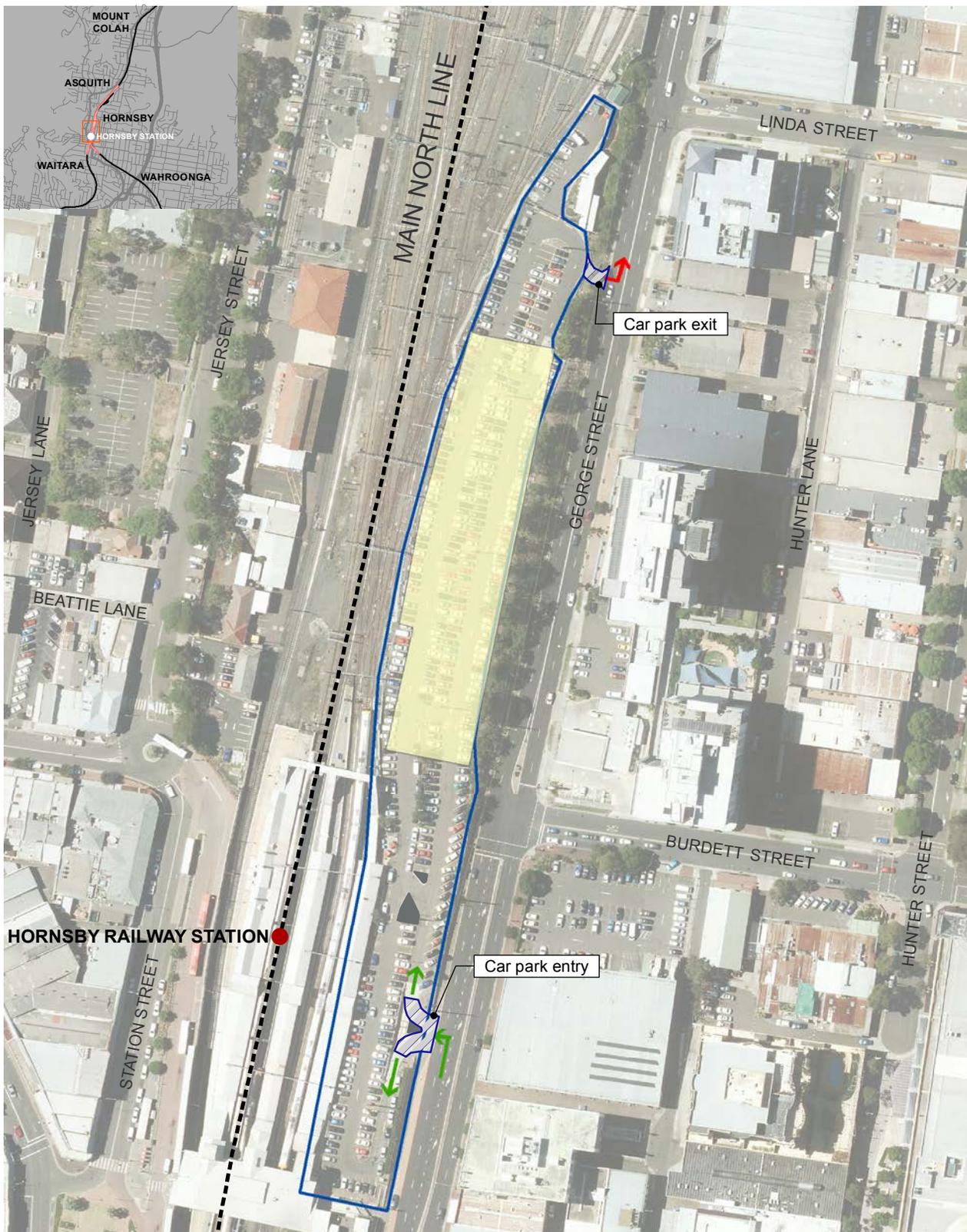


Figure 4-2 : Indicative cross section of the modified Commuter Car Park (through lift lobbies)



JACOBS NSW SPATIAL - GIS MAP file : IA088400_GIS_REF_F013_r1v1 | 4/04/2016

Legend

- Hornsby Station existing main commuter carpark
- Rail line
- Proposed Multi storey car park
- ➔ Car park entry point
- ➔ Car park exit point



Data sources

Jacobs 2015
 Ausimage 2014
 LPI 2014

Figure 4-3 | Hornsby proposed multi storey car park

Changes in impacts associated with the modified Proposal are outlined below.

Urban design, landscape and visual amenity

An updated visual impact assessment has been prepared to assess the potential impacts of the modified car park design and to address submission responses. The assessment has addressed:

- revision of Visual Envelope Map with changes in sight lines noted and additional viewpoints added
- impacts to landscape character zones reassessed for modified Proposal
- existing eight viewpoints reassessed for modified Proposal
- five additional viewpoints added and assessed for new design of car park; including viewpoints from 90 George Street and 1c Burdett Street
- updates to photomontages
- preparation of an additional photomontage from 90 George Street.

As discussed in Section 6.2.2 of the REF, it is anticipated that the majority of sensitive receivers located within close proximity to the construction works, construction compound, stockpile sites and construction access routes would experience a temporary reduction in visual amenity. Safeguards and management measures would be implemented to manage visual amenity impacts during construction. Operational phase impacts are discussed below, and indicative photomontages of the modified Proposal are shown in Figure 4-4 to Figure 4-6.



Figure 4-4 View of modified Proposal from George Street and Burdett Street intersection



Figure 4-5 View of modified Proposal from 8th floor balcony, 90 George Street



Figure 4-6 View of modified Proposal from 108 George Street

Landscape character zones

The locations of each of the landscape character zones adopted for the purpose of informing the visual impact assessment is shown in Figure 4-7. As per the original Proposal, generally the visual impact to landscape character zones in the vicinity of the modified Proposal would be moderate to low. The impact is predicted for landscape character zone 1 (commercial / residential) is moderate due to the change in current form of the car park and subsequent removal of vegetation; thus increasing the magnitude of change from moderate to high. Impacts would be mitigated through car park design development including façade and landscaping treatments.

Potential impacts of the modified Proposal on each of the landscape character zones are summarised in Table 4-1.



Figure 4-7 Landscape character zones

Table 4-1 Potential impacts on landscape character zones

Landscape character zone	Description of impacts	Visual impact
Landscape character zone 1	<p>The Proposal would have a visual impact within this zone, with the magnitude of impact increasing due to the addition of levels and sequent change in height of the modified Proposal. However, the new commuter car park would reflect the predominantly built character of the zone.</p> <p>The zone's eastern edge currently has views onto the existing car park and would look directly onto the Proposed Commuter Car Park. This edge of the zone would be exposed to the change in formation, particularly to the apartments located at 90 George Street, shops and light industry in the central region of the zone, between Burdett and Linda Streets.</p> <p>Views onto the car park from the high density residential apartments in landscape character zone 1 would be affected by the modified Proposal, although the formalisation of the car park would provide an integrated design along George Street that fits with the urban character of the area. The removal of overhead wiring above the existing car park should provide an improved aesthetic view from the apartments. The finish to the wall of the car park may however have the potential to reflect glare and heat from the morning sun into the resident's apartments.</p> <p>The green edge which screens the existing car park, provides a softening function to the edge of landscape character zone 1 and landscape character zone 4, and may be appreciated by the residents of the apartment blocks. The removal of the existing vegetation would alter the view from this zone; however, the provision of new landscaping and the urban design would reduce the visual impact of the modified Proposal.</p>	Moderate
Landscape character zone 2	<p>The majority of the zone would experience negligible impact as a result of the car park development. The residential zone would be unaffected by the Proposal due to the screening effect of the buildings in landscape character zone 1, which are located between this zone and the proposed commuter car park. The reduction of the footprint of the modified Proposal to the north of Burdett Street would reduce the visual impact within this zone.</p>	Negligible
Landscape character zone 3	<p>The Proposal has negligible impact in this zone. Although the top floor of the modified Proposal sits approximately ten metres above ground level, the view onto it from landscape character zone is cluttered by a series of cables, fencing and rail components spread across the rail infrastructure zone which will make the modified Proposal difficult to view from Hornsby Town Centre.</p> <p>The removal of the existing vegetation on the site would have a minor visual impact from landscape character zone 3. The canopy of some of the larger trees can be seen from the bus terminal and Railway Hotel on Station Street.</p>	Moderate to low

Landscape character zone	Description of impacts	Visual impact
Landscape character zone 4	<p>The existing commuter car park is in high demand, with cars using space not formally designated for parking. The modified Proposal would formalise the layout and provide an ease of entry and exit on to George Street with the provision of separated vehicle entry and exit points from the car park to allow a more efficient and safe transition onto the road.</p> <p>The proposed design would give the car park a definitive edge, where it would meet street level and frame the extent of RailCorp land. Opportunities exist to return the existing vegetation to George Street and soften the impervious, functional zone.</p>	Moderate to low

Visual impact assessment

The potential impact of the modified Proposal on visual amenity was assessed for thirteen key representative viewpoints (Figure 4-8).

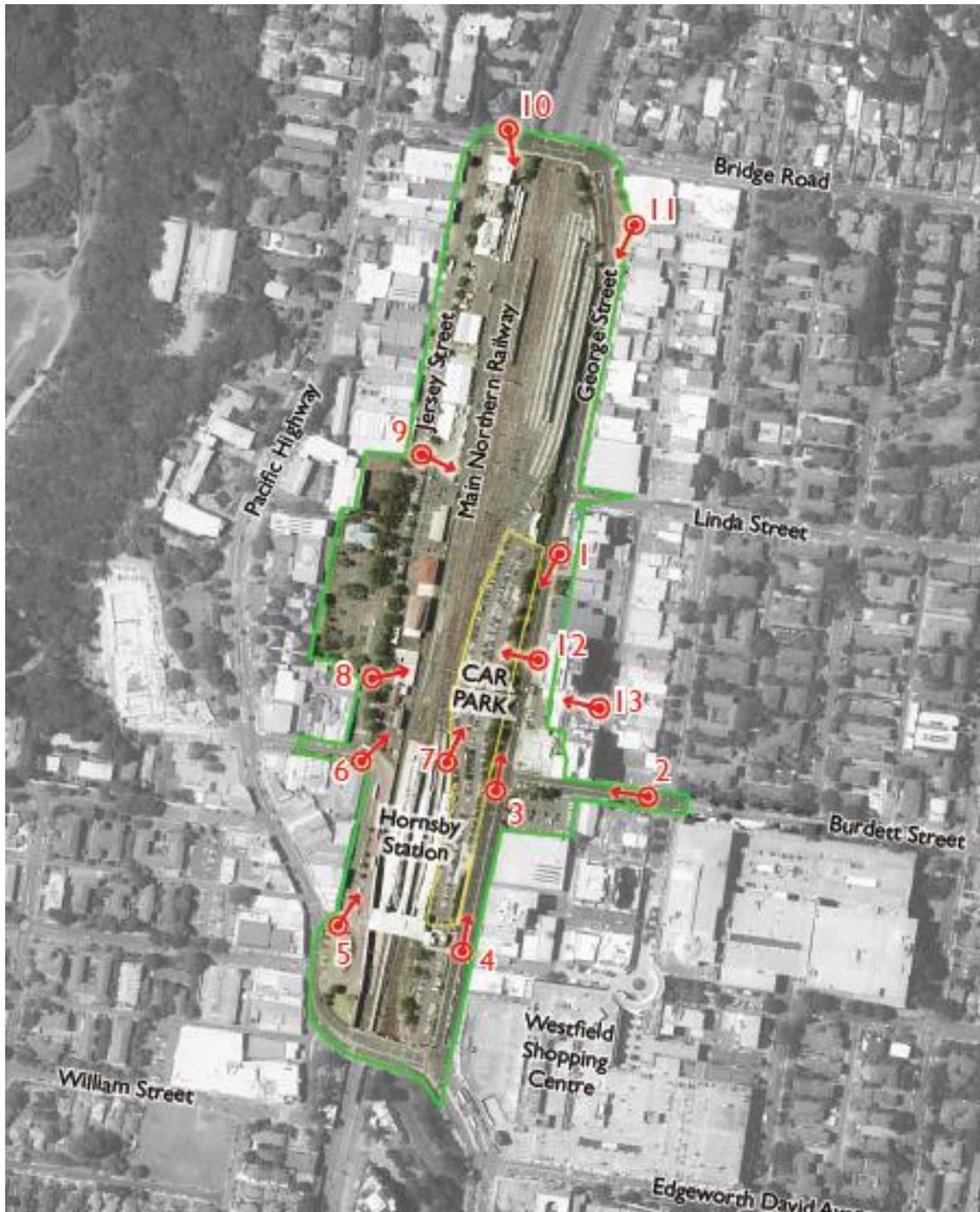


Figure 4-8 Visual impact assessment viewpoints

The visual impacts are summarised in Table 4-2 and include:

- a high to moderate visual impact at one viewpoint
- a moderate visual impact at seven viewpoints
- a moderate to low visual impact at one viewpoint
- a low visual impact at three viewpoints
- a negligible visual impact at one viewpoint.

