



Transport
for NSW

Wentworth Falls Station Easy Access Upgrade

Review of Environmental Factors



Artist's impression of the proposed easy access upgrade, subject to detailed design

Contents

Executive summary	10
<hr/>	
1 Introduction	15
<hr/>	
1.1 Overview of the Proposal	15
1.2 Location of the Proposal	16
1.3 Existing infrastructure and land uses	18
1.4 Purpose of this Review of Environmental Factors	22
2 Need for the Proposal	23
<hr/>	
2.1 Strategic justification	23
2.2 Design development	24
2.3 Alternative options considered	25
2.4 Justification for the preferred option	26
3 Description of the Proposal	27
<hr/>	
3.1 The Proposal	27
3.2 Construction activities	33
3.3 Property acquisition	37
3.4 Operational management and maintenance	37
4 Statutory considerations	39
<hr/>	
4.1 Commonwealth legislation	39
4.2 NSW legislation and regulations	39
4.3 State Environmental Planning Policies	41
4.4 Local environmental planning instruments and development controls	42
4.5 NSW Government policies and strategies	45
4.6 Ecologically sustainable development	46

Author:	Natalie Green
Reviewers	Kai Budd, Ben Groth, Jeremy Kidd, Zoe Rourke, Mona Ren, Damien Wilson, Dennis Emery, Craig McPherson, David Gainsford, Peter Whelan.
Version:	FINAL
Reference:	Wentworth Falls Station Easy Access Upgrade Review of Environmental Factors
Division:	Transport Projects Division

5	Community and stakeholder consultation	47
5.1	Stakeholder consultation during concept design	47
5.2	Consultation requirements under the Infrastructure SEPP	47
5.3	Consultation strategy	49
5.4	Public display	50
5.5	Aboriginal community involvement	50
5.6	Ongoing consultation	50
6	Environmental impact assessment	52
6.1	Traffic and transport	52
6.2	Urban design, landscape and visual amenity	58
6.3	Noise and vibration	74
6.4	Indigenous heritage	80
6.5	Non-indigenous heritage	81
6.6	Socio-economic impacts	95
6.7	Biodiversity	97
6.8	Contamination, landform, geology and soils	102
6.9	Hydrology and water quality	105
6.10	Air quality	106
6.11	Other impacts	108
6.12	Cumulative impacts	108
6.13	Climate change and sustainability	109
7	Environmental management	110
7.1	Environmental management plans	110
7.2	Mitigation measures	110
8	Conclusion	119
Appendix 1 – Consideration of matters of National Environmental Significance		122
Appendix 2 – Consideration of clause 228		123
Appendix 3 – Neutral or Beneficial Effect Assessment		125

Figures

Figure 1	Planning approval and consultation process for the Proposal	14
Figure 2	Regional context	17
Figure 3	Site locality	19
Figure 4	Plan view of key elements of the Proposal	28
Figure 5	Proposed Station Building configuration	29
Figure 6	Location of proposed works and temporary construction compound	38
Figure 7	Blue Mountains LEP 2005 zoning map	44
Figure 8	Potential construction vehicle route (GTA, 2014)	55
Figure 9	Photomontage locations (GBD, 2014)	62
Figure 10	View from Railway Parade south to south west towards station footbridge (PM1), (GBD, 2014)	63
Figure 11	View from Coronation Park looking north east towards station (PM2), (GBD, 2014)	64
Figure 12	View from Station Street looking south to south east towards station (PM3), (GBD, 2014)	65
Figure 13	Proposal viewshed (GBD, 2014)	67
Figure 14	Receiver locations for Visual Impact Assessment (GBD, 2014)	68
Figure 15	Monitoring locations and potential receivers within vicinity of Proposal (SLR, 2014)	76
Figure 16	Wentworth Falls Station Section 170 heritage curtilage	84
Figure 17	Station Street Precinct Conservation Area (Artefact Heritage, 2014)	85
Figure 18	Existing Station Building layout	88
Figure 19	Proposed Station Building layout	89
Figure 20	Approximate location of trees in Proposal area (GHD, 2014)	100

Tables

Table 1	Indicative construction stages for key activities	34
Table 2	Other relevant legislation applicable to the Proposal	40
Table 3	Relevant provisions of the Blue Mountains LEP	43
Table 4	Infrastructure SEPP consultation requirements	48
Table 5	Visual Significance Matrix (GBD, 2014)	69
Table 6	Summary of existing ambient noise levels (SLR, 2014)	75
Table 7	Representative noise receivers (SLR, 2014)	75
Table 8	Proposal Specific Noise Criteria for the Proposal (SLR, 2014)	77
Table 9	Heritage items/areas within the vicinity of the proposed works	81
Table 10	Summary of heritage impact	93
Table 11	Proposed mitigation measures	110

Abbreviations

AHIMS	Aboriginal Heritage Information Management System
ARI	Average Recurrence Interval
BCA	Building Code of Australia
BMCC	Blue Mountains City Council
BTEX	Benzene, Toluene, Ethylbenzene and Xylenes
CBD	Central Business District
CCTV	Closed Circuit TV
CEMP	Construction Environmental Management Plan
CLM Act	<i>Contaminated Land Management Act 1997</i>
CNVMP	Construction Noise and Vibration Management Plan
CPTED	Crime Prevention through Environmental Design
CTMP	Construction Traffic Management Plan
DBH	Diameter Breast Height
DDA	<i>Disability Discrimination Act 1992</i> (Commonwealth)
DoE	Commonwealth Department of the Environment
DP&E	NSW Department of Planning and Environment
DSAPT	Disability Standards for Accessible Public Transport
ECM	Environment Control Map
EMS	Environmental Management System
EPA	Environment Protection Authority
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EP&A Regulation	<i>Environmental Planning and Assessment Regulation 2000</i>
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Commonwealth)
EPI	Environmental Planning Instrument
EPL	Environment Protection Licence
ESD	Ecologically Sustainable Development (refer to Definitions)
FAT	Family Accessible Toilet
FM Act	<i>Fisheries Management Act 1994</i>
Heritage Act	<i>Heritage Act 1977</i>
ICNG	<i>Interim Construction Noise Guideline</i> (Department of Environment and Climate Change, 2000).
Infrastructure SEPP	<i>State Environmental Planning Policy (Infrastructure) 2007</i>
LEP	Local Environmental Plan
LGA	Local Government Area
LoS	Level of Service
MCA	multi-criteria analysis
NEPM	National Environmental Protection Measures
NES	National Environmental Significance

NorBE	Neutral or Beneficial Effect (relating to water quality)
Noxious Weeds Act	<i>Noxious Weeds Act 1993</i>
NPW Act	<i>National Parks and Wildlife Act 1974</i>
OEH	NSW Office of the Environment and Heritage
PAH	polycyclic aromatic hydrocarbons
PM	Photomontage
POEO Act	<i>Protection of the Environment Operations Act 1997</i>
PSNC	Proposal Specific Noise Criteria
RailCorp	Rail Corporation of NSW (now Sydney Trains)
RBL	Rating Background Level
REF	Review of Environmental Factors (this document)
RMS	NSW Roads and Maritime Services (formerly Roads and Traffic Authority)
Roads Act	<i>Roads Act 1993</i>
SEPP	State Environmental Planning Policy
SRZ	structural root zone
TCP	Traffic Control Plan
TfNSW	Transport for NSW
TPD	Transport Projects Division (TfNSW)
TPZ	tree protection zone
TSC Act	<i>Threatened Species Conservation Act 1995</i>
VAC	Visual Absorption Capacity
VOC	volatile organic compound
WARR Act	<i>Waste Avoidance and Resource Recovery Act 2001</i>

Definitions

Concept Design The Concept Design is the preliminary design presented in the REF, which would be refined by the Contractor (should the Proposal proceed) to a design suitable for construction (subject to TfNSW acceptance).

