NSW GOVERNMENT | Transport for NSW

Leura Station Upgrade

Review of Environmental Factors

April 2016

Contents

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Abbreviations

Term	Meaning
AHIMS	Aboriginal Heritage Information Management System
ASA	Asset Standards Authority (refer to Definitions)
CCTV	Closed Circuit TV
CEMP	Construction Environmental Management Plan
CLM Act	*Contaminated Land Management Act 1997* (NSW)
CNVMP	Construction Noise and Vibration Management Plan
CPTED	Crime Prevention Through Environmental Design
DBH	Diameter Breast Height
DDA	*Disability Discrimination Act 1992* (Cwlth)
DoE	Commonwealth Department of the Environment
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)
ESD	Ecologically Sustainable Development (refer to Definitions)
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)
LEP	Local Environmental Plan
LGA	Local Government Area
NES	National Environmental Significance
Noxious Weeds Act	*Noxious Weeds Act 1993* (NSW)
NPW Act	*National Parks and Wildlife Act 1974* (NSW)
NSW	New South Wales

Term	Meaning
NSW Trains	Responsible for the operation of the NSW Trainlink network.
OEH	NSW Office of the Environment and Heritage
PDP	Public Domain Plan
POEO Act	*Protection of the Environment Operations Act 1997* (NSW)
RailCorp	(former) Rail Corporation of NSW
RBL	Rating Background Level
REF	Review of Environmental Factors (this document)
Roads Act	*Roads Act 1993* (NSW)
Roads and Maritime	NSW Roads and Maritime Services (formerly Roads and Traffic Authority)
SEPP	State Environmental Planning Policy
Sydney Trains	Formerly CityRail
TfNSW	Transport for NSW
TMP	Traffic Management Plan
TPZ	Tree Protection Zone
TSC Act	*Threatened Species Conservation Act 1995* (NSW)
UDP	Urban Design Plan
WARR Act	*Waste Avoidance and Resource Recovery Act 2001* (NSW)

Definitions

Term	Meaning
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.
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. Design Authority functions formerly performed by RailCorp are now exercised by ASA.
Concept design	The concept design is the preliminary design presented in this REF, which would be refined by the Contractor (should the Proposal proceed) to a design suitable for construction (subject to TfNSW acceptance).
Design and Construct Contract	A method to deliver a project in which the design and construction services are contracted by a single entity known as the Contractor. The Contractor completes the project by refining the concept design presented in the REF and completing the detailed design so that it is suitable for construction (subject to TfNSW acceptance). The Contractor is therefore responsible for all work on the project, both design and construction.
Detailed design	Detailed design broadly refers to the process that the Contractor undertakes (should the Proposal proceed) to refine the concept design to a design suitable for construction (subject to TfNSW acceptance).
Disability Standards for Accessible Public Transport	The Commonwealth *Disability Standards for Accessible Public Transport 2002* ("Transport Standards") (as amended) are a set of legally enforceable standards, authorised under the Commonwealth *Disability Discrimination Act 1992* (DDA) for the purpose of removing discrimination 'as far as possible' against people with disabilities. The Transport Standards cover premises, infrastructure and conveyances, and apply to public transport operators and premises providers.
Ecologically Sustainable Development	As defined by clause 7(4) Schedule 2 of the EP&A Regulation. Development that uses, conserves and enhances the resources of the community so that ecological processes on which life depends are maintained, and the total quality of life, now and in the future, can be increased.
Feasible	A work practice or abatement measure is feasible if it is capable of being put into practice or of being engineered and is practical to build given project constraints such as safety and maintenance requirements.
Interchange	Transport interchange refers to the area/s where passengers transit between vehicles or between transport modes. It includes the pedestrian pathways and cycle facilities in and around an interchange.
Noise sensitive receiver	In addition to residential dwellings, noise sensitive receivers include, but are not limited to, hotels, entertainment venues, pre-schools and day care facilities, educational institutions (e.g. schools, TAFE colleges), health care facilities (e.g. nursing homes, hospitals), recording studios and places of worship/religious facilities (e.g. churches).

Term	Meaning
NSW Trains	From 1 July 2013, NSW Trains became the new rail provider of services for regional rail customers.
Out of hours works	Defined as works *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 Part 5 of the EP&A Act - in this instance, TfNSW.
Rail possession	Possession is the term used by railway building/maintenance contractors to indicate that they have taken possession of the track (usually a block of track) for a specified period, so that no trains operate for a specified time. This is necessary to ensure the safety of workers and rail users.
Reasonable	Selecting reasonable measures from those that are feasible involves making a judgment to determine whether the overall benefits outweigh the overall adverse social, economic and environmental effects, including the cost of the measure.
Sensitive receivers	Land uses which are sensitive to potential noise, air and visual impacts, such as residential dwellings, schools and hospitals.
Sydney Trains	From 1 July 2013, Sydney Trains replaced CityRail as the provider of metropolitan train services for Sydney.
Tactiles	Tactile tiles or Tactile Ground Surface Indicators (TGSIs) are textured ground surface indicators to assist pedestrians who are blind or visually impaired. They are found on many footpaths, stairs and train station platforms.
The Proposal	The construction and operation of the Leura Station Upgrade.
Vegetation Offset Guide	The TfNSW guide that applies where there is vegetation clearing proposed, and where the impact of the proposed clearing is not deemed 'significant' for the purposes of section 111 of the EP&A Act. The Guide provides for planting of a minimum of eight trees for each large tree with a diameter at breast height (DBH) of more than 60 cm, four trees where the DBH is 15-60 cm, or two trees where DBH is less than 15 cm.

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 Leura Station Upgrade (the Proposal).

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

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

Description of the Proposal

The key features of the Proposal are summarised as follows:

- installation of a lift and new stairs at the station overbridge to connect to the platform
- expanded concourse area on the overbridge surrounding the lift
- new canopy covering the lift entrance, station stairs and part of the platform
- works to the existing station buildings to make them accessible, including upgraded toilet facilities
- extension of the platform at the western end
- provision of a kiss and ride facility on the eastern side of Leura Mall next to the existing pedestrian crossing
- provision of an accessible path and ramp as well as new stairs between the station and new taxi parking area
- provision of about six taxi parking spaces along Railway Parade
- provision of bicycle parking facilities
- ancillary works, including minor platform resurfacing, wayfinding, anti-throw screens, minor drainage works, adjustments to lighting, modifications to station communication, and security systems with new CCTV cameras.

Subject to approval, construction is expected to commence in late 2016 and take around 16 months to complete. A detailed description of the Proposal is provided in Chapter 3 of this REF.

Need for the Proposal

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

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

assist in responding to forecasted growth in the region and as such would support growth in commercial and residential development.

The Proposal fulfils the program objectives by proposing to provide:

- improved accessibility for customers at Leura Station, particularly those with disabilities, the ageing, or those with prams or luggage by providing
    - a lift to the station platform
    - an accessible path, ramp and stairs between the station and new taxi parking area
- improved customer amenity and facilities at the station including a new platform canopy, upgraded toilet facilities, new lighting and CCTV and works to the existing station buildings and platforms to make them accessible
- improved transport interchange facilities including new formalised kiss and ride areas, bicycle parking facilities and about six taxi parking spaces along Railway Parade.

The Proposal would also ensure that Leura Station would meet legislative requirements under the *Disability Standards for Accessible Public Transport 2002*.

Design options considered

Options for improving access to Leura Station were developed following a number of workshops with TfNSW in consultation with other relevant stakeholders, the community, and the project design team.

Two concept design options were developed initially to address station needs and other design principles. Both options focused on providing infrastructure required for equitable access to the station platform by connecting new infrastructure, such as a lift or ramp, to the existing footbridge. The key differences were the alternate station entrance and platform access arrangements. Broadly, these are summarised below:

- Option 1 proposed the installation of a lift between the street level and platform, on the southern side of the concourse, with the new stairway located on the northern side of the lift. A canopy would be provided over the entrance, stairway and along the platform to the station building.
- Option 2 proposed the installation of a lift in the centre of the concourse, with a concourse walkway either side of the lift, and the replacement of the existing stairway. This option would require a larger concourse area and therefore a greater widening of the existing bridge. The stairway would also extend further into the platform area. A canopy would be provided over the entrance, stairway and along the platform to the station building.

Option 2 was selected as the preferred option and further refined to include two kiss and ride bays, adjustments to the non-accessible ramp leading to the taxi rank, conversion of the toilets to provide one accessible male toilet, one accessible female toilet, and one separate unisex staff toilet.

During preparation of the REF, community feedback was sought on the project, in particular, the extent of canopy coverage for the preferred option. The majority of feedback received supported the installation of some form of canopy cover over the new lift and stairs.

Statutory considerations

The EP&A Act provides for the environmental impact assessment of development in NSW. Part 5 of the EP&A Act generally specifies the environmental impact assessment requirements for activities undertaken by public authorities, such as TfNSW, which do not require development consent under the EP&A Act.

The *State Environmental Planning Policy (Infrastructure) 2007* (the Infrastructure SEPP) is the primary environmental planning instrument relevant to the proposed development and is the key environmental planning instrument which determines that this Proposal is permissible without consent and therefore is to be assessed under Part 5 of the EP&A Act.

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. 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' and 'associated public transport facilities for railway stations'.

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

This REF has been prepared to assess the construction and operational environmental impacts of the Proposal. The REF has been prepared in accordance with clause 228 of the *Environment Planning and Assessment Regulation 2000* (the EP&A Regulation).

In accordance with section 111 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 proposed activity.

Chapter 6 of this REF presents the environmental impact assessment for Leura Station Upgrade, in accordance with these requirements.

Community and stakeholder consultation

Under the Infrastructure SEPP, consultation is required with local councils or public authorities in certain circumstances, including where Council-managed infrastructure is affected. Consultation has been undertaken with Blue Mountains City Council, Sydney Trains, NSW Trains, NSW Government Architects Office and the community during the development of design options and the preferred option. Consultation with these stakeholders would continue through the detailed design and construction of the Proposal.

TfNSW is also proposing to undertake the following consultation for the Proposal:

- direct notification to community stakeholders
- public display of the REF.

Community consultation activities for the Proposal would be undertaken during the public display period of this REF. The REF would be displayed for a period of about three weeks. Further information about these specific activities is included in Section 4.5 of this REF.

During this period, the REF would also be available for viewing at Wentworth Falls Library at the School of Arts Building, Great Western Highway at Wentworth Falls, Katoomba Library at Blue Mountains Cultural Centre at 30 Parke Street Katoomba, Blue Mountains City Council at

2-6 Civic Place, Katoomba and the TfNSW Community Information Centre at 388 George Street, Sydney. The REF would also be available to download from the TfNSW website[1] and a Project Infoline (1800 684 490) would be available for members of the public to make enquiries.

TfNSW would review and assess all feedback received during the public display period, prior to determining whether or not to proceed with the Proposal.

Should the Proposal proceed to construction, the community would be kept informed throughout the duration of the construction period. Figure 1 presents an overview of the consultation and planning process and the current status of the Proposal.

Figure 1 Planning approval and consultation process for the Proposal

[1] http://www.transport.nsw.gov.au/projects-tap

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 following key impacts have been identified should the Proposal proceed:

- introduction of new elements, such as canopies and lifts, into the visual environment
- temporary noise and vibration impacts during construction
- temporary changes to vehicle and pedestrian movements to access the station and taxi parking
- temporary disruptions to station facilities and amenities during construction
- impacts to heritage-listed platform buildings
- removal of trees and vegetation that would require planting offsets.

The longer term benefits of the Proposal include improved accessibility to the station and improved station and interchange facilities.

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

Conclusion

This REF has been prepared having regard to sections 111 and 112 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 *NSW Sustainable Design Guidelines – Version 3.0* (TfNSW, 2013a) taking into account the principles of ecologically sustainable development (ESD).

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

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

1 Introduction

Transport for NSW (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 Leura Station Upgrade (the Proposal), to be delivered by the Infrastructure and Services Division.

1.1 Overview of the Proposal

1.1.1 The need for the Proposal

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

Leura Station does not currently meet the key requirements of the *Disability Standards for Accessible Public Transport 2002* (DSAPT) or the Commonwealth *Disability Discrimination Act 1992* (DDA). There is currently no accessible path to the station platforms, and some paths of travel from the surrounding footpath and roads are not compliant with requirements of the DDA. There are also issues with the connections between the station and other modes of transport, including a non-accessible taxi zone, and a lack of kiss and ride bays and bicycle parking.

The Proposal is required to provide safe and equitable access to the station and to improve customer facilities. The improvements would also assist in supporting growth in public transport use and would provide an improved customer experience for existing and future users of the station.

1.1.2 Key features of the Proposal

The key features of the Proposal are summarised as follows:

- installation of a lift and new stairs at the station overbridge to connect to the platform
- expanded concourse area on the overbridge surrounding the lift
- new canopy covering the lift entrance, station stairs and part of the platform
- works to the existing station buildings to make them accessible, including upgraded toilet facilities
- extension of the platform at the western end
- provision of a kiss and ride facility on the eastern side of Leura Mall next to the existing pedestrian crossing
- provision of an accessible path and ramp as well as new stairs between the station and new taxi parking area
- provision of about six taxi parking spaces along Railway Parade
- provision of bicycle parking facilities
- ancillary works, including minor platform resurfacing, wayfinding, anti-throw screens, minor drainage works, adjustments to lighting, modifications to station communication, and security systems with new CCTV cameras.

Subject to planning approval, construction is expected to commence in late 2016 and take around 16 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 town of Leura in the Blue Mountains local government area (LGA), about 110 kilometres west of Sydney. Figure 2 shows the regional context of the Proposal site.

Leura Station is located beneath the Leura Mall overbridge, about 140 metres south of the Great Western Highway. The main shopping area (Leura town centre) is located immediately south of the station entrance along both sides of Leura Mall. The Blue Mountains National Park is located about 0.85 kilometres south and two kilometres to the north east of the Proposal site.

The station is serviced by the NSW TrainLink Blue Mountains line. The travel time between Sydney Central Station and Leura Station is about two hours. Leura Station is the 196th busiest railway station on the NSW rail network, with around 780 trips on a typical weekday (NSW Bureau of Transport Statistics, 2014).

The Proposal would involve upgrades to Leura Station on land owned by RailCorp and managed by NSW Trains. Work would also be undertaken along the footpath, car park and road reserves of Leura Mall and Railway Parade, in areas owned and managed by Blue Mountains City Council (Council).

1.3 Existing infrastructure and land uses

1.3.1 Existing land uses

Immediately south of the station is Leura town centre which has a range of food and retail outlets catering to visitors and local residents. Low density residential areas lie to the north, east and west of the station. The main shopping strip is located immediately south of the station entrance along both sides of Leura Mall. The closest boundary of the Blue Mountains National Park is located further to the south of the site; approximately 0.85 kilometres from the station. The local tourism office is located north west of the station off the Great Western Highway, and can be accessed via a walkway that runs parallel to the rail corridor along the top of the cutting, to the north of Leura Mall overbridge. Hotels and restaurants are located between the highway and the rail corridor on the northern boundary of the Proposal site.

The Great Western Highway and Railway Parade are located north and south of the site respectively and run parallel to the rail corridor. Leura Mall overbridge is the main access point for vehicles between the Great Western Highway and the area of Leura located south of the highway. As such, the overbridge is characterised by a high number of vehicle movements.

The footpath along the eastern side of Leura Mall does not continue across the bridge, resulting in the only access to the site being from the footpath associated with the western side of the bridge. The only formal pedestrian crossing point provided is a zebra crossing across Leura Mall, about 30 metres north of the station entrance. Other road crossings are informal kerb ramp crossings across Railway Parade (west) and Leura Mall (south). These crossings are steep, and as such, affect the overall accessibility of the site.

There is some existing landscaping and vegetation immediately south of the station on Railway Parade.

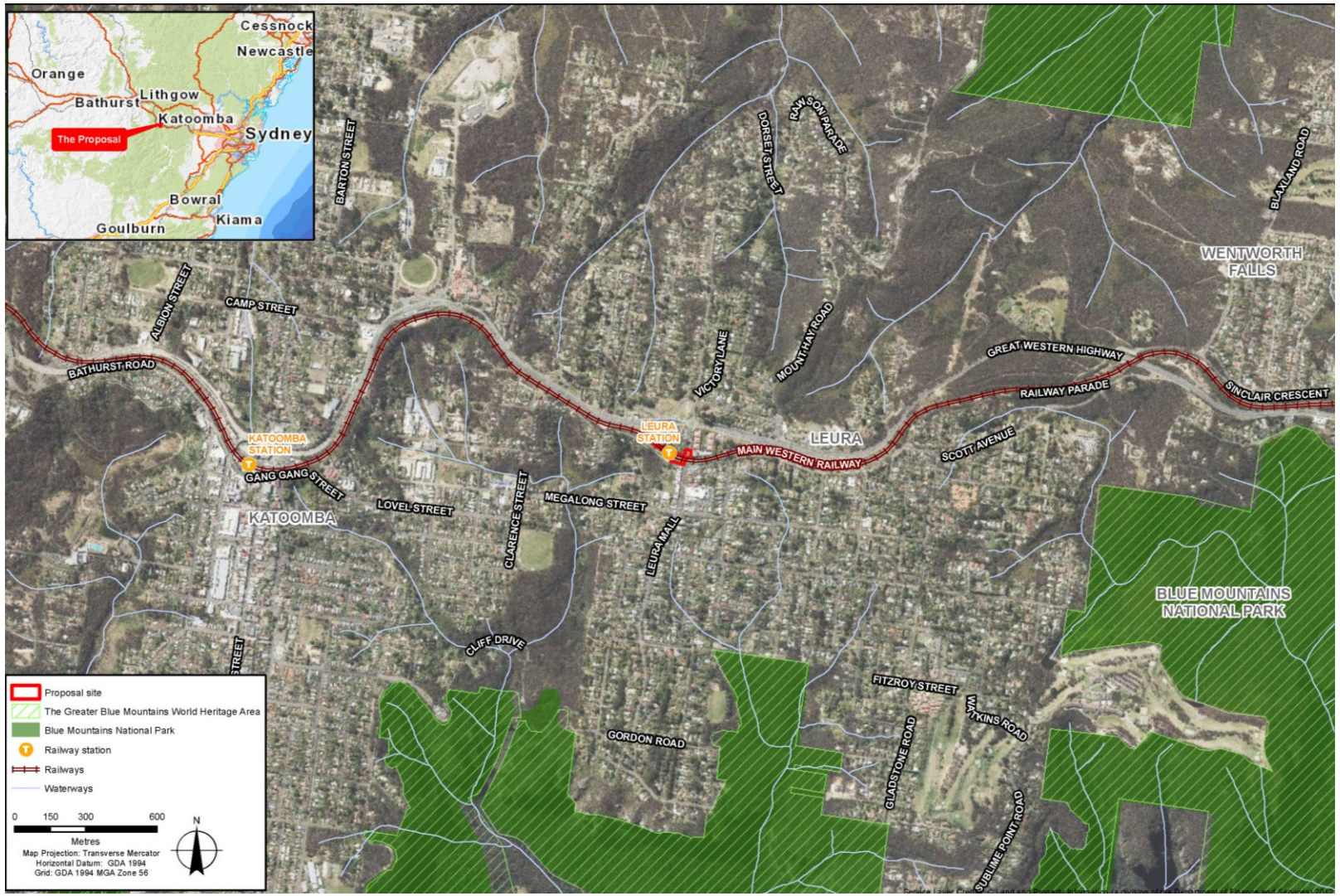

Figure 2 Regional context

1.3.2 Existing infrastructure

Leura Station consists of an island platform configuration. There are two platforms serviced by the NSW TrainLink Blue Mountains Line. Platform 1 services trains travelling to Sydney and platform 2 services trains travelling from Sydney.

The Proposal site (refer to Figure 3) consists of the station platform and associated building (refer to Figure 4), intermodal interchange facilities, and the immediate surrounding road and footpath network that would be impacted by the Proposal.

All existing passenger amenities, services and facilities are located on the station platform in and around the station building. These include food and drink vending machines, public telephones, emergency help point, signage, and male and female toilets. Seating is provided in the waiting room and on the platform. Passengers only have access to the waiting room and toilet facilities when the station is staffed.

At the Proposal site the railway corridor is located within a cutting (refer to Figure 5). Access to the platform is via a set of stairs connecting to the Leura Mall overbridge at the eastern end of the platform (refer to Figure 6). There is limited canopy protection on the platform and none above the stairway. The station building has a platform awning covering a small part of the platform.

Existing transport interchange arrangements at Leura Station are as follows:

- Council has provided a small car park on the corner of the Great Western Highway and Leura Mall for use as an informal commuter car park. This car park contains around 22 unmarked bays and is located about 100 metres from the station entrance.
- On-street parking along Leura Mall and Railway Parade is generally time-limited, for use by patrons of the Leura town centre.
- A taxi rank, serving both the village centre and the station, is located on the north side of Railway Parade, west of Leura Mall (refer to Figure 7). This has capacity for about three taxis.

Pedestrian footpaths are located on Leura Mall (to the north and south), providing access from the village centre and adjacent residential areas (refer to Figure 8)

- Bicycles have been observed chained to fences and poles as there are no formal racks near the station.
- Blue Mountains Bus Company operates the bus routes in the Blue Mountains region. Route 690K, which links Katoomba with Penrith, services the Leura Interchange. There are two local bus stops located on Railway Parade, about 30 metres east of Leura Mall. The westbound bus stop has ‘bus zone’ signage and seat, with no other signage, timetable or shelter. The eastbound bus stop has bus zone signage and a sheltered seat. The Blue Mountains Trolley Tours and Blue Mountains Explorer Bus hop-on and hop-off services also stop at this location.

Figure 3 Site locality map

Figure 4 View looking east towards the station building

Figure 5 View looking east towards Leura Mall overbridge access stairs

Figure 6 View looking west from Leura Mall overbridge towards the station platform

Figure 7 View looking west along Railway Parade towards informal taxi waiting area

Figure 8 View looking north from Leura Mall towards Leura Station

1.4 Purpose of this Review of Environmental Factors

This REF has been prepared by TfNSW to assess the potential impacts of the Proposal. For the purposes of these works, TfNSW is the proponent and the determining authority under Part 5 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 111 of the EP&A Act, and to identify mitigation measures to reduce the likely impacts of the Proposal. This REF has been prepared in accordance with clause 228 of the *Environment Planning and Assessment Regulation 2000* (the EP&A Regulation).

This assessment has also considered the relevant provisions of other relevant environmental legislation, including the *Threatened Species Conservation Act 1995* (TSC Act), *Fisheries Management Act 1994* 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 Environment 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 objectives of the Proposal, having regard to the objectives of the Transport Access Program and the specific objectives of the Proposal. This chapter also provides a 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

2.1.1 Overview

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 Proposal, the subject of this REF, forms part of the Transport Access Program. This program is designed to drive a stronger customer experience outcome to deliver seamless travel to and between modes, encourage greater public transport use and better integrate station interchanges with the role and function of town centres within the metropolitan area and developing urban centres in regional areas of NSW.

The Proposal is consistent with the NSW Government's commitment to deliver an efficient and effective transport system around Sydney and NSW as detailed in *NSW 2021 – A Plan to Make NSW Number One* (Department of Premier and Cabinet, 2011).

NSW 2021 is the NSW Government's ten year plan to guide budget and decision making in NSW. *NSW 2021* includes the following goals, targets and priority actions relevant to the Proposal:

- reduce travel times
- minimise public transport waiting times for customers
- improve co-ordination and integration between transport modes
- grow patronage on public transport
- improve public transport reliability
- improve customer experience with transport services.

