NSW GOVERNMENT

Transport Access Program

Lapstone Station Upgrade

Review of Environmental Factors

Artist's impression of the proposed Lapstone Station Upgrade, subject to change during detailed design.

November 2019

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Figures

Tables

Abbreviations

Term	Meaning
AHD	Australian Height Datum
AHIMS	Aboriginal Heritage Information Management System
ALR Act	*Aboriginal Land Rights Act 1983* (NSW)
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)
BMCC	Blue Mountains City Council
BS	British Standard
CBD	Central Business District
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, 2018)
CTMP	Construction Traffic Management Plan
D&C	Design & Construct
DBH	Diameter Breast Height
DDA	*Disability Discrimination Act 1992* (Cwlth)
DoEE	Commonwealth Department of the Environment and Energy
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)* (Cwlth)
ECM	Environmental Controls Map
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)
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cwlth)
EPL	Environment Protection Licence
ESD	Ecologically Sustainable Development (refer to Definitions)

Term	Meaning
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)
NorBE	Neutral or Beneficial Effect
NPW Act	*National Parks and Wildlife Act 1974* (NSW)
NSW	New South Wales
NVIA	Noise and Vibration Impact Assessment
OEH	(former) NSW Office of Environment and Heritage
PCC	Penrith City Council
PDP	Public Domain Plan
PoEO Act	*Protection of the Environment Operations Act 1997* (NSW)
REF	Review of Environmental Factors (this document)
Roads Act	*Roads Act 1993* (NSW)
Roads and Maritime	(former) NSW Roads and Maritime Services
SEPP	State Environmental Planning Policy
SoHI	Statement of Heritage Impact
SHI	State Heritage Inventory
SHR	State Heritage Register
SREP	Sydney Regional Environmental Plan
SW Act	*Sydney Water Act 1994* (NSW)
TAP	Transport Access Program
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)
WM Act	*Water Management Act 2000* (NSW)

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.
Concept design	The concept design is the preliminary design presented in this REF, which would be refined by the Construction Contractor (should the Proposal proceed) to a design suitable for construction (subject to 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.
Detailed Design	Detailed design broadly refers to the process that is undertaken (should the Proposal proceed) to refine the concept design to a design suitable for 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.
Hi-rail	Refers to vehicles or plant which can operate both on rail tracks and a conventional road. These vehicles or plant have normal wheels with rubber tyres, but are fitted with additional flanged steel wheels for running on rails.
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.
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).
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 Lapstone Station Upgrade.
Rail possession / shutdown	Shutdown is the term used by railway construction/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.
Sensitive receivers	Land uses which are sensitive to potential noise, air and visual impacts, such as residential dwellings, schools and hospitals.
Vegetation Offset	The TfNSW guide that applies where there is vegetation clearing proposed, and

Term	Meaning
Guide (TfNSW, 2016b)	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 Lapstone Station Upgrade (the 'Proposal').

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

As part of the TAP program, the Proposal would aim to 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 under Division 5.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) to assess potential environmental impacts associated with construction and operation of the Proposal.

Description of the Proposal

The Proposal would aim to provide:

- a new station entrance south of the station building
- a new ramp from the existing footbridge to the commuter car park
- a new lift from the existing footbridge to the eastern platform (Platform 2)
- new accessible facilities within the station building.
- an upgraded accessible parking space and new kiss and ride space within the commuter car park.
- upgrades to stairs, handrails, platform gradients and clearances and installation of Tactile Ground Surface Indicators (TGSIs).

Subject to approval, construction is expected to commence in mid-2020 and take around 12 to 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 1 and Figure 2.

Need for the Proposal

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

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

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

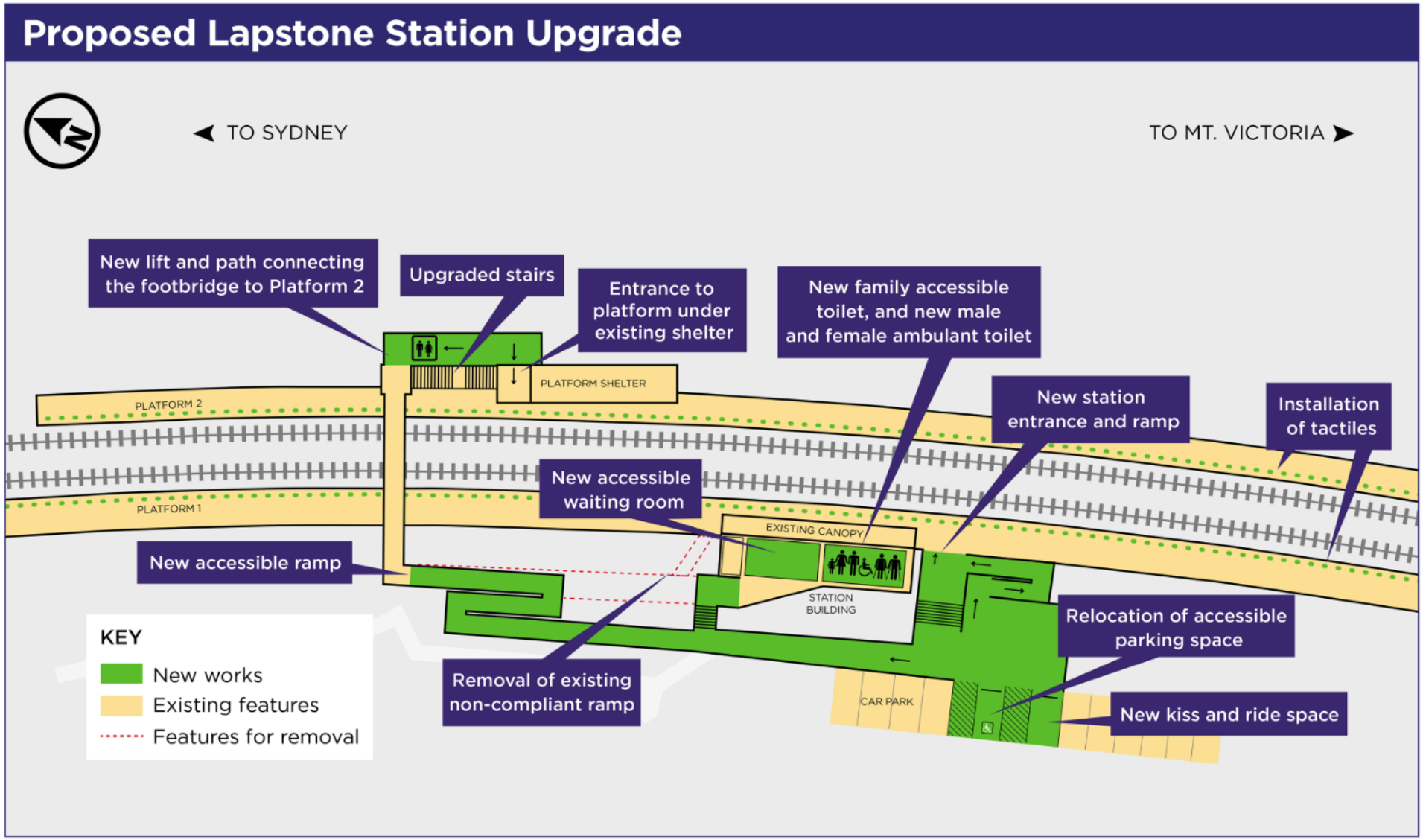


Figure 1 Key features of the Proposal (subject to detailed design)

(Note: This is indicative, subject to detailed design)

Figure 2 Photomontage of the proposed eastern platform lift

(Note: This is indicative, subject to detailed design)

Community and stakeholder consultation

Community consultation activities for the Proposal would be undertaken during the public display period of this REF and 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 approximately 2 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 also 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 has been undertaken with Blue Mountains City Council (BMCC) during the development of design options and the preferred option. Consultation with BMCC would continue through the detailed design and construction of the Proposal. Consultation with Penrith City Council (PCC) would also occur during detailed design and construction should it be required.

TfNSW would review, consider and respond to 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 and customers would be kept informed throughout the duration of the construction period. Figure 3 shows the planning approval and consultation process for the Proposal.

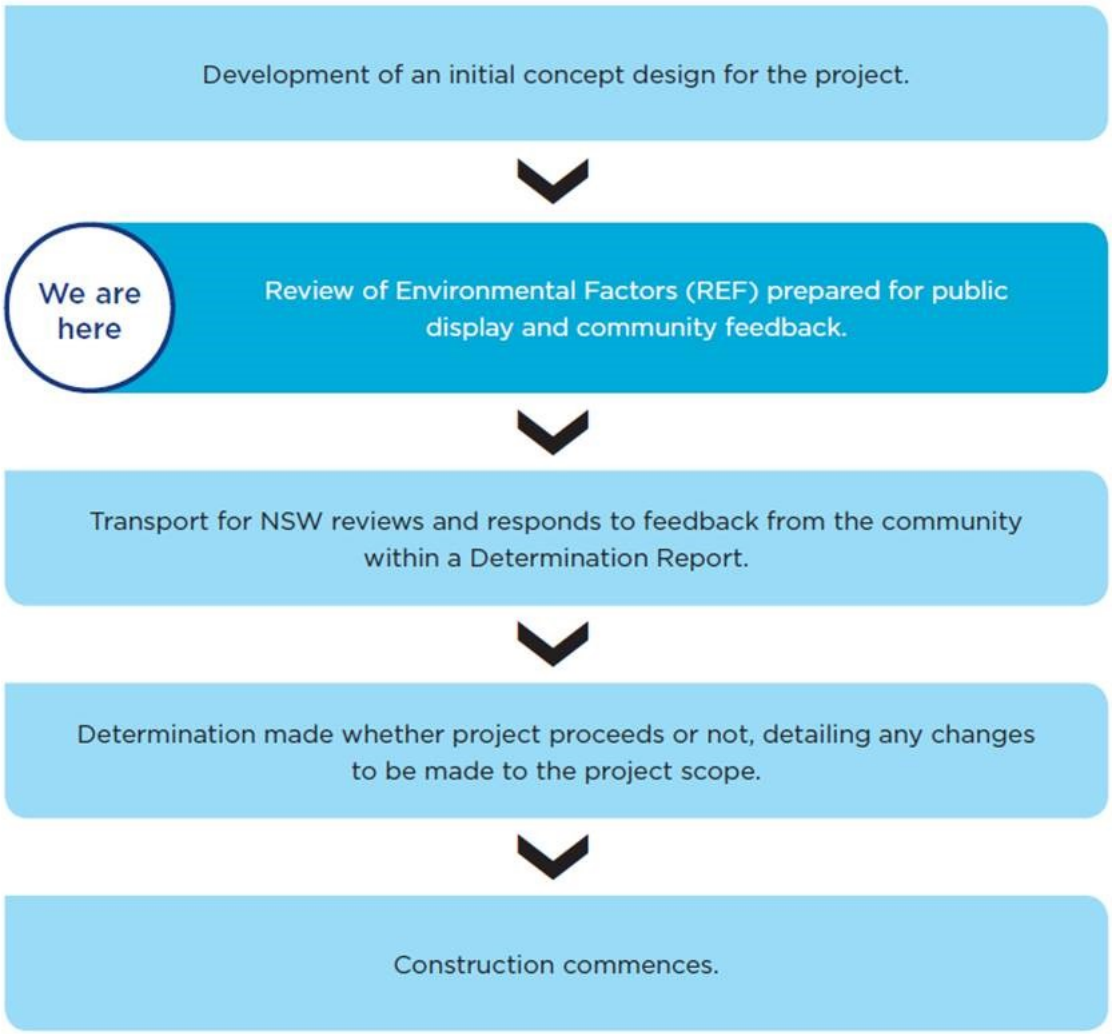


Figure 3 Planning approval and consultation process for the Proposal

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 Lapstone Station for customers resulting from the installation of a lift, regrading of the station platform, altering of station floor levels, accessible pathways, and provision of a DDA compliant accessible parking space and a formalised kiss and ride space
- improved amenity and safety for customers at the station resulting from the installation of the family accessible toilet, ambulant toilets, new seating, new landscaping, new lighting 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

- temporary reduction of about eight to nine commuter car parking spaces in the lower tier of the car park during construction
- permanent net loss of two car parking spaces in the new parking configurations, however the new configuration is anticipated to improve safety and reduce conflict between vehicles and passenger movements
- moderate temporary impacts to the landscape character due to construction activities, including hoardings and the establishment and use of a construction compound
- moderate with periods of moderate-high visual impacts of the Proposal from selected viewpoints due to the proximity of the residential receivers to the station, and the removal of vegetation required for the Proposal.
- temporary noise and vibration impacts during construction. These impacts were assessed as variable and dependent on the construction stage and hours of work. Impacts would be mitigated through the implementation of a range of mitigate measures proposed in the Noise and Vibration Impact Assessment (NVIA) (Pulse Acoustic 2019) and the *Construction Noise and Vibration Strategy* (TfNSW, 2018b)
- irreversible impacts on the heritage values of the Sedimentary Dykes in the western rail cutting due to the introduction of seating proposed to be cut into the existing sandstone rail cutting. However, the work will not impact the Lapstone Monocline Group as whole and provides the opportunity for interpretation to identify and explain the heritage item.
- Removal of approximately 29 trees, due to the introduction of new ramps, lift and extension of the footbridge. No threatened flora species were identified within the Proposal area, and the removal of vegetation, proposed work and operation, were assessed as highly unlikely to result in any significant impact on threaten fauna species. Offset planting would be undertaken within the proposed new landscaping areas and re-established around the new lift.

Further information regarding these impacts is provided in Chapter 6 of the 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 designed in accordance with the Infrastructure Sustainability Council of Australia (ISCA) 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) was established in 2011 as the lead agency for integrated delivery of public transport services across all modes of transport in NSW. TfNSW is the proponent for the Lapstone Station Upgrade (the 'Proposal').

1.1. Overview of the Proposal

1.1.1. Need for the Proposal

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

The Transport Access Program is a NSW Government initiative to provide a better experience for public transport customers by delivering accessible, secure and integrated transport infrastructure where it is needed most.

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

The non-compliant pathways, car parking, ramps and stairs to Lapstone Station and platforms do not facilitate access for people with reduced mobility, parents or carers with prams, or customers with luggage. There are no lift facilities and inadequate handrails and tactile ground surface indicators (TGSIs) to stairs and platforms.

The Proposal would provide safe access to the platforms and to the car parking and pedestrian network surrounding the station. Customer facilities and amenity would also be improved. The upgrades would provide an improved customer experience for existing and future users of the station.

1.1.2. Proposal features

The key features the Proposal are:

- construction of a new lift from the existing footbridge to the eastern platform (Platform 2) of the station
- provision of a new station entrance
- construction of a new DSAPT compliant ramp from the existing footbridge to the commuter car park and new station entrance
- modifications to the existing station building layout including:
    - reconfiguration of the existing toilets to accommodate one new family accessible toilet, one male ambulant toilet and one female ambulant toilet
    - providing accessible entry into existing waiting room and toilets
- modifications to commuter car park to provide a compliant accessible parking space and a new kiss and ride space.

Subject to planning approval, construction is expected to commence in mid-2020 and take around 12 to 18 months to complete. A detailed description of the Proposal is provided in Chapter 3 of this Review of Environmental Factors (REF)

1.2. Location of the Proposal

The Proposal is located in the township of Lapstone, within the Blue Mountains City Council (BMCC) Local Government Area (LGA). Lapstone Station is approximately 63 kilometres from Central Station, Sydney on the Blue Mountains Line of the Intercity Trains Network. The location of the Proposal in the regional context is shown in Figure 4.

Lapstone Station is located on Explorers Road, Lapstone. To the west of the station and the rail corridor is an established low density residential area. To the east of the rail corridor, the land is within the Penrith City Council LGA and comprises a tract of bushland connecting through to the Nepean River about 330 metres to the south-east of the station (see Figure 5).

Lapstone Station is a dual station platform, with Platform 1 providing services northbound to Central Station, Sydney and Platform 2 providing services southbound to the Blue Mountains and beyond to Lithgow.

The Proposal includes upgrades to Lapstone Station on land owned by RailCorp, facilities maintained by Sydney Trains, and rail services operated by NSW TrainLink. In addition, the Proposal includes work to the commuter car park, some work to footpaths, and the temporary use of land under the control of the BMCC and PCC.

The proposal area is shown in Figure 6 and includes:

- the rail corridor around Lapstone Station (including the station building, platforms, footbridge, shelter and connecting paths and stairs)
- an area of the bushland reserve to the east of the station footbridge
- a portion of the lower tier of the station commuter carpark
- a proposed construction compound area within the road reserve at the eastern extent of Dawes Place.

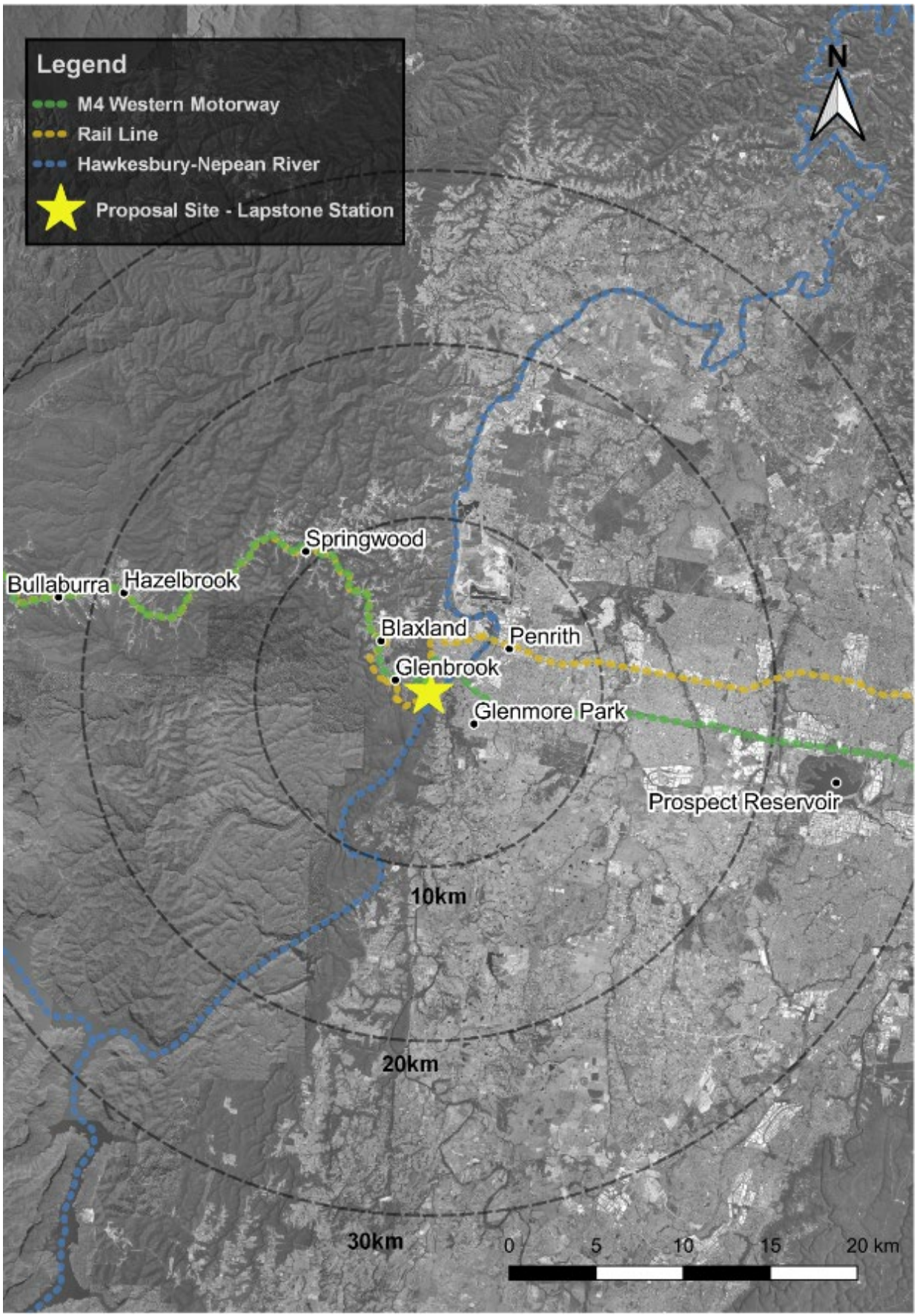


Figure 4 Regional context

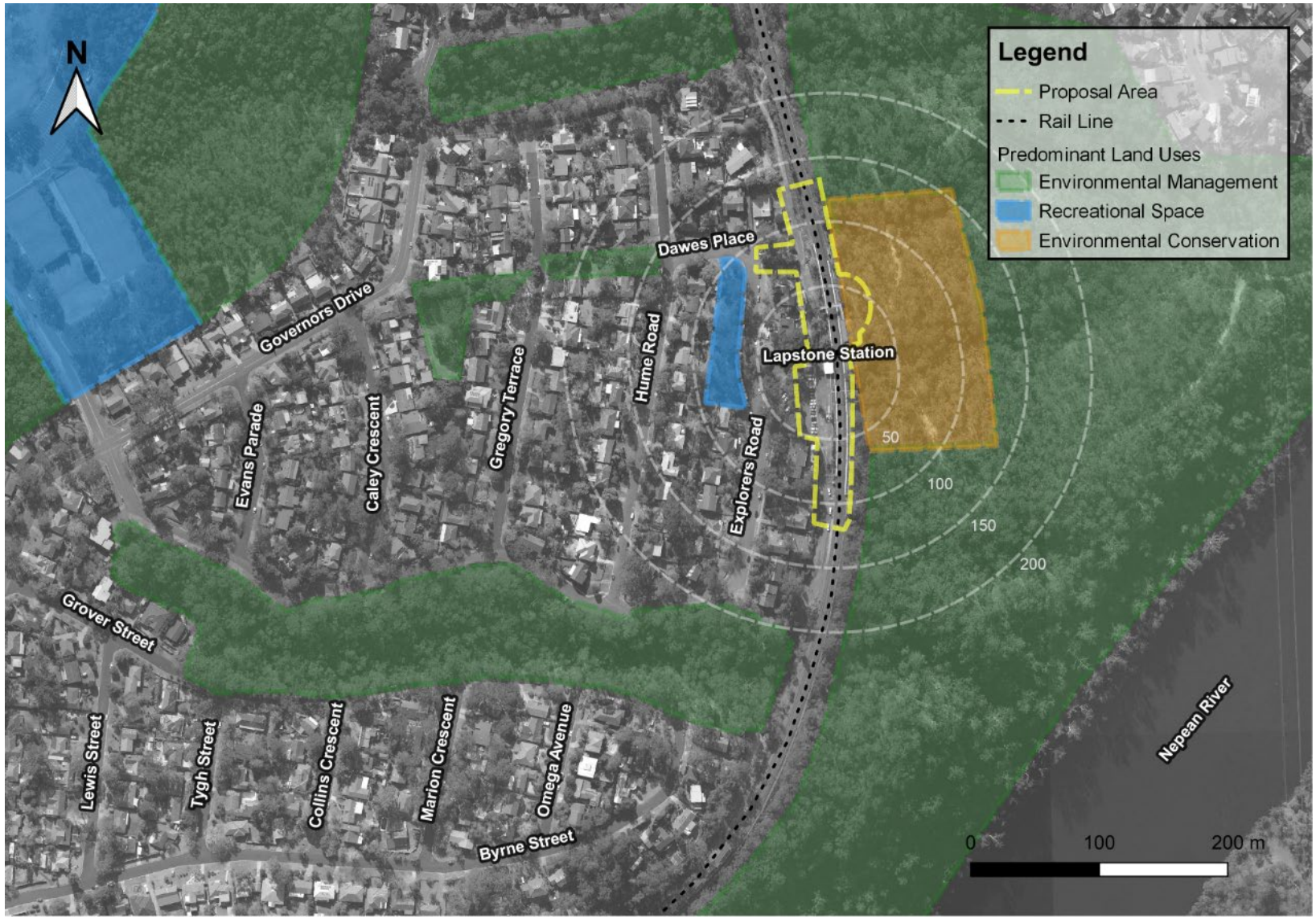


Figure 5 Local site context

Figure 6 Proposal area

1.3. Existing infrastructure and land uses

1.3.1. Platforms

Lapstone Station consists of two platforms located on either side of the existing rail tracks. The western platform (Platform 1) provides services through to Central Station, Sydney and the eastern platform (Platform 2) provides services to the Blue Mountains and beyond to Lithgow.