TfNSW contracts a single entity (the Contractor) to further develop the Reference Design to a level suitable for construction. The Contractor therefore becomes responsible for all work on the project.

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 (subject to TfNSW acceptance) to be suitable for construction. The Contractor is therefore responsible for all work on the project, both design and construction.

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.

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).

NSW Trains From 1 July 2013, NSW Trains replaced RailCorp as a new rail operator created to service regional rail customers.

Opal card The integrated ticketing smartcard being introduced by TfNSW.

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.

station buildings Collective terms used to refer to three station platform buildings at Wentworth Falls Station (Station Building, Lamp Room and Out of Shed building).

Sydney Trains From 1 July 2013, Sydney Trains replaced RailCorp as a new rail operator created to service Sydney rail customers.

The Proposal The construction and operation of the Wentworth Falls Station Easy Access Upgrade works.

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

Transport for NSW (TfNSW) is the proponent for the Wentworth Falls Station Easy Access Upgrade (the Proposal). TfNSW is the government agency responsible for the delivery of major transport infrastructure projects in NSW.

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 where it is needed most.

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

Description of the Proposal

The key features of the Proposal are summarised as follows:

- installation of three new lifts (one on either side of the station and one to access station platform)
- improved weather protection by installing canopies along existing footbridge, stairs and entrance areas
- shortening of footbridge at western end including new or relocated stairs to provide space for new access path to the western lift entrance
- upgrade of station platform buildings to provide accessible toilet facilities and ticketing window, larger waiting room and new communications/equipment room
- provision of new pedestrian paths, new Kiss and Ride areas on both sides of the station and new seating at the Station Street shelter
- installation of new bicycle racks installed on both sides of the station
- commuter car parking improvements including accessible parking on both sides of the station and the extension of the Railway Parade car park to the south to allow vehicles to safely turn into and depart the Kiss and Ride area
- services diversion and/or relocation, station power supply upgrade, adjustments to lighting, and improvements to station communication systems associated with new infrastructure, including additional CCTV cameras and Opal card readers.

Subject to approval, construction is expected to commence in 2015 and take up to 20 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.

TfNSW identified the need for improved access at Wentworth Falls Station, which does not currently meet key requirements of the Disability Standards for Accessible Public Transport (DSAPT) or the Commonwealth *Disability Discrimination Act 1992* (DDA).

Wentworth Falls Station is a key public transport facility in the Blue Mountains area and provides a train stop that services a large catchment for both local and regional commuters and tourists. The Proposal is consistent with the aims of the Transport Access Program as it would provide:

- improved accessibility for customers at Wentworth Falls Station - including the provision of an accessible route for equitable access to the station platform through provision of accessible parking and lifts
- improved customer amenity and facilities at the station, including a larger waiting room, accessible toilets and canopies over the footbridge and stairs for weather protection
- improved connections with wider pedestrian and bicycle network through new pedestrian paths from both sides of the station to adjacent car parks and upgraded bicycle facilities
- improved transport interchange facilities including new Kiss and Ride zones and bicycle facilities on both sides of the station; and accessible seating at the existing Station Street shelter
- improved and safer traffic flow through the extension of the Railway Parade car park to include a turning area for vehicles in proximity to the new Kiss and Ride area.

The Proposal is also consistent with key planning strategies in NSW, including *NSW 2021 - Making NSW Number One* (Department of Premier and Cabinet, 2011) and the *NSW Long Term Transport Master Plan* (TfNSW, 2012a).

Options considered

Options for improving access to Wentworth Falls Station were developed following a succession of workshops with TfNSW, relevant stakeholders and the project design team. Three concept design options were developed to address station needs and other design principles and proposed different footbridge and lift arrangements, as well as a ramp rather than a lift to access the western side of the station. A range of interchange improvements such as additional station building upgrades, improved pedestrian access, passenger drop off and pick up facilities and bicycle parking were also developed and were similar for all options. A preferred option was then selected to progress to the next phase of planning. Refer to Section 2.3 for more information on options development.

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 of the Wentworth Falls Station Easy Access 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 Sydney Trains and Blue Mountains City Council 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 approximately six 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 Blue Mountains City Council, the Wentworth Falls library and the TfNSW Community Information Centre. The REF would also be available to download from TfNSW's website and an information line (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.

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:

- temporary noise and vibration impacts during construction
- temporary changes to vehicle and pedestrian movements to access the station and car parks 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
- introduction of new elements, such as canopies and lifts, into the visual environment
- long term benefits include improved accessibility to the station and enhanced links with the surrounding road, pedestrian and bicycle network.

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 Transport for NSW's *Sustainable Design Guidelines* (TfNSW, 2013a) taking into account the principles of ecologically sustainable development (ESD).

The assessments undertaken have concluded that the Proposal would not have significant impacts to the environment. Should the Proposal proceed, the likely impacts would be appropriately managed in accordance with the mitigation measures outlined in this REF. Accordingly, an environmental impact statement is not required for the Proposal, nor is the approval of the Minister for Planning required. Overall, the Proposal is expected to provide long term benefits for the customers of Wentworth Falls Station and the broader community, which outweigh the short term adverse impacts during construction.

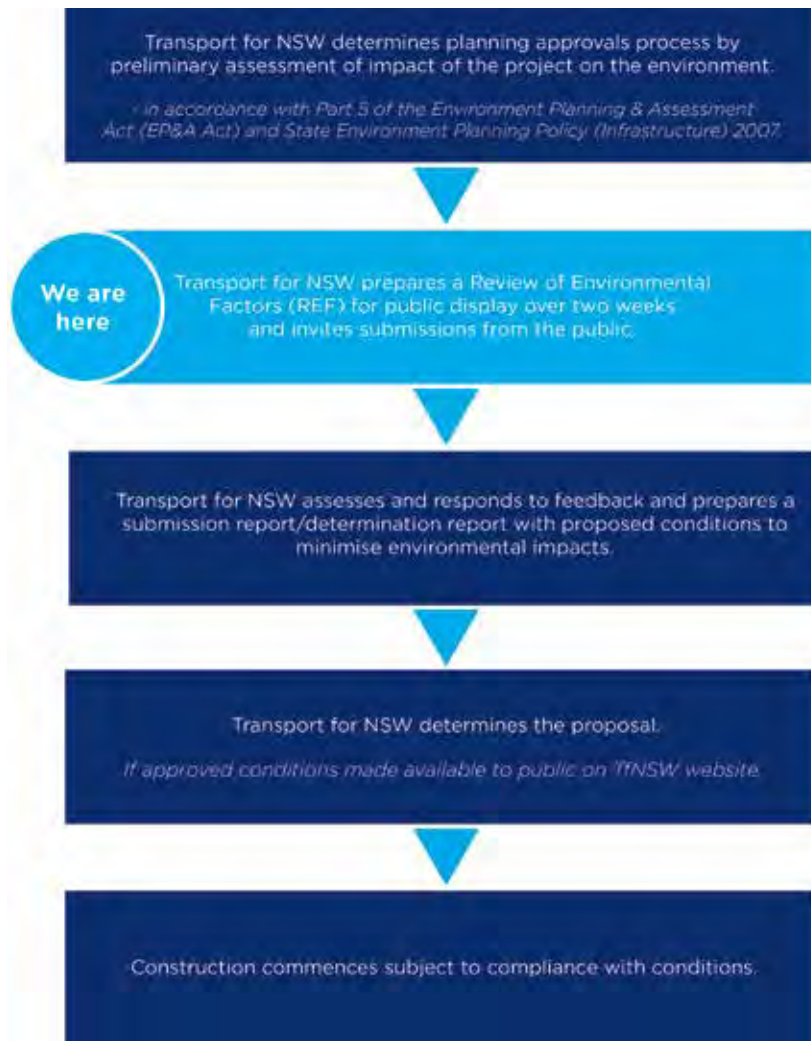


Figure 1 Planning approval and consultation process for the Proposal

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 Wentworth Falls Station Easy Access Upgrade (the Proposal), to be delivered by the Transport Projects Division (TPD).