The following additional mitigation measures have been identified to reduce the visual impacts and enhance the urban design of the modified Proposal:

- An urban design and landscaping plan (UDLP) would be prepared to incorporate appropriate building scale, materials and finishes, access arrangements, sustainable design, landscape and visual amenity considerations into the detailed design. The Proposal design would be subject to review by the Transport for NSW Precincts and Urban Design team (Urban Design Review Panel).
- The planting strategy for the modified Proposal, in particular along the eastern face of the car park, would include the following where possible:
 - planting mature tree stock at appropriate spacing along the eastern edge
 - ensuring pot sizes of mature specimens are of suitable volume (typically at least 400 litres)
 - providing frangible shrub and ground cover planting between the road and the car park where possible. Frangible planting is vegetation that would be expected to break under the impact of a motor vehicle. Generally trees and shrubs with a mature trunk diameter of less than 100mm at around 500mm above ground level are considered frangible. If space is limited, climbers are to be considered as an alternative.
 - establishment of suitable low height trees and shrubs under electrical power lines
 - providing taller trees where there are no power lines, taking into consideration clearance zone requirements.
 - specifying appropriate soil, drainage and mulch, applicable to each species to ensure optimum chance of survival and growth rate.

Table 4-2 Visual impact assessment

Viewpoint	Description of impacts	Visual impact
<p>Viewpoint 1 – 108 George Street (visible to pedestrians, cyclists and motorists)</p> 	<p>The Proposal would be prominent from this view, yet would sit within the current context of the zone. The car park is characteristic of land use close to a train station; however the Proposal is of a larger scale than the existing car park.</p> <p>Replacement planting along the verge next to the Proposal would mitigate the magnitude of the impact of the works, as the vegetation matures.</p> <p>It is unlikely that the visual impact of the site establishment or construction machinery would be of high magnitude.</p>	<p>Moderate</p>
<p>Viewpoint 2 – Burdett Street and Hunter Street intersection (visible to workers, residents, motorists, and pedestrians)</p> 	<p>As the site would remain as a commuter car park, the magnitude of change on the current form would be negligible. Limited clearing of vegetation will take place from this view.</p>	<p>Negligible</p>

Viewpoint	Description of impacts	Visual impact
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Viewpoint 3 – Corner of George Street and Burdett Street (visible to motorists, pedestrians, and cyclists)



A substantial change to the current form would take place.

Moderate

The approximate 15 metre façade will create a hard edge along George Street. Replacement planting would mitigate the magnitude of the works, as they mature over time.

During construction, the temporary concrete safety barriers and fencing required to create a safe work zone would be visible.

Viewpoint 4 – Pedestrian footbridge (visible to pedestrians)



Although at some distance from the viewer, elements of the Proposal would be visible from this view as the vegetation along George Street would be removed. Two 15 metre walls would be seen from this view, the tops of which would meet the eye line of the viewer on the pedestrian bridge. Replacement planting would mitigate the magnitude of the works as they mature over time. Temporary fencing and storage facilities, stockpile areas, site buildings and other facilities may be visible.

Moderate

Viewpoint

Viewpoint 5 – Hornsby town centre, west side of the railway (visible to pedestrians, park users, motorists, and bus and taxi patrons)



Description of impacts

The Proposal would have a low effect on observers from this viewpoint. The elevator shafts as well as the western façade of the car park would be seen, however only through existing gaps in the rail infrastructure, cables, trains and fencing.

Visual impact

Moderate to Low

Viewpoint 6 – Station Street outside Railway Hotel (visible to pedestrians, workers, Railway Hotel, and café patrons)



The current view from The Railway Hotel and cafe is of the railway and commuter car park.

Moderate

The Proposal is synonymous with the existing land use however it would differ substantially in height. The Proposal would only be seen through gaps in the existing infrastructure from this viewpoint therefore the impact is considered to be moderate.

Viewpoint	Description of impacts	Visual impact
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Viewpoint 7 – Hornsby Railway Station, eastern side of the railway, Platform 1 stairway landing (visible to rail customers)



The change in car park form would be evident from this view. The new formalised arrangement of vehicles and removal of overhead wiring within the car park would have a positive outcome, however the removal of vegetation and introduction of a three storey façade would harden the adjacent view of the residential apartments.

Moderate

Viewpoint 8 – Jersey Street, western side of the railway (visible to pedestrians) (long distance view)



Construction of the Proposal would result in the removal of vegetation only sighted from the viewpoint through gaps in fencing and buildings.

Low

Viewpoint

Viewpoint 9 - Jersey Street, western side of railway (visible to pedestrians) (medium distance view)



Description of impacts

Construction of the Proposal would result in the removal of vegetation only sighted from the viewpoint through gaps in fencing, railway stanchions, power poles and buildings. The Proposal would sit in front of 90 George Street and would generally align with the built form of the zone.

Visual impact

Low

Viewpoint 10 – Bridge Road facing south (visible to pedestrians)



Construction of the Proposal would result in the removal of vegetation that is barely visible and the height of the car park would only just peak over the gantries.

Low

Viewpoint	Description of impacts	Visual impact
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Viewpoint 11 - George Street and Hunter Lane, looking south toward Hornsby Station (visible to pedestrians, cyclists, motorists)



Construction of the Proposal would result in the large scale removal of the vegetation which currently conceals the car park behind.

The exposed car park would create a hard edge to the western side of George street which would result in a substantial change to the current view.

Moderate

Viewpoint 12 - 90 George Street (8th floor), western balcony looking southwest (visible to residents)



The magnitude of change to the current view would be high, as construction of the Proposal would result in the large scale removal of the vegetation which currently conceals the car park behind.

The level of the cars parked on the rooftop will be lifted beyond the canopy of the existing trees and the new façade of the Proposal would be seen directly across from ground floor up to the 8th floor apartment balconies.

The potential impact at this location would be high to moderate. The viewpoint is not in the public domain and would be mitigated via landscaping and façade treatment. The impact is therefore considered to be acceptable.

High to moderate

Viewpoint

Viewpoint 13 - 1C Burdett Street (visible to residents)



Description of impacts

Construction of the Proposal would result in the removal of the street trees and expose the viewers to the façade of the car park.

Light from the afternoon sun, would be marginally inhibited by the Proposal's height, for some of the lower level apartments.

Visual impact

Moderate

Noise and vibration

The predicted operational noise impact on surrounding sensitive receivers arising from the movement of vehicles around the modified Proposal is presented in Table 4-3.

Table 4-3 Predicted operation noise impacts from the commuter car park

Receiver	Maximum $L_{Aeq}(1hr)$	INP noise criteria $L_{Aeq}(Day)$	Complies Y/N
88 - 90 George Street (Avanti apartments)			
40m elevation	50.0	48	No
20m elevation	51.5	60	Yes
10m elevation	50.4	60	Yes
1.5m elevation	49.4	60	Yes
1c Burdett Street (Avanti apartments)			
40m elevation	46.5	48	Yes
20m elevation	47.6	60	Yes
10m elevation	47.4	60	Yes
1.5m elevation	43.6	60	Yes
25 - 29 Hunter Street (The Madison apartments)			
20m elevation	39.9	60	Yes
10m elevation	40.1	60	Yes
1.5m elevation	38.6	60	Yes

Operational noise associated with potential increases in train frequency and approach speed is not expected to be noticeable at surrounding receiver locations. Operational traffic noise impacts at higher floors (at elevations above 20 metres) of residential units on George Street are predicted to potentially exceed INP operational criteria by a small margin of 2dB(A). These findings are generally consistent with what was found for the original Proposal. Predictions are based on conservative assumptions for the busiest possible one hour period, and are based on external noise levels (i.e. noise that would be experienced on the balconies of these residential units).

The results presented in Table 4-3 present external noise levels. Lower noise levels would be experienced inside the residential units. Where doors and windows are left open, a reduction of approximately 10dB(A) would be expected to occur across the building façade. This would lead to maximum internal levels of operational noise in the order of 41dB(A) in lower floors (20 metres elevation and below) and 38dB(A) on higher floors (above 20 metres elevation) of George Street.

The recommended design sound level for internal residential rooms in built up areas is 35dB(A), with a maximum recommended level of 45dB(A) (according to BS2107.2000 – Acoustics).

Given that doors and windows will not always be open, and that these predictions are based on conservative assumptions for the most busy possible one hour period, these predicted internal noise levels are within the allowable range of design sound levels and are considered acceptable.

No additional mitigation measures are proposed.

Aboriginal Heritage

The amended design does not result in additional areas of ground disturbances and therefore no additional impact to Aboriginal Heritage is predicted.

Non-Aboriginal Heritage

The increased prominence of the car park is expected to increase the visual impact to some local heritage items. The proposed commuter car park would be visible from Hornsby Station and its platforms, altering the views from the station and the setting of the station. The car park would also be visible from Station Street, High Street and Peats Ferry Road, although the views to the station are already screened by modern additions. The potential visual impact of the modified Proposal on the Hornsby Railway Station Group and Barracks (listed on the RailCorp (now Sydney Trains) section 170 register) is expected to be a moderate visual impact, which is consistent with the findings of the REF.

The modified Proposal would continue to have a moderate visual impact on the State Rail Authority (SRA) electricity plant and signal box, listed on the Hornsby Local Environmental Plan 2013 (Hornsby LEP).

The modified Proposal is expected to have a minor impact on the following three local heritage items:

- The Railway Station cloak room building, listed as item A52 on the Hornsby Local Environmental Plan (LEP).
- The Peats Ferry Road Precinct, Hornsby West Side Heritage Conservation Area, listed as item C5 on the Hornsby LEP.
- The War memorial and palms, listed as item 503 on the Hornsby LEP.

The modified Proposal is expected to have a negligible or neutral impact on the remaining local heritage items identified in the REF.

The heritage buffer zone has been expanded to account for the increased visibility of the modified Proposal and two additional listed heritage items have been identified (Table 4-4).

Table 4-4 Additional Listed heritage items in the vicinity of the Proposal

Heritage item	Register(s) listed	Heritage significance	Distance from the Proposal
Street trees	Hornsby LEP	Local	100m west of the study area, along William Street
Hornsby War Memorial	Hornsby LEP	Local	80m west of the study area

The design amendments would not result in physical impacts to the heritage items. The visual impacts to these items are expected to be negligible with limited views to the modified Proposal.

4.2.2 Car park access

Under the design described in the REF, vehicle access to the commuter car park would have comprised a combined entry and exit from the George Street / Burdett Street intersection (which would be reconfigured to accommodate the Proposal). As part of design development, the existing combined entry and exit point would be converted into an entry point only. A new single lane exit ramp would be provided to the north at

the northern end of the car park onto George Street, in the vicinity of the Linda Street intersection.

The access arrangements for the modified Proposal are shown in Figure 4-3.

Changes in impacts associated with this alternative construction methodology are outlined below.

Traffic and access

Provision of a northern ramp will permit access to the Sydney Trains depot to be maintained and also assist with access to the construction site for the car park. This will minimise impacts on operation of the existing at-grade car park to the south during construction of the multi-storey car park.

During operation, change of the proposed car park entrance and exit locations via George Street would likely result in a redistribution of traffic compared to that assessed in the REF. During the morning peak hour (the worst case scenario), the following proportion of trips are anticipated:

- 30 per cent from the north
- 30 per cent from the east
- 20 per cent from the south
- 20 per cent from the west.