The station building (Figure 7) is located at the mid-point along the western platform and contains:

- a waiting room with an unused ticketing window, seating and two single timber rollover next train indicator boards with clock faces, blackboards and foot pedals
- a staff area including office and kitchen facilities
- male and female toilets
- store room.

Figure 7 View looking north of Lapstone Station building and Platform 1

Entry to Platform 1 is via the waiting room of the station building or a sloping narrow path, immediately to the north of the station building. There is a path from the commuter car park to the station building. A canopy roof extends from the eastern side of the station building over Platform 1 for the length of the building (approximately 18.5m) to provide weather protection for customers.

North of the station building, and near the southern extent of Platform 1, sedimentary dykes (a locally significant heritage item) are visible in the sandstone cutting of the western platform. The width of Platform 1 to the north of the station and at the very southern end is constrained by this sandstone cutting (Figure 8).

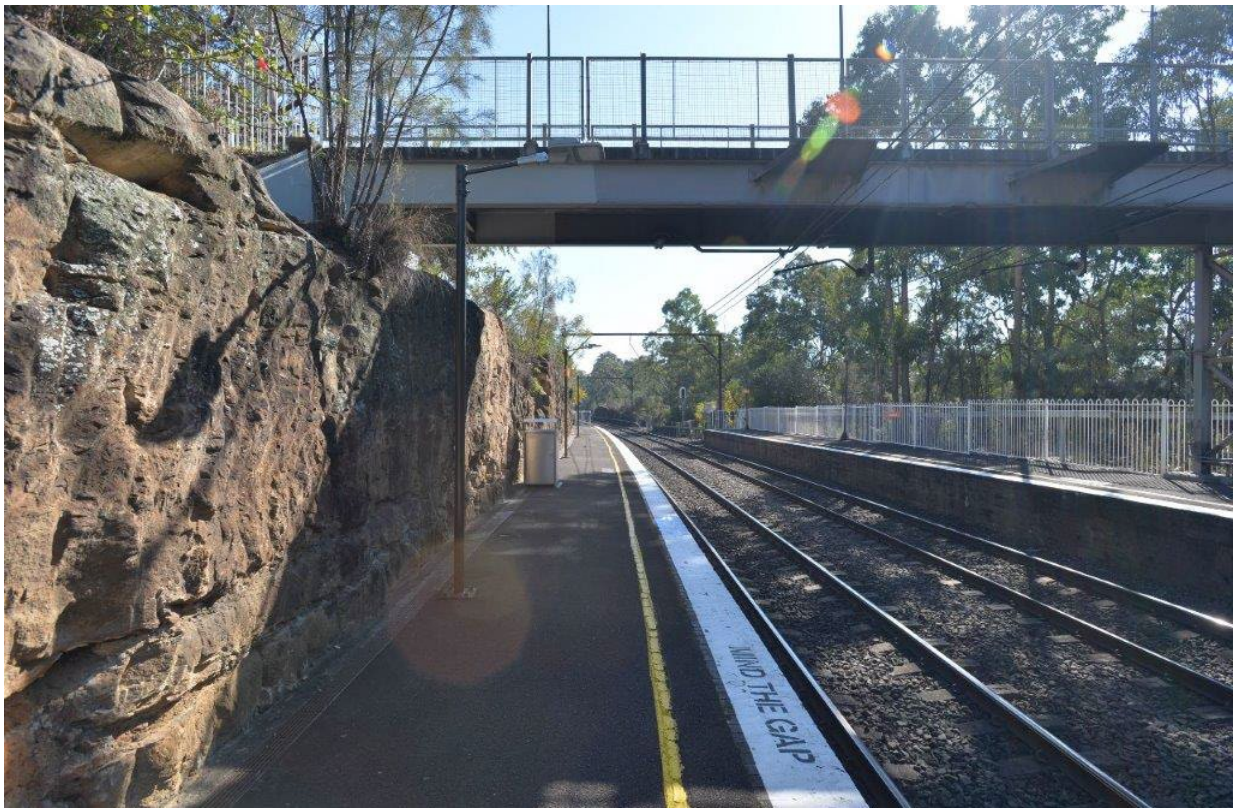


Figure 8 View looking north from Platform 1 of the sandstone cutting and footbridge

Entry to Platform 2 is via stairs from a steel footbridge located towards the northern end of the platforms (Figure 8 and Figure 9).

Figure 9 View looking north from Platform 1 showing the footbridge and stairs to Platform 2

A steep sloping path connects the station building to the western side of the footbridge (Figure 10). The path is fenced to the rail corridor on the east and bordered by a garden bed to the west. This path is not an accessible pathway and does not comply with DSAPT requirements.

Figure 10 View looking south from the western end of the footbridge down the sloping path towards the station building

Platform 2 provides a shelter at the base of the footbridge stairs that is about 16 metres long with fixed seating (Figure 11).

Figure 11 View of Platform 2 looking south

1.3.2. Station entrances

Entry to Lapstone Station is provided from multiple points:

- a path from the commuter car park
- a public footpath from Explorers Road between the properties of 215 and 217 Explorers Road (Figure 12(a))
- a pedestrian footpath from the eastern end of Dawes Place (Figure 12(b))
- a track through the adjoining bushland east of the Station. This track provides an informal entrance for pedestrians coming from the neighbouring residential suburb of Leonay (Figure 13).

(a) Path between 215 and 217 Explorers Road, looking west towards Explorers Road

(b) Looking north from the entry to the footbridge along the pedestrian pathway provided from the eastern end of Dawes Place

Figure 12 Views of pedestrian paths west of Station

Figure 13 View of track to the east of the rail corridor within adjacent bushland

1.3.3. Commuter car park and other interchange facilities

A council owned commuter car park is located on the western side of Lapstone Station and is accessed via Explorers Road (Figure 14). The car park is sealed and provides 36 car parking spaces (BMCC 2018), including one space marked as accessible that does not comply with current standards.

The car park comprises an upper and a lower tier separated by landscaping which includes mature trees. One-way entry is from Explorers Road to the lower tier parking, from which the access leads up to the upper tier parking with a separate one-way exit to Explorers Road.

Figure 14 View of lower tier of the commuter car park looking south

There is a bus stop on Explorers Road located about 120 metres walking distance from Platform 1 of the station. The stop provides a single daily service between Penrith and Mount View (Blaxland 691 service), stopping at Lapstone Station at 5:38pm. School bus services also utilise the stop morning and afternoon.

There is no formal taxi rank at the station, and no bicycle parking or storage facilities at the station

1.3.4. Existing land uses

The western side of the rail corridor including the station and western platform (Platform 1) is zoned SP2 (Infrastructure) in the Blue Mountains Local Environmental Plan (LEP) 2015.

Land surrounding the station to the west is occupied by low-density residential housing. Residential dwellings along Explorers Road back onto the railway corridor. This residential area is zoned E4 (Environmental Living) in the Blue Mountains LEP 2015.

The majority of work on the eastern side of Lapstone Station is located on rail land and is unzoned. A small amount of land clearing may need to occur within the Penrith LGA however this is only required to facilitate construction. The area is zoned E3 (Environmental management) within the Penrith LEP 2010. Should this land be required, consultation would occur with PCC during detailed design.

The bushland on the eastern side of Lapstone station and the rail corridor that extends to the Nepean River are important features of the locality. Part of the land (Lot 102 DP 235829 and Lot 2 DP 242718) is listed as an archaeological site of local heritage significance (Item No.

A112) in the Penrith LEP 2010, being the ‘Site of Edinglassie’, the site of the first private residence at Emu Plains.

There are no commercial properties located within 200 metres of Lapstone Station.

1.4. Purpose of this Review of Environmental Factors

This REF has been prepared by SNC-Lavalin on behalf of TfNSW to assess the potential impacts of the Lapstone Station Upgrade. For the purposes of this work, 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 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, having regard to the objectives of the Transport Access Program and 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 why the preferred option has been chosen.

2.1. Strategic justification

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

The Lapstone 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 and integrated transport infrastructure. The Proposal would improve accessibility to Lapstone Station and provide safe and equitable access to the platforms and carpark, in line with DDA legislation and DSAPT requirements.

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

Policy / Strategy	Overview	How the Proposal aligns
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 to guide transport investment in Greater Sydney. These outcomes include transport providing convenient access, supporting attractive places and providing 30-minute access for customers to their nearest centre by public transport.	The Proposal aligns with the objectives of: • Delivering a fully accessible network that enables barrier-free travel for all. • Supporting more environmentally sustainable travel. New compliant access paths and lift would provide a physically accessible and safe network allowing greater choice for people with mobility constraints to access public transport. Greater accessibility would also mean better connections to places and opportunities for employment, education, business and enjoyment.

Policy / Strategy	Overview	How the Proposal aligns
NSW: Making It Happen *(NSW Government, 2015)*	In September 2015, the NSW Government announced a series of State Priorities as part of *NSW: Making It Happen* (NSW Government, 2015). The State Priorities are intended to guide the ongoing actions of the NSW Government across the State, and guide resource allocation and investment in conjunction with the NSW Budget. *NSW: Making it Happen* focuses on 12 key 'priorities' to achieve the NSW Government's commitments. One of the 12 priorities identified as part of NSW: Making It Happen relates to investment in building infrastructure. The ongoing development and investment in transport infrastructure is identified as part of the wider building infrastructure priority.	The Proposal would assist in meeting the priority to develop and invest in transport infrastructure by improving accessibility to, and encouraging greater usage of, public transport.
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 Sydney's 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 growing rail demand, the need to improve rail access, and the Nepean Blue Mountains growing and ageing population	The proposal would provide for increased rail use and improve accessibility for the elderly and less mobile.
A Metropolis of Three Cities - Greater Sydney Region Plan (Greater Sydney Commission, 2018)	The *Greater Sydney Region Plan* is the NSW Government's 40-year land use plan for Sydney. It establishes a vision for a metropolis of three cities – the Eastern Harbour City, Central River City and Western Parkland City. The Proposal is located in the Western	The Proposal aligns with the strategies of improving productivity and sustainability through better transport accessibility, connectivity, and use of public transport.

Policy / Strategy	Overview	How the Proposal aligns
	Parkland City, at the edge of a Metropolitan Rural Area.	
Western City District Plan (Greater Sydney Commission, 2018)	The *Western City District Plan* is a guide for implementing the Greater Sydney Region Plan, *A Metropolis of Three Cities*, at a district level. This plan includes considerations for greater Penrith and the Blue Mountains.	The Proposal aligns with the current commitments outlined to upgrade the Blue Mountains train line to provide for greater capacity and accommodate new and existing trains.
Disability Inclusion Action Plan 2018-2022 (TfNSW, 2017a)	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 Proposal has been developed in consideration of the objectives outlined in this Plan. Lapstone Station has been identified for upgrade as part of Tranche 3 of the Transport Access Program. The Proposal would assist in achieving the objectives of the Disability Inclusion Action Plan, as it would make public transport facilities in the Blue Mountains LGA more accessible for people with a disability

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 where it is needed most. The program aims to provide:

- 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, help points, fences and security measures for car parks and interchanges, including stations, bus stops and wharves
- signage improvements so customers can more easily use public transport and transfer between modes at interchanges
- other improvements and maintenance such as painting, new fencing and roof replacements.

2.3. Objectives of the Proposal

The proposal seeks to address the objectives of the TAP initiative and current deficiencies at Lapstone Station in relation to compliance with DSAPT requirements.

The specific objectives of the Proposal are to:

- provide a station that is accessible to people with a disability, are less mobile, parents/carers with prams and customers with luggage
- improve customer experience and amenity (such as the station building facility upgrade, improved station pathways and improved visual appearance)
- improve integration with surrounding precinct by providing an accessible path of travel from the station to the new accessible car space and kiss and ride space
- improve customer safety (extend the existing digital CCTV system and provide additional cameras as required)
- consideration of heritage items
- improve wayfinding in and around the station.

2.4. Options considered

The options for improving access to Lapstone 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.

2.4.1. Option 1 and Option 2

Improvements common to the two options included:

- new construction and improvement work to the existing footpath on the western side of the station from the carpark to the station entry and footbridge
- new station entry to allow level access to Platform 1, south of the existing station building
- new lift and landing to footbridge on the eastern side of the footbridge (Platform 2)
- upgrade existing stairs from footbridge to Platform 2 to include new handrails, TGSIs and stair nosing
- provision of new accessible parking space adjacent to the new southern station entry
- conversion of existing male toilet on Platform 1 into a new unisex family accessible toilet
- provision of new TGSIs along the full length of the platforms
- upgrading the general railway station infrastructure including statutory signage and wayfinding signage, CCTV, lighting and seating
- removal of redundant stanchions on Platforms 1 and 2.

The key differences in each option considered are summarised as follows:

- Option 1: achieves compliance to DSAPT standards through the provision of two lifts on the existing footbridge. In addition to the lift on Platform 2 (outlined above), a lift on Platform 1 would be located within a rock cutting. Platform 1 would be regraded to allow for a maximum 1:40 fall from the station building to the new lift and furniture relocated as required

- Option 2: achieves compliance to DSAPT standards through the provision of the one lift on Platform 2 and replacement of the existing steep sloping path up to the footbridge on the western side with a compliant ramp.

2.4.2. The ‘do-nothing’ option

Under a ‘do-nothing’ option, existing access to the platforms, station (including waiting room and toilets), 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 the 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 Lapstone community.

2.5. Justification for the preferred option

The design options were assessed in a multi-criteria analysis (MCA) that included consideration of factors such as customer experience, accessibility, engineering constraints, environmental constraints, modal integration and whole-of-life-costs, to select a preferred option.

Option 2 was selected as the preferred option, receiving the highest scores in both the qualitative and quantitate criteria. Option 2, with the provision of a single lift, would provide faster construction times than Option 1, reducing impact to nearby residences. Option 2 also provides for better integration into the surroundings, avoiding excavation of a lift pit on Platform 1 and the associated impacts on the fabric of the locally heritage listed sedimentary dykes. Option 2 does not result in the creation of security blackspots on Platform 1, and the use of a single lift reduces long term maintenance requirements. On this basis, Option 2 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 the concept design for the preferred option and is subject to detailed design.

3.1. Scope of work

As described in Section 1.1, the Proposal involves an upgrade of Lapstone Station as part of the Transport Access Program to improve accessibility and amenity for customers.

The scope of work for the Proposal includes:

- installation of one new lift to the eastern end of the existing footbridge and a new footpath from the base of the lift to connect to Platform 2
- construction of a new DSAPT compliant ramp that provides access on the western side of station from the commuter car park to the footbridge
- construction of a new entrance point south of the station building on Platform 1, including new stair and ramp access from the commuter car park
- relocation and upgrade of the existing non-compliant accessible parking space within the commuter car park closer to the new Platform 1 entrance
- provision of a new kiss and ride space which would replace an existing car space
- closure of the steep ramp immediately north of the station building that currently provides access to Platform 1
- all stairs upgraded with compliant handrails, TGSIs and stair nosings
- installation of TGSIs along the full length of both platforms
- localised regrading of some platform areas to achieve compliant cross falls
- modifications to the existing station building layout including:
    - reconfigure the existing station toilets and store room to accommodate one family accessible toilet, one male ambulant toilet, one female ambulant toilet and a new store room
    - the building modifications would include providing level access from Platform 1 into both the waiting room and the new family accessible toilet
- installation of seating cut into the sandstone rail cutting on Platform 1
- closed circuit television (CCTV) cameras to provide coverage to meet security standards for new infrastructure
- power supply upgrade to support new infrastructure, including upgrade of existing connection, transformer and distribution board
- trimming and removal of trees and vegetation to construct and accommodate the new accessible paths and lift
- ancillary work including installation of platform hearing loops, electrical conduits, pits, cabling, service relocation, lighting, opal card reader relocation, landscaping, drainage works, wayfinding signage, relocation of bins and furniture, and new bin storage area.

Figure 15 shows the general location of key elements of the Proposal. Additional details for specific components of the Proposal are discussed in detail in Sections 3.1.1 to 3.1.3.

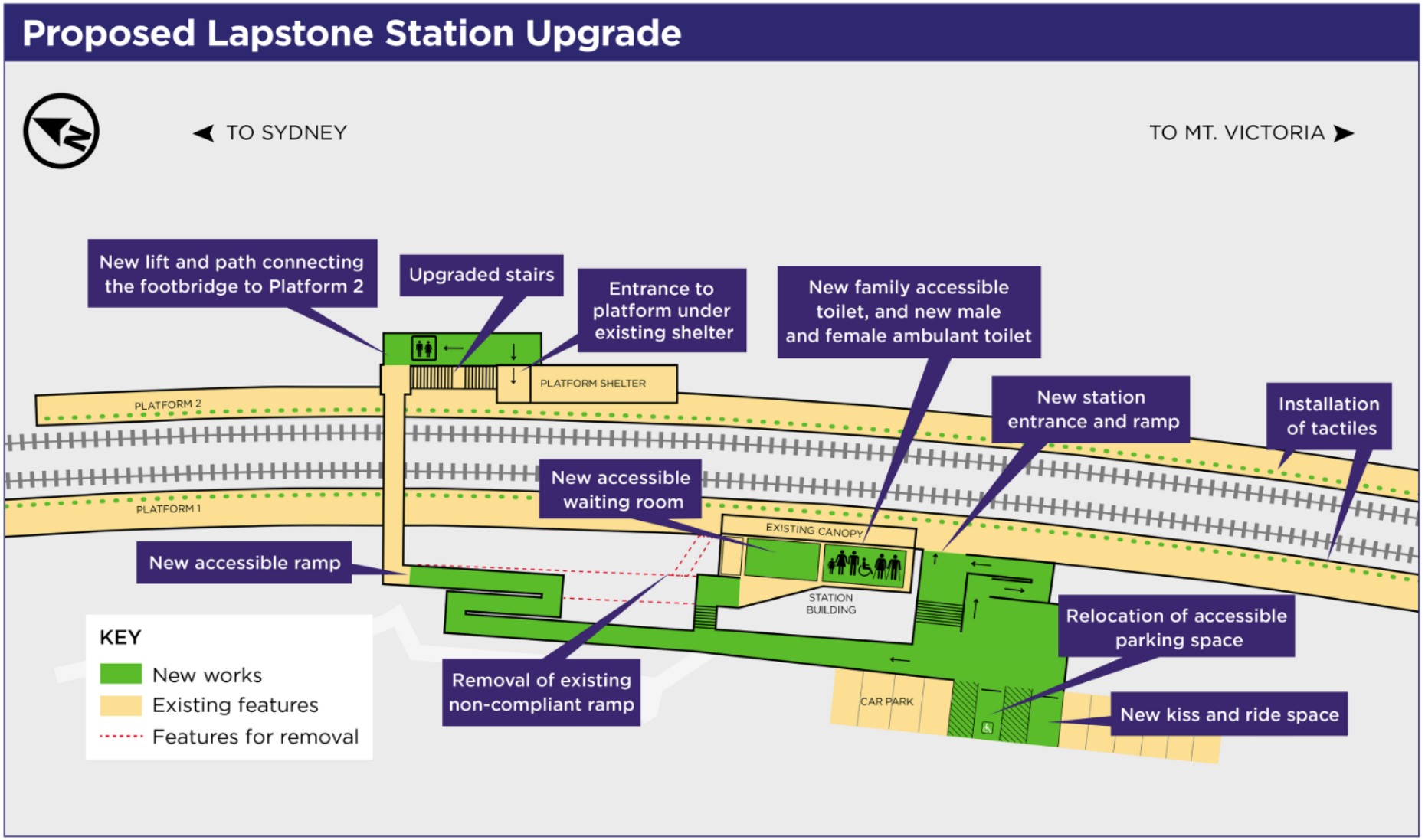


Figure 15 Key features of the Proposal (indicative, subject to detailed design)

3.1.1. Station upgrade

Existing station building

Work to the existing station building involves demolition of the existing floor slab to the waiting room and toilets, and construction of a new floor that is level with Platform 1. The new floor would provide level access from the platform to both the waiting room and new family accessible toilet.

Part of the existing male toilet would be converted into a family accessible toilet, while the current storage room, female toilet and rest of the male toilet would be converted to one male ambulant toilet, and one female ambulant toilet, which are directly entered from Platform 1, and a store room located off the waiting room.

The waiting room entry doors from Platform 1 to the waiting room would be repositioned to allow for the new floor level.

The waiting room would be reconfigured to include an allocated wheelchair space and phone charging facilities.

New entry to Platform 1

A new entrance point would be provided to Platform 1 south of the existing station building. A new ramp would provide a compliant path from the accessible parking space to the new entrance to Platform 1 (refer to Figure 15 and Figure 16). The current platform entrance point to the north of the existing station building would be removed.