1.1 Overview of the Proposal

1.1.1 The need for the Proposal

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

Wentworth Falls Station does not currently provide equitable access to station platforms, or meet key requirements of the Disability Standards for Accessible Public Transport (DSAPT) or the Commonwealth *Disability Discrimination Act 1992* (DDA). The platform is currently accessible by stairs only. There are no lifts or ramps and the existing arrangement is not suitable for the users of any wheeled vehicles (bicycles, prams, pushchairs/wheelchairs) or older people with reduced stamina or mobility issues.

The Wentworth Falls Station Easy Access Upgrade is required to improve access to the station and surrounding road/pedestrian network to provide equitable access, and would improve customer and staff facilities and amenity. The improvements would in turn assist in supporting the growth in public transport use and would provide an improved customer experience for existing and future users of this station. The expected increase in customers also had to be taken into account during design development with a forecast station design patronage of 1,970 for 2036, which is an increase of approximately 27 percent from the daily patronage of 1,440 in 2012.

1.1.2 Key features of the proposal

The key features of the Proposal are summarised as follows:

- installation of three new lifts (one on either side of the station and one to access station platform)
- improved weather protection by installing canopies along existing footbridge, stairs and entrance areas
- shortening of footbridge at western end including new or relocated stairs to provide space for new access path to the western lift entrance
- upgrade of station platform buildings to provide accessible toilet facilities and ticketing window, larger waiting room and new communications/equipment room
- provision of new pedestrian paths, new Kiss and Ride areas on both sides of the station and new seating at the Station Street shelter
- installation of new bicycle racks installed on both sides of the station
- commuter car parking improvements including accessible parking on both sides of the station and the extension of the Railway Parade car park to the south to allow vehicles to safely turn into and depart the Kiss and Ride area

- services diversion and/or relocation, station power supply upgrade, adjustments to lighting, and improvements to station communication systems associated with new infrastructure, including additional CCTV cameras and Opal card readers.

A detailed description of the Proposal is provided in Chapter 3 of this Review of Environmental Factors (REF).

Subject to planning approval, construction is expected to commence in 2015 and is anticipated to take up to 20 months to complete.

1.2 Location of the Proposal

The Proposal would involve upgrade works to Wentworth Falls Station which is located about 103 kilometres west of Sydney's central station in the town of Wentworth Falls (refer Figure 2).

The town of Wentworth Falls extends across the northern and southern sides of the Great Western Highway within the Blue Mountains Local Government Area (LGA). Leura is located to the west, Bullaburra is located to the east, and national parks extend north and south of Wentworth Falls.

Wentworth Falls Station is located immediately north of the Great Western Highway between Railway Parade (to the east) and Station Street (to the west) which connects to the highway. The station is serviced by the Blue Mountains Line providing train services between Lithgow and Sydney and is the 172nd busiest station on the Sydney Trains network with an average patronage of 1,440 trips each weekday (recorded 2012).

The Proposal site is located on land owned by RailCorp and operated and maintained by Sydney Trains.

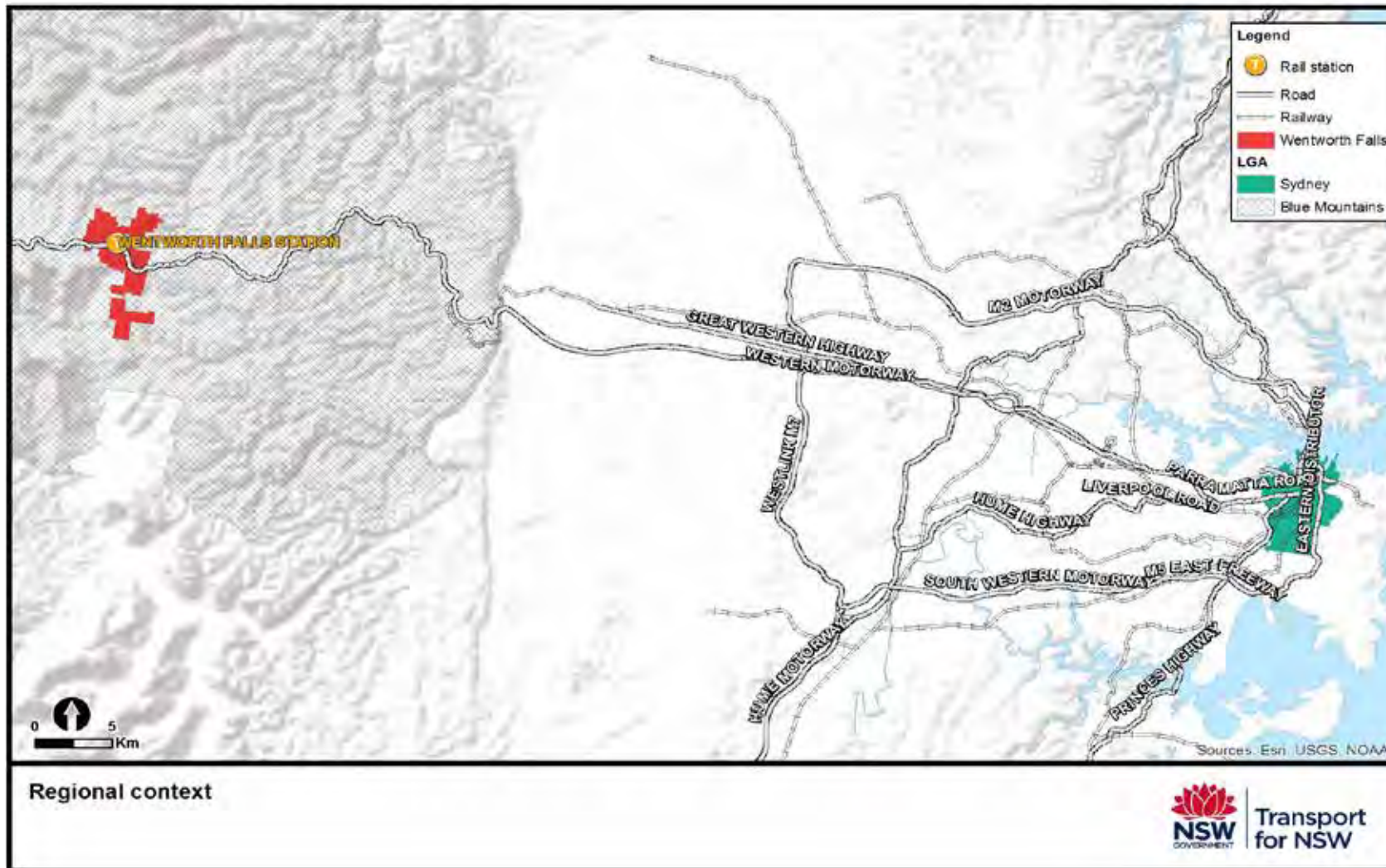


Figure 2 Regional context

1.3 Existing infrastructure and land uses

Land immediately to the north and south of the station is occupied by rail infrastructure (refer Figure 3). The Wentworth Falls village is located west on Station Street and comprises small businesses and Coronation Park, all of which are part of the Station Street Precinct Conservation Area. Land immediately east of the station comprises low density rural residential properties.

Wentworth Falls station consists of an island platform with one eastbound line towards Central (Platform 1) and one westbound line towards Lithgow (Platform 2). Wentworth Falls is serviced by one train (in each direction) every hour in off-peak periods during the week, with an increase in frequency during peak periods and on weekends.

The island platform contains three buildings, the Station Building built in 1890, the Lamp Room (1890) and Out of Shed building (1902). The Station Building accommodates a general waiting room, a ticketing room, Station Manager's office, ladies waiting room and adjoining ladies toilet, and men's toilet which is accessed from the outside.

