NSW GOVERNMENT

Transport Access Program

Narara Station Upgrade

Review of Environmental Factors

Artist's impression of the proposed Narara Station Upgrade, subject to detailed design

August 2020

Narara Station Upgrade – Review of Environmental Factors

August 2020

Ref – 6472237

Contents

Document control	
Status:	Approved
Date of issue:	August 2020
Version:	Final
Document Author:	SNC-Lavalin Atkins
Document Reviewer:	Cathy Lestrange, Natalie Moore, Kevin Truong, Chris Gibbons, Holly Koenigs, Nigel Cocks, Trent Middleton, David Morrison, Ben Groth, Ben Grogan, Sue Robinson, Louise Sureda

Figures

Tables

Abbreviations

Term	Meaning
AHD	Australian Height Datum
AHIMS	Aboriginal Heritage Information Management System
AS	Australian Standard
ASA	Asset Standards Authority (refer to Definitions)
ASS	Acid Sulfate Soils
BCA	Building Code of Australia
BC Act	*Biodiversity Conservation Act 2016* (NSW)
BS	British Standard
CBD	Central Business District
CCC	Central Coast Council
CEMP	Construction Environmental Management Plan
CCTV	Closed Circuit Television
CLM Act	*Contaminated Land Management Act 1997* (NSW)
CLMP	Community Liaison Management Plan
CM Act	*Coastal Management Act 2016* (NSW)
CNVMP	Construction Noise and Vibration Management Plan
CNVS	Construction Noise and Vibration Strategy (TfNSW, 2019a)
CTMP	Construction Traffic Management Plan
DAWE	Department of Agriculture, Water and the Environment (Cwlth)
dB(A)	Decibels using the A-weighted scale measured according to the frequency of the human ear.
DBH	Diameter Breast Height
DCP	Development Control Plan
DDA	*Disability Discrimination Act 1992* (Cwlth)
DP&E	(former) NSW Department of Planning and Environment
DPIE	NSW Department of Planning, Industry and Environment
DSAPT	*Disability Standards for Accessible Public Transport (2002)*
ECM	Environmental Controls Map
EES	NSW Environment, Energy and Science (Division of Department of Planning Industry and Environment) (formerly OEH)
EMS	Environmental Management System
EPA	Environment Protection Authority
EP&A Act	*Environmental Planning and Assessment Act 1979* (NSW)
EP&A Regulation	*Environmental Planning and Assessment Regulation 2000* (NSW)

Term	Meaning
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cwlth)
EPL	Environment Protection Licence
ESD	Ecologically Sustainable Development (refer to Definitions)
FM Act	*Fisheries Management Act 1994* (NSW)
Heritage Act	*Heritage Act 1977* (NSW)
ICNG	*Interim Construction Noise Guideline* (Department of Environment and Climate Change, 2009).
Infrastructure SEPP	*State Environmental Planning Policy (Infrastructure) 2007* (NSW)
IS rating	Infrastructure Sustainability rating under ISCA rating tool (v 1.2)
ISCA	Infrastructure Sustainability Council of Australia
LEP	Local Environmental Plan
LGA	Local Government Area
MCA	Multi-criteria analysis
NES	National Environmental Significance (refers to matters of National Environmental Significance under the EPBC Act)
NPW Act	*National Parks and Wildlife Act 1974* (NSW)
NSW	New South Wales
NVIA	Noise and Vibration Impact Assessment
OEH	(former) NSW Office of the Environment and Heritage
PDP	Public Domain Plan
PoEO Act	*Protection of the Environment Operations Act 1997* (NSW)
PMF	Probable Maximum Flood
REF	Review of Environmental Factors (this document)
Roads Act	*Roads Act 1993* (NSW)
Roads and Maritime	(former) NSW Roads and Maritime Services (now Transport for NSW)
RMS	(former) NSW Roads and Maritime Services (now Transport for NSW)
SEPP	State Environmental Planning Policy
SES	NSW State Emergency Service
SoHI	Statement of Heritage Impact
SHI	State Heritage Inventory
SHR	State Heritage Register
TfNSW	Transport for NSW
TGSIs	Tactile Ground Surface Indicators
TPZ	Tree Protection Zone
UDP	Urban Design Plan
WARR Act	*Waste Avoidance and Resource Recovery Act 2001* (NSW)

Term	Meaning
WM Act	*Water Management Act 2000* (NSW)
WMP	Waste Management Plan

Definitions

Term	Meaning
Asset Standards Authority	The ASA is an independent body within TfNSW, responsible for engineering governance, assurance of design safety, and ensuring the integrity of transport and infrastructure assets.
Average Recurrence Interval	The likelihood of occurrence, expressed in terms of the long-term average number of years, between flood events as large as or larger than the design flood event. For example, floods with a discharge as large as or larger than the 100-year ARI flood will occur on average once every 100-years.
Scoping Design	The scoping design is the preliminary design presented in this REF, which would be refined by the Construction Contractor (should the Proposal proceed) to a design suitable for construction (subject to TfNSW acceptance).
Construction Contractor	The entity appointed by TfNSW to undertake the construction of the Proposal. The Construction Contractor is therefore responsible for all work on the project, both design and construction.
Determining authority	A Minister or public authority on whose behalf an activity is to be carried out or public authority whose approval is required to carry out an activity (under Division 5.1 of the EP&A Act).
Disability Standards for Accessible Public Transport	The *Commonwealth Disability Standards for Accessible Public Transport 2002* (as amended), authorised under the Commonwealth *Disability Discrimination Act 1992* (DDA).
Ecologically Sustainable Development	As defined by clause 7(4) Schedule 2 of the EP&A Regulation.
Feasible	A work practice or abatement measure is feasible if it is capable of being put into practice or of being engineered and is practical to build given project constraints such as safety and maintenance requirements.
Interchange	Transport interchange refers to the area/s where passengers transit between vehicles or between transport modes. It includes the pedestrian pathways and cycle facilities in and around an interchange.
Kiss and ride space	Dedicated limited-time parking space near a public transport mode for picking up or dropping off customers.
Out of hours works	Defined as works undertaken *outside* standard construction hours (i.e. outside of 7am to 6pm Monday to Friday, 8am to 1pm Saturday and no work on Sundays/public holidays).
Probable Maximum Flood	The largest flood that could conceivably occur at a particular location, usually estimated from probable maximum precipitation.
Proponent	A person or body proposing to carry out an activity under Division 5.1 of the EP&A Act.
Proposal	The construction and operation of the Narara Station Upgrade Project.
Rail possession / shutdown	Shutdown is the term used by railway building/maintenance personnel to indicate that they have taken possession of the track (usually a section of track) for a specified period, where no trains operate for a specified time. This is necessary to ensure the safety of workers and rail users.

Term	Meaning
Reasonable	Selecting reasonable measures from those that are feasible involves making a judgment to determine whether the overall benefits outweigh the overall adverse social, economic and environmental effects, including the cost of the measure.
Sensitive receivers	Land uses which are sensitive to potential noise, air and visual impacts, such as residential dwellings, schools and hospitals.
Vegetation Offset Guide (TfNSW, 2019b)	The TfNSW guide that applies where there is vegetation clearing proposed, and where the impact of the proposed clearing is not deemed 'significant' for the purposes of Section 5.5 of the EP&A Act.

Executive summary

Overview

Transport for NSW (TfNSW) is the government agency responsible for the delivery of major transport infrastructure projects in NSW and is the proponent for the Narara Station Upgrade (the 'Proposal').

The Proposal is part of the Transport Access Program, an NSW Government initiative to provide a better experience for public transport customers by delivering accessible, modern, secure and integrated transport infrastructure.

As part of the Transport Access Program, the Proposal would provide a station precinct that is accessible for everyone including people with a disability, limited mobility, parents/carers with prams, and customers with luggage.

This Review of Environmental Factors (REF) has been prepared to assess all matters affecting or likely to affect the environment by reason of the construction and operation of the Proposal under the provisions of Division 5.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

Description of the Proposal

The key features of the Proposal are summarised as follows:

- installation of two new lifts (and lift landings) connecting the existing footbridge to the two commuter car parks and the platforms
- localised surface regrading in both commuter car parks and provision of an accessible parking space and a kiss and ride space within each car park
- a new pedestrian crossing across the northern commuter car park connecting to Narara Valley Drive
- a new accessible path from the station to Narara Valley Drive
- relocation of the existing southbound bus stop on Narara Valley Drive and provision of a formalised pedestrian crossing on Narara Valley Drive
- formalised Boarding Assistance Zones (BAZ) on each platform
- provision of a localised ramp from Platform 1 into the waiting area
- new fencing and bollards
- reshaping the mound surrounding the electrical pole at the southern commuter car park to improve traffic flow
- ancillary work including electrical upgrades to support new infrastructure, service relocation, opal car reader relocation, drainage works, upgrades to lighting and public address systems, CCTV, wayfinding signage and relocation of bins and furniture.

Subject to planning approval, construction is expected to commence in late-2020 and take around 12-18 months to complete. A detailed description of the Proposal is provided in Chapter 3 of this REF, while an overview of the Proposal is shown in Figure ES-1-1 and Figure ES-1-2.

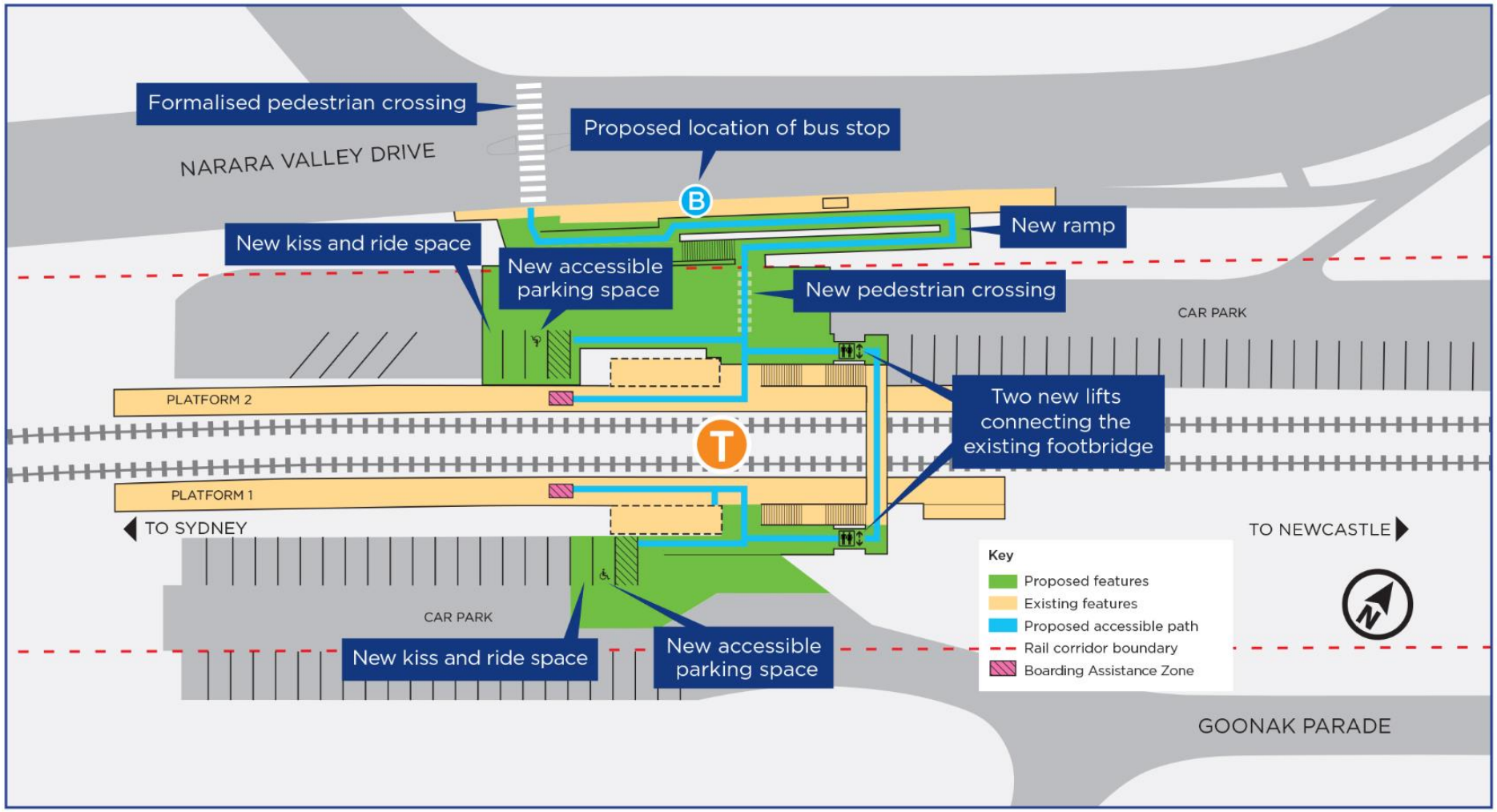

Figure ES-1-1 Key features of the Proposal (indicative only, subject to detailed design)

Figure ES-1-2 Photomontage of the Proposal (subject to detailed design)

Need for the Proposal

Narara Station has been identified for an accessibility upgrade as it does not currently meet the key requirements of the Commonwealth *Disability Discrimination Act 1992* (DDA) and the *Disability Standards for Accessible Public Transport 2002* (DSAPT).

The station entrances and access to the platforms do not facilitate access for people with reduced mobility, parents/carers with prams or customers with luggage. Currently there are no accessible parking spaces, no lift facilities to link the platforms via the footbridge, and no compliant accessible path of travel to the bus stop on the southern side of Narara Valley Drive.

The Proposal is designed to achieve an enhanced customer experience outcome, deliver improved travel to and between transport modes and encourage greater public transport use throughout the community.

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

Community and stakeholder consultation

Community consultation activities for the Proposal would be undertaken during the public display period of this REF with the public invited to submit feedback to help TfNSW understand what is important to customers and the community. The REF would be displayed

for a period of two weeks. Further information about these specific consultation activities is included in Section 5.3 of this REF.

During the display period a Project Infoline (1800 684 490) and email address (projects@transport.nsw.gov.au) would be available for members of the public to make enquiries.

In accordance with the requirements of the *State Environmental Planning Policy (Infrastructure) 2007* (Infrastructure SEPP), consultation is required with local councils and/or public authorities in certain circumstances, including where council managed infrastructure is affected. Consultation with Central Coast Council (CCC) and the NSW State Emergency Service (SES) is required under the Infrastructure SEPP and would continue through the detailed design and construction of the Proposal.

TfNSW 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. Figure ES-1-3 shows the planning approval and consultation process for the Proposal.

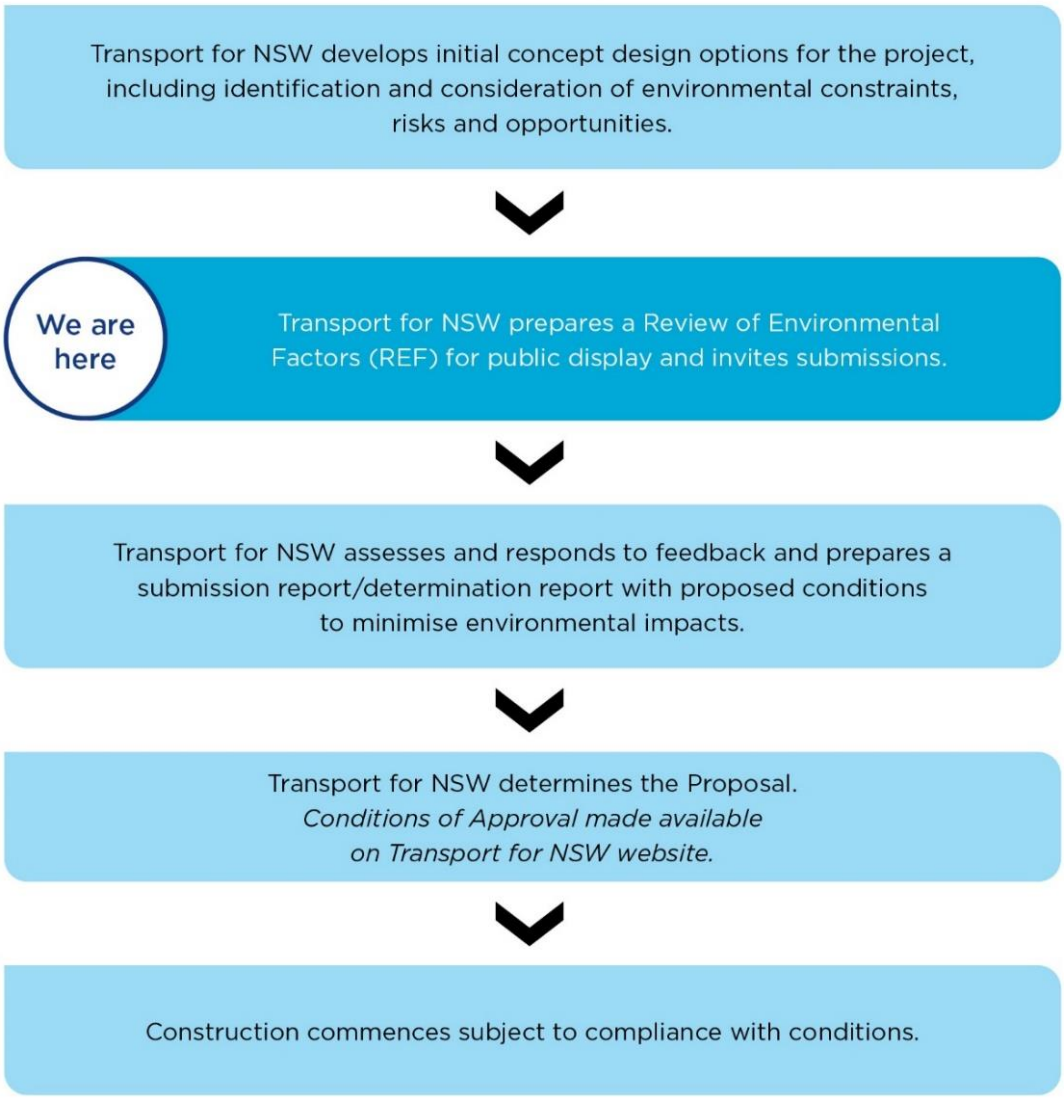

Figure ES-1-3 Planning approval and consultation process for the Proposal

Environmental impact assessment

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

The Proposal would provide the following benefits:

- improved and equitable access to Narara Station for customers resulting from the installation of lift access from both the southern and northern commuter car parks to the footbridge connecting both platforms
- provision of a DDA compliant accessible parking space and a formalised kiss and ride space in both the southern and northern commuter car parks
- provision of a DDA compliant accessible pathway linking Narara Station to bus services along the southern side of Narara Valley Drive

- improved amenity and safety for customers at the station resulting from improved lighting, public address system, Opal card readers, and CCTV

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

- minor temporary changes to vehicle and pedestrian movements to, from and around the station during construction
- moderate temporary impacts to the visual character from selected viewpoints of residential receivers due to construction activities, including hoardings, the establishment and use of a construction compound and removal of mature trees
- low to moderate permanent visual impacts, depending on the selected viewpoint, due to the lift shafts that would be new taller built elements in the view as well as the accessible path and ramp on the northern side of the station along the existing embankment
- temporary noise and vibration impacts during construction. These impacts were assessed as variable and dependent on the construction stage and hours of work.
- permanent removal of up to 10 formal and six informal commuter parking spaces within the commuter car parks at the station.
- removal of one large tree and two medium sized trees, which would be replaced in accordance with the *TfNSW Vegetation Offset Guide* (TfNSW, 2019b).

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

Conclusion

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

The detailed design of the Proposal would also be done in accordance with the Infrastructure Sustainability Council of Australia (ISCA) Infrastructure Sustainability (IS) Rating Tool (v 1.2) taking into account the principles of ecologically sustainable development (ESD).

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

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

1. Introduction

Transport for NSW (TfNSW) is the lead agency of the NSW Transport cluster. TfNSW is responsible for strategy, planning, policy, procurement, regulation, funding allocation and other non-service delivery functions for all modes of transport in NSW including road, rail, ferry, light rail, point to point, cycling and walking. TfNSW is the proponent for the Narara Station Upgrade (the 'Proposal').

1.1. Overview of the Proposal

1.1.1. Need for the Proposal

The Narara Station Upgrade, the subject of this REF, forms part of the Transport Access Program. This Program is an initiative to provide a better experience for public transport customers by delivering accessible, modern, secure and integrated transport infrastructure.

Narara Station has been identified for an accessibility upgrade as it does not currently meet key requirements of the *Disability Standards for Accessible Public Transport 2002 (*DSAPT) or the Commonwealth *Disability Discrimination Act 1992* (DDA). The non-compliant pathways, car parking and stairs to the footbridge do not facilitate access for people with reduced mobility, parents or carers with prams, or customers with luggage.

The Proposal would provide safe and equitable access to the platforms and car parks, and to the bus and pedestrian network on the northern side of the station

The Proposal would improve accessibility of the station in line with the requirements of the DDA and the DSAPT. The upgrades would provide an improved customer experience for existing and future users of the station.

The needs and objectives of the Proposal are further discussed in Chapter 2 of this REF.

1.1.2. Key features

The key features of the Proposal are shown in Figure 3-1 and summarised as follows:

- installation of two new lifts (and lift landings) connecting the existing footbridge to the two commuter car parks and the platforms
- localised surface regrading in both commuter car parks and provision of an accessible parking space and a kiss and ride space within each car park
- a new pedestrian crossing across the northern commuter car park connecting to Narara Valley Drive
- a new accessible path from the station to Narara Valley Drive
- relocation of the existing southbound bus stop on Narara Valley Drive and provision of a formalised pedestrian crossing on Narara Valley Drive
- formalised Boarding Assistance Zones (BAZ) on each platform
- provision of a localised ramp from Platform 1 into the waiting area
- new fencing and bollards
- reshaping of the mound surrounding the electrical pole at the southern commuter car park to improve traffic flow

- ancillary work including electrical upgrades to support new infrastructure, service relocation, opal card reader relocation, drainage works, upgrades to lighting and public address systems, CCTV, wayfinding signage and relocation of bins and furniture.

The schematic image provided in Figure ES-1-1 and Figure 3-1 shows the general layout of key elements of the Proposal based on the strategic scoping design. The design would be further refined during the detailed design phase.

Subject to planning approval, construction is expected to commence in late 2020 and take around 12-18 months to complete.

A detailed description of the Proposal is provided in Chapter 3 of this REF.

1.2. Location of the Proposal

The Proposal is located in the suburb of Narara, within the Central Coast Council (CCC) Local Government Area (LGA). Narara Station is approximately 80 kilometres from Central Station, Sydney, and about four kilometres north of Gosford Station. Narara Station is serviced by the Central Coast and Newcastle Line of the Intercity Trains Network. The location of the Proposal and its regional context is shown in Figure 1-1.

The station lies between Goonak Parade to the south and Narara Valley Drive to the north. Narara Station is accessed from the southern side of the rail corridor from the Pacific Highway via Goonak Parade, and from the northern side of the rail corridor from Narara Valley Drive. Informal driveways with no kerbs and no pedestrian footpaths provide access to commuter carparks on both sides of the rail corridor.

The commuter car parks currently provide a total formal capacity of 79 car parking spaces, one secure bike locker and one bike rack. There are no existing accessible car parking spaces nor any formal kiss and ride spaces.

Additional transportation options are located to the north-west of the station along Narara Valley Drive, with northbound and southbound bus stop zones located within reach of the station.

The Proposal includes upgrades to Narara Station on land owned by RailCorp, with the station facilities maintained by Sydney Trains, and rail services operated by NSW TrainLink. In addition, the Proposal includes some work within the road reserve of Narara Valley Drive, which is on CCC land. This proposed work within the road reserve is to facilitate a new accessible path and pedestrian crossing between the existing bus stops on Narara Valley Drive and the station.

The Proposal area is shown in Figure 1-2 and includes:

- the rail corridor around Narara Station (including the platforms, shelters, and footbridge)
- the station commuter car parks either side of the rail corridor
- a proposed construction compound area within the rail corridor, to the south of the southern commuter car park
- the northbound and southbound bus stops on Narara Valley Drive, and the road verge adjacent the northern commuter car park.

Figure 1-1 Regional and local site context

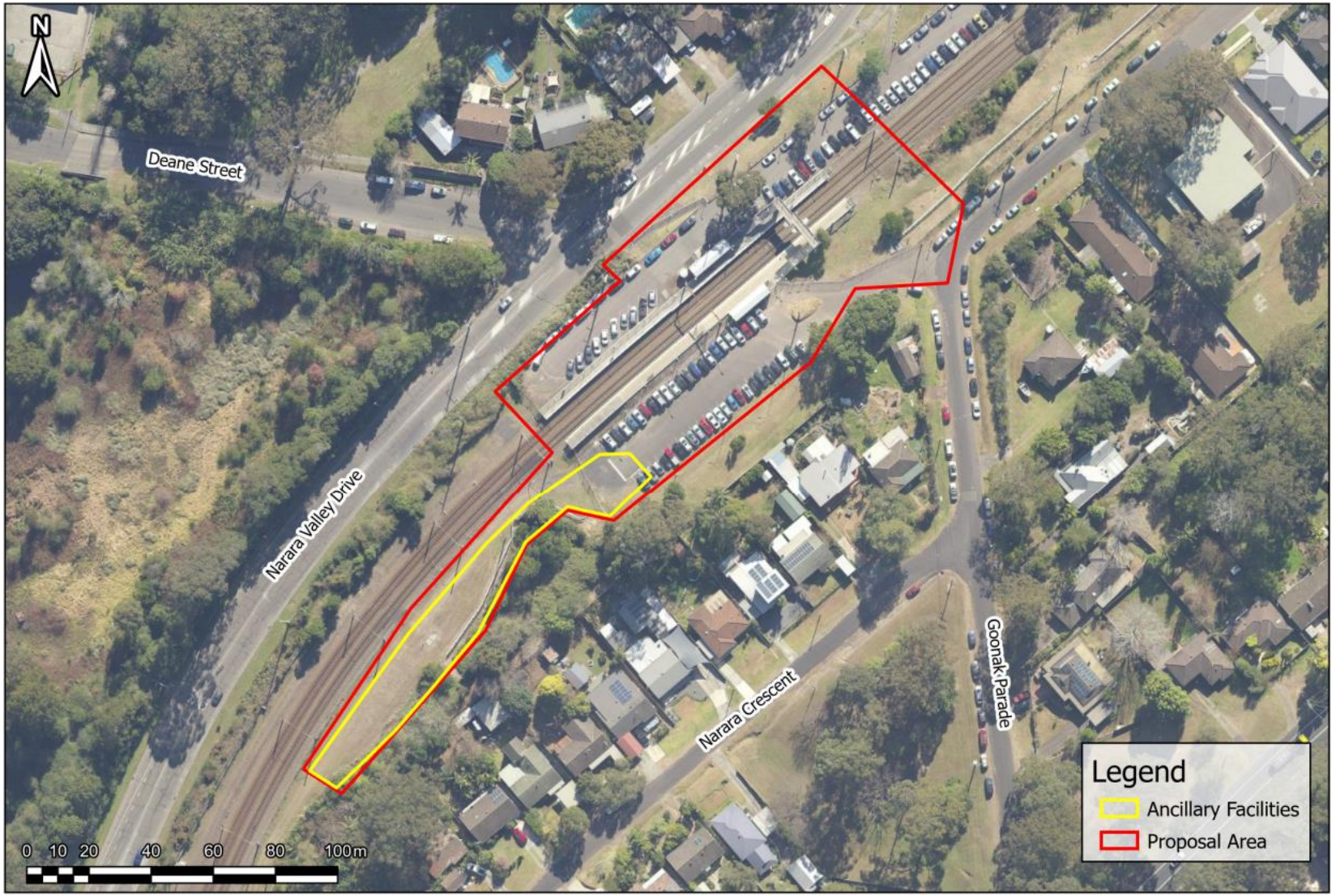

Figure 1-2 Narara Station and Proposal area

1.3. Existing infrastructure and land uses

1.3.1. Platforms and stairs

The station consists of two concrete side platforms. The southern platform (Platform 1) provides services southbound 'up' to Sydney Central and northern the platform (Platform 2) provides services northbound 'down' to Newcastle.