Figure 16 Photomontage of proposed new entry to Platform 1 and car park upgrade

(The proposed accessible car space and kiss and ride space in bottom left of image) (indicative only, subject to detailed design)

New DSAPT compliant path to access footbridge

The existing steep sloping path on the western side of the station leading to the footbridge would be removed. The landscaping along the western edge of this path would also be removed. The Proposal includes the introduction of a new DSAPT compliant path incorporating a series of ramps. To meet the required gradient the path is long and incudes a switch back and rest areas including seating, provided in accordance with DSAPT. A landscape zone is proposed to the east of the new path (Figure 17).

Figure 17 Photomontage of proposed accessible paths to footbridge and Platform 1

The path to the footbridge is in the centre-left of image and the path and ramp to Platform 1 are in the right of image (indicative only, subject to detailed design)

Lifts and landing to Platform 2

The Proposal would include the installation of a new lift servicing Platform 2. The lift would provide access from the current footbridge to ground level and a new accessible path from the base of the lift would connect to Platform 2 under the existing shelter. Work includes a landing to the new lift from the footbridge (refer to Figure 15). The proposed lift is positioned to the east of the existing stairs.

New seating to Platform 1

The proposal includes the installation of new seating to Platform 1, with a minimum of 4 bench seats to be provided and evenly distributed along Platform 1. Due to the platform width to the north and south of the station building being restricted by the existing railway cutting, it is proposed to cut seating into the sandstone rail cutting on Platform 1. Two seats would be installed to the north of the station building and one to the south of the station building. The design and construction of the seating within the sandstone may include local input (e.g. from a local artist, or men's shed).

3.1.2. Car park upgrade

Part of the lower area of the existing commuter car park would be regraded and an upgraded accessible parking space and a new kiss and ride drop off parking space would be provided, including new line marking, signage and bollards as required. The accessible parking space would be moved closer to the new station entrance south of the station building and the new kiss and ride space would replace an existing parking space. Figure 16 is a photomontage depicting the north-eastern corner of the carpark and proposed upgrade location for these parking spaces.

The creation of these two parking spaces and their respective shared zones would result in the net loss of two existing parking spaces from the commuter car park.

3.1.3. Materials and finishes

Materials and finishes for the Proposal have been selected based on the criteria of constructability, durability, low maintenance and cost effectiveness, to minimise visual impacts, and to be aesthetically pleasing.

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
    - shaft –concrete (natural grey in colour)
    - door, control button and indicator – polished stainless steel.
    - glazing – clear glass
    - canopy over waiting areas (dark charcoal grey in colour)
    - ventilation louvre – horizontal storm proof louvre, (dark charcoal grey in colour)
    - roof – metal roof sheeting, dark charcoal grey in colour
- access
    - ramp – concrete base, brick and stainless steel balustrade with stainless steel hand rails
    - stairs – concrete base, brick and stainless steel balustrade with stainless steel handrails and non-slip tread
- platform regrading – asphalt or concrete (as per existing).

The design would be submitted to TfNSW's Urban Design and Sustainability 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 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 placement and integrity of existing structures (station building, station platforms and the footbridge) were considered during the development of the Concept 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 impacts, structural clearances to the track, and safe working provisions.

Extension of the existing footbridge, construction of the new DSAPT compliant paths, regrading of the station platform, and upgrades to stairs is required to be undertaken in a way that allows the station to continue to operate during construction.

Heritage: The Sedimentary Dykes within the station platform cuttings are listed as a heritage item of local significance. The existing cuttings restrict the platform widths and the ability to provide compliant DSAPT clearances for the provision of seating and rubbish bins along the platforms.

Vegetation: The footbridge extension and lift location minimises the disturbance to vegetation. Consideration has been given to including new landscape zones to address the removal of existing garden beds in order to accommodate the new DSAPT compliant ramp and access paths and also to address amenity and urban heat.

Construction access: Construction access is a major constraint for the Proposal. Explorers Road provides the main point of access to Lapstone Station (to Platform 1), but the lift shaft would be constructed on the opposite (eastern) side of the track. All materials needed for the work on Platform 2 and the eastern access would therefore have to be moved across the footbridge manually, or across the track or along the track using hi-rail vehicles during track possessions, or via negotiation of access through the bushland from the neighbouring suburb of Leonay. The Proposal may involve additional night works (beyond planned track possessions) for material movements. Entry to the footbridge from the western side is also limited in width and extent by the proximity of residential properties.

A review of constructability and safety in design for the new lift to the eastern platform concluded that a cast in-situ concrete shaft structure may be suited to this site. This is because the limited construction access and the presence of 11 kV overhead electricity lines, mean that access to the rail corridor using a crane is very difficult.

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

Public access: Public access is to be maintained throughout construction of the station upgrade. Maintaining pedestrian entry to the station during construction requires careful consideration to address construction and limited work areas to accommodate construction of new paths and landings.

3.2.2. Design standards

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

- *Disability Standards for Accessible Public Transport, 2002* (issued under the Commonwealth *Disability Discrimination Act 1992*)
- National Construction Code
- relevant Australian Standards
- Asset Standards Authority standards
- Sydney Trains and NSW TrainLink 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. The Proposal would need to achieve between 50 and 74 points to be certified as 'Excellent' under IS version 1.2.

3.3. Construction activities

3.3.1. Work methodology

Subject to approval, construction is expected to commence in mid-2020 and take 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 2. This staging is indicative and is based on the current concept design and may change once the detailed design methodology is finalised.

Table 2 Indicative construction staging for key activities

Stage	Activities
Stage 1 – site establishment and enabling works	• establish site compound (erect fencing, tree protection zones, site offices, amenities and plant/material storage areas) • remove vegetation to allow for construction of new accessible paths, lift and stairs • relocate/upgrade services/utilities where required • install safety barriers and hoarding around the nominated work zones.
Stage 2 – electrical and communications	• install conduits, pits, transformer, cabling, and new distribution board.
Stage 3 – construction work	• earth and bond installations • excavate for lift pit • form, install reinforcing, and pour lift pit, lift structure and ramps • install lift car and lighting • station building modification and fit out.
Stage 4 – installation and	• localised platform regrading and install of tactile ground surface

Stage	Activities
finishing	indicators (TGSIs) • stair modifications • install new paths and ramps • install other ancillary features • relocate and install new platform furniture • landscaping and fencing • line marking, painting, wayfinding signage.
Stage 5 - testing and commissioning	• test all new systems • commission the lift • defect resolution.
Stage 6 – demobilisation	• remove all construction hoardings/temporary fencing • remove site compound and clear site • remove environmental, safety and traffic controls.

3.3.2. Plant and equipment

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

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

3.3.3. Working hours

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

- between 7am and 6pm Monday to Friday
- between 8am and 1pm Saturdays
- no work on Sundays or public holidays.

Certain work may need to occur outside recommended standard hours and would include night work and work during routine rail shutdowns, which are scheduled closures that would occur regardless of the Proposal when part of the rail network is temporarily closed for maintenance and trains are not operating.

Out of hours work 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. It is estimated that approximately six rail shutdowns would be used to facilitate the following:

- detailed site survey, services and/or geotechnical investigations within and around the rail corridor
- demolition work and relocation of services
- installation of new conduits and cabling
- excavation, delivery and installation of lift
- minor extension work to footbridge to accommodate lift landing
- platform regrading, installation of TGSIs and furniture, and stair modifications.

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 TfNSW *Construction Noise and Vibration Strategy* (TfNSW, 2018b) (refer to Section 6.3 for further details).

The proposed workforce would typically be 10-15 workers during standard hours, with up to 60 workers per shift during possession works.

3.3.4. Earthworks

Excavations and earthworks would generally be required for the following:

- levelling of site compound including temporary retaining wall
- removal of landscaped area and regrading for new ramps
- removal of vegetation near lift shaft
- excavation of lift pit
- regrading for new accessible car space and kiss and ride space in the commuter car park, and new ramp and platform 1 station entry
- other minor civil work.

Excavated material would be reused onsite where possible or disposed of in accordance with relevant legislative requirements. It is estimated that less than 50 cubic metres of excavated material would be generated by path regrading and excavation of the lift pit, and that most of this material can be reused in path regrading.

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 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, and in particular associated with the construction compound at the eastern end of Dawes Place
- temporary increased demand for all-day parking for construction staff

- temporary loss of commuter car parking during regrading of car park for the accessible car parking space and kiss and ride space
- 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) 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 a construction compound has been proposed in the road reserve at eastern end of Dawes Place (refer Figure 18 and Figure 19). The area nominated for the compound is on land managed by Blue Mountains City Council.

Impacts associated with utilising these areas have been considered in the environmental impact assessment including requirements for rehabilitation.

Figure 18 Location of proposed temporary construction compound area at the eastern end of Dawes Place

Figure 19 Proposed construction compound area at the eastern end of Dawes Place

3.3.8. Public utility adjustments

An upgrade of the Endeavour Energy power supply to the station would be required to service the new lift.

Relocation of the existing galvanised steel troughing, and underground signal and communications cables (including Optus assets), at the eastern end of the footbridge would be required to enable the extension of the footbridge and installation of the lift.

Relocation of communications cables and drainage and stormwater would be required for the regrading and construction of the new paths and ramps on the western side of the station.

3.4. Property acquisition

TfNSW does not propose to acquire any property as part of the Proposal.

A temporary 'Licence to Occupy' or lease of the construction compound area would be obtained from BMCC for the duration of the works and a small parcel of land from PCC should it be required. However, any works and structures in Dawes Place, intended to be utilised during the project by TfNSW, would be carried out pursuant to the 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 Proposal is not anticipated to significantly alter the current operating arrangements at Lapstone Station. Any changes to future operation and maintenance would be subject to discussions with Sydney Trains, NSW TrainLink, TfNSW and BMCC.

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 lift would be the responsibility of Sydney Trains.

The eastern car park would continue to be managed by BMCC.

4. Statutory considerations

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

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'. 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 require removal of up to 29 trees, 13 of which are native, throughout an area of about 0.23 hectares. No vegetation to be impacted is listed under the EPBC Act.

No matters of National Environmental Significance or Commonwealth land are identified as being impacted by the Proposal. Therefore, a referral to the Commonwealth Minister for the Environment is not required.

4.1.2. Other Commonwealth legislation

Table 3 discusses other relevant legislation applicable to the Proposal.

Table 3 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 Indigenous 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, 2016a).
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 directly seeks to address the legislative 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*:

a) to plan for a transport system that meets the needs and expectations of the public

b) to promote economic development and investment

c) to provide integration at the decision-making level across all public transport modes

d) to promote greater efficiency in the delivery of transport infrastructure projects

e) to promote the safe and reliable delivery of public transport and freight services.

4.2.2. Environmental Planning and Assessment Act 1979

The 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 the REF provides an environmental impact assessment of the Proposal in accordance with clause 228 and Appendix B specifically responds to the factors for consideration under clause 228.

4.2.3. Other NSW legislation and regulations

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

Table 4 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 require removal of up to 29 trees, 13 of which are native, throughout an area of about 0.23 hectares. No threatened flora species were recorded within the Proposal site and vegetation to be impacted is not listed under the BC Act. The Proposal was considered highly unlikely to result in significant impacts to the identified threatened species (Refer to section 6.6).
Biosecurity Act 2015	Weeds listed as Priority weeds under the *Biosecurity Act 2015* and Weeds of National Significance (WoNS) have been identified within the Proposal site. Clause 22 of the Act 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 (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

Applicable legislation	Considerations
	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 Heritage within the Proposal site. Lapstone Station precinct is not heritage listed. There are two heritage items in the vicinity of the station are significant at a local level: the 'Sedimentary Dykes' and 'Site of Edinglassie'. The Sedimentary Dykes would be directly impacted by the Proposal but the Site of Edinglassie is not likely to be impacted by the Proposal. There are no approvals required under the provisions of the Heritage Act. However, consultation with BMCC is required for impacts to the dykes (refer to Section 6.5).
National Parks and Wildlife Act 1974 (NPW Act)	Sections 86, 87 and 90 of the NPW Act require approval from the Chief Executive of the former Office of Environment and Heritage, whose functions for permits are now within DPIE, for any works which may impact an item of Aboriginal Heritage. The Proposal is unlikely to disturb any Indigenous objects (refer Section 6.4). However, if unexpected archaeological items or items of Indigenous 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, 2016a).
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 at the eastern end of Dawes Place which is a local road under the control of BMCC. Consent under the Roads Act is not required; however, Road Occupancy Licence/s would be obtained from BMCC for the work and use of the area as a temporary site compound, including any temporary road closures where required (refer to Section 6.1).
Sydney Water Act 1994 (SW Act)	The SW Act requires an approval to be obtained for the disposal of trade waste to the sewer network. The Proposal would not involve discharge of wastewater to the sewer.
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. Under section 91E of the WM Act, it is an offence to carry out a controlled activity in, on or under waterfront land unless a controlled activity approval has been issued. The Proposal would not involve any water use (from a natural source

Applicable legislation	Considerations
	e.g. aquifer, river – only from the network), water management works, drainage or flood works, controlled activities or aquifer interference.

4.2.4. Key State Environmental Planning Policies

State Environmental Planning Policy (Infrastructure) 2007

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

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

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.

Clause 13 outlines requirements for consultation with councils, where development impacts on council related infrastructure or services. This is discussed further in Section 5.2.

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.

State Environmental Planning Policy No 44—Koala Habitat Protection

State Environmental Planning Policy No. 44 – Koala Habitat Protection (SEPP 44) aims to encourage the proper conservation and management of natural vegetation areas that provide habitat for koalas to ensure that permanent, free living areas are maintained over their present range. The policy applies to a number of LGAs across NSW, including the Blue Mountains LGA which the Lapstone Station is located within.

As the Proposal is to be assessed under Division 5.1 of the EP&A Act, SEPP 44 does not formally apply, however the provisions of SEPP 44 have been considered in the preparation of this REF.

Section 6.6.1 of this report states that Koala have been recorded in the locality and have the potential to occur in the Proposal Area based on foraging habitat. However, the assessment

concludes that the Proposal Area is marginal foraging habitat (not core koala habitat as defined in this SEPP), and the impact of the proposal on this area is considered highly unlikely to result in any significant impacts on these species.

State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011

Whilst some areas within the Blue Mountains LGA fall within the boundary of the Sydney Drinking Water Catchment the Proposal is not located within the Sydney Drinking Water Catchment to which the SEPP applies and has not been considered further.

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

The aim of this plan is to protect the environment of the Hawkesbury-Nepean River system by ensuring that the impacts of future land uses are considered in a regional context. The Proposal is located within the river corridor, identified as an area of 'Scenic Significance' managed by the SREP.

The Proposal would involve only minor vegetation clearance in and around the existing station buildings, in areas previously cleared, or involving removal of predominantly exotic species. The Proposal would not adversely impact water quality or the scenic significance of the area. The Proposal is considered consistent with this SREP.

4.2.5. Local Environmental Plans (LEPs)

The Proposal is located within both the Blue Mountains LGA and the Penrith LGA, with the boundary between the two LGAs on either side of rail land (see Figure 20). 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*, neither of which apply to the Proposal. During the preparation of this REF, the provisions of the Blue Mountains LEP 2015 (refer Table 5) and Penrith LEP 2010 were considered (refer Table 6).

Table 5 Relevant provisions of the Blue Mountains LEP

Provision description	Relevance to the Proposal
Clause 1.2 – Aims of the Plan	The aims of the LEP include, to promote safe and sustainable access opportunities, including public transport initiatives, walking and cycling.
Part 2 – Zone objectives and land use tables	The station and the associated rail corridor is zoned SP2 –Infrastructure – Rail. The objectives of the zone are to provide for infrastructure and related uses. Surrounding and adjacent residential areas west of the Proposal are zoned E4 Environmental Living. This zone surrounds areas zoned E2 Environmental Conservation and RE1 Public Recreation.
Clause 5.10 – Heritage conservation	Objectives include seeking to conserve the environmental heritage of the Blue Mountains and the heritage significance of heritage items. Sedimentary Dykes on the Main Western Railway (at Lapstone Railway Station) are listed as a heritage item of Local significance L002. A discussion of the potential impacts of the proposal on this local heritage item is discussed in Section 6.5.
Clause 6.12	The Proposal Area is located within an area defined as "Protected Area – Escarpment" on the Scenic and Landscape Values Maps contained in the LEP. Objectives of this clause seek to: • preserve and enhance the visual, cultural and ecological values of the escarpment systems in the Blue Mountains • restrict development, including buildings and vegetation clearance, to minimise impacts • limit hard surfaces

Provision description	Relevance to the Proposal
	• site and design development to minimise environmental impacts • encourage retention, restoration and maintenance of native vegetation. The proposal is centred on and involves existing buildings and infrastructure. Mitigation measures to address the visual impact and ecological impacts are included in Section 6.2 and 6.6. These include the use of recessive colours and materials for the new works and limiting vegetation clearance to only that necessary for construction. New landscaping is proposed to complement and offset new hard surfaced areas.
Clause 6.14 Earthworks	Objectives of this clause seek to ensure that earthworks for which development consent is required would not have a detrimental impact on environmental functions or processes (including waterways, riparian land and groundwater), neighbouring uses, cultural or heritage items or features of the surrounding land. Mitigation measures to address the impacts of proposed earthworks consistent with this objective are addressed in Section 7.2

Table 6 Relevant provisions of the Penrith LEP

Provision description	Relevance to the Proposal
Clause 1.2 – Aims of the Plan	The aims of the LEP include, to protect and enhance the environmental values and heritage of Penrith.
Part 2 – Zone objectives and land use tables	The eastern platform, stairs and shelter are within the rail corridor land which has not been assigned a zone. Clearance of vegetation and 4WD access may occur on land zoned E3 – Environmental Management. Objectives of the E3 zone include, to protect, manage and restore areas with special ecological, scientific, cultural or aesthetic values; and, to provide for a limited range of development that does not have an adverse effect on those values. A discussion of the potential impacts of the proposal on these values is provided in Section 6 and mitigation measures in Section 7.2.
Clause 5.10 – Heritage conservation	Objectives include seeking to conserve the environmental heritage of Penrith and the heritage significance of heritage items. The land immediately to the east of the rail corridor is identified as an archaeological site of local heritage significance (Item No. A112), being the 'Site of Edinglassie', the site of the first private residence at Emu Plains. A discussion of the potential impacts of the proposal on this local heritage item is discussed in Section 6.5.

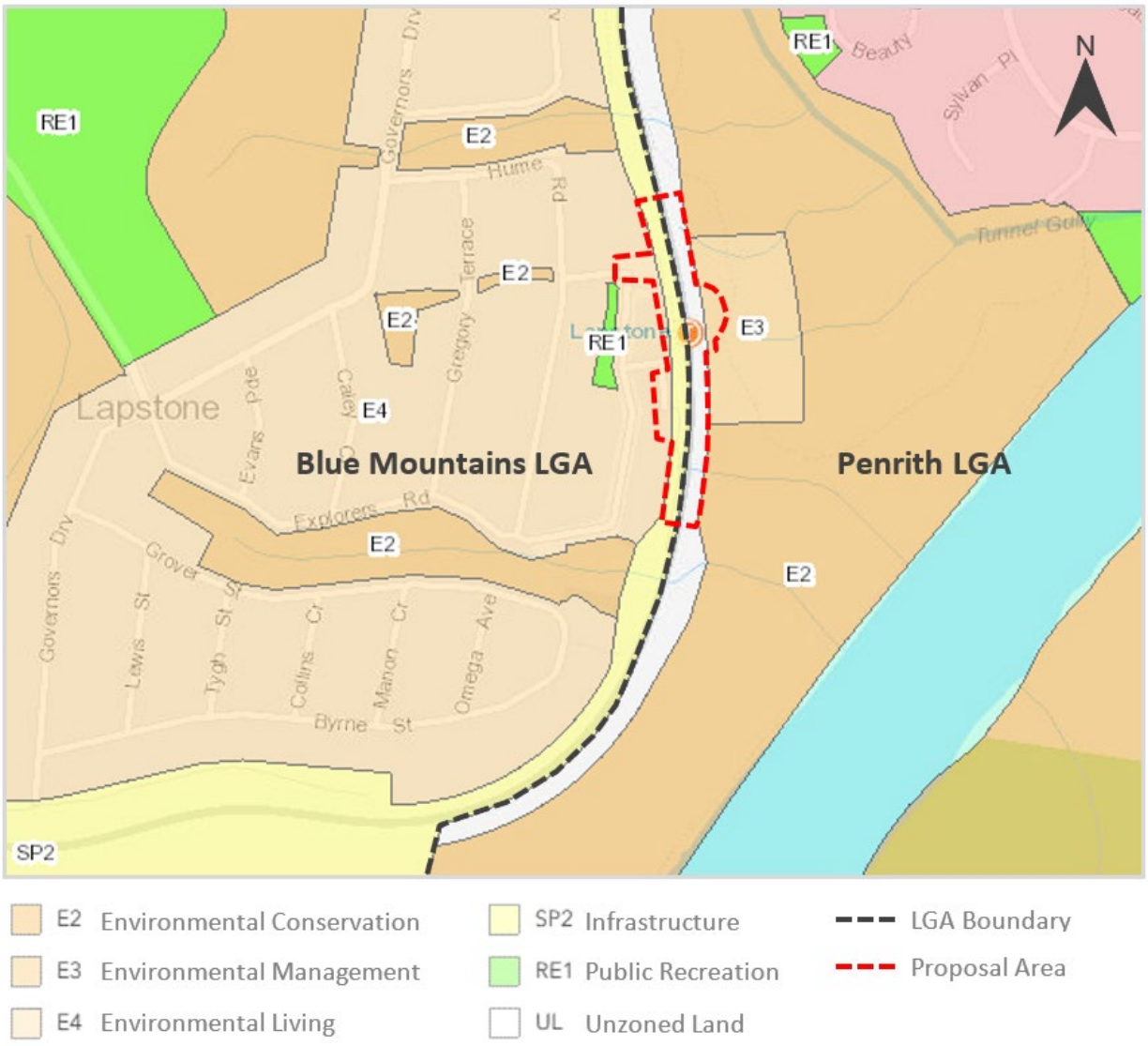


Figure 20 LEP landuse zones map

4.3. Ecologically sustainable development

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

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

The principles of ESD have been adopted by TfNSW throughout the development and assessment of the Lapstone Station Upgrade. Section 6.11 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 for the future. This chapter discusses the consultation strategy adopted for the Proposal and the results of consultation with the community, relevant government agencies and stakeholders.

5.1. Stakeholder consultation during concept 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

BMCC were consulted and provided feedback on elements of the concept design and the use of the proposed construction compound area at the eastern extent of Dawes Place.

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 to 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 7 provides details of consultation requirements under the Infrastructure SEPP for the Proposal.