Existing transport interchange arrangements available at Wentworth Falls Station include:

- commuter car parking on both the eastern and western sides of the station, and on Plantation Street providing approximately 152 long stay spaces (including two accessible parking spaces) and 13 short stay spaces
- two bus routes service the area that include route 685, with bus stops located on Station Street, and route 690K that operates along the Great Western Highway and so is unlikely to be regularly accessed from the station
- taxi stand on Station Street
- bicycle locker storage on eastern side of station.

There are no formal Kiss and Ride facilities currently provided at Wentworth Falls Station. Photographs of the existing station are provided in Images 1 to 6.



Figure 3 Site locality



Image 1 View of existing footbridge looking south east



Image 2 View from platform looking north



Image 3 View of stairs and footbridge on eastern side of station



Image 4 View of Station Street stairs from station platform



Image 5 View from footbridge looking south



Image 6 View from footbridge looking north

1.4 Purpose of this Review of Environmental Factors

This REF has been prepared by TfNSW to assess the potential impacts of the proposed station easy access upgrade works to Wentworth Falls Station. 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* (FM Act) and the *Roads Act 1993* (Roads Act).

Having regard to the provisions of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), this REF considers the potential for the Proposal to have a significant impact on matters of National Environmental Significance (NES) or Commonwealth land, and the need to make a referral to the Commonwealth Department of 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

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 forms part of the Transport Access Program. This program is designed to drive a stronger customer experience 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 the *Long Term Transport Master Plan* (TfNSW, 2012b). The plan provides a clear direction for transport over the next 20 years, while building on current commitments.

The *Long Term Transport Master Plan* (TfNSW, 2012b) complements and builds on the visions and goals established in *NSW 2021* and this Proposal would support growth and improvements in the safe and efficient management of transport in the Sydney region.

The *2012-2017 Disability Action Plan* (TfNSW, 2012c) 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 Disability Action 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 in consideration of the objectives outlined in this Plan.

Rebuilding NSW - State Infrastructure Strategy 2014 is a plan to deliver \$20 billion in new productive infrastructure to sustain productivity growth in our major centres and regional communities (NSW Government, 2014). 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. Further details of the application of NSW Government policies and strategies are discussed in Section 4.5 of this REF.

2.1.1 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 parents/carers with prams
- modern buildings and facilities for all modes that meet the needs of a growing population
- modern interchanges that support an integrated network and allow seamless transfers between all modes for all customers
- safety improvements including extra lighting, 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.

2.1.2 Objectives of the Proposal

The specific objectives of the Wentworth Falls Station Easy Access Upgrade are to:

- provide a station that is accessible to those with disabilities, the ageing and parents/carers with prams
- improve customer and staff facilities
- improve customer amenity
- improve the transport interchange area through improvements to car parks, new formalised Kiss and Ride zones and new bicycle facilities
- enhance connections to the adjacent pedestrian and bicycle network.

2.2 Design development

The expected increase in customers has been taken into account during design development with a forecast station design patronage of 1,970 for 2036, which is an increase of approximately 27 percent from the daily patronage of 1,440 in 2012. An assessment of Wentworth Falls 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 GHD's *Concept Plan Report* and included:

- lack of an accessible path of travel from the station entrances from Station Street and Railway Parade to the island platform (stairs only)

- lack of accessible facilities in the Station Building
- no formalised Kiss and Ride areas
- opportunity for additional bicycle facilities on both sides of the station
- lack of accessible parking in the Railway Parade car park.

The needs and opportunities identified for Wentworth Falls Station were then considered in the development of the concept design options (refer to Section 2.3).

2.3 Alternative options considered

2.3.1 Identified options

Options for improving access to Wentworth Falls Station were developed following a succession of workshops with TfNSW, and in consultation with other relevant stakeholders (including representatives from Sydney Trains and Blue Mountains City Council).

Three concept design options were developed to address station needs and other design principles and are listed below. Upgrades to the station buildings, car parks and interchange facilities were included for all options and so were not considered as part of the options assessment. The three options focused on providing infrastructure required to provide equitable access to the station platform through connecting new infrastructure such as a lift or ramp to the existing footbridge, given the footbridge is a recently established structure (constructed in 1994) and would not require major upgrade works.

The three options included:

- Option 1: Three lifts incorporated into the existing footbridge with an access path to the new lift on the Station Street side through Coronation Park and passing under the footbridge
- Option 2: Three lifts incorporated into the existing footbridge which would also be shortened at the Station Street side to allow for a more direct footpath route from the car park
- Option 3: Two lifts (Railway Parade side and platform) with a new ramp incorporated into the existing footbridge on the Station Street side.

2.3.2 The do-nothing option

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 would not help encourage the use of public transport and would not meet the immediate needs of the Wentworth Falls community.

2.3.3 Assessment of identified options

Each concept design option was assessed against a range of aspects including DDA and Building Code of Australia compliance, services, customer circulation, constructability and cost. Each option offered a feasible, practical and buildable solution to improve accessibility at Wentworth Falls Station and were taken forward to undergo a multi-criteria analysis (MCA) to select a preferred option.

2.4 Justification for the preferred option

Based on the analysis undertaken, Option 2 received the highest score which was due to it possessing the most preferred accessible paths which would have a positive customer benefit, when compared with the less desirable paths proposed for other options. In addition, the new footpath on the Station Street side in Option 2 would not impact on trees or on Coronation Park (as would have been the case for Option 1). Option 2 also had reduced visual impacts allowing for the retention of the existing character and associated heritage significance of the local area.

Option 3 was the lowest ranked option because of the proposed ramp on the Station Street side which was considered to have a greater visual impact than options than the options. The required length for the ramp to achieve a compliant grade (or steepness) was considered to be less desirable for customers than a lift.

The preferred option – Option 2: three lifts and shortened footbridge on Station Street side along with other interchange facilities would greatly enhance the accessibility of Wentworth Falls Station and satisfy the objectives of the Transport Access Program and has formed the basis for the Proposal as described in more detail in Chapter 3.

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, with some minor modifications as a result of further consultation with stakeholders and is subject to detailed design.

3.1 The Proposal

As described in Section 1.1, the Proposal involves an easy access upgrade of Wentworth Falls Station as part of the Transport Access Program which would improve accessibility and amenities for customers. Proposed upgrades to staff facilities would be confirmed during detailed design but have been assessed in this REF.

The Proposal would provide a number of improved features to provide an accessible station and improved interchange facilities. The Proposal would include the following key elements:

- installation of three new lifts (one on either side of the station and one to access station platform)
- improved weather protection by installing canopies along existing footbridge, stairs and entrance areas
- shortening of footbridge at western end including new or relocated stairs to provide space for new access path to the western lift entrance
- upgrade of station platform buildings to provide accessible toilet facilities and ticketing window, larger waiting room and new communications/equipment room
- provision of new pedestrian paths, new Kiss and Ride areas on both sides of the station and new seating at the Station Street shelter
- installation of new bicycle racks installed on both sides of the station
- commuter car parking improvements including accessible parking on both sides of the station and the extension of the Railway Parade car park to the south to allow vehicles to safely turn into and depart the Kiss and Ride area
- services diversion and/or relocation, station power supply upgrade, adjustments to lighting, and improvements to station communication systems associated with new infrastructure, including additional CCTV cameras and Opal card readers.

Figure 4 shows the general layout of key elements of the Proposal and Figure 5 provides the proposed configuration of the Station Building (notes are provided in the figure to indicate activities proposed to be undertaken to achieve the new layout, such as demolition of walls).