The platforms are accessed directly from each of the adjoining commuter car parks. A reinforced concrete footbridge, with precast concrete steps and pole mounted lights, is located towards the eastern end of the platforms, providing a pedestrian link between the two platforms. Figure 1-3 to Figure 1-5 provide views of the relationship of the footbridge to the platforms.

On each platform there is an open-sided waiting area (refer Figure 1-3). There are no station buildings or toilet facilities at the station.

Figure 1-3 View from footbridge looking south-west

Figure 1-4 View from footbridge looking north-east

Figure 1-5 View of the footbridge from the northern station platform (Platform 2)

1.3.2. Commuter car parks

Dedicated commuter car parks are provided on both the southern and northern sides of the rail corridor. The southern car park is accessed by vehicles from the Pacific Highway off Goonak Parade via a driveway with no kerbs and no pedestrian footpath. The car park is sealed with 42 marked car parking spaces at 90 degrees to the rail lines (refer Figure 1-6**)**

The northern car park is accessed by vehicles from Narara Valley Drive via a driveway with no kerbs and no pedestrian footpath. A pedestrian path provides access up a steep incline from the footpaths on Narara Valley Drive to the northern car park. The car park is sealed and has 37 formally marked car parking spaces, comprising 31 spaces at 90 degrees to the rail lines, 1 small car space and a further 5 angle parks at the southern end of the car park (refer Figure 1-7 and Figure 1-8). Informal parallel parking occurs along the northern side of the northern car park, with the area accommodating about 25 informal car parking spaces.

A parking area for service vehicles only is provided directly adjacent the footbridge stairs in the northern car park. Beneath the footbridge stairs is an electrical transformer.

A bike rack with capacity for 7 bikes and one secure bike locker is provided in the northern commuter car park beside the waiting area shelter.

Figure 1-6 View of southern commuter car park from the footbridge looking south

Figure 1-7 View of northern commuter carpark from footbridge looking north

Figure 1-8 View of northern commuter carpark, from near the entrance to Platform 2, looking south

1.3.3. Land uses

Under the *Gosford Local Environmental Plan 2014* (Gosford LEP), Narara Station is zoned as SP2 Infrastructure, similarly north of the rail corridor is a designated road reserve corridor also zoned as SP2 Infrastructure.

The station is located in an area of predominately low-density residential housing (R2 zone) to the north, east and south, interspersed with some public recreation areas (RE1 zone). The area west of the station is zoned as an Environmental Conservation (E2 zone), and includes areas of bushland along the margins of Narara Creek. Figure 1-9 and Figure 1-10 provide viewpoints to the north and west across Narara Valley Road.

Approximately 400m south of the station is a light-industrial and commercial retail area bordering the Pacific Highway. Approximately 800m to the south-west is Narara Valley High School. An extract from the Gosford LEP zoning map can be viewed in Figure 4-1.

Figure 1-9 View of neighbouring low-density residential areas along Narara Valley Drive from the northern side of the station looking north

Figure 1-10 View of existing non-compliant ramp to Narara Valley Drive and the corner of the Environmental Conservation zone from commuter car park looking south

1.4. Purpose of this Review of Environmental Factors

This REF has been prepared by SNC-Lavalin Atkins on behalf of TfNSW to assess the potential impacts of the Narara Station Upgrade. For the purposes of these works, TfNSW is the proponent and the determining authority under Division 5.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

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

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

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

2. Need for the Proposal

Chapter 2 discusses the need and strategic justification for the Proposal, with consideration of the objectives of the Transport Access Program as well as the specific objectives of the Proposal. This chapter also provides a summary of the options that have been considered during development of the Proposal and a justification for the preferred option.

2.1. Strategic justification

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

The Narara Station Upgrade, the subject of this REF, forms part of the Transport Access Program which is an initiative to provide a better experience for public transport customers by delivering accessible, secure, modern and integrated transport infrastructure. The Proposal would improve accessibility to Narara Station and provide safe and equitable access to the platforms and commuter car parks, in line with DDA legislation and DSAPT requirements.

Table 2-1 identifies key NSW government policies applicable to the Proposal as part of the strategic justification. Further details of the application of NSW Government policies and strategies are discussed in Chapter 4 of this REF.

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

Policy / Strategy	Overview	How the Proposal aligns
Central Coast Regional Plan 2036 (DPIE, 2016)	The *Central Coast Regional Plan 2036* aims to build a strong economy capable of generating jobs, providing greater housing choice, essential infrastructure, lively centres for shopping, entertainment and dining, and protecting the natural environment. It sets the vision of *A healthy natural environment,* *a flourishing economy and well-connected communities* and identifies four goals to achieving this.	The Proposal aligns with Goal 3 which seeks *well-connected communities and attractive lifestyles* and includes *Direction 18: Create places that are inclusive, well designed and offer attractive lifestyles*. Specifically, this direction speaks to making places that are safe and accessible for children, older people and people with a disability. These are goals and directions inherent in the Proposal.
Future Transport Strategy 2056 (TfNSW, 2018a)	*Future Transport 2056* is an update of NSW's *Long-Term Transport Master Plan*. It is a suite of strategies and plans for transport to provide an integrated vision for the state. *Future Transport 2056* identifies 12 customer outcomes for future transport in regional NSW. These outcomes include sustaining and enhancing the liveability of our places and, making services accessible for all customers.	The Transport Access Program is identified in the Strategy as an example of the NSW Government working to improve accessibility of the rail network (outcome 5 of the strategy's vision for transport and outcome 9 of the strategy for future transport in regional NSW). New compliant access paths and lifts would provide a physically accessible and safe network allowing greater choice for people with mobility constraints to access public transport.

Policy / Strategy	Overview	How the Proposal aligns
		Greater accessibility would enhance the liveability of the locality.
NSW State Infrastructure Strategy 2018-2038 *(NSW Government, 2018)*	The *NSW State Infrastructure Strategy 2018–2038* builds on the NSW Government's major long-term infrastructure plans over the last seven years. The strategy sets out the government's priorities for the next 20 years, and combined with the *Future Transport Strategy 2056*, the *Greater Sydney Region Plan* and the *Regional Development Framework*, brings together infrastructure investment and land-use planning for our cities and regions. Public transport is viewed as critical to urban productivity, expanding employment opportunities by connecting people to jobs, reducing congestion, and supporting delivery of urban renewal.	The Proposal supports investment in rail infrastructure and aligns with the need to continue to provide urban public transport to support increasing population. The Proposal is also consistent with overall aims and objectives of the *Future Transport Strategy 2056* to improve transport infrastructure across NSW.
Building Momentum – State Infrastructure Strategy 2018-2038 (Infrastructure NSW, 2018)	The *State Infrastructure Strategy 2018-2038* makes recommendations for each of NSW's key infrastructure sectors including transport. The strategy identifies the Central Coast as the State's fastest growing corridor and the need to improve passenger rail services to Sydney and Newcastle to allow residents to access a wider variety of jobs and business opportunities in both cities.	The Proposal would provide for increased rail use and improve accessibility to a wider range of customers including the elderly and less mobile.
Disability Inclusion Action Plan 2018-2022 (TfNSW, 2017)	The *Disability Inclusion Action Plan 2018-2022* was developed by TfNSW in parallel with the development of *Future Transport Strategy 2056*, and in consultation with the Accessible Transport Advisory Committee, which is made up of representatives from peak disability and ageing organisations within NSW. The Plan places the needs of the customer at the centre of planning and decision-making for the transport system. This means delivering high quality services to all customers including those with disability. A key action of the Plan is to continue the roll out of the Transport Access Program to increase accessibility to stations on the basis of prioritised need.	The Transport Access Program has been identified in this Plan as a key action to ensure transport networks in Sydney are accessible for all potential customers. The Proposal has been developed in consideration of the objectives outlined in this Plan. The Proposal would assist in achieving the objectives of the Disability Inclusion Action Plan, as it seeks to improve and provide equitable access to public transport facilities.

Policy / Strategy	Overview	How the Proposal aligns
NSW government's key policy priorities.	The NSW government have announced five key policy priorities: • A strong economy • Highest quality education • Well-connected communities with quality local environments • Putting customers at the centre of everything we do • Breaking the cycle of disadvantage	The TAP objectives highlight the importance of infrastructure and place and put the customer at the centre of everything we do. This aligns directly with the priority for well-connected communities with quality local environments.

2.2. Objectives of the Transport Access Program

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

- stations that are accessible to people with disabilities, are less mobile, parents/carers with prams, and customers with luggage
- 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 transport modes for all customers
- safety improvements including extra lighting, CCTV, help points, fences and security measures for car parks and interchanges, including stations, bus stops and wharves.

2.3. Objectives of the Proposal

The Proposal seeks to address the objectives of the Transport Access Program initiative and current non-compliances at Narara Station in relation to DSAPT requirements.

The specific objectives of the Proposal are to:

- provide a station that is accessible for people with a disability, limited mobility, parents/carers with prams and customers with luggage
- improve customer experience and amenity (including better interchange facilities such as formal kiss and ride spaces and improved footpaths around the station)
- improve integration with the surrounding precinct by providing an accessible path of travel from the station to the new accessible car spaces, the bus stop on the southern side of Narara Valley Drive, and the kiss and ride spaces
- improve customer safety (including additional CCTV cameras and lighting as required).

2.4. Options considered

The options for improving access to Narara Station were developed following workshops and assessment by TfNSW and key stakeholders.

Two options, in addition to the ‘do-nothing’ option, were developed to address accessibility needs and desirable upgrades to provide improved customer outcomes. The two options

differed only in the proposed location of the lifts and landings providing access from each of the platforms to the existing footbridge.

2.4.1. Option 1 and Option 2

- Option 1: Installation of a lift from the northern commuter car park and a lift from the southern commuter car park, each connecting to the sides (northern and southern sides) of the existing footbridge stairs. Option 1 also included relocation of the existing transformer located under the footbridge stairs leading to the northern car park.
- Option 2: Installation of a lift from the northern commuter car park and a lift from the southern commuter car park, each connecting to the rear (northern side) of the existing footbridge.

2.4.2. The 'do-nothing' option

Under a 'do-nothing' option, existing access to the side platforms, footbridge and car parks would remain the same and there would be no changes to the way the station and surrounding area currently operates.

The NSW Government has identified the need for improving the accessibility of transport interchanges, train stations and commuter car parks across NSW as a priority under the Transport Access Program.

The 'do-nothing' option was not considered a feasible alternative as it would not meet DDA legislation and DSAPT requirements. A 'do nothing' option would not assist in encouraging the use of public transport or meet the current and anticipated future needs of the Narara community.

2.5. Justification for the preferred option

The design options were assessed in a multi-criteria analysis (MCA) workshop. The MCA included consideration of factors such as accessibility, customer experience, transport integration, urban design and precinct planning, operation and maintenance, infrastructure, deliverability, sustainability, heritage and environmental constraints, to select a preferred option.

Option 1 was selected as the preferred option, receiving the highest scores in the qualitative criteria. Option 1, with the provision of the lifts to the sides of the existing footbridge, provides better connectivity to the overall precinct and one common equitable direction of travel. Additionally, Option 1, with the lift entry next to the stair entry, provided a safer design outcome aligned with Crime Prevention Through Environmental Design (CPTED) requirements. Option 1 also had lower impacts to existing car parking at the station. On this basis, Option 1 was selected as the preferred option and is assessed in this REF.

3. Proposal description

Chapter 3 describes the Proposal and summarises key design parameters and construction methodology. The description of the Proposal is based on a scoping design for the preferred option and is subject to detailed design.

3.1. Scope of works

As described in Section 1, the Proposal involves an upgrade of Narara Station as part of the Transport Access Program to improve accessibility and amenity for customers.

The scope of work for the Proposal includes:

New lifts to existing footbridge

- installation of two new lifts (and lift landings) connecting to the existing footbridge. Works would include:
  - installation of a lift connecting the southern commuter car park to the existing footbridge
  - installation of a lift connecting the northern commuter car park to the existing footbridge.
- retention of the existing footbridge with minor modifications which would include:
  - extensions to the existing footbridge at the southern end and northern end to provide landings for the two new lifts
  - upgrade works, including removal of a portion of the existing footbridge balustrade to allow for lift landings
  - installation of anti-throw screens on the lift landings around the new lifts and the stairs (subject to a risk assessment).
- relocation of station services attached to the existing footbridge balustrades and installation of compliant handrails.

Platform works

- platform upgrades, including:
  - line marking for the Boarding Assistance Zones (BAZs)
  - Tactile Ground Surface Indicators (TGSIs) along the platform and repainting of the platform edge coping.
- waiting area upgrades, including:
  - provision of wheelchair waiting areas
  - relocation of seating, bins, ticketing machines and signs to provide compliant accessible paths of travel
  - provision of a localised ramp from Platform 1 into the waiting area.

Northern commuter car park

- introduction of an accessible parking space and a new kiss and ride space within the car park

- provision of an accessible path within the car park from the new accessible parking space and the new kiss and ride space to the platform entry and continuing to the new lift. This path would require the relocation of the existing bicycle rack
- installation of a new accessible path of travel that provides access from Narara Valley Drive to the northern car park, including retaining walls.
- provision of an accessible path from the car park to the bus stop in front of the station on Narara Valley Drive. This would require the upgrade of the existing pathway along Narara Valley Drive
- introduction of a pedestrian crossing from the Platform 2 entry across the commuter car park to connect to the proposed accessible path on Narara Valley Drive
- relocation of the existing southbound bus stop on Narara Valley Drive and provision of a formalised pedestrian crossing across Narara Valley Drive
- construction of a small retaining wall behind the shelter on Platform 2
- localised regrading to areas of the car park.

Southern commuter car park

- introduction of an accessible parking space and a new kiss and ride space within the commuter car park, with an accessible path of travel to the Platform 1 entry. This would require the removal of five formalised car parking spaces
- localised regrading to create an accessible path of travel from the base of the footbridge stairs to the proposed lift, accessible parking space, and kiss and ride space
- reshaping of the mound surrounding the electrical pole in the southern commuter carpark to allow for traffic flow
- regrading around the Goonak Parade entrance
- installation of bollards where necessary to protect accessible paths of travel.

Ancillary works

- upgrades to lighting and CCTV cameras to provide coverage to meet security standards for new infrastructure
- upgrades to the public address system, including relocating existing speakers and extending the system to the new lift areas
- installation of platform hearing loops, new Opal card readers and relocation of existing Opal card readers
- installation of wayfinding signage and other signage to identify accessible features
- new TGSIs
- upgrades to stairs, nosings, balustrades and handrails, where required
- installation of new fencing and anti-throw screens
- protection or relocation of services and utilities, where impacted by the Proposal
- relocation of the service vehicle parking space in the northern commuter car park
- relocation of bicycle hoops

- electricity upgrades for new infrastructure.

Figure 3-1 shows the general location of key elements of the Proposal.

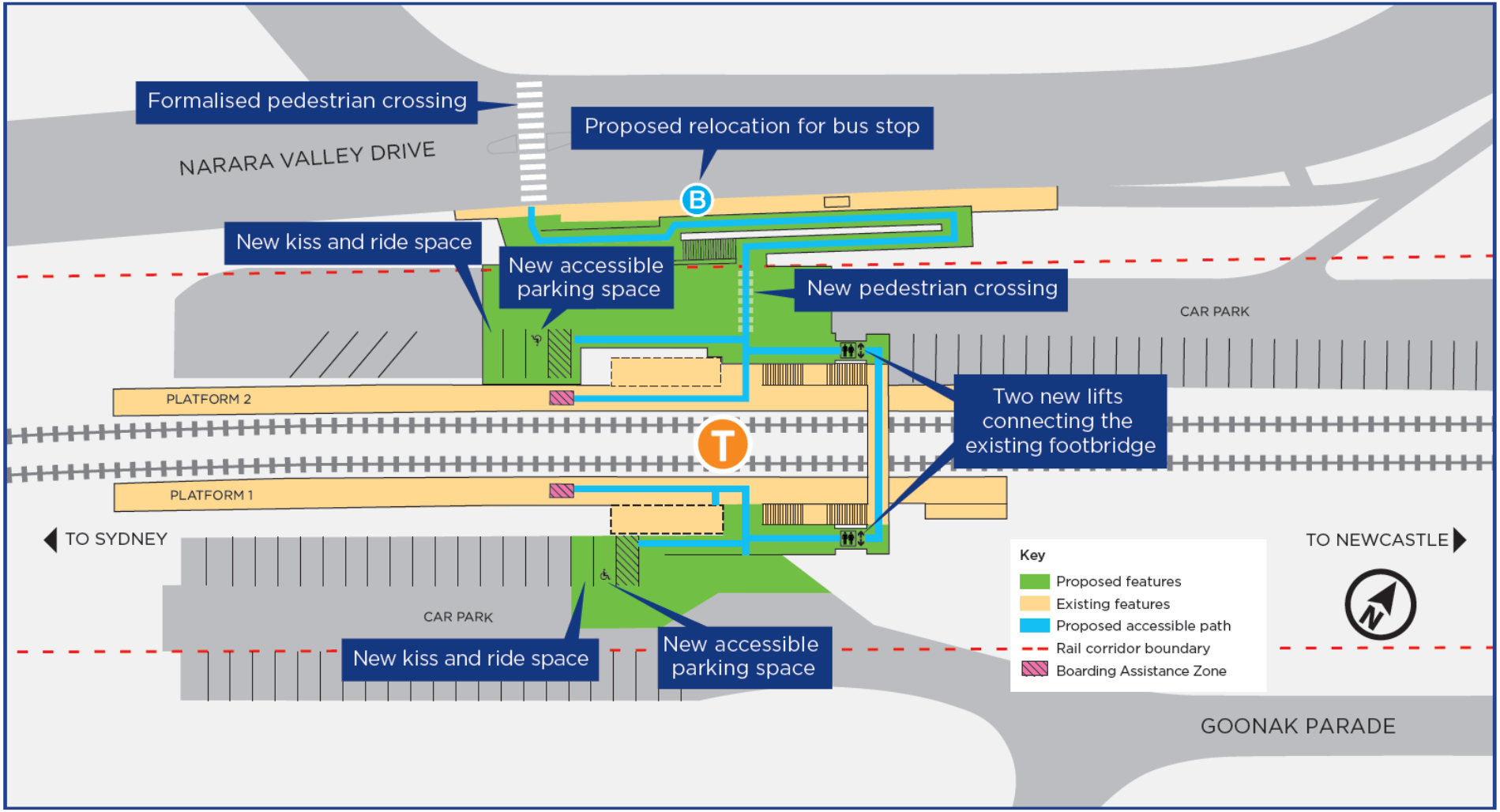

Figure 3-1 Key features of the Proposal (indicative only, subject to detailed design)

3.1.1. Materials and finishes

Materials and finishes for the Proposal have been selected based on the criteria of durability, low maintenance and cost effectiveness, to minimise visual impacts, and to be aesthetically pleasing. Consideration has also been given to lifecycle impacts. The lifecycle impacts of a material are calculated by looking at the environmental impacts of materials from the point of extraction, through to transportation, use, operation and end of life.

Availability and constructability are also important criteria to ensure that materials can be readily sourced, and that the structures can be built with ease and efficiency. Materials are also selected for their application based on their suitability for meeting design requirements.

Subject to detailed design, the Proposal would include the following:

- lift shafts – concrete (natural grey in colour)
- lift doors, control buttons and indicators – polished stainless steel.
- lift glazing – clear glass
- lift canopies over waiting areas – metal sheet roofing (charcoal grey in colour)
- lift ventilation louvres – horizontal storm proof louvre, (charcoal grey in colour)
- lift roofs – metal roof sheeting (charcoal grey in colour)
- footbridge landing extensions – concrete base, with steel balustrades
- platform regrading – asphalt or concrete (as per existing), materials to match existing and achieve compliance
- footpaths – asphalt or concrete with non-slip textured finish.

The design would be submitted to TfNSW's Design Review Panel at various stages for comment before being accepted by TfNSW. An Urban Design Plan (UDP) including a Public Domain Plan (PDP) would also be prepared by the Construction Contractor, prior to finalisation of detailed design for endorsement by TfNSW.

3.2. Design development

3.2.1. Engineering and environmental constraints

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

Existing structures: the accessibility, placement and integrity of existing structures (such as the station platforms and the footbridge) were considered in the scoping design report and during the development of the scoping design plans.

Asset Standards Authority (ASA), Sydney Trains and NSW TrainLink requirements: modifications to existing structures and new structures within the rail corridor must be designed and constructed with consideration of train collision loadings, structural clearances to the track, and safe working provisions.

Extension of the existing footbridge, installation of the new lifts, construction of the new accessible paths, and upgrades to stairs is required to be undertaken in a way that allows the station to continue to operate during construction.

Construction access: Construction access is a constraint for the Proposal due to working in a live rail corridor environment. The Proposal may involve additional night works (beyond planned track possessions) to complete works restricted by the need to provide public access during train operations.

The impacts of these construction access constraints, and appropriate mitigation measures, are addressed in Sections 6.1and 6.3.

Public access: Public access is to be maintained throughout construction of the station upgrade, excluding rail shutdown periods. Maintaining pedestrian entry to the station during construction requires careful consideration, in particular, to address the construction of the footbridge extensions and lift installations.

3.2.2. Design standards

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

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

3.2.3. Sustainability in design

The Proposal is targeting a rating of ‘Excellent’ using the Infrastructure Sustainability Council of Australia (ISCA) Infrastructure Sustainability (IS) Rating Scheme (v1.2). The rating scheme provides an independent and consistent methodology for the application and evaluation of sustainability outcomes in infrastructure projects. The sustainability outcomes address environmental, social, economic and governance aspects.

The IS Rating Scheme is grouped into six key themes:

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

These sustainability themes are divided into 15 performance categories, against which the Proposal would be independently assessed and assigned a rating level.

3.3. Construction activities

3.3.1. Work methodology

Subject to approval, construction is expected to commence in 2020 and take around 12 to 18 months to complete. The construction methodology would be further developed during the detailed design of the Proposal by the nominated Construction Contractor in consultation with TfNSW.

The proposed construction activities for the Proposal are identified in Table 3-1. This staging is indicative and is based on the current scoping design and may change once the detailed design methodology is finalised. The staging is also dependent on the Contractor's preferred methodology, program and sequencing of work.

Table 3-1 Indicative construction staging for key activities

Stage	Activities	Timeframe
Stage 1 – Site establishment and enabling works	• establish site compound (erect fencing, site offices, amenities and plant/material storage areas) • remove guardrails to allow for construction of new accessible paths, and lifts • undertake services investigation, relocate or upgrade services/utilities where required • install safety barriers and hoarding around the nominated work zones and establish pedestrian paths for use during construction.	Standard hours OOHW period 1 OOHW period 2 48hr rail shutdown
Stage 2 – Electrical and communications	• install conduits, pits, transformer, cabling, and new distribution board.	Standard hours 48hr rail shutdown
Stage 3A – Construction work (footbridge, stairs, lift, car park and platform works)	• pile and excavate for lift pits • install formwork, install reinforcing, and pour lift pits • install lift shafts and lighting • excavate and install new footpaths • introduction of an accessible parking space and a new kiss and ride space in each commuter car park.	Standard hours OOHW period 1 OOHW period 2 48hr rail shutdown
Stage 3B – Construction work (ramp works)	• vegetation removal • demolish existing ramp • pile and excavate for ramp • install formwork, install reinforcing, and pour ramp and retaining walls • install new furniture and fixtures	Standard hours 48hr rail shutdown OOHW period 1 OOHW period 2
Stage 4 – Installation and finishing	• stair and balustrade modifications • install lift components • install fencing and anti-throw screens to accessible paths and under stairways as necessary	Standard hours 48hr rail shutdown OOHW period 1 OOHW period 2

Stage	Activities	Timeframe
	• relocate and install new seating, bins, ticketing machine and signs • line marking, painting, wayfinding signage, TGSIs install new station systems.	
Stage 5 – testing and commissioning	• test and commission all new station systems • test and commission the lifts • defect resolution.	Standard hours
Stage 6 - Demobilisation	• remove all construction hoardings/temporary fencing • remove site compound and clear site • remove environmental, safety and traffic controls.	Standard hours OOHW period 1 OOHW period 2

Note 1 – Standard construction hours ('standard hours') are from 7.00am-6.00pm Monday to Friday, and 8.00am-1.00pm Saturdays, no work on Sundays or Public Holidays.
Note 2 - Work outside of standard construction hours is defined as Out-of-Hours Work (OOHW) and can be divided into two periods of sensitivity. OOHW Period 1 is defined as Monday to Saturday 6:00pm to 10:00pm, Saturday 7:00am to 8:00am and 1:00pm to 10:00pm, and Sunday and public holidays 8:00am to 6:00pm. OOHW Period 2 is defined as Monday to Saturday 10:00pm to 7:00am (nights) and Sundays and public holidays 6:00pm to 8:00am (nights).

3.3.2. Plant and equipment

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

- power tools (e.g. drill, hammer drill, saw, grinder torque and impact wrenches)
- demolition saw
- coring machine
- jack hammer
- mobile crane
- elevated work platform, scissor lift
- generator
- hi-rail plant (e.g. rail mounted elevated work platform, flatbed, hiab, excavators, piling rig, dump trucks)
- bobcat
- forklift
- hydraulic/rock saw
- hand tools
- vibratory roller / compaction plate
- nail gun
- trucks (various types and sizes e.g. skip trucks, suction truck, hiab for deliveries)
- lighting towers
- water cart
- rattle gun
- excavators, piling rigs
- concrete pump and truck.

3.3.3. Working hours

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

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

Certain works may need to occur outside recommended standard hours and would include night works and works during routine rail shutdowns. Routine Sydney Trains rail shutdowns are scheduled closures that would occur regardless of the Proposal when part of the rail network is temporarily closed for maintenance and trains do not operate. Works required to be carried out during rail shutdown periods are listed in Table 3-1.

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

OOHW Period 1 is defined as

- Monday to Saturday 6:00pm to 10:00pm
- Saturday 7:00am to 8:00am and 1:00pm to 10:00pm
- Sunday and public holidays 8:00am to 6:00pm.

OOHW Period 2 is defined as

- Monday to Saturday 10:00pm to 7:00am (nights)
- Sundays and public holidays 6:00pm to 8:00am (nights).