Table 7 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 • use of a public place that significantly disrupt pedestrian or vehicle movement • involve significant excavation to a road surface or footpath for which Council has responsibility.	The proposal would result in temporary disruption to vehicle access within the BMCC car park and pedestrian footpaths and access to the station during the works. The proposal includes the occupation of the reserve at the eastern end of Dawes Place for a construction compound, for which a lease would be arranged for the duration of the work. The proposal would include changes to levels in the car park and changes to stormwater drainage affecting Council infrastructure. TfNSW have consulted with BMCC on the concept design and would continue to consult council throughout public display, detailed design, and construction. The proposal may include the use of PCC land to the east of the station. PCC would also be advised of the proposal and consulted with.
Clause 14	Where railway station work:	The proposal includes the introduction

Clause	Clause particulars	Relevance to the Proposal
Consultation with Councils – development with impacts on local heritage	• has a 'not minor or inconsequential impact' on local heritage item (if not also a State Heritage Item) • substantially impacts a heritage conservation area.	of Platform 1 seating within the sandstone cutting, which includes sandstone dykes listed as a local heritage item in the BMCC LEP. TfNSW are continuing to consult BMCC in regards to heritage considerations around this feature, with potential to engage a local stone mason and/or artists.

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:

- public display of the REF at various locations
- distribution of a project newsletter to the local community including business and residents, key stakeholder groups and customers outlining the Proposal and inviting feedback on the REF
- advertisement of the REF public display in local newspapers that includes a summary of the Proposal and information on how to provide feedback with a link to the TfNSW website
- consultation with Blue Mountains City Council, Penrith City Council, Sydney Trains, NSW Trains, community and accessibility groups and other key non-community stakeholders
- a community information session near the station.

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 prior to the commencement of the public display period. The REF would be displayed for a period of approximately two weeks.

The REF would be placed on public display on the TfNSW website[1], NSW Government Have Your Say website[2] and hard copies at the following locations:

- Transport for NSW Office
  Level 5, Tower A, Zenith Centre,
  821 Pacific Highway, Chatswood 2067
- Blaxland Library, 33 Hope Street, Blaxland
- Lapstone Station
- Blue Mountains City Council, 104 Macquarie Road, Springwood

Further information on the Proposal may be requested by contacting the Project Infoline (1800 684 490) or by email[3].

During the display period feedback from the community is invited and can be submitted in the following ways:

- mail: Transport Access Program – Lapstone Station Upgrade
  Associate Director, Environmental Impacts Assessment
  Transport for NSW
  Locked Bag 6501
  St Leonards NSW 2065
- email : projects@transport.nsw.gov.au
- TfNSW website: transport.nsw.gov.au/lapstone
- Project Infoline: 1800 684 490
- in person at a project community information session.

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 6-kilometre buffer, on 19 July 2019. No Aboriginal sites were identified in or near the Proposal site. In addition a visual inspection and walkover of the proposal site was conducted and no aboriginal sites, objects, places or areas of potential Aboriginal archaeological sensitivity were identified. The Aboriginal Heritage Due Diligence Assessment completed by AMBS (2019) accompanies and forms part of this REF.

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 suggests that the archaeological

[1] www.transport.nsw.gov.au/lapstone

[2] www.nsw.gov.au/improving-nsw/have-your-say

[3] projects@transport.nsw.gov.au

potential of the area is low. Therefore, it was not considered necessary to undertake specific Aboriginal consultation.

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 and addressed in a Determination Report (refer Figure 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, councils and other key stakeholders informed of the process, identify any further issues as they arise, and develop additional mitigation measures to minimise the impacts of the Proposal. The interaction with the community would be undertaken in accordance with a Community Liaison Management Plan (CLMP) 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, transport and access

The assessment of potential impacts to traffic, transport and access included a desktop analysis and site inspection. Detailed traffic counts and modelling were not considered necessary as the Proposal is focused on the station area and is unlikely to have major impacts on the surrounding road network. A technical report was not prepared.

6.1.1. Existing environment

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

Station platforms and access

Lapstone Station is a dual platform station with the western platform (Platform 1) providing services through to Central Station, Sydney and the eastern platform (Platform 2) providing services to the Blue Mountains and beyond to Lithgow. Entry to Platform 1 is via a combination of stairs and ramps. Customers who wish to access Platform 2 can do so via the existing footbridge and stairs or through the existing track to the east which connects to the suburb of Leonay. The narrowest point of entry to the station is the existing northern sloping path providing access to Platform 1 and the footbridge which is one metre wide. The narrowest point of entry/exit for Platform 2 are the stairs, which are 2.5 metres wide.

Most people walk to Lapstone Station (48 per cent). Other access modes include kiss and ride (26 per cent), park and ride (26 per cent), with very few customers that access the station via bus (Stantec, 2018). The existing access to Lapstone Station is not compliant with DSAPT.

Surrounding road network

Lapstone Station is located on Explorers Road, Lapstone (refer to Figure 5). Explorers Road provides vehicle and pedestrian entry to the station from the west, no vehicle entry is provided from the east. The station is situated in a quiet and established residential area next to bushland, about one kilometre south of the Great Western Highway, which provides strategic access between Sydney and Bathurst.

The surrounding road network comprises of local roads (residential streets) managed by BMCC. Traffic in the area is mainly local traffic.

Parking

Lapstone Station is supported by an existing, asphalt commuter car park located immediately south-west of the station, off Explorers Road. The car park is sealed and provides 36 car parking spaces (BMCC 2018), including one non-compliant accessible parking space.

The car park has an upper and a lower tier separated by landscaping which includes mature trees. One-way entry is via Explorers Road to the lower tier parking which features a steep gradient access road, then leads to the upper tier parking and one-way exit to Explorers Road.

No formal kiss and ride is provided at the station, informal kiss and ride can occur within the existing commuter car park. There is also un-timed, on-street parking along Explorers Road

Public transport

Lapstone Station is on the Blue Mountains Line providing services to Central Station and Bathurst. During the morning peak (6am-8am) and evening peak (4pm-6.30pm), trains run about every 30 minutes in both directions. During off-peak periods trains typically run every hour in both directions.

There is a bus stop on Explorers Road which serves Lapstone Station and connects customers to the local area. The bus stop is located about 120 metres walking distance from Platform 1 of the station, via the commuter car park. The stop provides a single daily service between Penrith and Mount View (Blaxland 691 service), stopping at Lapstone Station at 5.38pm. A school bus service also uses the stop in the morning and in the afternoon

There is no formal taxi rank at the station.

Pedestrian and cycling infrastructure

There are pedestrian footpaths along the station side of Explorers Road and pedestrian bush trails through the bushland on the eastern side of the station. Explorers Road is an on-road cycle route as part of the Blue Mountains Cycle Network, providing a cycle route to the station. There are no bicycle parking or storage facilities at the station.

6.1.2. Potential impacts

a) Construction phase

Customer and public access impacts

Construction activities are anticipated to impact pedestrian and road users due to temporary restricted access of construction areas. Impacts would vary during the construction program as work progresses.

Work would be scheduled to minimise impacts to highly trafficable areas where practicable.

Certain work may need to occur outside standard hours and would include night work and work during routine rail possessions which are scheduled closures that would occur regardless of the Proposal when part of the rail network is temporarily closed and trains are not operating.

Pedestrian and cyclists

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

- upgrading the existing stairs and footbridge, which would impede customer access to the platforms during construction
- the existing footpath from Dawes Place to the station may be temporarily closed to allow access between the station and the construction compound
- upgrading the footpaths between the station and the commuter car park, which would impede customer entrance to the station.

However, any closures would be temporary, with safe and suitable detours provided as a part of the construction traffic management to be implemented during the construction period.

Construction traffic

The construction traffic generated by the Proposal would primarily be light vehicles and some heavy vehicles. Most of this construction traffic would be due to construction workers moving to and from site. The heavy vehicles would be required for the delivery and removal of materials, plant, and equipment.

Truck 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. 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, hi-rail vehicles and skid loaders.

As described in Section 3.3.7, the main construction compound would be located within an area of vegetated road reserve at the eastern end of Dawes Place, (refer to Figure 15).

Heavy vehicle access to the construction compound would be via the Great Western Highway. Immediate access to the construction compound shall be via Governors Drive and either Hume Road or Explorers Road as shown in Figure 21.

The final construction haulage route would be determined by the nominated Construction Contractor during the detailed design of the Proposal.

With the exception of the construction compound area in Dawes Place, the need for any other Road Occupancy Licences has not been identified. This would need to be reviewed during the detailed design.

If required, vehicular access to Platform 2 would be via Dryad Place Access Gate and along the rail track utilising hi-rail vehicles (i.e. vehicles which can operate on a conventional road and rail tracks). Access to the Dryad Place Access Gate from the Great Western Highway would be via Leonay Parade and The Sanctuary Drive as shown in Figure 21. Access would only occur during rail possessions and involve a small number of vehicle movements per day (less than 10) for plant, such as elevated work platforms and hi-ab crane, to access the site.

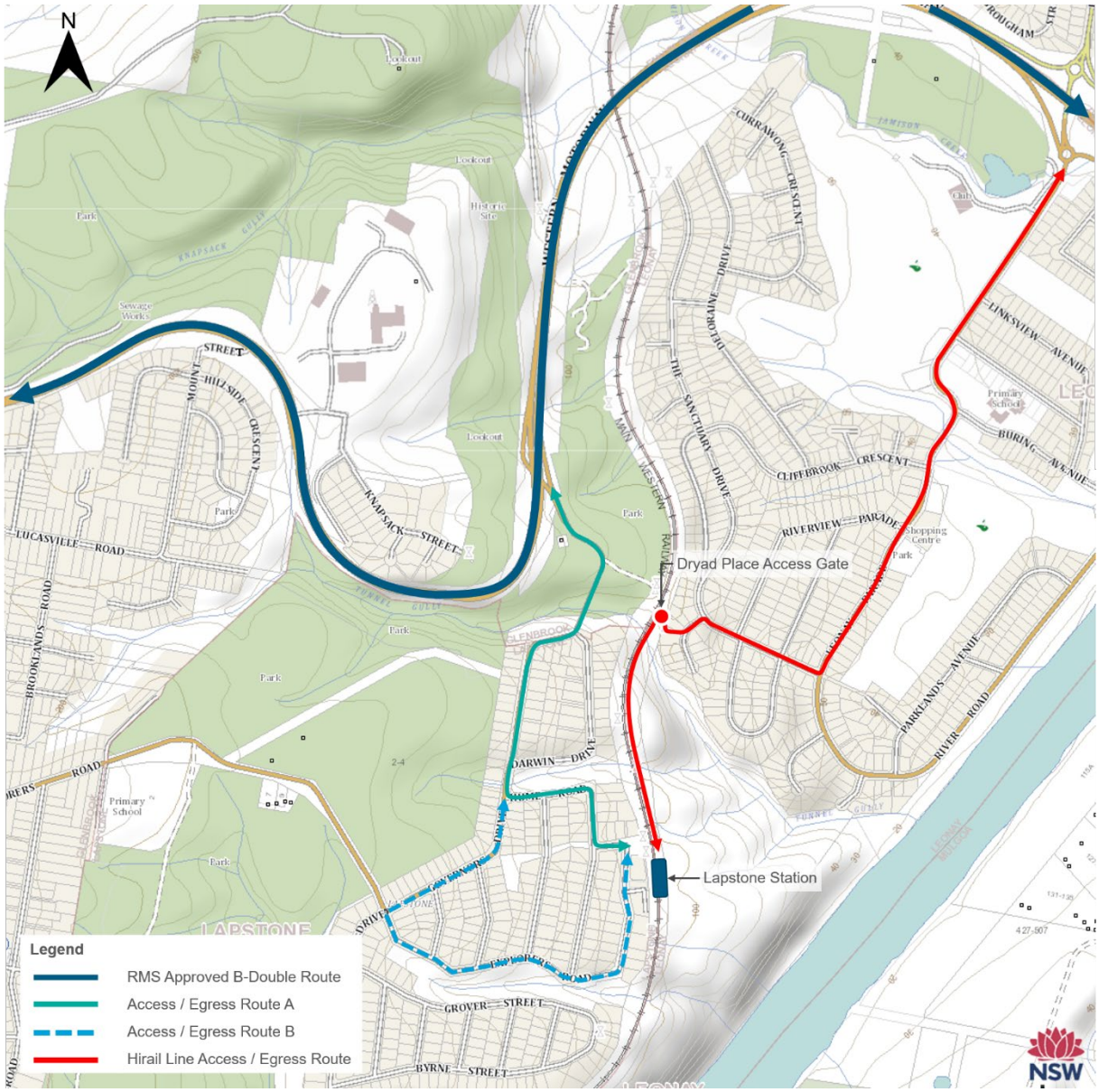


Figure 21 Potential construction vehicle routes (indicative only, subject to detailed design)

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 at the eastern end of Dawes Place.

Temporary loss of parking spaces in the existing commuter car park would occur during construction of the new DDA compliant parking space and kiss and ride space and may result in the temporary loss of eight to nine parking spaces and possible temporary closure of the lower car park. However, any loss in parking is expected to be short term.

Emergency vehicle access

Access for emergency vehicles would be maintained at the construction site at all times. 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

Pedestrians

The Proposal would improve pedestrian movements within and to/from Lapstone Station due to the installation of the lift to Platform 2, regrading of the platform surface and existing footpaths, new DSAPT compliant ramps, closure of the steep ramp north of the station to Platform 1, and installation of a new station entrance point south of the station building on Platform 1. This would allow for accessible movement to and from the pedestrian bridge, station platforms, external road network and accessible parking space.

Road network and traffic

The proposed scope of work would not affect the local road network and is not anticipated to have a direct increase in traffic generation during operation.

Parking

The Proposal would result in minimal changes to the parking supply within the station precinct. The introduction of two new parking spaces (one new upgraded accessible parking space and one kiss and ride space) within the commuter car park would result in the loss of four existing parking spaces, equating to a net loss of two parking spaces.

The car-park does not currently operate at capacity, and on-street parking is readily available in the vicinity. The net loss of 2 parking spaces is expected to have a minor negative impact.

One new accessible car parking space and one kiss and ride space in the commuter car park would have a positive impact for users of Lapstone Station. The location of the kiss and ride space immediately in front of the station is considered beneficial. It is anticipated the designated kiss and ride space would reduce motorists stopping at informal locations to allow passengers to disembark / embark from the vehicles, resulting in an improved safety outcome and efficient traffic movement.

Public transport, pedestrian and cyclist infrastructure

The Proposal does not include changes to existing bus or rail services and would not impact on the operation (service operation or timetabling) of public transport in the vicinity of Lapstone Station.

The proposal includes the installation of a bicycle rack with parking space for 10 bicycles on the western side of the station.

6.1.3. Mitigation measures

Prior to the start of construction, a Construction Traffic Management Plan (CTMP) would be prepared as part of the Construction Environmental Management Plan (CEMP). The CTMP would include as a minimum:

- traffic management measures such as signage, line marking, and all other traffic control devices
- designated traffic routes and parking areas for workers and oversize vehicles
- managing impacts and changes to on and off street parking
- access to Station and around work area for pedestrians and cyclists, including fencing and barriers
- oversize vehicle permits and Road Occupancy Licences for temporary road closures that may be required
- information regarding the presence of qualified traffic controllers during construction work.

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

6.2. Landscape and visual amenity

A landscape and visual amenity impact assessment was undertaken by Envisage for the Proposal (Envisage, 2019) and forms part of this REF. The findings of the assessment are summarised in this section.

The assessment included desktop analysis, site inspection on 5 August 2019, and the creation of photomontages. The photomontages provide an indication of what the Proposal may look like from key representative viewpoints once complete, noting that materials and finishes are indicative only and would be further investigated during 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*, December 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 and magnitude of the impact to produce a combined impact rating of negligible, low, moderate-low, moderate, moderate-high and high (refer to Figure 22).

		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 22 TfNSW (former) Roads and Maritime impact grading matrix

6.2.1. Existing environment

Existing landscape character

Lapstone is located on the top of an escarpment about 330 metres north-west of the Nepean River, at an elevation of about 110 metres (AHD). The suburb is characterised by its small size and bushland surroundings. Residential streets west of the station are moderately steep, with predominantly two-storey or elevated single-level detached dwellings, or small apartment buildings. Tall native forest is east of the station and there is almost 50 per cent native canopy cover throughout the residential area. The predominance of tall, native trees and steep landform combine to create an attractive setting.

The station and carpark are described as visually unremarkable, although located within an attractive setting with a bushland backdrop. The station is at a lower level than the surrounding areas and therefore it is not visually prominent or a key feature of the local area.

The landscape is assessed as having a **moderate** sensitivity to change due to:

- the vicinity of Lapstone Station (not the rail corridor and station itself) is within the area identified as "Protected Area – Escarpment" within the BMCC LEP 2015 and contributes to the unique visual qualities of the escarpment system
- the landscape surrounding the station being attractive due to the predominance of trees and the sloping land providing high value views over the station to surrounding bushland reserves

- the station, car park and rail corridor infrastructure not being visually prominent and not having a particular scenic value.

Visual receivers and viewpoints

Lapstone Station has a very small visual catchment due to the surrounding topography, vegetation and buildings. Views of the proposal area, including the proposed construction compound area in the road reserve at the eastern end of Dawes Place, are possible from the length of Dawes Place, small sections of Hume Road and Explorers Road, and some residential properties along these local roads. The approximate viewing area (or viewshed) from which the proposal area can be viewed is shown in Figure 23.

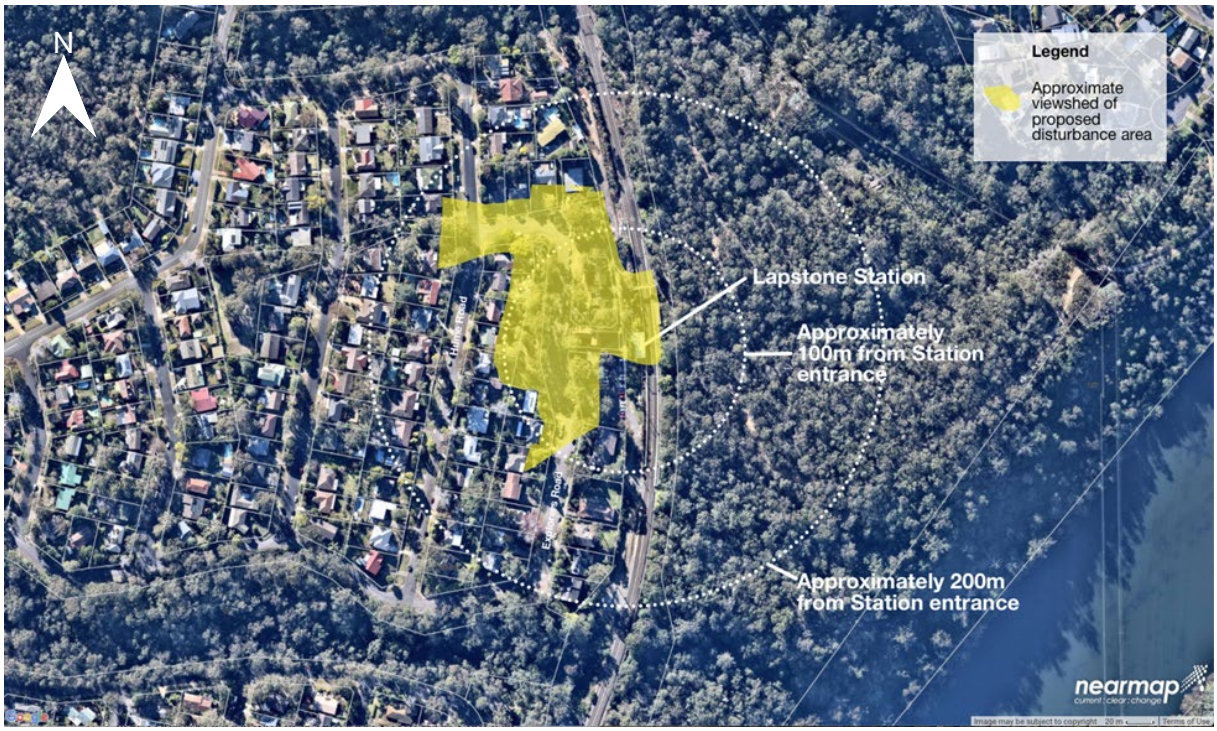


Figure 23 Approximate area from which the Proposal area can be viewed

Visual receivers are individuals or groups of people whose views may be affected by the Proposal. These include users of residential dwellings, users of the station and public spaces and generally comprise residents, rail customers, motorists and pedestrians. Four viewpoint locations have been identified as part of the visual impact assessment and these are described in Table 8 and shown in Figure 24.

Table 8 Identified viewpoints

Viewpoint	Description and sensitivity
VP1: Residential buildings west of station	Located immediately west of the station, residents have opportunity for close, direct views of, and over the station. From second storeys, residents would have views to the bushland reserve to the east. Some occupants have installed privacy screens to balconies facing the station. Sensitivity of these visual receivers is considered **moderate**.
VP2: Dwelling immediately south of the station carpark	Located directly adjacent to the car park. Native vegetation along the boundary restricts views and no windows overlook the station or car park. Sensitivity to views of the Proposal is considered **low**.

VP3: View from Explorers Road	From street level and residences on Explorers Road existing views of the station are screened by vegetation within the car park and private properties, and by the descending topography. Sensitivity to views of the Proposal is considered **low** due to proximity, and as the station is not visually prominent in views.
VP4: Views from Dawes Place	Representative of views from residents near the proposed construction compound. Sensitivity to views of the Proposal is considered **moderate** due to proximity of works (nearest receiver approximately 10 metres away) as the reserve is visually prominent, however not the main focus of views.

Figure 24 Viewpoints identified for assessment (Source: Envisage, 2019)

6.2.2. Potential impacts

a) Construction phase

Landscape character

The main changes to landscape character would be during construction. The construction activities and elements likely to be introduced into the visual environment include:

- fencing and hoarding
- ground disturbance and vegetation removal
- barriers and signage
- formwork and scaffolding
- construction compound including retained and compacted area for site office and amenities, storage of materials and equipment, site assembly of components, and parking of vehicles.

Where night work is required for the Proposal this would involve the use of temporary lighting for operational, safety and security purposes.

Although temporary, the construction area (including the construction compound) would be moderately large, involve large equipment and would dominate local character of the immediate area. The attractiveness of the adjoining bushland and landscape east of the station would be temporarily reduced by equipment and construction activities.

During construction the magnitude of change on the landscape character would be **moderate**. The overall landscape character impact is assessed as **moderate**.