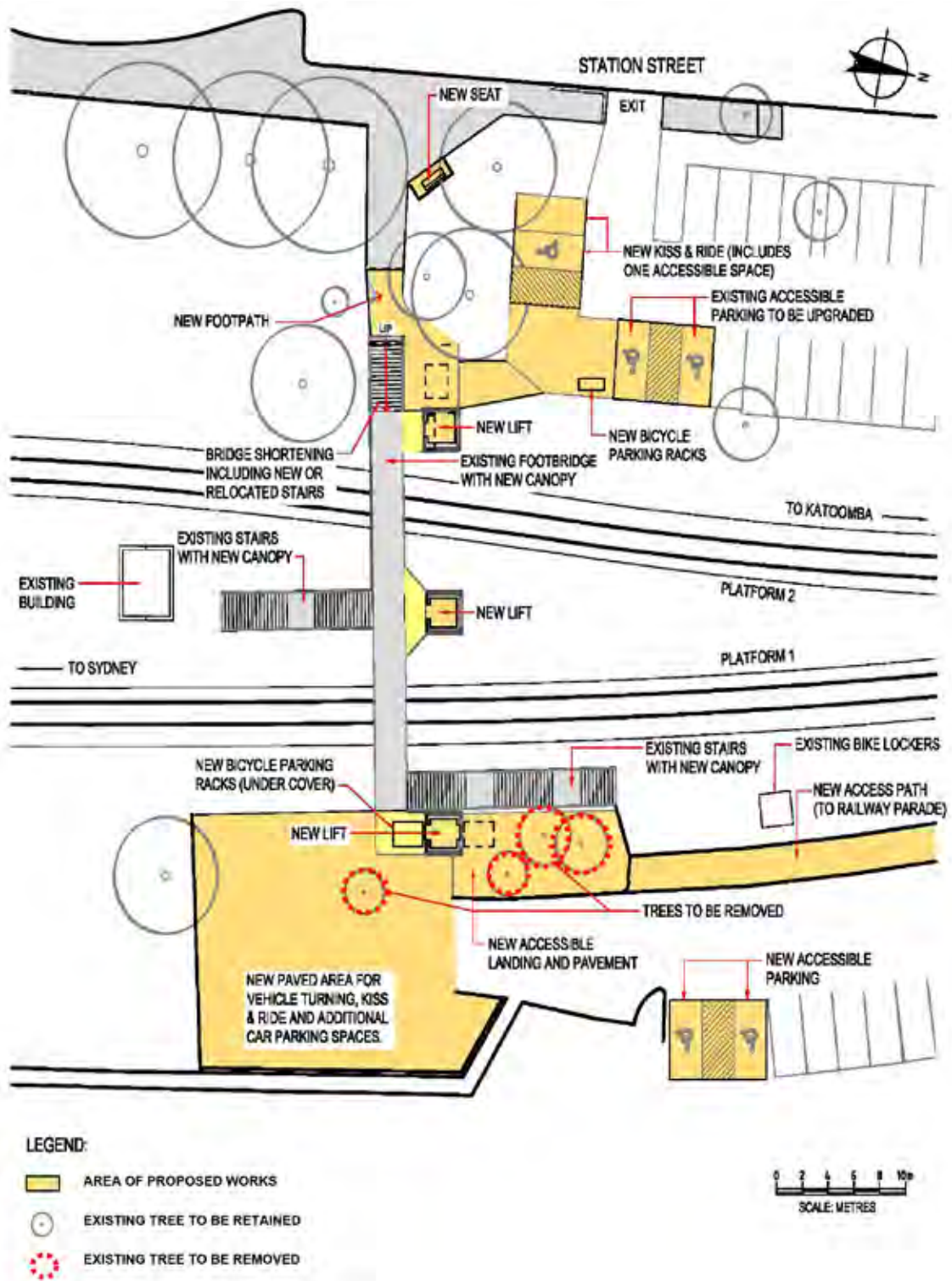


Figure 4 Plan view of key elements of the Proposal

Note: Image is indicative only. Subject to detailed design.

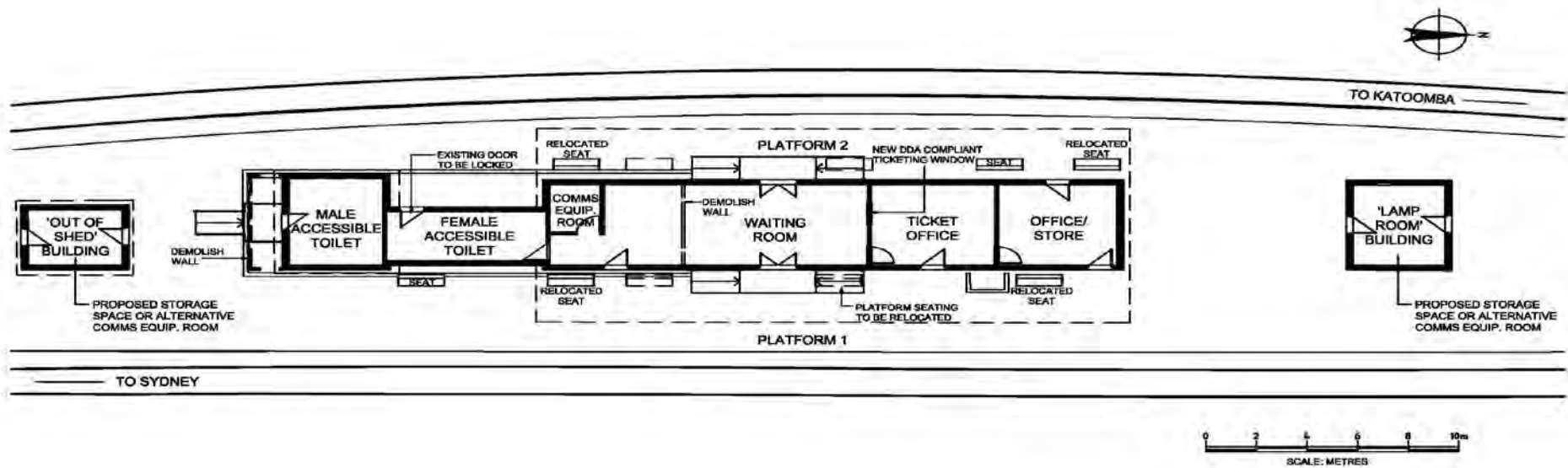


Figure 5 Proposed Station Building configuration

Note: Image is indicative only. Subject to detailed design.

3.1.1 Design features

Station structures, building works and services provision

Details of the proposed works to take place at the station to improve accessibility are provided below:

- repairs to existing footbridge and minor structural modifications
- footbridge shortening at western end including new or relocated stairs, to provide space for new access path to the lift entrance
- three new lifts and associated landings and support structures, including lift pit excavations, and retaining structures with civil works for new lift access to the western side of the station
- collision protection to existing and new structures adjacent to the tracks (as required, and dependent on the Contractor's design)
- upgrade to existing stairs including repairs, new stair nosings (i.e. projected section at then end of the step), and other modifications to provide Building Code of Australia (BCA) and DDA compliance
- new canopies to the footbridge, stairs, base of stairs, and the lift waiting areas, including drainage provisions (the canopies would comprise posts and roofs and would not be fully enclosed - they would be designed so that they are sympathetic to the station surrounds with unobtrusive, modern, light materials
- Station Building refurbishment, modifications and adjustment to room layout including required services, finishes and fit out to provide accessible customer (and staff) areas and facilities, including accessible paths of travel, accessible ticket window, accessible waiting room, accessible toilets and accessible station operational areas (refer Figure 5)
- relocation of existing station communications equipment, and incorporation of new communications equipment into a new room located within the main Station Building or by utilising either of the 'Out of Shed' building to the south of the main Station Building, or the 'Lamp Room' building to the north of the main Station Building (refer Figure 5)
- existing platform would be regraded to provide compliant crossfalls (i.e. transverse slope) of maximum 1 in 40 (where required) and other modifications including relocation of seating, provision of Tactile Ground Surface Indicators along platform edges, for stairs, and other required locations
- services diversion and/or relocation, including stormwater drainage adjustments, to accommodate the new infrastructure, and adjustment to overhead wiring and supports
- station power supply upgrade including new padmount substation, earthing and bonding provisions, adjustment to station lighting for new works and access areas, and augmentation and relocation of station communication systems including additional CCTV associated with the new infrastructure
- adjustment to station ticketing facilities including new Opal card readers for lift access to the station
- adjustment to corridor boundary fencing and landscaping works for areas affected by the works
- temporary works (where required) during construction in order to maintain existing 'level of service' such as access provisions, operational ticket window, and temporary toilets for customers and staff.