It is estimated that up to four rail shutdowns would be utilised to facilitate the following activities:

- re-routing of any services and utilities that can only be moved a during possession
- trimming of the rock outcrop in southern commuter car park
- installation of prefabricated lift shaft segments required for both lifts
- installation of station services on platforms and the footbridge
- installation of TGSIs on the platforms
- electrical works and reinstatement of any re-directed services and utilities.

Out of hours works may also be scheduled outside rail shutdown periods. Approval from TfNSW would be required for any out of hours work and the affected community would be notified as outlined in the CNVS (TfNSW, 2019a) (refer to Section 6.3 for further details).

3.3.4. Earthworks

Excavations and earthworks would generally be required for the following:

- piling and excavation of lift pits
- construction of new accessible paths and ramp
- construction of the pedestrian crossings, accessible parking and kiss and ride spaces
- regrading around the Goonak Parade entrance
- other minor civil work.

Excavated material would be reused onsite where possible or managed in accordance with relevant legislative requirements. It is estimated that about 300-350 cubic metres of excavated material would be generated by the earthworks listed above.

3.3.5. 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 the ISCA IS Rating Scheme v1.2. Materials would be sourced from local suppliers where practicable. Reuse of existing and recycled materials would be undertaken where practicable.

3.3.6. Traffic access and vehicle movements

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

- increased construction vehicle traffic, including light and heavy vehicles within the station precinct and local streets
- temporary increased demand for all-day parking for construction staff
- loss of commuter parking during regrading of the car park and line marking for accessible car parking and kiss and ride spaces
- temporary detours and disruptions to pedestrian movements in and around the station.

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

3.3.7. Ancillary facilities

A temporary construction compound would be needed to accommodate a site office, amenities, laydown and storage area for materials. An area for this main construction compound has been proposed within the rail corridor to the south of the southern commuter car park. The area is currently unused rail corridor land (refer Figure 1-2, Figure 3-2). Temporary laydowns in the rail corridor would also be required during construction. Impacts associated with utilising this area have been considered in the environmental impact assessment.

In addition to this temporary construction compound, small temporary compounds would also be set up in both the southern and northern commuter car parks, centred around the proposed lift locations in order to facilitate construction works. Temporary hoarding and fencing would be setup to restrict access to the works area.

Access for hi-rail construction vehicles during track possessions is proposed from the existing access pad north of the station (refer Figure 3-3).

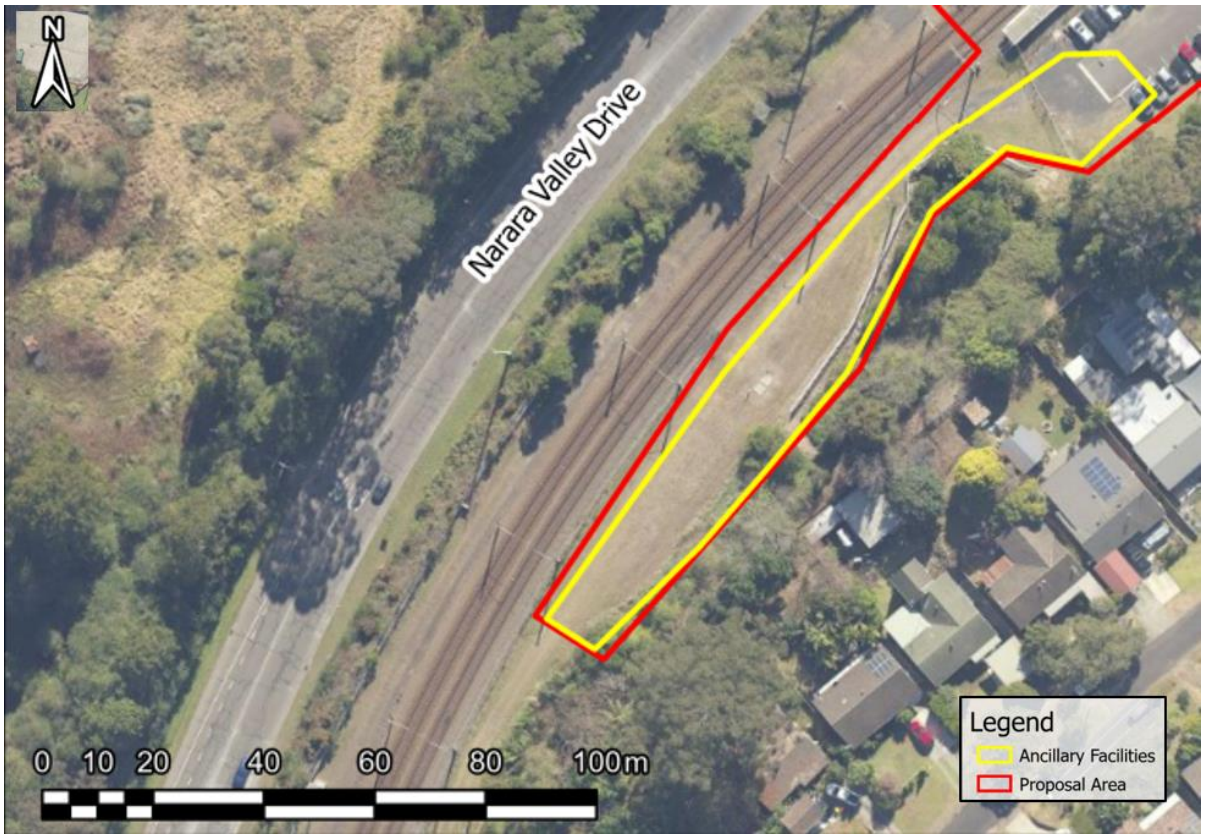

Figure 3-2 Location of proposed temporary construction compound area (yellow outline)

Figure 3-3 Proposed hi-rail access area

3.3.8. Public utility adjustments

A dial before you dig (DBYD) investigation was completed during the scoping design development. Implications from the proposed scope of works were identified for existing low voltage lines, communications, Station data and CCTV.

An upgrade of the power supplies to the station would be required to service the new lifts. The works would include an upgrade of the distribution boards from single to three -phase power, the installation of a new transformer, low voltage cable installations to connect both sides of the station, and upgrades to circuit breakers, switches and wiring to support a three-phase power supply.

The existing station transformer is located under the northern stairs to the footbridge and would need to be removed for the proposed northern lift. A new transformer would be located behind the footbridge (Refer Figure 3-4).

The proposed southern lift location may impact existing underground fibre optic cables that would need to be relocated.

The proposed lifts are not located directly under aerial high voltage lines and would comply with clearance distances. However, during the construction of the southern lift, an outage would be required of the existing 11kV overhead electricity lines.

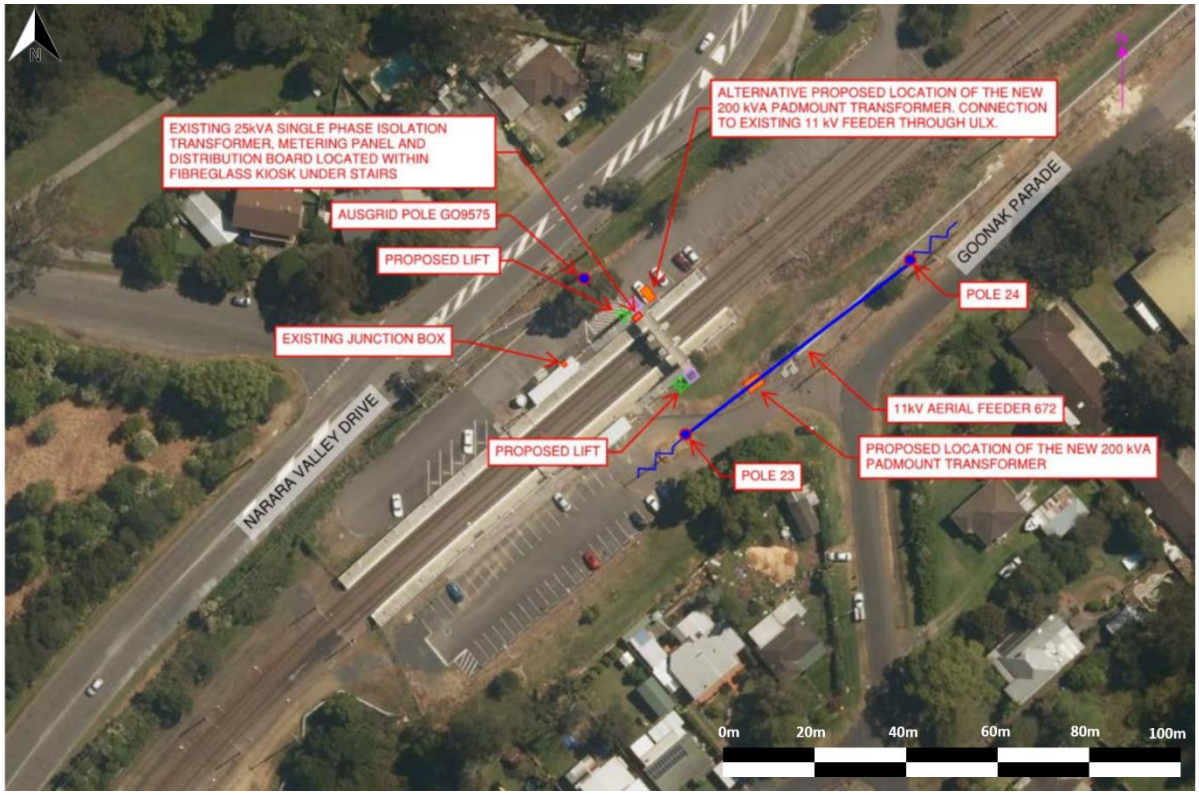

Figure 3-4 Aerial image depicting the Narara Station Preliminary Electrical Plan and locations of public utilities (source - Narara Scoping Design Report)

Relocation of communications cables, drainage and stormwater would be required for the construction of the new paths.

3.4. Property acquisition

The Proposed activity would largely be contained within the rail corridor, however the Proposal includes some work within the road reserve of Narara Valley Drive, which is on CCC land. Consultation will be undertaken with CCC to determine ongoing ownership and maintenance responsibilities.

If required, TfNSW would acquire this section of the road reserve in accordance with the requirements of the *Land Acquisition (Just Terms Compensation) Act 1991*.

Additionally, the works in the Narara Valley Drive road reserve would be carried out in accordance with an exemption from Section 138 of the *Roads Act 1993* provided in clause 5 of Schedule 2 of the *Roads Act 1993*.

3.5. Operation and maintenance

The future operation and maintenance of the upgraded station would be subject to discussions with Sydney Trains, NSW TrainLink, TfNSW and CCC.

Operation of the train services would remain with NSW TrainLink, while maintenance of the station assets within the rail corridor, including access paths, station facilities and the lifts would 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 polices/strategies, NSW legislation (particularly the EP&A Act), environmental planning instruments, and Commonwealth legislation.

4.1. Commonwealth legislation

4.1.1. Environment Protection and Biodiversity Conservation Act 1999

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

The Proposal would not require removal of any trees or vegetation listed under the EPBC Act.

As the Proposal would not or is not likely to have a significant impact on any matters of NES or on Commonwealth land, a referral to the Commonwealth Minister for the Environment is not required.

4.1.2. Other Commonwealth legislation

Table 4-1 discusses other relevant Commonwealth legislation applicable to the Proposal.

Table 4-1 Other Commonwealth legislation applicable to the Proposal

Applicable legislation	Considerations
Aboriginal and Torres Strait Islander Heritage Protection Act 1984	There is an obligation on a person who discovers anything which he or she has reasonable grounds to suspect are Aboriginal remains to report that discovery to the Minister, giving particulars of the remains and their location. There are no known sites at this location. However, if unexpected archaeological items or items of Aboriginal heritage significance are discovered during the construction of the Proposal, all works would cease, and appropriate advice sought as per the TfNSW *Unexpected Heritage Finds Guideline* (TfNSW, 2019c).
Disability Discrimination Act 1992 (DDA Act)	This Act aims to eliminate as far as possible, discrimination against persons on the ground of disability in areas including access to premises and the provision of facilities, services and land. The Proposal would be designed having regard to the requirements of this Act.

4.2. NSW legislation and regulations

4.2.1. Transport Administration Act 1988

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

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

2A Objects of Act

…

a) to provide an efficient and accountable framework for the governance of the delivery of transport services,

b) to promote the integration of the transport system,

c) to enable effective planning and delivery of transport infrastructure and services,

d) to facilitate the mobilisation and prioritisation of key resources across the transport sector,

e) to co-ordinate the activities of those engaged in the delivery of transport services,

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

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

…

(a) ***Environmental sustainability***

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

(b) ***Social benefits***

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

4.2.2. Environmental Planning and Assessment Act 1979

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

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

Clause 228 of the EP&A Regulation prescribes the minimum factors which must be considered when determining if an activity assessed under Division 5.1 of the EP&A Act has or is likely to have a significant effect on the environment. Chapter 6 of this REF provides an environmental impact assessment of the Proposal in accordance with clause 228 and Appendix B specifically responds to the factors for consideration under clause 228.

4.2.3. Other NSW legislation and regulations

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

Table 4-2 Other NSW legislation applicable to the Proposal

Applicable legislation	Considerations
Biodiversity Conservation Act 2016 (BC Act)	Under Section 2.4 of the BC Act it is an offence to damage the habitat of a threatened species or threatened ecological community, as listed in Schedule 1 and 2 of the Act. The Proposal would not require the removal of trees and vegetation that would affect the habitat of identified threatened species or any threatened ecological community. The Proposal was considered unlikely to result in significant impacts to any threatened species (Refer to Section 6.6).
Biosecurity Act 2015	Clause 22 requires any person who deals with a biosecurity matter has a duty to ensure that in so far as is reasonably practicable, the potential biosecurity risk is prevented, eliminated or minimised. Appropriate management methods would be implemented during construction if declared noxious weeds in the CCC LGA are identified (refer to Section 6.6).
Contaminated Land Management Act 1997 (CLM Act)	The CLM Act regulates significantly contaminated land through requirements for notification to the EPA, investigation, remediation and recovery of costs from the person responsible The NSW Environment Protection Authority (EPA) must be notified by the property owner in writing of any contamination identified within the Proposal site in accordance with the requirements of Section 60 of the Act. The site has not been declared as a contaminated site under the CLM Act (refer to Section 6.8).
Heritage Act 1977 (Heritage Act)	Sections 57 and 60 require approval for works which may have an impact upon items listed on the State Heritage Register. Sections 139 and 140 require similarly require approval where relics are likely to be exposed. For any works which may have an impact upon items listed on a Section 170 heritage and conservation register maintained by a government agency, notification to the Heritage Division may be required. There are no items of state or local heritage significance within the Proposal site or in the vicinity (refer Section 6.5).
Land Acquisition (Just Terms Compensation) Act 1991.	The Just Terms Act applies to the acquisition of land “by agreement or compulsory process” by an authority of the State that is authorised to acquire the land by compulsory process. The Act guarantees that, when land affected by a proposal for acquisition by an authority of the State is eventually acquired, the amount of compensation will be not less than the market value of the land (unaffected by the proposal) at the date of acquisition. It ensures compensation on just terms for the owners of the land that is acquired by an authority of the State when the land is not available for public sale.

Applicable legislation	Considerations
Protection of the Environment Operations Act 1997 (PoEO Act)	The Proposal does not involve a 'scheduled activity' under Schedule 1 of the PoEO Act. Accordingly, an Environment Protection Licence (EPL) is not required for the Proposal. However, in accordance with Part 5.7 of the PoEO Act, TfNSW would notify the EPA of any pollution incidents that occur onsite. This would be managed in the CEMP to be prepared and implemented by the Construction Contractor.
Roads Act 1993 (Roads Act)	Section 138 of the Roads Act requires consent from the relevant road authority for the carrying out of work in, on or over a public road. However, clause 5(1) in Schedule 2 of the Roads Act states that public authorities do not require approval for works on unclassified roads. The Proposal would involve work within the road reserve of Narara Valley Drive which is an Unclassified Regional Road under the control of CCC. Consent under the Roads Act is not required. However, Road Occupancy Licences would be obtained from CCC for the work to install a new pedestrian path from the station to the bus stops, install a new pedestrian crossing, and relocate the southbound bus stop (refer to Section 6.1).
Waste Avoidance and Resource Recovery Act 2001 (WARR Act)	TfNSW would carry out the Proposal having regard to the requirements of the WARR Act. A site-specific Waste Management Plan would be prepared.
Water Management Act 2000 (WM Act)	Approval under the WM Act is required for certain types of developments and activities that are carried out in or near a river, lake or estuary, or may intersect groundwater. Under Section 91F of the WM Act, it is an offence to carry out an activity that would interfere with an aquifer unless a controlled activity approval has been issued. The Proposal is not considered to give rise to any activities that would adversely impact surface waterbodies or groundwater.

4.3. Key State Environmental Planning Policies

State Environmental Planning Policy (Infrastructure) 2007

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

Division 15, 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 (i.e. assessable under Part 5 of the EP&A Act). Clause 78 defines '*rail infrastructure facilities' as*

> *including elements such as 'railway stations, station platforms and areas in a station complex that commuters use to get access to the platforms', 'public amenities for commuters', 'associated public transport facilities for railway stations', 'cuttings', 'fences', 'bridges', 'pedestrian and cycleway facilities*'.

Consequently, development consent is not required for the Proposal which is classified as a rail infrastructure facility, however the environmental impacts of the Proposal have been assessed under the provisions of Part 5, Division 5.1 of the EP&A Act.

Part 2 (Clause 13 to 16) of the Infrastructure SEPP contains provisions for public authorities to consult with local councils and other agencies prior to the commencement of certain types of development. Section 5.2 of this REF discusses the consultation undertaken under the requirements of the Infrastructure SEPP.

Where there is an inconsistency between the Infrastructure SEPP and any other environmental planning instrument, the Infrastructure SEPP prevails to the extent of the inconsistency, with the exception of *State Environmental Planning Policy (State Significant Precincts) 2005* and clauses 10, 11 and 19 of *State Environmental Planning Policy (Coastal Management) 2018.* The Proposal is not affected by *State Environmental Planning Policy (State Significant Precincts) 2005.* With regard to the *State Environmental Planning Policy (Coastal Management) 2018,* the Proposal is located within a mapped 'Coastal Environment Area'. Further consideration of this SEPP is provided below.

State Environmental Planning Policy (Coastal Management) 2018

State Environmental Planning Policy (Coastal Management) 2018 (Coastal Management SEPP) updates and consolidates SEPP 14 (Coastal Wetlands), SEPP 26 (Littoral Rainforest) and SEPP 71 (Coastal Protection), including clause 5.5 of the Standard Instrument – Principal Local Environmental Plan. These latter policies are now repealed.

The Costal Management SEPP gives effect to the objectives of the *Coastal Management Act 2016* from a land use planning perspective, by specifying how development Proposals are to be assessed if they fall within the coastal zone. The coastal zone is comprised of four coastal management areas:

- Coastal wetlands and littoral rainforest area
- Coastal vulnerability area
- Coastal environment area
- Coastal use area.

Though not located on the NSW coast, the Proposal boundary and the ancillary facility are located within an area mapped as a 'Coastal Environment Area' under the Coastal Management SEPP. The planning provisions pertaining to areas mapped as 'Coastal environment area' are contained in Clause 13 of the Coastal Management SEPP, which would otherwise provide that works for the Proposal within the mapped area being permissible with development consent. This therefore represents an inconsistency with Clause 79 of the Infrastructure SEPP, which identifies that the Proposal would be permissible without development consent.

However, as detailed above, the Coastal Management SEPP only prevails in the event of an inconsistency between Clauses 10, 11 and 19 of the Coastal Management SEPP and the Infrastructure SEPP. Given that the 'Coastal environment area' relates to Clause 13 (not 10, 11 or 19) of the Coastal Management SEPP, the Infrastructure SEPP is the prevailing instrument. Accordingly, the Proposal is permissible without development consent under the Infrastructure SEPP.

Notwithstanding, the Proposal has considered whether the proposed development is likely to cause an adverse impact to the coastal environment areas (Refer Section 6.6) but concluded that adverse impacts to coastal environmental values are unlikely.

State Environmental Planning Policy 55 – Remediation of Land

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

Section 6.8 of this REF contains an assessment of the potential contamination impacts of the Proposal. It is unlikely that any large-scale remediation (Category 1) work would be required as part of the Proposal. The proposed land use would not differ to the existing use and would, therefore be, unlikely to be affected by any potential contaminants that exist within the rail corridor.

4.3.1. Gosford Local Environmental Plan 2014

The Proposal is located within the Central Coast LGA. The *Gosford Local Environmental Plan 2014* (Gosford LEP) remains the in-force LEP for the LGA.

The Infrastructure SEPP prevails over all other environmental planning instruments (such as LEPs) except where there is an inconsistency with *State Environmental Planning Policy (State Significant Precincts) 2005* or certain provisions of *State Environmental Planning Policy (Coastal Management) 2018*. However, despite the Infrastructure SEPP prevailing, during the preparation of this REF, consistency of the Proposal with the provisions of Gosford LEP was considered (refer Table 4-3).

The rail corridor is zoned SP2 (Rail Infrastructure Facility), and the road reserve of Narara Valley Drive to the west area also zoned SP2 (Road), refer Figure 4-1.

Table 4-3 Relevant provisions of the Gosford LEP 2014

Provision description	Relevance to the Proposal
Clause 1.2 – Aims of the Plan	The aims of the Gosford LEP include: • to promote the efficient and equitable provision of public services, infrastructure and amenities • to promote design principles in all development to improve the safety, accessibility, health and wellbeing of residents and visitors.
Part 2 – Zone objectives and land use table	Under the Gosford LEP the station and the associated rail corridor is zoned SP2 Infrastructure (Rail Infrastructure Facility). The objectives of the zone include to provide for infrastructure and related uses, and to ensure development is compatible with the desired future character of the zone.
Clause 7.1 – Acid Sulfate Soils	The objective of this clause is to ensure development does not disturb, expose or drain Acid Sulfate Soils (ASS) and cause environmental damage. In the accompanying ASS maps, the majority of the Proposal area is identified as Class 5, and the northern area comprising Narara Valley Drive identified as Class 4. Works in Class 5 areas within 500 metres of adjacent Class 1, 2, 3 or 4 land that is below five metres Australian Height Datum (AHD) and by which the water table is likely to be lowered below

Provision description	Relevance to the Proposal
	one metre Australian Height Datum (AHD) on adjacent Class 1, 2, 3 or 4 land require development consent. Works in Class 4 areas more than two metres below the natural ground surface and works likely to lower the water table by more than two metres below the natural ground surface require development consent. The Proposal is exempt from the requirement for development consent under the Infrastructure SEPP. Regardless, the Proposal is not located within 500 metres of adjacent Class 1, 2, 3, or 4 land that is below five metres AHD and is not likely to lower the water table. The proposed pedestrian ramp from Narara Valley Drive to the northern commuter car park would involve excavations exceeding two metres in depth. For this reason, ASS testing was conducted (Cardno, 2020). Impacts of the Proposal on soils, and proposed mitigation measures, are assessed and discussed in Section 6.8.
Clause 7.2 – Flood Planning	The objectives include: • to minimise the flood risk to life and property associated with the use of land. Flood risk is assessed in Section 6.9.

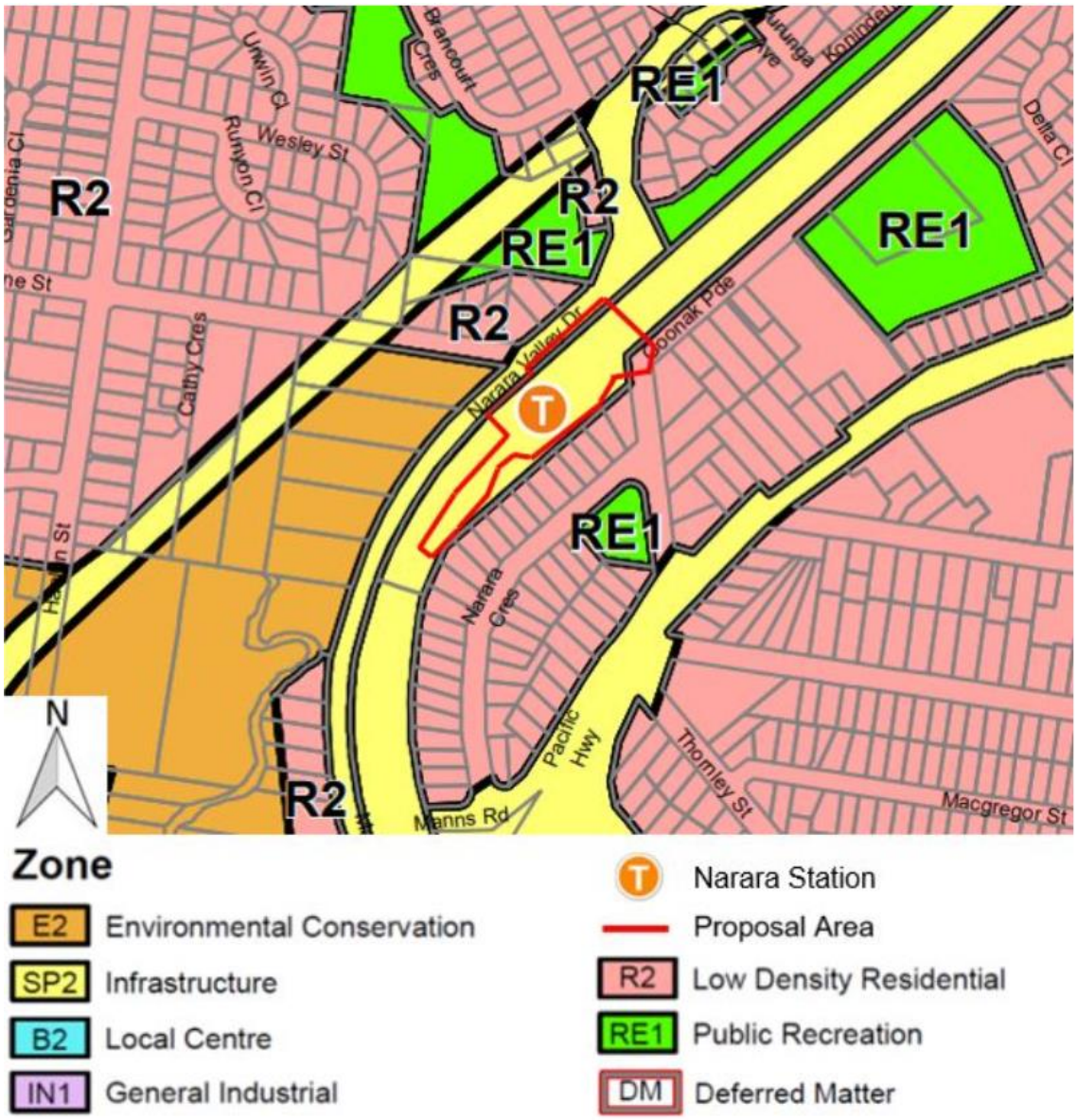

Figure 4-1 Gosford LEP zoning map (Source LEP 2014, Sheet LZN_014C)

4.4. Ecologically sustainable development

TfNSW is committed to ensuring its projects are implemented in a manner 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 TfNSW throughout the development and assessment of the Narara Station Upgrade. Section 6.13 includes an assessment of the Proposal on sustainability, and Section 7.2 lists mitigation measures to ensure ESD principles are incorporated during the construction phase of the Proposal.