The modified Proposal is expected to result in a less than one percent increase in development traffic volumes during peak traffic periods at the George Street / Burdett Street, George Street / Bridge Road / Railway Parade and Bridge Road / Pacific Highway intersections (Arup 2015). The Pacific Highway / George Street intersection is expected to experience a 1.2 per cent increase of the base traffic during the morning peak hour. The assessment concludes that the impact on the operation of the key intersections in the vicinity of the modified Proposal is negligible.

Noise and vibration

Potential operational noise impacts have been reassessed to address redistributed traffic movement to and from the new car park during operation. Additional vehicles have been considered along Pacific Highway, George Street and William Street, in addition to Burdett Street and Edgeworth David Avenue. The results are presented in Table 4-5.

Table 4-5 : Predicted traffic noise impacts – car park access

Location	Predicted increase dB(A)	Allowable RNP increase dB(A)	Comply Y/N
George Street			
Morning peak	1.2	+2	Y
Evening peak	1.5		Y
William Street			
Morning peak	1.3	+2	Y
Evening peak	1.1		Y
Pacific Highway			
Morning peak	0.2	+2	Y
Evening peak	0.2		Y

Location	Predicted increase dB(A)	Allowable RNP increase dB(A)	Comply Y/N
Burdett Street			
Morning peak	0.6	+2	Y
Evening peak	0.5		Y
Linda Street			
Morning peak	1.0	+2	Y
Evening peak	1.1		Y
Edgeworth David Avenue			
Morning peak	1.0	+2	Y
Evening peak	0.5		Y

These results show that an increase in traffic noise on local roads associated with the operation of the Commuter Car Park are likely to remain below 1.5 dB(A) at all locations and will therefore comply with the allowable increase of 2 dB(A).

Ecology

Construction of the new vehicular exit point at the northern end of the car park onto George Street may require vegetation removal. These works are located just outside of the ecology study area however it is expected that the vegetation would be consistent with the planted native and exotic vegetation surveyed along George Street to the south. Vegetation removal at this site would be subject to a separate approval in accordance with Transport for NSW's Application for Removal or Trimming Vegetation (Form PE-FO-078/5.0).

4.2.3 Construction methodology

The construction methodology is provided in Table 3-1 of the REF. The overall construction program, staging, personnel numbers and working hours are unchanged. Modifications are proposed to Stage 2 and Stage 3 of the construction methodology to reflect updated commuter car park design and access arrangements.

Additional construction activities to be undertaken during Stage 2 works would include:

- relocation of drainage and lighting utilities for the provision of the proposed exit ramp at the northern end of the multi-storey car park
- demolition of an existing unused shed located between the existing commuter car park and railway line
- construction of new pavement, kerbs and line marking for the new commuter car park exit onto George Street
- construction of a deflection wall between the western façade of the car park and the railway
- installation of anti-climb fencing between western façade of the car park and the railway.

Works that are no longer required be undertaken are as follows:

- large scale excavation of car park. Excavated material would therefore be reduced from 27,000 cubic metres to 2,000 cubic metres
- reconfiguration of the George Street / Burdett Street intersection

Additional construction activities to be undertaken during Stage 3 works include:

- installation of deflection walls on either side of the railway under Bridge Street. The need for these deflection walls will be assessed during detailed design. If this is considered to not be required after investigations, another form of derailment protection will be undertaken that will have a lesser impact.
- minor modification to platform coping to allow for suitable separation distances between platform and trains.

The following utilities which would have been affected under the original Proposal would now not require removal or relocation:

- four electrical poles at the George Street/Burdett Street intersection (Ausgrid)
- traffic signals/associated infrastructure at George Street/Burdett Street intersection (Roads and Maritime)
- exit ramp design would avoid key power pole utilities

Changes in impacts associated with this alternative construction methodology are outlined below.

Traffic and transport

The construction of the modified Proposal would generate less daily truck movements as a result of lower volumes of excavated material. Construction staff numbers and haulage routes are anticipated to remain the same. The impact of the construction traffic on the traffic network in the vicinity of the site would be slightly reduced compared to the original Proposal.

Noise and vibration

As discussed in the REF, several receivers surrounding the construction works are expected to potentially be 'highly noise affected' during the following activities:

- high voltage overhead power line relocation
- ground works and site clearance for the proposed commuter car park
- earthworks for the proposed commuter car park

The modified construction methodology would not require driven sheet piling for the proposed commuter car park however it would require piling for the car park and the deflection walls. If required, piling works associated with the deflection walls at Bridge Street would be undertaken during scheduled track possessions, but would be programmed to be undertaken during standard construction hours, where practicable. In accordance with mitigation outlined in the REF and Section 5, the affected community would be advised of any noise intensive works scheduled to occur outside of standard construction hours and mitigation measures would be used in accordance with Transport for NSW's (2012) *Construction Noise Strategy*.

Noise impacts relating to removal of the brick retaining wall would be avoided, and a 90 per cent reduction in material excavation would occur. It is therefore anticipated that the duration of noisy activities would be reduced thus reducing exposure for sensitive receivers. All other modifications to the Proposal would be consistent with the anticipated noise levels.

Noise and potential vibration impacts would be managed in accordance with the REF and the Transport for NSW *Construction Noise Strategy*.

Non-Aboriginal Heritage

To accommodate new rail alignment, the coping on short sections of platforms 1 and 2 would need to be trimmed. The works would involve cutting a maximum of 119mm from platform 1 and 25mm from platform 2.

As outlined in Section 6.5.1 of the REF, Hornsby Railway Station Group and Barracks is listed as an item of local heritage significance under the Hornsby LEP and RailCorp (now Sydney Trains) section 170 register. Modern modifications have resulted in the removal of some of the original fabric of the platforms. The platform trimming work would not involve the removal of any aspects of this heritage item which can be identified as part of the late Victorian railway station fabric. Works to trim the platforms would not have adverse impacts to the significant heritage fabric of this item.

4.2.4 Additional construction site access and compounds

Three additional site compounds have been identified to support the construction methodology and reduce storage requirements in the main construction site. The compounds are described in Table 4-6 below and their locations are shown in Figure 4-9 to Figure 4-12.

Table 4-6 Overview of additional construction site access and compounds

Site	Access	Key activities
Government Road access area	Existing rail corridor access from Government Road, approximately 250 metres south of Hornsby Station	<ul style="list-style-type: none"> Access for Hornsby Junction Remodelling works (city end) including track, signalling and overhead wiring hi-rail equipment upgrades. Storage of containers and rail componentry to reduce congestion in the construction site. Re-assembly of rail componentry
Asquith Station access area	Existing rail corridor gate entry from the Pacific Highway, approximately two kilometres north of Hornsby Station	<ul style="list-style-type: none"> Access for Hornsby Junction Remodelling works (country end).
Asquith Station stockpile area	Within the eastern side of the existing rail corridor, approximately 170 metres north of Asquith Station	<ul style="list-style-type: none"> Temporary storage of equipment and materials.
Hawkesbury River prefabrication yard	Approximately 26 kilometres North of Hornsby Station on the Main North train line	<ul style="list-style-type: none"> Prefabrication yard and assembly area for major track components. Equipment will be transported using work trains and semi-trailers.



Figure 4-9 Government Road access (upside)



Figure 4-10 Asquith Station access area (country end)



Figure 4-11 Asquith Station stockpile area



Figure 4-12 Hawkesbury River prefabrication yard

The compounds are all located within the rail corridor and are currently used as Sydney Trains lay down and access areas.

The Asquith Station access area would not be used for storage.

Typical plant and equipment to be used at Government Road and Hawkesbury River compounds include:

- construction and delivery vehicles (trucks and utes)
- excavation equipment
- welding equipment
- water carts
- mobile cranes.

The sites would be used from mid-2016 for a period up to two years, and works would occur during standard working hours, with no night works anticipated. Equipment would be stored in site sheds and hoarding would be provided to enable visual and physical separation as required.

Changes in impacts associated with this alternative construction methodology are outlined below.

Traffic and transport

The proposed construction compounds are located within the rail corridor and would be accessed using existing access gates. It is expected that a small number of vehicle movements would occur at these sites across the day. The impact of construction vehicles using these access gates is therefore considered to be negligible.

Urban design, landscape and visual amenity

The proposed construction compounds at Government Road and Asquith Station are located within a highly urbanised context. The Hawkesbury River prefabrication yard is located in an isolated Sydney trains facility, with no residential properties in close proximity.

Views to the Government Road construction compound are generally constrained by vegetation and a deflection wall to the west of the compound. Sensitive receivers include residential apartments located to the east of the compound. Views to Asquith Station construction compound are generally constrained by vegetation and a deflection wall to the east of the compound. Sections of Asquith Station construction compound (west) are visible to passing pedestrians, cyclists and motorists. Sensitive receivers in proximity to Asquith Station stockpile area include residential properties to the west of the compound past the Pacific Highway and residents on the eastern side of the railway line. Additional sensitive receivers include St Patrick's Catholic Primary School and Church on the eastern side of the railway line. Views from receivers located to the east of the compound would be screened by existing vegetation. The compound would be visible to receivers to the west.

The construction compounds would result in temporary adverse visual amenity impacts for surrounding sensitive receivers. Controls to minimise impacts include the containment and screening of construction compounds through the use of suitable barriers and the reinstatement of the compound sites after construction.

Noise and vibration

Each of the proposed construction compounds are used by Sydney Trains as pre-existing access points to the rail corridor. Noise sources at these areas are likely to consist primarily of traffic entering and exiting site and as such would therefore be consistent with the current land use.

Reassembly works at the Government Road access site would include the operation of a five tonne excavator and hand tools. The works would take place during standard construction hours and would occur over two three-week periods.

The use of these sites would be short term, and result in only a minor increase in current levels of use. Overall noise impacts at these locations are expected to be low. Mitigation measures to limit noise and vibration impacts associated with the use of these sites would be included in the Construction Noise and Vibration Management Plan (CNVMP).

Aboriginal heritage

There are no Aboriginal sites or places located within 50 metres of the construction compounds.

Non-Aboriginal heritage

Two listed heritage items of state significance and national significance, and 14 listed heritage items of local significance are located within the study areas of the proposed compounds. These items are listed in Table 4-7 to Table 4-10. Some heritage items.

Table 4-7 Listed heritage items in the vicinity of Government Road site compound

Heritage item	Register(s) listed	Heritage significance	Distance from the Proposal
Street trees	Hornsby LEP	Local	100 metres east of the study area, along Edgeworth David Avenue
Hornsby War Memorial Hall	Hornsby LEP	Local	85 metres north-west of study area
Pretoria Parade Precinct, Hornsby West Side Heritage Conservation area	Hornsby LEP	Local	150 metres south-west of study area
Hornsby Railway Station Group and Barracks	RailCorp (now Sydney Trains) s170 register Hornsby LEP	Local	150 metres north of study area

Table 4-8 Listed heritage items in the vicinity of Asquith Station access area site compound

Heritage item	Register(s) listed	Heritage significance	Distance from the Proposal
Street trees	Hornsby LEP	Local	Within the extent of construction works
St Patrick's church grounds	Hornsby LEP	Local	220 metres north-east of study area
House	Hornsby LEP	Local	360 metres north-east of study area

Heritage item	Register(s) listed	Heritage significance	Distance from the Proposal
House	Hornsby LEP	Local	227 metres north-east of study area
House	Hornsby LEP	Local	150 metres south-east of study area
Street tree	Hornsby LEP	Local	220 metres north-east of study area
Asquith Railway Station Group	RailCorp (now Sydney Trains) s170 register	Local	65 metres north-east of study area

Table 4-9 Listed heritage items in the vicinity of Asquith Station stockpile area

Heritage item	Register(s) listed	Heritage significance	Distance from the Proposal
House	Hornsby LEP	Local	20 metres west of the study area
House and garden	Hornsby LEP	Local	130 metres north-east of the study area
St Patrick's church grounds	Hornsby LEP	Local	45 metres south-east of the study area
Street trees	Hornsby LEP	Local	150 metres south of the study area
Asquith Railway Station Group	RailCorp (now Sydney Trains) s170 register	Local	170 metres south of study area

Table 4-10 Listed heritage items in the vicinity of Hawkesbury River prefabrication yard

Heritage item	Register(s) listed	Heritage significance	Distance from the Proposal
Hawkesbury River Rail Bridge and Long Island Group	RailCorp (now Sydney Trains) s170 register Hornsby LEP	State	Within the extent of construction works
Nature Reserve Bushland	Hornsby LEP	Local	30 metres west of study area
Hawkesbury River Railway Station Group	RailCorp (now Sydney Trains) s170 register Hornsby LEP	State	480 metres south of study area
Hawkesbury Reserve (former)	Australian Heritage database	Register of the National Estate	> 500 metres from study area
Hawkesbury River Rail Bridge	Australian Heritage database	Register of the National Estate	> 500 metres from study area

Activities at the Hawkesbury River prefabrication yard would be consistent with current activities at the site, and so are not anticipated to result in any impact to the Hawkesbury River Rail Bridge and Long Island Group heritage item. Vehicle movements and activities will be managed in accordance with the CEMP, Construction Noise and Vibration Plan and CTMP; and no impacts to heritage items including street trees are expected.