Visual impact

The impacts on the viewpoints in Figure 24 are assessed on the basis of sensitivity and magnitude of change using the impact grading matrix previously discussed (Figure 22

Sensitivity	Magnitude				
		High	**Moderate**	**Low**	**Negligible**
	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 22). The visual impacts anticipated during construction are described in Table 9.

Table 9 Summary of visual impact during construction

Viewpoint	Summary of impact	Overall impact
VP1: Residential buildings west of station	Sensitivity of these visual receivers is considered **moderate** due to their close proximity and the station's visual prominence to this viewpoint. The magnitude of change during construction is considered **moderate** overall, with periods of high impact during the lift construction works. Vegetation would be removed and works would be immediately apparent and extend over a significant portion of viewed area. The proximity of works and the removal of vegetation would result in a reduction in visual and acoustic privacy for these residences. However, boundary fencing would remain and a number of residences have existing privacy screening to first floor balconies and windows.	**Moderate** (with periods of Moderate to High)
VP2: Dwelling immediately south of the station carpark	Sensitivity to views of the Proposal considered **low**. The magnitude of change to views during construction is considered **low** due to proximity works and restricted views.	**Low**
VP3: View from Explorers Road	Sensitivity to views of the Proposal considered **low**. The magnitude of change to views during construction is considered **low** due to screening vegetation and limited view extent.	**Low**
VP4: Views from Dawes Place	Sensitivity to views of the Proposal considered **moderate**. The magnitude of change to views during construction is considered **moderate** as construction compound activities (site office, fencing, hoardings) would dominate the road reserve and detract from views.	**Moderate**

b) Operation phase

Landscape character

Following construction, the Proposal would have a **negligible (positive)** magnitude of change on the landscape character. The attractiveness of the bushland setting would be restored when construction infrastructure is removed. The construction compound would be decommissioned, and the area rehabilitated.

The proposed lift, paths and new features would not dominate the existing landscape character and would be consistent with the original station setting. The proposed new entrance and landscaping at the station entrance would increase the station's attractiveness and enhance local landscape character.

Lighting would be designed in accordance with the requirements of standards relevant to AS 1158 Road Lighting and AS 4282 Controlling the Obtrusive Effects of Outdoor Lighting, to restrict light spill.

Visual impact

Once completed, the main Proposal elements that would be visible are:

- the new entrance south of the station
- the proposed lift to Platform 2
- the proposed ramp between the carpark and the footbridge
- seating recessed into the sandstone rail cutting of Platform 1
- landscaping.

Except for Viewpoint 1, the Proposal during operation would be relatively comparable with the existing view. Table 10 provides a summary of impacts during operation.

Table 10 Summary of visual impact during operation

Viewpoint	Summary of impact	Overall impact
VP1: Residential buildings west of station	Sensitivity of these visual receivers is considered **moderate**. Post construction the magnitude of impact to views is considered **low** as new landscaping would replace vegetation removed, improvements would increase attractiveness, and proposed lift would be lower than tree canopy background.	**Moderate-Low**
VP2: Dwelling immediately south of the station carpark	Sensitivity to views of the Proposal are considered **low**. Magnitude of change to views post construction is considered **negligible** as vegetation and restricted views would remain.	**Negligible**
VP3: View from Explorers Road	Sensitivity to views of the Proposal are considered **low**. Magnitude of change to views post construction is considered **negligible** as the Proposal on completion would be relatively compatible with the existing view.	**Negligible**
VP4: Views from Dawes Place	Sensitivity to views of the Proposal are considered **moderate**. Magnitude of change to views post construction is considered **negligible** as new elements would not be visible, with exception of landscaping.	**Negligible**

Photomontages have been prepared that are representative of views from both customer experience as well as residents' views. The viewpoints for the photomontages are presented below in Figure 25, and the photomontages as Figure 27, Figure 29, Figure 31 and Figure 33.

Figure 25 Viewpoints for photomontages (Source: Envisage, 2019)

Figure 26 Existing VP3 from commuter car park looking east

Figure 27 Photomontage VP3 from commuter car park looking east

Figure 28 Existing VP5 looking north at proposed entry paths from commuter car park

Figure 29 Photomontage VP5 looking north at proposed entry paths from commuter car park

Figure 30 Existing VP6 of the proposed eastern platform lift

Figure 31 Photomontage VP6 of the proposed eastern platform lift

Figure 32 Existing VP7 from eastern Platform 2 looking north to new fencing and entry to Platform 1

Figure 33 Photomontage VP7 from eastern Platform 2 looking north to new fencing and entry to Platform 1

6.2.3. Mitigation measures

During construction the Proposal would have some moderate-high visual impacts, but overall is assessed as having a moderate level of visual impact on the residential properties immediately to the west of the station (VP1). However, following construction, the visual impact is considered moderate-low and from all other assessed viewpoints negligible.

Although some established existing vegetation would be removed and new structures (such as the lift shaft) introduced, the new elements would not dominate the landscape character and the upgrade would, in general, increase the attractiveness of the station precinct.

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 Visual Impact Assessment (Envisage, 2019), and include:

- retain existing trees throughout the car park to maintain their screening effect on views from Explorers Road (bearing in mind CPTED requirements)
- install temporary hoarding/screening around the construction compound (such as covering the temporary security fencing with shade cloth)
- Investigate onsite replacement of vegetation to provide similar vegetation screening to residences on the western side of the station. In accordance with TfNSW's *Vegetation Offset Guide* and in consultation with Sydney Trains.
- As part of the Urban Design Plan, a landscape plan is prepared and implemented that includes:
    - replacement planting of shrubs/trees in the road reserve at the eastern end of Dawes Place (if removed)
    - planting of new garden beds near the proposed new ramp to the footbridge
    - rehabilitation planting within the bushland reserve east of the station within the disturbance area
    - landscaping associated with the new entrance to Platform 1
    - planting within Lapstone Station carpark (if removal of vegetation within the carpark is required)
- materials used for new structures to be non-reflective and colours to be recessive
- during night work, temporary light spill beyond the construction site is to be mitigated by directing light source down and installing shields around the light source
- remove graffiti if it occurs at the construction site in accordance with TfNSW standard requirements
- rehabilitate disturbed areas as soon as possible following construction.

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) has been prepared by Pulse Acoustic to assess potential construction and operational impacts of the Proposal and recommend appropriate noise control measures (Pulse Acoustic, 2019). The findings of the assessment are summarised in this section.

6.3.1. Existing environment

Sensitive receivers and noise catchment areas

Construction works would be carried out at the station and car park, and within the ancillary construction compound at the eastern end of Dawes Place.

Residential dwellings are located 20 m to the west of the western sloping path. A children's park is located 280m west of the western platform. Aside from the children's park, no other non-residential sensitive receivers are identified within 300m of the station. Residential receivers are located to the south, north and to the west of the proposed construction compound, along Explorers Road and Dawes Place.

The eastern side of the station features bushland that separates the suburb of Leonay from Lapstone Station. The closest residential receiver in Leonay is located about 300m from Lapstone Station.

The Sedimentary Dykes revealed in the railway cutting at Lapstone Station are a heritage item of local significance which would be directly impacted as a result of the Proposal, and have the potential to be adversely impacted by vibration.

The NVIA considers potential impacts on both residential dwellings and non-residential receiver within the vicinity of the Proposal.

The NVIA was carried out on the basis of identifying four Noise Catchment Areas (NCAs) into which the receivers were grouped. The NCAs are shown in Figure 34.

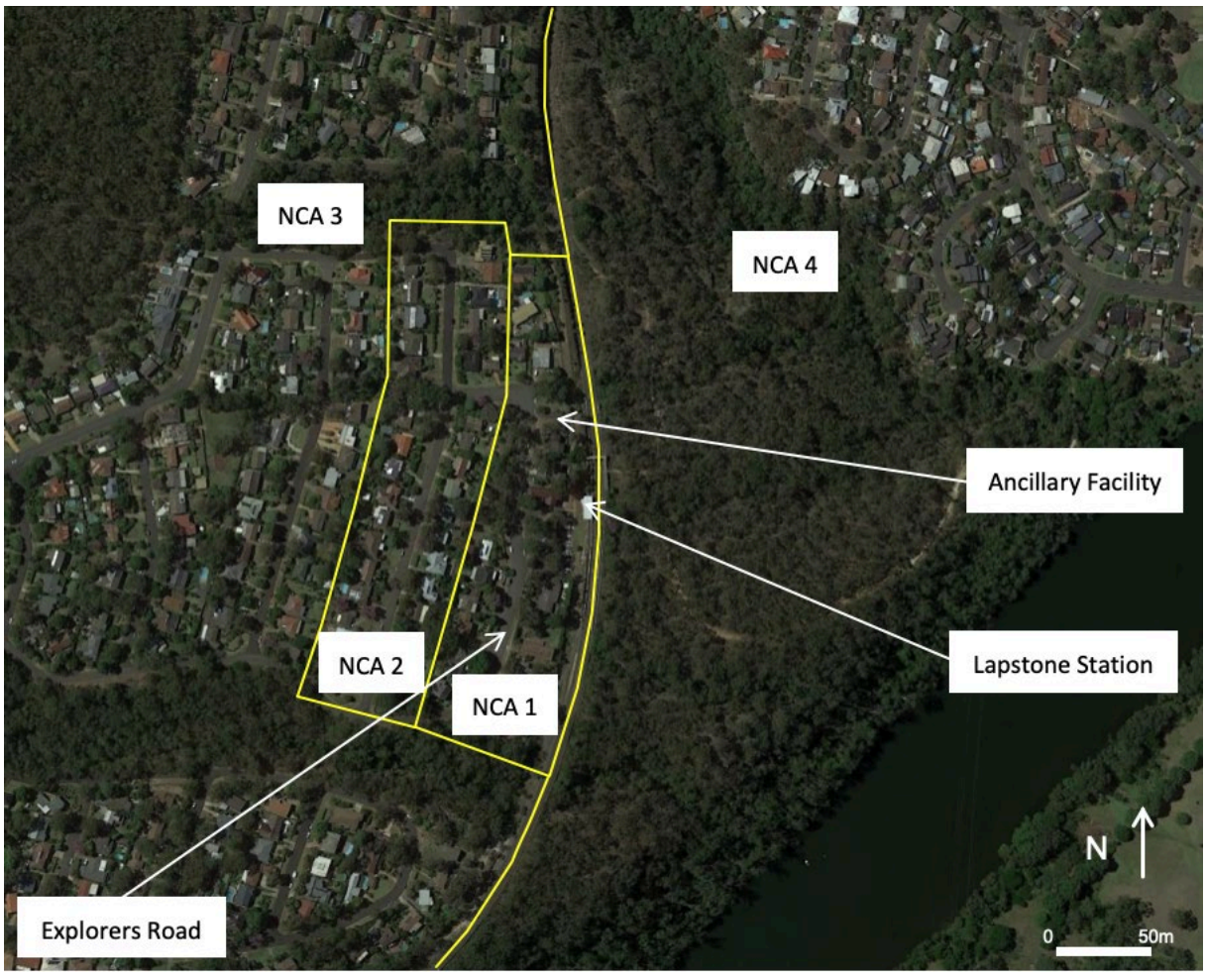


Figure 34 Location of Noise Catchment Areas (NCAs) (Source: Pulse Acoustic, 2019)

Background noise levels

Existing noise levels (prior to construction of the Proposal) are measured 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 construction activity.

Attended monitoring was conducted on Tuesday 20 August 2019 at the closest residential receiver to Lapstone Station (Location A) and the closest residential receiver to the proposed construction compound (Location B), see Figure 36.

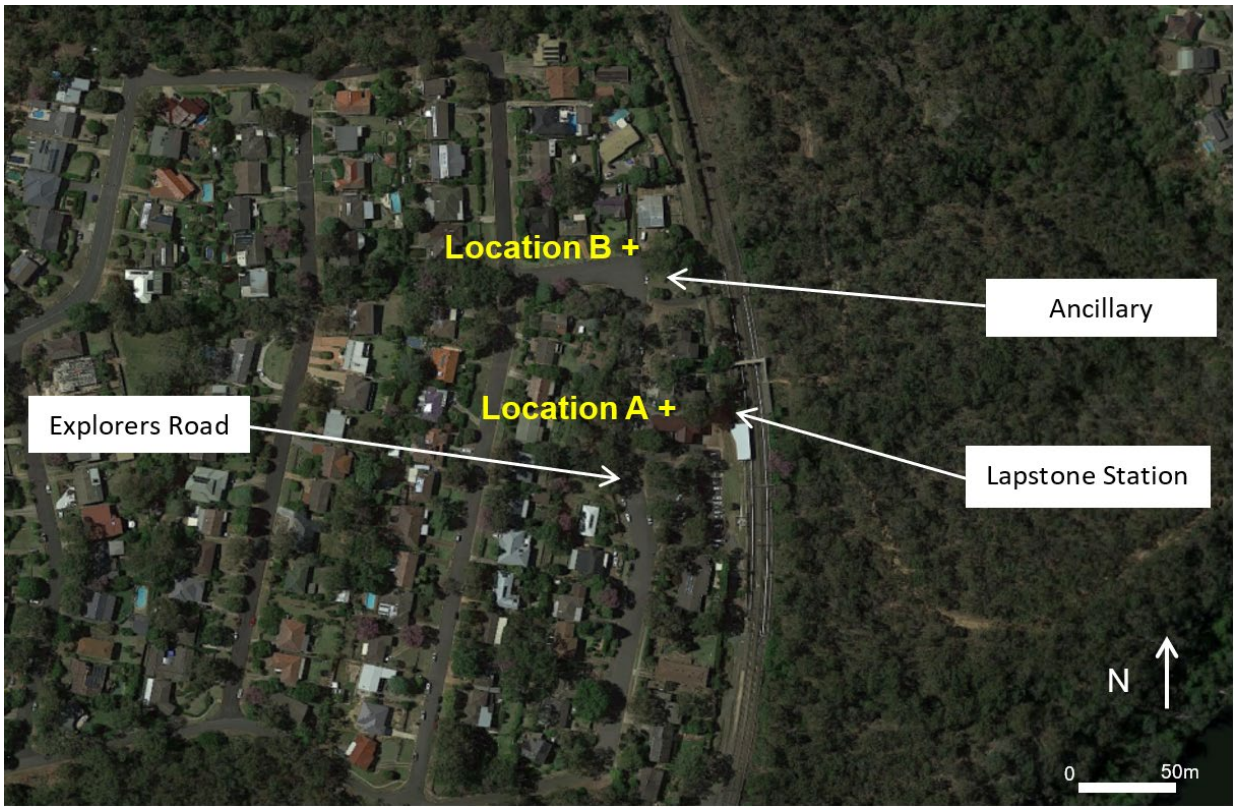


Figure 35 Noise monitoring locations

The attended noise monitoring found almost identical background noise levels at the two receivers (see Table 11). Measurements at Location A inform the noise criteria for operational and construction activities from the station. Measurements at Location B inform the criteria for the ancillary construction compound scenario. Given that the attended noise monitoring results have similar background levels and that Location B only represents one construction scenario which is predicted to have minor impacts, unattended monitoring was conducted only at Location A.

Table 11 Attended noise monitoring results

Location	Time	$L_{Aeq,\ 15\ min}$	L_{A90}
Location A	10:02-10:17am	50	37
Location B	10:22-10:37am	45	36

The unattended background noise levels for Location A are shown in Table 12. Overall, the background noise levels are low for a suburban area. Distant road traffic noise and environmental noise is slightly quieter during the night period than the day and evening periods.

Table 12 Unattended noise monitoring results

Location A	Daytime 7:00am to 6:00pm	Evening 6:00pm to 10:00pm	Night-time 10:00pm to 7:00am
L_{A90}[1]	32 dB(A)	32 dB(A)	30 dB(A)
L_{Aeq}	55 dB(A)	55 dB(A)	55 dB(A)

Note 1 – The L_{A90} noise level is representative of the "average minimum background sound level" (in the absence of the source under consideration), or simply the background level.

When very low background noise levels are measured in an environment, the *Noise Policy for Industry* (NPI) (EPA, 2017) provides minimum background noise levels to be used in preference to the measured background noise levels, as well as project intrusiveness limits. These are shown in Table 13 and would apply to the Proposal for the daytime period only.

Table 13 Minimum assumed background noise levels

Time period[2]	Rating background noise level (RBL)[1]	Project intrusiveness noise levels ($L_{Aeq, 15\ min}$)[1]
Day	35 dB(A)	40 dB(A)
Evening	30 dB(A)	35 dB(A)
Night	30 dB(A)	35 dB(A)

Note 1 – from section 2.3 and Table 2.1 of the NPI.

Note 2 – for Monday to Saturday, Daytime 7am–6pm; Evening 6pm–10pm; Night-time 10pm–7am. On Sundays and Public Holidays, Daytime 8am–6pm; Evening 6pm–10pm; Night-time 10pm–8am.

Noise and vibration assessment criteria

The NVIA provides a detailed discussion of the relevant guidelines and standards used to establish the criteria for the assessment of:

- construction noise
- construction vibration
- operational noise.

Table 14, Table 15, Table 16 and Table 17 provide a summary of criteria relevant to the proposal, and against which the assessment of potential impacts of noise and vibration is then made. For a detailed analysis of these criteria refer to the NVIA (Pulse Acoustic, 2019)

Table 14 Adopted construction Noise Management Levels (NMLs)

Time period	Residential receiver NML
Standard Hours – Daytime (7am–6pm Mon-Fri, 8am–1pm Sat)	45 dB(A)
Out of Hours Work – Daytime (7am–8am and 1pm–6pm Sat, 7am–6pm Sun)	40 dB(A)
Out of Hours Work – Evening (6pm–10pm seven days)	37 dB(A)
Out of Hours Work – Night-time (10pm–7am seven days, 7am–8pm Sun)	35 dB(A)

Table 15 Acceptable human comfort vibration dose values for vibration

Vibration type	Period	Preferred value (m/s^2)		Maximum value (m/s^2)	
Continuous		**z-axis**	**x- and y-axis**	**z-axis**	**x- and y-axis**
Residential	Day	0.010	0.0071	0.020	0.014
Residential	Night	0.007	0.005	0.014	0.010
Impulsive	**(m/s^2)**	**z-axis**	**x- and y-axis**	**z-axis**	**x- and y-axis**
Residential	Day	0.30	0.21	0.60	0.42
Residential	Night	0.10	0.071	0.20	0.14
Intermittent		**Preferred value ($m/s^{1.75}$)**		**Maximum value ($m/s^{1.75}$)**	
Residential	Day	0.20		0.40	
Residential	Night	0.13		0.26	

Note – Day (7am–10pm); Night (10pm–7am); from Assessing Vibration – A Technical Guideline (DEC, 2006)

Table 16 Structural damage assessment criteria for vibration

Structure type	PPV (mm/s)			
	1 Hz to 10 Hz	10 Hz to 50 Hz	50 Hz to 100 Hz[1]	Vibration of horizontal plane of highest floor at all frequencies
Buildings used for commercial purposes, industrial buildings and buildings of similar design	20	20 to 40	40 to 50	40
Dwellings and buildings of similar design and/or use	5	5 to 15	15 to 20	15
Structures that, because of their sensitivity to vibration, do not correspond to those listed in lines 1 and 2 and are of great intrinsic value (e.g. heritage/buildings that are under a preservation order)	3	3 to 8	8 to 10	8

Note 1: For frequencies above 100Hz, at least the values specified in this column shall be applied.

Table 17 Operational noise criteria

Location	Period	Intrusive $L_{Aeq,\ 15\ min}$ Criterion for New Sources (dBA)[1]	Amenity $L_{Aeq,\ 15\ min}$ Criterion for New Sources (dBA)[2]
Residences	Day	**40**	53
Residences	Evening	**37**	48
Residences	Night	**35**	48
Active Recreation	When in use	N/A	**53**

Note the Project Trigger Noise Levels ($L_{Aeq(15\ min)}$) are shown in bold being the more stringent of the intrusiveness and amenity noise level

Note 1: Project intrusive noise level is RBL + 5dB

Note 2: Project amenity (period) noise level is the prescribed amenity criteria minus 5 dB

Sleep disturbance

Sleep arousal criteria have also been established for residential receivers which are based on the NSW Roads Noise Policy (Department of Environment, Climate Change and Water, 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.

6.3.2. Potential impacts

a) Construction phase

Construction noise and vibration impacts

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 most activities are expected to take place during standard construction hours, construction work would also take place during weekend track possessions and involve night work. It is expected that a future Construction Noise & Vibration Management Plan (CNVMP) would provide greater clarification on construction hours for each activity.

In this section, the in-principle construction noise and vibration generating scenarios are identified, based on the indicative equipment list and construction methodology for the proposed construction (see Section 3.3.2). Potential construction noise and vibration impacts are predicted at the nearby receivers. In principle recommended mitigation measures against potential noise and vibration impacts are given, subject to a future CNVMP.

Construction noise

Potential construction noise impacts were modelled for eight construction scenarios (see Table 18). The scenarios are informed by the construction staging assessment prepared for the strategic concept design (SMEC 2017a) and are indicative only (subject to change during detailed design and construction planning).

Table 18 Indicative construction noise assessment scenarios

Indicative scenario[1]	Plant and equipment
Scenario 1: Ancillary Facility (Potential Night OOHW 2)	Truck (idle)
Scenario 2: Platform Rock Sawing (Potential Night OOHW 2)	Concrete Saw[1]
Scenario 3: Ramp Demolition	3T Excavator with Hydraulic Hammer[1], Truck (idle),

Indicative scenario[1]	Plant and equipment
(Potential Day OOHW 1)	Hand Tools
Scenario 4: Ramp Installation (Potential Day OOHW 1)	Truck (idle), Hand Tools, Concrete Boom Pump
Scenario 5: Lift Pit Excavation (Potential Day OOHW 1)	3T Excavator with Hydraulic Hammer[1], Hand Tools
Scenario 6: Western Entrance (Potential Day OOHW 1)	Hand Tools; Truck (idle), Concrete Boom Pump
Scenario 7: Internal Demolition (Potential Night OOHW 2)	Jackhammer[1], Hand Tools
Scenario 8: Carpark Grading Preparation (Potential Day OOHW 1)	Truck (idle), 3T Excavator with Hydraulic Hammer[1]

Note 1 –In addition to standard daytime, scenario assessed for possible OOHW.

A summary of noise modelling results is provided in Table 19. In the worst case scenarios presented, no construction noise levels are predicted to exceed the 75 dB(A) highly noise affected level for any 15-minute construction scenario. Exceedances are predicted of standard day criteria in NCA 1 for all scenarios and the majority of scenarios in NCA 2. OOHW day exceedances are predicted for scenario 3 and scenario 5 in both NCA 3 and NCA 4, and an OOHW evening exceedance is predicted for scenario 2 in NCA 4.