5. Community and stakeholder consultation

Chapter 5 discusses the consultation undertaken to date for the Proposal and the consultation proposed. 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. Stakeholder consultation during scoping design

As part of the design development for the Proposal, meetings and workshops were held to ensure that key stakeholders were involved in the collaborative design process. Key stakeholders included:

- TfNSW
- Sydney Trains
- NSW TrainLink.

Workshops and meetings undertaken during design development included:

- constructability workshops
- safety in design workshops with relevant TfNSW and Sydney Trains representatives
- multi-criteria analysis workshops with relevant TfNSW representatives
- design and scope development workshops
- risk management workshops.

5.2. Consultation requirements under the Infrastructure SEPP

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

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

Table 5-1 Infrastructure SEPP consultation requirements

Clause	Clause particulars	Relevance to the Proposal
Clause 13 | Consultation with Councils – development with impacts on council related infrastructure and services	Consultation is required where the Proposal would result in: • substantial impact on stormwater management services • generating traffic that would place a local road system under strain • involve connection to or impact on a council owned sewerage system • involve connection to and substantial use of council owned water supply	The Proposal includes the introduction of new pedestrian paths, a pedestrian crossing and relocation of a bus stop within the road reserve of Narara Valley Drive. The works would involve excavation and disruption to pedestrian movement. TfNSW consultation with CCC has commenced and would continue throughout public display, detailed design and construction

Clause	Clause particulars	Relevance to the Proposal
	• significantly disrupt pedestrian or vehicle movement • involve significant excavation to a road surface or footpath for which Council has responsibility.	
Clause 14 | Consultation with Councils – development with impacts on local heritage	Where railway station works: • has a 'not minor or inconsequential impact' on local heritage item (if not also a State heritage item) • substantially impact on a heritage conservation area.	There are no heritage items located within proximity to the works therefore consultation under Clause 14 of the Infrastructure SEPP is not required.
Clause 15 | Consultation with Councils – development with impacts on flood liable land	Where railway station works: • impact on land that is susceptible to flooding – reference would be made to *Floodplain Development Manual: the management of flood liable land.*	The Proposal area involves land within Narara Valley Drive that it susceptible to flooding by a 100-year Average Recurrence Interval (ARI) event (refer Section 6.9). Notice of the proposed works would be given to CCC, and any response received within 21 days of the notice taken into consideration for the Proposal.
Clause 15A Consultation with Councils – development with impacts on certain land within the coastal zone	Where railway station works: • impact on land within a coastal vulnerability area and is inconsistent with certified coastal management program that applies to that land	The Proposal is located within a coastal environment area. In the absence of mapping to identify whether the Proposal is within, or would impact on, coastal vulnerability areas, consultation with Council would be undertaken under Clause 15A of the Infrastructure SEPP.
Clause 15AA Consultation with State Emergency Service – development with impacts on flood liable land	Where railway station works: • impact on flood liable land -written notice must be given (together with a scope of works) to the State Emergency Services and taken into consideration any response to the notice received from the State Emergency Service within 21 days after the notice is given.	The Proposal area extends into areas identified as flood liable land (refer Section 6.9). Notice of the proposed works would be given to State Emergency Services, and any response received within 21 days of the notice taken into consideration for the Proposal.
Clause 16 | Consultation with public authorities other than Councils	For specified development which: • includes development that is undertaken adjacent to land reserved under the *National Parks and Wildlife Act 1974*, consultation with the DPIE Energy, Environment and Science Group is required. Consultation with other agencies is required when specified by the Infrastructure SEPP.	The Proposal is not located adjacent to land reserved under the *National Parks and Wildlife Act 1974*. Accordingly, consultation with the DPIE Energy, Environment and Science Group on this matter is not required.

5.3. 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 is 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.

5.3.1. Public display

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

- consultation with known community stakeholders through phone calls and emails
- distribution of a project newsletter to the local community and rail customers at the station, which outlines the Proposal and invites feedback on the REF
- advertisement of the REF public display in local newspapers with a link to the TfNSW website that includes a summary of the Proposal and information on how to provide feedback
- installation of project signage at the station
- consultation with CCC, Sydney Trains, NSW TrainLink and other non-community stakeholders
- geographically targeted social media advertising via Facebook to inform locals of the proposal and invite their feedback online.

At the time the public display of the REF takes place, consideration of face-to-face engagement (in the form of a community information session at the station) would be given. The determination of whether to host the session would be based on up-to-the-minute COVID-19 advice and the ongoing need for social distancing.

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 displayed for a period of approximately two

weeks. The display period of the REF is Wednesday 5 August to Wednesday 19 August 2020.

The REF would be placed on public display on the TfNSW website[1], and the NSW Government Have Your Say website[2].

Further information on the Proposal may be requested by contacting the Project Infoline (1800 684 490) or by email: projects@transport.nsw.gov.au.

Feedback can be sent to:

- Email: projects@transport.nsw.gov.au
- Mail:

  Transport Access Program – Narara Station Upgrade

  Associate Director Environmental Impact Assessment

  Transport for NSW

  Locked Bag 6501

  St Leonards NSW 2065

Or submitted to:

- NSW Government HaveYourSay website: https://www.nsw.gov.au/narara-station-upgrade
- The Proposal website: https://www.transport.nsw.gov.au/narara

Following the consideration of feedback received during the public display period, TfNSW would determine whether to proceed with the Proposal and what conditions would be imposed on the project should it be determined to proceed.

5.4. Aboriginal community involvement

An Aboriginal Heritage Information Management System (AHIMS) search was undertaken for the area covered by the Proposal plus a 200 metre radius, on 2 June 2020. No Aboriginal sites were identified in or near the Proposal area.

The extensive landscape modification that has occurred across the Proposal area suggests that intact evidence of Aboriginal land use is unlikely to occur within the boundaries of the Proposal area. Similarly, the high level of disturbance would suggest that the archaeological potential of the area is low. Therefore, it was not considered necessary to undertake specific Aboriginal consultation.

[1] https://www.transport.nsw.gov.au/narara

[2] https://www.nsw.gov.au/narara-station-upgrade

5.5. Ongoing consultation

At the conclusion of the public display period for this REF, TfNSW would acknowledge receipt of feedback from each respondent. The issues raised by the respondents would be considered by TfNSW before determining whether to proceed with the Proposal (refer Figure ES-1-3).

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

Should TfNSW determine to proceed with the Proposal, the project team would keep the community, CCC 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. Interaction with the community would be undertaken in accordance with a Community Liaison Management Plan to be developed prior to the commencement of construction.

6. Environmental impact assessment

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.

Project-specific mitigation measures are discussed in each of the sub-sections, while a full list of mitigation measures for the Proposal is provided in Section 7.2.

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

6.1. Traffic and transport

The assessment of potential impacts to traffic, transport and access included a desktop analysis and site inspection.

6.1.1. Existing environment

A detailed description of the existing infrastructure at Narara Station, including the station platforms, car parks and entrances, is included in Section 1.3.

Surrounding road network

As discussed in Section 1.2 Narara Station is located between Narara Valley Drive to the north and Goonak Parade to the south. Narara Valley Drive has a posted speed limit of 50km/h and provides direct vehicle access to the station on the northern side while access to the station on the southern side from the Pacific Highway is via Goonak Parade which is a local road with a speed limit of 50km/h.

The Pacific Highway is a major State arterial road and a designated 25 metre B-double route, with a posted speed limit of 60km/h in this area. Narara Valley Drive is an unclassified regional road and Goonak Parade is part of the local road network.

Parking

Narara Station has two existing sealed commuter car parks, one located on each side of the station with a total capacity of 79 marked spaces (37 spaces in the northern car park and 42 spaces in the southern car park). In addition, informal parallel parking occurs along the northern side of the northern car park, providing approximately 25 car parking spaces. Untimed informal parking is also permitted along Goonak Parade and surrounding streets, however, car parking is not permitted on Narara Valley Drive.

There are no existing accessible car parking spaces or any formal kiss and ride spaces in the existing commuter car parks.

The surrounding road network and parking around Narara Station is shown in Figure 6-1.

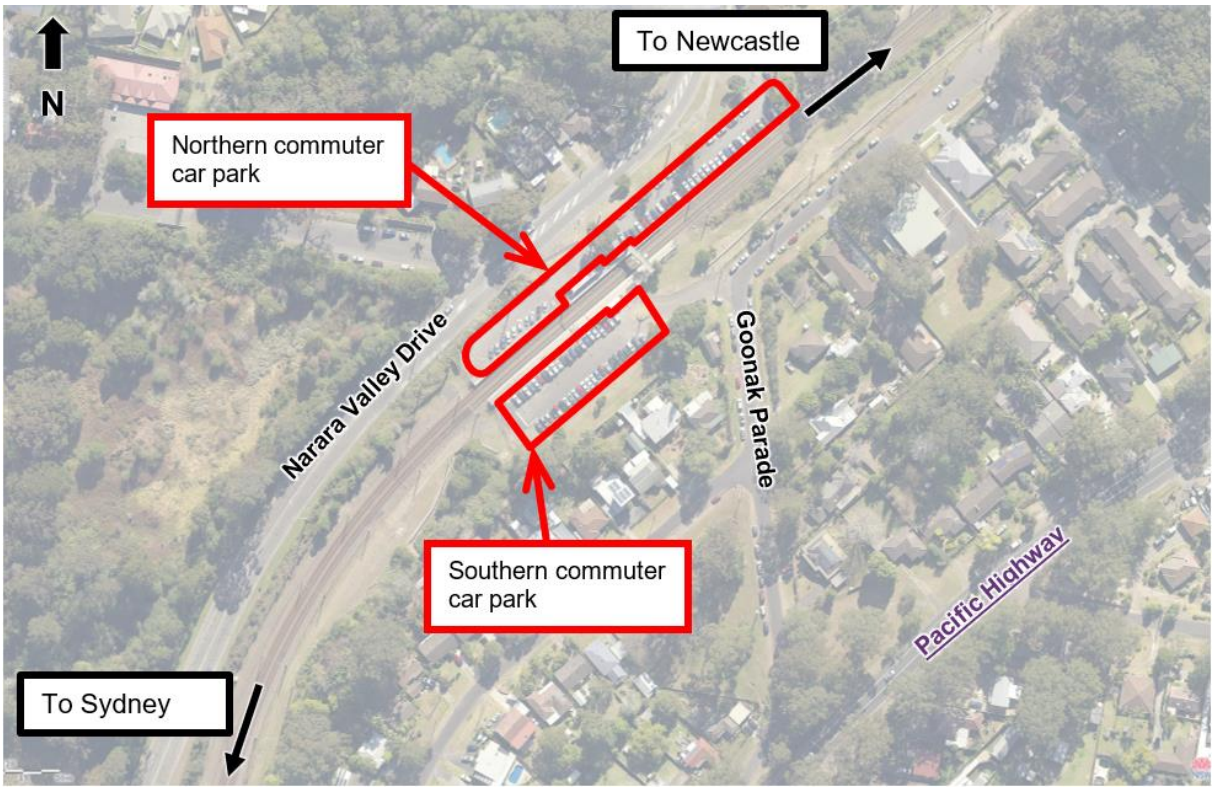

Figure 6-1 Surrounding road network and parking

Station platforms and access

Narara Station has two platforms, with the southern side platform (Platform 1) providing services south to Sydney and the northern side platform (Platform 2) providing services north through to Newcastle Interchange.

The platforms are accessed directly from the adjoining commuter carparks. A footbridge is located towards the north-eastern end of the platforms, providing a pedestrian link between the two platforms. Non-compliant pathways, car parking, ramps and stairs between the platforms means that access is difficult for people with reduced mobility, parents or carers with prams, or customers with luggage.

Public transport

Rail

Narara Station is on the Central Coast & Newcastle line which provides services north to Newcastle Interchange and south to Central Station in Sydney. On weekdays, four southbound trains per hour stop during the morning peak between 6AM and 7AM and four northbound trains per hour stop during the evening peak between 6PM and 7PM. During non-peak weekday hours trains generally run every hour.

During the weekends and public holidays, trains typically run every hour from 3AM to 1AM (the next day) in the Newcastle to Sydney direction and approximately every hour all day in the Sydney to Newcastle direction.

Bus

There are northbound and southbound bus stops on Narara Valley Drive which serve Narara Station. The bus stops service Route 36 (Westfield Tuggerah to Gosford via Niagara Park). This bus route generally offers an hourly service on weekdays and weekends.

Taxi

There is no formal taxi rank at the station.

Pedestrian and cycling infrastructure

On the northern side of Narara Station two bus stops are located on Narara Valley Drive opposite the Station entrance. One bus stop is located on the northern side of the road and travels northbound and the other bus stop is located on the southern side travelling southbound. There are two pedestrian refuges near the station that allow for safe pedestrian movements across Narara Valley Drive. Crossing the road at either refuge leads to a paved footpath and one of two ramps that are used to access the northern commuter carpark. There are no paved footpaths or pedestrian crossings within the northern commuter carpark. Currently there are no signalised intersections or pedestrian crossings along Narara Valley Drive.

On the southern side of the station, there is no pedestrian footpath along Goonak Parade linking the southern commuter car park and station to the Pacific Highway and surrounding neighbourhoods.

Existing footpath infrastructure near Narara Station is shown in Figure 6-2.

Figure 6-2 Pedestrian infrastructure around Narara Station

Access to Narara Station for cyclists is via Narara Valley Drive and Goonak Parade, which have a combination of low to moderate on-road cycleways and off-road paths. A bike rack with provision for seven bicycles is located in the northern commuter car park behind the platform shelter and six secure bike lockers are provided near the northern commuter car park entrance.

6.1.2. Potential impacts

a) Construction phase

Site compound

The main construction compound is proposed to be located on vacant land owned by RailCorp adjacent to the southbound tracks and south-west of the southern commuter car park. Construction vehicles would access the compound through the southern car park via Goonak Parade.

Customer and public access impacts

Construction activities are anticipated to impact pedestrian and road users due to temporary restricted access to the Proposal area. Impacts would vary during the construction program as the works progress however access to the station would be maintained at all times (outside of rail shutdown periods) and work would be scheduled to minimise impacts to highly trafficable areas where practicable. Mitigation measures (as outlined in section 6.1.3) would be implemented to ensure that alternate safe access routes to the station are provided during the construction period.

The following access impacts to pedestrians and rail customers are anticipated from construction activities:

- detours and longer walking distances during the construction of the new accessible path from the station to Narara Valley Drive
- potential higher levels of platform congestion arising from portions of the platform being temporarily fenced off during construction
- higher road safety risk levels due to elevated frequency of pedestrian and construction vehicle interactions on Goonak Parade and within the commuter car parks
- potential confusion and loss of amenity to customers accessing the station via temporary and changed facilities during construction.

Work would be scheduled to minimise impact to highly trafficable areas within the station, where practicable.

Construction traffic

The construction traffic generated by the Proposal would primarily be light vehicles with limited heavy vehicles. The traffic generated as a part of the construction works is not expected to exceed around 25 light vehicles and 15 heavy vehicles per day, during the typical construction period. However, during rail shut down periods, it is expected that the works would generate up to around 50 light vehicle and 12 heavy vehicles per day.

Most of this construction traffic would be due to construction workers moving to and from site. Heavy vehicles would be required for the delivery and removal of materials, plant, and equipment. Heavy vehicle movements would only travel a short distance from the Pacific Highway along Goonak Parade or Manns Road and Narara Valley Drive to the Station (refer Figure 6-3). Therefore, movements as a result of the Proposal are not expected to significantly increase local traffic volumes and are unlikely to impact the performance of the surrounding road network and intersections.

The Pacific Highway is a State Road and is considered to have sufficient capacity to accommodate this temporary increase in construction traffic from the Proposed Activity.

During the construction phase anticipated vehicle types may include four-wheel drive pickup trucks, flatbed trucks (some featuring loader cranes), excavators, skip trucks, concrete trucks, forklifts, and skid loaders.

In addition, hi-rail vehicles, such as rail-mounted elevated work platforms and hiab crane trucks, would access the rail corridor via the hi-rail access pad located approximately 300 metres north-east of the station (refer Figure 6-3) Construction vehicle access from the local road network to the construction compound would be via the Pacific Highway. The final construction haulage route would be determined by the nominated Construction Contractor during the detailed design of the Proposal.

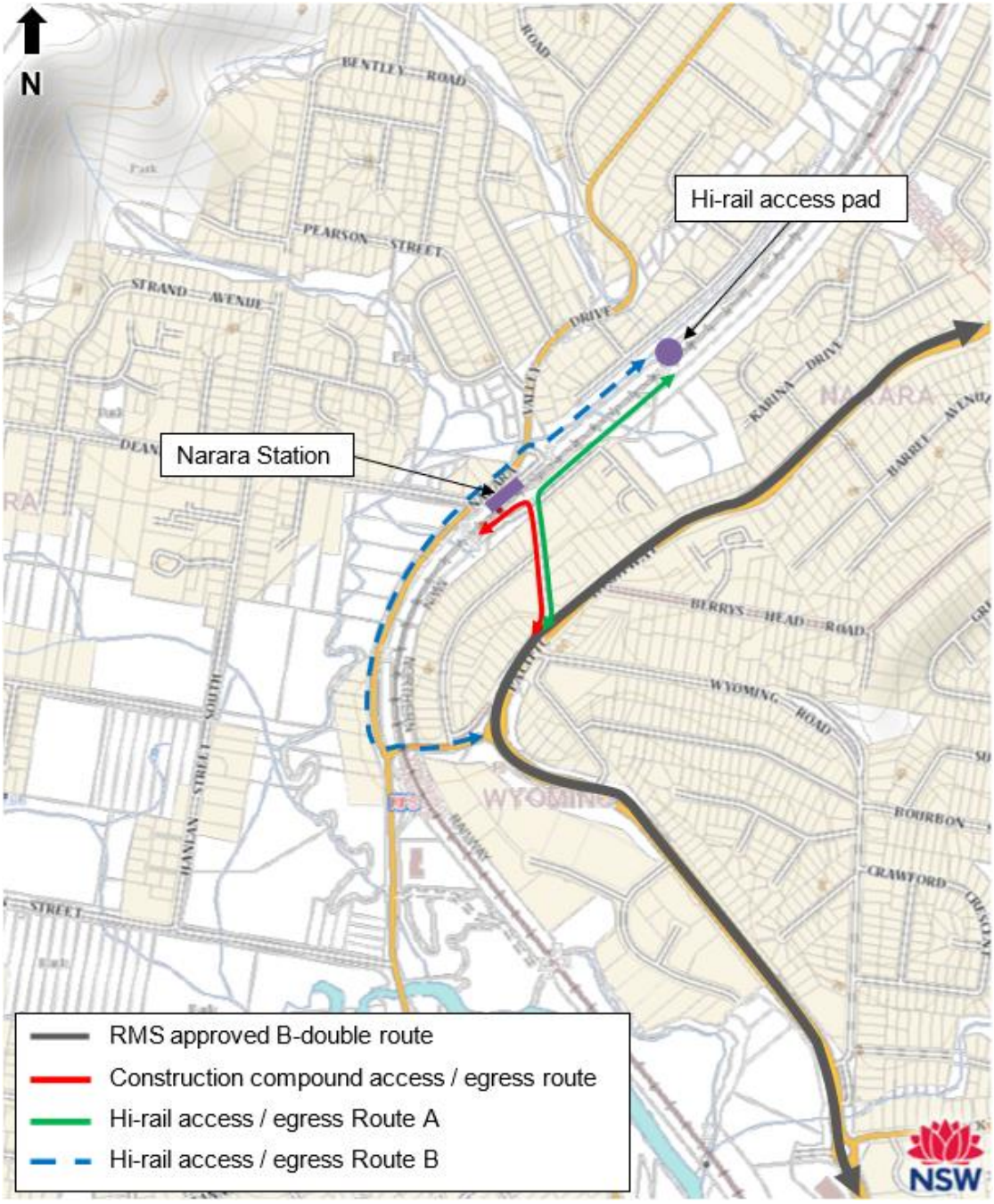

Figure 6-3 Potential construction vehicle routes (indicative only, subject to detailed design)

Parking

The proposed construction work, including construction site and access points, would be designed to avoid impacts on parking provisions where possible. Construction vehicles would park within the main construction compound located to the south-west of the southern commuter car park. If the main compound area is insufficient then construction workers may contribute to a minor increase in demand for on-street parking. Workers would be expected to park on the local road network in proximity to the station during the construction period and would not be permitted to park within the commuter car parks outside of rail shutdown periods. Construction workers would be encouraged to use alternate transport options such as public transport to access the site. Parking for construction vehicles would be addressed in the Construction Traffic Management Plan (CTMP).

There would be minor disruptions to normal operations of the commuter car parks during certain time periods during construction to allow for the movement and parking of construction vehicles. Up to six formal parking spaces located closest to the construction compound site may be temporarily unavailable to minimise conflicts between construction vehicles and commuter vehicles. Traffic control would be in place to manage the interactions between the construction vehicles accessing the construction compound and the users of the southern commuter carpark.

In the northern commuter car park, the number of parking spaces would be reduced from the commencement of the proposed construction works to provide for additional construction compounds centred around the proposed lift. During construction, up to four formal spaces in the northern commuter car park would be impacted by construction works associated with these additional construction compound. The existing service vehicle parking space would also be impacted by these works.

Additionally, in both commuter car parks the number of parking spaces would be further reduced to provide for the proposed accessible parking spaces, the kiss and ride spaces, and accessible paths. In the northern commuter car park, five spaces would become unavailable. In the southern commuter car park, five spaces would become unavailable. This loss of car parking spaces would become permanent and would require customers to utilise parking outside the station. There is untimed on-street parking on many of the surrounding streets, and despite the inconvenience is not considered to provide a substantive adverse impact on commuter parking.

Pedestrians and cyclists

Construction work is expected to have a minor impact on the pedestrian and cycle network given the restricted space in which construction work is to be carried out. It is expected that there may be restrictions and disruption to pedestrian and bicycle access as a result of the following construction activities:

- construction of the new accessible path from the northern car park to the existing bus stops on Narara Valley Drive, which would require pedestrians and cyclists to utilise a different station entry point located approximately 95 metres to the north-east
- construction of a raised pedestrian crossing from the Platform 2 entry across the commuter car park to connect to the proposed accessible path to Narara Valley Drive

- the creation of accessible paths of travel from the base of the stairs to the lifts, the accessible parking spaces, and the kiss and ride spaces in both commuter car parks. This would require relocation of the existing bike rack in the northern commuter carpark which may be temporarily unavailable during construction.
- upgrading the existing stairs and footbridge which would limit customer access to the platforms during construction.

While restriction and disruptions are expected, any closures would be temporary, with safe and suitable detours provided as part of the construction management plans to be implemented during the construction period.

Public Transport

The bus stop on Narara Valley Drive would not need to be relocated during construction, however, passengers would be detoured around the construction zone to gain access to and from the station.

No impacts are anticipated to the bus services during construction.

Train services would not be affected during construction excluding scheduled rail shutdowns. Rail replacement bus services would be implemented during scheduled rail shutdowns. Passengers would be detoured around the construction zone to gain access to and from the bus stops where required.

Emergency vehicle access

Access for emergency vehicles would be maintained at all times during construction. Emergency services would be advised of all planned changes to traffic arrangements prior to applying the changes. Advice would include information about upcoming traffic disruptions, anticipated delays to traffic, extended working hours, and locations of any road shutdown periods.

b) Operation phase

Customer and public access impacts

The Proposal would improve pedestrian access within, as well as to and from Narara Station due to the installation of the lift to the platforms and new accessible path to the bus stop. This would allow for accessible movement to and from the footbridge, station platforms, external road network and accessible parking spaces.

Operational traffic

The Proposal would increase accessibility to Narara Station and improve the customer experience and amenity, potentially leading to a minor increase in utilisation and patronage. This may be due to customers either travelling by train where they did not before, or by changing from another nearby station.

As a result, there may be a minor increase in traffic generation however, it is projected to be minor and would have a negligible impact on the surrounding road network or the amenity of local residents.

Parking

The Proposal would result in the removal of five existing formal car spaces in the northern commuter car park. These car spaces would be removed to accommodate the creation of

one accessible space, a new kiss and ride space, an accessible path linking these facilities to the platform entrance and the new lift on Platform 1, relocation of the existing bike rack, and positioning of the new transformer. The Proposal would also remove the ability for informal parallel parking to occur around the new accessible path to Narara Valley Drive resulting in the loss of six informal spaces.

In the southern commuter car park, there would be the removal of five existing formal car spaces. These car spaces would be removed to provide for the creation of one accessible car space, a new kiss and ride space, and an accessible path linking these facilities to the new lift on Platform 2. It is anticipated that the introduction of designated kiss and ride spaces would reduce informal drop off and pick up, resulting in an improved safety outcome and efficient traffic movement.

The Proposal would remove about 10 formal car parking spaces and six informal spaces across both commuter car parks. Given that there is untimed on-street parking in the area around the station, the permanent reduction of 10 formal car parking spaces and six informal spaces would have a minor impact on commuter car parking operations.

Public transport

The Proposal would result in overall positive impacts in terms of contributing towards making public transport more accessible to the community.

The Proposal involves relocation of the existing bus stop on the southern side of Narara Valley Drive. The relocated bus stop would be in a similar position but would be closer to the entrance of the station following completion of the proposed works. The Proposal does not include changes to existing rail services and would not impact on the operation (service operation or timetabling) of public transport in the vicinity of Narara Station.

Pedestrians and cyclists

The bike rack removed during construction would be relocated behind the Platform 2 lift within the northern commuter car park, providing parking for seven bikes.

6.1.3. Mitigation measures

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

General mitigation measures

The following general mitigation measures are recommended for implementation, to minimise impacts during the construction of the Proposal.

- prior to the commencement of construction, a Construction Traffic Management Plan (CTMP) would be prepared as part of the Construction Environmental Management Plan communication would be provided to the community and local residents, via notifications and signage to inform them of changes to parking, pedestrian access and/or traffic conditions including vehicle movements and anticipated effects on the local road network relating to site work
- a Road Occupancy Licence for temporary road closures would be obtained, where required.

- suitable vehicle and pedestrian provisions would be implemented throughout construction to ensure the safe movement for pedestrians within and surrounding the station is maintained
- qualified traffic controllers would be used during construction work to ensure safe and efficient movement of vehicle and pedestrian traffic on the external road as well as in and out of the construction site
- fencing and barriers would be installed between the construction site and outside the construction zone to ensure safe and easy navigation of pedestrians and cyclists
- opportunities to minimise impacts to parking and pedestrian movements through scheduling of construction activities would be investigated.

Refer to Section 7.2 for a full list of proposed mitigation measures.

6.2. Landscape and visual amenity

A Landscape and Visual Impact Assessment Technical Paper (Envisage, 2020) was prepared for the Proposal and forms part of the REF. The findings of the assessment are summarised in this section.

The assessment included a desktop analysis, a site inspection on 13 May 2020, and the preparation of a photomontage.