Station interchange facilities - west side of station

Details of the proposed works to take place on the western side of the station (Station Street) to improve accessibility are provided below:

- provision for new/upgraded accessible pathways between the new lift/station entrance and Station Street, the accessible parking spaces, and the Kiss and Ride zone
- works to provide minimum of two Kiss and Ride parking spaces (one of which would be accessible for people with a disability) near the station entrance with a sheltered waiting area
- provision for minimum of two accessible car parking spaces, (existing spaces may be utilised subject to modifications to ensure compliance with Standards)
- upgrade of existing shelter (near taxi stand and access path to station) to provide accessible seating
- bicycle racks near the station entrance to provide space for minimum of six bicycles
- new wayfinding signage, and provision of other signage including statutory/regulatory signage.

Station interchange facilities - east side of station

Details of the proposed works to take place on the eastern side of the station (Railway Parade) to improve accessibility are provided below:

- provision for new accessible pathways between the new lift/station entrance with connection to existing footpath on Railway Parade, accessible parking and the Kiss and Ride area
- works to provide minimum of one Kiss and Ride parking space (that would be accessible) near the station entrance with a sheltered waiting area
- provision for minimum of two new accessible car parking spaces
- relocation of the existing rail corridor boundary fence and vehicle access gates at the southern end of the existing car parking area to provide additional space to safely turn into and depart the designated Kiss and Ride parking area, and additional parking spaces to offset any impacted commuter car parking spaces at the station
- provision for drainage works to connect to Council's existing stormwater system
- new bicycle racks near the station entrance to provide space for minimum of six bicycles
- new wayfinding signage, and provision of other signage including statutory/regulatory signage.

3.1.2 Engineering constraints

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

Existing structures: the placement and integrity of existing structures needed to be considered during the development of the design. These structures include the platform, station buildings, and the footbridge.

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

Utilities: Sydney Trains services search data has identified a number of utilities in the vicinity of the proposed works including:

- above and underground electrical services
- communication cabling
- stormwater
- water
- rail utilities, including signalling cabling.

Other considerations:

- proximity of existing gardens and mature trees on the western side of the station and the requirement to minimise impact for placement of new infrastructure
- proximity of car parking areas on both sides of the station and the need to minimise impact for placement of new infrastructure
- capacity of existing footbridge to cater for the new canopies and connection of lift landings
- preliminary geotechnical information which indicated shallow bedrock that is exposed in some locations
- existing Station Building doorway thresholds are not level with the platform
- existing obstructions such as seating, and the need to provide a compliant accessible path of travel in and around the Station Building
- requirement to undertake internal refurbishment with minimal alterations to the existing external facades of the station buildings.

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*)
- Building Code of Australia
- relevant Australian Standards
- Asset Standard Authority standards
- Sydney Trains standards
- Transport for 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.

3.1.4 Sustainability in design

The detailed design of the Proposal would be undertaken in accordance with the project targets identified in TfNSW's Environmental Management System (EMS) and the *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.

The Guidelines also specify a minimum level of compliance within each category: 100 percent of applicable Compulsory initiatives and 50 percent of the applicable Discretionary points are to be explored through each stage of design.

3.2 Construction activities

3.2.1 Work methodology

Subject to approval, construction is expected to commence in 2015 and take up to 20 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 1. This staging is indicative and is based on the current preliminary design and may change once the detailed design methodology is finalised, and is also dependent on the Contractor's preferred methodology, program and sequencing of the work.

Table 1 Indicative construction stages for key activities

Activity
<p>Site establishment and enabling works</p> <ul style="list-style-type: none"> • Establishment of site compound (erect fencing, tree protection zones, site offices, amenities and plant / material storage areas etc). • Establishment of temporary facilities as required (e.g. temporary stairs or bridge structure for where works would affect the existing footbridge, alternate toilet facilities ticketing window in order to maintain same level of service throughout construction). • Removal of vegetation on eastern side to allow for new lift and pathway (no trees in temporary compound area to be removed). • Services relocation including for new padmount substation.
<p>Lift, footbridge and platform upgrades</p> <ul style="list-style-type: none"> • Excavation and foundations for new lifts (and stairs on western side). • Construction of new lift shafts/landings and installation of new lifts. • Footbridge shortening on the western side to accommodate the new lift. • Installation of collision protection around structures (as required). • Minor repairs to existing footbridge and upgrade to existing stairs. • Installation of canopies. • Existing platform would be regraded to provide compliant crossfalls (i.e. transverse slope) of maximum 1 in 40 (where required) – this work is to be undertaken over multiple possessions in sections. The platform is to be left in a state that allows for the station to be fully operational between possessions. • Relocation/replacement of station platform seats. • Install fixtures, lighting and CCTV cameras for affected areas.
<p>Station buildings works</p> <ul style="list-style-type: none"> • Demolish existing external concrete slab, brick screen wall and curtain wall at the southern end of Station Building and the internal waiting room wall to allow for reconfiguration. • Partial demolition of other walls in the Station Building to allow for accessible door widths and paths as required. • Installation of new ticketing facilities and external ramps in the Station Building. • Fit out of new rooms and facilities in the Station Building (and Lamp Room or Out of Shed building for new communications/equipment room if required).
<p>Interchange works</p> <ul style="list-style-type: none"> • Extension of Railway Parade car park to include new turning area, new Kiss and Ride area and new accessible parking. • Construction of accessible footpaths on both sides of the station. • Upgrade of accessible parking and new Kiss and Ride area on both sides of the station. • Installation of new bicycle racks on both sides of the station. • Installation of new accessible seating at the Station Street shelter. • Electrical and power supply upgrade works. • Replanting/landscaping and fencing adjustments.
<p>Testing and commissioning</p>

3.2.2 Plant and equipment

A list of plant and equipment that would likely be used in the construction of the Proposal is provided below:

- Trucks
- Piling rig
- Concrete truck
- Generators
- Grinder
- Bobcat
- Jack hammer
- Excavators
- Impact wrench
- Welding equipment
- Hammer drill
- Concrete pump
- Concrete saw
- Water truck
- Mobile cranes
- Concrete vibrator
- Compactor
- Smooth drum roller
- Paving machine
- Line marking plant
- Hand tools
- Elevated work platform
- Small vehicles
- Lighting towers
- Chainsaw
- Chipper
- Stump grinder.

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. There are typically three weekend possessions scheduled each year and given construction is estimated at 20 months it is likely that activity may be required for around five possession periods to facilitate the following:

- detailed site survey, services investigations and geotechnical investigation works within and around the tracks
- installation of temporary demarcation fencing/hoardings, etc to allow works to be undertaken during non-possession periods
- placement of temporary facilities on platform (if required) using cranes
- relocation of underground services to accommodate new/adjusted infrastructure
- repairs to existing footbridge and minor structure modifications located above and between tracks
- works to facilitate shortening of the existing footbridge and removal of existing stairs and replacement with new/relocated stairs using cranes
- installation of lift structural components, elevated landings and canopy components using cranes
- civil works including foundations and construction/installation of collision protection measures for structures adjacent to the tracks (if required)
- platform re-grading (if required) and installation of Tactile Ground Surface Indicators, where plant or personnel are required to work near the platform edge

- loading of materials over tracks (using crane) to be used for station building refurbishment works
- station building modification works where potential to impact on station operations, including cutover and commissioning of new ticket window
- testing and commissioning of station communications systems and equipment including augmentation of station CCTV and ticketing systems
- testing and commissioning/cutover of new lifts and upgraded station power supply.