The NSW Government has developed a *Long Term Transport Master Plan* (TfNSW, 2012a). This plan provides a comprehensive strategy for all modes of transport across NSW over the next 20 years, while also delivering on current commitments.

Data forecasts indicate that there would be significant growth in population and employment from 2006 up to 2036 in the area within the station catchment. The Proposal accommodates the forecast NSW Trainlink patronage growth (+15 per cent to 2036) and changing travel patterns.

The *Disability Action Plan 2012-2017* (TfNSW, 2012b) was developed by TfNSW, in consultation with the Accessible Transport Advisory Committee, which is made up of representatives from peak disability and ageing organisations within NSW. The Plan discusses the challenges, the achievements to date, the considerable undertaking that is required to finish the job and provide a solid and practical foundation for future progress over the next five years. The Proposal has been developed in consideration of the objectives outlined in this Plan.

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. Further details of the application of NSW Government policies and strategies are discussed in Section 4.5 of this REF.

2.1.2 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 those with disabilities, the ageing and those with prams or 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 all modes for all customers
- safety improvements including extra lighting, lift alarm, 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.

2.1.3 Objectives of the Proposal

The specific objectives of the Proposal are as follows:

Key architectural objectives:

- maintain elegant simplicity in the architectural planning and detailing
- ensure compliance with functional and operational requirements
- respond sensitively to the current and likely future built environment around the interchange
- balance core operations and customer needs
- design all elements for easy maintenance
- maintain existing heritage and visual characteristics unique to Leura Station and the locality.

Key engineering objectives:

- minimise walking distances and promote interchange with other modes of transport
- minimise pedestrian conflict points and crowding points
- minimise queuing at station facilities
- maximise security and safety, and the perception of security and safety
- minimise cost of ownership and maintenance
- accommodate potential for growth in patronage and changing travel patterns

- improve the station's functionality, including reduced congestion, access to ticketing and improved platform clearance rates
- increase equity of access for all customers
- compliance with the DDA.

Key urban design objectives:

- integrate the interchange with its current and future urban context, taking into consideration the heritage nature of the site and surrounding biodiversity
- encourage walking, cycling and bus usage by facilitating interchange for all customers, through the urban design of the interchange precinct and careful integration of the interchange within its local area
- incorporate flexibility and adaptability in the interchange precinct which may accommodate any future change
- create a high-quality, positive addition to the public domain.

2.2 Design development

Cardno Pty Ltd was engaged by TfNSW to develop the concept design for the Proposal.

Sustainable Blue Mountains 2025 (Blue Mountains City Council, 2013) forecasts an annual increase in local population numbers of 0.54 per cent, with an expected population of 5022 by 2031 (Cardno, 2015). Table 1 shows the existing and forecast passenger volumes for the station.

Table 1 Existing and forecast passenger volumes (Cardno, 2015)

Provision description	2012	2036	2036 + 15%*
Annual	247,280	305,600	351440
Daily	880	1088	1251
AM Period	220	272	313
Peak queue on platform	20	25	28
Peak 5 minute access (two-way flow)	14	17	20

*While this interchange is considered rural it generally operates in a similar manner as a metropolitan interchange and as such, some of the metropolitan rationale has been applied to the movement assumptions. As is standard for metropolitan forecast estimates, an additional factor of 15 per cent has been added for the design consideration.

An assessment of Leura Station was undertaken to identify key deficiencies and opportunities at the station with regards to accessibility and the customer experience. The findings were presented in the *Leura Rural and Regional Interchange Upgrade Concept Design Plan Report* (Cardno, 2015) and are summarised below:

- The natural topography of the area surrounding the interchange is steep.
- The footpaths and station entry are not fully accessible.
- The links between transport modes, in particular bus stops, are missing and not prioritised for people walking.
- No bicycle parking is provided at the interchange.

- There are no shared paths, cycle lanes or other facilities connecting to the interchange.
- Platform cross-fall is not fully accessible.
- Wayfinding and identification in the interchange precinct is poor.
- Insufficient taxi spaces are provided to meet current demand as the taxi zone is used to serve the village centre as well as the interchange.
- No dedicated kiss and ride bays are provided.
- The station building is not fully accessible, including access to public toilets and through staff areas.
- There is a lack of integration with the surrounding area, for example landscaping and footpath connections.
- There is a lack of weather protection within the station
- There is a lack of CCTV, contemporary alarm system and lighting which reduces security and safety in the Interchange.

2.3 **Alternative options considered**

Options for improving access to Leura Station were developed following a number of workshops with TfNSW in consultation with other relevant stakeholders (including Sydney Trains, NSW Trains, NSW Government Architects Office and Blue Mountains City Council) and the project design team.

Two concept design options were developed to address station needs and other design principles and those options common to both are listed below:

- pedestrians
  - provide lift access to the station platform
  - upgrade the access along pedestrian desire lines from Leura Station to Leura town centre
  - upgrade facilities to improve accessibility, including installation of tactile ground surface indicators throughout the station, and provision of a canopy over the stairway and station entrance pedestrians
- cyclists
  - provide bicycle racks
- motorists
  - provision of two kiss and ride bays
  - conversion of three parking bays to two accessible parking space
- taxi users
  - additional taxi spaces with compliant access
  - guardrail for taxi and commuter safety
- building improvements
  - provide a new door at the station building entrance and install a new threshold
  - provide a lower section of the ticket counter for accessibility

    - upgrade and reconfigure the male and female toilets to provide ambulant cubicles and new finishes
    - install a ramp to the ticket office
- ancillary provisions, including kerb and gutter realignment, upgrading wayfinding, CCTV and lighting where required.

The two options focused on providing infrastructure required for equitable access to the station platform by connecting new infrastructure, such as a lift or ramp, to the existing footbridge. The key differences between the options focused on an alternate station entrance and platform access arrangements, and are summarised below:

- Option 1 proposed the installation of a lift between the street level and platform, on the southern side of the concourse, with the new stairway located on the northern side of the lift. A canopy would be provided over the entrance, stairway and along the platform to the station building.
- Option 2 proposed the installation of a lift in the centre of the concourse, with a concourse walkway either side of the lift, and the replacement of the existing stairway. This option would require a larger concourse area and therefore a greater widening of the existing bridge. The stairway would also extend further into the platform area. A canopy would be provided over the entrance, stairway and along the platform to the station building.

The general layout of option 2 was adopted, with the following refinements:

- provision of two kiss and ride bays
- remove non-accessible ramp leading to the taxi rank
- reconfigure the ramp accessing the taxi rank to maximise landscaping opportunity
- convert the toilet configuration into one accessible male toilet, one accessible female toilet, and one separate unisex staff toilet

2.3.1 The ‘do-nothing’ option

Under a ‘do-nothing’ option, existing access to the platform would remain the same and there would be no changes to the way the interchange 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 is inconsistent with NSW Government objectives and legislation and would not help encourage the use of public transport and would not meet the needs of the Leura community.

2.3.2 Assessment of identified options

The design options were assessed in a multi-criteria analysis that included consideration of factors such as customer experience, accessibility, urban form, engineering constraints, modal integration, heritage, environment and cost to select a preferred option.

2.4 Justification for the preferred option

Option 1 was considered to have an inferior customer experience and modal integration compared to Option 2. Option 1 was also considered to have higher heritage and urban form integration impacts.

Option 2 was selected as the preferred option due to the greater customer experience that could be provided and improved integration with the local heritage and urban form. The estimated costs of option 2 are higher than option 1, however the environmental and social improvements obtained from this design were considered to outweigh the costs.

2.5 Further refinements to the preferred option

During preparation of the REF, community feedback was sought on the project, in particular, the extent of canopy coverage for the preferred option.

Feedback on the level of canopy coverage at the station was mixed with varying levels of support for:

- no canopy to be installed at the station
- minimal canopy to be installed over and around the proposed new lift and stairs
- canopy coverage over most of the area between the proposed new lift and stairs and the existing station building.

The majority of feedback received supported the installation of some form of canopy cover over the new lift and stairs. Feedback also raised concern over the canopy impacting on the Irish Strawberry Tree located on the station platform (and forming part of the heritage listing of the station) and restricting views of the historic station buildings. As a result, the minimal canopy coverage was adopted as the preferred design. Community feedback on the design and canopy options will be considered further during the detailed design phase.

This is discussed further in Section 5.4.

3 Description of the Proposal

Chapter 3 describes the Proposal and summarises key design parameters, construction method, and associated infrastructure and activities. The description of the Proposal is based on the concept design and is subject to detailed design.

3.1 The Proposal

As described in Section 1.1, the Proposal involves an upgrade of Leura Station as part of the Transport Access Program which would improve accessibility and amenities for customers.

The Proposal would include the following key elements:

- installation of a lift and new stairs at the station overbridge to connect to the platform
- expanded concourse area on the overbridge surrounding the lift
- new canopy covering the lift entrance, station stairs and part of the platform
- works to the existing station buildings to make them accessible, including upgraded toilet facilities
- extension of the platform at the western end
- provision of a kiss and ride facility on the eastern side of Leura Mall next to the existing pedestrian crossing
- provision of an accessible path and ramp as well as new stairs between the station and new taxi parking area
- provision of about six taxi parking spaces along Railway Parade
- provision of bicycle parking facilities
- ancillary works, including minor platform resurfacing, wayfinding, anti-throw screens, minor drainage works, adjustments to lighting, modifications to station communication, and security systems with new CCTV cameras.

A general layout of the Proposal and a plan view of the Proposal is shown in Figure 9 and Figure 10. Photomontages showing the proposal are shown in Figure 11 and Figure 12.

Figure 9 General layout of key elements of the Proposal (indicative only, subject to detailed design)

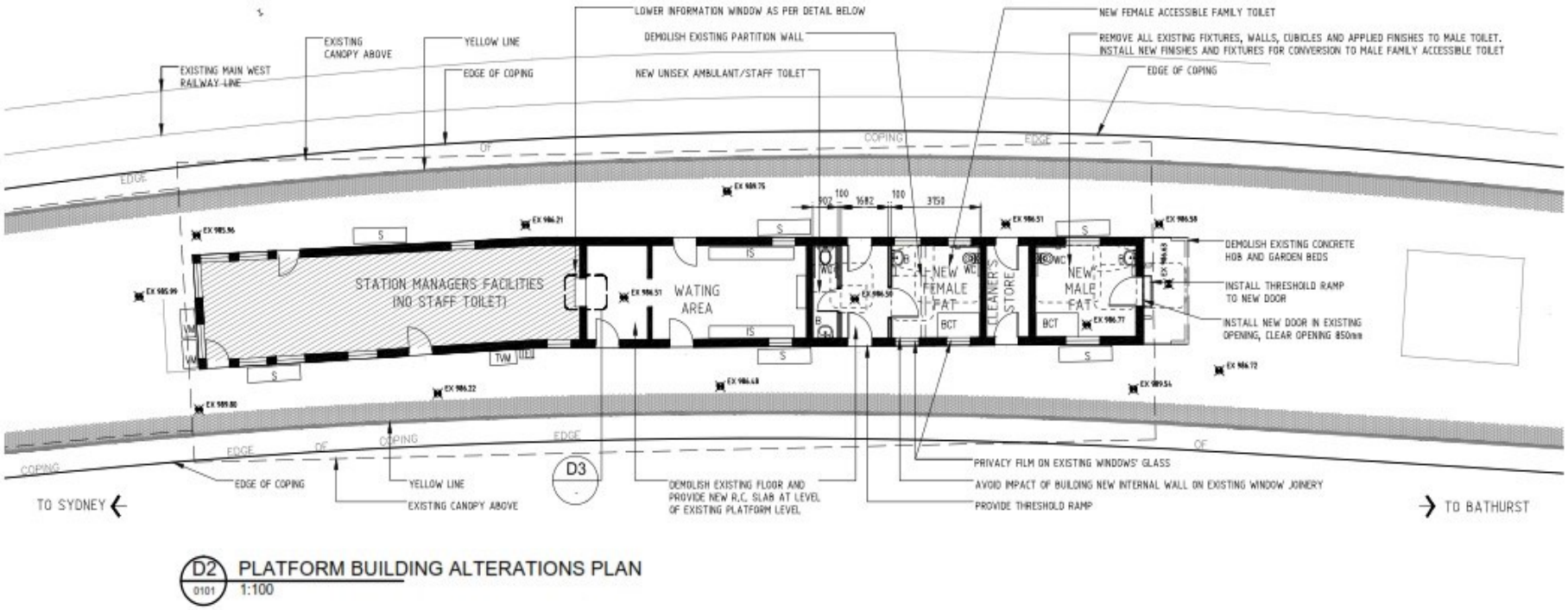

Figure 10 Plan view of key elements of the Proposal (indicative only, subject to detailed design)

3.1.1 Proposal design features

Station upgrade

The Proposal would improve accessibility by installing a lift at the station entrance, to provide access to the platform from the street. The existing railway overbridge would be retained, although extended to provide landings for the lift.

The waiting area for the lifts would be protected by a canopy. The entry stairs would be replaced with a compliant stair design and canopy. Other improvements to accessible parking, ramps and stairs adjacent to the interchange would ensure the interchange's accessibility.

The upgrade to the station facilities would include:

- installation of a lift at the station entrance to connect to the platform
- expanded concourse area on the overbridge surrounding the lift
- new stairs connecting the concourse to platform 1 and 2
- new canopies around the lift, on the stairs and part of the platform
- platform extension at the western end
- lowering of the ticket booth window for accessibility
- provision of a step ramp to the ticket office or locally raise platform for accessibility
- reconfiguring the existing male and female toilet into two accessible toilets (one male, one female) and one staff unisex accessible toilet and provision of ramps to the toilets
- installation of wayfinding and tactile ground surface indicators throughout the station, including platforms, ramps and stairs
- provision of CCTV and lighting
- service relocation and adjustments to stormwater drainage and electrical infrastructure

Interchange facilities

Details of the proposed works to improve accessibility and customer experience include:

- demolition of the existing stairs and ramp and realignment of kerb and gutter on the southern side of the station to provide for the new accessible ramp and stairs, and maximising landscaping opportunity
- conversion of four parking bays on the eastern side of Leura Mall to two kiss and ride bays
- provision of about six taxi parking spaces along Railway Parade, including a guardrail for taxi and commuter safety, and extension of kerb, gutter and footpath along Railway Parade to accommodate the bays and provide safe access for patrons
- provision of bike racks adjacent to the stairs connecting the concourse and platforms
- upgrade pedestrian facilities between Leura Station and Leura town centre with footpath improvements north of the station and a new ramp and stairs south of the station to connect with the taxi zone
- landscaping work including the removal and replacement of vegetation on the platform and immediately south of Leura Station on Railway Parade.

Construction activities

Proposed construction activities include:

- temporary site compounds for storage of materials and equipment
- temporary vehicular and pedestrian access provisions including a temporary station footbridge.

Materials and finishes

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

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

Each of the upgraded or new facilities would be constructed from a range of different materials, with a different palette for each architectural elements. Subject to detailed design, the Proposal would include the following:

- lift shafts – precast concrete and glass
- platform stairs – concrete with mesh throw screens and canopy

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) and/or Public Domain Plan (PDP) would also be prepared by the Contractor, prior to finalisation of detailed design for endorsement by TfNSW.

Figure 11 Photomontage looking north towards Leura Station from Leura Mall/Railway Parade

Figure 12 Photomontage looking south east to Leura Station platform (indicative only)

3.1.2 Engineering 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 needed to be considered during the development of the design – these structures included the platforms, station buildings, access structures and Leura Mall overbridge.

The railway overbridge currently allows for two lanes of traffic and a single pedestrian footpath along the west side of Leura Mall, creating a single pedestrian desire line from the station entrance across Railway Parade. The route via the overbridge is the main access point for vehicles between the Great Western Highway and Leura. This route is narrow and is characterised by a high number of vehicle movements with limited opportunity to accommodate formal drop off zones for buses and vehicles. The route is also constrained by the roundabout located just south of the overbridge at the intersection of Railway Parade, creating a traffic congestion point and a barrier to pedestrian movement at this location.

Sydney Trains' requirements: modifications for existing structures and new structures within the rail corridor must be designed and constructed with consideration of train impact loads, structural clearances to the track, and safe working provisions.

Utilities: A detailed services schedule has been provided by RailCorp that has identified a number of utilities in the vicinity of the proposed works including:

- overhead electricity cables
- electricity cables attached to the Leura Mall overbridge
- underground electricity cables
- high and low pressure gas mains
- water and sewerage pipes.

Heritage: Leura Station is listed on RailCorp's Section 170 Heritage and Conservation Register and the *Blue Mountains Local Environmental Plan 2015*. The proposed works are predominantly inside the Leura Station group listing boundary. The mature tree at the

eastern end of the platform is included as part of the listing. The proposed works in Leura Mall and Railway Parade are outside the listing boundary.

The Proposal would impact on the stairs, platforms, physical and visual connections to the street and precinct.

Other considerations:

As a result of the station platform being located substantially within a rock cutting, during certain weather conditions, customers on the platform may be affected by a 'wind tunnel' effect. This can be particularly unpleasant during colder months of the year.

The area around the station and town centre is characterised by a significant grade change from the Great Western Highway down past Leura Mall. The station platform is located in a deep cutting with a single entrance point off the west side of the Leura Mall overbridge.

The majority of taxis accessing the existing taxi rank arrive from the Leura Mall/Railway Parade intersection; however the rank faces the eastbound direction. To reach the rank, taxis are required to execute a three-point turn using a gravel driveway which provides vehicular access to the rail corridor.

All paths approaching the station are steep, which affect accessibility, except for a short section of the western footpath on Leura Mall, north of the station entrance. The footpath at the junction of Railway Parade and Leura Mall is split, comprising a steep, narrow, curved ramp and a set of stairs.

The platforms are generally uncovered and when it snows, access to the platforms can be slippery, affecting passenger comfort and access.

Existing landscaping and vegetation is located immediately south of the interchange on Railway Parade.

3.1.3 Design standards

The Proposal would be designed having regard to the following:

- 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 standards
- *NSW Sustainable Design Guidelines – Version 3.0* (TfNSW, 2013a)
- *Guidelines for the Development of Public Transport Interchange Facilities* (Ministry of Transport, 2008)
- Crime Prevention Through Environmental Design (CPTED) principles
- Council standards where relevant to the streetscape works.

3.1.4 Sustainability in design

The development of the concept design for the Proposal has been undertaken in accordance with the project targets identified in TfNSW's Environmental Management System (EMS) and the *NSW Sustainable Design Guidelines - Version 3.0* (TfNSW, 2013a) which groups sustainability into seven themes:

- energy and greenhouse gases
- climate resilience

- materials and waste
- biodiversity and heritage
- water
- pollution control
- community benefit.

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

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

A shortlist of compulsory initiatives has been developed by TfNSW specifically for Transport Access Program projects, which includes the Leura Station Upgrade. These compulsory initiatives have been reviewed and incorporated into the concept design (unless otherwise justified) and documented in a Sustainable Design Guidelines checklist that was approved by TfNSW (a summary of the key initiatives is provided in Appendix C). The checklist and the initiatives contained within would be reviewed again at the detailed design and construction phases, and submitted for approval by TfNSW.

3.2 Construction activities

3.2.1 Work methodology

Subject to approval, construction is expected to commence in late 2016 and take around 16 months to complete. The construction methodology would be further developed during the detailed design of the Proposal by the nominated 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. The staging is also dependent on the Contractor's preferred methodology, program and sequencing of work.

Table 2 Indicative construction staging for key activities

Stage	Activities
Site establishment and enabling works	• establish a site compound(s) (erect fencing, tree protection zones, site offices, amenities and plant/material storage areas) • establish temporary facilities as required (e.g. temporary pedestrian access to station, temporary toilets) • remove vegetation to allow for new ramp and stairs • works to the station building • services relocation
New lift and platform upgrade	• installation of a temporary footbridge • remove existing stairs, • construction of lift shaft including piling and foundations for lift shaft • platform modifications, platform extension, • extension of overbridge • construct lift shaft • install lift • construct new stairs, fencing and new canopies • install fixtures, lighting, signage and CCTV cameras for the station areas • platform regrading in localised areas, including hearing protection loop installation • construction of platform extension
Station building works	• reconfigure internal station buildings to allow for staff facilities, accessible male, female and unisex toilets • refresh station building including painting works • lowering of the ticket booking window for accessibility
Interchange works	• widen and regrade pedestrian footpath • install new ramp and stairs • provide a taxi zone, a kiss and ride area, bike racks and accessible car spaces (final scope subject to detail design)
Finalisation	• install wayfinding signage • electrical and power supply upgrade works • replanting/landscaping, fencing adjustments and bollards
Testing and commissioning	• various activities to test and commission power supply, lifts, lighting, new/modifications to station services, ticketing systems, communication and security systems

3.2.2 Plant and equipment

The plant and equipment likely to be used during construction includes:

- trucks (tipper and semi-trailers)
- demolition saw
- generator
- jack hammer
- excavator (with auger)
- grinder
- bobcat
- manitou
- scissor lift
- mobile/franna crane
- hand tools
- lighting tower
- mulcher
- chainsaw
- concrete pump
- pilling rig
- concrete truck
- hydreama and/or hirail
- wacker packer
- nail gun
- mini excavator
- coring machine.

3.2.3 Working hours

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

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

Certain works may need to occur outside standard hours and would include night works and works during routine track 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.

Out of hours works 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 five track possessions would be required to facilitate the following:

- services relocation
- demolition of existing stairs on the platforms
- installation of a temporary access footbridge
- platform extension, lift shaft including piling and foundations for lift shaft
- construction of lift shaft, stairs, fencing and new canopies
- minor platform resurfacing
- refresh of station building including painting works.

Out of hours works may also be scheduled outside track possession periods. Approval from TfNSW would be required for any out of hours work and the affected community would be notified as outlined in TfNSW's *Construction Noise Strategy* (TfNSW, 2012c) (refer to Section 6.3 for further details).

3.2.4 Earthworks

Excavations and earthworks would generally be required for the following:

- services relocation

- construction of lift shaft, stairs, fencing and new canopies
- taxi zone, kiss and ride and bike racks
- other minor civil works, including footings and foundations for structures, drainage/stormwater works (including retaining walls), and trenching activities for service adjustments and relocations.

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

3.2.5 Source and quantity of materials

The source and quantity of materials would be determined during the detailed design phase of the Proposal, and would consider the requirements of the *NSW Sustainable Design Guidelines – Version 3.0* (TfNSW, 2013a). Materials would be sourced from local suppliers where practicable. Reuse of existing and recycled materials would be undertaken where practicable.

3.2.6 Traffic access and vehicle movements

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

- impacts to pedestrians and rail customers
    - a temporary footbridge from the northern footpath near the Hotel Alexandria car park to the station platform would be provided while the existing entrance and stairway is upgraded
    - access would be maintained to the station during all operating times with the exception of track possessions
- interruptions to traffic movements on Railway Parade and Leura Mall
- temporary loss of four parking spaces from Leura Mall and informal taxi parking on Railway Parade.

3.2.7 Ancillary facilities

A temporary construction compound would be required to accommodate a site office, amenities, laydown and storage area for materials. Three areas for construction compounds have been proposed, one on the existing platform, the other two adjacent to the Proposal site – one on the north boundary and one to the south. The area nominated for the three potential compounds is on land owned by RailCorp. Impacts associated with utilising these areas have been considered in the environmental impact assessment including requirements for rehabilitation.

3.2.8 Public utility adjustments

The Proposal has been designed to avoid relocation of services where feasible. Further investigations into utility adjustments would be undertaken during detailed design. In the event that works would be required outside the REF footprint, further assessment would be undertaken. The appropriate utility providers would be consulted during the detailed design phase.