Table 19 Worst case construction noise scenario results, standard hours and OOHW 1, scenarios 1-8

Catchment	Standard Day Criteria	OOHW 1 Day Criteria	OOHW 1 Evening Criteria	Scenario							
				1	2	3	4	5	6	7	8
NCA 1	45	40	37	56	50	68	67	59	63	49	66
NCA 2	45	40	37	52	37	50	55	46	55	37	59
NCA 3	45	40	37	30	32	41	35	41	32	21	32
NCA 4	45	40	37	32	40	44	37	41	34	24	33

Note:
- Predicted to Exceed the OOHW 1 Evening NML
- Predicted to Exceed the OOHW 1 Day NML
- Predicted to Exceed the Standard Day NML
- Predicted to Exceed the 75 dB(A) Highly Noise Affected Criteria

To limit the impact of these noise exceedances the assessment recommends that only certain work scenarios occur during OOHW 2 periods and that specific mitigation measures, including notification, verification monitoring, and respite periods are adopted through a Construction Noise and Vibration Management Plan (CNVMP) and implemented for OOHW 1 and OOHW 2 periods.

The potential for sleep disturbance at nearby receptors has been predicted for construction scenarios 1, 2 and 7. Sleep disturbance is not predicted at any receivers during scenarios 2 and 7. Sleep disturbance may occur at two receivers in NCA 1 and one receiver in NCA 2 during scenario 1 when a truck is operating at the ancillary facility:

Construction vibration

The construction equipment that are potential sources of vibration include the excavator with hydraulic hammer and jackhammer. From BS 7385 and NSW CNVS, the minimum

recommended distance to avoid cosmetic damage and human response for these sources is outlined in Table 20.

Table 20 Recommended Minimum Working Distances from Vibration Intensive Plant

Scenario	Minimum Distance – Cosmetic Damage (BS 7385)	Minimum Distance – Human Response (OE&H Vibration Guideline)
Jackhammer (handheld)	1 m (nominal)	Avoid contact with structure
Small Hydraulic Hammer (300kg)	2 m	7 m
Medium Hydraulic Hammer (900kg)	7 m	23 m
Large Hydraulic Hammer (1600kg)	22 m	73 m

Human response and cosmetic damage from construction vibration would be avoided by observing the minimum distances listed.

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.

Final equipment has not yet been selected, but is expected to include lift motor, lift air conditioner, bathroom exhaust fans and the building air conditioner. However, from other station upgrades, 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 project trigger levels specified in Table 17.

Operational vibration

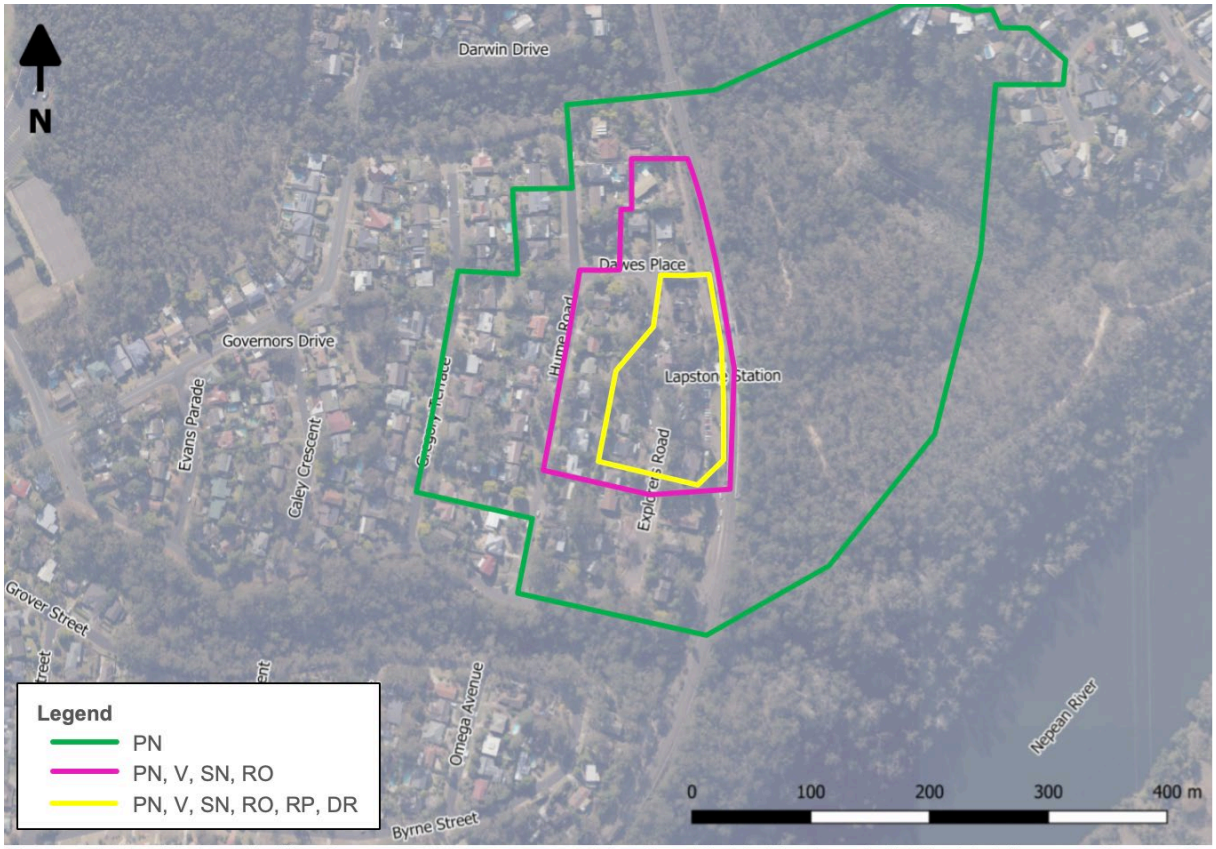
The operational noise sources do not contain any significant sources of vibration. No further assessment or mitigation measures necessary.

6.3.3. Mitigation measures

Specific mitigation measures outlined in the NVIA (Pulse Acoustics, 2019) include:

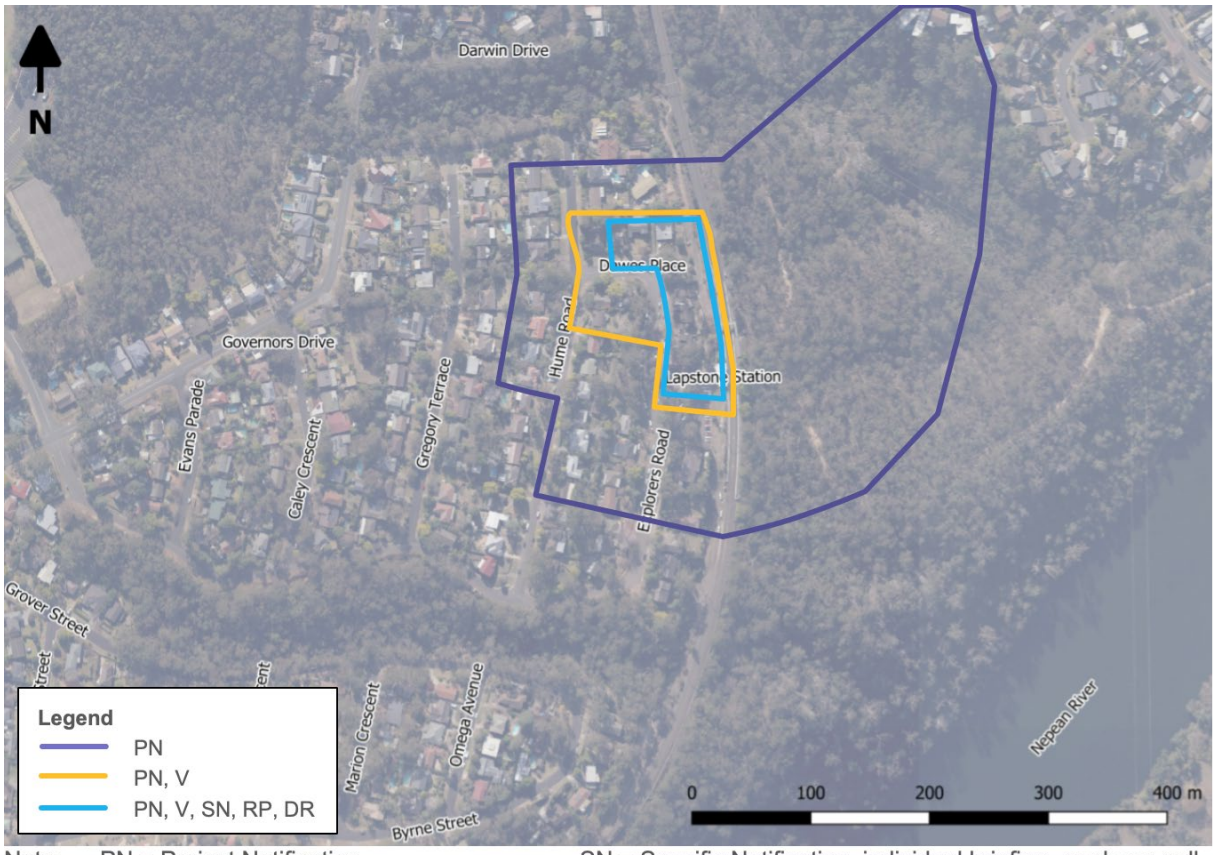
- a Construction Noise and Vibration Management Plan (CNVMP) would be prepared to determine specific mitigation measures for construction activities
- construction activities including operation of the ancillary facility (scenario 1), platform rock sawing (scenario 2) and internal demolition (scenario 7) are to take place during standard, OOHW 1 or OOHW 2 periods
- construction activities involving ramp demolition (scenario 3), ramp installation (scenario 4), lift civil works (scenario 5), western entrance (scenario 6) and carpark grading preparation (scenario 8) are to take place during standard or OOHW 1 periods
- 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, 2019).

Additional mitigation measures in accordance with the matrix contained in the *Construction Noise and Vibration Strategy* (TfNSW, 2018b) are also recommended for OOHW1 and OOHW2 periods in the NVIA (Pulse Acoustics, 2019) and reproduced in Figure 36 and Figure 37 below. The diagrams define areas in which mitigation measures including project notification, verification monitoring, specific notifications, respite periods, project specific respite offers and duration reductions are to be implemented.



Note: PN = Project Notification
V = Verification Monitoring
RP = Respite Period
SN = Specific Notification, individual briefing, or phone call
DR = Duration reduction
RO = Project Specific Respite Offer

Figure 36 Recommended additional evening OOHW 1 mitigation measures



Note: PN = Project Notification
V = Verification Monitoring
RP = Respite Period
SN = Specific Notification, individual briefing, or phone call
DR = Duration reduction
RO = Project Specific Respite Offer

Figure 37 Recommended additional evening OOHW 2 mitigation measures

As such it is recommended:

- The additional mitigation measures presented for Evening OOHW1 and Evening OOHW2 works in Figures 8-1 and 8-2 of the NVIA (Pulse Acoustics, 2019) are implemented.

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

6.4. Indigenous heritage

A due diligence assessment was undertaken for the Proposal by AMBS Ecology & Heritage (2019) in accordance with current heritage best practice and the guidelines of Department of Planning, Industry and Environmental (DPIE, formerly the Office of Environment and Heritage, OEH). The assessment involved desktop review of information and site inspection.

6.4.1. Existing environment

An extensive search of the Indigenous Heritage Information Management System (AHIMS) database was undertaken for the area covered by the Proposal (the area around Lapstone Station) on 19 July 2019. Whilst 92 registered Indigenous sites were located within the local area, the AHIMS database indicated that no registered Indigenous heritage sites, objects or places were present in the Proposal Area.

The proposed work for the excavation or the lift pit and construction of the lift includes vegetation clearance and disturbance. A conservative radius of 20m from the lift pit has been identified as the impact zone and includes regrowth scrubland and an informal unsealed access track.

A review of the archaeology of the area identified that the landforms in the Proposal area would have had potential to retain heritage sites however, the extensive disturbance the area has be subject to as a result of land clearing, the construction of the station, rail corridor and

other surrounding infrastructure is likely to have impacted and removed in situ Aboriginal heritage objects. It is unlikely that any stone artefact sites have been retained due to the removal of topsoil and modification of the natural topography.

A visual inspection of the Proposal area was also undertaken on Friday 26 July 2019. The inspection involved walking around the area, focusing on areas of ground surface exposure. No Aboriginal sites, objects or places, or areas of potential Aboriginal archaeological sensitivity were identified within this part of the Proposal Area during the visual inspection.

6.4.2. Potential impacts

a) Construction phase

Construction of the Proposal would involve some minor excavation for the following activities:

- the foundations and pit for the new lift shaft would require excavation up to a depth of about two-three metres
- the new accessible paths to the station entrance and footbridge.

Ground disturbing activities have the potential to impact Indigenous sites, if present.

As no Indigenous sites, objects or places, or areas of potential Indigenous 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 Indigenous heritage items. Therefore, the Proposal's impact on Indigenous heritage during the construction phase is considered negligible.

b) Operation phase

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

6.4.3. Mitigation measures

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, 2019d), 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 DPIE 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 the DPIE would be notified.

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

6.5. Non-Indigenous heritage

A Statement of Heritage Impact (SoHI) has been prepared by AMBS (2019a) for the Proposal. The assessment included a desktop analysis and site inspection of the Proposal Area undertaken on 5 August 2019. The assessment of the SoHI is summarised in this section.

6.5.1. Existing environment

Historical background

The Main Western Railway, now known as the Blue Mountains Line, was built across the mountains from 1863 initially as a single track from Penrith to Wentworth Falls. The steep gradients and dense natural vegetation of the mountain ridges presented unique challenges during the construction of the railway. The construction of Lapstone Railway Station commenced in July 1960 and in 1974, Lapstone Station between Glenbrook and Emu Plains was opened.

Heritage items

Heritage listed items in, and within, the vicinity of the Proposal include:

- Site of Edinglassie (Item A112 on the Penrith LEP 2010)
- Sedimentary Dykes (Item L002 on the Blue Mountains LEP 2015)

The locations of these items are depicted in Figure 38.

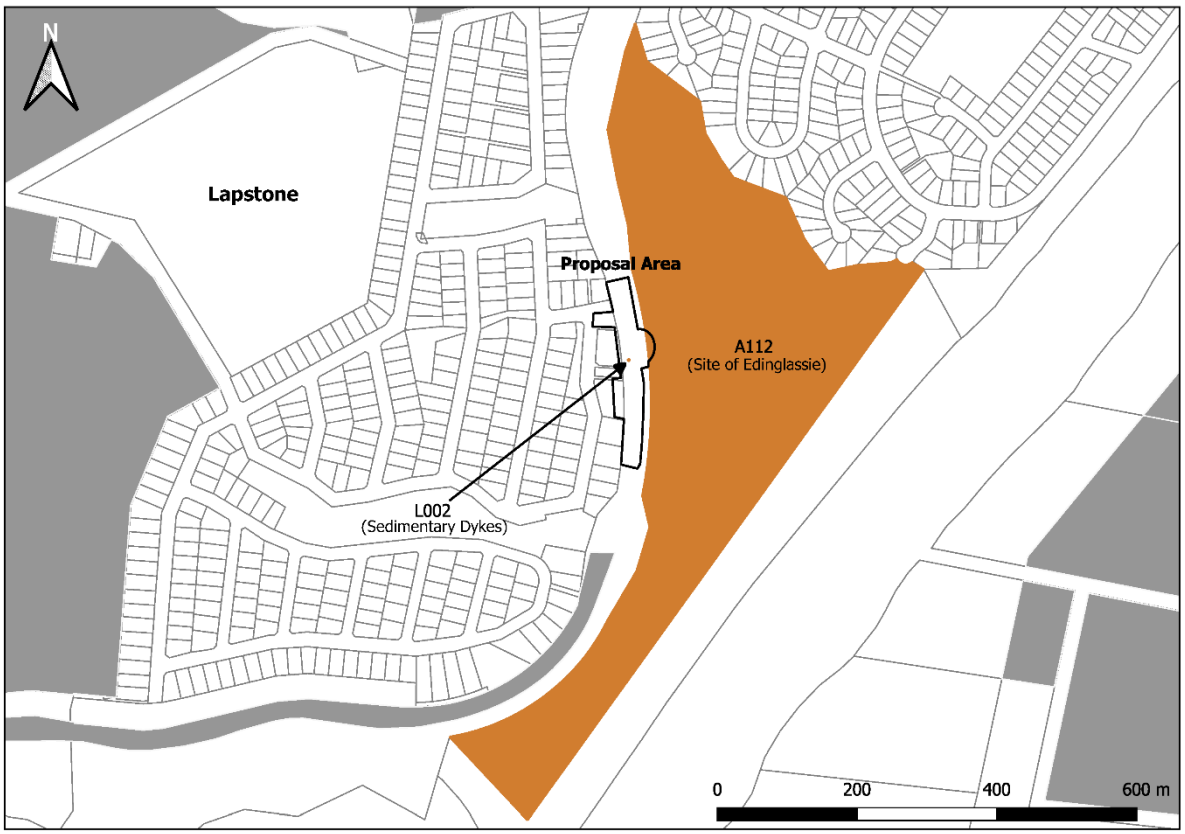


Figure 38 Locations of heritage items within the Proposal Area

The 'Site of Edinglassie'

The bushland area to the east of Lapstone Station, comprising all of Lot 102, DP 235829 and Lot 2, DP 242718 is identified as the Site of Edinglassie within the Penrith LEP 2010. The building no longer exists. The site contains bushland with walking tracks passing through and the site of the former house is approximately 350m north-east of the proposed lift on Platform 2. The Statement of Significance for the Site of Edinglassie is:

- Significant as the site of the first private residence at Emu Plains and as the country house of a man who was a major figure in the establishment of the Australian Legal system.

Sedimentary Dykes

Sedimentary Dykes are visible in the sandstone cutting of the western platform, both to the north and south of the Station building. These dykes are listed as a heritage item (Item No. L002) of local significance in the Blue Mountains LEP 2015. The Sedimentary Dykes form part of the 'Lapstone Monocline Group', encompassing five listed geological items that is an upfolding of the sedimentary strata of the Sydney Basin.

The Sedimentary Dykes form a locally significant landscape component of the Lapstone Monocline Group as they demonstrate a geological event and feature that indirectly shaped

the patterns of historical movement into the Blue Mountains. The historical Statement of Significance is:

- The Lapstone monocline was the Aboriginal stairway from the plains to the Mountains; for the early Europeans it represented a strenuous obstacle to wheeled traffic by road and a major engineering challenge to the railway of the later nineteenth century.

The scientific and technical Statement of Significance is:

- The Lapstone Monocline is of scientific significance on a State level for its demonstration of a profound event in the geological formation of the Sydney Basin between 15 and 22 million years ago.

Non-listed heritage

The footpath from the carpark has 1960s kerbing and, set into the concrete of the path from Explorers Road are a series of small square features. These may be related to a previous interpretation; the Blue Mountains City Council have been contacted regarding these features and currently there is no known information about their purpose.

Inside the station building there are some moveable heritage items including two commemorative plaques (mounted in 1990 and 2014) and a timber rollover indicator board likely dating to the establishment of the station in 1964.

Archaeological potential

There are no known or expected archaeological features within the Lapstone Station grounds and the site of the former house addressed under the Site of Edinglassie is located approximately 350m outside the construction footprint, the overall archaeological potential of the Lapstone Station precinct is low.

6.5.2. Potential impacts

a) Construction phase

This section considers the potential heritage impacts associated with construction of the Proposal. The Lapstone Station building has not been identified as having heritage significance and as such the proposed works to the station would not have any heritage impact.

The Site of Edinglassie

The proposed construction of the new lift on Platform 2 would require potential disturbance within a radius of 20 metres of the proposed lift to facilitate access and construction. Therefore, the Proposal area extends about 9 metres beyond the rail corridor to the east, and into the land identified as the Site of Edinglassie in the Penrith LEP. The archaeological potential of this item has been determined to most likely be limited to the site of the house and its local environment. As the site of the former house is located about 350m from the proposed construction area it is unlikely any relics from the Edinglassie property would be impacted during construction.

Sedimentary Dykes

In order to provide adequate clearance and comply with DSAPT, the proposal includes platform seating that would be cut into the bedrock of the sedimentary dykes at three separate locations. Two locations to the north of the station and one location to the south of the station.

Each of the proposed seating locations would include removal of a section of the rock face from the top of the cutting down to the top of the seat. Each section cut into the bedrock would be approximately 600mm deep and 2.7m long.

The removal of three section of the sandstone cutting would have an irreversible adverse impact on the identified heritage values of the Sedimentary Dykes. However, there would not be a significant impact on the Lapstone Monocline Group in its entirety. Despite the intrusive work and direct impact on the heritage item, the work would enable compliance with DSAPT requirements and provide the benefits of improved circulation area and improved platform and commuter safety. The introduction of the seating into the sandstone would also provide the opportunity for a plaque or some other form of interpretation to be introduced to identify and explain the heritage item.

b) Operation phase

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

6.5.3. Mitigation measures

To protect the heritage value of the Sedimentary Dykes, which is part of the Lapstone Monocline Group, the following specific mitigation measures are recommended for the proposal:

- The impact on the heritage values of the Sedimentary Dykes should be minimised where possible. During detailed design, the seat locations are to be selected to minimise impacts on the dykes and the extent of the vertical removal of the fabric of the sandstone cutting should be minimised to achieve a vertical clearance of 2000mm (measured from the base of the seat at 460-500mm above ground level), unless there is demonstrable risk of collapse.
- An archival photographic recording should be prepared before any excavation of the cutting is undertaken. This recording should be undertaken in accordance with NSW Heritage Council's *Photographic Recording of Heritage Items Using Film or Digital Capture* (2006) guideline.
- Engage with local community (local artists, Men's Shed etc.) to provide input into the design of the proposed seating cut into the bedrock of the Sedimentary Dykes to enhance the visual amenity of the seating. In addition, consideration should be given to including an interpretative plaque into the seating to identify and provide information on the Sedimentary Dykes and their significance.

The following specific mitigation measures are recommended for retention, and the future interpretation of the station:

- The commemorative plaques and the timber rollover indicator board, should be retained as a record of the history of Lapstone Station. The items may be included as part of any future interpretation of the station.
- Following the completion of the proposed development, a Public Domain Plan should be prepared, that notes consideration is to be given to the reinstatement of some features surrounding the station. These include the 1960s brick kerbing located at the proposed site compound area and the footpath from the carpark to the station entry, as well as the square panels set into the concrete footpath from Explorers Road.