Biodiversity

The construction compounds are located within previously cleared areas. A review of the Protected Matters Search Tool identified that both Government Road and Asquith Station construction compounds have five listed threatened ecological communities, 29 threatened species and 14 migratory species located within 200 metres of their study areas. The Asquith Station stockpile area has three listed threatened ecological communities, 29 threatened species and 14 migratory species located within 200 metres. The Hawkesbury River prefabrication yard has one listed threatened ecological community, 47 threatened species and 46 migratory species located within 200 metres. Long Island Nature Reserve is located approximately 250 metres to the west of the site (Department of Environment, 2016).

No vegetation clearance at any of the compounds is expected. No impacts to threatened ecological communities, threatened species and migratory species are expected during construction or operation of these compounds.

Landform, geology, soils and contamination

All four construction compounds have a relatively flat topography. According to the Australian Soil Resource Information System, all sites have a low probability for acid sulphate soils.

According to the NSW Environment Protection Authority (EPA), the closest contaminated land record is located 185 metres south-east from the Government Road construction compound. Other contaminated sites notified to the EPA include a BP service station located 30 metres south-west from Asquith Station construction compound, and 400 metres from Asquith Station stockpile area (Regulation under the Contaminated Land Management Act not required) and a former oyster farm located 970 metres south-west from the Hawkesbury River construction compound.

As no excavation or ground disturbance activities are proposed, no impacts are expected.

Hydrology and water quality

Jimmy Banks Creek is located 175 metres west from Government Road construction compound. Cackle Creek is located one kilometre from Asquith Station construction compound. The Hawkesbury River which forms part of the Hawkesbury-Nepean Catchment Area, is adjacent to the Hawkesbury River construction compound.

Potential impacts to water quality include pollution of stormwater runoff with sediments, fuel and other hazardous materials. Mitigation measures such as appropriate liquid storage will be included in the CEMP to minimise impacts to water quality.

Air quality

A search of the National Pollutant Inventory listed the three sources of pollution in close proximity to the construction compounds. The West Hornsby Sewage treatment plant is located 1.5 kilometres north-west of Government Road construction compound. The Wrigley Company Asquith is located 700 metres north-east of Asquith Station

construction compound and 750 south-east of the Asquith Station stockpile area. Brooklyn Sewage Treatment Plant is located three kilometres south-west of the Hawkesbury River prefabrication yard.

Construction activities and vehicle use have the potential to impact on local air quality including particulate (dust) and gaseous emissions. Air quality impacts would be minor in nature and managed through the CEMP.

5 Summary of mitigation measures

Environmental management for the Proposal would be carried out as detailed in the REF. A CEMP would be prepared to include all specific environmental mitigation measures that have been identified in the REF and in this Submissions Report.

A complete list of environmental management and mitigation measures for the Proposal, having regard to submissions received and the investigations and modifications outlined in Section 4.2 of this report, are included in Table 5-1.

The list includes any changes to mitigation measures that are now proposed in response to submissions received during the public display period or due to additional investigations undertaken since the completion of the display. New mitigation measures have been underlined and are shown in red. Removal of mitigation measures (or text amended or removed from measures) has been shown with a strikethrough.

The mitigation measures numbers have been adjusted to account for the inclusion or removal of particular mitigation measures.

Table 5-1 outlines the revised set of mitigation measures for the Proposal.

Table 5-1 Mitigation and management measures

ID no.	Mitigation measures	Applicable Proposal component
General		
G.1	An appropriately qualified and experienced site based environment manager would be appointed prior to the commencement of construction.	All
G.2	A project risk assessment including environmental aspects and impacts would be undertaken prior to the commencement of construction. The risk assessment would be used to inform the development of the CEMP and ECM(s).	All
G.3	Inspections would be undertaken on a weekly basis and after heavy rainfall to monitor environmental compliance and performance during construction.	All
G.4	Prior to the commencement of construction, all contractors would be inducted on the key project environmental risks, mitigation measures and conditions of approval. The ECM(s) would form part of the induction.	All
Community engagement		
C.1	Rail customers would be provided with adequate notification of the scheduled track possessions <u>rail line shutdowns and track work weekends</u> and any temporary closures of the existing commuter car park to allow them to plan their journey during these periods.	All
C.2	Newsletters and other communication tools would be distributed to keep the community informed of construction progress, activities and impacts.	All
C.3	Contact details for a 24-hour construction response line, project Infoline, <u>website</u> and email address would be provided for ongoing stakeholder contact throughout the construction phase.	All

ID no.	Mitigation measures	Applicable Proposal component
Traffic and transport		
T.1	<p>A detailed Construction Traffic Management Plan (CTMP) would be prepared for the Proposal to manage and minimise construction impacts. The CTMP would include but not be limited to the following:</p> <ul style="list-style-type: none"> • timing of proposed works • hours of construction activities • number of construction vehicles to be used • designation of construction routes • mitigation and management measures including use of traffic control signals, construction vehicle access and traffic circulation arrangements • designation of temporary parking during construction works (for both the commuters and project personnel) • contact details for key onsite construction personnel. 	All
T.2	<p>Site-specific traffic management issues would also be addressed through the implementation of appropriate Traffic Control Plans (TCPs) developed in consultation with the relevant roads authority. The TCPs would outline key details such as advanced warning signage, traffic flow management and pedestrian management measures.</p>	All
T.3	<p>Maintain pedestrian access to and from Hornsby Station at all times.</p>	All
T.4	<p>Where practicable, minimise the use of local and town centre roads for construction vehicle access to and from the site, with major regional roads being used for construction haulage where practicable.</p>	All
T.5	<p>Where practicable, avoid the delivery of construction materials during peak commuter travel periods and school drop off/pick up times.</p>	All
T.6	<p>Minimise the total number of deliveries required during construction by providing enough storage within the construction compound for stockpiling materials.</p>	All
T.7	<p>Scheduling oversized deliveries and other significant traffic disrupting activities to occur at night using vehicles fitted with non-tonal reversing alarms.</p>	All
T.8	<p>Avoid a net loss in accessible parking spaces at the eastern Hornsby Station entrance by relocating existing commuter parking spaces.</p>	All
T.9	<p>Road occupancy licences for temporary closure of roads would be obtained, where required.</p>	All
T.10	<p>Limit off-site construction vehicle parking to designated areas. Areas of temporary on-street parking during peak construction events would be identified in the traffic management plans to minimise the impact on surrounding properties and businesses. Construction worker parking would not be permitted within 600 metres of the construction site.</p>	All
T.11	<p>The queuing and idling of construction vehicles in residential streets would be minimised.</p>	All

ID no.	Mitigation measures	Applicable Proposal component
T.12	An emergency response plan would be developed for construction traffic incidents.	All
T.13	Where required, public communications would be conducted to warn the community and local residents of vehicle movements and anticipated effects on the local road network relating to site works in accordance with the CEMP.	All
T.14	Access to all private properties adjacent to the works would be maintained during construction, unless otherwise agreed by relevant property owners.	All
T.15	During project inductions, all heavy vehicle drivers would be provided with the emergency response plan for construction traffic incidents.	All
T.16	Should damage occur to the road surface as a direct result of the construction of the Proposal, the construction contractor would be required to 'make good' any damage sustained.	All
<u>T.17</u>	<u>Changes to car park access and egress routes would be subject to a road safety audit during detailed design to ensure appropriate line of sight and turning requirements are met.</u>	<u>Commuter car park</u>
<u>T.18</u>	<u>The car park design should provide a facility that enables drivers to collect their car before picking up fellow passengers if possible.</u>	<u>Commuter car park</u>
<u>T.19</u>	<u>A formalised kiss and ride facility on the eastern side of the station within the existing car park would be considered as part of the detailed design.</u>	<u>Commuter car park</u>
<u>T.20</u>	<u>Connection of the car park into the station will be further investigated during the detailed design of the Proposal. Access will be constructed to be compliant with the <i>Disability Discrimination Act 1992</i>.</u>	<u>Commuter car park</u>
<u>T.21</u>	<u>The provision of alternative parking facilities during construction would be required to offset the loss of commuter parking at the existing station car park. The location of these facilities would be as close to the station as possible, within walking distance (10-minutes or 800 metres), as a minimum, and would be developed in consultation with Council and relevant stakeholders.</u>	<u>Commuter car park</u>
Urban design, landscape and visual amenity		
<u>U.1</u>	<u>An urban design and landscaping plan (UDLP) would be prepared to incorporate appropriate building scale, materials and finishes, access arrangements, sustainable design, landscape and visual amenity considerations into the detailed design.</u>	<u>Commuter car park</u>
<u>U.2</u>	<u>The Proposal design would be subject to review by the Transport for NSW Precincts and Urban Design team (Urban Design Review Panel).</u>	<u>Commuter car park</u>
<u>U.3</u>	<u>The provision of a covered pathway for pedestrians would be considered during detailed design.</u>	<u>Commuter car park</u>
U.1 <u>U.4</u>	Anti-graffiti coating would be provided to elements of the buildings and wall finishes which are accessible to the public.	Commuter car park

ID no.	Mitigation measures	Applicable Proposal component
U.2-U.5	<p>Layered planting, including the provision of medium height trees, would be provided <u>as part of the UDLP in consultation with Roads and Maritime and Council</u> to:</p> <ul style="list-style-type: none"> • provide visual amenity for the road user, pedestrian and residents • provide shade to pedestrians and parked cars • mitigate the hard surface character and magnitude of works, as the vegetation matures. <p><u>The following principles are to be followed where practicable:</u></p> <ul style="list-style-type: none"> • <u>planting mature tree stock at appropriate spacings along the eastern edge</u> • <u>ensuring pot sizes of mature specimens are of suitable volume (typically at least 400 litres)</u> • <u>providing frangible shrub and ground cover planting between the road and the car park where possible. If space is limited, climbers are to be considered as an alternative</u> • <u>establishment of suitable low height trees and shrubs under electrical power lines</u> • <u>providing taller trees where there are no power lines, taking into consideration clearance zone requirements</u> • <u>specifying appropriate soil, drainage and mulch, applicable to each species to ensure optimum chance of survival and growth rate.</u> 	Commuter car park
U.3-U.6	<p>Approximately 80 square metres of redundant footpath at the northern part of George Street, from the stair shaft to the extent of works boundary can <u>would</u> be redesigned to allow for replacement of vegetation in this area and the mitigation of the visual impact of the structure, <u>in consultation with Roads and Maritime and Council.</u></p>	Commuter car park
U.4-U.7	<p>The following building façade s are proposed; however, would be determined during detailed design <u>in consultation with Transport for NSW:</u></p> <ul style="list-style-type: none"> • the long façade of the building which borders George Street would be finished with vertical, irregular spaced aluminium sheets, to assist breaking up the monotonous form of the Proposal and help soften its edge by allowing air and light through the structure • the finish of the ground level wall would be of a textured pattern, or tactile appearance of either an exposed aggregate or tile cladding • the upper parapet can be concrete finish, concrete with an added oxide, or painted concrete to provide a look of formalised capping to the Proposal • the parapet would be finished with a double rail which spans the length of the building. This galvanized rail would have the effect of reducing the apparent height of the structure as well as prevent the public from walking along the top of the wall. 	Commuter car park
U.5-U.8	<p>Detail design and documentation drawings would define the extent of all construction activity including temporary works in order to protect the area of vegetation immediately adjacent during construction.</p>	All