Any upgrade of the interchange is required to be compatible with the existing electrical supply, where applicable.

3.3 **Property acquisition**

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

3.4 **Operation management and maintenance**

The majority of the works would take place within the rail corridor. The future operation and maintenance of the new infrastructure is subject to further discussions with NSW Trains, TfNSW and Blue Mountains City Council. Structures constructed under this Proposal would be maintained by NSW Trains. A local community group, Leura Village Association, maintains the gardens along Leura Mall and Railway Parade. It is expected that remaining adjacent garden/landscape areas would continue to be maintained by Blue Mountains City Council.

4 Statutory considerations

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

4.1 Commonwealth legislation

4.1.1 Environment Protection and Biodiversity Conservation Act 1999

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

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

4.2 NSW legislation and regulations

4.2.1 Environmental Planning and Assessment Act 1979

The EP&A Act establishes the system of environmental planning and assessment in NSW. This Proposal is subject to the environmental impact assessment and planning approval requirements of Part 5 of the EP&A Act. Part 5 of the EP&A Act specifies the environmental impact assessment requirements for activities undertaken by public authorities, such as TfNSW, which do not require development consent under Part 4 of the Act.

In accordance with section 111 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 *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation) defines the factors which must be considered when determining if an activity assessed under Part 5 of the EP&A Act has a significant impact on the environment. Chapter 6 of the REF provides an environmental impact assessment of the Proposal in accordance with clause 228 and Appendix B specifically responds to the factors for consideration under clause 228.

4.2.2 Other NSW legislation and regulations

Table 3 provides a list of other relevant legislation applicable to the Proposal.

Table 3 Other legislation applicable to the Proposal

Applicable legislation	Considerations
Contaminated Land Management Act 1997 (CLM Act) (NSW)	Section 60 of the CLM Act imposes a duty on landowners to notify the Office of Environment and Heritage (OEH), and potentially investigate and remediate land if contamination is above EPA guideline levels. The site has not been declared under the CLM Act as being significantly contaminated (refer Section 0).
Crown Lands Act 1987 (NSW)	The Proposal does not involve works on any Crown land.
Disability Discrimination Act 1992 (DDA Act) (Cwlth)	The Proposal would be designed having regard to the requirements of this Act.
Heritage Act 1977 (Heritage Act) (NSW)	• Sections 57 and 60 (approval) where items listed on the State Heritage Register are to be impacted • Sections 139 and 140 (permit) where relics are likely to be exposed • Section 170 where items listed on a government agency Heritage and Conservation Register are to be impacted. A heritage assessment has been undertaken for the Proposal and is summarised in Section 6.5. Consultation has been undertaken with Sydney Trains Heritage regarding the impacts of the Proposal on the heritage values of Leura Station. This would continue throughout the next phase of design development.
National Parks and Wildlife Act 1974 (NPW Act) (NSW)	Sections 86, 87 and 90 of the NPW Act require consent from OEH for the destruction or damage of Indigenous objects. 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. An extensive search of the Aboriginal Heritage Information Management System (AHIMS) database was undertaken on 29 February 2016. No recorded Aboriginal Sites are located within the Proposal site. There are two registered AHIMS sites located within the AHIMS search area; Leura Cascades and Gordon Falls, which are located about 1.3 kilometres south west and 0.9 kilometres south of the Proposal site respectively. Both sites are recorded as artefacts.
Noxious Weeds Act 1993 (NSW)	No noxious weeds have been identified in the Proposal area during ecological investigations. Appropriate Weed control measures management methods would be implemented during construction (refer Section 6.7), consistent with TfNSW's Weed Management and Disposal Guideline (TfNSW, 2015f), to manage the potential dispersal and establishment of weeds during the construction phase of the project.
Protection of the Environment Operations Act 1997 (PoEO Act) (NSW)	The Proposal does not involve a 'scheduled activity' under Schedule 1 of the PoEO Act. Accordingly, an Environment Protection Licence 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 Contractor.

Applicable legislation	Considerations
Roads Act 1993 (Roads Act) (NSW)	Section 138 of the Roads Act requires consent from the relevant road authority for the carrying out of work in, on or over a public road. However, clause 5(1) in Schedule 2 of the Roads Act states that public authorities do not require consent for works on unclassified roads. It is not proposed to undertake works on classified roads. However for the works required on Railway Parade and Leura Mall a Road Occupancy Licence would be obtained from Blue Mountains City Council.
Sydney Water Act 1994 (NSW)	The Proposal would not involve discharge of wastewater to the sewer.
Threatened Species Conservation Act 1995 (TSC Act) (NSW)	The site is unlikely to contain suitable habitat for any listed threatened species or community and is unlikely to have a significant impact on any threatened species or community (refer Section 6.7).
Waste Avoidance and Resource Recovery Act 2001 (WARR Act) (NSW)	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 (NSW)	The Proposal would not involve any water use (from a natural source e.g. aquifer, river – only from the network), water management works, drainage or flood works, controlled activities or aquifer interference.

4.3 State Environmental Planning Policies

4.3.1 State Environmental Planning Policy (Infrastructure) 2007

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

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' and 'associated public transport facilities for railway stations'.*

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 of the EP&A Act.

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

It is noted that the Infrastructure SEPP prevails over all other environmental planning instruments except where *State Environmental Planning Policy (Major Development) 2005*, *State Environmental Planning Policy No 14 – Coastal Wetlands* or *State Environmental Planning Policy No 26 – Littoral Rainforest* applies. The Proposal does not require consideration under these SEPPs and therefore do not require further consideration as part this REF.

4.3.2 State Environmental Planning Policy 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 does not differ to the existing use and is, therefore, unlikely to be affected by any potential contaminants that exist within the rail corridor.

4.3.3 State Environment Planning Policy (Sydney Drinking Water Catchment) 2011

The Proposal site is located on land mapped within the Sydney Drinking Water Catchment, as defined by this SEPP. There is not expected to be adverse impacts to water quality as result of the construction or operation of the Proposal as identified in the Neutral or Beneficial Effect (NorBE) assessment undertaken (refer Appendix D).

4.4 Local environmental planning instrument and development controls

The Proposal is located within the Blue Mountains LGA. The provisions of the Infrastructure SEPP mean that Local Environmental Plans (LEPs), prepared by councils for an LGA, do not apply. However, during the preparation of this REF, the provisions of the *Blue Mountains Local Environmental Plan 2015* was considered:

4.4.1 Blue Mountains Local Environmental Plan 2015

The Blue Mountains LEP is the governing plan for the Blue Mountains LGA, including Leura. Table 4 summarises the relevant aspects of the Blue Mountains LEP applicable to the Proposal. Figure 13 shows the relevant section of the zoning map from the Blue Mountains LEP, with the indicative location of the Proposal.

Table 4 Relevant provisions of the Blue Mountains LEP

Provision description	Relevance to the Proposal

Clause 2.3 – Land use table and zone objectives	The Proposal would be located in the following zones:
	• the rail corridor is zoned as SP2 Infrastructure (Rail)
	• local retail and commercial services located south of the station is zoned as B2 Local centre (Leura Precinct B2-LE01).
	The following zones surround the Proposal site:
	• the Great Western Highway is zoned as SP2 Infrastructure (Road)
	• residential land to the south east and south west of the railway station is zoned as R3 Medium density residential
	• to the west of the B2 local centre zone are the following zones:
	  ○ E2 Environmental conservation
	  ○ E4 Environmental living
	• between the rail corridor and the Great Western Highway is a deferred matter (DM) zone. The Blue Mountains LEP 2005 allocates this zone as VT-LE01 Village tourism, accessible housing.
	The Proposal is consistent with the objectives of the SP2 Infrastructure (Rail) zone and the Leura Precinct B2-LE01 local centre and the other zones identified above.

Clause 5.9 – Preservation of trees or vegetation	This clause aims to preserve the amenity of the area, including biodiversity values, through the preservation of trees and other vegetation. However by the virtue of clauses 5(3) and 79 of the Infrastructure SEPP, the clearing of vegetation for the Proposal is permissible without development consent and would be approved under Part 5 of the EP&A Act. Vegetation clearance is discussed in more detail in Section 6.7.
Clause 5.12 – Infrastructure development and use of existing buildings of the Crown	The LEP does not restrict or prohibit the carrying out of development by, or on behalf of a public authority, that is permitted with or without consent, or is exempt development under the Infrastructure SEPP.
Clause 5.10 – Heritage conservation	The LEP aims to conserve heritage significance of heritage items in the Blue Mountains. Leura Station, the local rail corridor, the area surrounding the station and Leura Mall include a number of locally listed heritage items and the Central Leura Urban Conservation Area located to the south of the station. The Proposal is being developed with consideration of heritage values of the station and local area and more information is included in Section 6.5.

Provision description	Relevance to the Proposal
Clause 6.19(4)f - Design excellence	TfNSW is committed to delivering projects of a high design excellence. The project addresses the relevant matters discussed in the associated clause, including: • the suitability of the land for development • existing and proposed uses and use mix • heritage issues and streetscape constraints • the relationship of the development with other development (existing or proposed) on the same site or on neighbouring sites in terms of separation, setbacks, amenity and urban form • the achievement of the principles of ecologically sustainable development • pedestrian, cycle, vehicular and service access, circulation and requirements • the impact on, and any proposed improvements to, the public domain. The matters have been considered through the development and assessment of the Proposal.
Clause 6.1(2)c – Environmental sensitive water supply catchment	The Proposal area is located within the Sydney drinking water catchment. It is considered that the construction and operation of the Proposal would not have an adverse effect on water quality – refer Section 6.9 and Appendix D.
Clause 7.8 – Leura precinct	This clause identifies the objectives for development on land identified as Leura Precinct B2-LE01. The Proposal is consistent with the objectives of the Leura Precinct B2-LE01.

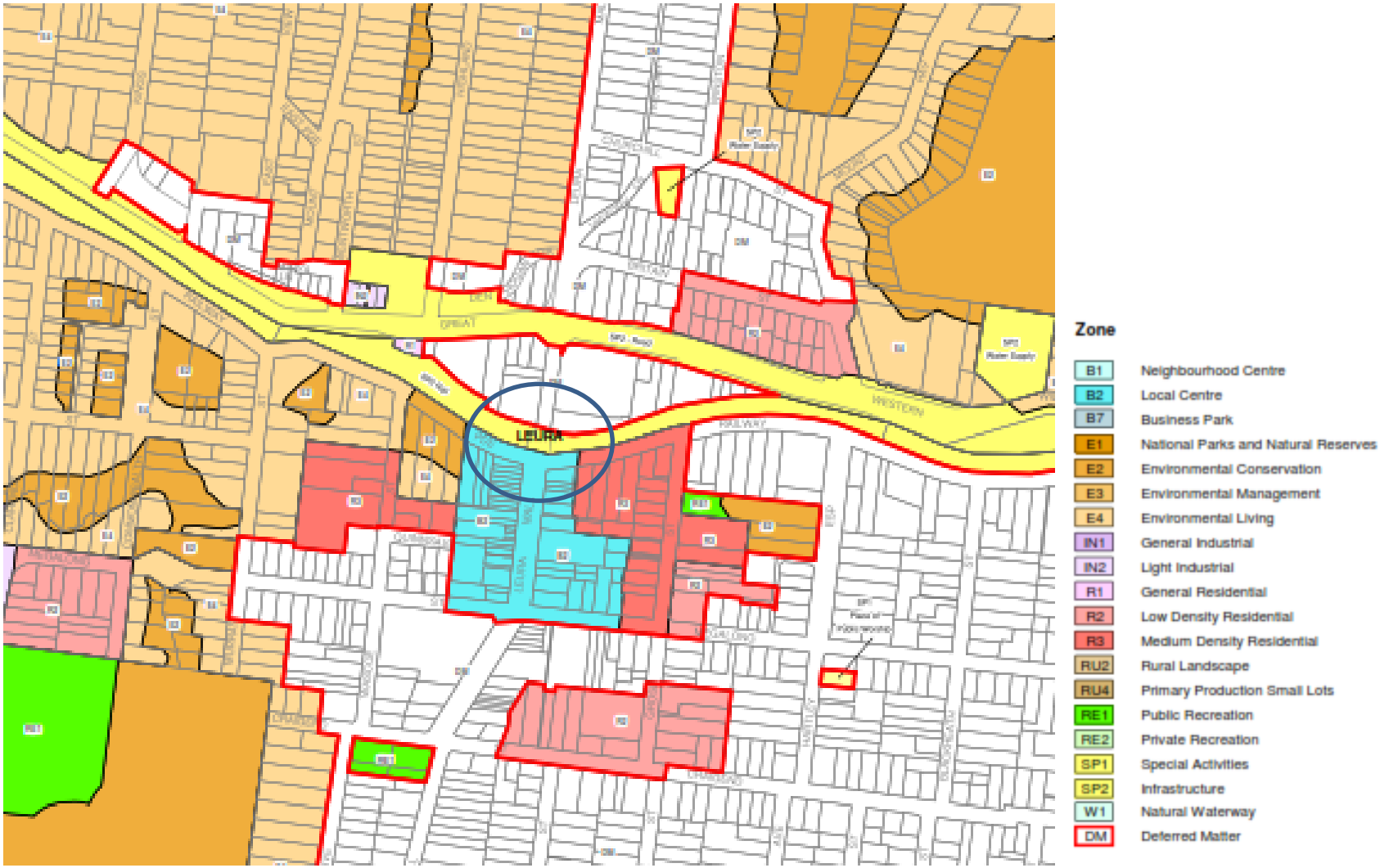

Figure 13 Blue Mountains LEP zoning map

Note: Proposal area circled in blue

4.5 NSW Government policies and strategies

Table 5 provides an overview of other NSW Government policies and strategies relevant to the Proposal.

Table 5 NSW Government policies and strategies applicable to the Proposal

Policy/Strategy	Commitment	Comment
NSW 2021 – A Plan to Make NSW Number One (Department of Premier and Cabinet, 2011	*NSW 2021 – A Plan to Make NSW Number One* is a ten-year plan developed in 2011 and outlines the high level strategic priorities and associated goals for government and its respective agencies. A key aspect in the transport strategy includes: • the return of quality transport and community services • building infrastructure that improves' people's lives and • strengthening our local environments. NSW 2021 includes the following goals, targets and priority actions relevant to the Proposal: • improve coordination and integration between transport modes • grow patronage on public transport • improve customer experience with transport services.	The Proposal is consistent with the NSW Government's commitment to: • grow patronage on public transport, and • improve customer experience with transport services. And in particular with Goal 20 – Build liveable centres. The Proposal also contributes to Goal 14 – Increase opportunities for people with a disability, by improving transport access. The Proposal also supports active transport by contributing to the development of cycle facilities as part of an integrated local network.
NSW Long Term Transport Master Plan (TfNSW, 2012a)	The *NSW Long Term Transport Master Plan* identifies a planned and co-ordinated set of actions to address transport challenges and will guide the NSW Government's transport funding priorities over the next 20 years. The Master Plan would meet a number of challenges to building an integrated transport system for Sydney and NSW, including: • customer-focused integrated transport planning • integrated modes to meet customer needs • getting Sydney Moving Again • sustaining Growth in Greater Sydney. The Master Plan links to NSW 2021, the Metropolitan Strategy for Sydney, the State Infrastructure Strategy, regional and sub-regional strategies, and national plans.	The Proposal implements the following key themes in the Master Plan: • improving customers' journey experience • making better use of existing assets • providing accessible transport to help address social exclusion.

Policy/Strategy	Commitment	Comment
Disability Action Plan 2012-2017 (TfNSW, 2012b)	The *Disability Action Plan 2012-2017* was developed by TfNSW in consultation with the Accessible Transport Advisory Committee, which is made up of up of representatives from peak disability and ageing organisations within NSW. The Disability Plan discusses the challenges, the achievements to date, the considerable undertaking that is required to finish the job, and provides a solid and practical foundation for future progress over the next five years.	The Proposal has been developed with consideration of the objectives outlined in this Plan and seeks to improve and provide equitable access to public transport facilities.
Sydney's Walking Future - Connecting people and places (TfNSW, 2013b)	*Sydney's Walking Future* outlines the NSW government's efforts to: • promote walking for transport • connect people to places through safe walking networks around activity centres and public transport interchanges.	The Proposal would facilitate walking by removing physical barriers to accessible public transport and by providing accessible cross-corridor access, hence contributing a relative reduction in local trips via private cars.
Sydney's Cycling Future - Cycling for everyday transport (TfNSW, 2013c)	*Sydney's Cycling Future* outlines the NSW government's commitment to a safe and connected network of bicycle paths as an important part of Sydney's integrated transport system. The government wants to make bike riding a convenient and enjoyable option by improving access to towns and centres, and investing in bicycle facilities at transport hubs.	The Proposal supports the government's Bike and Ride initiative that better integrates bicycle riding with other modes of transport, making it convenient to ride to transport hubs, park bicycles securely and transfer to public transport as part of longer transport journeys.
Rebuilding NSW – State Infrastructure Strategy 2014 (NSW Government, 2014)	*Rebuilding NSW* is a plan to deliver $20 billion in new productive infrastructure to sustain productivity growth in our major centres and regional communities. Rebuilding NSW will support overall population growth in Sydney and NSW. 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 reservation of $8.9 billion for urban public transport to support Sydney's population, that is expected to reach almost six million by 2031.

Policy/Strategy	Commitment	Comment
A Plan for Growing Sydney (Department of Planning and Environment, 2014)	*A Plan For Growing Sydney* superseded the draft *Metropolitan Strategy for Sydney 2036*. The Plan provides information on the strategies to accommodate an additional 664,000 homes and 689,000 jobs by 2031, which in part will be helped by a more integrated transport network. The Proposal is located in the Blue Mountains which is situated in the West subregion and the priorities relevant for the Blue Mountains area include: • a competitive economy • accelerate housing supply, choice and affordability and build great places to live • protect the natural environment and promote its sustainability and resilience.	The Proposal would be consistent with the aims of promoting a competitive economy through: • supporting and developing the visitor economy to maintain the role of the Greater Blue Mountains World Heritage Area as a nationally significant tourism destination, and the subregion's role as a visitor gateway to regional NSW • better access between centres in the subregion and with regional NSW.

4.6 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 Leura Station Upgrade. Section 3.1.4 summarises how ESD would be incorporated in the design development of the Proposal. Section 6.13 includes an assessment of the Proposal on climate change and sustainability, and Section 7.2 lists mitigation measures to ensure ESD principles are incorporated during the construction 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

Options were developed following a number of workshops with TfNSW and in consultation with other relevant stakeholders (including Sydney Trains, NSW Trains, NSW Government Architects Office and Blue Mountains City Council) and the project design team.

Meetings were held with Council in 2014, 2015 and 2016. The following key issues were raised by Council for consideration during the development of the preferred option:

- there are currently no bike racks at the station
- the taxi rank area is currently constrained
- street parking in the vicinity of the station is also used by patrons of the Alexandra Hotel
- there is a council car park near the station which is at capacity
- the Proposal site is particularly constrained, therefore consideration for siting construction sheds and staging of construction activities would be needed
- roads around the station are almost always busy, particularly at weekends when it was expected that most of the construction work would be undertaken
- there is a lack of parking at the station especially when tourist coaches are taking up space
- rail customers often prefer to use Katoomba Station as it has lifts and ramps and more train services stop there compared to Leura Station
- the lifts at Katoomba Station are considered to be more in keeping with local heritage and should be viewed during the design development process
- the local community has raised concerns regarding previous proposals for station canopies, largely on heritage grounds
- Council recommended that TfNSW develop a thorough communications plan for the project, including information sessions with the community
- a local community group - Leura Village Association - maintain the gardens along Leura Mall.

The preferred option incorporates many of these considerations, including provision of bicycle racks, a lift, improved taxi zone and inclusion of kiss and ride bays. A community information session was held during preparation of the REF to gain feedback on design and canopy options from the community (see Section 5.4).

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, 14, 15 and 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 6 provides details of consultation requirements under the Infrastructure SEPP for the Proposal.

Table 6 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 • significantly disrupt pedestrian or vehicle movement • involve significant excavation to a road surface or footpath for which Council has responsibility.	The Proposal includes works that would: • require connections or impacts the stormwater system • disrupt pedestrian and vehicle movements • impact on road pavements under Council's care and control • impact on Council-operated footpaths. Consultation with Blue Mountains City Council has been undertaken and would continue throughout the detailed design and construction phases.
Clause 14 | Consultation with Councils – development with impacts on local heritage	Where railway station works: • substantially impact on local heritage item (if not also a State heritage item) • substantially impact on a heritage conservation area.	Leura Station Group and Leura Railway corridor are listed on the Blue Mountains LEP. The Proposal would involve substantial works to the station. Consultation with Council has been undertaken regarding the Proposal and would continue through the next stages of the Proposal. Refer to Section 6.5 for further information on potential heritage impacts.
Clause 15 | Consultation with Councils – development with impacts on flood liable land	Where railway station works: • impact on land that is susceptible to flooding – reference would be made to *Floodplain Development Manual: the management of flood liable land.*	The Proposal is not located on land that is susceptible to flooding. Accordingly, consultation with Council is not required in regard to this aspect. Refer to Section 6.9.
Clause 16 | Consultation with public authorities other than Councils	For *specified development* which includes consultation with the OEH for development that is undertaken adjacent to land reserved under the *National Parks and Wildlife Act 1974*, and other agencies specified by the Infrastructure SEPP where relevant. Although not a specific Infrastructure SEPP requirement, other agencies TfNSW may consult with could include: • Roads and Maritime • Sydney Trains • NSW Trains • OEH.	The Proposal is not located adjacent to land reserved under the *National Parks and Wildlife Act 1974*. Accordingly, consultation with the OEH on this matter is not required.

5.3 Consultation strategy

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

The objectives of the consultation strategy are to:

- provide accurate and timely information about the Proposal and REF process to relevant stakeholders
- raise awareness of the various components of the Proposal and the specialist environmental investigations
- ensure that the directly impacted community are aware of the REF and consulted where appropriate
- provide opportunities for stakeholders and the community to express their view about the Proposal
- understand and access valuable local knowledge from the community and stakeholders
- record the details and input from community engagement activities
- build positive relations with identified community stakeholders
- ensure a comprehensive and transparent approach.

5.4 Consultation during REF preparation

5.4.1 Consultation process

TfNSW held a community information session at Leura Station during the evening peak period on 15 March 2016. The aim of the community information session was to seek feedback from the local community on the initial design and canopy options for the Leura Station Upgrade.

Activities undertaken to notify the community of this community information session included:

- distribution of colour leaflets at Leura Station and by letterbox drop to nearby residents and businesses (up to a radius of about 500 metres from the station)
- installation of project posters at Leura Station
- information on the TfNSW website
- direct contact with local residents who had previously been interested in plans to upgrade the station.

5.4.2 Key issues raised

Around 80 people attended the community information session. The project team were available to answer questions and discuss the project. Feedback forms were available for the community to complete and submit to provide their feedback on the canopy design and the project in general.

A total of 64 community submissions were received by TfNSW at the information session with further feedback being submitted online following the event.

Overall, the key design feature that received overwhelming community support was the provision of a lift services between the station entry on Leura Mall to the platform.

Feedback on the level of canopy coverage at the station was mixed with varying levels of support for:

- no canopy to be installed at the station
- minimal canopy to be installed over and around the proposed new lift and stairs
- canopy coverage over most of the area between the proposed new lift and stairs and the existing station building.