The photomontage provides an indication of what the Proposal may look like from a key representative viewpoint once complete, noting that the materials and finishes are indicative only and would be further investigated during detailed design (refer Figure 6-4).

Figure 6-4 Photomontage of the Proposal (indicative only, subject to detailed design)

The assessment has been carried out in accordance with the TfNSW (former Road and Maritime Services) *Guideline for Landscape Character and Visual Impact Assessment, Environmental Impact Assessment Practice Note EIA-N04* (TfNSW, 2018),in which two discrete assessments were conducted:

- landscape character assessment
- visual impact assessment.

The method to measure impacts in both assessments is based on the combination of sensitivity of the existing area or view to change and magnitude of the impact on that area or view to produce a combined impact rating of negligible, low, moderate-low, moderate, moderate-high and high (refer to Figure 6-5).

		Magnitude			
		High	**Moderate**	**Low**	**Negligible**
Sensitivity	**High**	High	Moderate-high	Moderate	Negligible
	Moderate	Moderate-high	Moderate	Moderate – Low	Negligible
	Low	Moderate	Moderate – Low	Low	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

Figure 6-5 Visual impact grading matrix (Source TfNSW, 2018)

6.2.1. Existing environment

The railway corridor is located along the valley floor of the Narara Creek catchment. Land to the east of the railway corridor is generally quite steep and land to the west the land is lower in elevation and generally flat, rising to the densely vegetated ridges of the Strickland State Forest (approximately 800 metres further west).

The station is located within a low-density residential area. Residences are primarily detached 1-2 storey dwellings and are generally well vegetated. There are numerous public reserves in the vicinity with dense stands of tall, native trees. Local streets have wide, grassed verges and tall street trees.

The landscape character is rated as having low sensitivity as:

- the wider landscape setting of vegetated slopes and tall, mature trees provides an attractive background and scenic resource for the local community
- the immediate landscape setting (with detached residential dwellings and large number of tall trees interspersed throughout local streets) is valuable, but typical of suburban development in this part of the Central Coast
- the station is located on lower slopes with a higher capacity to absorb development and within an area of generally lower visual sensitivity
- the station is not a scenic element within the landscape.

Visual receivers and viewpoints

The closest viewpoints of the Proposal are the residences to the north-west (along Narara Valley Road) and south (along Narara Crescent). Less sensitive viewpoints are possible from

local roads and elevated residences along the Pacific Highway. Six viewpoint locations have been identified, all within 300 metres of the station, as part of the visual impact assessment and these are described in Table 6-1 and shown in Figure 6-6.

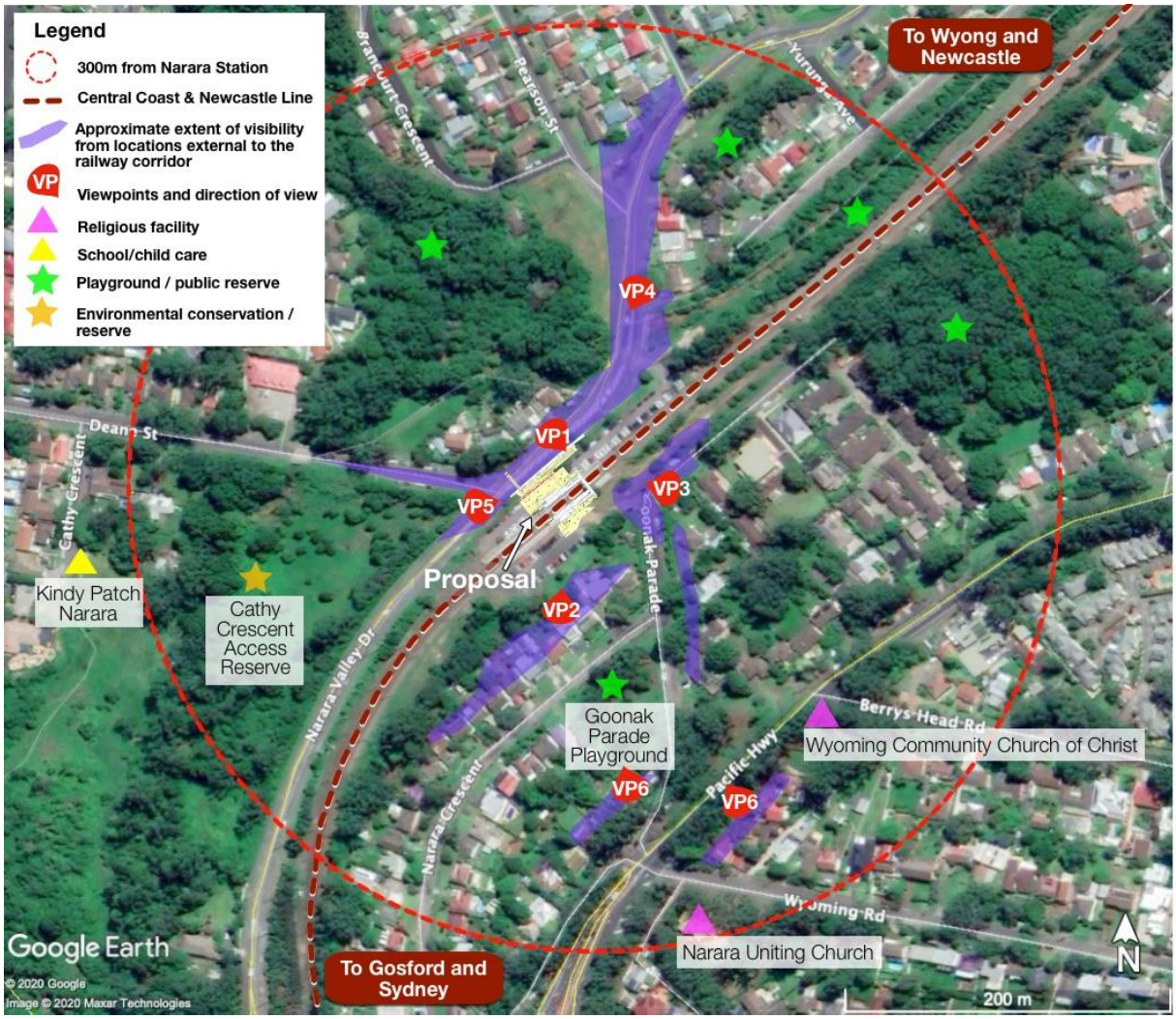

Figure 6-6 Approximate area from which the Proposal can be viewed (Source: Envisage 2020)

Table 6-1 Identified viewpoints

Viewpoint	Description and sensitivity
VP1: View from Narara Valley Drive (north-west)	This viewpoint is located opposite the northern entrance on Narara Valley Drive and the station has high visual prominence from the front yard of three residences. North of the residences is a large reserve. The viewpoint also provides temporary, public views for a small number of pedestrians accessing the adjacent reserve and road users accessing Narara Valley Drive. Sensitivity to views of the Proposal is considered **moderate**.

Viewpoint	Description and sensitivity
VP2: View from Narara Crescent (south)	Located about 50 metres south of the Proposal area and including approximately eight residential backyards and upper levels. Residences are elevated slightly from the commuter car park and station. Views toward the station are partially screened by fences and planting within private yards. Sensitivity to views of the Proposal is considered **moderate**.
VP3: View from Goonak Parade (east)	Located about 55 metres east of the Proposal area. Goonak Parade provides access from the Pacific Highway to the southern commuter park and residences. The viewpoint provides limited private views from about two single-storey dwellings opposite the railway corridor and up to five residences on the southern side of Goonak Parade. Views are limited by vegetation within the road reserve and on private property and the lower elevation of the station. Sensitivity to views of the Proposal is considered **low**.
VP4: View from Narara Valley Drive (north)	Located about 130 metres north of the Proposal area, views from several residences. Between the residences and the railway corridor is a pedestrian pathway connection to Koninderie Parade. The viewpoint provides opportunity for prolonged, private views from one Narara Valley Drive residence and temporary, public views for a moderate number of road users travelling south along Narara Valley Drive. The station and commuter car park are elevated between 1-3 m above the level of Narara Valley Drive. Sensitivity to views of the Proposal is considered **low**.
VP5: View from Deanne Street (west)	Located about 65 metres west of the Proposal area Deanne Street intersects Narara Valley Drive. The station and commuter car park are elevated 2-3 metres above the viewpoint. The viewpoint provides temporary, public views for road users travelling north along Narara Valley Drive and Deanne Street road users travelling east. Sensitivity to views of the Proposal is considered **low**.
VP6: View from the Pacific Highway (south)	Located about 200 metres south-east of the Proposal area, there are several elevated residences along the Pacific Highway and a public reserve located opposite the homes. The station is mostly screened by trees. Only bright and tall features are visible against the dark green background. Sensitivity to views of the Proposal is considered **low**.

6.2.2. Potential impacts

a) Construction phase

Landscape character

The construction activities and elements likely to be introduced into the visual environment include:

- fencing, hoarding and signage

- ground disturbance
- vegetation removal
- formwork and scaffolding
- cranes and other large plant and equipment
- construction compound including site office and amenities, storage of materials and equipment, site assembly of components and parking of vehicles.

Although temporary, construction would be a prominent feature of the scene and contrast with surrounding scale and character through removal of the trees and the appearance of tall, moving cranes, rigs, and excavators.

During construction, the magnitude of change on the landscape character would be moderate. Combined with the low sensitivity to change, the overall landscape character impact during construction is assessed at moderate-low.

Visual impact

The impacts on the viewpoints in Figure 6-6 are assessed on the basis of sensitivity (from Table 6-1) and magnitude of change using the impact grading matrix outlined in Figure 6-5. The overall visual impacts anticipated during construction are described in Table 6-2.

Table 6-2 Summary of visual impact during construction

Viewpoint	Summary of impact	Overall impact
VP1: View from Narara Valley Drive (north-west)	Sensitivity to views of the Proposal is considered **moderate**. The magnitude of change during construction is considered **moderate** overall. Views of tall mobile equipment and truck movements would be unavoidable and occur within close proximity (about 25 metres from private property boundaries). Construction would be the dominant feature and contrast in scale and character. There may be occurrences of night works during which there would be lights, however these would be directed towards the works and away from residences. Construction would be temporary.	**Moderate**
VP2: View from Narara Crescent (south)	Sensitivity to views of the Proposal is considered **moderate**. The magnitude of change to views during construction is considered **moderate** as the construction compound would be in close proximity (around 10-15 metres) from residential boundaries, however largely screened by vegetation. Construction activities at the footbridge within the southern commuter car park and platforms would be visible. There may be occurrences of night works during which there would be lights, however these would be directed towards the works and away from residences. Construction would be temporary.	**Moderate**
VP3: View from Goonak Parade (east)	Sensitivity to views of the Proposal is considered **low**. The magnitude of change to views during construction is considered **low** as the viewpoint provides limited private views. The views are screened by vegetation within the road reserve and private property, and the lower elevation of the station. Construction would be temporary.	**Low**

Viewpoint	Summary of impact	Overall impact
VP4: View from Narara Valley Drive (north)	Sensitivity to views of the Proposal is considered **low**. The magnitude of change to views during construction is considered **moderate** as construction activities would be a dominant feature of the scene and directly in the line-of-sight of travellers on Narara Valley Drive. From private residences, activities would be partially screened by vegetation and appear less dominant. Movement of tall equipment and trucks would contrast in scale and character. Construction would be temporary.	**Moderate-Low**
VP5: View from Deanne Street (west)	Sensitivity to views of the Proposal is considered **low**. The magnitude of change to views during construction is considered **moderate** as travellers heading north along Narara Velley Drive would travel alongside the construction zone. Travellers heading east along Deanne Street would be in the direct line-of-sight of the construction zone. The construction activity would be a close and dominate feature of the scene. Construction would be temporary.	**Moderate-Low**
VP6: View from the Pacific Highway (south)	Sensitivity to views of the Proposal is considered **low**. The magnitude of change to views during construction is considered **low** as tall construction equipment may be seen above the surrounding vegetation. Construction would be temporary.	**Low**

b) Operation phase

Landscape character

The proposal would be relatively compatible with the existing built character of the station in scale and form and changes would be confined to a relatively small proportion of the scene. The lift shafts and new pedestrian access route would be recognisable new elements. Tall native trees are a key element comprising locally significant character. The planned removal of one tall, native tree on the northern side of the station would temporarily reduce the contribution of the station to the local character. However, the density of trees in the surrounding environment and predominant landscape characteristics of the vicinity means the distinctive character of the local landscape would not reduce overall. The Proposal would have a **low** magnitude of change on the landscape character.

Visual impact

Once completed, the main elements of the Proposal that would be visible are the new lift shafts and the accessible path and ramp on the northern side of the station along the existing embankment. Table 6-3 provides a summary of impacts on the assessed viewpoints during operation.

Table 6-3 Summary of visual impact during operation

Viewpoint	Summary of impact	Overall impact
VP1: View from Narara Valley Drive (north-west)	Sensitivity of these visual receivers is considered **moderate**. The magnitude of change following construction is assessed as **moderate**. The removal of tree T3 and trimming of trees T1 and T2 would increase the extent of the station in view. The new retaining wall and ramp to the station from Narara Valley Drive would replace the grassed embankment opposite the residences with a concrete wall (approximately 2m high) and introduce elevated pedestrian movement to the view. The lift shafts would be new taller built elements in the view, although would be generally compatible in form and scale with the existing station. Planned landscaping of the embankment (to the north of the retaining wall) would soften and help integrate the new built elements and improve the visual amenity of the station over time.	**Moderate**
VP2: View from Narara Crescent (south)	Sensitivity of these visual receivers is considered **moderate**. The magnitude of change following construction is assessed as **low**. Removal of tree T5 and trimming of tree T6 would increase exposure to the station for some residents and increase the extent of built elements in view. Some residents would have views of both lift shafts. The lift shafts would have a backdrop of dense vegetation from the elevated slopes of the Strickland State Forest located to the north-east. The lift shafts would be generally compatible in form and scale with the existing station.	**Moderate-Low**
VP3: View from Goonak Parade (east)	Sensitivity of these visual receivers is considered **low**. The magnitude of change following construction is assessed as **low**. Removal of tree T4 would increase exposure of the footbridge and extent of the station in view. Both lift shafts would be visible and would appear lower in height than vegetation in the background. The lift shafts would be generally compatible in form and scale with the existing station.	**Low**
VP4: View from Narara Valley Drive (north)	Sensitivity of these visual receivers is considered **low**. The magnitude of change following construction is assessed as **low**. Removal of tree T3 and proposed tree trimming is likely to increase exposure of the footbridge and the station. The two proposed lifts would be visible however, tall vegetation in the background would appear behind and above the southern lift shaft and the northern lift would be partially concealed by existing vegetation. The new accessible ramp along the embankment would be in view, however would be relatively compatible with the existing form of the landscape.	**Low**

Viewpoint	Summary of impact	Overall impact
VP5: View from Deanne Street (west)	Sensitivity of these visual receivers is considered **low**. The magnitude of change following construction is assessed as **low**. Removal of tree T3 would increase the exposure of the footbridge. Removal of tree T5 would increase exposure of the northern commuter car park and station platforms. The northern lift shaft would be a new visible feature however would be lower in height than the vegetation in the background. The new accessible ramp along the embankment would reduce the extent of grass visible however, the pathway would be relatively similar in scale and form to the existing landscape.	**Low**
VP6: View from the Pacific Highway (south)	Sensitivity of these visual receivers is considered **low**. The magnitude of change following construction is assessed as negligible as the proportion of the Proposal in view would be consistent with the existing landscape and the lift shafts would be partially screened by existing trees.	**Negligible**

6.2.3. Mitigation measures

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

- Mitigation measures would be reviewed and revised where appropriate during detailed design development and construction planning to minimise the level of visual impact of the construction and operation phases of the Proposal.
- The detailed design of the Proposal is to be undertaken with reference to the recommendations included in the Landscape and Visual Impact Assessment Technical Paper (Envisage, 2020), and include:
  - a Public Domain Plan and an Urban Design Plan would be prepared which includes replacement planting to address vegetation removed during construction. This includes landscaping of the embankment on Narara Valley Drive
  - construction compounds are to be shielded with shade cloth or similar from residential properties
  - unnecessary loss or damage to vegetation would be avoided by protecting trees prior to construction
  - designing and installing all lighting in accordance with the requirements of *AS4282 Control of the Obtrusive Effects of Outdoor Lighting*
  - any existing and future graffiti would be removed in accordance with TfNSW's standard requirements
  - trees to be removed would be offset in accordance with Transport for NSW *Vegetation Offset Guide* (2019b). Offset planting would be prioritised in areas to manage visual impacts. Areas to be prioritised are Goonak Parade station entrance, along the northern embankment and within the southern car park along the boundary with the residents
  - adopt a dark recessive colour for new fencing (e.g. charcoal, dark grey)

Refer to Section 7.2 for a full list of proposed mitigation measures.

6.3. Noise and vibration

A Noise and Vibration Impact Assessment (NVIA) Technical Paper has been prepared for the Proposal (Pulse Acoustics, 2020). The assessment included:

- conducting background noise monitoring to establish existing background noise levels in the vicinity of the station
- establishing the construction noise management levels and vibration limits that would apply to the Proposal
- predicting noise and vibration levels at nearby residential and other sensitive receivers due to the Proposal
- considering potential noise from the operation of the Proposal
- identifying mitigation measures to reduce and manage noise and vibration impacts from the Proposal to comply with established construction noise management levels and vibration limits.

6.3.1. Existing environment

Sensitive receivers and noise catchment areas

The Proposal is located at Narara Station, between Narara Valley Drive and Goonak Parade. The suburb of Narara primarily consists of low-density housing, with some shops, churches and a school also located within the suburb. The northern side of the station fronts onto Narara Valley Drive. The closest residential receiver on the northern side of the station is 50 metres from Platform 2. The southern side of the station fronts onto Goonak Parade and the closest residential receiver of the station is 40 metres from Platform 1.

Construction works are primarily proposed to take place within the rail corridor at Narara Station, with the exception of some works on the northern side of Narara Valley Drive to provide an accessible path from the existing bus stop to the station. An ancillary construction facility is proposed to be located to the south of the station, on the southern side of the railway line.

This noise and vibration assessment considers potential noise impacts for each receiver within the vicinity of the Proposal area. Two (2) Noise Catchment Areas (NCAs) have been defined for this Proposal, and are shown in Figure 6-7. The NCAs are described as follows:

- NCA 1: This catchment includes the receivers located on the northern side of the railway line, primarily consisting of low-density residential dwellings and a number of non-residential receptors. The dominant noise sources in the catchment are vehicle traffic from Narara Valley Drive and local roads, as well as noise sources associated with the railway line.
- NCA 2: The catchment contains the receivers on the southern side of the railway station which consists mostly of low-density residential dwellings and a number of non-residential receivers. The dominant noise sources in the catchment are vehicle traffic from the Pacific Highway and local roads, as well as noise sources associated with the railway line.

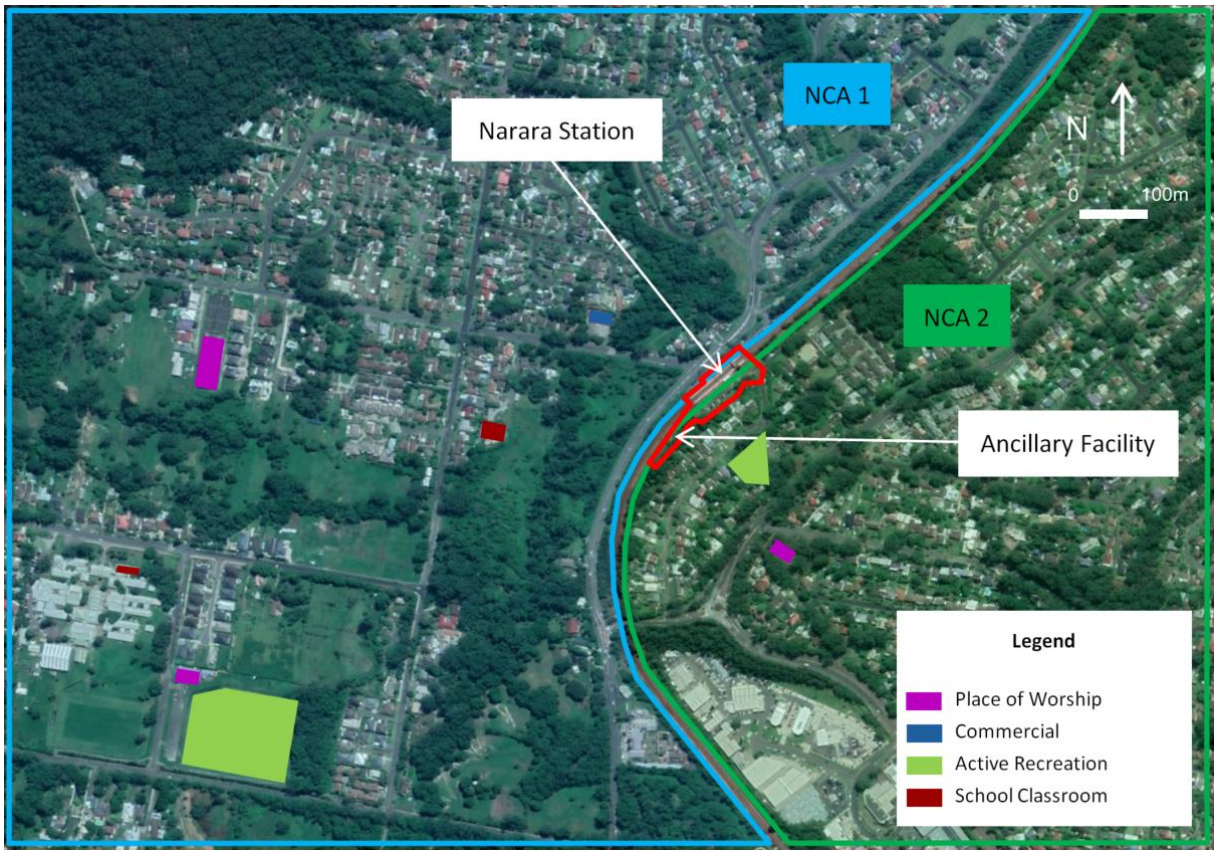

Figure 6-7 Noise catchment areas (Proposal area outlined in red) (Source: Pulse Acoustics, 2020)

Background noise levels

Existing noise levels were measured as part of preparing the NVIA (Pulse Acoustics, 2020) to determine background noise levels and establish operational and construction noise criteria for sensitive receivers close to the Proposal. Locations were selected to be representative of receivers that would experience potential noise impacts from the construction of the Proposal.

Unattended monitoring was conducted from Wednesday 27 May 2020 to Thursday 4 June 2020 at two of the closest residential receivers to Narara Station (Location A and Location B) as shown in Figure 6-8.

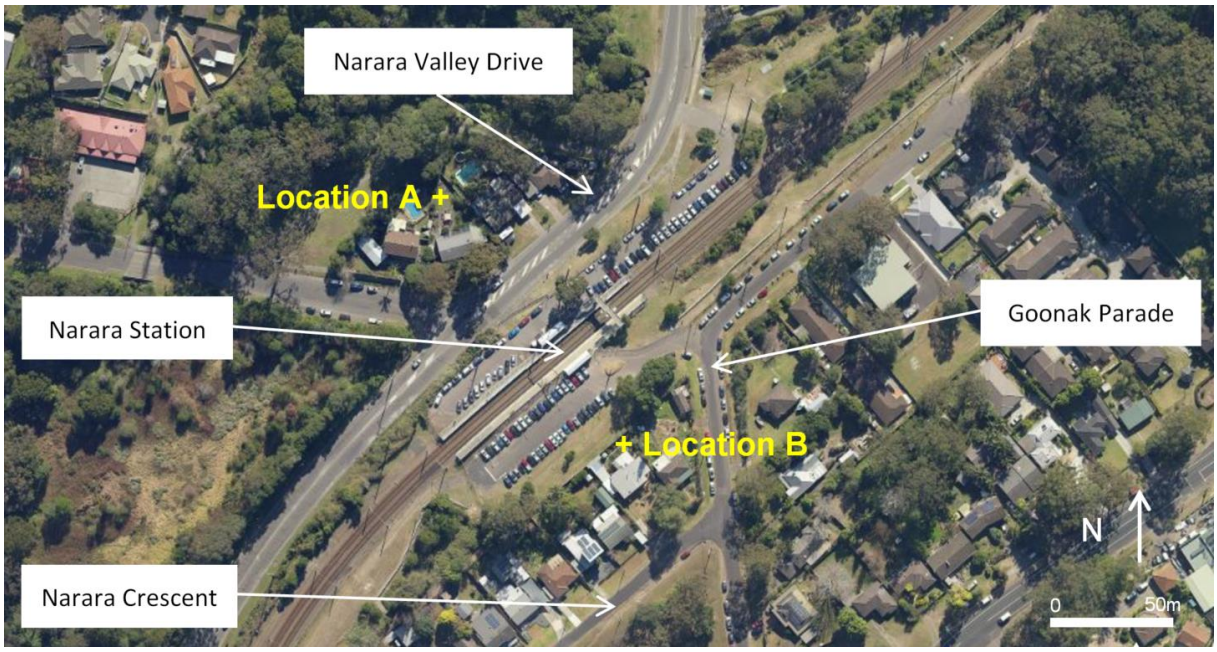

Figure 6-8 Noise Monitoring Locations (Source: Pulse Acoustics, 2020)

Rating Background Noise Levels (RBLs) are determined from measurement of L_{A90} noise levels (representing the noise level exceeded for 90 per cent of the monitoring period) in the absence of noise from the Proposal.

The results of the unattended noise monitoring for the two locations are provided in Table 6-4. The measurements confirm road traffic noise and environmental noise is quieter during the night period than the day and evening periods.

Table 6-4 Unattended noise monitoring results – background noise levels (Source: Pulse Acoustics, 2020)

	Period[1]	Rating Background Level (L_{A90}) in dB	Ambient Noise Level (L_{Aeq}) in dB
Location A	Day time	44	54
	Evening	37	51
	Night time	31	50
Location B	Day time	45	53
	Evening	36	49
	Night time	30	48

Note 1: Day is defined as 7.00am to 6.00pm, Monday to Saturday and 8.00am to 6.00pm Sundays & Public Holidays. Evening is defined as 6.00pm to 10.00pm Monday to Sunday. Night time is defined as 10.00pm to 7.00am Monday to Saturday and 10.00pm to 8.00am Sundays & Public Holidays.

Construction noise criteria

The EPA's *Interim Construction Noise Guideline* (ICNG) (DECC, 2009) is the principal guideline for the assessment and management of construction noise in NSW. The ICNG recommends standard hours of construction as:

- Monday to Friday: 7am to 6pm

- Saturday: 8am to 1pm
- Sundays and public holidays: no works.

Noise management levels (NMLs) have been determined for receivers as per the procedures in the ICNG. The ICNG prescribes set noise management levels for non-residential receivers such as commercial, schools and places of worship. The background noise levels from the monitoring at Location A were used to determine the NMLs for residential receivers in NCA 1 and the monitoring at Location B was used to determine the NMLs for residential receivers in NCA 2.