Out of hours works may also be scheduled outside 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, 2012b) (refer to Section 6.3 for further details).

3.2.4 Earthworks

The Proposal would require a small amount of earthworks. Excavations and earthworks would generally be required for the following:

- the pits for proposed lift shafts which would require an open cut excavation through the station platform and excavation into rock (using rock breakers and jack hammers) at other lift locations
- construction of the Railway Parade car park extension that includes a vehicle turning area and connecting footpath
- construction of new footpath areas in the Station Street car park
- platform regrading (where required)
- other minor civil works including footings and foundation for structures, 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 TfNSW *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 detail in Section 6.1 of this REF.

The potential traffic and access impacts expected during the construction of the Proposal include:

- disruptions to customer access to the station and the need for temporary access arrangements (such as temporary stairs/bridge structure that would be provided where works are to affect the footbridge; and alternate toilet and ticketing facilities to maintain the same level of service)
- temporary loss of parking during construction

- disruptions to vehicle and pedestrian movements into the car parks and along footpaths
- construction vehicle movements and access arrangements.

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

3.2.7 Ancillary facilities

A temporary construction compound would be required to accommodate a site office, amenities, laydown and storage area for materials. An area for a construction compound has been proposed on the eastern side of Wentworth Falls Station beyond the southern end of the existing car park. This land is owned by RailCorp and operated and maintained by Sydney Trains, and is accessible via Railway Parade (refer Figure 6). Impacts associated with utilising this area have been considered in the environmental impact assessment including requirements for rehabilitation.

3.2.8 Public utility adjustments

An upgraded electrical supply is required to accommodate new infrastructure (e.g. lifts) and it is proposed that a new padmount substation would be installed close to the location of existing electrical infrastructure in the eastern car park (subject to detailed design). Some drainage works may also be required, including potentially in the area around the extension of the eastern car park to connect to Council's stormwater system.

A range of other utilities are located on or adjacent to the Proposal site. A utility investigation has been undertaken during preliminary design stages as discussed in Section 3.1.2.

The Proposal has been designed to avoid relocation of services where feasible, however further investigation may be required. It is likely some services may require relocation, including stormwater pipes, but such relocation is unlikely to occur outside of the footprint of the works assessed in this REF. In the event that works would be required outside of this footprint, further assessment would be undertaken. The appropriate utility providers would be consulted during the detailed design phase.

3.3 Property acquisition

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

3.4 Operational management and maintenance

The management and maintenance of Wentworth Falls Station would continue to be the responsibility of Sydney Trains. It is proposed that Blue Mountains City Council continue to operate and maintain applicable car park areas and other assets.



Figure 6 Location of proposed works and temporary construction compound

4 Statutory considerations

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

4.1 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 1.

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. Having regard to these provisions, TfNSW has determined that no significant environmental impact is likely, and as a consequence an environmental impact statement is not required, nor is the approval of the Minister for Planning.

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 this REF provides an environmental impact assessment of the Proposal in accordance with clause 228. Appendix 2 specifically responds to the factors for consideration under clause 228.

4.2.2 Other NSW legislation and regulations

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

Table 2 Other relevant legislation applicable to the Proposal

Applicable legislation	Considerations
<i>Contaminated Land Management Act 1997</i> (CLM Act) (NSW)	<p>Section 60 of the CLM Act imposes a duty on landowners to notify OEH, and potentially investigate and remediate land if contamination is above EPA guideline levels.</p> <p>The site has not been declared under the CLM Act as being significantly contaminated (refer Section 6.8).</p>
<i>Crown Lands Act 1987</i> (NSW)	The Proposal does not involve works on any crown land.
<i>Disability Discrimination Act 1992</i> (DDA Act) (Commonwealth)	The Proposal would be designed having regard to the requirements of this Act.
<i>Fisheries Management Act 1994</i> (NSW)	<p>Stormwater quality measures would be implemented during construction to prevent any adverse impacts to any natural watercourse.</p> <p>The Proposal would not affect any listed threatened species, marine vegetation or involve dredging or dam works.</p>
<i>Heritage Act 1977</i> (Heritage Act) (NSW)	<ul style="list-style-type: none"> • 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. <p>Wentworth Falls Railway Station is not listed on the State Heritage Register, but it listed on RailCorp's Section 170 Heritage and Conservation Register.</p> <p>Formal notification needs to be provided to Sydney Trains as the Proposal has the potential to impact on heritage items listed on the Section 170 Heritage and Conservation Heritage Register.</p> <p>Transport agencies are responsible for conserving heritage places under their stewardship, as well as provide equitable access under the <i>Disability Discrimination Act 1992</i> and relevant transport standards.</p> <p>The Proposal aims to ensure equitable access outcomes are achieved in a way that conserves important heritage values and minimises impacts on heritage significance.</p>
<i>National Parks and Wildlife Act 1974</i> (NPW Act) (NSW)	<p>Sections 86, 87 and 90 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).</p> <p>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.</p>

Applicable legislation	Considerations
<i>Noxious Weeds Act 1993</i> (NSW)	No noxious weeds were identified in the Proposal area during ecological investigations (refer Section 6.4).
<i>Protection of the Environment Operations Act 1997</i> (PoEO Act) (NSW)	The Proposal does not involve a 'scheduled activity' under Schedule 1 of the PoEO Act. Accordingly, an environment protection licence (EPL) is not required for the Proposal. However, in accordance with Part 5 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.
<i>Roads Act 1993</i> (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 should any works be required on Station Street or Railway Parade a Road Occupancy Licence would be obtained from Blue Mountains City Council.
<i>Sydney Water Act 1994</i> (NSW)	The Proposal would not involve discharge of wastewater to the sewer.
<i>Threatened Species Conservation Act 1995</i> (TSC Act) (NSW)	The site does not 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).
<i>Waste Avoidance and Resource Recovery Act 2001</i> (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.
<i>Water Management Act 2000</i> (NSW)	The Proposal would not involve any water use, 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.

In accordance with Clause 7(1) of SEPP 55, a consent authority must not consent to the carrying out of development on any land unless:

'(a) it has considered whether the land is contaminated.

(b) if the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or would be suitable, after remediation) for the purpose for which the development is proposed to be carried out.

(c) if the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the land would be remediated before the land is used for that purpose.'

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 Environmental Planning Policy (Sydney Drinking Water Catchment) 2011

The majority of 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 3).

4.4 Local environmental planning instruments and development controls

The Proposal is located within the Blue Mountains LGA. The operation of the Infrastructure SEPP means that the Local Environmental Plan (LEP) does not apply. However, during the preparation of this REF, the provisions of the following LEPs were considered:

- *Blue Mountains Local Environmental Plan 2005* (in force)
- Draft Blue Mountains Local Environmental Plan 2013

4.4.1 Blue Mountains Local Environmental Plan 2005

The *Blue Mountains Local Environmental Plan 2005* (Blue Mountains LEP) is the governing plan for the Blue Mountains LGA, including Wentworth Falls. Table 3 summarises the relevant aspects of the Blue Mountains LEP applicable to the Proposal.

Figure 7 shows the relevant section of the zoning map from the Sutherland Shire LEP 2005, with the indicative location of the Proposal.