The majority of feedback received supported the installation of some form of canopy cover over the new lift and stairs. Other common issues raised regarding the Proposal are summarised in Table 7.

Table 7 Key issues raised during the community information session

Issue Category	Issue
Anti-throw screens	• limited support for the proposed anti-throw screens • suggestion that anti-throw screens are made from a material that doesn't restrict views to the station and beyond
Lift	• strong support for the proposed new lift
Canopy	• strong support for a canopy around the lift and over the stairs • limited support for full canopy coverage from the stairs to the existing station building • strong support for limited provision of canopy at the entrance end of the platform • suggestions that TfNSW consider providing a canopy or shelter over the proposed new bike racks at Leura Mall
Canopy design	• feedback received requested that any canopy design be sympathetic to the local area. Blaxland and Lithgow Stations were provided as examples of canopy designs that wouldn't be sympathetic to the context of the Leura area • some people requested that the design match the fabric of the existing station building. Others requested a glass or clear canopy be installed to allow for natural lighting
Impact on Irish Strawberry Tree	• request that the canopy not impact on the Irish Strawberry Tree located on the station platform • request that view of the Irish Strawberry Tree from the station entrance and Leura Mall overpass be maintained • request that the Irish Strawberry Tree be retained
Kiss and ride	• request that kiss and ride be moved to western side (station side) of Leura Mall to reduce need to cross the road to the station entrance (in the area currently shown as a proposed taxi stand) • concern raised about traffic impact of kiss and ride in an already congested area
Parking	• request for commuter parking to be provided with station upgrade
Pedestrian crossing	• comment received that traffic does not stop at the pedestrian crossing on Leura Mall and that additional lighting be provided • suggestion for a pedestrian crossing across Railway Parade to link the station to Leura Mall

Issue Category	Issue
Security	• concern that a canopy could decrease passive surveillance of station platform
Station operational issues	A number of comments were received relating to the operation of the station including: • days/hours that station is staffed • toilet opening hours • waiting room opening hours • removal of rubbish from platform bins • request to remove the existing vending machines on station platform • request for additional seating on the station platform
Taxi shelter	• request for shelter to be installed near the proposed new taxi rank
Wind shelter	• request for some form of windbreak on the station platform

As a result of this feedback, the canopy coverage has been modified to only cover the lift, staircase and part of the platform.

TfNSW will consider and assess this feedback, in addition to all feedback received during the public display period, prior to determining whether to not to proceed with the Proposal.

5.5 Public display of the REF

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

- public display of the REF at various locations
- distribution of a project update at the station, and to local community and rail customers, outlining the Proposal and inviting feedback on the REF
- advertisement of the REF public display in local newspapers with a link to the TfNSW website that includes a summary of the Proposal and information on how to provide feedback
- consultation with council, Sydney Trains, NSW Trains and other non-community stakeholders.

Community consultation activities for the Proposal would be undertaken during the public display of this REF. The display period of the REF would be advertised in the week that the public display commences. The REF would be displayed for a period of about three weeks.

The REF would be placed on public display at the following locations:

- Wentworth Falls Library at the School of Arts Building, Great Western Highway, Wentworth Falls
- Katoomba Library at Blue Mountains Cultural Centre, 30 Parke Street, Katoomba
- Blue Mountains City Council at 2-6 Civic Place, Katoomba
- Transport for NSW Information Centre, Ground Floor, 388 George Street, Sydney.

The REF would also be available on the TfNSW website[2]. Information on the Proposal would be available through the Project Infoline (1800 684 490) or by email[3]. During this time feedback is invited. Following 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.

5.6 **Aboriginal community involvement**

An extensive search of the Aboriginal Heritage Information Management System (AHIMS) was undertaken in February 2016 covering a one-kilometre radius around Leura Station. The closest Aboriginal site was 0.9 kilometres away and therefore would not be impacted by the Proposal.

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

5.7 **Ongoing consultation**

At the conclusion of the public display period for this REF, TfNSW would acknowledge receipt of feedback from each respondent. The issues raised by the respondents would be considered by TfNSW before determining whether to proceed with the Proposal (refer Figure 1, page 13).

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 Plan to be developed prior to the commencement of construction.

[2] http://www.transport.nsw.gov.au/projects-tap
[3] projects@transport.nsw.gov.au

6 Environmental impact assessment

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

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

6.1 Traffic and transport

A traffic, transport and access impact assessment has been prepared by GHD (2016) for the Proposal. The assessment included a desktop analysis. Detailed traffic volumes and modelling did not form part of this assessment as the Proposal is focused on the station area and is unlikely to have major impacts to the surrounding road network. The findings of the assessment are summarised in this section.

6.1.1 Existing environment

Leura Station

Leura Station is serviced by the NSW TrainLink Blue Mountains Line. This train line extends from Sydney Central Station to Katoomba and Lithgow, with one service per day in each direction extending to Bathurst. Key stations along this route include Sydney Central, Redfern, Strathfield, Parramatta, Penrith, Katoomba, Lithgow and Bathurst.

Road network and traffic

Leura Station

Leura Station is located at the northern end of the Leura village centre and is accessed by Railway Parade, adjacent to the rail corridor running from east to west, and Leura Mall, running from north to south.

Railway Parade

Railway Parade in the vicinity to the station is a local road with a sealed carriageway of around five metres in width. The carriageway widens to around 6.5 metres for about 30 metres west of the Leura Mall/Railway Parade roundabout to accommodate a taxi zone on the northern side of Railway Parade. Railway Parade in the vicinity of the station has a sign posted speed limit of 40 km/h due to the high number of pedestrians in the area.

Leura Mall

Leura Mall in the vicinity of Leura Station is a collector road which provides connection through an interchange to the Great Western Highway to the north of the station. To the south of the station, connection is made to the Leura town centre and south to the Gordon Falls lookout and the scenic route of Cliff Drive which provides access to the Three Sisters tourist attraction. In the vicinity of the station to the north of Railway Parade, Leura Mall provides a seven metre wide overbridge across the railway line with a separated pedestrian path on the western side. North of the overbridge the carriageway widens to around 14 metres to accommodate angle parking on the eastern side. Leura Mall in the vicinity of the station has a sign posted speed limit of 40 km/h due to the high pedestrian activity zone.

Great Western Highway

The Great Western Highway runs parallel to Railway Parade and is the main arterial road that passes in the vicinity of Leura Station. The Great Western Highway connects with Leura Mall at an interchange north of the station which provides vehicle access into Leura and the commuter carpark. The arterial road provides a four lane two way highway with a seven metre carriageway and on and off ramps to the east and west of Leura Mall.

Section 1.3 details the surrounding road infrastructure in close proximity to the Proposal.

Parking

There is no formal commuter car park at Leura Station. Blue Mountains City Council has provided a small informal commuter car park on the corner of the Great Western Highway/Leura Mall, about 100 metres from the station entrance. This car park contains around 22 unmarked bays.

On-street parking on Leura Mall and Railway Parade is generally time-limited, for use by patrons of the Leura village centre. In addition there are several half-hour time-limited parking spaces provided on Railway Parade, east of Leura Mall.

Taxi/kiss and ride facilities

There is an existing informal taxi rank serving both the village centre and the station which is located on the north side of Railway Parade, west of Leura Mall. This rank currently has capacity for around three taxis.

Taxis accessing the existing rank generally arrive from the Leura Mall/Railway Parade intersection heading westbound; however the taxi rank is on the northern side of Railway Parade facing eastbound. To reach the taxi rank, taxis are required to execute a three-point turn utilising a gravel driveway which provides access to the rail corridor.

Currently there are no formal kiss and ride spaces in the vicinity of Leura Station with customers often illegally stopping in a no stopping zone on the northern side of the overbridge.

Bus operations

Currently there is a bus stop located on Leura Mall and bus stops on Railway Parade, around 30 metres east of Leura Mall. The buses are operated by Blue Mountains Bus Company and provide the following bus services:

- Route 685 – Katoomba to North Wentworth Falls via Leura and return – this service only operates through Leura three times a day. This service operates in both directions.
- Route 690 K – Springwood to Lawson and Katoomba – this service operates through Leura six times a day between Katoomba to Springwood and eight times a day between Springwood to Katoomba.

The Blue Mountains Trolley Tours and Blue Mountains Explorer Bus hop-on and hop-off services also stop at this location.

Pedestrian access

Pedestrians generally arrive at Leura Station from the following origins:

- the village centre and residential areas in close proximity to the station via pedestrian footpaths on Leura Mall (north and south)
- bus stop located on the eastern side of Leura Mall
- bus stops located slightly to the east of the Railway Parade/Leura Mall intersection

- taxi rank serving both the village centre and the interchange located on the north side of Railway Parade, west of Leura Mall, which currently has capacity for around three taxis.

The footpath along the eastern side of Leura Mall does not extend across the overbridge, with the western footpath providing the only access across the rail corridor.

The only formal pedestrian crossing (zebra crossing) crosses Leura Mall about 30 metres north of the station entrance. Informal kerb ramp crossings exist at the roundabout south of the station (across Railway Parade (west) and Leura Mall (south)). Additionally, there are informal ramp crossings on the east and west sides of the Great Western Highway interchange roundabout which provides pedestrian access to the Leura Station from residential areas north of the Great Western Highway.

Cycle ways and bicycle facilities

There are currently no bicycle parking facilities provided at Leura Station.

Leura Station is the starting location for a cycling trail known as the Great Blue Mountains Trail. This trail connects to Echo Point, Katoomba, Blackheath and Mount Victoria. This trail is progressively being developed with on-street and off-street facilities to promote cycle tourism.

6.1.2 Potential impacts

a) Construction phase

Construction routes

As noted in Section 3.2.7, three construction compounds have been identified as potential locations for site offices, amenities, laydown and storage areas during the construction of the Proposal (refer to Figure 14).

Access to the compound on Railway Parade would be directly from the Great Western Highway onto Leura Mall and right onto Railway Parade. It is anticipated that the majority of construction heavy vehicles would arrive from and depart to the east on the Great Western Highway.

The site compound located on the northern side of the station would be accessed directly from the westbound on ramp to the Great Western Highway through a left turn into a short cul-de-sac road that provides access to the northern side of the rail corridor. All entering vehicles would need to leave the Great Western Highway at Leura and then enter the on ramp heading back onto the Great Western Highway. All exiting vehicles from this compound would need to travel in a westbound direction to Katoomba in order to make a turn to travel eastbound.

The inbound and outbound routes are shown in Figure 14.

Depending on the size of the vehicles, suitable traffic control would need to be used to assist larger vehicles in turning when accessing the compounds. Traffic control would also be required on the on-ramp to ensure that accelerating traffic on the on ramp is not impacted.

The compound located on the train platform would not be vehicle accessible, however, construction workers would be provided access, via the pedestrian access arrangements to the station at the time. This would change depending on the stage of construction.

Figure 14 Construction compounds and haulage access

Traffic impacts

Traffic generated by construction activities would include light vehicles from construction workers as well as heavy vehicles associated with construction plant, deliveries and removal of materials. A list of vehicles types has been provided in Section 3.2.2; typically these would include medium and large rigid vehicles.

Traffic likely to be generated by construction would be confirmed by the construction contractor as part of construction planning, however, only a minor increase in proportion to existing traffic levels on the local road network is expected. Heavy vehicles would be restricted to non-peak periods where practicable to minimise disruption to local traffic.

Impacts to local roads due to construction are likely to cause temporary delays to vehicles, particularly on Leura Mall and Railway Parade. Vehicles that normally use these road routes may need to be diverted to alternate road routes and/or rail crossings, potentially at Scott Avenue (intersection at Great Western Highway). Where practicable, these works would be scheduled outside of peak periods to mitigate any impacts to the community caused by diversions.

With the implementation of the mitigation measures detailed in Section 6.1.3 and Section 7, no significant impacts to traffic flows or intersection performance are anticipated. These traffic mitigation measures are to be addressed in the construction Traffic Management Plan (TMP).

Parking impacts

The construction stage would have some localised impacts to parking, specifically to the taxi parking area on Railway Parade, while a formalised taxi zone is constructed. Additional impacts would be to the four parking spaces located on the east side of Leura Mall, north of the railway over bridge, while the proposed kiss and ride parking area is constructed. On street parking in the vicinity of the works is anticipated to be sufficient to cater for temporary parking losses during construction.

Construction workers would be encouraged to car pool and/or make use of the public transport to travel to site.

Pedestrian and bicycle impacts

Construction works are proposed in the vicinity of the existing pedestrian crossing on Leura Mall. This would be managed through the implementation of mitigation measures provided in Section 6.1.3 and Section 7 to ensure that there is no impact to public safety.

Temporary diversions are likely to occur for pedestrians that use Leura Mall overbridge during construction works at this location. A temporary footbridge is proposed for pedestrians during the constructional phase, which would alter existing pedestrian movements slightly. When the existing stairs are removed, temporary stairs would also be provided, which would maintain pedestrian access to the platforms during construction. Access to the station would be maintained at all times during rail operations.

Property access

The Proposal would not result in any impacts on access to neighbouring private properties. In the event access is to temporarily impacted, consultation with the landowner would occur to determine access requirements.

b) Operational phase

Traffic generation and parking demand

The Proposal would improve the accessibility of Leura Station. The kiss and ride facility would encourage more ‘drop off’ patrons, however, the expected increase in traffic generation from the Proposal is likely to only be minimal.

The installation of the two kiss and ride bays would result in the removal of four unrestricted parking spaces on Leura Mall. The removal of these parking spaces is considered to be a minimal impact, particularly for local commercial properties. However, it is considered there is sufficient unrestricted and restricted parking on the surrounding local road network and in the council car park to absorb this loss. To further minimise impacts to the adjacent businesses, consideration would be given to restricting the kiss and ride usage to peak commuter usage, with the two parking bays remaining as time restricted parking outside these periods and signposted accordingly.

The formalisation of the taxi bays may reduce the number of taxis using general parking spaces around the station. Currently a gravel area is used as a three point turn area west of the existing taxi rank. Consideration would be given to how this existing arrangement can be improved. One possible option is for taxi's to turn around on Railway Parade at Murray Street west of the station. The location of this turn around point is shown in Figure 15.

Station facilities

The provision of the formal kiss and ride spaces, taxi rank and upgraded, modern facilities at the station may result in an increase in associated use.

The provision of bicycle parking facilities would potentially encourage more patrons to use active transport to gain access to the station.

The station, and the new facilities, would have sufficient capacity to cater for this growth.

Pedestrians

The pedestrian improvements would provide a safer walking environment in and around the station to the taxi and kiss and ride areas and provide positive impacts to pedestrians.

The provision of a lift at the station, with accessible paths would accommodate people with disabilities requiring access to the station platforms. The lift would also improve access for the elderly and for those with prams and luggage.

Community feedback has raised concerns about the lack of a pedestrian crossing across Railway Parade between the station and Leura Village. This would be considered further during detailed design in consultation with relevant stakeholders.

6.1.3 Mitigation measures

A construction Traffic Management Plan (TMP) would be prepared by the Contractor in consultation with TfNSW, and provided to Council and RMS as required. The TMP would be the primary management tool to manage potential traffic impacts associated with construction. Table 19 describes the requirements of the TMP.

Consultation with the appropriate road authority would be undertaken for the proposed operational changes to Railway Parade and Leura Mall, such as changes to intersections, parking, bus/taxi zones and signage changes etc.

The community and local residents would be informed in advance of changes to parking, pedestrian access and/or traffic conditions including vehicle movements and anticipated effects on the local road network relating to site works.

Turning arrangements for taxis accessing the taxi rank would be confirmed during detailed design.

Figure 15 Taxi turn area

6.2 Urban design, landscape and visual amenity

A visual impact assessment was undertaken by Green Bean Design (2016) for the Proposal. The findings of the assessment are summarised in this section. The full report is provided in Appendix F. The assessment included a desktop analysis, site inspection, and analysis of photomontages. A full description of the methodology is provided in Appendix F.

6.2.1 Existing environment

Landscape character

The landscape character of the study area is typical of a small town centre with a mix of land uses. Features contributing to the visual appearance of the study area include the existing road and rail infrastructure within and surrounding the Proposal site, commercial premises, residential housing, vegetated areas, and mature trees.

The station buildings and platform are located in a cutting, which limits the visibility of the Proposal site from a number of areas. Land to the north of the Proposal site is located at a higher elevation compared with the Proposal site and areas to the south.

Key urban design/landscape features surrounding the Proposal site include:

- roads immediately to the south (Railway Parade) and east (Leura Mall), with the Great Western Highway further to the north
- vegetated embankments to the south on the southern side of Railway Parade
- the Leura Mall road overbridge to the east
- older style commercial buildings associated with the tree lined Leura town centre to the south east (many of which were built in the early twentieth century)
- a mix of multi-storey commercial and medium density residential buildings to the north and north east
- low density residential housing further to the east, west, south, and north of the Great Western Highway.

The residential areas in the study area are defined by detached dwellings on larger allotments with front and rear gardens. Dwellings are generally set back from the street frontages. In contrast, the town centre provides a range of building forms, shops and services. There is a visual diversity of colour, line and form associated with the buildings and signage.

As noted in Section 6.5 a number of heritage listed items are located within and around the Proposal site. The Central Leura Urban Conservation Area, situated around the Leura town centre, is located to the south east. Further information on the heritage significance of the study area is provided in Section 6.5. A description of the vegetation surrounding the Proposal site is provided in Section 6.7.

Viewshed

The viewshed, which forms the study area for the visual impact assessment, is defined as the area of land surrounding and beyond the Proposal site, which could be potentially affected by the Proposal. The primary viewshed extends in a north–south and east–west orientation following the main parallel view corridors of the rail corridor, Railway Parade, and Leura Mall.

The viewshed beyond the station precinct is influenced by the mature tree plantings and built environment surrounding the rail corridor. The existing mature trees create a backdrop to the views of the Proposal site from a number of viewpoints.

Visual absorption capacity

Visual absorption capability (VAC) is a classification system used in visual impact assessments to describe the relative ability of the landscape to absorb modifications and alterations without the loss of character or significant impacts to visual amenity. Essentially, the landscape's VAC provides a measure of its ability to 'absorb' development.

The visual impact assessment concluded that the landscape surrounding the Proposal site has relatively high VAC.

Visual receivers

The main views to the Proposal site are available from the Leura Mall overbridge, nearby commercial properties on Leura Mall, and pedestrians and vehicles travelling along Leura Mall and Railway Parade. Pedestrians using the path along the northern side of the corridor to the car park between the railway and the Great Western Highway would also have views of the Proposal site.

For the purposes of the assessment, 17 representative viewpoints/visual receivers were identified and are shown in Figure 17.

The potential sensitivity of the visual receivers to change was determined and rated. Sensitivity depends on a number of factors, including the location of receivers, the importance of their view, the activity at this location, the importance of key elements within the visual landscape, and the extent of existing and future screening.

Figure 16 Visual impact assessment viewpoints

6.2.2 Potential impacts

a) Construction phase

The Proposal would generate temporary visual impacts during the construction period. These impacts would be experienced by sensitive visual receivers (including residents, pedestrians, cyclists, motorists and local workers) in the vicinity of the construction works and from the identified receiver locations. During construction, visible elements would include work sites, construction compound(s), machinery and equipment, fencing, soil stockpiles, waste materials, lighting during any night works and partially constructed structures.

Overall, the potential visual impacts of construction activities are considered to be minimal as the works would be temporary and short-term.

b) Operational phase

Potential visual impacts relate to the introduction of new elements in the landscape. The key features of the Proposal are described in Section 3.1. Once constructed, the potential visual impacts of the Proposal would be mainly associated with:

- the upgraded station facilities, including the new lift, station entrance and canopies
- new accessible ramp and stairs
- platform extension
- new lighting
- associated loss of vegetation.

Photomontages providing an indication of the appearance of the Proposal are included as Figure 11 and Figure 12.

Landscape character impacts

The Proposal would have an overall low impact upon the existing urban landscape character of the study area. The bulk and scale of the new structures would be partially visually contained by the existing mature trees around and beyond the Proposal site, as well as the existing commercial and residential development surrounding the Proposal site and in the town centre. The design of the Proposal incorporates various features that would visually minimise its bulk and scale, including modulation and articulation of structures.

The proposed building form and height responds to the existing constructed elements within and adjacent to the Proposal site, including the existing station buildings. The Proposal is unlikely to form any significant skyline view from surrounding viewpoints.

The Proposal would integrate with the existing station precinct and, as it involves an upgrade to existing facilities, the Proposal would retain the station's existing function and purpose in relation to surrounding land use. The Proposal provides for a high level of urban design. It presents a rational approach to pedestrian and vehicular movement within the station precinct, and its connectivity to adjoining areas.

The Proposal is considered to result in an overall balanced and harmonious visual outcome. The application of contemporary design, modern materials and sympathetic colours to the existing station precinct would create a legible and high quality visual asset within the surrounding urban landscape.

Visual impacts

The significance of the potential visual impacts was determined by assessing the magnitude of potential impacts for each receiver in combination with the sensitivity of the receiver. Significant impacts are considered to be those with a rating of high-moderate or above. A summary of the results of the visual impact assessment for those receivers with the potential to be impacted by the Proposal is provided in Table 8. The views from representative

viewpoints R1-R4, R9, R11, (shown Figure 17) to the proposal site are obscured by existing plantings and/or buildings. As a result, these receivers would not be impacted by the proposal and they have not been included in Table 8.

In summary, the Proposal would introduce constructed elements which, in general, complement the scale and form of some existing commercial buildings beyond the station. The Proposal is not expected to create a noticeable deterioration in the amenity of the existing view and surrounding built environment. The assessed significance of impacts for the receivers with the potential to be impacted by the Proposal ranged from negligible to moderate-low.

Although the more significant visual elements of the Proposal (the lift shaft and canopies) would be visible from the overbridge and areas adjoining Railway Parade and the Leura Mall roundabout, the structures would not block or screen existing sightlines toward local road corridors, or buildings beyond the station precinct.

Further information on the potential visual impacts on the heritage significance of the listed items in the study area is provided in Section 6.5.

As noted in Section 3, the Proposal would require installation of lighting for operational, safety, security and maintenance purposes. With the implementation of the mitigation measures provided in Section 6.2.3 and Table 19, it is not anticipated that the proposed lighting would adversely impact surrounding receivers.

The distance between the proposal site and public domain areas, road corridors and residential areas would result in shadows cast by new infrastructure being largely contained within the station precinct boundary. Therefore, the Proposal is unlikely to create any significant cumulative shadowing in addition to existing shadowing from the mature tree plantings surrounding the station precinct.

Overshadowing

The location of the Proposal in relation to the offset distance to public domain areas, road corridors and residential areas would result in shadows cast by new infrastructure being largely contained within the station precinct boundary. The Proposal is unlikely to create any significant cumulative overshadowing in addition to existing shadowing from mature tree plantings adjoining the station precinct.

Night time lighting

The Proposal would require installation of lighting for operational, safety, security and maintenance purposes. Night lighting would include building and pole mounted directional spot lighting and pole mounted pedestrian lighting. The Proposal would avoid broad area or floodlighting where possible. Light installations would be installed in accordance with the Australian Standard 4282-1997 *Control of the Obtrusive Effects of Outdoor Lighting* (AS 4282-1997), and avoid light spill to adjoining road corridors and residential areas. A qualified lighting designer would assess the level of street lighting at all locations affected by the works, including the pedestrian crossing across Leura Mall, and upgrades would be made where necessary to ensure compliance with Australian Standards. In summary, night time lighting is not anticipated to have an adverse impact.