Table 6-5 provides the construction NMLs for the Proposal. The NVIA (Pulse Acoustics, 2020) provides a summary of all other criteria relevant to the Proposal

Table 6-5 NMLs for Construction

Receiver	Standard Hours (RBL+10dB)	Out of Hours (RBL+5dB)[1]		
	Day time	Day time	Evening	Night
Residential – NCA 1	54	49	42	36
Residential – NCA 2	55	50	41	35
Commercial	70	70	N/A	N/A
Place of Worship	55	55	N/A	N/A
Education Classroom	55	55	N/A	N/A
Active Recreation	65	65	N/A	N/A

Note 1 – Out of Hours construction hours – Evening hours are 6pm to 10pm. Night time hours are 10pm to 7am Sunday to Saturday and 10pm Saturday to 8am Sunday.

Note 2 – NML's for commercial, industrial, educational (classroom) and active recreation facilities are taken from the Interim Construction Noise Guideline (Department of Environment and Climate Change, 2009) (ICNG).

Note 3 – Education Classroom includes both schools and childcare centres.

In addition, a 'highly noise affected' level of 75 dB(A) for residential receivers represents the point above which the ICNG indicates there may be strong community reaction to noise.

Where works exceed the NMLs, all reasonable and feasible measures (such as equipment selection and location, construction scheduling and respite periods) should be implemented to reduce noise levels as far as practicable.

Sleep disturbance

Sleep disturbance criteria have also been established for residential receivers which are based on the *NSW Roads Noise Policy* (RNP) (DECCW, 2011). Based on the Policy, the adopted sleep disturbance criterion at residential properties for noise emissions generated by short term events occurring during the night-time period is an internal noise level of 50 dB L_{Amax}.

As a guide, the difference between the internal noise level and the external noise level is typically 10 dB with windows open for adequate ventilation. Therefore, the proposed noise

screening criterion for sleep disturbance is 60 dB L_{Amax} external noise level at residential properties.

Road noise

The number of construction vehicles travelling on public roads is expected to be relatively small compared to current traffic flows. For traffic noise, the criterion applied on public roads generated during the construction phase of a project is an increase in existing road traffic noise of no more than 2 dB(A). Any increase in road traffic noise levels is predicted to be well below 2 dB(A), therefore, road traffic noise from construction vehicles on public roads is expected to have a negligible impact on neighbouring receivers and is not considered further.

Construction vibration criteria

The effects of ground borne vibration on buildings may be segregated into the following three categories:

- human comfort – vibration in which the occupants or users of the building are inconvenienced or possibly disturbed
- effects on building contents – where vibration can cause damage to fixtures, fittings and other non-building related objects
- effects on building structures – where vibration can compromise the integrity of the building or structure itself.

Human comfort

The EPA's *Assessing Vibration: A Technical Guideline* (DEC, 2006) provides the guideline values used 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 day time or night-time period.

Structural damage vibration

Structural damage vibration limits are based on British Standard *BS7385: Part 2-1993 Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration* (BSI 1993).

Safe working distances

From BS 7385 and the Construction Noise and Vibration Strategy (CNVS) (TfNSW, 2019a), the safe working distances for items of vibration intensive equipment are outlined in Table 6-6.

Table 6-6 Recommended minimum working distances from vibration intensive plant

Scenario	Minimum Distance (Cosmetic Damage)	Minimum Distance (Human Response)
Jackhammer (handheld)	1 metre (nominal)	Avoid contact with structure
Small Hydraulic Hammer (300kg)	2 metres	7 metres
Medium Hydraulic Hammer (900kg)	7 metres	23 metres
Piling Rig – Bored ≤800mm	2 metres	N/A
Piling Rig – Hammer	15 metres	50 metres

Scenario	Minimum Distance (Cosmetic Damage)	Minimum Distance (Human Response)
Vibratory Roller (2-4 tonne)	6 metres	20 metres
Vibratory Roller (4-6 tonne)	12 metres	40 metres
Vibratory Roller (7-13 tonne)	15 metres	100 metres

Operational noise criteria

The *Noise Policy for Industry* (EPA, 2017) (NPI) sets out procedures for establishing the project intrusiveness $L_{Aeq(15minute)}$ and project amenity $L_{Aeq(period)}$ noise levels, where the lower (i.e. more stringent) is then adopted as the Project Trigger Noise Level (PTNL). Applicable PTNLs for all noise sensitive receiver areas are shown in Table 7-6 of the NVIA.

6.3.2. Potential impacts

a) Construction phase

The potential for noise and vibration impacts on sensitive receivers would typically depend on:

- the type of equipment and number of simultaneously operating plant items
- topography and the presence of any other physical barriers
- proximity to sensitive receivers
- hours/duration of construction work
- the prevailing background noise level
- ground conditions.

While much of the work is expected to take place during standard construction hours, construction work would also take place during weekend rail shutdowns and involve night work.

To assess the potential impacts from the proposed work, the construction phases described in Section 3.3.1 were used to develop indicative construction scenarios comprising typical plant and equipment. The scenarios developed were:

- scenario 1: site establishment and enabling works
- scenario 2: electrical and communications
- scenario 3: construction work
- scenario 4: installation and finishing
- scenario 5: testing and commissioning
- scenario 6: demobilisation.

Construction noise

A 3D computer model is then used to predict the noise levels for each NCA resulting from the above scenarios. Worst-case noise level predictions have been made based on worst-case impacts for each work scenario. The predictions are provided in the NVIA (Pulse, 2020).

A summary of predicted noise impacts for the works scenarios is provided in Table 6-7 below. Overall, no exceedances of the highly noise affected criteria are predicted during any noise generating scenario. No exceedances are predicted at non-residential receivers during the project.

A number of residential receivers would be affected by exceedances of NMLs during the OOHW periods, particularly during the construction, installation and finishing stages of the Proposal, for which mitigation measures would need to be adopted.

During standard construction hours, a small number of residential receivers (up to 10) would be affected by exceedances of NMLs. It is considered that construction noise generated by the Proposal during standard working hours would not result in significant adverse impacts.

Table 6-7 Summary of predicted noise impacts

Works scenario	Summary of predictions	Timing of works [1]
Scenario 1: site establishment and enabling works	No exceedance of standard hours NMLs at NCA 1 Maximum exceedance of 2 dB of NMLs during standard hours at NCA 2 During OOHW 2, exceedances are predicted at receivers in NCA 1 and NCA 2 with maximum exceedance up to 22 dB above the NML in NCA 2	Standard hours OOHW 1[1] OOHW 2[1]
Scenario 2: electrical and communications	Exceedance of standard hours NMLs at NCA 1 and NCA 2. The maximum exceedance up to 5dB above the NML in NCA 1	Standard hours
Scenario 3: construction work	Exceedance of standard hours NMLs at NCA 1 and NCA 2. The maximum exceedance up to 7dB above the NML in NCA 1 For the OOHW 2, exceedances are predicted at receivers in NCA 1 and NCA 2. The maximum exceedance up to 25 dB above the NML in NCA 1 and NCA 2. The construction works scenario is the worst case scenario assessed for the Proposal.	Standard hours 48 hr rail shutdown OOHW 1 OOHW 2
Scenario 4: installation and finishing	Exceedance of standard hours NMLs at NCA 1 and NCA 2. The maximum exceedance up to 7dB above the NML in NCA 1 and NCA 2 For the OOHW 2, exceedances are predicted at receivers in NCA 1 and NCA 2. The maximum exceedance up to 25 dB above the NML in NCA 1	Standard hours OOHW 1 OOHW 2
Scenario 5: testing and commissioning	No exceedance of NMLs	Standard hours
Scenario 6: demobilisation	No exceedance of standard hours NMLs at NCA 1 Maximum exceedance of 1 dB of NMLs during standard hours at NCA 2 For the OOHW 2, exceedances are predicted at receivers in NCA 1 and NCA 2. The	Standard hours OOHW 1 OOHW 2

Works scenario	Summary of predictions	Timing of works [1]
	maximum exceedance up to 21 dB above the NML in NCA 2	

Note 1 - Work outside of standard construction hours is defined as Out-of-Hours Work (OOHW) and can be divided into two periods of sensitivity. OOHW 1 is defined as Monday to Saturday 6:00pm to 10:00pm (evenings), Saturday 7:00am to 8:00am and 1:00pm to 10:00pm (day & evening) and Sunday and public holidays 8:00am to 6:00pm (days). OOHW 2 is defined as Monday to Saturday 10:00pm to 7:00am (nights) and Sundays and public holidays 6:00pm to 8:00am (nights).

During OOHW night work scenario 3 (construction works), the sleep disturbance criteria is predicted to be exceeded at three receivers in NCA 1 and four receivers in NCA 2. The maximum exceedance in NCA 2 is predicted to be 4 dB above the sleep disturbance criteria.

For installation and finishing during the OOHW night works scenario 4 (installation and finishing), the sleep disturbance criteria is predicted to be exceeded at two receivers in NCA 1. No exceedances of the sleep disturbance criteria are predicted in NCA 2. The maximum exceedance in NCA 1 is predicted to be 1 dB above the sleep disturbance criteria.

Sleep disturbance is not predicted during scenario 1 or scenario 6. OOHW night works are not proposed for scenario 2 or scenario 5.

Cumulative noise impacts

Cumulative noise impacts warrant assessment where more than one works scenario operates at the same time and in the same location such that the same receiver is impacted by noise from more than one works scenario. Generally, the proposed works are scheduled in consecutive phases which are dependent on rail shutdowns, therefore cumulative noise impacts are not anticipated. The potential for cumulative impacts from other projects is discussed in Section 6.16.

Construction road traffic noise

The proposed construction activities would not generate a significant amount of construction traffic. The relatively small number of construction vehicles accessing the site is predicted to have a negligible effect on existing road traffic noise levels and further consideration of noise impacts due to construction traffic is not required.

Construction vibration

The use of vibration intensive equipment is proposed. The construction equipment that are potential sources of vibration include hand held compaction machines, hydraulic hammers, vibratory roller and handheld jackhammer.

A minimum distance between the piling rig and any neighbouring on-site buildings is recommended to be two metres for a bored piling rig. The hand held compaction machine is similar to a one tonne vibratory roller in nature. A minimum distance of five metres is therefore recommended between the compaction plate and any neighbouring buildings.

Given the equipment proposed and the distances to nearby receivers, human response to construction vibration is not predicted for this project.

b) Operation phase

Operational noise

The Proposal would not increase operations on the rail line, and not result in any increase in rail noise.

Any potential increase in road traffic and road traffic noise as a result of the Proposal is expected to be minimal and predicted to comply with the Road Noise Policy.

Operational equipment is expected to include lift motor and lift air conditioner. It is predicted that the sound power levels of such equipment would be low. Therefore, operational noise impacts at neighbouring receivers are predicted to readily comply with the operational noise criteria.

Operational vibration

The operational noise sources do not contain any significant sources of vibration. No further assessment or mitigation measures are necessary.

6.3.3. Mitigation measures

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

Specific mitigation measures outlined in the NVIA (Pulse Acoustics, 2020) include:

- a Construction Noise and Vibration Management Plan (CNVMP) would be prepared to determine specific mitigation measures for construction activities.
- to avoid structural impacts as a result of vibration or direct contact with structures, the proposed work would be undertaken in accordance with the safe work distances outlined in the NVIA (Pulse Acoustics, 2020).

The NVIA (Pulse Acoustics, 2020) provides details of additional mitigation measures, in accordance with the matrix contained in the CNVS (TfNSW, 2019a), which are recommended for OOHW works. Mitigation measures recommended include project notification, verification monitoring, specific notifications, respite periods, project specific respite offers, and duration reductions. These measures would be addressed in the CNVMP and, where relevant, incorporated into applications for OOHW.

Refer to Section 7.2 for a full list of proposed mitigation measures.

6.4. Aboriginal heritage

An assessment was undertaken for the Proposal in accordance with the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* guidelines recommended to be followed by the Department of Planning, Industry and Environment (DPIE). The assessment involved desktop review of information and observations from site inspection.

6.4.1. Existing environment

Narara Station is located on the traditional lands of the Darkinjung Aboriginal people. A search of the Aboriginal Heritage Information Management System (AHIMS) database was undertaken for the area covered by the Proposal (including a buffer area of about 200 metres) on 2 June 2020. No registered Aboriginal sites were located within the area and the

site inspection undertaken on 13 May 2020 did not identify any items of potential Aboriginal heritage value.

Certain landscape features, such as nearby waterways, sand dune systems, ridge tops, ridge lines, headlands, cliff faces and rock caves / shelters, can indicate the likely presence of Aboriginal objects. An unnamed tributary of Narara Creek is located approximately 145 metres west of the station however the extensive landscape modification and high level of disturbance that has occurred across the Proposal area suggests that the presence of culturally sensitive buried items is unlikely within the boundaries of the Proposal.

6.4.2. Potential impacts

a) Construction phase

Construction of the Proposal would involve some ground disturbance for the following activities:

- the foundation and pits for the new lift shafts would require piling and excavation
- excavation for the new accessible paths and regrading in the commuter car parks
- excavation and piling for the new accessible ramp and path from the northern commuter car park to Narara Valley Drive.

Ground disturbing activities have the potential to impact Aboriginal sites, if present. However, the ground disturbance is confined to existing modified and developed land.

As no Aboriginal sites, objects or places, or areas of potential Aboriginal archaeological sensitivity were identified within the Proposal area or immediate surrounds during the inspection or research of the area, these ground disturbing activities are unlikely to impact any Aboriginal heritage items. Therefore, the Proposal's impact on Aboriginal heritage during the construction phase is considered negligible.

b) Operation phase

There would be no risks to Aboriginal heritage from the operation of the Proposal.

6.4.3. Mitigation measures

The following mitigation measures are recommended to be implemented to minimise potential Aboriginal heritage impacts during the construction of the Proposal.

- All construction staff would undergo an induction in the recognition of Aboriginal cultural heritage material.
- If previously unidentified Aboriginal heritage objects are uncovered during construction, in accordance with TfNSW's *Unexpected Heritage Finds Guideline* (TfNSW, 2019c), work would cease in the vicinity of the find and the TfNSW Project Manager and TfNSW Environment and Planning Manager would be notified immediately to assist in co-ordinating next steps which are likely to involve consultation with an archaeologist, the relevant regulatory authority and the Local Aboriginal Land Council/s. If human remains are found, work would cease, the site would be secured and the NSW Police and DPIE would be notified.

Refer to Section 7.2 for a full list of proposed mitigation measures.

6.5. Non-Aboriginal heritage

A desktop search of the following historic heritage databases were undertaken on 17 June 2020 for the Proposal area:

- Heritage NSW State Heritage Inventory which lists heritage items on statutory lists in NSW. This includes but is not limited to items listed on Local Environmental Plans, Section170 Heritage and Conservation Registers, and the State Heritage Register
- Schedule 5 of the Gosford LEP 2014 and associated heritage maps. A search for items within 200 metres of the Proposal area was undertaken
- Commonwealth Department of Agriculture, Water and the Environment Protected Matters Search Tool (PMST) (DAWE, 2018). A search for items of national and world heritage within 200 metres of the Proposal was undertaken.

6.5.1. Existing environment

The search identified no items listed on the Commonwealth, National or State heritage registers within the Proposal area or immediate surrounds.

One locally heritage listed item was identified within 200 metres of the site. This item is a Church (item 189 under the Gosford LEP) and is located 190 metres south east of the Proposal.

6.5.2. Potential impacts

a) Construction phase

Narara Station has not been identified as having any heritage significance and as such the proposed works to the station would not have any heritage impact.

The closest non-Aboriginal heritage item is located 190 metres south east of the Proposal area. Due to the distance between the heritage item and the proposed works the risk of damage to this item during the construction phase is considered negligible.

b) Operation phase

The operation of the Proposal would not impact upon non-Aboriginal heritage.

6.5.3. Mitigation measures

The following mitigation measures are recommended to be implemented to minimise potential non-Aboriginal heritage impacts during the construction of the Proposal.

- All construction staff would undergo an induction in the recognition of non-Aboriginal cultural heritage material.
- If previously unidentified non-Aboriginal heritage objects are uncovered during construction, in accordance with TfNSW's *Unexpected Heritage Finds Guideline* (TfNSW, 2019c), work would cease in the vicinity of the find and the TfNSW Project Manager and TfNSW Environment and Planning Manager would be notified immediately to assist in co-ordinating next steps which are likely to involve consultation with an archaeologist, and Heritage NSW.

Refer to Section 7.2 for a full list of proposed mitigation measures.

6.6. Biodiversity

An Arboricultural Impact Assessment (All Arbor Solutions, 2020) and a desktop review of applicable biodiversity and ecological databases was undertaken for the Proposal. This included a site inspection by a qualified arborist on 13 May 2020, along with a review of information contained in the following resources:

- NSW Biodiversity Conservation Division Atlas of NSW Wildlife (EES, 2020)
- Commonwealth Department of Agriculture, Water and the Environment Protected Matters Search Tool (PMST) (DAWE, 2018)
- Biodiversity Conservation Division Threatened Species Profile Database
- NSW Department of Planning and Environment State Environmental Planning Policy (Coastal Management) 2018 (Coastal Management SEPP) Maps.

6.6.1. Existing environment

Flora

The Proposal area is a highly modified, urban environment which has been subject to disturbance and clearing with the introduction of the rail corridor and the development of the surrounding area. As such the majority of the Proposal area comprises sealed or paved surfaces with mown exotic grasses and does not provide any area of habitat connectivity.

A total of six trees were assessed within the Proposal area. These trees consisted of five native tree species and one exotic tree species, none of the trees identified are weeds of national significance. Four of the trees are located on the northern side of the station adjacent Narara Valley Drive and two trees are located on the southern side of the station adjacent Goonak Parade (refer to Figure 6-9).

None of the trees within the Proposal area are identified as threatened species nor form part of an endangered ecological community. No significant hollows or cavities were observed that may be utilised as wildlife habitat.

Figure 6-9 Tree location plan (Source: All Arbor Solutions, 2020)

Fauna

The results of the PMST search identified a total of 42 listed threatened species, 17 listed migratory species, two areas of Commonwealth Land, and 23 listed marine species that may potentially occur within one kilometre of the Proposal site.

The Proposal Area is considered to provide limited habitat for fauna species due to the disturbed and degraded nature of the vegetation on site. The Proposal Area may provide some foraging habitat for a range of highly mobile threatened fauna species that may utilise the area as part of a larger foraging range. The Proposal Area does not contain breeding habitat for any of the fauna groups considered likely to occur, as no breeding habitat features were present such as caves, tree hollows, nests or known breeding camps.

The NSW EES BioNet Atlas for threatened species did not identify any threatened species under the NSW *Biodiversity Conservation Act 2016* (BC Act) within 200 metres of the Proposal area.

Coastal Management Area

The Proposal boundary and the ancillary facility are located within an area mapped as a 'Coastal Environment Area' under Clause 13 of the Coastal Management SEPP (refer Figure 6-10). A Coastal Environment Area is defined as areas that are characterised by natural coastal features such as beaches, rock platforms, coastal lakes and lagoons and undeveloped headlands. Marine and estuarine waters are also included.

Figure 6-10 Extract from Coastal Management SEPP Map showing Coastal Environment Area (shaded in light blue) and the location of the Proposal area outlined in red (Source: Department of Planning and Environment)

6.6.2. Potential impacts

a) Construction phase

Flora

The Proposal would require the removal of two *Eucalyptus umbras* (Broad-leafed White Mahogany) (Tree 3 and Tree 4) and one *Callistemon viminalis* (Bottlebrush) (Tree 5). Tree 4 would be highly impacted by the construction of a retaining wall for the accessible ramp. Similarly, Tree 5 would be impacted by the construction of the lift on the southern side of the station, and cannot be retained. Tree 1, *Eucalyptus elata* (River Peppermint), Tree 2 *Eucalyptus umbra* (Broad-leafed White Mahogany), and Tree 6 *Cinnamomum camphora* (Camphor Laurel), are clear of the Proposed works and can be retained.

Figure 6-11 Tree 1, *Eucalyptus elata* (River Peppermint) located adjacent the commuter car park off Narara Valley Drive (Source: All Arbor Solutions, 2020)

Figure 6-12 Tree 2, *Eucalyptus umbra* (Broad-leafed White Mahogany) located adjacent Narara Valley Drive (Source: All Arbor Solutions, 2020)

Figure 6-13 Tree 3, *Eucalyptus umbra* (Broad-leafed White Mahogany) located adjacent the car park off Narara Valley Drive (Source: All Arbor Solutions, 2020)

Figure 6-14 Tree 4, *Eucalyptus umbra* (Broad-leafed White Mahogany) located adjacent Narara Valley Drive (Source: All Arbor Solutions, 2020)

Figure 6-15 Tree 5, *Callistemom viminalis* (Bottlebrush) located adjacent the pedestrian footbridge to Platform 1 (Source: All Arbor Solutions, 2020)

The impacts from the removal of the three trees would be offset in accordance with the TfNSW *Vegetation Offset Guide* (TfNSW, 2019b).

Tree 6, a *Cinnamomum camphora* (Camphor Laurel) would be retained as it is outside the footprint of the proposed works however would require some selective pruning to provide clearance for construction vehicle access (Refer to Figure 6-16. This would include one main branch approximately 100 millimetres in diameter located at 2.5 metres height within the tree canopy. The branch consists of less than five per cent of the total tree canopy volume and its removal is not expected to have a significant impact on the health and condition of the tree.

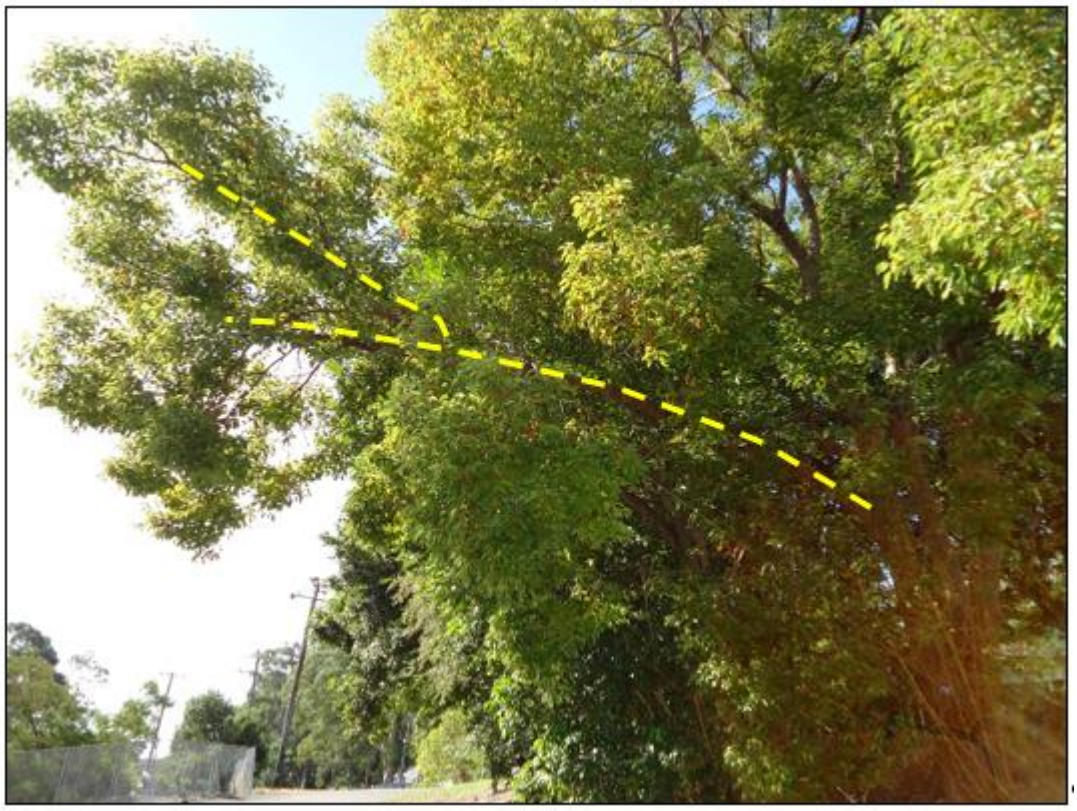

Figure 6-16 Tree 6 *Cinnamomum camphora* (Camphor Laurel), branch identified for removal (Source: All Arbor Solutions, 2020)

The most likely indirect impact arising from the Proposal is the introduction, establishment and spread of weeds within the Proposal area and to adjoining areas of vegetation. Weed establishment and spread generally results from soil disturbance and excavation as well as use of equipment that may carry weed propagules.

Fauna

The Proposal area has very limited habitat of value for native flora and fauna. No important habitat features such as hollow-bearing trees, fallen logs or termite mounds were identified in the Proposal area.

The vegetation within the Proposal area does not provide important resources for any threatened fauna species or migratory birds previously recorded or predicted to occur in the locality given the small isolated nature of the vegetation patches, the absence of important habitat features and the lack of connectivity with areas of known habitat. Whilst the loss of three native trees may result in a small decrease in foraging habitat any local populations of threatened species would not be reliant on the vegetation within the Proposal area for their persistence in the locality.

Vehicle, plant, and construction equipment would temporarily increase noise pollution within the Proposal area. This can cause disruption to normal fauna activity and lead to the temporary departure of species from an area during construction.

The Proposal is unlikely to have any significant impact on the habitat of protected fauna and would not impact habitat connectivity.

Coastal Management Area

The boundary of the Proposal area and the ancillary facility are mapped as being in a Coastal Management Area (as defined by the Coastal Management SEPP). No important coastal features such as beaches, surf zones, rock platforms, coastal lakes and lagoons and undeveloped headlands have been identified on site during inspections. The Proposal is unlikely to have any significant impact on any coastal features and natural coastal processes.

Key Threatening Processes

Key Threatening Processes are identified and listed under the EPBC Act. There are no relevant Key Threatening Processes that have the potential to affect biodiversity values within the Proposal area. The proposed vegetation removal is not of a scale to cause significant impacts.

b) Operation phase

The Proposal area does not contain any significant vegetation or habitat and is highly modified. The Proposal would have negligible impact on the habitat of protected fauna.

TfNSW has prepared a *Vegetation Offset Guide* (TfNSW, 2019b) to assist in meeting biodiversity sustainability targets and providing a framework for a consistent approach for offsetting impacts to vegetation on TfNSW projects. As the Proposal would include the removal of five mature trees, this would be offset by a minimum of 20 locally endemic native trees. Tree planting would be provided within or surrounding the Proposal Area following provision of detailed design and consultation with Sydney Trains and CCC in accordance with the TfNSW *Vegetation Offset Guide* (TfNSW, 2019b).

6.6.3. Mitigation measures

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

- a project arborist would be appointed to supervise works within tree protection zones, and tree sensitive excavation and construction methods are to be employed
- protection of the trees nominated for retention would be undertaken prior to site establishment and/or demolition works in line with *AS 4970-2009 Protection of Trees on Development Sites*, and the Arboricultural Impact Assessment (All Arbor Solutions, 2020)
- offsets and/or landscaping would be undertaken in accordance with the TfNSW *Vegetation Offset Guide, SD-087* (TfNSW, 2019b) for all trees removed
- weed removal, management and disposal must be undertaken in accordance with the TfNSW *Weed Management and Disposal Guideline* (TfNSW, 2019d). This would include the management and disposal of weeds in accordance with the Biosecurity Act 2015
- all pruning works are to be undertaken by suitably qualified tree workers (minimum AQF level 3 or equivalent) in accordance with *AS4373-2007 Pruning of Amenity Trees and Safe Work Australia's Guide to Managing Risks of Tree Trimming and Removal Works*.