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

6.6. Biodiversity

An Ecological Assessment was undertaken by Cumberland Ecology for the proposal and forms part of this REF. This assessment included a site inspection by a qualified ecologist on 5 August 2019. A review of the NSW Wildlife Atlas (OEH, 2018) and the EPBC Protected Matters Database (DoEE, 2018) was also conducted.

6.6.1. Existing environment

Flora

The Proposal area has been subjected to disturbance and clearing as result of the surrounding infrastructure and land use and this has removed or modified the majority of the complex habitats.

Four vegetation communities were identified within the Proposal area, with one community, Sydney Hinterland Transition Woodland, present in three condition states. These vegetation communities and the total area of extent within the Proposal Area is identified in Table 21 and Figure 39 below.

Table 21 Vegetation communities within Proposal area

Vegetation community	Area (ha)
Sydney Hinterland Transition Woodland – Moderate Condition	0.13
Sydney Hinterland Transition Woodland – Degraded Condition	0.03
Sydney Hinterland Transition Woodland – Scattered Trees	0.01
Urban Native/ Exotic Vegetation	0.11
Exotic Vegetation	0.10
Exotic Grassland	0.12
Cleared Land	0.53

Figure 39 Vegetation communities within Proposal area

A total of 108 flora species were identified within the Proposal Area. Species present are comprised of a mix of remnant trees, planted native and non-endemic native species (56 per cent) and exotic species (44 per cent).

No threatened flora species were recorded within the Proposal Area.

Vegetation on the eastern side of the Proposal Area is considered to have a moderate degree of connectivity as per ISCA definitions as it is comprised of native vegetation considered to be in good condition that forms part of a greater than 100 metres wide habitat corridor.

A total of 13 Priority weeds and Weeds of National Significance (WoNS), as listed in the NSW Department of Primary Industries (DPI) website were identified within the Proposal Area. These include Asparagus Fern (*Asparagus aethiopicus)*, Climbing Asparagus Fern (*Asparagus plumosus)*, Lantana (*Lantana camara)* and Fireweed (*Lantana camara)*.

Fauna

The Proposal Area is considered to provide limited habitat for fauna species due to the artificial nature of the planted vegetation on the western side, and the degraded nature of the bushland on the eastern side. The Proposal Area is considered to constitute marginal 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.

A total of 11 native fauna species were identified within the Proposal Area and immediate surrounds including ten bird species and one reptile. Common urban adapted species such as the Noisy Miner (*Manorina melanocephala*) and the Rainbow Lorikeet (*Trichoglossus moluccanus*) were observed within the Urban Native/Exotic planted vegetation and would be expected to utilise all of the available habitat within the Proposal Area for foraging. Woodland bird species such as the New Holland Honeyeater (*Phylidonyris novaehollandiae*) and the Bell Miner (*Manorina melanophrys*) would be expected to mostly utilise the bushland on the eastern side.

A number of threatened species have been recorded within the locality that have the potential to occur within the Proposal Area based on the foraging habitat including:

- Grey-headed flying fox (*Pteropus poliocephalus*)
- Large Bent-winged Bat (*Miniopterus orianae oceanensis*)
- Koala (*Phascolarctos cinereus*)
- Greater Glider (*Petauroides volans*)
- Yellow-bellied Glider (*Petaurus australis*)
- Powerful Owl (*Ninox strenua*)
- Masked Owl (*Tyto novaehollandiae*)
- Glossy Black-Cockatoo (*Calyptorhynchus lathami*)
- Gang-gang Cockatoo (*Callocephalon fimbriatum*)
- Square-tailed Kite (*Lophoictinia isura*)
- Varied Sitella (*Daphoenositta chrysoptera*)
- Swift Parrot (*Lathamus discolour*)

6.6.2. Potential impacts

a) Construction phase

Flora

The construction of the Proposal would result in the removal of approximately 29 trees, 13 of which are native trees. Of the native trees, two trees to be removed are of medium size with a diameter of greater than 15 centimetres and a height of 20 metres. The further eleven native trees are all classed as small as their diameters are less than 15 centimetres and their height ranges between 3 metres and 10 metres. A full list of trees which are likely to be removed is included in Ecological Assessment forming part of this REF (Cumberland Ecology, 2019c).

The native vegetation community that occurs within the Proposal Area is the Sydney Hinterland Transition Woodland, which would be directly impacted by construction of the Proposal and site compound.

Whilst the habitat to the east of the Proposal Area offers a moderate degree of connectivity the impacts of the proposal would have a marginal impact on the habitat connectivity values of the vegetation communities. The Proposal Area only extends about nine metres into the edge of treed habitat which is not considered to be a significant impact, and any disturbance would be restricted to only that necessary to gain access and carry out the proposed work. Tree planting to offset the native tree removal would provide mitigation of impacts on both the vegetation communities and fauna, and is discussed in the mitigation measures in Section 6.6.3. Only the potential loss of native trees has been addressed in the offset calculations. The calculations provide for an offset ratio of planting greater than the total number of potential trees to be removed. In addition to offset tree planting, other vegetation would also be incorporated within the planter beds adjacent the proposed ramps.

No threatened flora species have been identified in the Proposal Area and therefore negligible impacts would occur.

Fauna

The western extent of the Proposal Area is located within a previously cleared, ecologically degraded urban environment containing mixed native and exotic plantings, surrounded by residential allotments. The eastern extent of the Proposal Area encroaches into a large patch of Sydney Hinterland Transition Woodland in varying condition states.

The main groups of fauna that would be anticipated to utilise the Proposal Area includes Megachiropteran bats, Microchiropteran Bats, Large Forest Owls, Diurnal Woodland Birds and Arboreal Mammals. All of these highly mobile groups of threatened fauna would be expected to occasionally and opportunistically utilise the foraging habitat within the Proposal Area as part of a larger foraging range and would not be solely reliant on the habitat to be impacted.

Tests of Significance under Section 7.3 of the BC Act have been prepared for the threatened fauna species that have potential to utilise the Proposal Area. The removal or modification of approximately 0.28 ha (0.17ha Sydney Hinterland Transition Woodland and 0.11ha Urban Native/ Exotic Vegetation) of marginal foraging habitat is considered highly unlikely to result in significant impacts on these species.

b) Operation phase

The proposal would introduce similar areas of native/exotic landscape zones around the new entry paths and ramps. Post construction and during the operational phase, impacts are likely to have a similar profile to existing conditions. No operational impacts to biodiversity are anticipated from the Proposal.

6.6.3. Mitigation measures

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. The Ecological Assessment has determined that a total of 30 trees are to be replanted to offset the loss of 13 native trees. Tree planting would be provided within or surrounding the Proposal Area following provision of detailed design and consultation with Sydney Trains in accordance with the *TfNSW Vegetation Offset Guide*.

Key mitigation measures to minimise impacts of the proposed works are:

- Areas that require clearance would be flagged and clearly marked by temporary fencing to ensure no areas to be retained are unintentionally cleared during construction. Site inductions are to be provided to ensure all site workers and visitors are aware of no-access area.
- Pre-clearance surveys must be conducted by a suitably qualified ecologist for all areas of vegetation that are required to be cleared or altered and must be undertaken one week before clearing activities commence.
- All clearing would be undertaken in a two-stage process. The initial phase would involve clearing around identified habitat features and leaving the features overnight and the second phase would involve clearing of features left overnight followed by an inspection.
- An ecologist must inspect all felled trees for the presence of hollows and fauna prior to clearing and must be present while clearing is taking place to rescue any injured animals.
- Weed removal, management and disposal must be undertaken in accordance with the *TfNSW Weed Management and Disposal Guideline* (TfNSW, 2019a). Due to the presence of weeds, no vegetation is to be reused as mulch.
- Offsetting will be undertaken in accordance with TfNSW *Vegetation Offset Guide* (TfNSW 2019). The below offsetting ratios required for native tree removal associated with the Proposal would be followed:

DBH (cm)	No. trees removed	Planting ratio	Replacement plantings
>60	0	8:1	0
15-60	2	4:1	8
<15	11	2:1	22
Total	**13**		**30**

- All proposed offset plantings must be designed and located with the guidance of a suitably experienced and qualified ecologist following provision of detailed designs. Offset plantings must be designed to ensure that habitat connectivity within offset area is maximised with a suitable species composition utilising species characteristic of the Sydney Hinterland Transition Woodland.

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

6.7. Socio-economic impacts

6.7.1. Existing environment

Lapstone Station is located in a low density residential area. There is no commercial centre in Lapstone.

Existing facilities for rail customers include Opal card readers, shelters, female and male toilets (non-accessible). A waiting room is provided for customers, however the facility is only

used while station staff are present (between 7am and 10am) (Stantec 2018). There is one accessible car space available and no kiss and ride space or taxi rank. Lighting is provided at the car park and throughout the station and platforms.

A review of the Australian Bureau of Statistics 2016 Census data (ABS, 2016) was undertaken for Lapstone. Lapstone has a population of 961 people (almost evenly split between males and females) with a median age of 43 years. Children aged 0-14 years made up 18.5 per cent of the population and people aged 65 years and over made up 21 per cent of the population. Most people living in the suburb of Lapstone were born in Australia (81 per cent) and most people only spoke English at home (87.7 per cent).

Of the 485 people over the age of 15 in the workforce around Census time, 58.8 per cent were employed full time and 33.6 per cent worked part time. In Lapstone, on the day of the 2016 Census, 19.1 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 65.8 per cent used car (either as driver or as passenger). Most (about 95 per cent) occupied private dwellings had at least one registered motor vehicle parked at their address.

As a result of a disability, long term health condition (lasting six months or more) or old age, 4.6 per cent of residents within Lapstone reported at Census time the need for assistance.

Information included in the scoping report indicates that patronage of Lapstone Station is low (Stantec 2018). The AM peak hour demand in 2017 was 35 persons and is forecast to increase to 45 persons by 2036 (which includes an additional 15 per cent to account for potential increases in population). Whilst these figures are low, the Proposal may promote a modal shift in transport, and will enable increased use of the station by members of the community with a disability, limited mobility, parents/carers with prams, and customers with luggage.

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.

The Proposal would support and promote the BMCC Community Strategic Plan 2035, positively impacting its key directions of ‘Care’, by making the LGA more inclusive, and ‘Move’, by making the LGA more accessible.

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 loss of informal open space at the eastern end of Dawes Place for construction compound
- temporary closure of toilets and the waiting room
- temporary disruptions to local traffic movements near the station
- temporary loss of some parking in the car park during construction
- more traffic including truck movements delivering site materials, plant and equipment and removing waste
- construction noise, vibration, dust and visual impacts.

Station access 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 station car park would be retained during construction, however there would be temporary disruptions and unavailability of some parking spaces.

b) Operation phase

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

- improved accessibility for Lapstone Station customers due to the provision of a new lift, accessible paths to the station and accessible parking
- improved customer amenity and facilities at the station including a family accessible toilet (FAT), male and female ambulant toilets, improved wayfinding, CCTV and lighting and a new kiss and ride space
- increased active transport facilities – provision of five bike hoops
- potential increased use of public transport to and from Lapstone.

6.7.3. Mitigation measures

A number of mitigation measures are recommended to minimise potential impacts on the community with a particular focus on keeping the community informed, including:

- mitigation measures for potential impacts on amenity (e.g. noise, dust and visual)
- 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 also 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
- consideration of any local events in Lapstone during the construction period.
- 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

A desktop assessment was undertaken as part of the REF. Information to describe the existing landform, geology and soils of study area was obtained from the NSW Government's Spatial Information Exchange (Department of Finance, Services and Innovations 2019) and eSPADE (OEH 2019) and BMCC (2018) spatial and mapping services.

A Phase 1 Contamination Assessment was completed in July 2018 for the Proposal site as part of the design development and scoping study (Stantec 2018). Information from that assessment has been carried over into this REF.

6.8.1. Existing environment

Landform and geology and soils

Lapstone is at the eastern extent of the Blue Mountains escarpment. Lapstone Station is located about 330 metres west of the Nepean River, at an elevation of about 110 metres. The land around the railway station is moderately steep (see Figure 7) and slopes towards the east at between 20 and 33 per cent.

The underlying geology of the area is Hawkesbury Sandstone, with lithology (characteristics of rock) described as medium to very coarse-grained quartz sandstone, minor laminated

mudstone and siltstone lenses (Clark and Jones 1991). The Lapstone Monocline is an upfolding of the sedimentary strata of the Sydney Basin and is a significant geological feature at the eastern edge of the Blue Mountains (BMCC 2018 and OEH 2019a). Exposures of the monocline feature occur on the platform of the Lapstone Railway Station (see Figure 7) and rock outcrops also exist in the bushland to the east of the station.

The soil landscape of the area around Lapstone Station is mapped as Hawkesbury (identified as 9030 ha) on the Penrith Soil Landscapes 1:100,000 map sheet. More detailed information available via eSPADE shows that the northern half of Lapstone Station is mapped as Rickabys Creek landscape (Red Podzolic Soil) while the southern area is mapped as Hawkesbury Variant A (Lithosols, Siliceous Sands, Earthy Sands, and Yellow Earths).

Soils are shallow and moderately to highly erodible and are prone to wind and water erosion. There is moderate sheet erosion on the steep slopes of the Lapstone Monocline and minor streambank erosion along streams.

Acid sulphate soils (ASS) have not been assessed for the area and no Council data available. The station precinct is on elevated land near the Nepean River. ASS risk mapping available via eSPADE along areas of the Nepean River about 4 kms upstream from Leonay indicates no known occurrence of ASS. It is therefore considered unlikely that any ASS would be encountered at the station site.

Contaminated land and hazardous materials

There are no registered sites on the NSW Contaminated Land Register (EPA 2019) for the suburbs of Lapstone or Leonay. The predominant land use of these areas is low density residential development and bushland reserve.

The railway line through Lapstone was established in 1913, with the completion of The Glenbrook (Second) Deviation, and Lapstone Station was built in 1964.

The Sydney Trains contaminated land register did not display any on track contamination for the western line (Blue Mountains Line). As part of the site inspections completed for the 2018 Phase 1 assessment and this REF, no potentially contaminating activities were identified.

Potential asbestos and hazardous materials were identified in the station building during preliminary scoping studies (Stantec 2018) as follows:

- asbestos sheeting was removed from the exterior awning of the main station building in 2016. Potential remains for contamination of the underlying soils
- lead-contaminated dust has been identified within the ceiling space of the main building, as well as synthetic mineral fibre materials which were identified as being in good condition
- lead-based paint has been identified on the exterior of the main building
- an asbestos-backed electrical mounting board was identified in the station car park. This has been inspected and is recorded as being in good condition.

There is a risk of encountering typical rail-related contaminants and hazardous materials within the Proposal footprint relating to:

- fuel and oil spills, and engine emissions from historical rail activities
- pesticides and herbicides from weed and vegetation control
- potential asbestos containing materials within historical cabling, pipework ducting, existing/former site structures and brake linings
- various contaminants associated with the fabric of old rolling stock
- various contaminants associated with imported fill and ballast.

6.8.2. Potential impacts

a) Construction phase

Soil erosion and sedimentation

Excavation and earthworks needed to construct the Proposal are described in Section 3.3.1. and if such activities are not adequately managed, could result in the following impacts:

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

The sloping terrain in some parts of the Proposal Area and the presence of the railway cutting may increase the risk of soil erosion and concentrated runoff through disturbed areas. However, it is expected that erosion risks would be adequately managed through the implementation of standard erosion control measures.

Contaminated land and hazardous materials

Excavation also 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.

The Proposal has the potential to disturb asbestos containing material and other hazardous substances (such as lead paint) from the refurbishment of the station building. There is also 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 risks to geology and soils as a result of the Proposal.

6.8.3. Mitigation measures

Site-specific erosion and sediment control plans would be prepared and implemented before construction starts. They would be maintained throughout the construction period until disturbed areas have stabilised. Standard erosion control measures as outlined in the 'Blue Book' – *Managing Urban Stormwater: Soils and Construction* (Landcom, 2004) would be applied.

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

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

6.9. Hydrology and water quality

6.9.1. Existing environment

Three unnamed creeks occur in the bushland to the east of Lapstone Station, the closest is about 60 metres from the western platform structure (see Figure 40). Water runoff in the Proposal area is from west to east flowing via the unnamed creeks towards the Nepean River.

The nearest named watercourses are Tunnel Gully, Glenbrook Creek and the Nepean River, all over 240 metres away from the station. All the watercourses flow into the Nepean River.

Lapstone is not within the Sydney Drinking Water Catchment.

No flood studies have been prepared for the Proposal area. A flood study was completed for BMCC that included part of Lapstone (Jacobs 2015) and overland flows into Glenbrook Creek. The Lapstone Station is outside of this catchment and would not be affected by runoff from within the Glenbrook Creek catchment. Residential properties to the south of Lapstone Station are above the Flood Planning Level adopted from the flood study. Based on the information available the station is unlikely to be at risk of inundation during a flooding event.

The Bureau of Meteorology (2019) Australian Groundwater Explorer mapping system was used to identify all bores in within the 500 metres of the Proposal site and west of the Nepean River. Seven bores were identified, six for monitoring and one for water supply purposes. The closest bores to Lapstone Station are a 6-metre deep monitoring bore about 420 metres north east and a 46-metre deep water supply bore located about 430 metres west of the station. Depth to groundwater and direction of groundwater are not known.

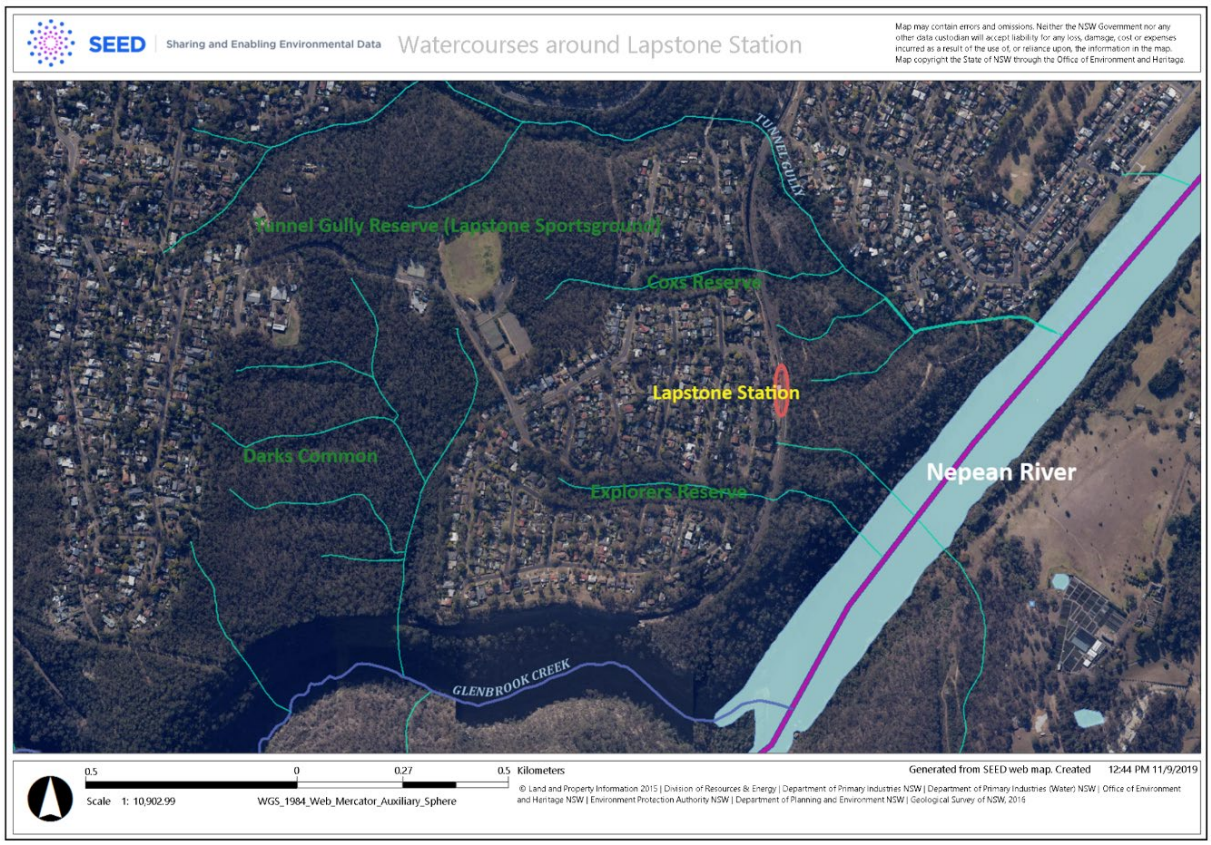


Figure 40 Watercourses near Lapstone Station (Source http://www.seed.nsw.gov.au)

6.9.2. Potential impacts

a) Construction phase

Potential for soil erosion and sedimentation is discussed in Section 6.8.2. Uncontrolled runoff through disturbed areas during construction may contribute to reduced water quality downslope of the station.

The maximum depth of excavation needed to install the lift pit would be two to three metres. Given the location and geology of the Proposal site, above a sandstone escarpment, the risk of intercepting and impacting groundwater is considered low.

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

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. Existing stormwater management measures would remain in place and are not proposed to be upgraded.

6.9.3. Mitigation measures

Site-specific erosion and sediment control plans would be prepared, implemented and maintained as outlined in Section 6.8.3. Construction activities would be undertaken in compliance with the TfNSW (2019b) Water Discharge and Reuse Guidelines

The use of non-potable sources of water for construction would be considered, if appropriate.

Surface water runoff from paved areas would be directed to existing the stormwater management system around the station.

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

6.10. Other impacts

6.10.1. Waste

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

- 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)
- green waste (including weeds)
- hazardous wastes (chemicals and potentially asbestos)
- demolition waste from the existing ramps and concrete slabs and relocated services
- general waste, including food scraps generated by construction workers.

Efforts to minimise the volume of surplus materials have been undertaken during planning and design of construction activities. A Waste Management Plan would be prepared as part of the CEMP for and 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 (e.g. Platform 1). Any removal of any hazardous material is to be undertaken in accordance with applicable EPA and SafeWork NSW guidelines.

The Proposal would not result in major changes to operational waste management arrangements. Bins would be relocated on Platform 1 to where the platform width is at least 3.3 metres. A new bin storage area would be provided.

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

6.10.2. Air quality

The main influences on air quality in Lapstone are from vehicle emissions, domestic wood heating, hazard reduction burns and bushfire. Sensitive receivers in the vicinity of the Proposal include residential properties in Lapstone and staff and customers at Lapstone Station.

Impacts to air quality during construction are expected from:

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

Impacts would be localised and temporary and are not expected to affect sensitive receivers. Measures to protect local air quality and minimise generation of dust would be included in the CEMP.