Table 8 Summary of visual impact assessment results

Receiver viewpoint (refer to Figure 16)		View direction and distance to Proposal site	Description of visual impact	Sensitivity of receiver	Overview of potential impacts	Magnitude of visual impacts	Significance of visual impacts
R5	Hotel and serviced apartments	West Around 50 metres	Ground and upper storey views are largely blocked by tree planting along the property boundary. Indirect views would extend toward and beyond the Proposal site from a small number of upper storey rooms within the south-western building block.	Moderate	The Proposal would form a minor visible element within the surrounding visual environment. However, views toward the Proposal site from the majority of rooms would be partially filtered and/or screened by tree planting along the property boundary and adjoining the Leura Mall road corridor.	Low	Moderate-low
R6	Commercial and restaurant	South-west Within 50 metres	Ground and upper storey views from the receiver would extend toward the Proposal site from rooms located within the west and south of the building.	Moderate	The Proposal would form a proximate, but minor visible element within the surrounding visual environment, and is not expected to create a noticeable deterioration in the amenity of the existing view and surrounding built environment.	Low	Moderate-low
R7	Commercial properties	North-west Between 100 and 150 metres	Ground and upper storey indirect views are largely filtered by existing tree planting within property boundaries and along the southern boundary of the rail corridor.	Moderate	Views toward the Proposal would be partially filtered and screened by mature tree planting along Railway Parade and adjacent to the rail corridor. The Proposal would generally result in no discernible deterioration in the existing view.	Negligible	Negligible

Receiver viewpoint (refer to Figure 16)		View direction and distance to Proposal site	Description of visual impact	Sensitivity of receiver	Overview of potential impacts	Magnitude of visual impacts	Significance of visual impacts
R8	Commercial - restaurant and shops	North Within and between 50 and 100 metres	Ground and upper storey views from commercial properties on the Railway Parade and Leura Mall intersection extend toward the Proposal site, with partial screening provided by tree and shrub planting along the rail corridor boundary.	Moderate	The Proposal would form a minor visible element within the surrounding visual environment. Some views toward the Proposal from surrounding shops would be partially filtered and/or screened by tree planting adjoining the Railway Parade road corridor.	Low	Moderate-low
R10	Commercial properties	North Around 50 metres	Indirect ground and upper storey views from the receiver are largely screened by adjoining built development and contained within the streetscape corridor.	Moderate	The Proposal would introduce constructed elements which, in general, complement the scale and form of some existing commercial buildings beyond the station.	Low	Moderate-low
R12	Commercial	North Within 50 metres	Ground and upper storey views from commercial properties on the Railway Parade and Leura Mall intersection extend toward the Proposal site, with partial screening provided by tree and shrub planting along the rail corridor boundary.	Moderate	The Proposal would introduce constructed elements which, in general, complement the scale and form of the existing commercial buildings beyond the station. The Proposal is not expected to create a noticeable deterioration in the amenity of the existing view and surrounding built environment.	Low	Moderate-low

Receiver viewpoint (refer to Figure 16)		View direction and distance to Proposal site	Description of visual impact	Sensitivity of receiver	Overview of potential impacts	Magnitude of visual impacts	Significance of visual impacts
R13	Railway Parade (east)	East and north-east Between 50 and 150 metres	Street level views toward the Proposal site extend directly toward the station precinct, with more distant views west of the station partially screened and filtered by the road cutting and tree planting along the rail corridor.	Moderate-low	Views toward the Proposal would be transitory from vehicles or for pedestrians accessing or passing the station, and would be very short term.	Low	Moderate-low
R14	Leura Mall (south)	North Within and between 50 and 150 metres	Street level views extend directly toward the station precinct, with more distant views south of the station partially screened and filtered by tree planting within the central grassed median.	Moderate-low	The Proposal would form a visual element within the surrounding visual environment. However, views toward some Proposal elements would be partially filtered by street tree planting. Views toward the Proposal would be transitory from vehicles or for pedestrians accessing or passing the station, and would be very short term. The Proposal is not expected to create a noticeable deterioration in the existing view.	Low	Moderate-low
R15	Railway Parade (west)	West Within and between 50 and 150 metres	Street level views extend directly toward the station precinct close to Leura Mall, with more distant views west of the station partially screened and filtered by tree planting alongside the rail corridor.	Moderate-low	Views toward the Proposal would be transitory from vehicles or for pedestrians accessing or passing the station, and would be very short term.	Low	Moderate-low

Receiver viewpoint (refer to Figure 16)		View direction and distance to Proposal site	Description of visual impact	Sensitivity of receiver	Overview of potential impacts	Magnitude of visual impacts	Significance of visual impacts
R16	Leura Mall (overbridge)	West Adjoining and within 50 metres	Existing views from the overbridge extend north and south along the Leura Mall road corridor and west across the station.	Moderate-low	The Proposal would form a prominent visual element within the surrounding visual environment. Views toward the Proposal would be transitory from vehicles or for pedestrians accessing or passing the station, and would be very short term. The Proposal is not expected to create a noticeable deterioration in the existing view.	Low	Moderate-low
R17	Leura Mall (north)	South Within and between 50 and 150 metres	Street level views in proximity to the Railway Parade and Leura Mall roundabout, and crossing the rail bridge, extend directly toward the Proposal from the Leura Mall road corridor	Moderate-low	The Proposal would form a visual element within the surrounding visual environment. However, views toward some Proposal elements would be partially filtered by street tree planting. Views toward the Proposal would be transitory from vehicles or for pedestrians accessing or passing the station, and would be very short term.	Low	Moderate-low

6.2.3 Mitigation measures

Measures to mitigate visual impacts during construction would be included in a CEMP for the Proposal and would include measures such as minimising light spill during night works, screening of compounds and minimising tree removal. Refer to Table 19 for a list of proposed mitigation measures.

While the overall visual significance of the Proposal has been determined as negligible to moderate-low for the receivers with the potential to be impacted, mitigation measures would be considered to minimise the level of residual visual impacts.

Detailed design of the Proposal would be undertaken with reference to the recommendations included in the Visual Impact Assessment (Appendix F) which are included in the list of proposed mitigation measures in Table 19. These measures are generally aimed at reducing the extent of visual contrast between the visible portions of the Proposal structures and the surrounding landscape, and/or screening direct views toward the Proposal where possible, and include:

- refinement of lift and canopy structures to minimise bulk and height
- incorporating modern, light and transparent materials
- selection of materials and colour finishes which are sympathetic to the existing station precinct
- providing anti-throw screens which allow for views to the station and beyond
- appropriate selection of plantings
- minimising the obtrusive effects for surrounding receivers
- allowing for a smooth integration between the new and old structures.

6.3 Noise and vibration

An environmental noise and vibration impact assessment has been undertaken by GHD for the Proposal. The findings of the assessment are summarised in this section. Appendix E details acoustic terminology, background monitoring methodology and noise and vibration compliance criteria for the construction and operational phases of the Project.

6.3.1 Existing environment

Existing operational noise sources at Leura Station include:

- trains accelerating and decelerating into and out of the station
- public address systems
- mechanical plant
- commuter speech/travel.

Noise sensitive receivers

The following sensitive receivers and land uses have been identified in close proximity to the Proposal:

- residential premises located along Railway Parade, Wascoe Street and Quinns Avenue, the closest being around 100 metres at No. 88 Railway Parade.
- the Leisure Inn Spires and serviced apartment block, around 40 metres to the north east and the Alexandra Hotel, around 130 metres to the north west of the Proposal

site. These receivers are classified as residential premises for the purposes of this study

- retail spaces and restaurants located along Leura Mall.

The properties along Leura Mall have been classified as commercial premises.

The Leura-Wentworth Falls Baptist Church located north east of the station has not been identified as a sensitive receiver as it is adjacent to the Great Western Highway and road traffic would be the dominant noise source.

Representative sensitive receivers were selected for modelling and assessment purposes and are shown in Figure 17 with details of each receiver provided in Appendix E.

Background noise levels

Background noise monitoring was undertaken at one location considered representative of the sensitive receivers. Potential acoustic influences were also considered when selecting these locations.

Continuous unattended monitoring was undertaken between 15 and 21 February 2016 in accordance with the NSW Industrial Noise Policy (INP) (EPA, 2000) in the garden of the Flemish Flavours restaurant located to the north of the station (as shown in Figure 17).

A detailed monitoring methodology and daily noise level charts are provided in Appendix E.

Data from the background noise monitoring were used to determine the Rating Background Levels (RBL) for the day, evening and night time periods in accordance with the *Interim Construction Noise Guideline* (ICNG) (DECC, 2009). A summary of the recorded RBL and overall equivalent noise levels are provided in Table 9.

The primary ambient noise source was identified as road traffic along Leura Mall and from the Great Western Highway. Further ambient noise source contributions can be attributed to wildlife and commuters travelling towards the station. Passenger and freight train passbys are the noise sources that contribute to the differences between the RBL and overall equivalent levels.

Table 9 Summary of noise monitoring results, dB(A)

Date	Rating background level 90th percentile $L_{A90(15min)}$ [1]			Ambient noise levels, $L_{Aeq(period)}$ [1]		
	Day	Evening	Night	Day	Evening	Night
RBL/average	47	42	33	59	58	56

Note 1: INP defines day, evening and night time periods as:
Day: the period from 7 am to 6 pm Monday to Saturday; or 8 am to 6 pm on Sundays and Public Holidays.
Evening: the period from 6 pm to 10 pm.
Night: the remaining period.

Figure 17 Sensitive noise receivers and noise monitoring location

Proposal specific noise criteria

The construction noise management levels for the Proposal are based on the *Interim Construction Noise Guideline* (DECC, 2009) and the *Sydney Trains Environmental Management System Guide Noise and Vibration from Rail Facilities* (Sydney Trains, 2013) guidance on sleep disturbance. The ICNG specifies the method used to determine the noise management levels for residential receivers during standard construction hours and out of hours works. A fixed noise management level is set by the ICNG for receiver types classed as commercial, schools and places of worship.

The recommended standard construction hours stated in the ICNG are:

- Monday to Friday: 7am to 6pm
- Saturday: 8am to 1pm
- No work on Sunday or public holidays.

Guidelines to determine the noise management levels for residential receivers, during and outside of standard recommended hours provided in the ICNG, are summarised in Table 10. A detailed summary of the relevant construction noise and vibration criteria is provided Appendix E.

Table 10 Construction noise management level guidelines for residences

Time of day	Noise management level $L_{Aeq(15min)}$
Recommended standard hours:	Noise affected: Rating background level + 10 dBA
	Highly noise affected 75 dBA
Outside recommended standard hours	Noise affected: Rating background level + 5 dBA

Where works exceed the noise management levels, all reasonable and feasible measures (including but not limited to construction scheduling, equipment selection and respite periods) should be implemented to reduce noise levels as far as practicable.

If works exceed the highly noise affected level the relevant authority may require respite periods by restricting the hours that the activities may occur, taking into account:

- times identified by the community when they are less sensitive to noise
- whether the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.

Sleep disturbance noise management levels

Construction works occurring during the night time period can affect people's sleep. The ICNG states that where construction works are planned to extend over more than two consecutive nights, the noise assessment should include maximum noise levels and the extent and number of times the maximum exceeds the rating background levels.

The ICNG refers to the *Environmental Criteria for Road Traffic Noise* (EPA, 1999), since superseded by the *Road Noise Policy* (RNP) (EPA, 2013), for guidance on sleep disturbance from maximum noise level events. The RNP advises a sleep disturbance screening level of $L_{A90(15min)}$ + 15 dBA.

The RNP further indicates that:

- maximum internal noise levels below 50 – 55 dBA are unlikely to result in sleep disturbance
- one or two internal noise levels above 65 – 70 dBA per night are unlikely to significantly affect health and wellbeing.

Road traffic noise management levels

Noise levels from road traffic due to construction should be limited to within 2 dBA of the relevant day, evening or night noise assessment criterion.

Summary of construction noise management levels

A summary of the construction noise management levels developed for the Proposal has been detailed in Table 11 for all identified receiver types. A detailed summary of the relevant construction noise and vibration criteria is provided Appendix E.

Table 11 Proposal specific construction noise management levels, dB(A)

	Construction noise management level, $L_{Aeq(15min)}$					Sleep disturbance screening
	During standard recommended hours[1]		Outside of standard recommended hours[2]			L_{Amax} (external)
Receivers	**Noise affected**	**Highly noise affected**	**Day**	**Evening**	**Night**	**Night**
Residential receivers (and hotel accommodation)	57	75	52	47	38	49
Commercial receivers	70	-	-	-	-	-

Note 1: Standard recommended hours: 7 am to 6 pm Monday to Friday, 8 am to 1 pm Saturday, no work on Sunday or public holidays
Note 2: Day: 7 am to 8 am and 1 pm to 6 pm Saturday, 8 am to 6 pm Sunday & Public Holidays
Evening: 6 pm to 10 pm Monday to Sunday & Public Holidays
Night: 10 pm to 7 am, Monday to Saturday; 10 pm to 8 am Sunday & Public Holidays

Proposed construction vibration criteria

Vibration assessments consider impacts on human comfort and impacts on buildings (structural and cosmetic damage).

Safe working buffer distances to comply with the human comfort, cosmetic damage and structural damage criteria, were taken from the *Construction Noise Strategy* (TfNSW, 2012) and are presented in Table 12. Safe working buffer distances for heritage buildings were calculated based on the German Standard DIN 4150: Part 3 – 1999 *Structural Vibration in Buildings*.

Table 12 Vibration safe working buffer distances in metres

Activity	Human comfort	Structural damage heritage building/structure	Structural damage Standard dwelling
Wacker packer	15 m	10 m	5 m
Jackhammer	Avoid contact with structure	2 m (nominal)	1 m (nominal)
Piling (bored)	-	4 m (nominal)	2 m (nominal)

Proposal specific operational noise criteria

The *Industrial Noise Policy* (EPA, 2000) operational noise criteria for sensitive receivers are summarised in Table 13. A detailed summary of the relevant operational noise criteria is provided in in Appendix E.

Table 13 Proposal specific operational noise criteria

Receiver	Time period	Amenity criteria (acceptable noise level)[1] LAeq(period)	RBL, $L_{Aeq(15min)}$	Intrusive criteria, $L_{Aeq(15min)}$	Proposal specific noise criteria (external)
Residential receivers	Day	55	47	52	**52 $L_{Aeq(15min)}$**
Residential receivers	Evening	45	42	47	**45 $L_{Aeq(evening)}$** **47 $L_{Aeq(15min)}$**
Residential receivers	Night	40	33	38	**38 $L_{Aeq(15min)}$**
Commercial receivers	When in use	65	-	-	**65 $L_{Aeq(period)}$**

Note 1: '-'With consideration to the INP, 'noise amenity area' classification, the residential receivers surrounding the Proposal

6.3.2 Potential impacts

a) Construction phase

Construction noise modelling

Construction of the Proposal would take about 16 months and would likely utilise about five weekend track possessions. Modelling of construction equipment noise sources for sixteen stages/scenarios was undertaken to allow for a 'worse-case' construction noise assessment. Descriptions of the proposed construction stages/scenarios used for the noise assessment are provided in Appendix E.

The construction noise modelling takes into account the indicative staging of construction plant and equipment to predict the noise level at each receiver location. A total of 59 indicative receiver locations around the station were selected for the assessment and are shown in Figure 17. The predicted noise levels were compared with the noise management levels for that receiver to determine whether there might be noise impacts during construction.

Construction noise modelling methodology, construction stages and proposed equipment noise levels are summarised in Appendix E. It is possible that equipment other than that

modelled may be used during construction, however it is anticipated that it would produce similar noise emissions.

During construction, it is unlikely that all machinery would be operational at the same time during a particular stage or activity (like the modelling assumes), but taking a 'worse case' scenario approach helps to identify where noise impacts could be a concern and assists in the formulation of mitigation measures.

A summary of the predicted construction noise management levels during standard construction hours and outside of standard construction hours at modelled sensitive receivers for each construction scenario is provided in Appendix E.

Summary of construction noise impacts during standard recommended hours

A summary of the construction noise impacts during standard recommended hours for receivers where noise levels are predicted to be above the relevant criteria for at least one of the construction scenarios is provided in Table 14. The full list of results is provided in Appendix E.

Table 14 Construction noise impact summary during standard recommended hours

Receiver location (receiver numbers)	Receiver type	Noise management level, dBA	Noise affected?	Highly noise affected?
Leura Mall (R1, R9, R10, R12-R17, R23-R26)	Commercial	70	Yes	N/A
Leisure Inn Spires (R3, R8)	Hotel accommodation/ residential	57	Yes	Yes
Railway Parade (R30-R32. R55-R59)	Residential	57	Yes	No
Wascoe Street (R33-R38, R43, R44, R49, R49, R51, R52)	Residential	57	Yes	No
Quinns Avenue (R40, R41, R45-R47)	Residential	57	Yes	No
Megalong Street (R50)	Residential	57	Yes	No
Great Western Highway (R53)	Commercial	70	Yes	N/A

The affected construction noise management level is expected to be exceeded for the serviced apartments located about 40 metres north-east of the station on Leura Mall as well as the residential receivers located along Railway Parade, Wascoe Street and Quinns Avenue. This exceedance is due to proposed construction works in close proximity to the buildings. The highly noise affected construction noise management level of 75 dBA during standard

recommended hours is not predicted to be exceeded at all but one receiver (R8) where the exceedances would be experienced at all three floors of the building.

Noise levels are also predicted to exceed the noise affected construction noise management level of 70 dBA at commercial receivers directly adjacent to the proposed works along Paisley Road, Hennessy Street and the Leura Mall. The construction noise levels can be mainly attributed to the use of the demolition saw, jack hammer, compactor, mulcher and rock breaker used in close proximity to the commercial receivers.

Summary of construction noise impacts during out of hours

Some activities have the potential to be undertaken outside of standard hours during weekend day/evening and night time possessions.

A summary of the construction noise impacts outside of standard recommended hours, for receivers where noise levels are predicted to be above the relevant criteria for at least one of the construction scenarios, is provided in Table 15. Activities during night time weekend possessions are also likely to exceed the sleep disturbance screening level of 48 dBA. The full list of results is provided in Appendix E.

Table 15 Construction noise impact summary outside standard recommended hours

Receiver location (receiver numbers)	Receiver type	Noise affected (day), 52 dBA	Noise affected (evening), 47 dBA	Noise affected (night), 38 dBA	Noise affected (commercial), 70 dBA
Leura Mall (R1, R9, R10, R13-R17, R23-R26)	Commercial	N/A	N/A	N/A	Yes
Leisure Inn Spires (R2-R8)	Hotel accommodation/ residential	Yes	Yes	Yes	N/A
Railway Parade (R30-R32, R55 to R59)	Residential	Yes	Yes	Yes	N/A
Wascoe Street (R33-R39, R42-R44, R48, R49, R51, R52)	Residential	Yes	Yes	Yes	N/A
Quinns Avenue (R40, R41, R45-R47)	Residential	Yes	Yes	Yes	N/A
Megalong Street (R50)	Residential	No	Yes	Yes	

Receiver location (receiver numbers)	Receiver type	Noise affected (day), 52 dBA	Noise affected (evening), 47 dBA	Noise affected (night), 38 dBA	Noise affected (commercial), 70 dBA
Great Western Highway (R12, R53)	Commercial	N/A	N/A	N/A	Yes

With regards to construction traffic using local roads, daily construction vehicle movements would not be significant when compared with the existing traffic volumes in the area. As a result, noise impacts from construction traffic movements are not anticipated.

Summary of vibration impacts

As discussed in Section 6.3.1, impacts due to vibration can be categorised into human comfort effects and building effects (structural and heritage). A summary of the vibrational impacts is provided below.

Structural damage

With consideration to the building damage criteria for typical buildings, the expected magnitude of ground vibrations would not be sufficient to cause damage to buildings within 15 metres of the works. The use of smaller equipment or work methods that do not generate significant vibration emissions would significantly reduce the building buffer distance.

Leura Station and a number of buildings along Leura Mall are locally listed heritage items. In addition, the proposal site and neighbouring buildings are located within the Central Leura Urban Conservation Area. The following heritage listed buildings are within about a 10 metre radius of the proposal site boundary:

- serviced apartments on 118-124 Leura Mall
- commercial building at 126 – 128 Leura Mall
- Le Gobelet at 131 Leura Mall
- Leura Station.

An indicative list of equipment likely to be used for the Proposal is listed in Section 3.

Heritage structures

The final equipment selection and operation would consider the heritage listed structures adjacent to Leura Station. It is recommended that smaller equipment and work methods that produce lower vibration emissions be considered where feasible and reasonable. When work is required in the vicinity of a heritage listed structure it would be conducted at a distance exceeding the damage safe working buffer distances listed in in Table 12. If no alternative work method is feasible or reasonable then additional mitigation measures as detailed in Section 6.6.3 would be undertaken.

Site specific safe working distances would be established on-site prior to the vibration generating works commencing. Vibration intensive work should not proceed within safe-working distances unless a permanent monitoring system is installed around one metre from the building footprint to warn operators in real time (e.g. flashing lights, SMS, or audible alarm system) when vibrations are approaching maximum criteria levels.

Vibration impacts would be managed in accordance with the 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).

Human comfort

There is potential for some human comfort impacts at sensitive receivers, depending on the final equipment to be used. The safe work buffer distances in Table 12 relate to continuous vibration however most construction activities are intermittent in nature occurring over short periods.

Work within the human comfort buffer distances would be limited to commercial premises located along Leura Mall within 15 metres of compaction activities. Human comfort impacts for other equipment are expected to be limited to transient receivers such as commuters/pedestrians traversing in and around the station. As such human comfort vibration impacts would be minimal.

Human exposure to vibration from construction would be managed in accordance with *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).

b) **Operational phase**

Summary of operational noise impacts

The Proposal is not expected to significantly change operational activities at the station and as a result the existing noise and vibration levels are unlikely to change.

Installation of a new lift would provide an additional source of operational noise at the station but this would not produce significant noise emissions. The operational noise environment is expected to remain largely unchanged however it is assumed an appropriate selection of mechanical plant and adjustments to the Public Address system would be undertaken to comply with Sydney Trains speech intelligibility requirements and the operational noise criteria provided above.

Operation of the taxi bays and kiss and ride is not expected to produce significant noise emissions when compared to existing traffic noise.

6.3.3 Mitigation measures

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 Construction Noise Strategy (TfNSW, 2012c).

The CNVMP would be the key management document that would prescribe specific mitigation measures to help reduce the impacts of construction noise and vibration. The measures would focus on Contractor inductions, the efficient operation of plant and equipment, along with prescribing safe working distances for vibration intensive equipment and detailing procedures for noise and vibration monitoring, and for obtaining TfNSW approval for out of hours works.

Noise management zones have been calculated for each construction stage showing the recommended additional mitigation measure for each time period. Noise management zones are shown in Appendix E and are shown for levels that are moderately intrusive and highly intrusive for distances up to 1000 metres from the site as it is assumed distances greater that this would not be feasible or reasonable to implement in practice.

The CNVMP would also be supported by the Community Liaison Plan to be prepared for the Proposal, which would detail community notification requirements.

A detailed set of mitigation measures is contained in Table 19.

6.4 Indigenous heritage

A due diligence assessment has been undertaken by Artefact in February 2016 in accordance with the requirements of the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (OEH, 2010). The assessment included a desktop analysis of existing databases, past reports and aerial imagery.

6.4.1 Existing environment

The Proposal is located within with Deerubbin Local Aboriginal Land Council area and is the tradition land of the Gundungurra and Darug tribal groups.

An extensive search of the Aboriginal Heritage Information Management System (AHIMS) database was undertaken on 29 February 2016, with a search radius of one kilometre. No recorded Aboriginal sites are located within the Proposal site.