Refer to Section 7.2 for a full list of proposed mitigation measures.

6.7. Socio-economic impacts

6.7.1. Existing environment

Narara Station is located in a low-density residential area with numerous public reserves in the vicinity with dense stands of tall, native trees. Local streets have wide, grassed verges and tall street trees. The Narara Village Store is approximately 200 metres west of the station and there are two churches 250 metres south-east of the station. A commercial/industrial park is located around 500 metres south of the station and the Narara Valley High School is almost one kilometre to the south-west.

Existing facilities for rail customers at the station include two open waiting areas, seating, help points, rubbish disposal bins and bicycle parking. There is commuter car parking on both the northern and southern side of the station. While each commuter parking area has lighting, no formal pathways are provided and pedestrian access requires circulation across each parking area, especially to the bus stops off Narara Valley Drive. There are no existing accessible car parking spaces nor any formal kiss –and ride spaces in the existing commuter car parks.

A review of the Australian Bureau of Statistics Census 2016 data (ABS, 2016) was undertaken for the suburb of Narara. The area of Narara had a population of 6642 people, with about 66 per cent of working age. People aged 65 years and over made up about 14 per cent of the population.

Of the 3492 people over the age of 15 in the workforce, on the day of the 2016 Census, 13 per cent of employed people used public transport (train, bus, ferry, tram/light rail) as at least one of their methods of travel to work, and about 75 per cent used car (either as the driver or as the passenger).

According to the TfNSW Transport Performance and Analytics data, the average daily patronage at Narara Station in 2017 was 765 passengers.

The *One - Central Coast, Community Strategic Plan 2018-2028* is a 10-year plan developed by Council through engagement with the community to help set the priorities and confirm strategies and activities that best achieve the community's desired outcomes for the future. The plan identifies investment in infrastructure as a key opportunity for the growing region along with the construction of new homes to accommodate the projected population growth. The plan outlines that during these periods of growth and urban development it is particularly important to conserve the environment, keeping it free from pollution and addressing climate change and the associated risks.

6.7.2. Potential impacts

a) Construction phase

The construction phase of the Proposal has the potential to impact station customers, pedestrians, adjacent residents, and motorists due to:

- temporary changes to access to, through and around the station
- temporary disruptions to local traffic movements near the station
- temporary loss of some parking in the car park during construction
- temporary loss of bicycle parking facilities during relocation of the bicycle parks

- increased traffic including truck movements delivering site materials, plant and equipment and removing waste
- minor increase in economic activity in the area due to patronage from construction staff
- construction noise, vibration, dust and visual impacts (refer to sections 6.2, 6.3 and 6.12).

With the exception of scheduled rail shutdowns, access to the station would be maintained at all times during construction, including pedestrian access to both sides of the station. Temporary pedestrian diversions would be placed around the construction areas.

Vehicle access to the commuter car park would be retained during construction, however there would be temporary disruptions and unavailability of some parking spaces.

The Proposed activity would largely be contained within the rail corridor, however the Proposal includes some work within the road reserve of Narara Valley Drive, which is on CCC land. Consultation will be undertaken with CCC to determine ongoing ownership and maintenance responsibilities. If TfNSW is required to acquire this section of the road reserve then acquisition of land would be undertaken in accordance with the Requirements of the *Land Acquisition (Just Terms Compensation) Act 1991*.

The TfNSW Social Procurement and Workforce Strategy outlines specific targets for a socially sustainable inclusive workforce. These requirements would be incorporated into contracts for the construction phase and would have positive impacts on the economic, social, and environmental well-being of the LGA. Opportunities for local businesses, local employment opportunities, community welfare programs and community cultural activities would be investigated.

b) Operation phase

The Proposal would provide positive socio-economic benefits to Narara and the wider area including:

- improved accessibility for Narara Station customers due to the provision of new lifts, provision of accessible parking, kiss and ride facilities, and accessible paths to and around the station
- improved customer amenity and facilities at the station including improved wayfinding, CCTV and lighting
- potential increased use of public transport to and from Narara
- supporting and promoting the *CCC Disability Inclusion Plan* (CCC 2019), positively impacting its key objective of enabling people with disabilities to better access mainstream services, facilities and open spaces in the LGA.

The Proposal may promote a modal shift in transport and would enable increased use of the station by members of the community with a disability, limited mobility, parents/carers with prams, and customers with luggage. However, the Proposal would result in a reduction in commuter parking (refer section 6.1).

6.7.3. Mitigation measures

The following mitigation measures are recommended to be implemented to minimise potential impacts on the community with a particular focus on keeping the community informed during the construction of the Proposal.

- mitigation measures in respect to potential impacts to amenity (e.g. noise, dust and visual) as assessed in the relevant sections of this report and listed in Section 7.2 of this report
- development of a Community Liaison Management Plan (by the Construction Contractor prior to construction) which would outline methods for consultation with stakeholders during construction. The plan would identify local community groups, encourage feedback, and facilitate opportunities for the community and stakeholders to have input where possible.
- informing the community of construction progress, activities and impacts in accordance with the Community Liaison Management Plan
- any land acquisition is to be undertaken in accordance with the Requirements of the *Land Acquisition (Just Terms Compensation) Act 1991*, where required
- providing contact details for a Project Infoline, a Construction Hotline (24-hour construction response line) and email address to enable ongoing stakeholder contact throughout the construction phase.

Refer to Section 7.2 for a full list of proposed mitigation measures.

6.8. Contamination, geology and soils

Information to describe the existing landform, geology and soils of the Proposal area was obtained from the NSW Government's Spatial Information Exchange (Department of Finance, Services and Innovations 2019) and eSPADE (DPIE 2019) and CCC (2018) online mapping services.

6.8.1. Existing environment

Landform, geology and soils

Narara Station is located at an elevation of about 12-13 meters Australian Height Datum (AHD) to the north and 14-16 metres (AHD) to the south. The Proposal area has a gradual slope to the north-west. There is an embankment either side of both platforms, both sloping to the north-west. The north-western embankment is about 2.5 metres high and separates the northern commuter car park and Narara Valley Drive. The southern embankment is about one metre high and separates the southern commuter carpark and the residential properties.

The underlying geology of the area is the Narrabeen Group Terrigal Formation. The Terrigal Formation is characterised by interbedded laminate, shale and fine to coarse-grained quartz to quartz-lithic sandstone with minor red claystone and is more prone to erosion.

The soil landscapes at the Proposal area is on the boundary of Erina and Yarramalong landscapes. Erina is comprised of fine-grained sandstones and claystones, whereas Yarramalong is comprised of deep alluvium on Quaternary sediments.

The Proposal area is mapped as containing either Class 4 or Class 5 Acid Sulfate Soils (ASS) in the Gosford LEP 2014 ASS Map. ASS in a Class 4 area are likely to be found beyond 2 metres below the natural ground surface. ASS are not typically found in Class 5 areas but are located within 500 metres on adjacent class 1, 2, 3 or 4 land.

Samples taken as part of a preliminary contamination assessment (Cardno, 2020) were screened for pH which showed pH levels between 5.3 and 5.8 (moderately acidic) in Borehole 1 and 5.2 (moderately acidic) in Borehole 2. Oxidised pH values were reported

between 4.2 and 4.3 (strongly acidic) in Borehole 1 and between 3.9 and 4.0 (very strongly acidic) in Borehole 2 indicating the potential for oxidisable material within the soils. Detailed analysis via Chromium Reducible Sulfur (SCR) indicated that the material was not considered potential ASS, and the pH of the material is below 4 indicating the material is not actual ASS.

Contaminated land and hazardous materials

A search of the NSW Environment Protection Authority (EPA) Contaminated Land Database as of 17 June 2020 did not identify any records relating to, or close to, the Proposal area.

A preliminary contamination assessment of the Proposal area has been conducted (Cardno, 2020). The assessment found that within a one kilometre radius of the Proposal area there have been no notices issued by the EPA in relation to contaminated sites under the *Contaminated Land Management Act 1997.* Similarly, there were no contaminated sites notified to the EPA, within a one kilometre radius. There was one site within a one kilometre radius with a formerly active licence under the *Protection of the Environmental Operations Act 1997* (PoEO Act) (refer to Table 6-8), but there were no sites within a one kilometre radius with an active licence.

Table 6-8 Delicenced Premises still Regulated by the EPA, Licenses Surrendered, Clean Up and Penalty Notices

Licence Holder	Name	Premise Address	Fee Based Activity	Status	Distance / Direction
Downer EDI Works PTY LTD	Gosford Passing Loops Project	Main North Line Corridor – 2 km between Gosford and Narara Stations	Regulation under CLM Act not required	Surrendered	943 metres south--west

As part of the preliminary contamination assessment two 250 millimetre boreholes were advanced to a depth of 6.27 metres below ground level and a total of 19 soil samples were collected for analysis. The soil sampling analysis returned no Contaminants of Potential Concern (CoPC) above the Human Health and Ecological screening criteria for Commercial/Industrial land uses.

The preliminary contamination assessments review of historical data and intrusive investigation identified no CoPC within the Proposal area. However, the assessment highlighted the limited nature of the intrusive investigations and the risk of encountering contaminants due to the use of the land for railway activities.

6.8.2. Potential impacts

a) Construction phase

Soil erosion and sedimentation

Excavation and earthworks needed to construct the Proposal are described in Section 3.3.4. The Proposal involves minimal excavation, but if unmanaged the Proposal could result in the following nuisance and impacts:

- dust generation from excavation and vehicle movements over exposed soil
- an increase in sediment loads entering the stormwater system and/or local runoff

- erosion of exposed soil and any stockpiled materials.

The Proposal area is generally gently sloping, however there is a steep slope on the northern side of the station (near Narara Valley Drive). Excavation for the accessible path on this steep slope has the potential to cause erosion and sediment runoff issues. It is expected that these risks would be adequately managed through the implementation of standard measures as outlined in the 'Blue Book' - *Managing Urban Stormwater: Soils and Construction* (Landcom, 2004).

Contaminated land and hazardous materials

Excavation has the potential to expose contaminants, which if not appropriately managed, can present a health risk to construction workers and the community. The exposure of contaminants could also pose an environmental risk if they were to enter nearby waterways through the stormwater infrastructure.

There is potential for construction activities to result in the contamination of soil through accidental fuel or chemical spills from construction plant and equipment.

b) Operation phase

There would be no operational risk to geology and soil, or operational risk of contamination as a result of the Proposal.

6.8.3. Mitigation measures

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

- as part of the CEMP (to be prepared by the Construction Contractor prior to the commencement of construction), a site-specific Erosion and Sediment Control Plan would be prepared and implemented in accordance with the 'Blue Book' - *Managing Urban Stormwater: Soils and Construction* (Landcom, 2004).
- further screening for ASS should be undertaken during construction due to testing indicating slightly elevated acidity within natural clays.

Refer to Section 7.2 for a full list of proposed mitigation measures.

6.9. Hydrology and water quality

6.9.1. Existing environment

The nearest natural watercourse to the Proposal is a tributary of Narara Creek which is located 140 metres west of the Proposal area. Water runoff in the Proposal area is generally towards the north--west to Narara Creek

The CCC online mapping (Figure 6-17 does not identify the platforms or car parks as being within a flood planning area, however the very northern edge of the road reserve is mapped as a flood planning area.

Figure 6-17 Extract from the CCC online maps (CCC, 2020) depicting modelled 1 per cent AEP flood event (shaded grey) with respect to the Proposal area (indicated by the red polygon)

A preliminary contamination assessment of the Proposal area has been conducted (Cardno, 2020). As part of the preliminary contamination assessment two boreholes were advanced to a maximum depth of 6.27 metres below ground level. Groundwater was not encountered at any borehole.

6.9.2. Potential impacts

a) Construction phase

Potential for soil erosion and sedimentation is discussed in Section 6.8. Uncontrolled runoff through disturbed areas during construction may contribute to reduced water quality downslope of the station. There is a steep slope on the northern side of the station (near Narara Valley Drive). Proposed excavated areas are confined and risks would be adequately managed through the implementation of standard measures as outlined in the 'Blue Book' - *Managing Urban Stormwater: Soils and Construction* (Landcom, 2004).

The maximum depth of excavation needed to install the lift pits would be approximately two and a half metres. Given the depth of the nearby bores with no encounter of groundwater, the likelihood of intercepting groundwater is considered low. However, should groundwater be encountered during excavation works, groundwater would be managed in accordance with the requirements of the *Waste Classification Guidelines* (EPA, 2014) and Transport for NSW's *Water Discharge and Reuse Guideline* (TfNSW, 2019i).

Pollutants such as fuel, chemicals or wastewater from accidental spills could potentially reach nearby stormwater drains and flow into downstream waterways, impacting on water quality and ecological values. Soil disturbance during construction also has the potential to impact on local water quality and downstream ecological values as a result of erosion and run off sedimentation.

Based on the information available, the station and proposed work areas are unlikely to be at risk of inundation during a flooding event. Nonetheless, flooding affecting areas adjacent the northern commuter car park should be duly considered in the preparation of any CEMP and consultation carried out with CCC in accordance with ISEPP requirements.

b) Operation phase

The Proposal would not affect hydrology or water quality during operation. Most of the work would be located in existing paved areas. Alterations to the surface water flows would likely be within the capacity of the stormwater network and as such, impacts would be minor.

A 1% AEP flood event is not likely to result in flood waters significantly affecting the Proposal area or affecting the access and operation of the station.

The two proposed lift shafts would require drainage connections for the Lift Shaft rainwater to the nearest existing stormwater drainage line.

The detailed design would take stormwater management around new and existing structures into consideration and the stormwater system for the Proposal would be designed to meet the requirements of AR & R, AS3500 National Plumbing and Drainage Code & AS 2150 metal rainwater goods selection and installation

6.9.3. Mitigation measures

The following mitigation measures are recommended to be implemented to minimise potential water quality impacts during the construction of the Proposal.

- Site-specific erosion and sediment control plans would be prepared, implemented and maintained as outlined in Section 6.8. Construction activities would be undertaken in compliance with the TfNSW *Water Discharge and Reuse Guideline* (TfNSW, 2019i).
- Other mitigation measures that would be required for construction and detailed in a CEMP include regular vehicle and equipment maintenance, sediment fencing, along with spill kits and spill response procedures.
- Surface water runoff from paved areas would be directed to existing the stormwater management system around the station.
- If groundwater is encountered during excavations, groundwater would be managed in accordance with the requirements of the *Waste Classification Guidelines* (EPA, 2014) and TfNSW *Water Discharge and Reuse Guideline* (TfNSW, 2019i).

Refer to Section 7.2 for a full list of proposed mitigation measures.

6.10. Bushfire

An assessment of the sites hazard potential was carried out through review of the CCC online mapping tools and fact sheets and the NSW Rural Fire Service (RFS) online bushfire prone land tool.

6.10.1. Existing environment

Parts of the Proposal area are identified as being within a Bushfire Prone Land Vegetation Buffer area and adjacent to Bushfire Prone Land (RFS Category 1 and 2) in the mapping layers for bushfire prone land available on the CCC Online Mapping tool (Figure 6-18). Similarly, the NSW RFS online bushfire prone land tool identifies the Proposal area as being Bushfire Prone Land. The orange RFS Bushfire Category 1 area in Figure 6-18 is considered to be high fire risk vegetation and refers to forest, woodlands, heath and wetlands greater than one hectare in size. The yellow RFS Bushfire Category 2 area is considered to be low fire risk vegetation and refers to moist forests, scrublands, open woodlands, mallee,

grasslands and pockets of Category 1 vegetation of less than one hectare. Land that directly adjoins bushland is classified as a “buffer”, these are areas in which developments and people are most likely to be affected by bushfire in the adjacent area.

Legend:

- RFS Bushfire Category 1
- RFS Bushfire Category 2
- Buffer

Figure 6-18 Extract from CCC online maps (CCC, 2020) depicting bushfire prone land with respect to the Proposal area (indicated by the blue polygon).

6.10.2. Potential impacts

a) Construction phase

Bushfire has the potential to impact the construction phase of the Proposal as a fire may occur at the station or within the construction compound. This may lead to damage and/or destruction of key equipment and resources to be used for the Proposal. Construction activities may also pose a risk to the surrounding vegetation should a fire start and become uncontrolled, spreading to the surrounding area. Smoke generated by fires may also impact worker health and safety and other sensitive receivers such as residences near the Proposal area.

b) Operation phase

During operation, the Proposal would not increase the potential bushfire hazard. As is the accepted practice, in the event of a fire the lifts should not be used. The remaining accessibility upgrades would improve movement and safety for commuters at the station.

6.10.3. Mitigation measures

The following mitigation measures are recommended to be implemented to minimise potential bush fire impacts during the construction of the Proposal.

- incorporation of site-specific procedures to prevent and respond to bush fire incidents are to be included in the CEMP.

Refer to Section 7.2 for a full list of proposed mitigation measures.

6.11. Air quality

6.11.1. Existing environment

The main influences on air quality in Narara are from vehicle emissions from the Pacific Highway and Narara Valley Drive, domestic wood heating, local industries and bushfire. Sensitive receivers in the vicinity of the Proposal include residential properties, workers and educational establishments in Narara and customers at Narara Station.

6.11.2. Potential impacts

a) Construction phase

Impacts to air quality during construction are expected from:

- increased vehicle activity around the station
- operation of construction plant and equipment
- stockpiling activities
- dust from demolition and excavation for the works.

Impacts would be localised and temporary and are not expected to affect sensitive receivers provided that measures to protect local air quality and minimise generation of dust are implemented.

b) Operation phase

The Proposal would not result in any change to air quality during operation as the land use remains the same. There may be an increase in patronage at the station, and thus an increase in traffic related emissions, however it is not anticipated to significantly impact air quality in the station area.

The Transport Access Program aims to improve accessibility to public transport and transfer between modes of transport. The Proposal would contribute to the long-term positive impacts on air quality associated with increased use of public transport and a net reduction in private vehicle reliance.

6.11.3. Mitigation measures

Refer to Section 7.2 for a full list of proposed mitigation measures.

6.12. Waste and resources

6.12.1. Existing environment

During construction of the Proposal, the following waste materials would be generated:

- vegetation
- asphalt and concrete
- surplus building materials
- excavated spoil
- building material wastes (including metals, timbers, plastics, packaging)
- electrical wiring and conduit waste (from electrical connections and utility relocation)
- hazardous wastes (chemicals)
- demolition waste from the existing ramps, stairs, and concrete slabs and relocated services
- general waste, including food scraps generated by construction workers.

6.12.2. Potential impacts

a) Construction phase

Efforts to minimise the volume of surplus materials would been undertaken during planning and design of construction activities. Waste management would be undertaken in accordance with the *Waste Avoidance and Resource Recovery Act 2001* (WARR Act) and a Waste Management Plan would be prepared as part of the CEMP which would include measures to minimise waste, outline methods of disposal, reuse and recycling and monitoring, as appropriate.

Waste management targets in accordance with the ISCA IS Rating Tool v1.2 (2017) would be developed for the Proposal and would include reuse and recycling.

A hazardous materials survey in accordance with AS2601:2001 Demolition of Structures would be undertaken by an appropriately qualified scientist prior to the demolition of any structures. Any removal of any hazardous material is to be undertaken in accordance with applicable EPA and SafeWork NSW guidelines.

b) Operation phase

The Proposal would not result in major changes to operational waste management arrangements.

6.12.3. Mitigation measures

Refer to Section 7.2 for a full list of proposed mitigation measures.

6.13. Sustainability

The design of the Proposal would be based on the principles of sustainability, including targeting an ‘Excellent’ rating under the ISCA Infrastructure Sustainability Rating Tool v1.2

Refer to Section 3.2.3 for more information regarding the application of the ISCA IS Rating Scheme.

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

6.14. Climate change

The dynamic nature of our climate system indicates a need to focus attention on how to adapt to the changes in climate and understand the limitation of adaptation.

The assessment included analysis of the Australian Bureau of Meteorology Climate Change Projections. The projections relevant to the Proposal area are made for the East Coast South Cluster. The key messages for the East Coast South Cluster are expected increases in average temperatures, more hot days and warm spells, decreases in winter rainfall, increased intensity of rainfall events, mean seal level would continue to rise, and harsher fire weather conditions (BOM, 2019).

To address the impacts of increasing temperatures and more hot days, the following measures should be reviewed for feasibility during detailed design:

- lift design to consider roofing, cladding materials, glazing, insulation and ventilation to reduce heat loads, potential cooling systems, and protections for electrical equipment
- introduction of replacement landscaping to reduce thermal mass and increase shading
- avoid use of metal outdoor furniture
- provide sufficient protections for electrical systems (such as for proposed lifts) to meet expectations of future temperature increases
- designed with appropriate fire protection measures.

6.15. Greenhouse gas emissions

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

The detailed design process would undertake a compliant carbon foot printing exercise in accordance with TfNSW's *Carbon Estimate and Reporting Tool Manual* (TfNSW, 2019) or equivalent. The carbon footprint would to be used to inform decision making in design and construction.

Due to the small scale of the Proposal and the short-term temporary nature of the individual construction work, it is considered that greenhouse gas emissions resulting from the construction of the Proposal would be minimal. Furthermore, greenhouse gas emissions generated during construction would be kept to a minimum through the implementation of the standard mitigation measures detailed in Section 7.2.

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

6.16. Cumulative impacts

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

A search of the Department of Planning and Environment's Major Projects Register, and Central Coast Council Development Application Register on 22 June 2020 identified that no major development applications or development applications are listed for the Proposal area, or in proximity, at this time.

TfNSW currently has other projects in planning and construction within the Central Coast area including Niagara Park, Lisarow, Ourimbah and Point Clare Stations.

Other TfNSW projects in and around the Central Coast area which may create cumulative impacts include signalling modifications associated with the New Intercity Fleet projects, and road upgrade works to the Pacific Highway between Narara and Lisarow. The construction of these projects would be managed by TfNSW to ensure the community is informed of all work, and to coordinate work. Required rail shutdown work would where possible occur simultaneously and be coordinated with any other construction activities in the area, to minimise cumulative construction impacts such as traffic and noise.

Traffic associated with other project construction work is not anticipated to have a significant impact on the surrounding road network. Operational traffic and transport impacts would have a negligible impact on the performance of the surrounding road network.

Based on this assessment, and subject to further consultation with relevant stakeholders and the implementation of associated mitigation measures in Chapter 7.2, it is anticipated that the cumulative impacts would be negligible.7

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

7. Environmental management

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

7.1. Environmental management plans

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

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

- Construction Traffic Management Plan (CTMP)
- Construction Noise and Vibration Management Plan (CNVMP)
- Erosion and Sediment Control Plan (ESCP)
- Sustainability Management Plan (SMP).

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

7.2. Mitigation measures

Mitigation measures for the Proposal are listed in Table 7-1. These proposed measures would minimise the potential adverse impacts of the Proposal identified in Chapter 6, should the Proposal proceed.

Table 7-1 Proposed mitigation measures

No.	Mitigation measure
	General
1.	A Construction Environmental Management Plan (CEMP) would be prepared by the Construction Contractor in accordance with the relevant requirements of *Guideline for Preparation of Environmental Management Plans,* Department of Infrastructure, Planning and Natural Resources, 2004) for approval by TfNSW, prior to the commencement of construction and following any revisions made throughout construction.
2.	A project risk assessment including environmental aspects and impacts would be undertaken by the Construction Contractor prior to the commencement of construction and documented as part of the CEMP.
3.	An Environmental Controls Map (ECM) would be developed by the Construction Contractor in accordance with TfNSW's *Guide to Environmental Controls Map* (TfNSW, 2019e) for approval by TfNSW, prior to the commencement of construction and following any revisions made throughout construction.
4.	Prior to the commencement of construction, all contractors would be inducted on the key project environmental risks, procedures, mitigation measures and conditions of approval.
5.	Site inspections to monitor environmental compliance and performance would be undertaken during construction at appropriate intervals.

No.	Mitigation measure
6.	Service relocation would be undertaken in consultation with the relevant authority. Contractors would mark existing services on the ECM to avoid direct impacts during construction.
7.	Any modifications to the Proposal, if approved, would be subject to further assessment and approval by TfNSW. This assessment would need to demonstrate the Proposal, as modified, is not likely to significantly affect the environment.
	Traffic and transport
8.	Prior to the commencement of construction, a Construction Traffic Management Plan (CTMP) would be prepared as part of the CEMP and would include at a minimum: • ensuring adequate road signage at construction work sites to inform motorists and pedestrians of the work site ahead to ensure that the risk of road accidents and disruption to surrounding land uses is minimised • maximising safety and accessibility for pedestrians and cyclists • ensuring adequate sight lines to allow for safe entry and exit from the site • ensuring access to railway stations, businesses, entertainment premises and residential properties (unless affected property owners have been consulted and appropriate alternative arrangements made) • managing impacts and changes to on and off-street parking and requirements for any temporary replacement provision • parking locations for construction workers away from stations and busy residential areas and details of how this would be monitored for compliance • routes to be used by heavy construction-related vehicles to minimise impacts on sensitive land uses and businesses • details for rail replacement bus stops if required, including appropriate signage to direct patrons, in consultation with the relevant bus operators. Particular provisions would also be considered for the accessibility impaired • measures to manage traffic flows around the area affected by the Proposal, including as required regulatory and direction signposting, line marking and variable message signs and all other traffic control devices necessary for the implementation of the CTMP. Consultation with the relevant road authorities would be undertaken during preparation of the CTMP. The performance of all project traffic arrangements must be monitored during construction.
9.	Communication would be provided to the community and local residents to inform them of changes to parking, pedestrian access and/or traffic conditions including vehicle movements and anticipated effects on the local road network relating to site works.
10.	Road Occupancy Licences for temporary road closures would be obtained, where required.
11.	Pedestrian access would be maintained throughout construction to ensure that pedestrian connectivity is not impacted as a part of the work and that suitable and safe paths are provided.
12.	Qualified traffic controllers would be used during construction work to ensure safe and efficient movement of vehicle and pedestrian traffic on the external road as well as in and out of the construction site
13.	Fencing and barriers would be installed between the construction site and outside the construction zone to ensure safe and easy navigation of pedestrians and cyclists
14.	Opportunities to minimise impacts to parking and pedestrian movements through scheduling of construction activities would be investigated
	Landscape and visual amenity

No.	Mitigation measure

15.	An Urban Design Plan (UDP) would be prepared by the Construction Contractor, in consultation with the relevant council, and submitted to TfNSW for endorsement by the Precincts and Urban Design team, prior to finalisation of the detailed design. The UDP, at a minimum, would address the following:
	• the appropriateness of the proposed design with respect to the existing surrounding landscape, built form, behaviours and use-patterns (including consideration of Crime Prevention Through Environmental Design principles). This is to include but not be limited to:
	  ○ connectivity with surrounding local and regional movement networks including street networks, other transport modes and active transport networks. Existing and proposed paths of travel for pedestrians should be shown
	  ○ integration with surrounding local and regional open space and or landscape networks. Existing and proposed open space infrastructure/landscape elements should be shown
	  ○ integration with surrounding streetscape including street wall height, active frontages, awnings, street trees, entries, and vehicle cross overs etc.
	  ○ integration with surrounding built form (existing or desired future) including building height, scale, bulk, massing and land-use
	• design detail that is sensitive to the amenity and character of heritage items located within or adjacent to the Proposal area.