ID no.	Mitigation measures	Applicable Proposal component
U.6 - U.9	Construction facilities would be contained within the construction works zone boundary and occupy the minimum area practicable for their intended use.	All
U.7 U.10	Prior to construction commencement provide suitable barriers, such as shade cloth or a similar material, to screen views from adjacent areas during construction.	All
U.8 U.11	Existing trees to be retained within construction facilities areas would be identified, protected and maintained.	All
U.9 U.12	Minimise light spill from the rail corridor into adjacent visually sensitive properties by directing construction lighting into the construction areas and ensuring the site is not over-lit. This includes the sensitive placement and specification of lighting to minimise any potential increase in light pollution.	All
U.10 U.13	Once construction is complete, or progressively throughout the works where possible, return compound sites to at least their pre-construction state.	All
Noise and vibration		
N.1	<p>A Construction Noise and Vibration Management Plan (CNVMP) would be prepared as part of the Construction Environmental Management Plan. Measures documented in the CNVMP would be consistent with the mitigation measures outlined in the Transport for NSW Construction Noise Strategy and the <i>Interim Construction Noise Guideline</i> where practicable. These measures may include (but would not be limited to):</p> <ul style="list-style-type: none"> • letter box drops, individual briefings, respite periods, or where highly intrusive noise levels are anticipated, alternative accommodation for specific construction activities • use of localised acoustic hoarding around significant noise generating items of plant • briefing of the work team in order to create awareness of the locality of sensitive noise receivers and the importance of minimising noise emissions • planning the higher-noise activities and work near residential noise receivers to be undertaken predominantly during less sensitive periods • ensuring spoil is placed and not dropped into awaiting trucks • use of less noise-intensive equipment • noise monitoring. 	All
N.2	All construction plant and vehicles would be fitted with non-tonal reversing alarms.	All
N.3	<u>Where identified in the CNVMP and if required by a risk assessment, a building condition survey and vibration monitoring would be undertaken for any residences within 50 metres and heritage items within 150 metres of the works.</u>	<u>All</u>
N.3 - N.4	Operational traffic noise impacts associated with the proposed commuter car park would be considered further during detailed design, with the aim of minimising impacts to residential properties within the Avanti units on George Street. Measures that could be considered include avoiding the use of polished concrete and minimising gaps in traffic barriers along the George Street façade.	All

ID no.	Mitigation measures	Applicable Proposal component
Aboriginal heritage		
A.1	All construction staff would receive basic training 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 both the Aboriginal and non-Aboriginal community, as well as the legal implications of removal, disturbance and damage to any Aboriginal cultural heritage material and sites.	All
A.2	If Aboriginal objects are located during works, all works would stop in the vicinity of the find, and the OEH, Local Aboriginal Land Council and an archaeologist would be notified. Where required, further archaeological investigations and an Aboriginal Heritage Impact Permit would be obtained before works recommence.	All
A.3	If the project design is changed, and areas not surveyed are to be impacted, further archaeological assessment would be undertaken. Should any Aboriginal heritage items be found, they would be identified on the construction contractor's environmental control maps.	All
Non-Aboriginal heritage		
H.1	Non-Aboriginal heritage items would be identified on the construction contractor's environmental control maps.	All
H.2	If any unanticipated archaeological deposits are identified within the Proposal area during construction, work likely to impact on the deposit would cease immediately and the NSW Heritage Council and a heritage consultant would be contacted. Where required, further archaeological work and/or consents would be obtained for the unanticipated archaeological deposits prior to works recommencing at the location.	All
H.3	A heritage induction would be provided to workers before construction begins, informing them of the location of known heritage items and guidelines to follow if unanticipated heritage items or deposits are located during construction.	All
H.4	Design of the commuter car park is to consider the heritage context of the Hornsby Railway Station, and aim to minimise the potential for adverse impact on the setting of the surrounding heritage item. The design would aim to be low in form where possible, to avoiding avoid competing with unmodified elements of Hornsby Station visible from street level, such as the current platform canopies. The façade fronting George Street would be finished in a suitable material and colour that is consistent with the existing visual context.	Commuter car park
H.5	A program of archival recording would be carried out prior to the removal of the existing A-frame in the Hornsby rail yard. The recording would include a photographic record of the A-frame to be replaced in the yards and on the platforms, and be carried out in accordance with the <i>How to Prepare Archival Records of Heritage Items</i> guidelines (OEH 1998). The recording would meet the minimum requirements for archival recording.	Hornsby Junction Remodelling
Biodiversity		
B.1	All workers would be provided with an environmental induction prior to commencing work on-site.	All

ID no.	Mitigation measures	Applicable Proposal component
B.2	Disturbance of vegetation would be limited to the minimum amount necessary to construct the Proposal. The clearing of mature, native trees would be minimised as far as practicable.	All
B.3	Any vegetation to be removed that has not been assessed in this REF would be subject to separate approval in accordance with Transport for NSW's <i>Application for Removal or Trimming Vegetation</i> (Form PE-FO-078/5.0).	All
B.4	Weed control measures would be developed and included in the CEMP to manage the dispersal and establishment of weeds during the construction phase of the Proposal. This would include the management and disposal of weeds found to be noxious within the Hornsby LGA, as well as the following weeds that are known to occur within the rail corridor: <ul style="list-style-type: none"> • exotic perennial grasses, such as <i>Chloris gayana</i>, <i>Melinis repens</i> and <i>Pennisetum clandestinum</i> • exotic vines, such as <i>Asparagus aethiopicus</i>, <i>Asparagus asparagoides</i>, <i>Hedera helix</i>, <i>Ipomoea indica</i> and <i>Tradescantia fluminensis</i> • noxious weeds of <i>Ageratina adenophora</i>, <i>Ambrosia tenuifolia</i>, <i>Asparagus asparagoides</i>, <i>Lantana camara</i> and <i>Rubus fruticosus</i>, in accordance with the NW Act. 	All
B.5	Native vegetation that is removed as a result of the Proposal would be offset in accordance with the Transport for NSW Vegetation Offset Guide 9TP-ST-149. Quantities for offset to be determined during the detailed design stages of works.	All
Landform, geology, soils and contamination		
L.1	If hazardous or contaminated materials are found during construction, work would stop immediately and the Project Manager would be contacted.	All
L.2	Any contaminated waste would be classified according to the <i>Waste Classification Guidelines</i> (EPA 2014) prior to removal offsite. Should any contaminated material be uncovered during redevelopment works that exceeds the relevant land use guidelines then further delineation works may be required.	All
L.3	Assessment of excavated soil exposed during the construction of Phase 2 of the Proposal would be carried out as appropriate to assist in quantifying any potential contamination risks.	All
L.4	Procedures for handling asbestos contaminated materials, including licensed contractor involvement as required, record keeping, site personnel awareness and waste disposal would be undertaken in accordance with WorkCover requirements.	All
Hydrology and water quality		
W.1	Soil and water management measures would be identified, consistent with the principles and practices detailed in <i>Managing Urban Stormwater: Soils and Construction</i> (Landcom 2004).	All
W.2	No stockpiles of materials or storage of fuels or chemicals would be located within high/medium flood risk areas.	All
W.3	Vehicles and machinery would be properly maintained to minimise the risk of fuel/oil leaks.	All

ID no.	Mitigation measures	Applicable Proposal component
W.4	Routine inspections of all construction vehicles and equipment would be undertaken for evidence of fuel/oil leaks.	All
W.5	All fuels, chemicals and hazardous liquids would be stored within an impervious bunded area in accordance with Australian Standards and EPA Guidelines.	All
W.6	Emergency spill kits would be kept on-site at all times. All staff would be made aware of the location of the spill kit and be trained in its use.	All
W.7	Construction plant, vehicles and equipment would be refuelled off-site, or in a designated re-fuelling area.	All
W.8	Site offices and staff facilities would be located above the 100-year ARI flood level, where practicable.	All
W.9	The existing RailCorp and Council drainage systems would remain operational throughout the construction of the Proposal.	All
W.10	Groundwater encountered during the construction of the Proposal would be managed in accordance with the requirements of the <i>Waste Classification Guidelines</i> (EPA 2014) and <i>Water Discharge and Reuse Guideline</i> (Transport for NSW 2015).	All
W.11	Erosion and sediment control measures would be regularly inspected (particularly following rainfall events) to ensure their ongoing functionality.	All
W.12	Erosion and sediment control measures would be left in place until the works are complete and areas are stabilised.	All
W.13	Works would be managed during rainfall (or whilst the ground remains sodden) to minimise plant and vehicle disturbance to the topsoil.	All
W.14	Adequate water quality and hazardous material procedures (including spill management procedures, use of spill kits and procedures for refuelling and maintaining construction vehicles/equipment) would be implemented during the construction of the Proposal.	All
W.15	Erosion and sediment control plans would be prepared in accordance with <i>Volume 2D of Managing Urban Stormwater: Soils and Construction</i> (DECC 2008). The erosion and sediment control plans would be established prior to the commencement of construction and be updated and managed throughout as relevant to the activities during the construction phase.	All
W.16	Disturbed surfaces would be reinstated as quickly as practicable after construction.	All
W.17	All stockpiled materials would be stored in bunded areas and kept away from waterways to avoid sediment entering the waterways.	All
W.18	Sediment would be prevented from moving off-site and sediment laden water prevented from entering any watercourse, drainage line or drainage inlet.	All
W.19	Temporary scour protection and energy dissipation measures would be designed and implemented to protect receiving environments from erosion.	All

ID no.	Mitigation measures	Applicable Proposal component
Air quality		
AQ.1	Methods for management of emissions would be incorporated into the CEMP, inductions, training and pre-start talks.	All
AQ.2	Activities with the potential to cause substantial emissions, such as material delivery and load out and earthworks, would be identified in the CEMP. Work practices which minimise emissions during these activities would be investigated and applied where reasonable and feasible.	All
AQ.3	<p>Visually monitor dust and where necessary implement the following measures:</p> <ul style="list-style-type: none"> • apply water (or alternate measures) to exposed surfaces that are causing dust generation. Surfaces may include unpaved roads, stockpiles, hardstand areas and other exposed surfaces (for example recently graded areas) • appropriately cover loads on trucks transporting material to and from the construction site. Securely fix tailgates of road transport trucks prior to loading and immediately after unloading • prevent where possible, or remove, mud and dirt being tracked onto sealed road surfaces. 	All
AQ.4	Ensure plant and machinery is regularly checked and maintained in a proper and efficient condition. This would reduce the likelihood of exceeding relevant emissions standards.	All
<u>Sustainability</u>		
<u>S.1</u>	<u>The Proposal will aim to achieve a minimum ‘Silver’ rating under the NSW Sustainable Design Guidelines – Version 3.0. A sustainability checklist will be updated at key design milestones to demonstrate how initiatives have been considered and incorporated as practicable.</u>	<u>All</u>
<u>S.2</u>	<u>Opportunities to reduce the impacts of materials will be considered, and Transport for NSW minimum requirements for substitution of Portland cement incorporated during the detailed design and construction stages.</u>	<u>All</u>
<u>S.3</u>	<u>Consideration of the provision of future electric car charging systems would be undertaken during detailed design in accordance with Transport for NSW Technical Specifications.</u>	<u>Commuter car park</u>
<u>S.4</u>	<u>Opportunities to implement energy saving measures in the proposed car park would be considered during the detailed design stage.</u>	<u>Commuter car park</u>
Cumulative impacts		
CI.1	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.	All

6 Conclusion

6.1 Conclusion

The Hornsby Junction Remodelling and Commuter Car Park REF included a comprehensive assessment of the likely environmental impacts as a result of the Proposal. Potential impacts were identified and addressed in the REF and mitigation measures were recommended where appropriate.

The REF was placed on public display from 27 January to 10 February 2016.

A total of 93 submissions were received which included 92 submissions from the community, and one submission from a local government agency. This Submissions Report has documented and considered the submissions received and outlined Transport for NSW's response.