There are two registered AHIMS sites located within the AHIMS search area; Leura Cascades and Gordon Falls, which are located about 1.3 kilometres south west and 0.9 kilometres south of the Proposal site respectively. Both sites are recorded as artefacts.

The Proposal is located in an area that has been highly modified for a range of uses associated with the railway and surrounding urban development, and it is considered unlikely that any Aboriginal heritage items would be located in or in the vicinity of the Proposal area, due to this past history of disturbance.

6.4.2 Potential impacts

a) Construction phase

As no known Aboriginal sites are located in the vicinity of the Proposal site and the potential for unknown items is considered to be low, the Proposal is unlikely to affect Aboriginal heritage during construction.

b) Operational phase

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

6.4.3 Mitigation measures

All construction staff would undergo an induction in the recognition of Indigenous cultural heritage material.

If unforeseen Aboriginal objects are uncovered during development, work should cease in the vicinity of the find and the TfNSW Project Manager and TfNSW Environment and Planning Manager are to be notified immediately to assist in co-ordinating next steps which are likely to involve consultation with an archaeologist, the OEH and Local Aboriginal Land Council. If human remains are found, work should cease, the site should be secured and the NSW Police and the OEH should be notified.

If changes are made to the Proposal that may result in impacts to areas not covered by this assessment, further archaeological assessment would be required.

Refer to Table 19 for a list of proposed mitigation measures.

6.5 Non-Indigenous heritage

A Statement of Heritage impact has been prepared by Artefact Heritage for the Proposal which included a desktop assessment and a site inspection. The findings of the assessment are summarised in this section. The full report is provided in Appendix G.

6.5.1 Existing environment

Previously identified heritage items located in and around the Proposal area were identified through a search of heritage registers including the National Heritage list, Commonwealth Heritage List, State Heritage Register, State Heritage Inventory, RailCorp's Section 170 Heritage and Conservation Register, heritage schedules of the Blue Mountains LEP 2015 and the Register of the National Estate (non-statutory). Heritage items located within the Proposal site or in the vicinity of the Proposal are listed in Table 16 and are shown in Figure 18 and Figure 19.

The Greater Blue Mountains World Heritage Area is located over one kilometre from the Proposal and would not be directly or indirectly affected by the Proposal.

Table 16 Heritage items/areas within the vicinity of the proposed works

Heritage item	Address	LEP listing	Section 170 listing
Leura Railway Station Group	Railway Parade, Leura	LA016	4801024
Leura Railway Corridor	Main Western Railway (near Leura), Leura	LA030	
Central Leura Urban Conservation Area	Bounded by Railway Parade to the north, Megalong Street to the south, and the area around Leura Mall	LA018	
Le Gobelet	131 Leura Mall	LA010	
Single storey commercial building	126-128 Leura Mall	LA069	
Kinauld House	87 Railway Parade	LA084	
Waitangi House	88 Railway Parade	LA009	
Ilion House	89 Railway Parade	LA085	

Figure 18 Section 170 curtilage of Leura Railway Station Group (Source: RailCorp)

Figure 19 Listed LEP heritage items within and adjacent to the Proposal site

Leura Railway Station Group

Leura Railway Station Group consists of the main station building, the 'out of shed' building, the platform, footbridge, a tree at the eastern end of the platform, and a Ratner London Patent safe (moveable heritage). The station buildings are brick Federation style, which was the prominent choice at the start of the twentieth century.

Leura Railway Station Group is of local significance as part of the early construction phase of railway line duplication on the upper Blue Mountains demonstrating the technological and engineering achievements in railway construction at the beginning of the 1900s. The station group is a good example of a Federation free classical railway station combining a large station building with a signal room and detached out-of-shed, and are representative examples of the arrangement of Federation style buildings that were built between Penrith and Lithgow during the early twentieth Century.

A description of the different elements of the station group is provided below.

Station building (1902)

Constructed of face brick with corrugated metal gabled roof extending as awnings to both platforms, the Leura Station building is an early island platform building in Federation style.

It features nine bays with linear arrangement along the platform with tuck-pointed red brickwork and engaged piers between the bays. The most eastern bay is enclosed by fibrocement panels, which had housed the interlocking frame between 1912 and 1958. The station building is slightly curved from the ticket office onwards to the west in line with the curve of the island platform.

Internally, the station building has maintained few of the original detailing and finishes due to the upgrade works in 1994. However, the original floor layout remains including former signal room (timber framed addition) combined with the Station Master's office and ticket office, general waiting room, ladies' toilets with waiting room, and male toilets at the western end. All toilet and light fittings are relatively new. Doors to both platforms of the general waiting room have been replaced.

The station building is considered to be high heritage significance.

Out of shed (1902)

A small square shaped detached face brick shed featuring moulding and rendered string course detailing similar to the main station building. It is located on the west side of the station building. The shed features a gabled corrugated metal roof with timber bargeboard and narrow eaves with exposed rafters, contrasting rendered moulded trim above a single door on west side elevation and the two windows on side elevations, and two rows of string courses throughout all elevations. There is no opening on the eastern elevation of the building.

The out of shed is considered to be high heritage significance.

Island platform (1902-1912)

Leura Station has an island platform curved with a pointed end to the west. The platform is brick faced with concrete deck and asphalt finish. A small number of concrete edged garden beds with plantings are located between the station building and the out-of-shed as well as towards the western end of the platform. A mature tree is located on the eastern part of the platform between the station building and the overbridge. Period and modern light fittings and timber bench seating, and modern signage, water fountain and aluminium palisade fencing at both ends of the platform are other features along the platform.

The island platform is considered to be of moderate heritage significance.

Rail overbridge and footbridge (1985)

A standard pre-stressed concrete plank overbridge supported on concrete columns adjoins Leura Mall with a single set of stairs to the platform. It spans over the tracks and marks the eastern end of the station.

This is considered to be of little heritage significance.

Movable items

A Ratner London Patent safe has been observed in the ticket office below the ticket window desk.

This is considered to be high heritage significance.

Landscape features

The setting of the station within the rock escarpment is typical of the natural setting of the Blue Mountains stations. The only significant landscape element is the mature tree at the eastern end of the platform and planted gardens on the southern end of the overbridge.

The landscape features are considered to be of high heritage significance.

Leura Railway Corridor

The Railway Corridor consists of an intact brick station with elegant detailing situated on an island platform in a deep railway cutting. Some 1868 masonry culverts also survive beneath the railway per-way formation (generally on the north side of the line).

The transport corridor across the Blue Mountains is of state significance as a whole, because the road created the potential for expansion of New South Wales from the Cumberland Plain out beyond the Dividing Range and because the railway created an entirely new sort of tourism in the Mountains and the development of heavy extractive and secondary industry in the Mountains and Lithgow and the wheat industry of the black soil plains in the late Victorian period.

The railway corridor has local significance as creating through its rock-cuttings and station-siting pre-conditions for the growth of Leura township. It is no coincidence that Leura grew rapidly only after 1892, when the railway station finally opened.

Central Leura Urban Conservation Area

The Central Leura Urban Conservation Area is situated around the early twentieth century Leura Mall. It is a rare example of a high quality small commercial centre. The precinct is characterised by early twentieth century and inter-war commercial buildings of one to two stories fronting Leura Mall. The centre of the street has a generous grassed median strip which gives a transition in levels across the street and, with its plantings of cherry trees, provides a pleasant character to the town centre. A memorial to the former Presbyterian minister, Redmond, is located in the centre of the median strip.

The commercial section of Leura Mall is of State significance because of the integrity of the assemblage of commercial and public service buildings which grew up rapidly after the railway station opened in Leura in 1890. The Central Leura Urban Conservation Area retains a substantial number of early twentieth century buildings that combine to give the streetscape a distinctive character.

Le Gobelet

Le Gobelet is a two storey commercial building in the Federation Arts and Crafts style constructed in 1906. With its prominent position at the north entry to Leura Mall shopping

precinct it has importance in establishing the character of the commercial precinct and makes a positive contribution to the streetscape.

Single storey commercial building

The commercial building at 126-128 Leura Mall is a single storey building with Federation arts and crafts influences and dates between 1912 and 1914. The shops on the corner of Railway Parade have significance as a good representative example of the sort of modest commercial development which was occurring in Leura Mall just before World War I.

Kinauld House

Kinauld is a substantial two-storey Federation house built of red brick roofed with Marseilles tiles and dates between 1915 and 1916. Kinauld is a representative example of closer development near the business centre of Leura and the railway station in the 1910s. For over thirty years Kinauld was a social focus as the first doctor's consulting-rooms. It retains social esteem as an art gallery, currently showing the significant local works of John Ellison.

Waitangi House

Waitangi, at 88 Railway Parade, is a single storey house, dating from c.1890 with a Victorian character. Waitangi is a good representative example of development along Railway Parade in the two decades after Leura Station opened in 1892. The property has aesthetic significance as a rare surviving house with a Victorian character in the upper Blue Mountains.

Ilion House

Ilion is a single storey house in the Federation Bungalow style. Ilion is a representative example of the good quality housing constructed near the railway station which opened at Leura in 1892 and of the brisk speculation which was going on during the early years of the twentieth century in Leura.

Archaeological potential

Background and archival research has not identified any former structures located within the site location prior to the development of the railway line that was extended in 1868 through what was to become Leura.

Successive upgrades to the station facilities and railway track have reduced the likelihood that any archaeological remains would be located within the site location. The likelihood of recovering non-rail infrastructure archaeological relics around the station platform and rail overbridge is nil-low. The archaeological potential of the site location has therefore been assessed as nil-low.

6.5.2 Potential impacts

a) Construction phase

Leura Railway Station Group

The objectives of the Proposal are to improve the amenity and accessibility at Wentworth Falls Station through a range of upgrade works; some of which have the potential to directly impact existing heritage elements of the station. Others, like the addition of a new lift, canopies and anti-throw screens may alter the visual environment thereby potentially having an indirect impact to the station and other heritage items/conservation areas.

Lift, concourse, stairs and overbridge

The existing stairs to the platform have little heritage significance and their removal would not impact significant fabric. There would be negligible impacts to the fabric of the overbridge (little significance) where it is attached to the existing stairs, however construction of the new lift concourse may have minor impacts to the fabric of the overbridge.

The excavation of the island platform (moderate significance) for the construction of the lift shaft would result in a minor impact.

The excavation of the platforms for installation of the canopy columns would be limited to the resurfaced platform surface. The canopy design would not impact on the mature tree on the station platform, or on the period-design platform lighting on which the Leura Station platform sign is mounted. The canopy design would result in negligible impacts to heritage fabric.

Construction of the accessible ramp from the overbridge and concourse to Leura Mall and Railway Parade would require the removal of vegetation along Railway Parade, with a new landscaped area provided to the west of the ramp along Railway Parade. The footpath on Railway Parade is not considered heritage-significant fabric of the station. Construction of the ramp would result in neutral impacts to heritage fabric.

Station building and platform renovations

The platform surface has been altered and re-graded a number of times since its original construction. The minor resurfacing of the platform would only impact the surface of the platform and not the heritage significant outer brick edging of the platform, resulting in negligible impacts to heritage fabric.

Within the station building, works to convert the female bathroom into one accessible toilet and one staff toilet would involve the demolition of an original internal wall and alteration of the room's original configuration. Renovation of the male toilet to an accessible toilet would involve replacement of walls and fixtures. These works would result in moderate impacts to heritage fabric.

The removal of internal fixtures, cubicles and applied finishes, installed in the 1990s, would result in negligible impacts to heritage fabric.

The installation of the ramp to the men's bathroom would involve the removal of the existing garden bed and the replacement of the existing original fabric door to the bathroom. These works would result in moderate impacts to the station building and island platform.

The lowering of the existing information window and part of the internal wall of the station building would cause minor impacts to the original fabric by removal of masonry and repainting.

The waiting room floor would be lowered to match the new platform level. As the waiting room floor was modified in the 1990s, the alterations would result in a negligible impact to heritage fabric.

Although the platform seating is not original, the design of the seating is consistent with the heritage character of the station. Replacement of seating would not impact significant fabric.

The Ratner London patent safe located in the service counter room near the ticket window could require temporary removal during construction. This would be considered a minor heritage impact.

Gardens and setting

The garden vegetation on the southern side of the station adjoining Railway Parade is considered consistent with the garden village character of the station and Leura as a whole. Landscaping would replace vegetation to be removed for the construction of the ramp and footpath.

Alterations to kerb and gutters, the kiss and ride and taxi parking would not result in impacts to heritage fabric.

Minor and temporary works

Installation of smoke alarms, hearing loops, warning indicators and establishment of site compounds would result in negligible impacts to heritage fabric.

Visual impacts

The Proposal would result in potential changes to existing views to heritage buildings and features as a result of the proposed lift shaft and housing, new stairs, canopies surrounding the lift concourse area, stairs and part of the station platform and the anti-throw screens.

The installation of the lift shaft and housing would result in minor to moderate visual impacts from the overbridge as it would detract from the setting of the station and views to the station building. From Leura Mall this would be a minor visual impact.

The installation of the staircase and platform canopies would result in a minor to moderate visual impact.

The installation of the anti-throw screens would result in a moderate visual impact.

Internal works to station buildings would result in negligible visual impacts. The installation of privacy film on the window glass would result in minor visual impact.

The removal of the garden bed west of the station building would improve the visibility of the station building but would reduce the garden aesthetic of the station. This would result in a minor visual impact.

The removal of the vegetation to the south of the station along Railway Parade, would result in a minor visual impact.

Archaeological impact assessment

The Leura Railway Station Group has been assessed as having a having a nil-low archaeological potential. The likelihood of recovering intact archaeological deposits is nil-low.

Leura Railway Corridor

Widening of the footpath on the Leura Mall overbridge may be undertaken which may require additional supporting structures to be installed onto or into the sandstone cutting on the northern and southern sides of the railway corridor. However, pre-existing cutting into the sandstone wall has already impacted the sandstone cutting and the Proposal is not likely to significantly expand these impacts.

Visual impacts

The proposed lift, stairs and new canopies would impede heritage significant views of the sandstone cutting and railway line from both the overbridge and from the station setting due to the visual prominence of the proposed lift shaft construction. However, pre-existing visual obstructions from non-heritage significant components of the present Leura Station (particularly the concrete stairwell and concrete overbridge) have already reduced these heritage views, and therefore the Proposal would not significantly increase the degree of these pre-existing visual impacts.

Archaeological impact assessment

No impacts to archaeology are expected.

Heritage impacts to adjacent heritage items

The six heritage listed items located adjacent to the Proposal site would not be physically impacted by the proposed works. Impacts to heritage views and vistas are outlined in Table 17.

Table 17 Visual impacts to heritage items in the vicinity of the Proposal

Heritage item	Visual impacts
Central Leura Urban Conservation Area	The lift, canopied stairs and ramp would be seen from the northern section of the conservation area but would not be visible from the majority of the mall. There would be no significant visual obstructions from the overbridge towards the conservation area. Minor visual impact.
Le Gobelet	The lift, ramp and potential canopied stairs would be seen from Le Gobelet. The removal of vegetation on Railway Parade could increase the sightlines towards the Proposal. Heritage views and vistas of Le Gobelet from Leura Station would not be noticeably diminished, but could be increased due to vegetation removal. Minor visual impact.
Single storey commercial building	The lift, ramp and canopied stairs would be seen from the single storey commercial building. Heritage views and vistas of the single storey commercial building from Leura Station would not be noticeably diminished by the proposed works. Minor visual impact.
Kinauld House, Waitangi House, and Ilion House	Sightlines to the Proposal are obstructed by mature trees on the northern side of Railway Parade, and the sloping topography of the road. Neutral visual impact.

Statement of heritage impact

A Statement of Heritage Impacts has been prepared for the Proposal. A summary is provided below in Table 18.

Table 18 Statement of heritage impact for the Proposal

Development	Discussion
What aspects of the Proposal respect or enhance the heritage significance of the study area?	By making Leura Station compliant with *Disability Standards for Accessible Public Transport 2002* and the *Commonwealth Disability Discrimination Act 1992* (DDA) as part of the Transport Access Program, the Proposal would allow the station to continue in its historical use as well as allowing for increased public access to the station and its amenities.

Development	Discussion
What aspects of the Proposal could have a detrimental impact on the heritage significance of the study area?	The construction of the lift shaft housing would involve excavation of the station platform and would obscure views of the station building. This would result in minor impacts to fabric and minor to moderate visual impacts. Canopies would obstruct sightlines from the overbridge to the station building and would result in a minor to moderate visual impact, depending on the outcome of further design refinements. The removal of period-lighting on the station platform would result in a minor impact to heritage fabric. The installation of anti-throw screens result in a moderate visual impact. Renovations to the interior of the station building would result in a moderate impact to significant fabric. The lowering of the existing information window would result in a minor impact to fabric. The installation of privacy film to the Federation-style windows would result in a minor visual impact. The removal of the concrete hob and garden bed to the west of the station building would result in a minor physical impact and minor visual impact. The removal and partial replanting of vegetation and the installation of a new access ramp on Railway Parade would result in a minor visual impact. There would be minor visual impacts to the adjacent Le Gobelet, single storey commercial building and the Central Leura Urban Conservation Area.
Have more sympathetic options been considered and discounted?	The extent of canopy coverage has been reduced in response to heritage and visual impacts. Opportunities to ensure that this canopy design is sympathetic to existing heritage elements would be implemented, including the use of light-weight unobtrusive materials, such as glass panelling and slim frame elements to reduce visual bulk. Detailed design of the canopies would consider opportunities to retain as many of the sightlines between the overbridge and the station building as possible. Colour schemes would be sympathetic to existing colour schemes on the station building. Garden vegetation could be planted to screen less heritage sympathetic elements where practicable.

b) **Operational phase**

The operation of the Proposal does not present any risks to non-Indigenous heritage.

6.5.3 Mitigation measures

Detailed design

The detailed design and construction of the Proposal would be undertaken with consideration to the heritage values of the station.

A design architect would be engaged to assist the contractor to give due consideration to the design of the external elements such as the lift and extended canopy, along with the internal proposed alterations to the station building. The design would be prepared in consultation with TfNSW, Sydney Trains, NSW Trains and Council (as required) and the recommended mitigation measures prescribed in the Statement of Heritage Impact (Artefact Heritage, 2016). This would include the following design principles:

- the design and materials to be sympathetic to the existing character of the station, be light and unobtrusive and consider views and sightlines to the station buildings
- internal modifications to be sympathetic to the historical characteristics of Leura Station, retain original fabric where possible and use materials and fittings similar to existing

- vegetation planting to screen unsympathetic elements and remain consistent with the exotic planted garden species in the Leura area
- design of accessible paths and ramps to be sympathetic to the existing character of the site location and maintain vegetation planting where possible
- the Ratner London Patent safe (movable heritage) to be kept safe during construction and relocated back to the station building at the completion of construction activities.

As the Leura Railway Station Group and Leura Railway Corridor are listed on the Blue Mountains LEP 2015, Blue Mountains City Council would also be notified of the proposed upgrade works. As the station is listed on the s170 register, consultation with Sydney Trains would be undertaken.

A program of archival recording would be undertaken which would include a photographic record of the station building and setting of the station, as well as a record of views that would be modified by the Proposal. This would be undertaken in accordance with the NSW Heritage Office (1998) guidelines *How to Prepare Archival Records of Heritage Items.* As these elements have local heritage significance, the recording need only meet the minimum requirements for archival recording.

Should changes to the design occur, consideration of an updated heritage assessment should be undertaken to assess any impacts of the design changes.

Construction

Potential impacts to non-Indigenous heritage during construction would be managed through the implementation of the CEMP prepared by the Contractor that would map and protect nearby non-Indigenous heritage items and prescribe management measures to ensure these items are not affected.

If archaeological deposits are uncovered during development, work would cease in the vicinity of the find and procedures in the TfNSW's *Unexpected Heritage Finds Guideline* (TfNSW, 2015a) would be followed. The TfNSW Project Manager and TfNSW Environment and Planning Manager are to be notified immediately to assist in co-ordinating next steps which are likely to involve consultation with an archaeologist and OEH. Further archaeological work and/or consents would be obtained for archaeological deposits prior to works recommencing at the location, where required.

6.6 Socio-economic impacts

6.6.1 Existing environment

Leura is a destination town and tourist area within the Blue Mountains, which is a major tourism destination in NSW. In 2015, 2,658,000 domestic daytrips were made to the entire Blue Mountains area, including Leura (Destination NSW, 2015). This was an increase of 16.8 per cent in 2014. The largest proportion of trips was for holiday purposes (59 per cent). This was followed by visits to family and friends (26 per cent) and business (8 per cent).

Leura's attractions include the National Trust-listed Everglades Gardens, Sublime Point lookout and Leura Mall. Leura Mall is the main shopping street and includes restaurants, antique shops, art galleries and bookstores.

In 2011, Leura had a population of 4,371 people (Australian Bureau of Statistics, 2011). Over half of the residents were aged over 50 years (52 per cent) compared to 39 per cent for the entire Blue Mountains LGA. Six per cent of residents in Leura reported needing help in daily activities due to disability compared to five per cent in the Blue Mountains LGA. A higher proportion of Leura residents were not in the labour force in 2011 at 43 per cent, compared to

34 per cent in the Blue Mountains LGA. This also reflects the larger older population in Leura compared to the average for the Blue Mountains.

Compared to the LGA average, a higher proportion of Leura households did not own a motor vehicle (11 per cent compared to eight per cent in the Blue Mountains LGA). Despite this, the proportion of people who travelled to work by train was lower than the LGA average (eight per cent compared to 11 per cent), which may be due to the older population who are not in the workforce. In 2014, there were 920 daily barrier counts through Leura Station for the year (Bureau of Transport Statistics, 2014).

6.6.2 Potential impacts

a) Construction phase

The Proposal has the potential to temporarily impact rail customers, pedestrians, residents, local businesses and motorists as a result of construction activities including:

- changes to pedestrian access to the station concourse, platform and nearby footpaths
- disruptions to station facilities and amenities
- loss of four street parking spaces, which may affect nearby businesses and their customers
- changes to access to the taxi zone on Railway Parade
- increase in truck movements delivering materials, plant and equipment
- minor delays on the adjacent road network
- construction noise, vibration, dust and visual impacts.

No property acquisition is required for the Proposal.

b) Operational phase

The Proposal would provide positive, long term socio-economic benefits to the broader Leura community and visitors to the area, including:

- improved accessibility for station customers and pedestrians, particularly people with a disability, elderly people and those with prams or luggage
- improved customer amenity and facilities, including accessible toilets, canopies over the concourse, stairs and platform
- improved transport interchange facilities, including kiss and ride bays, bike racks and improved access to a formalised taxi zone
- improved safety for customers on the station platform, including provision of CCTV and lighting.

The Proposal would improve the overall accessibility of the station. This may result in increased station patronage, with the potential for more visitors travelling to Leura by train, and a flow on effect of increased tourism expenditure in Leura.

The Proposal would result in the permanent conversion of four street parking spaces to two kiss and ride bays. To reduce the impacts to businesses, consideration would be given to timing the kiss and ride bays so they only operate only during peak periods. This is expected to cause a minor impact to nearby businesses and their customers during peak periods, however alternative street parking spaces along Leura Mall are available within walking distance to businesses and Leura Station (less than 100 metres).