16.	A Public Domain Plan (PDP) would be prepared by the Construction Contractor, in consultation with the relevant council, and submitted to TfNSW for endorsement by the Precincts and Urban Design team, prior to finalisation of the detailed design. The PDP, at a minimum, would address the following: • materials, finishes, colour schemes and maintenance procedures including graffiti control for new walls, barriers and fences • landscape treatments and street tree planting to integrate with surrounding streetscape • opportunities for public art created by local artists to be incorporated, where considered appropriate, into the Proposal • total water management principles to be integrated into the design where considered appropriate • design measures included to meet the IS Rating Tool v1.2 • identification of design and landscaping aspects that would be open for stakeholder input, as required • opportunities to complete landscaping on the embankment of Narara Valley Drive.
17.	All permanent lighting would be designed and installed in accordance with the requirements of standards relevant to *AS 1158 Road Lighting* and *AS 4282 Controlling the Obtrusive Effects of Outdoor Lighting.*
18.	Worksite compounds would be screened with shade cloth (or similar material, where necessary) to minimise visual impacts from key viewing locations.
19.	Temporary hoardings, barriers, traffic management and signage would be removed when no longer required.
20.	During construction, graffiti would be removed in accordance with TfNSW's Standard Requirements.
21.	During detailed design investigate opportunities to minimise permanent fencing and adopt a recessive dark colour for new fencing (e.g. dark grey, charcoal).
22.	Trees to be removed would be offset in accordance with Transport for NSW *Vegetation Offset Guide* (2019b). Offset planting would be prioritised in areas to manage visual impacts. Areas

No.	Mitigation measure
	to be prioritised are Goonak Parade station entrance, along the northern embankment and within the southern car park along the boundary with the residents
	Noise and vibration
23.	Prior to commencement of works, a Construction Noise and Vibration Management Plan (CNVMP) would be prepared and implemented in accordance with the requirements of the *Interim Construction Noise Guideline* (Department of Environment and Climate Change, 2009), *Construction Noise and Vibration Strategy* (TfNSW, 2018a) and the Noise and Vibration Impact Assessment for the Proposal (Pulse Acoustics, 2020). The CNVMP would take into consideration measures for reducing the source noise levels of construction equipment by construction planning and equipment selection where practicable.
24.	The CNVMP would outline measures to reduce the noise impact from construction activities. Reasonable and feasible noise mitigation measures which would be considered, include: • regularly training workers and contractors (such as at the site induction and toolbox talks) on the importance of minimising noise emissions and how to use equipment in ways to minimise noise • avoiding any unnecessary noise when carrying out manual operations and when operating plant • ensuring spoil is placed and not dropped into awaiting trucks • avoiding/limiting simultaneous operation of noisy plant and equipment within discernible range of a sensitive receiver where practicable • switching off any equipment not in use for extended periods e.g. heavy vehicles engines would be switched off whilst being unloaded • avoiding deliveries at night/evenings wherever practicable • no idling of delivery trucks • keeping truck drivers informed of designated vehicle routes, parking locations and acceptable delivery hours for the site • minimising talking loudly; no swearing or unnecessary shouting, or loud stereos/radios onsite; no dropping of materials from height where practicable, no throwing of metal items and slamming of doors.
25.	The CNVMP would include measures to reduce the construction noise and vibration impacts from mechanical activities. Reasonable and feasible noise mitigation options which would be considered, include: • maximising the offset distance between noisy plant and adjacent sensitive receivers and determining safe working distances • using the most suitable equipment necessary for the construction works at any one time • directing noise-emitting plant away from sensitive receivers • regularly inspecting and maintaining plant to avoid increased noise levels from rattling hatches, loose fittings etc. • using non-tonal reversing/movement alarms such as broadband (non-tonal) alarms or ambient noise-sensing alarms for all plant used regularly onsite (greater than one day), and for any out of hours works • use of quieter and less vibration emitting construction methods where feasible and reasonable.
26.	Works would generally be carried out during standard construction hours (i.e. 7.00 am to 6.00 pm Monday to Friday; 8.00 am to 1.00 pm Saturdays). Any works outside these hours may be undertaken if approved by TfNSW and the community is notified prior to these works commencing. An Out of Hours Work application form would need to be prepared by the

No.	Mitigation measure
	Construction Contractor and submitted to the TfNSW Environment and Planning Manager for any works outside standard hours.
27.	As per the *Construction Noise and Vibration Strategy* (TfNSW, 2018a), construction activities with special audible characteristics (high noise impact, intensive vibration, impulsive or tonal noise emissions) would be limited to standard hours, starting no earlier than 8am; and to continuous blocks not exceeding three hours each with a minimum respite from those activities and works of not less than one hour between each block, unless otherwise approved by TfNSW.
28.	Work would be conducted behind temporary hoardings/screens wherever practicable. The installation of construction hoarding would take into consideration the location of residential receivers to ensure that 'line of sight' is broken, where feasible.
29.	Vibration resulting from construction and received at any structure outside of the Proposal area would be managed in accordance with: • for structural damage vibration - British Standard *BS 7385-2:1993 Evaluation and measurement for vibration in buildings Part 2* • for human exposure to vibration the acceptable vibration - values set out in the *Environmental Noise Management Assessing Vibration: A Technical Guideline* (Department of Environment and Conservation, 2006) which includes British Standard BS 6472-1:2008 *Guide to Evaluation of Human Exposure to Vibration in Buildings Vibration* sources other than blasting .
30.	Property conditions surveys would be completed prior to any vibration intensive work (such as piling or jack hammering) being carried out at or within the minimum distances set out in the TfNSW *Construction Noise and Vibration Strategy* (TfNSW, 2019a) and the *Noise and Vibration Impact Assessment* (Pulse Acoustics, 2020).
31.	Affected pre-schools, schools, and other identified sensitive receivers are to be consulted in relation to noise mitigation measures to identify any noise sensitive periods, e.g. exam periods. As much as reasonably possible noise intensive construction works in the vicinity of affected educational buildings are to be minimised.
	Aboriginal heritage
32.	All construction staff would undergo an induction in the recognition of Aboriginal cultural heritage material. This training would include information such as the importance of Aboriginal cultural heritage material and places to the Aboriginal community, as well as the legal implications of removal, disturbance and damage to any Indigenous cultural heritage material and sites.
33.	If unforeseen indigenous objects are uncovered during construction, the procedures contained in TfNSW's *Unexpected Heritage Finds Guideline* (TfNSW, 2019c) would be followed, and works within the vicinity of the find would cease immediately. The Construction Contractor would immediately notify the TfNSW Project Manager and TfNSW Environment and Planning Manager so they can assist in co-ordinating next steps which are likely to involve consultation with an Aboriginal heritage consultant, Heritage NSW and the Local Aboriginal Land Council. If human remains are found, work would cease, the site secured, and the NSW Police and the relevant regulatory authority notified. Where required, further archaeological investigations and an Aboriginal Heritage Impact Permit would be obtained prior to works recommencing at the location.
	Non-Indigenous heritage
34.	All construction staff would undergo a heritage induction, informing them of the guidelines to follow if unanticipated heritage items or deposits are located during construction.

No.	Mitigation measure
35.	In the event that any unanticipated archaeological deposits are identified within the project site during construction, the procedures contained in TfNSW's *Unexpected Heritage Finds Guideline* (TfNSW, 2019c) would be followed, and works within the vicinity of the find would cease immediately. The Construction Contractor would immediately notify the TfNSW Project Manager and the TfNSW Environment and Planning Manager so they can assist in co-ordinating the next steps which are likely to involve consultation with an archaeologist and Heritage NSW. Where required, further archaeological work and/or consents would be obtained for any unanticipated archaeological deposits prior to works recommencing at the location.
	Biodiversity
36.	Construction of the Proposal must be undertaken in accordance with TfNSW's *Vegetation Management (Protection and Removal) Guideline* (TfNSW, 2019f) and TfNSW's *Fauna Management Guideline* (TfNSW, 2019g).
37.	All workers would be provided with an environmental induction prior to commencing work onsite. This induction would include information on the protection measures to be implemented to protect vegetation, penalties for breaches and locations of areas of sensitivity.
38.	Disturbance of vegetation would be limited to the minimum amount necessary to construct the Proposal. Trees/vegetation nominated to be removed in the Arboricultural Impact Assessment Report (All Arbor Solutions, 2020) would be clearly demarcated onsite prior to construction, to avoid unnecessary vegetation removal. Trees to be retained would be protected through temporary protection measures discussed below.
39.	Tree Protection Zones (TPZs) would be established around trees to be retained, as nominated in the Arboricultural Impact Assessment Report (All Arbor Solutions, 2020). Tree protection would be undertaken in line with *AS 4970-2009 Protection of Trees on Development Sites* and would include exclusion fencing of TPZs.
40.	In the event of any tree to be retained becoming damaged during construction, the Construction Contractor would immediately notify the TfNSW Project Manager and TfNSW Environment and Planning Manager to coordinate the response which may include contacting an arborist to inspect and provide advice on remedial action, where possible.
41.	Should the detailed design or onsite works determine the need to remove or trim any additional trees, which have not been identified in the REF, the Construction Contractor would be required to complete TfNSW's Tree Removal Application Form and submit it to TfNSW for approval.
42.	Weed control measures, consistent with TfNSW's *Weed Management and Disposal Guideline* (TfNSW, 2019d), would be developed and implemented as part of the CEMP to manage the potential dispersal and establishment of weeds during the construction phase of the project. This would include the management and disposal of weeds in accordance with the *Biosecurity Act 2015.*
43.	A project arborist is to be appointed prior to the commencement of any construction works. The project arborist is to advise, monitor, inspect and ensure that industry standards are complied with regarding trees retained within and adjacent to the site. Any work within a designated TPZ requires authorisation from the project arborist.
44.	Offsets and/or landscaping would be undertaken in accordance with the *TfNSW Vegetation Offset Guide, SD-087* (TfNSW, 2019b) for all trees removed.
45.	All pruning works are to be undertaken by suitably qualified tree workers (minimum AQF level 3 or equivalent) in accordance with AS4373-2007 Pruning of Amenity Trees and Safe Work Australia's Guide to Managing Risks of Tree Trimming and Removal Works.
	Socio-economic

No.	Mitigation measure
46.	Sustainability criteria for the Proposal would be established to encourage the Construction Contractor to purchase goods and services locally, helping to ensure the local community benefits from the construction of the Proposal.
47.	Feedback through the submissions process would be encouraged to facilitate opportunities for the community and stakeholders to have input into the project, where practicable.
48.	A Community Liaison Plan would be prepared prior to construction to identify all potential stakeholders and best practice methods for consultation with these groups during construction. The plan would also encourage feedback and facilitate opportunities for the community and stakeholders to have input into the project, where practicable.
49.	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.
50.	The community would be kept informed of construction progress, activities and impacts in accordance with the Community Liaison Plan to be developed prior to construction.
51.	Any acquisition of land would be undertaken in accordance with the Requirements of the *Land Acquisition (Just Terms Compensation) Act 1991*, where required.
	Soils and water
52.	Prior to commencement of works, a site-specific Erosion and Sediment Control Plan would be prepared in accordance with the *'Blue Book' Managing Urban Stormwater: Soils and Construction* (Landcom, 2004) and updated throughout construction so it remains relevant to the activities. The Erosion and Sediment Control Plan measures would be implemented prior to commencement of works and maintained throughout construction.
53.	Erosion and sediment control measures would be established prior to any clearing, grubbing and site establishment activities and would be maintained and regularly inspected (particularly following rainfall events) to ensure their ongoing functionality. Erosion and sediment control measures would be maintained and left in place until the works are complete and areas are stabilised.
54.	Vehicles and machinery would be properly maintained and routinely inspected to minimise the risk of fuel/oil leaks. Construction plant, vehicles and equipment would also be refuelled offsite, or in a designated refuelling area.
55.	All fuels, chemicals and hazardous liquids would be stored away from drainage lines, within an impervious bunded area in accordance with Australian Standards, EPA Guidelines and TfNSW's *Chemical Storage and Spill Response Guidelines* (TfNSW, 2019h).
56.	Adequate water quality and hazardous materials procedures (including spill management procedures, use of spill kits and procedures for refuelling and maintaining construction vehicles/equipment) would be implemented in accordance with relevant EPA guidelines and the TfNSW *Chemical Storage and Spill Response Guidelines* (TfNSW, 2019h) during the construction phase. All staff would be made aware of the location of the spill kits and be trained in how to use the kits in the case of a spill.
57.	In the event of a pollution incident, works would cease in the immediate vicinity and the Construction Contractor would immediately notify the TfNSW Project Manager and TfNSW Environment and Planning Manager. The EPA would be notified by TfNSW if required, in accordance with Part 5.7 of the POEO Act.
58.	The existing drainage systems would remain operational throughout the construction phase.
59.	Should groundwater be encountered during excavation works, groundwater would be managed in accordance with the requirements of the *Waste Classification Guidelines* (EPA, 2014) and TfNSW's *Water Discharge and Reuse Guideline* (TfNSW, 2019i).

No.	Mitigation measure
60.	An environmental risk assessment would be undertaken prior to construction and would include a section on contamination as per the TfNSW Standard Requirements. Measures to mitigate potential impacts from contaminated soil and materials would include an unexpected contamination finds procedure and Waste Management Plan, as part of the CEMP. All waste would be managed in accordance with relevant legislation.
61.	Appropriate mitigation measures would be implemented to manage hazardous substances during demolition works. This would include the removal of hazardous materials from the structure by appropriately licensed asbestos/hazardous waste removalists and in accordance with relevant legislation and guidelines.
	Air quality
62.	Air quality management and monitoring for the Proposal would be undertaken in accordance with TfNSW's *Air Quality Management Guideline* (TfNSW, 2019k).
63.	Methods for management of emissions would be incorporated into project inductions, training and pre-start/toolbox talks.
64.	Plant and machinery would be regularly checked and maintained in a proper and efficient condition. Plant and machinery would be switched off when not in use, and not left idling.
65.	Vehicle and machinery movements during construction would be restricted to designated areas and sealed/compacted surfaces where practicable.
66.	To minimise the generation of dust from construction activities, the following measures would be implemented: • apply water (or alternate measures) to exposed surfaces (e.g. unpaved roads, stockpiles, hardstand areas and other exposed surfaces) • cover stockpiles when not in use • appropriately cover loads on trucks transporting material to and from the construction site and securely fix tailgates of road transport trucks prior to loading and immediately after unloading • prevent mud and dirt being tracked onto sealed road surfaces.
	Waste and contamination
67.	The CEMP must address waste management and would at a minimum: • identify all potential waste streams associated with the works and outline methods of disposal of waste that cannot be reused or recycled at appropriately licensed facilities • detail other onsite management practices such as keeping areas free of rubbish • specify controls and containment procedures for hazardous waste and asbestos waste • outline the reporting regime for collating construction waste data.
68.	An appropriate Unexpected Finds Protocol, considering asbestos containing materials and other potential contaminants, would be included in the CEMP. Procedures for handling asbestos containing materials, including licensed contractor involvement as required, record keeping, site personnel awareness and waste disposal to be undertaken in accordance with WorkCover requirements.
69.	All spoil to be removed from site would be tested to confirm the presence of any contamination. Any contaminated spoil would be disposed of at an appropriately licensed facility.
70.	All spoil and waste must be classified in accordance with the *Waste Classification Guidelines Part 1: Classifying waste (*EPA, 2014) prior to disposal.

No.	Mitigation measure
71.	Any concrete washout would be established and maintained in accordance with TfNSW's *Concrete Washout Guideline* (TfNSW, 2019j) with details included in the CEMP and location marked on the ECM.
	Sustainability, climate change and greenhouse gases
72.	Detailed design and construction of the Proposal would target a rating of 'Excellent' using the ISCA Infrastructure Sustainability Rating Scheme (v1.2)
73.	The detailed design process would undertake a compliant carbon foot printing exercise in accordance with TfNSW's *Carbon Estimate and Reporting Tool Manual* (TfNSW, 2017a) or another approved modelling tool. The carbon footprint would to be used to inform decision making in design and construction.
74.	The CEMP environmental risk assessment is to include site-specific procedures addressing the risks of bushfire and high intensity rainfall events. A climate change risk assessment is also to be undertaken.
	Cumulative
75.	During construction, the works would be coordinated with any construction activities associated with proposed developments nearby including TfNSW construction work (and any other relevant work). Consultation and liaison would occur with Central Coast Council, Sydney Trains, and other stakeholders.

8. Conclusion

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

The Proposal would provide the following benefits:

- improved and equitable access to Narara Station for customers resulting from the installation of lift access from both the southern and northern commuter car parks to the footbridge connecting both platforms
- provision of a DDA compliant accessible parking space and a formalised kiss and ride space in both the southern and northern commuter car parks
- provision of a DDA compliant accessible pathway linking Narara Station to bus services along the southern side of Narara Valley Drive
- improved amenity and safety for customers at the station resulting from improved lighting, public address system, Opal card readers, and CCTV

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

- minor temporary changes to vehicle and pedestrian movements to, from and around the station during construction
- moderate temporary impacts to the visual character from selected viewpoints of residential receivers due to construction activities, including hoardings, the establishment and use of a construction compound and removal of mature trees
- low to moderate permanent visual impacts, depending on the selected viewpoint, due to the lift shafts that would be new taller built elements in the view as well as the accessible path and ramp on the northern side of the station along the existing embankment
- temporary noise and vibration impacts during construction. These impacts were assessed as variable and dependent on the construction stage and hours of work
- permanent removal of up to 10 formal and six informal commuter parking spaces within the commuter car parks at the station.
- removal of one large tree and two medium sized trees, which would be replaced in accordance with the *TfNSW Vegetation Offset Guide* (TfNSW, 2019b).

This REF has considered and assessed these impacts in accordance with clause 228 of the EP&A Regulation and the requirements of the EPBC Act (refer to Chapter 6, Appendix A and Appendix B). Based on the assessment contained in this REF, it is considered that the Proposal is not likely to significantly affect the environment. Accordingly, an EIS is not required, nor is the approval of the Minister for Planning and Public Places.

The Proposal has also taken into account the principles of ESD and sustainability (refer to Section 4.4 and Section 6.13). These would be considered further during the detailed design, construction and operational phases of the Proposal. This would ensure the Proposal is delivered to maximum benefit to the community, is cost effective and minimises any adverse impacts on the environment.

References

All Arbor Solutions, 2020, *Arboricultural Impact Assessment,* Sydney

Australian Bureau of Statistics, 2020, https://www.abs.gov.au/websitedbs/censushome.nsf/home/2016

Aurecon, 2018, *TAP3 Narara Station, Narara Station Scoping Design Report*, TfNSW, Reference 502774, Rev 2

Bureau of Meteorology, 2020, http://www.climatechangeinaustralia.gov.au

Cardno, 2020, *Narara Station – Preliminary Contamination Assessment Report*, ISD-18-7619B/002, Sydney

Central Coast Council, 2019a, *Central Coast Council Bike Plan 2019-2029*, Gosford

Central Coast Council, 2019b, *Central Coast Council Disability Inclusion Action Plan 2017-2021*, Gosford

Department of Agriculture, Water and the Environment, 2018, Protected Matters Search Tool (PMST) https://www.environment.gov.au/epbc/protected-matters-search-tool

Department of Environment and Climate Change, 2009*, Interim Construction Noise Guideline*, Sydney

Department of Environment and Conservation, 2006, *Assessing Vibration: A Technical Guideline*, Sydney

Department of Environment, Climate Change and Water, 2011*, NSW Road Noise Policy*, Sydney

Department of the Environment and Heritage, 2006, *Climate Change Impacts and Risk Management; A Guide for Business and Government,* Australian Greenhouse Office, Canberra

Department of Infrastructure, Planning and Natural Resources, 2004, *Guideline for Preparation of Environmental Management Plans*, Sydney

DPIE, 2019, eSPADE https://www.environment.nsw.gov.au/eSpade2WebApp

Envisage, 2020, Landscape Character and Visual Impact Assessment, Sydney

EPA, 2014, *Waste Classification Guidelines*, Sydney

EPA, 2017, *Noise Policy for Industry,* Sydney

Golder, 2018, *Updated Narara Creek Flood Study, Gosford City Council*, Reference 097626068-006-RevG

Greater Sydney Commission, 2018. *A Metropolis of Three Cities – Greater Sydney Region Plan*. NSW Government, Sydney.

Infrastructure NSW, 2018, *Building Momentum – State Infrastructure Strategy 2018-2038,* Sydney

Landcom, 2004, 'Blue Book' *Managing Urban Stormwater: Soils and Construction, Volume - 4th Edition*, Sydney

Ministry of Transport, 2008, *Guidelines for the Development of Public Transport Interchange Facilities,* Sydney

NSW Government, 2018, *NSW State Infrastructure Strategy 2018-2038*, Sydney

OEH, 2010, *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW South Wales,* Sydney

Pulse Acoustics, 2020, Construction Noise and Vibration Impact Assessment, Sydney

TfNSW, 2017, *Disability Inclusion Action Plan 2018-2022*, Sydney

TfNSW (former RMS), 2018, *Guideline for Landscape Character and Visual Impact Assessment*, *Environmental Impact Assessment Practice Note EIA-N04*, Sydney

TfNSW, 2018a, *Future Transport 2056*, TfNSW, Sydney

TfNSW, 2018b, *Environmental Incident Classification and Reporting*, PR-105, Sydney

TfNSW, 2019a *Construction Noise and Vibration Strategy*, Sydney

TfNSW, 2019b, *Vegetation Offset Guide*, SD-087, Sydney

TfNSW, 2019c, *Unexpected Heritage Finds Guideline*, SD-115, Sydney

TfNSW, 2019d, *Weed Management and Disposal Guideline*, SD-110, Sydney

TfNSW, 2019e, *Guide to Environmental Control Map*, SD-015, Sydney

TfNSW, 2019f, *Vegetation Management (Protection and Removal) Guideline*, SD-111/5.0, Sydney

TfNSW, 2019g, *Fauna Management Guideline*, SD-113, Sydney

TfNSW, 2019h, *Chemical Storage and Spill Response Guidelines*, SD-066, Sydney

TfNSW, 2019i, *Water Discharge and Reuse Guideline*, SD-024, Sydney

TfNSW, 2019j, *Concrete Washout Guideline*, Sydney

TfNSW, 2019k, *Air Quality Management Guideline*, SD-107, Sydney

TfNSW, 2019l, *Carbon Estimate and Reporting Tool Manual*, Sydney

TfNSW, 2019m, NSW Sustainable Guidelines – Version 4.10, Sydney

Appendix A Consideration of matters of National Environmental Significance

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

Matters of NES	Impacts
Any impact on a World Heritage property? There are no World Heritage properties in the vicinity of the Proposal area	Nil
Any impact on a National Heritage place? There are no National Heritage places in the vicinity of the Proposal area	Nil
Any impact on a wetland of international importance? There are no wetlands of international importance within the Proposal area or in the vicinity of the Proposal area.	Nil
Any impact on a listed threatened species or communities? No threatened species were identified within the Proposal area during the site visit. The site does not contain any substantial vegetation and no threatened ecological communities are present within the Proposal area.	Nil
Any impacts on listed migratory species? It is unlikely that the development of the Proposal would significantly affect any migratory species as no migratory bird species were observed and there is no vegetation in the Proposal area to provide habitat for any listed migratory species.	Nil
Does the Proposal involve a nuclear action (including uranium mining)? The Proposal does not involve a nuclear action.	Nil
Any impact on a Commonwealth marine area? There are no Commonwealth marine areas in the vicinity of the Proposal.	Nil
Does the Proposal involve development of coal seam gas and/or large coal mine that has the potential to impact on water resources? The Proposal is for a transport facility and does not relate to coal seam gas or mining.	Nil
Additionally, any impact (direct or indirect) on Commonwealth land? Proposal would not be undertaken on or near Commonwealth Land.	Nil

Appendix B Consideration of clause 228

The table below demonstrates TfNSW'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
(a) Any environmental impact on a community? During the construction phase of the Proposal, there would be some temporary impacts to the community resulting from increased traffic, noise and reduced visual amenity. Mitigation measures outlined in Section 7.2, would be implemented to manage and minimise negative impacts during construction. The operation of the Proposal would result in improved accessibility to and within the Narara Station precinct.	Short-term, minor, negative Long-term, positive
(b) Any transformation of a locality? The locality is a low-density residential suburb bisected by the Central Coast & Newcastle Rail Line and the Pacific Highway transportation corridors works associated with the Proposal to upgrade the station would not transform the locality.	Nil
(c) Any environmental impact on the ecosystem of the locality? The Proposal area comprises a highly modified environment. Environmental impacts are anticipated to be minor and would not be expected to result in adverse impacts to the ecosystems of the locality.	Nil
(d) Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality? There would be some minor temporary impacts during construction particularly in relation to noise, traffic, access and visual amenity. The introduction of the lifts would alter the aesthetic of the location but is not anticipated to result in any significant adverse impacts.	Minor, negative
(e) Any effect on a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or other special value for present or future generations? The Proposal would be a positive contribution to the area as it provides equitable access to the station platforms and improves the amenity of the station for all customers.	Positive
(f) Any impact on the habitat of protected fauna (within the meaning of the *National Parks and Wildlife Act 1974*)? The Proposal area does not contain any significant vegetation or habitat and is highly modified. The Proposal would not have any impact on the habitat of protected fauna.	Nil
(g) Any endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air? The Proposal is unlikely to have any impact on endangering any species of animal, plant or other form of like, whether living on land, in water or in the air.	Nil
(h) Any long-term effects on the environment?	Nil

Factor	Impacts
The Proposal is unlikely to have any long-term effects on the environment.	
(i) Any degradation of the quality of the environment? The Proposal is unlikely to have any degradation of the quality of the environment.	Nil
(j) Any risk to the safety of the environment? The Proposal is unlikely to cause any pollution or safety risks to the environment provided the recommended mitigation measures are implemented.	Nil
(k) Any reduction in the range of beneficial uses of the environment? The Proposal is unlikely to have any reduction in the range of beneficial uses of the environment.	Nil
(l) Any pollution of the environment? The Proposal is unlikely to cause any pollution of the environment provided the recommended mitigation measures are implemented.	Nil
(m) Any environmental problems associated with the disposal of waste? The Proposal is unlikely to cause any environmental problems associated with the disposal of waste. All waste would be managed and disposed of with a site-specific Waste Management Plan prepared as part of the Construction Environmental Management Plan. Mitigation measures would be implemented to ensure waste is reduced, reused or recycled where practicable.	Nil
(n) Any increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply? The Proposal is unlikely to increase demands on resources that are, or are likely to become, in short supply.	Nil
(o) Any cumulative environmental effect with other existing or likely future activities? Cumulative effects of the Proposal are described in Section 6.16. Where feasible, environmental management measures would be co-ordinated to reduce any cumulative construction impacts. The Proposal is unlikely to have any significant adverse long-term impacts.	Nil
(p) Any impact on coastal processes and coastal hazards, including those under projected climate change conditions? The Proposal would not affect or be affected by any coastal processes or hazards.	Nil