Since display of the REF, additional investigations have been completed and modifications to the Proposal have been identified. This Submissions Report has assessed the modified Proposal in accordance with Section 111 of the EP&A Act, and the modifications were unlikely to result in a significant impact to the environment.

Some additional management measures have been identified in this report. The management of all other impacts would be consistent with the management and mitigation measures detailed in the REF. All mitigation measures for the Proposal are summarised in Table 5-1.

6.2 Next steps

Transport for NSW will review the REF and Submissions Report prepared for the Proposal and will determine whether the requirements for assessment under Part 5 of the EP&A Act have been met. Transport for NSW will also determine whether issues raised by stakeholders and the community have been appropriately addressed and considered in the Submissions Report.

Following this review, Transport for NSW will make a determination as to whether or not to proceed with the Proposal, in accordance with the provisions of Part 5 of the EP&A Act.

Should the Proposal be approved, Transport for NSW will continue to consult and inform community members, government agencies and other stakeholders during the pre-construction and construction phases. An overview of the consultation activities that will be undertaken by Transport for NSW during the pre-construction and construction phases of the Proposal is provided in Section 2.4.

7 References

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Appendix A – Summary of submissions received

Abbreviations

CC – Car Park capacity	PD – Proposal description and scope
CD – Car Park design	SA – Station access
TT – Traffic and transport	WN – Wider transport network
AP – Alternative parking facilities (construction)	NV – Noise and vibration
VU – Visual and urban design	S – Sustainability
AQ – Air Quality	O – Other

Stakeholder ID No.	Response number
1	CC1, WT1, WT2
2	CD4
3	CC1, CC2, CC3, CD12, O11
4	WT1, SA4
5	SA1, O11
6	CC2, CD2, SA4
7	SA4
8	CD1, O11
9	PD1, SA3
10	O5
11	CC2, CC3, TT1
12	CC1, CC3
13	CC3, PD1, WT1, O11
14	CC1, CC2, CC3
15	PD1
16	PD1, PD7, WT4
17	CC3, CD3, CD8, CD13, O11
18	CC1, CD8, SA1
19	CC3, O11
20	CC3
21	PD4
22	CC3, PD1, CD3, CD7, CD10, CD11, SA1
23	CC3, CD10, CD11
24	VU1
25	CC1, CC3, CC5
26	CC1, CC2, CC3, PD9, WT4, AP1, AP2
27	CC1, CC2, CD1, CD8, CD9, SA1, AP1, O11

Stakeholder ID No.	Response number
28	O11
29	CC3, CD3, O3, O11
30	PD7, WT1, CD3, CD7, CD11, SA1, SA2, TT1, TT4
31	PD7, SA3, O11
32	PD7
33	CD1, CD2, AP1, AP2, AP4
34	CC3, O11
35	CD7, TT11
36	CC3, CD3
37	CC1, CC2, CD11
38	PD5, WT4,
39	CD3, TT6, O4
40	O11
41	CC2, WT4, CD4, VU4
42	WT3
43	CC1, PD7
44	AP1, AP2
45	CC1, O11
46	CC1, CD11
47	O11
48	CC1, SA1
49	CC1, O11
50	CC1, SA3, TT8
51	CD11
52	CC3, SA3
53	N/A
54	PD8, CD1, SA1
55	CC1, PD1, PD5, PD7, CD3, SA6
56	CC2, CD3, O11
57	TT9
58	CC1, CC2, CC3, WT1
59	CC3, PD9, AP1
60	CD4, O11
61	PD2, NV1, NV2, NV4, NV6, S1, S2, VU3, O11
62	CC3, CD11, AP1, AP4
63	CC3, AP1, O3
64	CC1

Stakeholder ID No.	Response number
65	PD13, CD11, SA1, AP1, AP2, NV5, NV8
66	VU1,
67	SA4, TT10
68	CC1, CC2, PD3, WT1, WT2, CD3, TT3, O11
69	CC1, CC2, CC3, CC4, PD9, WT1, WT2, CD3, AP1, AP3, AP6, TT1, O11
70	CC2, SA6, TT5, O11
71	CC1, CC2
72	NV1, NV2, NV3, S1, S2, VU1, VU2, O1, O7
73	NV7, VU3
74	CC1, CC2, CD5, CD10, SA1, SA6
75	CC2, CC3
76	CD3, CD6
77	CC1
78	SA1
79	NV1, AQ1, VU5
80	CC1, SA1, O8
81	VU4
82	CC1, WT2, WT4, TT7
83	CC3, WT2
84	SA5
85	CC3, O11
86	CC1, CC2, AP1, AP5, O6
87	WT4, O9
88	PD4, PD5, PD6, PD10 CD1, SA6, TT1, TT2, TT7, TT9, TT12, S3, VU7, O11
89	PD11, CD1, SA1
90	CC1, CC2, CC3, PD8, WT1, SA1, TT4, VU6, O1, O2
91	PD8, PD12, O10
92	CC1, O1
93	CC2, CC3, WT4

Appendix 3

Hornsby Junction Remodelling and Commuter Car Park Conditions of Approval

Conditions of Approval

Hornsby Junction Remodelling and Commuter Car Park

Abbreviations

CEMP	Construction environmental management plan
CLP	Community liaison plan
EIA	Environmental impact assessment
EPA	NSW Environment Protection Authority
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPL	Environment protection licence issued by the EPA under the <i>Protection of the Environment Operations Act 1997</i>
EMR	Environmental management representative
ISO	International Standards Organisation
OEH	NSW Office of Environment and Heritage
OOHWP	Out of hours work protocol
PMEM	Principal Manager Environment Management, TfNSW (or nominated delegate)
REF	Review of environmental factors
TfNSW	Transport for NSW

Definitions

construction	Includes all work in respect of the Project, other than survey, acquisitions, fencing, investigative drilling or excavation, building/road dilapidation surveys, or other activities determined by the EMR to have minimal environmental impact such as minor access roads, minor adjustments to services/utilities, establishing temporary construction compounds (in accordance with this approval), or minor clearing (except where threatened species, populations or ecological communities would be affected).
contamination	The presence in, on or under land of a substance at a concentration above the concentration at which the substance is normally present in, on or under (respectively) land in the same locality, being a presence that presents a risk of harm to human health or any other aspect of the environment.
emergency work	Includes works to avoid loss of life, damage to external property, utilities and infrastructure, prevent immediate harm to the environment, contamination of land or damage to a heritage (indigenous or non-indigenous) item.
environmental impact assessment	The documents listed in Condition 1 of this approval.
environmental management representative	An independent environmental representative appointed to the Project or a delegate nominated by Transport for NSW.
noise sensitive receiver	In addition to residential dwellings, noise sensitive receivers include, but are not limited to, hotels, entertainment venues, pre-schools and day care facilities, educational institutions (e.g. schools, TAFE colleges), health care facilities (e.g. nursing homes, hospitals), recording studios, places of worship/religious facilities (e.g. churches), and other noise sensitive receivers identified in the environmental impact assessment.
reasonable and feasible	Consideration of best practice taking into account the benefit of proposed measures and their technological and associated operational application in the NSW and Australian context. Feasible relates to engineering considerations and what is practical to build. Reasonable relates to the application of judgement in arriving at a decision, taking into account: mitigation benefits, cost of mitigation versus benefits provided, community views and nature and extent of potential improvements.
the Project	The construction and operation of the Hornsby Junction Remodelling and Commuter Car Park project as described in the environmental impact assessment.
the Proponent	A person or body proposing to carry out an activity under Part 5 of the EP&A Act. In the case of the Project, TfNSW.

Conditions of approval

No	Condition	Applicability												
	General													
1.	<p>Terms of approval</p> <p>The Project shall be carried out generally in accordance with the environmental impact assessment (EIA) for this Project, which comprises the following documents:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">DOCUMENT</th> <th style="text-align: center;">AUTHOR</th> <th style="text-align: center;">DATE</th> </tr> </thead> <tbody> <tr> <td>Hornsby Junction Remodelling and Commuter Car Park – Review of Environmental Factors</td> <td>Jacobs</td> <td>January 2016</td> </tr> <tr> <td>Hornsby Junction Remodelling and Commuter Car Park – Submissions Report [if relevant]</td> <td>Jacobs</td> <td>April 2016</td> </tr> <tr> <td>Hornsby Junction Remodelling and Commuter Car Park – Determination Report</td> <td>TfNSW</td> <td>April 2016</td> </tr> </tbody> </table> <p>In the event of an inconsistency between these conditions and the EIA, these conditions will prevail to the extent of the inconsistency.</p>	DOCUMENT	AUTHOR	DATE	Hornsby Junction Remodelling and Commuter Car Park – Review of Environmental Factors	Jacobs	January 2016	Hornsby Junction Remodelling and Commuter Car Park – Submissions Report [if relevant]	Jacobs	April 2016	Hornsby Junction Remodelling and Commuter Car Park – Determination Report	TfNSW	April 2016	All
DOCUMENT	AUTHOR	DATE												
Hornsby Junction Remodelling and Commuter Car Park – Review of Environmental Factors	Jacobs	January 2016												
Hornsby Junction Remodelling and Commuter Car Park – Submissions Report [if relevant]	Jacobs	April 2016												
Hornsby Junction Remodelling and Commuter Car Park – Determination Report	TfNSW	April 2016												
2.	<p>Project modifications</p> <p>Any modification to the project as approved in the EIA would be subject to further assessment. This assessment would need to demonstrate that any environmental impacts resulting from the modifications have been minimised. The assessment shall be subject to approval under delegated authority by TfNSW. The Proponent shall comply with any additional requirements from the assessment of the project modification.</p>	All												
3.	<p>Statutory requirements</p> <p>These conditions do not relieve the Proponent of the obligation to obtain all other licences, permits, approvals and land owner consents from all relevant authorities and land owners as required under any other legislation for the Project. The Proponent shall comply with the terms and conditions of such licences, permits, approvals and permissions.</p>	All												
4.	<p>Pre-construction environmental compliance matrix</p> <p>A pre-construction environmental compliance matrix (PECM) for the Project (or such stages of the Project as agreed to by the Environmental Management Representative (EMR)) shall be prepared detailing compliance with all relevant conditions and mitigation measures prior to commencement of construction. The PECM shall also include details of approvals, licences and permits required to be obtained under any other legislation for the Project.</p> <p>The Proponent shall:</p> <ol style="list-style-type: none"> (a) submit a copy of the PECM to the EMR for review. The EMR are to be given a minimum period of 7 days to review and provide any comments to the Proponent in relation to the PECM (b) upon completion of the EMR review period, submit a copy of the PECM to the PMEM for approval, at least 14 days (or within such time as otherwise agreed to by the PMEM) prior to commencement of construction of the Project. 	All												

No	Condition	Applicability
5.	<p>Construction environmental compliance report</p> <p>The Proponent shall prepare a construction environmental compliance report (CECR) which addresses the following matters:</p> <ul style="list-style-type: none"> (a) compliance with the construction environmental management plan (CEMP) and these conditions (b) compliance with the <i>Sustainable Design Guidelines Version 3.0</i> compliance checklist (c) compliance with any approvals or licences issued by relevant authorities for construction of the Project (d) implementation and effectiveness of environmental controls (the assessment of effectiveness should be based on a comparison of actual impacts against performance criteria identified in the CEMP) (e) environmental monitoring results, presented as a results summary and analysis (f) details of the percentage of waste diverted from landfill and the percentage of spoil beneficially reused (g) number and details of any complaints, including summary of main areas of complaint, actions taken, responses given and intended strategies to reduce recurring complaints (subject to privacy protection) (h) details of any review and amendments to the CEMP resulting from construction during the reporting period (i) any other matter as requested by the PMEM. <p>The Proponent shall:</p> <ul style="list-style-type: none"> (j) submit a copy of the CECR to the EMR for review. The EMR is to be given a minimum period of 7 days to review and provide any comments to the Proponent in relation to the CECR (k) submit a copy of the CECR to the PMEM (or nominated delegate) for approval upon completion of the EMR review period. <p>The first CECR shall report on the first six months of construction and be submitted within six weeks of expiry of that period (or at any other time interval agreed to by the PMEM). CECRs shall be submitted no later than six months after the date of submission of the preceding CECR (or at other such periods as requested by the PMEM) for the duration of construction.</p>	All
6.	<p>Pre-operation compliance report</p> <p>A pre-operation compliance report (POCR) for the Project shall be prepared, prior to commencement of operation of the Project. The POCR shall detail compliance with all conditions of approval, licences and permits required to be obtained under any other legislation for the project.</p> <p>The Proponent shall:</p> <ul style="list-style-type: none"> (a) submit a copy of the POCR to the EMR for review. The EMR is to be given a minimum period of 7 days to review and provide any comments to the Proponent in relation to the POCR. (b) upon completion of the EMR review period submit a copy of the POCR to the PMEM (or nominated delegate) for approval. The POCR is to be provided to the PMEM at least one month prior to the scheduled operation of the Project (or such time as otherwise agreed to by the PMEM). 	All