6.6.3 Mitigation measures

Table 19 provides a number of environmental safeguards to minimise these potential impacts with a particular focus on keeping the community informed and includes the following:

- sustainability criteria for the Proposal would be established to encourage construction personnel to purchase goods and services locally helping to ensure the local community benefits from the construction of the Proposal
- the Community Liaison Plan (to be developed by the Contractor prior to construction) would identify all potential stakeholders and the best-practice methods for consultation with these groups during construction. The Plan would also encourage feedback and facilitate opportunities for the community and stakeholders to have input into the project, where possible
- the community would be kept informed of construction progress, activities and impacts in accordance with the Community Liaison Plan
- contact details for a 24-hour construction response line, Project Infoline and email address would be provided for ongoing stakeholder contact throughout the construction phase.

6.7 Biodiversity

An assessment of the trees and shrubs which occur within the Proposal site and habitat values for native flora and fauna has been undertaken by GHD (2016) (refer to Appendix H). This involved a desktop review of relevant documents and databases including the NSW Office of Environment and Heritage (OEH) BioNet database, Department of the Environment (DoE) EPBC Protected Matters Online Search Tool databases and Regional vegetation mapping (Keith and Benson, 1988).

A site inspection was undertaken on 19 and 22 February 2016 to identify trees within the Proposal site that required removal, those to be retained and determining the likely significance of impacts of the proposed works on threatened biota listed under the NSW TSC Act and Commonwealth EPBC Act. The findings of the assessment are summarised in this section.

6.7.1 Existing environment

Flora

No complete, continuous patches of native vegetation occur on the Proposal site. Vegetation mapping by Keith and Benson (1988) indicate that the closest patches of complete, continuous native vegetation occur about 1.5 kilometres south of the Proposal site.

The trees which may be affected by the Proposal are planted, exotic specimens. The trees surveyed are shown in Figure 20 and comprise:

- one tree, growing on the platform of Leura Station (Tree 1)
- one group of planted trees and shrubs, growing on a formed garden bed adjacent to an existing taxi rank on Railway Parade and south of the rail corridor fence (Tree Group 2). Tree Group 2 also includes the small garden bed containing planted shrubs near the existing stairs and ramp to the station.
- one tree, growing on top of the batter, on the western side of Leura Mall, to the north of the Leura Station, within the grounds of ‘Flemish Flavours’ (Tree 3).

Garden beds are also located on the station platform (as shown in Figure 20) however these do not constitute ‘trees’ for the purposes of the assessment and offsets.

Native plant species within the vicinity of Leura Station are scarce to absent and consist of the occasional self-established individual of Tantoon *Leptospermum polygalifolium* subsp. *polygalifolium* and Gristle Fern *Blechnum cartilagineum*, growing on a grassy batter, opposite the Railway Parade taxi rank and two juvenile specimens of Blue Mountains Mallee Ash *Eucalyptus stricta*, growing on the sandstone cliff on the northern side of the railway line. Generally, self-recruited species which are growing on the batters adjacent to the railway line are exotic and include Century Plant *Agave Americana*, English Ivy *Hedera helix*, Broom *Cytisus scoparius*, and Cotoneaster *Cotoneaster pannosus*, *C. glaucophyllus (*see Figure 21).

Tree assessment

All of the trees that would potentially be impacted by the Proposal are exotic species which have been planted. Trees 1 and 3 are likely more than 50 years old, while all plantings in Tree Group 2 are likely less than 25 years old. All trees assessed are in good condition and form.

Tree 1

Tree 1 is an Irish Strawberry *Arbutus unedo* growing on the station platform (see Figure 22) and is in good condition and form and was in full bloom at the time of this survey. The flowers may provide forage for some common native birds and insects. Most of the tree's root zone is located beneath the asphalt surface. A small square concrete garden bed encloses the inner root zone. No evidence of surface disruption by roots was evident at the time of this survey.

The garden bed at the western end of the platform does not contain trees and does not form part of the tree assessment.

Tree Group 2

Tree Group 2 comprises a group of trees (and shrubs) contained within a linear garden bed, located on the southern side of Leura Station, adjacent to the existing taxi rank and the small garden bed containing planted, exotic shrubs adjacent to the pedestrian stairway (Figure 23). The bed forms a visual and aesthetic buffer along the southern fence, and, in terms of species selection, approximates the earlier plantings along both sides of Leura Mall.

The trees are early-mature and are in good condition and well-maintained.

Tree 3

Tree 3 is a mature Bhutan Cypress *Cupressus torulosa* .D.Don**.** This specimen is located on the western side of Leura Mall, above a sandstone retaining wall (Figure 24). The tree is mature, in good condition and has the typical form of this species.

Figure 20 Tree survey locations

Figure 21 View of vegetation on railway batters

Figure 22 Tree 1, an Irish Strawberry, at the eastern end of the platform, Leura Station

Figure 23 Tree Group 2: Line of trees and shrubs within a garden bed, adjacent to Railway Parade taxi rank

Figure 24 Bhutan Cypress (Tree 3), growing above sandstone retaining wall and footpath, Leura Mall

Fauna and fauna habitats

The vegetation on the Proposal site does not contain habitat of likely significance for any native fauna species. The planted trees and shrubs to be affected, comprising the small isolated group of shrubs and trees within the garden beds along Railway Parade, would provide only very limited habitat value (foraging and roosting resources) for common, generalist bird species typical of highly modified urban landscapes. No bird calls were heard and only two bird species, the Rainbow Lorikeet (*Trichoglossus haematodus*) and Little Wattlebird (*Anthochaera chrysoptera*) were observed within the garden bed along Railway Parade. No nests or dreys were observed and no scratches, indicating the presence of arboreal mammals, were recorded on the leaders of smooth-barked trees. As the trees in the garden bed are no older than 25 years, there are no hollows in leaders or branches that would provide potential roost sites for hollow-dependent fauna, such as birds, possums or microchiropteran bats. Small, common garden skinks may occur in the garden beds and retaining walls, but no individuals were detected during the site inspection. There are no waterbodies to provide habitat for frogs.

Conservation significance of trees

Tree 1 (Irish Strawberry), located at the eastern end of the station platform, is a component of the Leura Railway Station Group listed on the Sydney Trains (formerly RailCorp) s.170 heritage register (4801024). Tree 1 together with Tree Group 2 at the southern end of the overpass footbridge comprise landscape features with a 'high' significance grading (Artefact, 2016).

Threatened biota and migratory species

The following threatened biota and migratory species listed under the TSC Act and EPBC Act have been previously recorded or are predicted to occur within five kilometres of the Proposal site:

- 20 threatened ecological communities (TECs)
- 25 threatened species of flora
- 14 threatened bird species, two reptiles, three amphibian, and 13 mammal species
- Six migratory species (terrestrial species only).

No other ecological Matters of National Environmental Significance (MNES), such as Ramsar wetlands, occur within the locality or would be impacted by the Proposal.

The vegetation to be affected by the Proposal comprises exotic planted species. There are no native stands of vegetation or any patches of threatened ecological communities within or in the immediate vicinity of the Proposal site. Vegetation mapping by Keith and Benson (1988) indicate that the closest patches of complete, continuous native vegetation occur about 1.5 kilometres from the Proposal site.

Of the 25 threatened plants previously recorded or predicted to occur in the locality, a number, including *Epacris hamiltonii*, Smooth Bush-Pea (*Pultenaea glabra*), and Needle Geebung (*Persoonia acerosa*) have been previously recorded in nearby bushland. No evidence of these or any other threatened plants was detected during searches within Tree Group 2 and in areas of self-established natives on the railway batters on both sides of the railway station.

The planted trees and shrubs in the Proposal site are exotic and located in a highly modified, urban landscape. The Proposal site does not provide important resources for any threatened fauna species or migratory birds previously recorded or predicted to occur in the locality given the small isolated nature of planted vegetation, the absence of important habitat features and the lack of connectivity with areas of known habitat. Any local population of such species

would not be reliant on the vegetation to be affected by the Proposal for their persistence in the locality.

6.7.2 Potential impacts

a) Construction phase

Tree removal

No patches of native vegetation would require clearing for the Proposal.

Tree Group 2

Tree Group 2, comprising 56 early-mature planted exotic trees (and shrubs) within the garden beds along Railway Parade, would require complete or partial clearing to allow construction of the accessible ramp. These trees should be removed according to the guidelines outlined in Safe Work Australia (2011). Trees removed in Tree Group 2 would be offset in accordance with TfNSW's Vegetation Offset Guide (TfNSW, 2013d).

Trees requiring protection

Tree 1 (Irish Strawberry) on the station platform would not be removed. However works to the station platform in the vicinity of the Tree Protection Zone would need to be managed, through fencing (see example in Appendix H) and root protection.

The Tree Protection Zone of Tree 3 (Bhutan Cypress) occurs on a landscaped garden terrace above the sandstone retaining wall along Leura Mall. The proposed widening of the footpath immediately below would not require any disturbance to the existing sandstone retaining wall, therefore the existing TPZ of Tree 3 should not be disturbed or affected as a result of the proposed footpath widening.

It is likely that machinery would be used beneath the section of canopy which projects from Tree 3 over the footpath (see Figure 25). If tall machinery is to be used, the lower branches should be supported by ropes, in order to lift that section of overhanging canopy above the machinery. If any lower branches are damaged during construction of the footpath, the wounded branches should be trimmed back by a qualified arborist.

Significance of likely impacts

The Proposal site does not contain any threatened ecological communities or habitat for threatened flora and the exotic street trees to be affected do not constitute habitat of relevance for threatened or migratory fauna species. The removal of up to 56 planted shrubs and trees (Tree Group 2) would have a negligible impact on native flora and fauna within the locality. The Proposal would therefore not have a significant impact on any threatened species, population or ecological community listed under the TSC Act. As such, a Species Impact Statement is not required for the Proposal. Similarly, the Proposal would not have a significant impact on threatened biota or migratory species listed under the EPBC Act and a Referral to the Commonwealth is not required.

Figure 25 Canopy of Tree 3 overhanging the footpath to be widened along Leura Mall

b) Operational phase

The operational phase of the Proposal would not impact on existing vegetation in the vicinity of the Proposal site.

6.7.3 Mitigation measures

Trees to be removed and retained would be taken into account during the detailed design of the proposal. Tree Protection Zones (TPZ) would be established to protect trees during construction.

TfNSW has prepared a Vegetation Offset Guide (TfNSW, 2013d) to provide a framework for a consistent approach to offset impacts to vegetation on applicable TfNSW projects and allows for appropriate offsets to be applied for one tree or a group of trees that do not form part of a vegetation community, regardless of whether they are native or not.

Trees removed would be offset in accordance with the TfNSW Vegetation Offset Guideline. Based on the removal of 56 planted shrubs and trees, 109 trees would be required to be planted with the aim to plant in and around the new ramp and stairs as much as possible. Some suggested indigenous tree and shrub species for planting are provided in Appendix H, however exotic species, consistent with the garden species in the Leura area, may be more appropriate to maintain the current characteristics the station.

Any additional trees that are found to require removal during construction would also need to be offset. Such measures and procedures for tree assessment and removal would be included and implemented as part of the CEMP for the Proposal. This would also include checking trees for active nests, prior to their removal.

The CEMP would be developed and would include a range of weed control, tree protection, and erosion and sedimentation control measures.

A detailed set of mitigation measures is contained in Table 19 of this REF.

6.8 Contamination, landform, geology and soils

A desktop assessment was undertaken as part of the REF and included a search of Australian Soil Resource Information System, the Environmental Protection Authority contaminated lands register and the Environmental Protection Authority contaminated lands in progress list. The findings of the assessment are summarised in this section.

6.8.1 Existing environment

Geology and soils

Leura Station has been constructed below the natural ground level within a cutting.

The published geological series sheet for the area (Katoomba 1:250,000) indicates that the site is underlain by Narrabeen Group Sandstones. The study area is within the Medlow Bath soil landscape. The soil is described as stony, acidic, very low fertility, very high aluminium toxicity, of moderate erodibility, localised rock outcrop and localised shallow soils. The Medlow Bath soil landscape is also typically characterised as moderately deep, well-drained earthy sands and yellow earth on crests and imperfectly drained grey earths on side slopes.

A search of the Australian Soil Resource Information System on 8 March 2016 showed the site to be in a built up area with extremely low probability and very low confidence of acid sulfate soils.

Contamination

The EPA contaminated lands register was searched on 24 February 2016. No identified contaminated lands are located within a close proximity to the Proposal site, however, Leura Garage, a former service station at 126-128 Leura Mall is located about 50 metres south of the Proposal. The site is currently under assessment to determine its contamination status.

The station may contain contaminated materials with the fabric of the existing buildings including:

- asbestos
- lead paint
- polychlorinated biphenyls in light fittings
- synthetic mineral fibres.

There may be contaminated fill present onsite, in particular beneath the hardstand of the platform and within the footprint of the railway corridor. Soils underlying the railway corridor may have also been impacted from previous spills or leaks.

6.8.2 Potential impacts

a) Construction phase

Erosion

The Proposal would require some excavation work for the installation of the lift shaft pits, new footpaths, new ramp and stairs, and associated sign posts. Other trenching or excavation may be required for the relocation of services or vegetation removal.

Excavation and other earthworks such as trenching can result in erosion and sedimentation if not undertaken with appropriate controls. Such impacts can also lead to an adverse effect on water quality and biodiversity through the introduction of sediments into waterways. Erosion and sedimentation risks for the Proposal are considered to be low, as it is expected that

erosion could be adequately managed through the implementation of standard measures as outlined in Section 6.8.3.

Contamination

Excavation also has the potential to expose contaminants, which if not appropriately managed, can present a health risk to construction workers and the community. Contaminants would also pose an environmental risk if they were to enter nearby waterways through the stormwater infrastructure. As there are no confirmed contaminated sites within close proximity of the Proposal site, contamination is not expected to be encountered.

During construction works, there is also the potential for soil to become contaminated through accidental chemical or fuel spills and leaks from construction plant and equipment.

Prior to works commencing on any existing buildings or structures, a hazardous materials survey for lead paint, asbestos and other potentially hazardous materials would be required. Remediation would be undertaken if identified contamination poses a risk to human health or the environment.

When the construction compounds are no longer required, a site assessment would be required to assess the risk posed by contamination (if any) introduced during use of the construction compounds. Remediation would be undertaken if contamination poses an unacceptable risk to human health or the environment.

b) Operational phase

There would be no operational risks to geology and soils as a result of the Proposal.

6.8.3 Mitigation measures

As part of the CEMP, a site-specific erosion and sediment controls plan would be prepared and implemented in accordance with the 'Blue Book' - Managing Urban Stormwater: Soils and Construction Guidelines (Landcom, 2004). The plan would be established prior to the commencement of construction and be updated and managed throughout as relevant to the activities during the construction phase.

An environmental risk assessment is to be undertaken prior to construction and must include a section on contamination as per the TfNSW Standard Requirements. Measures to mitigate potential impacts from any contaminated soil/materials during construction would be developed and implemented through an unexpected contamination finds procedure and Waste Management Plan as part of the CEMP. Prior to works commencing on buildings and structures a hazardous materials surveys would be completed. Remediation would be undertaken if identified contamination poses a risk to human health or the environment. All waste would be managed in accordance with relevant legislation.

A detailed set of mitigation measures is contained in Table 19 of this REF.

6.9 Hydrology and water quality

6.9.1 Existing environment

Surface water and groundwater

The Proposal site is located on land mapped within the Sydney Drinking Water Catchment. The nearest protected riparian area identified on the riparian lands map under the Blue Mountains LEP 2015 is around 230 metres south west of the Proposal. The nearest water bodies identified by aerial mapping are:

- Leura Falls Creek about 300 metres to the south west

- unnamed creek about 200 metres to the south east.

Both creeks are ephemeral but would collect stormwater runoff from surrounding green space and roads. Both creeks ultimately drain into Kedumba River about four kilometres to the south located within the Blue Mountains National Park.

Surface water in the vicinity of the Proposal site is managed by the Council stormwater drainage system consisting mainly of kerb and gutter drainage connected to an underground pipe network.

A review of the NSW Office of Water groundwater bores on 22 February 2016 identified 18 groundwater bores within 500 metres of the Proposal site. These did not provide any information on standing water level.

Flooding

According to the flood mapping in the Blue Mountains LEP 2015, no part of the Proposal site is located within a flood prone area. No areas identified as flood prone are within the vicinity of the Proposal site. The nearest flood prone areas are about 200 metres to the south and west.

6.9.2 Potential impacts

a) Construction phase

Without appropriate safeguards, pollutants (fuel, chemicals or wastewater from accidental spills, and sediment from excavations and stockpiles) could potentially reach nearby stormwater drains and flow into nearby waterways, including waterways that drain to the Blue Mountains National Park that form part of the Sydney Drinking Water Catchment. A Neutral or Beneficial Effect (NorBE) Assessment on water quality has been undertaken for the Proposal and is contained in Appendix D. The assessment found the Proposal to have a neutral effect on water quality.

Activities that would disturb soil during construction work have the potential to impact upon local water quality (which includes waterways that drain to the Blue Mountains National Park) as a result of erosion and run off sedimentation.

Groundwater levels were not determined as part of this assessment, however areas of excavation within the railway corridor may need to be dewatered as a result of groundwater seepage or rainfall runoff. Incorrect dewatering could pose risks to nearby waterways.

b) Operational phase

The Proposal is unlikely to impact upon the hydrology of the Proposal site or the surrounding area. The detailed design would take stormwater management into consideration through provision of kerb and gutters and while the new design only results in a minor increase in impervious areas through the new ramp to the taxi zone, the Proposal would be designed with consideration to the relevant NSW Trains, Sydney Water and Council standards and requirements.

6.9.3 Mitigation measures

As part of the CEMP, a site-specific erosion and sediment controls plan/s would be prepared and implemented in accordance with the *'Blue Book' - Managing Urban Stormwater: Soils and Construction Guidelines* (Landcom, 2004). The Erosion and Sediment Control Plans would be established prior to the commencement of construction and be updated and managed throughout as relevant to the activities during the construction phase.

A detailed set of mitigation measures is contained in Table 19 of this REF.

6.10 Air quality

6.10.1 Existing environment

Air quality in and around the Proposal site is considered to be typical of a semi-urban setting. The Blue Mountains State of City Report 2008-2012 (BMCC, 2012) notes that while air quality in the Blue Mountains is generally good, hazard reduction burning, domestic wood heating and diesel vehicle emissions are causes of air pollution in the LGA. Sensitive receivers in the vicinity of the Proposal site include:

- staff and customers at Leura Station
- residents immediately south and east of the station
- occupants of commercial properties to the south and north of the station
- recreational users of areas of informal open space to the south west of the station
- occupants of hotels to the north of the station.

The Department of Environment's *National Pollutant Inventory* was searched on 7 March 2016, which showed no polluting facilities exist within the Leura postcode. There are two facilities, Cascade Water Filtration Plant and Winmalee Sewage Treatment Plant, which are considered to be sources of air pollution. However, these are not located within a close vicinity of the Proposal site.

The OEH undertakes air quality monitoring for five key air pollutants: ozone (O_3), nitrogen dioxide (NO_2), carbon monoxide (CO), sulphur dioxide (SO_2) and particulates less than 10 micrometres in diameter (PM_{10}), as well as providing an hourly and daily regional air quality index. Blue Mountains City LGA is located adjacent to the Sydney North West monitoring region with air quality monitored from four fixed sites of which St Marys is the closest monitoring location, about 45 kilometres east of Leura Station.

The NSW Air NEPM Compliance Report 2013 (OEH, 2014) reported on exceedances of pollutants against National Environment Protection Measures (NEPM) goals. There were no exceedances in the Sydney North West region for nitrogen dioxide, sulphur dioxide, carbon monoxide and PM_{10}. Ozone levels were above the NEPM goal level at St Marys on two days in 2013.

The NSW Air Quality Statement 2015 (OEH, 2015) noted on one day PM_{10} levels were recorded above the national standard of 50 µg/m³ at St Marys. This related to a state wide dust storm.

6.10.2 Potential impacts

a) Construction phase

The main air quality impacts that have the potential to occur during construction would be temporary and associated with dust particles from vehicle and machinery emissions (CO, SO_2, PM_{10}, nitrous oxides, volatile organic compounds, and polycyclic aromatic hydrocarbons compounds associated with the combustion of diesel fuel and petrol) from construction plant and equipment.

Anticipated sources of dust and dust-generating activities include:

- excavation for the foundations and footings for the pedestrian bridge/temporary pedestrian bridge, lift shaft pit, stairs, canopies
- other trenching or excavation may be required for footpath and road works, relocation of services, drainage works and tree removal
- stockpiling activities

- dust generated from the loading and transfer of material from trucks
- other general construction works.

The Proposal would have minimal impact on air quality as it would not involve extensive excavation or other land disturbance with the potential to generate significant quantities of dust.

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

b) Operational phase

Overall impacts of air quality during the operation of the Proposal are considered minimal as the Proposal would not generate any pollutants during operation. In addition, as the Proposal would increase access to public transport, the use of public transport would be anticipated to increase and subsequently aim to reduce the amount of private vehicle related emissions in the long term.

6.10.3 Mitigation measures

Table 19 provides a list of mitigation measures that are proposed to manage air quality issues during construction. Mitigation is aimed around maintaining and operating plant and equipment efficiently and implementing measures for dust suppression including watering, covered loads and appropriate management of tracked dirt/mud on vehicles.

These measures would be included in the CEMP to be prepared for the Proposal.

6.11 Waste

The construction of the Proposal would generate the following waste:

- earthworks spoil and cleared vegetation
- asphalt and concrete
- various building material wastes (including metals, timbers, plastics, concrete etc)
- general waste, including food and other wastes generated by construction workers.

Waste management would be undertaken in accordance with the Waste Avoidance and Resource Recovery Act 2001 (WARR Act). A Waste Management Plan would be prepared that would 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 along with other onsite management practices such as keeping areas tidy and free of rubbish.

The application of the Sustainable Design Guidelines – Version 3.0 (TfNSW, 2013a) would also result in waste management targets to be developed for the Proposal and would include reuse and recycling.

6.12 Cumulative impacts

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

A search of the Department of Planning and Environment's Major Projects Register, Sydney West Joint Regional Planning Panel Development and Planning Register, and the Blue

Mountains City Council Development Application Register on 8 March 2016 identified no major developments in the vicinity of the Proposal likely to be constructed at the same time.

During construction, the works would be coordinated with any other construction activities in the area with Council, NSW Trains, and any other developments identified, to minimise cumulative construction impacts such as traffic and noise.

As described in Section 6.1.2, 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 minimal impact on the performance of the surrounding road network.

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

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

6.13 Climate change and sustainability

6.13.1 Greenhouse gas emissions

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

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

Due to the small scale of the Proposal and the short term temporary nature of the individual construction works, 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 Table 19.

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 Leura Station. 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.

6.13.2 Climate change

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

Climate change could lead to an increase in the intensity of rainfall events, whereby the rainfall excepted to occur in a 100-year average recurrence interval flood event would occur more frequently. Such changes in weather in the region are unlikely to impact on the operation of the Proposal.

Climate change could lead to an increase in frequency and severity in bushfires. The Proposal is not situated on land mapped as bush fire prone, but would be designed with appropriate fire protection measures.

6.13.3 Sustainability

The design of the Proposal would be based on the principles of sustainability, including the incorporation of the *NSW Sustainable Design Guidelines – Version 3.0* (TfNSW, 2013a) and the TfNSW *Environmental Management System* (EMS). These guidelines require a number of mandatory and discretionary initiatives to be applied. Refer to Section 3.1.4 for more information regarding the application of these guidelines.

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.

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. Section 7.2 lists the proposed mitigation measures for the Proposal to minimise the impacts of the Proposal identified in Chapter 6.