Removal of any potentially hazardous materials would be completed in accordance with applicable EPA and WorkCover guidelines, to minimise risk to human health or the environment.

The Proposal would not result in any change to air quality during operation as the land use remains the same.

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 reduced reliance on private vehicles.

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

6.11. Sustainability

The design of the Proposal would be based on the principles of sustainability, including aiming for an 'Excellent' rating as a program under the ISCA Infrastructure Sustainability Rating Tool v1.2 and the TfNSW Environmental Management System (EMS). These guidelines require a number of mandatory and discretionary initiatives to be applied. 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..

6.12. Climate change

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

The topography of the Central Tablelands region results in a large range of climate conditions throughout the region. It is expected that the region would experience an increase in all temperature variables (average, maximum and minimum), little change in rainfall and minimal change in severe bushfire weather in both the near (2030) and far future (2070) (BOM, 2018).

A climate risk pre-screening assessment was undertaken as part of the scoping design and identified that the climate change impact risk is low to moderate, due to a predicted increase in the frequency of heat waves (Stantec, 2018). The assessment provided recommendations for the Proposal to help mitigate for a changing future climate and indicated that a full climate risk assessment was not required. The assessment provided the following climate change related risks:

- increases in the number of hot days is likely to increase heat stress and solar exposure to commuters using the existing and proposed pathways from the western side of the station platform.

- increased average rainfall may see people waiting outside during rainfall events due to the limited sheltered space.
- increases in mean temperature and number of hot days could result in the potential failure of lighting, CCTV, PA systems and other electrical components.

Climate change could lead to an increase in average temperatures as well as additional extreme heat days over 35°C. As Lapstone Station and surrounds contain low-medium density development and comprise vegetated areas, impacts resulting from extreme heat is expected to be less pronounced than more dense urban areas. Measures such as landscaping to increase shading, roofing materials for the lift shafts to reduce heat loads to account for hotter temperatures should be reviewed for feasibility during detailed design to help reduce impacts from extreme heat.

Climate change could lead to an increase in the intensity of rainfall events, with a 100-year average recurrence interval (ARI) flood event expected to occur more frequently. However, the operation of Lapstone Station is not expected to be affected by extreme precipitation, flooding, storm surges or strong winds.

A climate change risk assessment screening was undertaken for the Proposal which identified increased frequency of hot weather and increased temperatures as climate change impacts that require additional design considerations. The next stage of the Proposal should consider the following mitigations to be included in design:

- lift design to consider future temperature increases including insulation/glazing, cooling, and protections on electrical equipment
    - provision of shade along the accessible pathway to shelter customers from extreme heat events. This could include additional tree planting for shade and/or installation of a canopy along the pathways and at waiting area
    - avoid use of metal outdoor furniture
- provide sufficient protections for electrical systems (such as for proposed lifts) to meet expectations of future temperature increases.

6.13. 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 involve an AS 14064-2 (Greenhouse Gases -project level) compliant carbon footprint exercise in accordance with the *Greenhouse Gas Inventory Guide for Construction Projects* (TfNSW, 2013). The carbon footprint would to be used to inform decision making in design and construction, if the estimated greenhouse gas emissions are determined to be greater than the carbon dioxide equivalent value established by the National Greenhouse and Energy Reporting threshold.

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 Lapstone. 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.

6.14. 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 DPIE Major Projects Register, Sydney Western City Planning Panel Development and Planning Register, and Blue Mountains and Penrith Councils Development Application Register in September 2019 identified that no major development applications are listed in Lapstone for approval at this time.

TfNSW currently has other projects in planning, construction and nearing completion within the Blue Mountains area including the Glenbrook Station Upgrade. Glenbrook is the nearest station to Lapstone and would provide an accessible alternative should residents want to utilise this station during construction of Lapstone.

Other TfNSW projects in an around the Blue Mountains area include station upgrades at Hazelbrook (in construction), Kingswood (in construction) and the New Intercity Fleet Route Clearance projects. 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 possessions 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.

The Proposal is centred around, and isolated to, Lapstone Station. Traffic associated with the 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, it is anticipated that the cumulative impacts would be negligible, with the implementation of consultation with relevant stakeholders and associated mitigation measures in Chapter 7.

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

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 Noise and Vibration Management Plan (CNVMP)
- Construction Traffic Management Plan (CTMP)
- Vegetation Management Plan (VMP)
- Waste Management Plan (WMP).

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

7.2. Mitigation measures

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

Table 22 Proposed mitigation measures

No.	Mitigation measure
	General
1.	A Construction Environmental Management Plan (CEMP) would be prepared by the Construction Contractor in accordance with the relevant requirements of *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 Control Map* (TfNSW, 2019k) 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.
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,

No.	Mitigation measure
	is not likely to significantly affect the environment.
	Traffic and transport
8.	Prior to the commencement of construction, a Traffic Management Plan (TMP) 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 the railway station 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 station commuter parking and private residential parking • routes to be used by heavy construction-related vehicles to minimise impacts on sensitive land uses and businesses (including to hi-rail access locations) • 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 roads 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 impact on the local road network relating to site works.
10.	Road Occupancy Licences for temporary road closures would be obtained, where required.
11.	All work with the potential to impact pedestrian movements such as lifting should be carried out during scheduled rail shutdown periods.
12.	Qualified traffic controllers would be used during construction work.
	Landscape and visual amenity

13.	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, vehicle cross overs etc
	  ○ integration with surrounding built form (existing or desired future) including building

No.	Mitigation measure
	height, scale, bulk, massing and land-use • design detail that is sensitive to the amenity and character of heritage items located within or adjacent to the Proposal site.
14.	The Urban Design Plan is to include the Public Domain Plan for the chosen option and will provide analysis of the: • landscape design approach including design of pedestrian and bicycle pathways, street furniture, interchange facilities, new planting and opportunities for public art • a Materials Schedule including materials and finishes for proposed built works, colour schemes, paving and lighting types for public domain, fencing and landscaping • an Artist's Impression or Photomontage to communicate the proposed changes to the precinct • design measures included to meet ISCA 1.2 • identification of design and landscaping aspects that will be open for stakeholder input, as required.
15.	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.*
16.	Worksite compounds would be screened with shade cloth (or similar material, where necessary) to minimise visual impacts from key viewing locations.
17.	Temporary hoardings, barriers, traffic management and signage would be removed when no longer required.
18.	During construction, graffiti would be removed in accordance with TfNSW's Standard Requirements.
19.	Retain existing trees throughout the carpark to maintain their screening effect on views from Explorers Road (bearing in mind CPTED requirements)
20.	Install temporary hording/screening around the construction compound.
21.	Replacement tree planting in line with TfNSW's Vegetation Offset Guide. In consultation with Sydney Trains, where possible canopy trees are to be provided to filter views down to the station for the closest residents and provide amenity benefits such as shade and landscape improvement.
22.	A landscape plan, prepared as part of the Urban Design Plan, and implemented that includes: • Replacement planting of shrubs/trees in the road reserve at the eastern end of Dawes Place (if removed). • Planting of new garden beds near the proposed new ramp to the footbridge. • Rehabilitation planting within the bushland reserve east of the station within the disturbance area. • Landscaping associated with the new entrance to Platform 1. • Planting within Lapstone Station car park (if removal of vegetation within the carpark is required).
23.	Materials used for new structures to be non-reflective and colours to be recessive.
24.	During night work, temporary light spill beyond the construction site is to be mitigated by directing light source down and installing shields around the light source
25.	Remove graffiti if it occurs at the construction site in accordance with TfNSW standard requirements.
26.	Rehabilitate disturbed areas as soon as possible following construction.
	Noise and vibration
27.	Operational plant and equipment would be designed with regard to the PTNLs in the Noise and Vibration Impact Assessment for the Proposal (Pulse Acoustics, 2019)

No.	Mitigation measure
28.	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, 2019) and the Noise and Vibration Impact Assessment for the Proposal (Pulse Acoustic, 2019). The CNVMP would take into consideration measures for reducing the source noise levels of construction equipment by construction planning and equipment selection where practicable.
29.	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 • 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 • avoiding/limiting 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.
30.	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.
31.	Work would generally be carried out during standard construction hours (i.e. between 7am and 6pm Monday to Friday; between 8am and 1pm Saturdays). Any work outside these hours may be undertaken if approved by TfNSW and the community is notified prior to work commencing. An Out of Hours Work application form would need to be prepared by the Construction Contractor and submitted to the TfNSW Environment and Planning Manager for any work outside standard hours.
32.	The additional mitigation measures presented for Evening OOHW1 and Evening OOHW2 works in Figures 8-1 and 8-2 of the NVIA (Pulse Acoustics, 2019) will be implemented.
33.	As per the *Construction Noise and Vibration Strategy* (TfNSW, 2018b), 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.

No.	Mitigation measure
34.	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.
35.	Vibration resulting from construction and received at any structure outside of the Proposal area would be managed in accordance with: • for structural damage vibration - German Standard DIN 4150: Part 3 – 1999 Structural Vibration in Buildings: Effects on Structures and British Standard BS 7385-2:1993 Guide to Evaluation of Human Exposure to Vibration in Buildings (1 Hz to 80 Hz) • for human exposure to vibration the acceptable vibration - values set out in the *Environmental Noise Management Assessing Vibration: A Technical Guideline* (Department of Environment and Conservation, 2006) which includes British Standard BS *7385-2:1993 Guide to Evaluation of Human Exposure to Vibration in Buildings (1 Hz to 80 Hz)*. • 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, 2019).
36.	Property conditions surveys would be completed prior to piling, excavation of bulk fill or any vibratory work including jack hammering and compaction for all buildings/structures/roads with a plan distance of 20 metres from the work and all heritage listed buildings and other sensitive structures within 50 metres of the work (unless otherwise determined following additional assessment they are not likely to be adversely affected).
	Indigenous heritage
37.	All construction staff would undergo an induction in the recognition of Indigenous cultural heritage material. This training would include information such as the importance of Indigenous cultural heritage material and places to the Indigenous community, as well as the legal implications of removal, disturbance and damage to any Indigenous cultural heritage material and sites.
38.	If unforeseen Indigenous objects are uncovered during construction, the procedures contained in TfNSW's *Unexpected Heritage Finds Guideline* (TfNSW, 2019d) would be followed, and work within the vicinity of the find would cease immediately. The Construction Contractor would immediately notify the TfNSW Project Manager and TfNSW Environment and Planning Manager so they can assist in co-ordinating next steps which are likely to involve consultation with an Aboriginal heritage consultant, the DPIE and the Local Aboriginal Land Council. If human remains are found, work would cease, the site secured and the NSW Police and the DPIE 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
39.	A suitably qualified and experienced heritage conservation architect would be engaged to provide ongoing heritage and conservation advice throughout detailed design and any subsequent relevant design modifications. The nominated heritage conservation architect would provide specialist advice throughout the detailed design phase to ensure that the final design adheres to the design recommendations made in the SoHI (AMBS, 2019).
40.	Archival recording of the Sedimentary Dykes within the western rail cutting would be undertaken prior to any excavation or sandstone cutting following NSW Heritage Division guidelines *Photographic recording of heritage items using film or digital capture* (NSW Heritage Office, 2006) and *How to prepare archival records* (NSW Heritage Office, 1998). Copies would be provided to Sydney Trains and BMCC for future reference.
41.	During detailed design consultation would be undertaken with local community where possible to provide input into the design of the proposed seating cut into the bedrock of the Sedimentary Dykes to enhance the visual amenity of the seating. In addition, consideration should be given to including an interpretative plaque into the seating to identify and provide information on the Sedimentary Dykes and their significance

No.	Mitigation measure
42.	In the event that any unanticipated archaeological deposits are identified within the proposal area during construction, the procedures contained in TfNSW's *Unexpected Heritage Finds Guideline* (TfNSW, 2019d) would be followed, and work within the vicinity of the find would cease immediately. The Construction Contractor would immediately notify the TfNSW Project Manager and the TfNSW Environment and Planning Manager so they can assist in co-ordinating the next steps which are likely to involve consultation with an archaeologist and OEH. Where required, further archaeological work and/or consents would be obtained for any unanticipated archaeological deposits prior to works recommencing at the location.
43.	The commemorative plaques and the timber rollover indicator board, would be retained as a record of the history of Lapstone Station
44.	The Public Domain Plan prepared by the Contractor is to consider the reinstatement of features surrounding the station. These include the 1960s brick kerbing located at the proposed site compound area and the footpath from the carpark to the station entry, as well as the square panels set into the concrete footpath from Explorers Road
45.	The movable heritage items within the station building, in particular the commemorative plaques and the timber rollover indicator board, should be retained as a record of the history of Lapstone Station. The items may be included as part of any future interpretation of the station.
46.	Following the completion of the proposed development, some locally significant features surrounding the station should be reinstated. The 1960s brick kerbing located at the proposed site compound area and the footpath from the carpark to the station entry, as well as the square panels set into the concrete footpath from Explorers Road should be repaired and reinstated if they are impacted during the works.
	Biodiversity
47.	Construction of the Proposal must be undertaken in accordance with TfNSW's *Vegetation Management (Protection and Removal) Guideline* (TfNSW, 2019c) and TfNSW's *Fauna Management Guideline* (TfNSW, 2019e).
48.	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.
49.	Disturbance of vegetation would be limited to the minimum amount necessary to construct the Proposal. Trees/vegetation nominated to be removed in the Ecological Assessment (ABMS, 2019) 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.
50.	Areas that require clearance would be flagged and clearly marked by temporary fencing to ensure no areas to be retained are unintentionally cleared during construction. Site inductions are to be provided to ensure all site workers and visitors are aware of no-access area.
51.	Pre-clearance surveys must be conducted by a suitably qualified ecologist for all areas of vegetation that are required to be cleared or altered and must be undertaken one week before clearing activities commence.
52.	An ecologist must inspect all felled trees for the presence of hollows and fauna prior to clearing and must be present while clearing is taking place to rescue any injured animals.
53.	The below offsetting ratios required for native tree removal associated with the Proposal would be followed:

No.	Mitigation measure

DBH (cm)	No. trees removed	Planting ratio	Replacement plantings
>60	0	8:1	0
15-60	2	4:1	8
<15	11	2:1	22
Total	**13**		**30**

54.	All proposed offset plantings must be designed and located with the guidance of a suitably experienced and qualified ecologist following provision of detailed designs. Offset plantings must be designed to ensure that habitat connectivity within offset area is maximised with a suitable species composition utilising species characteristic of the Sydney Hinterland Transition Woodland.
55.	Tree Protection Zones (TPZs) would be established around trees to be retained, as nominated in the Flora and Fauna Assessment Report (RPS 2018)). Tree protection would be undertaken in line with *AS 4970-2009 Protection of Trees on Development Sites* and would include exclusion fencing of TPZs.
56.	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.
57.	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.
58.	Weed control measures, consistent with TfNSW's *Weed Management and Disposal Guideline* (TfNSW, 2019a), 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.* Due to the presence of weeds, no vegetation is to be reused as mulch.
	Socio-economic
59.	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 updates distributed to local businesses and residents.
	Soils and water
60.	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.
61.	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.
62.	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.
63.	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

No.	Mitigation measure
	TfNSW's *Chemical Storage and Spill Response Guidelines* (TfNSW, 2019j).
64.	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, 2019j) 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.
65.	In the event of a pollution incident, work 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. Reporting process and procedure is outlined in TfNSW's Procedure *Environmental Incident Classification and Reporting* (TfNSW 2018b)
66.	The existing drainage systems would remain operational throughout the construction phase.
67.	Should groundwater be encountered during excavation work, 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, 2019b).
68.	The use of non-potable sources of water for construction would be considered, if appropriate.
	Air quality
69.	Air quality management and monitoring for the Proposal would be undertaken in accordance with TfNSW's *Air Quality Management Guideline* (TfNSW, 2019l).
70.	Methods for management of emissions would be incorporated into project inductions, training and pre-start/toolbox talks.
71.	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.
72.	Vehicle and machinery movements during construction would be restricted to designated areas and sealed/compacted surfaces where practicable.
73.	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
74.	A hazardous materials survey in accordance with AS2601 (2001) Demolition of Structures would be undertaken by an appropriately qualified environmental scientist prior to the demolition activities. Subsequent removal of any hazardous material is to be undertaken in accordance with applicable EPA and WorkCover guidelines
75.	The CEMP (or separate Waste Management Plan, if necessary) must address waste management and would at a minimum: • identify all potential waste streams associated with the works and outline methods of disposal of waste that cannot be reused or recycled at appropriately licensed facilities • detail other onsite management practices such as keeping areas free of rubbish • specify controls and containment procedures for hazardous waste and asbestos waste • outline the reporting regime for collating construction waste data.
76.	An appropriate Unexpected Finds Protocol, considering asbestos containing materials and other potential contaminants, would be included in the CEMP. Procedures for handling

No.	Mitigation measure
	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.
77.	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.
78.	All spoil and waste must be classified in accordance with the *Waste Classification Guidelines Part 1: Classifying waste (*EPA, 2014) prior to disposal.
79.	Any concrete washout would be established and maintained in accordance with TfNSW's *Concrete Washout Guideline* – (TfNSW, 2019g) with details included in the CEMP and location marked on the ECM.
80.	Sustainability, climate change and greenhouse gases
81.	Detailed design and construction of the Proposal is to be undertaken in accordance with the ISCA Infrastructure Sustainability Rating Scheme (v1.2).
82.	The detailed design process would undertake an AS 14064-2 (Greenhouse Gases - project level) compliant carbon footprinting exercise in accordance with TfNSW's *Carbon Estimate and Reporting Tool Manual* (TfNSW, 2019f). The carbon footprint would be used to inform decision making in design and construction.
83.	The detailed design process should consider the following mitigations for climate change: • lift design to consider future temperature increases including insulation/glazing, cooling, and protections on electrical equipment • provision of shade along the accessible pathway to shelter customers from extreme heat events. This could include additional tree planting for shade and/or installation of a canopy along the pathways and at waiting area • avoid use of metal outdoor furniture • provide sufficient protections for electrical systems (such as for proposed lifts) to meet expectations of future temperature increases.
84.	Cumulative
85.	Consultation with relevant stakeholders including construction contractors of nearby work would be undertaken to ensure that cumulative impacts such as traffic and noise generation are minimal.

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 Lapstone Station for customers resulting from the installation of a lift and ramp to access platforms, regrading of the station platform, altering of station floor levels, accessible pathways, and provision of a DDA compliant accessible parking space and a formalised kiss and ride space
- improved amenity and safety for customers at the station resulting from the installation of the family accessible toilet, ambulant toilets, new seating, new landscaping, improved lighting 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
- temporary reduction of about eight to nine commuter car parking spaces in the lower tier of the car park during construction
- permanent net loss of two car parking spaces in the new parking configurations, however the new configuration is anticipated to improve safety and reduce conflict between vehicles and passenger movements
- moderate temporary impacts to the landscape character due to construction activities, including hoardings and the establishment and use of a construction compound
- moderate with periods of moderate-high visual impacts of the Proposal from selected viewpoints due to the proximity of the residential receivers to the station, and the removal of vegetation required for the Proposal.
- temporary noise and vibration impacts during construction. These impacts were assessed as variable and dependent on the construction stage and hours of work. Impacts would be mitigated through the implementation of a range of mitigate measures proposed in the NVIA (Pulse Acoustic 2019) and the *Construction Noise and Vibration Strategy* (TfNSW, 2018b)
- irreversible impacts on the heritage values of the Sedimentary Dykes in the western rail cutting due to the introduction of seating proposed to be cut into the existing sandstone rail cutting. However, the work will not impact the Lapstone Monocline Group as whole, and provides the opportunity for interpretation to identify and explain the heritage item.
- Removal of approximately 29 trees, 13 of which are native trees, due to the introduction of new ramps, lift and extension of the footbridge. No threatened flora species were identified within the Proposal area, and the removal of vegetation, proposal work and operation, were assessed as highly unlikely to result in any significant impact on threaten fauna species. Offset planting would be undertaken within the proposed new landscaping areas and re-established around the new lift.

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 Spaces.

The Proposal has also taken into account the principles of ESD and sustainability (refer to Section 4.3 and Section 6.11). These would be considered further during the detailed design, construction and operational phases of the Proposal. This would ensure the Proposal is delivered to maximum benefit to the community, is cost effective and minimises any adverse impacts on the environment.

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Appendix A Consideration of matters of National Environmental Significance

The table below demonstrates 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	Nil
Any impact on a National Heritage place? There are no National Heritage places in the vicinity of the Proposal	Nil
Any impact on a wetland of international importance? There are no wetlands of international importance in the vicinity of the Proposal.	Nil
Any impact on a listed threatened species or communities? No threatened species were identified or mapped within the Proposal site during the field surveys and no threatened ecological communities are present within the Proposal site. On a precautionary basis, the Proposal Area is considered to constitute marginal foraging habitat for a range of highly mobile threatened fauna species that may utilise the Proposal Area as part of a larger foraging range. It is unlikely that any species would be reliant on it as a foraging source. Removal of vegetation within the Proposal area will not significantly impact any threatened fauna species.	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 the vegetation in the Proposal site is not important 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.	Short-term, minor, negative
The operation of the Proposal would result in improved accessibility to and within the Lapstone Station precinct.	Long-term, positive
(b) Any transformation of a locality?	
Lapstone Station is located at the fringe of the suburb. Works associated with the Proposal would not transform the locality.	Nil
(c) Any environmental impact on the ecosystem of the locality?	
The Proposal would remove about 29 trees (subject to detailed design) of predominantly planted and exotic varieties, and native vegetation of moderate to degraded condition. The study area comprises a modified and degraded 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. Minor vegetation removal would be required which would result in some visual impacts. Operation would also have minor visual impacts as the features of the Proposal such as the new lift and ramp altering the visual landscape.	Minor
(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 amenity of the station for all customers. The Proposal would impact the heritage listed sedimentary dykes located within the Proposal Area for the installation of seating on Platform 1. Impacts to heritage would be minimised through the implementation of the mitigation measures provided in the REF. The SoHI conducted an archaeological assessment which determined that there is a low risk of encountering archaeological items/deposits and that the Proposal is unlikely to expose historical archaeological relics.	Moderate
(f) Any impact on the habitat of protected fauna (within the meaning of the *National Parks and Wildlife Act 1974*)? While threatened species have been recorded in the Proposal Area, the area is considered marginal foraging habitat and the Proposal is unlikely to have any significant impact on the habitat of protected fauna.	Minor
(g) Any endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air?	Nil

Factor	Impacts
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.	
(h) Any long-term effects on the environment? The Proposal is unlikely to have any long-term effects on the environment.	Nil
(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 6.13, 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