No	Condition	Applicability
	Communications	
7.	<p>Community liaison plan</p> <p>The Proponent shall develop and implement a community liaison plan (CLP) to engage with government agencies, relevant councils, landowners, community members and other relevant stakeholders (such as utility and service providers, bus companies and businesses) where required. The CLP shall comply with the obligations of these conditions and should include, but not necessarily be limited to:</p> <ul style="list-style-type: none"> (a) details of the protocols and procedures for disseminating information and liaising with the community and other key stakeholders about construction activities (including timing and staging) and any associated impacts during the construction period (b) stakeholder and issues identification and analysis (c) procedures for dealing with complaints or disputes and response requirements, including advertising the 24 hour construction response line number (d) details (including a program) of training for all employees, contractors and sub-contractors on the requirements of the CLP. <p>Sub-plans to the CLP will be developed as required. These sub-plans will detail site-specific consultation and communication requirements for construction works that impact residents, other stakeholders and businesses. They will also identify further mitigation measures and processes to reduce construction impacts.</p> <p>The CLP shall be prepared to the satisfaction of the Technical Director Project Communications prior to the commencement of construction and implemented, reviewed and revised as appropriate during construction of the Project.</p>	All
8.	<p>Community notification and liaison</p> <p>The local community shall be advised of any activities related to the Project with the potential to impact upon them.</p> <p>Prior to any site activities commencing and throughout the Project duration, the community is to be notified of works to be undertaken, the estimated hours of construction and details of how further information can be obtained (i.e. contact telephone number/email, website, newsletters etc.) including the 24 hour construction response line number.</p> <p>Construction-specific impacts including information on traffic changes, access changes, detours, services disruptions, public transport changes, high noise generating work activities and work required outside the nominated working hours shall be advised to the local community at least seven (7) days prior to such works being undertaken or other period as agreed to by the Technical Director Project Communications or as required by Environment Protection Authority (EPA) (where an environment protection licence (EPL) is in effect).</p>	All
9.	<p>Website</p> <p>The Proponent shall provide electronic information (or details of where hard copies of this information may be accessed by members of the public) related to the Project, on dedicated pages within its existing website, including:</p> <ul style="list-style-type: none"> (a) a copy of the documents referred to under Condition 1 of this approval (b) a list of environmental management reports that are publicly available (c) 24 hour contact telephone number for information and complaints. <p>All documents must be compliant with the Web Content Accessibility Guidelines 2.0.</p>	All
10.	<p>Complaints management</p> <p>The Proponent shall set up a 24 hour construction response line number.</p> <p>Details of all complaints received during construction are to be recorded on a complaints register. A verbal response to phone enquiries on what action is proposed to be undertaken is to be provided to the complainant within two (2) hours during all</p>	All

No	Condition	Applicability
	<p>times construction is being undertaken and within 24 hours during non-construction times (unless the complainant agrees otherwise). A verbal response to written complaints (email/letter) should be provided within 48 hours of receipt of the communication. A detailed written response is to be provided to the complainant within seven (7) calendar days for verbal and/or written complaints.</p> <p>Information on all complaints received during the previous 24 hours shall be forwarded to the environmental management representative (EMR) each working day.</p>	
	Environmental management	
11.	<p>Construction environmental management plan</p> <p>The Proponent shall prepare a construction environmental management plan (CEMP) prior to commencement of construction which addresses the following matters, as a minimum:</p> <ul style="list-style-type: none"> (a) traffic and pedestrian management (in consultation with the relevant roads authority) (b) noise and vibration management (c) water and soil management (d) air quality management (including dust suppression) (e) indigenous and non-indigenous heritage management (f) flora and fauna management (g) storage and use of hazardous materials (h) contaminated land management (including acid sulphate soils) (i) weed management (j) waste management (k) sustainability (l) environmental incident reporting and management procedures (m) non-compliance and corrective/preventative action procedures <p>The CEMP shall:</p> <ul style="list-style-type: none"> i. comply with the Conditions of Approval, conditions of any licences, permits or other approvals issued by government authorities for the Project, all relevant legislation and regulations, and accepted best practice management ii. comply with the relevant requirements of <i>Guideline for Preparation of Environmental Management Plans</i> (Department Infrastructure, Planning and Natural Resources, 2004) iii. include an Environmental Policy. <p>The Proponent shall:</p> <ul style="list-style-type: none"> 1. consult with government agencies and relevant service/utility providers as part of the preparation of the CEMP 2. submit a copy of the CEMP to the EMR for review 3. submit a copy of the CEMP to the PMEM (or nominated delegate) for approval 4. review and update the CEMP at regular intervals, and in response to any actions identified as part of the EMR's audit of the document 5. ensure updates to the CEMP are made within 7 days of the completion of the review or receipt of actions identified by any EMR audit of the document, and be submitted to the EMR for approval. <p>The CEMP must be approved by the PMEM prior to the commencement of construction work associated with the Project.</p>	All

No	Condition	Applicability
12.	<p>Environmental management representative</p> <p>Prior to the commencement of construction, the PMEM shall appoint an EMR for the duration of the construction period for the Project.</p> <p>The EMR shall provide advice to the PMEM in relation to the environmental compliance and performance of the Project. The EMR shall have responsibility for:</p> <ul style="list-style-type: none"> (a) considering and advising the Proponent on matters specified in these conditions and compliance with such (b) reviewing and where required by the PMEM, providing advice on the Project's induction and training program for all persons involved in the construction activities and monitoring implementation (c) periodically auditing the Project's environmental activities to evaluate the implementation, effectiveness and level of compliance of on-site construction activities with authority approvals and licences, the CEMP and associated plans and procedures, including carrying out site inspections weekly, or as required by the PMEM (d) reporting weekly to the Proponent, or as required by the PMEM (e) issuing a recommendation to the Proponent for work to stop immediately, if in the view of the EMR circumstances so require. The stop work recommendation may be limited to specific activities if the EMR can easily identify those activities (f) requiring reasonable steps to be taken to avoid or minimise unintended or adverse environmental impacts (g) reviewing corrective and preventative actions to ensure the implementation of recommendations made from the audits and site inspections (h) providing reports to the Proponent on matters relevant to the carrying out of the EMR role as necessary (i) where required by the PMEM, providing advice on the content and implementation of the CEMP and environmental controls map (ECM) in accordance with the conditions (j) reviewing and approving updates to the CEMP. <p>The EMR shall be available during construction activities to inspect the site(s) and be present on-site as required.</p>	All
Hours of work		
13.	<p>Standard construction hours</p> <p>Construction activities shall be restricted to the hours of 7:00 am to 6:00 pm (Monday to Friday); 8:00 am to 1:00 pm (Saturday) and at no time on Sundays and public holidays except for the following works which are permitted outside these standard hours:</p> <ul style="list-style-type: none"> (a) any works which do not cause noise emissions to be more than 5dBA higher than the rating background level at any nearby residential property and/or other noise sensitive receivers (b) out of hours work identified and assessed in the EIA or the approved out of hours work protocol (OOHWP) (c) the delivery of plant, equipment and materials which is required outside these hours as requested by police or other authorities for safety reasons and with suitable notification to the community as agreed by the PMEM (d) emergency work to avoid the loss of lives, property and/or to prevent environmental harm (e) any other work as agreed by the PMEM (or nominated delegate) and considered essential to the Project, or as approved by EPA (where an EPL is in effect). 	All

No	Condition	Applicability
14.	<p>High noise generating activities</p> <p>Rock breaking or hammering, jack hammering, pile driving, vibratory rolling, cutting of pavement, concrete or steel and any other activities which result in impulsive or tonal noise generation shall not be undertaken for more than 3 hours, without a minimum 1 hour respite period unless otherwise agreed to by the PMEM (or nominated delegate), or as approved by EPA (where relevant to the issuing of an EPL), unless inaudible at nearby residential properties and/or other noise sensitive receivers.</p>	All

No	Condition	Applicability
	Noise and vibration	
15.	<p>Construction noise and vibration</p> <p>Construction noise and vibration mitigation measures shall be implemented through the CEMP, in accordance with TfNSW's <i>Construction Noise Strategy</i> and the EPA <i>Interim Construction Noise Guideline</i> (July 2009). The mitigation measures shall include, but not necessarily be limited to:</p> <ul style="list-style-type: none"> (a) details of construction activities and an indicative schedule for construction works (b) identification of construction activities that have the potential to generate noise and/or vibration impacts on surrounding land uses, particularly sensitive noise receivers (c) detail what reasonable and feasible actions and measures shall be implemented to minimise noise impacts (including those identified in the environmental impact assessment) (d) procedures for notifying sensitive receivers of construction activities that are likely to affect their noise and vibration amenity, as well as procedures for dealing with and responding to noise complaints (e) an out of hours work protocol (OOHWP) for the assessment, management and approval of works outside the standard construction hours identified in Condition 13 of this approval, including a risk assessment process which deems the out of hours activities to be of low, medium or high environmental risk, is to be developed. All out of hours works are subject to approval by the EMR and/or PMEM (or nominated delegate) or as approved by EPA (where relevant to the issuing of an EPL). The OOHWP should be consistent with the TfNSW <i>Construction Noise Strategy</i> (f) a description of how the effectiveness of actions and measures shall be monitored during the proposed works, identification of the frequency of monitoring, the locations at which monitoring shall take place, recording and reporting of monitoring results and if any exceedance is detected, the manner in which any non-compliance shall be rectified. 	All
16.	<p>Vibration criteria</p> <p>Vibration (other than from blasting) resulting from construction and received at any structure outside of the Project shall be limited to:</p> <ul style="list-style-type: none"> (a) for structural damage vibration - German Standard DIN 4150:Part 3 – 1999: <i>Structural Vibration in Buildings: Effects on Structures</i> (b) for human exposure to vibration – the acceptable vibration values set out in the <i>Environmental Noise Management Assessing Vibration: A Technical Guideline</i> (DEC 2006). <p>These limits apply unless otherwise approved by the PMEM through the CEMP.</p>	All
17.	<p>Non-tonal reversing beepers</p> <p>Non-tonal reversing beepers (or an equivalent mechanism) shall be fitted and used on all construction vehicles and mobile plant regularly used on site (i.e. greater than one day) and for any out of hours work.</p>	All
18.	<p>Noise impact on educational facilities</p> <p>Potentially affected pre-schools, schools, universities and any other affected permanent educational institutions shall be consulted in relation to noise mitigation measures to identify any noise sensitive periods (e.g. exam periods). As much as reasonably practicable noise intensive construction works in the vicinity of affected educational buildings are to be minimised.</p>	All