7.1 Environmental management plans

A CEMP for the construction phase of the Proposal would be prepared in accordance with the requirements of TfNSW's 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 as 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 below in Table 19. These proposed measures would minimise the potential adverse impacts of the Proposal identified in Chapter 6 should the Proposal proceed.

Table 19 Proposed mitigation measures

No.	Mitigation measure
	General
1.	A Construction Environmental Management Plan (CEMP) will be prepared by the 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 will be undertaken by the Contractor prior to the commencement of construction and documented as part of the CEMP.
3.	An Environmental Controls Map (ECM) will be developed by the Contractor in accordance with TfNSW's *Guide to Environmental Controls Map* (TfNSW, 2015c) 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 will be inducted on the key project environmental risks, procedures, mitigation measures and conditions of approval.
5.	Site inspections to monitor environmental compliance and performance will be undertaken during construction at appropriate intervals.
6.	Service relocation will be undertaken in consultation with the relevant authority. Contractors will mark existing services on the ECM to avoid direct impacts during construction.

No.	Mitigation measure
7.	Any modifications to the Proposal, if approved, will be subject to further assessment and approval by TfNSW. This assessment will need to demonstrate that any environmental impacts resulting from the modifications have been minimised.
	Traffic and site access
8.	Prior to the commencement of construction, a Traffic Management Plan (TMP) will be prepared as part of the CEMP and will include at a minimum: • ensuring adequate road signage at construction work sites to inform motorists and pedestrians of the work site ahead to ensure that the risk of road accidents and disruption to surrounding land uses is minimised • maximising safety and accessibility for pedestrians and cyclists • ensuring adequate sight lines to allow for safe entry and exit from the site • ensuring access to railway stations, businesses, entertainment premises and residential properties (unless affected property owners have been consulted and appropriate alternative arrangements made) • managing impacts and changes to on and off street parking and requirements for any temporary replacement provision • parking locations for construction workers away from stations and busy residential areas and details of how this will be monitored for compliance • routes to be used by heavy construction-related vehicles to minimise impacts on sensitive land uses and businesses • details for relocating kiss and ride, taxi ranks and rail replacement bus stops if required, including appropriate signage to direct patrons, in consultation with the relevant bus/taxi operators. Particular provisions will also be considered for the accessibility impaired • measures to manage traffic flows around the area affected by the Proposal, including as required regulatory and direction signposting, line marking and variable message signs and all other traffic control devices necessary for the implementation of the TMP. Consultation with the relevant roads authorities will be undertaken during preparation of the construction TMP. The performance of all project traffic arrangements must be monitored during construction.
9.	Communication will be provided to the community and local residents to inform them of changes to parking, pedestrian access and/or traffic conditions including vehicle movements and anticipated effects on the local road network relating to site works.
10.	Road Occupancy Licences for temporary road closures will be obtained, where required.
11.	A Road Safety Audit will be undertaken as part of detailed design and upon completion of construction, and design amendments made as required.
12.	Relevant authorisation(s) from the appropriate road authority will be obtained for the proposed operational changes to Railway Parade and Leura Mall, such as changes to intersections, parking, bus/taxi zones and signage changes etc.
13.	Encourage construction workers to not use commuter car parking spaces.
14.	Turning arrangements for taxis using the taxi rank will be confirmed during detailed design and communicated with signage at the rank.
15.	During detailed design, consideration will be given to the feasibility of installing a pedestrian crossing across Railway Parade.

No.	Mitigation measure
	Urban design, landscape and visual amenity
16.	The detailed design of the Proposal will be undertaken with reference to the recommendations in the Visual Impact Assessment (Appendix F).

17.	An Urban Design Plan (UDP) will be prepared by the 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, will 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 and bicycles should be shown
	  ○ integration with surrounding local and regional open space and or landscape networks. Existing and proposed open space infrastructure/landscape elements should be shown
	  ○ integration with surrounding streetscape including street wall height, active frontages, awnings, street trees, entries, vehicle cross overs etc
	  ○ integration with surrounding built form (existing or desired future) including building height, scale, bulk, massing and land-use
	• design detail that is sensitive to the amenity and character of heritage items located within or adjacent to the Proposal site.

18.	A Public Domain Plan (PDP) will be prepared by the Contractor, in consultation with the relevant council, and submitted to TfNSW for endorsement by the Precincts and Urban Design team, prior to finalisation of the detailed design. The PDP, at a minimum, will address the following: • materials, finishes, colour schemes and maintenance procedures including graffiti control for new walls, barriers and fences • location and design of pedestrian and bicycle pathways, street furniture including relocated bus and taxi facilities, bicycle storage (where relevant), telephones and lighting equipment • landscape treatments and street tree planting to integrate with surrounding streetscape • opportunities for public art created by local artists to be incorporated, where considered appropriate, into the Proposal • total water management principles to be integrated into the design where considered appropriate • design measures included to meet TfNSW's *NSW Sustainable Design Guidelines - Version 3.0* (TfNSW, 2013a) • identification of design and landscaping aspects that will be open for stakeholder input, as required.
19.	Light spill from the rail corridor into adjacent visually sensitive properties will be minimised by directing construction lighting into the construction areas and ensuring the site is not over-lit. This includes the sensitive placement and specification of lighting to minimise any potential increase in light pollution.
20.	All permanent lighting will 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.*

No.	Mitigation measure
21.	The detailed design of the Proposal will comply with Crime Prevention Through Environmental Design principles.
22.	Worksite compounds will be screened with shade cloth (or similar material, where necessary) to minimise visual impacts from key viewing locations.
23.	Temporary hoardings, barriers, traffic management and signage will be removed when no longer required.
24.	During construction, graffiti will be removed in accordance with TfNSW's Standard Requirements.
25.	The canopy design will be further developed during detailed design with an aim to maximise views of Leura Station and beyond, respecting the heritage values of the area.
26.	The detailed design is to be accepted by TfNSW urban design prior to construction.
27.	A qualified lighting designer will assess the level of street lighting at all locations affected by the works, including the pedestrian crossing across Leura Mall, and upgrades will be made where necessary to ensure compliance with Australian Standards.
	Noise and vibration
28.	Prior to commencement of works, a Construction Noise and Vibration Management Plan (CNVMP) will be prepared and implemented in accordance with the requirements of the *Interim Construction Noise Guideline* (Department of Environment and Climate Change, 2009), *Construction Noise Strategy* (TfNSW, 2012c) and the Noise and Vibration Impact Assessment for the Proposal. The CNVMP will take into consideration measures for reducing the source noise levels of construction equipment by construction planning and equipment selection where practicable.

No.	Mitigation measure
29.	The CNVMP will outline measures to reduce the noise impact from construction activities. Reasonable and feasible noise mitigation measures which will be considered, include: • regularly training workers and contractors (such as at the site induction and toolbox talks) on the importance of minimising noise emissions and how to use equipment in ways to minimise noise • avoiding any unnecessary noise when carrying out manual operations and when operating plant • ensuring spoil is placed and not dropped into awaiting trucks • avoiding/limiting simultaneous operation of noisy plant and equipment within discernible range of a sensitive receiver where practicable • switching off any equipment not in use for extended periods e.g. heavy vehicles engines will be switched off whilst being unloaded • avoiding deliveries at night/evenings wherever practicable • no idling of delivery trucks • keeping truck drivers informed of designated vehicle routes, parking locations and acceptable delivery hours for the site • minimising talking loudly; no swearing or unnecessary shouting, or loud stereos/radios onsite; no dropping of materials from height where practicable, no throwing of metal items and slamming of doors • 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.
30.	Works will generally be carried out during standard construction hours (i.e. 7.00 am to 6.00 pm Monday to Friday; 8.00 am to 1.00 pm Saturdays). Any works outside these hours may be undertaken if approved by TfNSW and the community is notified prior to these works commencing. An Out of Hours Work application form will need to be prepared by the Contractor and submitted to the TfNSW Environment and Planning Manager for any works outside normal hours.
31.	Where the $L_{Aeq\ (15minute)}$ construction noise levels are predicted to exceed 75 dBA and/or 30 dBA above the Rating Background Level at nearby affected sensitive receivers, respite periods will be observed, where practicable, and in accordance with TfNSW"s *Construction Noise Strategy* (TfNSW, 2012c). This will include restricting the hours that very noisy activities can occur.
32.	To avoid structural impacts as a result of vibration or direct contact with structures, the proposed works will be undertaken in accordance with the safe work distances outlined in the Noise and Vibration Assessment chapter and attended vibration monitoring or vibration trials will be undertaken where these distances are required to be challenged.

No.	Mitigation measure
33.	Vibration resulting from construction and received at any structure outside of the project will 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).
34.	Property conditions surveys will be completed prior to piling, excavation of bulk fill or any vibratory works including jack hammering and compaction for all buildings/structures/roads with a plan distance of 50 metres from the works and all heritage listed buildings and other sensitive structures within 150 metres of the works (unless otherwise determined following additional assessment they are not likely to be adversely affected).
35.	Where the noise levels are predicted to exceed construction noise management levels the relevant additional mitigation measures detailed in the Construction Noise Strategy (TfNSW, 2012c) should be considered.
	Indigenous heritage
36.	All construction staff will undergo an induction in the recognition of Indigenous cultural heritage material. This training will 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.
37.	If unforseen Indigenous objects are uncovered during construction, the procedures contained in TfNSW's *Unexpected Heritage Finds Guideline* (TfNSW, 2015a) will be followed, and works within the vicinity of the find will cease immediately. The Contractor will immediately notify the TfNSW Project Manager and TfNSW Environment and Planning Manager so they can assist in co-ordinating next steps which are likely to involve consultation with an Aboriginal heritage consultant, the OEH and the Local Aboriginal Land Council. If human remains are found, work will cease, the site secured and the NSW Police and the OEH notified. Where required, further archaeological investigations and an Aboriginal Heritage Impact Permit will be obtained prior to works recommencing at the location.
38.	If changes are made to the Proposal that may result in impacts to areas not covered by this assessment, further archaeological assessment may be required.
	Non-Indigenous heritage
39.	Prior to construction works commencing, a program of archival recording will be undertaken. This recording will include a photographic record of the station building and setting of the station, including a record of views that will be modified by the Proposal. The recording will be undertaken in accordance with the NSW Heritage Office (1998) guidelines *How to Prepare Archival Records of Heritage Items*. As these elements have local heritage significance, the recording will meet the minimum requirements for archival recording, measured drawings of the structures will not be necessary.
40.	A heritage induction will be provided to workers prior to construction, informing them of the location of known heritage items and guidelines to follow if unanticipated heritage items or deposits are located during construction.

No.	Mitigation measure
41.	In the event that any unanticipated archaeological deposits are identified within the project site during construction, the procedures contained in TfNSW's *Unexpected Heritage Finds Guideline* (TfNSW, 2015a) will be followed, and works within the vicinity of the find will cease immediately. The Contractor will 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 will be obtained for any unanticipated archaeological deposits prior to works recommencing at the location.
42.	An architect, suitably qualified and experienced in working with heritage structures will be engaged to provide input to, and review of, the detailed design of the Proposal, and give due consideration to the design of the external elements such as the lift, extended canopy and anti-throw screens, along with the internal proposed alterations to the station building.
43.	As Leura Station (LA016) and Leura Railway Corridor (LA030) are listed on the heritage schedule of the Blue Mountains LEP 2015, Blue Mountains City Council will be notified of the proposed works.
44.	As the station is listed on the s170 register, consultation with Sydney Trains will be undertaken.
45.	In order to minimise visual impacts on heritage items, the following mitigation measures will be implemented during detailed design: • The design and materials for the proposed accessible lift, concourse and access stairs should be as sympathetic as possible to the existing character of the station with the aim of minimising visual impacts to the Leura Railway Station Group and adjacent heritage items. The design should consider unobtrusive, modern, light materials, such as glass panelling and slim frame elements, which will reduce visual bulk • The canopies should be designed to permit as many sightlines from the overbridge to the station building as possible • Materials used for anti-throw screens should be as light and transparent as possible • Platform period-lighting that may need to be removed for canopy installation should be retained in its original position where possible or reused elsewhere on the platform. If platform period-lighting is not deemed suitable, alternative lighting will be sympathetic to the characteristics of Leura Station.
46.	The following design principles will be implemented where possible to reduce the impacts of internal modifications: • Modifications will be sympathetic to the historical characteristics of Leura Station. Original fabric is to be retained where possible, materials used during modifications will be congruent with the character of the station, and colour schemes will be as unobtrusive as possible. • If possible, the waiting room interior will be reproduced with similar fittings and furniture as it presently has after the floor has been lowered. • The replacement of the door to the men's bathroom at the western end of the station will aim to use materials and colour schemes as sympathetic to the existing door as possible. • If possible, the removal of the garden bed to the west of the station building will be replaced with a new garden bed in a similar location between the station building and the out of shed • The installation of privacy film on station building windows should not be installed on the upper multi-paned sash clear glass windows, as this will detract from their appearance in the context of the station building as a whole.

No.	Mitigation measure
47.	To reduce visual impacts from works adjoining Leura Mall and Railway Parade: • The design of new accessible paths, parking and seating will be sympathetic to the existing character of the site location. Similar and/or sympathetic colour schemes to those existing within the site location will be incorporated into the final design where possible. • The design and materials used for the proposed accessibility ramp connecting Railway Parade will be sympathetic to the historical characteristics of the site location. Materials used in its construction are to be consistent with the character of the station, and colour schemes will be as unobtrusive as possible. • Consider replanting of vegetation along the margins of the ramp, or between the northern side of the ramp and the outer fencing of the rail corridor to reduce the visual impacts that this vegetation removal. • Vegetation planting will be maintained where possible to enhance the garden character of Leura Station and Leura as a whole. New plantings will remain consistent with the exotic planted and garden species in the Leura area. Mature trees will be conserved wherever possible.
48.	The Ratner London Patent safe (moveable heritage) will be conserved and if relocation is required it will be kept in a safe and secure place during works and relocated back to the station building following completion of construction works.
49.	Should new design options or alterations be proposed, an updated heritage assessment may be required.
	Socio-economic
50.	Sustainability criteria for the Proposal will be established to encourage the Contractor to purchase goods and services locally, helping to ensure the local community benefits from the construction of the Proposal.
51.	Feedback through the submissions process will be encouraged to facilitate opportunities for the community and stakeholders to have input into the project, where practicable.
52.	A Community Liaison Plan will be prepared prior to construction to identify all potential stakeholders and best practice methods for consultation with these groups during construction. The plan will also encourage feedback and facilitate opportunities for the community and stakeholders to have input into the project, where practicable.
53.	Contact details for a 24-hour construction response line, Project Infoline and email address will be provided for ongoing stakeholder contact throughout the construction phase.
54.	The community will be kept informed of construction progress, activities and impacts in accordance with the Community Liaison Plan to be developed prior to construction.
	Biodiversity
55.	Construction of the Proposal must be undertaken in accordance with TfNSW's *Vegetation Management (Protection and Removal) Guideline* (TfNSW, 2015d) and TfNSW's *Fauna Management Guideline* (TfNSW, 2015e).
56.	All workers will be provided with an environmental induction prior to commencing work onsite. This induction will include information on the protection measures to be implemented to protect vegetation, penalties for breaches and locations of areas of sensitivity.

No.	Mitigation measure
57.	Disturbance of vegetation will be limited to the minimum amount necessary to construct the Proposal. Trees nominated to be removed will be clearly demarcated onsite prior to construction, to avoid unnecessary vegetation removal. Trees to be retained will be protected through temporary protection measures.
58.	Tree Protection Zones (TPZs) will be established around trees to be retained, as nominated in Section 6.7. Tree protection will be undertaken in line with *AS 4970-2009 Protection of Trees on Development Sites* and will include exclusion fencing of TPZs. Protection of Tree 1 and Tree 3 will be undertaken in line with AS 4970-2009 Protection of Trees on Development Sites but will not include exclusion fencing of the TPZ. If tall machinery is to be used for footpath widening under the canopy of Tree 3, the projecting lower branches should be tied back by a qualified arborist (minimum Level 3 qualified), in order to lift them above the height of the machinery. Any damage to the lower canopy resulting from machinery should be treated by a qualified arborist.
59.	The following measures will be implemented to protect Tree 1 from construction activities: • Retain the existing asphalt seal over the TPZ. If the asphalt seal has to be removed, the exposed fine root mat should be protected by covering with thin hessian, then top-dressed with a covering of coarse gravel or organic mulch. This top-dressed area should be occasionally watered, during hot, dry weather. • Install a fence around the TPZ prior to commencement of work on the platform. Fencing should comply with Australian Standards 4770- 2009 (see Appendix H). Fencing should not be removed until all works have been completed. • Any pruning necessary, either as a result of accidental injury or to accommodate construction should be carried out by a qualified arborist. • The health of the tree should be monitored six months and twelve months after completion of construction by a qualified arborist.
60.	Trees to be removed will be removed according to the guidelines outlined in Safe Work Australia (2011).
61.	In the event of any tree to be retained becoming damaged during construction, the Contractor will 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.
62.	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 Contractor will be required to complete TfNSW's Tree Removal Application Form and submit it to TfNSW for approval.
63.	For new landscaping works, mulching and watering will be undertaken until plants are established.
64.	Weed control measures, consistent with TfNSW's *Weed Management and Disposal Guideline* (TfNSW, 2015f), will 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 will include the management and disposal of weeds in accordance with the *Noxious Weeds Act 1993.*
65.	Offsets and/or landscaping will be undertaken in accordance with TfNSW's *Vegetation Offset Guide* (TfNSW, 2013d) and in consultation with the relevant council, and/or the owner of the land upon which the vegetation is to be planted. The 56 trees earmarked for removal will be offset with a minimum of 109 trees as advised in Appendix H. Any additional clearing will also require offset tree planting undertaken in consultation with Blue Mountains City Council.

No.	Mitigation measure
	Soils and water
66.	Prior to commencement of works, a site-specific Erosion and Sediment Control Plan will be prepared in accordance with the 'Blue Book' *Managing Urban Stormwater: Soils and Construction Guidelines* (Landcom, 2004) and updated throughout construction so it remains relevant to the activities. The Erosion and Sediment Control Plan measures will be implemented prior to commencement of works and maintained throughout construction.
67.	Erosion and sediment control measures will be established prior to any clearing, grubbing and site establishment activities and will be maintained and regularly inspected (particularly following rainfall events) to ensure their ongoing functionality. Erosion and sediment control measures will be maintained and left in place until the works are complete and areas are stabilised.
68.	Vehicles and machinery will be properly maintained and routinely inspected to minimise the risk of fuel/oil leaks. Construction plant, vehicles and equipment will also be refuelled offsite, or in a designated refuelling area.
69.	All fuels, chemicals and hazardous liquids will be stored away from drainage lines, within an impervious bunded area in accordance with Australian Standards, EPA Guidelines and TfNSW's *Chemical Storage and Spill Response Guidelines* (TfNSW, 2015g).
70.	Adequate water quality and hazardous materials procedures (including spill management procedures, use of spill kits and procedures for refuelling and maintaining construction vehicles/equipment) will be implemented in accordance with relevant EPA guidelines and the TfNSW *Chemical Storage and Spill Response Guidelines* (TfNSW, 2015g) during the construction phase. All staff will 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.
71.	In the event of a pollution incident, works will cease in the immediate vicinity and the Contractor will immediately notify the TfNSW Project Manager and TfNSW Environment and Planning Manager. The EPA will be notified by TfNSW if required, in accordance with Part 5.7 of the POEO Act.
72.	The existing drainage systems will remain operational throughout the construction phase.
73.	Should groundwater be encountered during excavation works, groundwater will be managed in accordance with the requirements of the *Waste Classification Guidelines* (EPA, 2014) and TfNSW's *Water Discharge and Reuse Guideline* (TfNSW, 2015b).
	Air quality
74.	Air quality management and monitoring for the Proposal will be undertaken in accordance with TfNSW's *Air Quality Management Guideline* (TfNSW, 2015h).
75.	Methods for management of emissions will be incorporated into project inductions, training and pre-start/toolbox talks.
76.	Plant and machinery will be regularly checked and maintained in a proper and efficient condition. Plant and machinery will be switched off when not in use, and not left idling.
77.	Vehicle and machinery movements during construction will be restricted to designated areas and sealed/compacted surfaces where practicable.

No.	Mitigation measure
78.	To minimise the generation of dust from construction activities, the following measures will 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
79.	The CEMP (or separate Waste Management Plan, if necessary) must address waste management and will 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.
80.	An appropriate Unexpected Finds Protocol, considering asbestos containing materials and other potential contaminants, will be included in the CEMP. Procedures for handling asbestos containing materials, including licensed contractor involvement as required, record keeping, site personnel awareness and waste disposal to be undertaken in accordance with WorkCover requirements.
81.	All spoil to be removed from site will be tested to confirm the presence of any contamination. Any contaminated spoil will be disposed of at an appropriately licensed facility.
82.	All spoil and waste must be classified in accordance with the *Waste Classification Guidelines Part 1: Classifying waste* (EPA, 2014) prior to disposal.
83.	Any concrete washout will be established and maintained in accordance with TfNSW's *Concrete Washout Guideline* – draft (TfNSW, 2015i) with details included in the CEMP and location marked on the ECM.
	Climate change and sustainability
84.	Detailed design of the Proposal will be undertaken in accordance with the *NSW Sustainable Design Guidelines – Version 3.0* (TfNSW, 2013a) with a view to obtaining a Silver rating or better.
85.	The detailed design process will include a Greenhouse Gases (project level) compliant carbon footprinting exercise in accordance with AS14064-2 and TfNSW's *Greenhouse Gas Inventory Guide for Construction Projects* (TfNSW, 2013e). The carbon footprint will then be used to inform decision making in design and construction.
86.	The detailed design process will undertake a climate change impact assessment with reference to the *Climate Change Impacts and Risk Management: A Guide for Business and Government* (Department of the Environment and Heritage, 2006) and the *ISCA Guidelines for Climate Change Adaptation* (AGIC, 2011) to determine the hazards/risks associated with future climatic conditions. Issues including protecting customers and electrical equipment from wind and rain during storm events, size of guttering, cross flow ventilation, reflective surfaces etc. will be considered in the design.

No.	Mitigation measure
	Cumulative impacts
87.	The potential cumulative impacts associated with the Proposal will be further considered as the design develops and as further information regarding the location and timing of potential developments is released. Environmental management measures will be developed in the CEMP, and implemented as appropriate.

8 Conclusion

This REF has been prepared in accordance with the provisions of section 111 of the EP&A Act, taking into account to the fullest extent possible, all matters affecting or likely to affect the environment as a result of the Proposal.

The Proposal would provide the following benefits:

- improved accessibility for customers at Leura Station - including the provision of an accessible route from the station platform through provision of a lift and accessible path, to the taxi rank and kiss and ride facilities
- improved customer amenity and facilities at the station, including accessible toilets and canopies over the lift and stairs and part of the platform for weather protection
- improving connections with wider pedestrian network through new pedestrian paths connecting with the station
- improved transport interchange facilities including new kiss and ride bays and taxi zone
- provision of bicycle parking facilities
- potential increased use of public transport to and from Leura.

The likely key impacts of the Proposal are as follows:

- introduction of new elements, such as canopies and lifts, into the visual environment
- temporary noise and vibration impacts during construction
- temporary changes to vehicle and pedestrian movements to access the station and taxi parking during construction
- temporary disruptions to station facilities and amenities during construction
- impacts to heritage-listed platform buildings
- removal of trees/vegetation that would require planting offsets.

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

The Proposal would also take into account the principles of ESD (refer to Section 3.1.4 and Section 4.6). These would be considered 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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