No	Condition	Applicability
19.	<p>Piling</p> <p>Wherever practical, piling activities shall be completed using non-percussive piles. If percussive piles are proposed to be used, approval of the PMEM shall be obtained prior to commencement of piling activities.</p>	All
20.	<p>Property condition surveys</p> <p>Subject to landowner agreement, property condition surveys shall be completed prior to piling, excavation or bulk fill or any vibratory impact works including jack hammering and compaction (Designated Works) in the vicinity of the following buildings/structures:</p> <p>(l) all buildings/structures/roads within a plan distance of 50 metres from the edge of the Designated Works</p> <p>(m) all heritage listed buildings and other sensitive structures within 150 metres from the edge of the Designated Works.</p> <p>Property condition surveys need not be undertaken if a risk assessment indicates that selected buildings/structures/roads identified in (a) and (b) will not be affected as determined by a qualified geotechnical and construction engineering expert with appropriate registration on the National Professional Engineers Register prior to commencement of Designated Works.</p> <p>Selected potentially sensitive buildings and/or structures shall first be surveyed prior to the commencement of the Designated Works and again immediately upon completion of the Designated Works.</p> <p>All owners of assets to be surveyed, as defined above, are to be advised (at least 14 days prior to the first survey) of the scope and methodology of the survey, and the process for making a claim regarding property damage.</p> <p>A copy of the survey(s) shall be given to each affected owner. A register of all properties surveyed shall be maintained.</p> <p>Any damage to buildings, structures, lawns, trees, sheds, gardens, etc. as a result of construction activity direct and indirect (i.e. including vibration and groundwater changes) shall be rectified at no cost to the owner(s).</p>	Commuter Car Park Works
Contamination and hazardous materials		
21.	<p>Unidentified contamination (other than asbestos)</p> <p>If previously unidentified contamination (excluding asbestos) is discovered during construction, work in the affected area must cease immediately, and an investigation must be undertaken and report prepared to determine the nature, extent and degree of any contamination. The level of reporting must be appropriate for the identified contamination in accordance with relevant EPA guidelines, including the <i>Guidelines for Consultants Reporting on Contaminated Sites</i>.</p> <p>The Proponent shall:</p> <p>(a) submit a copy of any contamination report to the EMR for review. The EMR is to be given a minimum period of 7 days to review and provide any comments to the Proponent in relation to the report</p> <p>(b) submit a copy of the report to the PMEM for consideration upon completion of the EMR review period. The PMEM shall determine whether consultation with the relevant council and/or EPA is required prior to continuation of construction works within the affected area.</p> <p>Note: <i>In circumstances where both previously unidentified asbestos contamination and other contamination are discovered within a common area, nothing in these conditions shall prevent the preparation of a single investigation report to satisfy the requirements of both Condition 20 and Condition 21.</i></p>	All
22.	<p>Asbestos management</p> <p>If previously unidentified asbestos contamination is discovered during construction,</p>	All

No	Condition	Applicability
	<p>work in the affected area must cease immediately, and an investigation must be undertaken and report prepared to determine the nature, extent and degree of the asbestos contamination. The level of reporting must be appropriate for the identified contamination in accordance with relevant EPA and WorkCover guidelines and include the proposed methodology for the remediation of the asbestos contamination. Remediation activities must not take place until receipt of the investigation report.</p> <p>Works may only recommence upon receipt of a validation report from a suitably qualified contamination specialist that the remediation activities have been undertaken in accordance with the investigation report and remediation methodology.</p> <p>Note: <i>In circumstances where both previously unidentified asbestos contamination and other contamination are discovered within a common area, nothing in these conditions shall prevent the preparation of a single investigation report to satisfy the requirements of both Condition 20 and Condition 21.</i></p>	
23.	<p>Storage and use of hazardous materials</p> <p>Construction hazard and risk issues associated with the use and storage of hazardous materials shall be addressed through risk management measures, which shall be developed by the construction contractor prior to construction as part of the overall CEMP, in accordance with relevant EPA guidelines, TfNSW <i>Chemical Storage and Spill Response Guideline</i> and Australian and ISO standards. These measures shall include:</p> <ul style="list-style-type: none"> (a) the storage of hazardous materials, and refuelling/maintenance of construction plant and equipment to be undertaken in clearly marked designated areas that are designed to contain spills and leaks (b) spill kits, appropriate for the type and volume of hazardous materials stored or in use, to be readily available and accessible to construction workers. Kits to be kept at hazardous materials storage locations, in site compounds and on specific construction vehicles. Where a spill to a watercourse is identified as a risk, spill kits to be kept in close proximity to potential discharge points in support of preventative controls (c) all hazardous materials spills and leaks to be reported to site managers and actions to be immediately taken to remedy spills and leaks (d) training in the use of spill kits to be given to all personnel involved in the storage, distribution or use of hazardous materials. 	All
	Erosion and sediment control	
24.	<p>Erosion and sediment control</p> <p>Soil and water management measures shall be prepared as part of the CEMP for the mitigation of water quality impacts during construction of the Project. The management measures shall be prepared in accordance with <i>Managing Urban Stormwater; Soils and Construction 4th Edition</i> (Landcom, 2004).</p>	All
	Heritage management	
25.	<p>Indigenous and non-Indigenous heritage</p> <p>If previously unidentified Indigenous or non-Indigenous heritage/archaeological items are uncovered during construction works, all works in the vicinity of the find shall cease and appropriate advice shall be sought from a suitably qualified heritage consultant (and in consultation with the OEH Heritage Branch where appropriate). Works in the vicinity of the find shall not re-commence until clearance has been received from the heritage consultant. Unexpected Heritage Finds Guideline - 3TP-SD-115</p>	All
26.	<p>Archival recording - TBC</p> <p>Archival recording of the A-frame to the north of Hornsby Station shall be undertaken in accordance with Heritage Division Guidelines prior to its removal.</p> <p>A copy of the archival recording shall be placed in the specified location so that a</p>	Junction Remodelling Works

No	Condition	Applicability
	complete record of the original location of the A-frame is available for public access.	
	Flora and fauna	
27.	<p>Replanting program</p> <p>All cleared vegetation (if any) shall be offset in accordance with TfNSW's Vegetation Offset Guide. All vegetation planted on-site is to consist of locally endemic native species, unless otherwise agreed by the PMEM, following consultation with the relevant council, where relevant, and/or the owner of the land upon which the vegetation is to be planted.</p>	All
28.	<p>Removal of trees or vegetation</p> <p>Separate approval, in accordance with TfNSW's <i>Application for Removal or Trimming of Vegetation</i>, is required for the trimming, cutting, pruning or removal of trees or vegetation where the impact has not already been identified in the EIA for the Project. The trimming, cutting, pruning or removal of trees or vegetation shall be undertaken in accordance with the conditions of that approval.</p>	All
	Lighting	
29.	<p>Lighting scheme</p> <p>A lighting scheme for the operation of the car park component of the Project is to be developed by a suitably qualified lighting designer and prepared in accordance with AS 1158 "Road Lighting" and AS 4282 "Control of the Obtrusive Effect of Outdoor Lighting". The lighting scheme shall address the following as relevant:</p> <ul style="list-style-type: none"> (a) consideration of lighting demands of different areas (b) strategic placement of lighting fixtures to maximise ground coverage (c) use of LED lighting (d) minimising light spill by directing lighting into the commuter car park (e) control systems for lighting that dim or switch-off lights settings according to the amount of daylight the zone is receiving (f) motion sensors to control low traffic areas (g) allowing the lighting system to use low light or switch off light settings while meeting relevant lighting Standards requirements, and (h) ensuring security and warning lighting is not directed at neighbouring properties. <p style="text-align: center;">The proposed lighting scheme is to be submitted to and accepted by TfNSW – Director Urban Design and Precincts.</p>	All (mainly applicable to Commuter Car Park Works, but also applicable to lighting for track on Junction Remodelling Works (eg. driver's walkway lighting))
	Sustainability	
30.	<p>Pre-construction sustainability report</p> <p>Prior to commencement of construction, a pre-construction sustainability report (PCSR) shall be prepared to the satisfaction of the PMS. The Report shall include the following minimum components:</p> <ul style="list-style-type: none"> (a) a completed electronic checklist demonstrating compliance with the <i>Sustainable Design Guidelines Version 3.0</i> (b) a statement outlining the Proponent's own corporate sustainability obligations, goals, targets, in house tools, etc (c) a section specifying any areas of innovation that will be explored and/or implemented on the Project during the course of the construction period. <p>The Proponent shall submit a copy of the PCSR to the PMS for approval, at least 14 days prior to the commencement of construction (or within such time as otherwise agreed to by the PMS).</p>	All
	Traffic and access	
31.	Traffic management plan	All

No	Condition	Applicability
	<p>The Proponent shall prepare a construction traffic management plan (TMP) as part of the CEMP which addresses, as a minimum, the following:</p> <ul style="list-style-type: none"> (a) 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 (b) maximising safety and accessibility for pedestrians and cyclists (c) ensuring adequate sight lines to allow for safe entry and exit from the site (d) ensuring access to railway stations, businesses, entertainment premises and residential properties (unless affected property owners have been consulted and appropriate alternative arrangements made) (e) managing impacts and changes to on and off street parking and requirements for any temporary replacement provision (f) parking locations for construction workers away from stations and busy residential areas and details of how this will be monitored for compliance (g) routes to be used by heavy construction-related vehicles to minimise impacts on sensitive land uses and businesses (h) details for relocating kiss-and-ride, taxi ranks and rail replacement bus stops if required, including appropriate signage to direct patrons, in consultation with the relevant bus operator. Particular provisions should also be considered for the accessibility impaired. (i) measures to manage traffic flows around the area affected by the Project, 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. <p>The Proponent shall consult with the relevant roads authority during preparation of the TMP, as required. The performance of all Project traffic arrangements must be monitored during construction.</p>	
32.	<p>Road safety audit</p> <p>A Road Safety Audit would be undertaken as part of the detailed design process. The Road Safety Audit would include specific assessment of:</p> <ul style="list-style-type: none"> (a) sight distances for vehicles exiting and entering the upgraded commuter car park and associated intersections and mitigation measures proposed (b) assessment of the commuter car park intersection and mitigation measures proposed <p>The Road Safety Audit is to be submitted to and accepted by TfNSW.</p>	Commuter Car Park Works
	Commuter car parking	
33.	<p>The Community liaison plan shall include public information sessions regarding the changes to the commuter car parking and any offset parking to be provided.</p>	Commuter Car Park Works
	Urban design and landscaping	
34.	<p>Urban design and landscaping plan</p> <p>The Proponent shall prepare an urban design and landscaping plan (UDLP) which demonstrates design excellence in the essential urban design requirements of the Project, as evident in the following matters:</p> <ul style="list-style-type: none"> (a) the appropriateness of to the proposed design with respect to the existing surrounding landscape, built form, behaviours and use-patterns (b) materials, finishes, colour schemes and maintenance procedures including graffiti control for new walls, barriers and fences (c) location and design of access points to and from the car park and station, facilities including kiss and ride, bus, taxi and bicycle facilities if applicable 	Commuter Car Park Works

No	Condition	Applicability
	<ul style="list-style-type: none"> (d) landscape treatments and street tree planting to integrate with surrounding streetscape (e) design detail that is sympathetic to the amenity and character of heritage items located within or adjacent to the Project site (f) opportunities for public art created by local artists to be incorporated, where considered appropriate, into the Project (g) total water management principles to be integrated into the design where considered appropriate (h) design measures included to meet the <i>Sustainable Design Guidelines Version 3.0</i> (i) identification of design and landscaping aspects that will be open for community input (j) visual amenity to neighbouring properties. <p>The UDLP shall be:</p> <ul style="list-style-type: none"> (k) prepared prior to the finalisation of the Project's detailed design (l) prepared in consultation with Council and relevant stakeholders (m) prepared by a registered architect and/or landscape architect (n) accepted by TfNSW – Director Urban Design and Precincts. 	
35.	<p>Urban Design Review Panel</p> <p>The architecture and urban design and landscaping plan (UDLP) for the commuter car park design will be subject to review by the Transport for NSW Precincts & Urban Design team.</p> <p>Signed approval of the detailed design is required from the Principal Manager Urban Design, TfNSW prior to commencement of construction of the multi-deck carpark component of this approval.</p>	Commuter Car Park Works
Additional conditions		
36.	<p>Graffiti and advertising</p> <p>Hoardings, site sheds, fencing, acoustic walls around the perimeter of the site, and any structures built as part of the Project are to be maintained free of graffiti and advertising not authorised by the Proponent during the construction period. Graffiti and unauthorised advertising will be removed or covered within the following timeframes:</p> <ul style="list-style-type: none"> (a) offensive graffiti will be removed or concealed within 24 hours (b) highly visible (yet inoffensive) graffiti will be removed or concealed within a week (c) graffiti that is neither offensive or highly visible will be removed or concealed within a month (d) any unauthorised advertising material will be removed or concealed within 24 hours. 	Commuter Car Park Works