Table 3 Relevant provisions of the Blue Mountains LEP

Provision description	Relevance to the Proposal
Clause 11 - Zoning table and zone objectives	<p>Under the Blue Mountains LEP:</p> <ul style="list-style-type: none"> the rail corridor is zoned as Regional Transport Corridor (Rail) the Great Western Highway is zoned as Regional Transport Corridor (Road) residential land to the east of the railway station is zoned as Living - Conservation local retail and commercial services located west along Station Street is zoned as Village Town Centre. <p>The Proposal is consistent with the objectives of the Regional Transport Corridor (Rail) zone.</p>
Clause 11 - Ecologically Sustainable Development	TfNSW is committed to ensuring that its projects are implemented in a manner that is consistent with the principles of ESD. The ESD principles have been considered through the development and assessment of the Proposal.
Clause 27 - Regional Transport Corridor Zone	The Proposal is consistent with the objectives of the Regional Transport Corridor Zone.
Clause 48 - Protected Area Water Supply Catchment	Most of the Proposal area is located within the drinking 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 3.
Clause 54 - Preservation of trees	Clause 54 is aimed at preservation of trees and development consent is required for tree removal in most instances. 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. Tree replanting is discussed in more detail in Section 6.7.
Clause 68-70 - Heritage	The LEP aims to conserve heritage significance of heritage items in the Blue Mountains. The Wentworth Falls Railway Station is listed in the heritage schedule along with the War Memorial in Coronation Park and the Station Street Precinct Conservation Area located to the west 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.

4.4.2 Draft Blue Mountains Local Environmental Plan 2013

Blue Mountains City Council has prepared the Draft Blue Mountains Local Environmental Plan 2013 (Draft Blue Mountains LEP), which once gazetted will supersede the 2005 LEP. Under the Draft Blue Mountains LEP, rail infrastructure is zoned SP2 Infrastructure - Railway. The Wentworth Falls local centre to the west of the station is zoned B2 Local Centre and on the eastern side of the station the residential land is zoned R6 Residential Character Conservation.

Should this LEP be gazetted prior to determination of the Proposal, it is not expected that the Proposal would be inconsistent with the objectives of the new LEP.

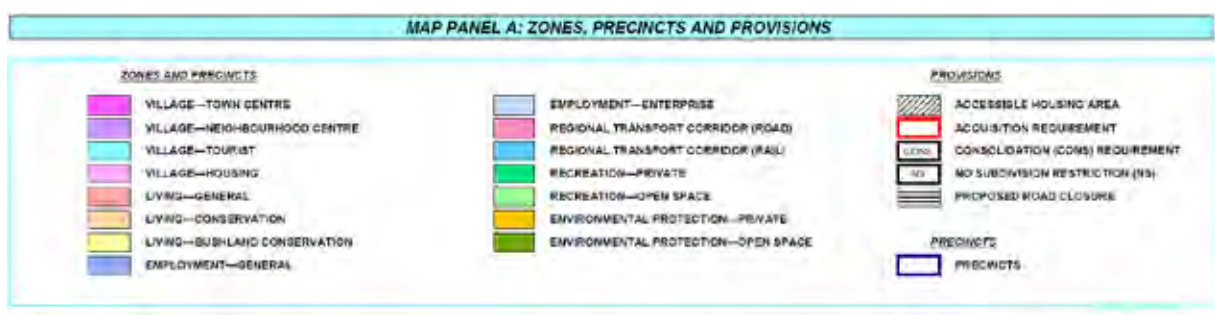
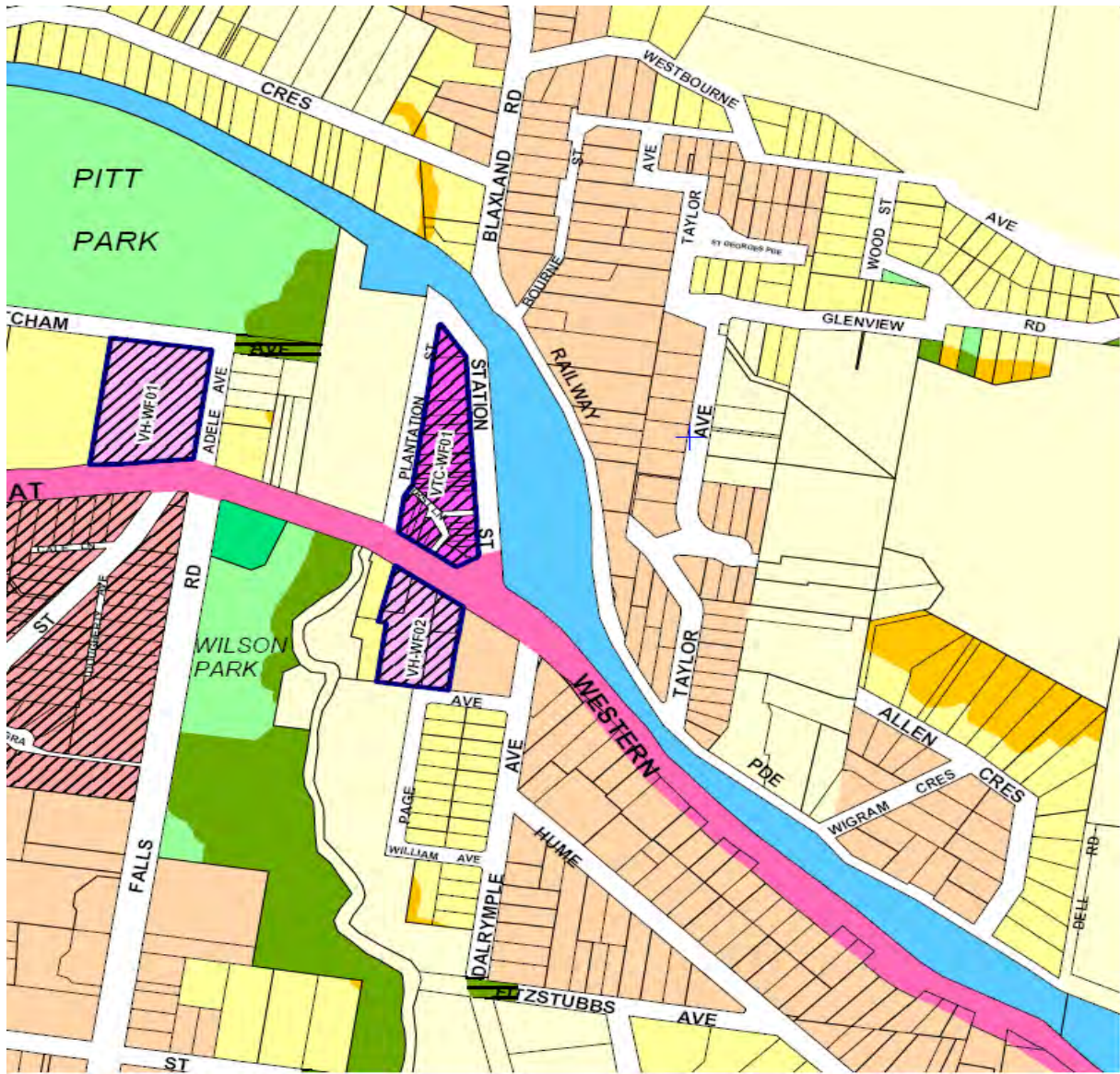


Figure 7 Blue Mountains LEP 2005 zoning map

Source: BMCC

4.5 NSW Government policies and strategies

In addition to statutory requirements, several NSW Government policies and strategies are relevant to the Proposal.

In 2007 the NSW Department of Planning released the *draft North West Subregional Strategy* (Department of Planning, 2007). The draft Strategy supported the implementation of the broader *Draft Metropolitan Plan for Sydney 2036* (Department of Planning, 2010), and applied the objectives of the Metropolitan Plan down to a local level.

Under the draft Strategy, Wentworth Falls is identified as a village centre, which is described as a strip of shops in a residential area. The Blue Mountains LGA is forecast to provide an additional 7,000 jobs and 7,000 dwellings by 2036 under the draft Strategy. Additional growth and activity would lead to increases in public transport patronage in the region, including at Wentworth Falls Station.

The NSW Government has recently released its *A Plan for Growing Sydney* (Department of Planning and Environment, 2014) which now supersedes the Metropolitan Plan. The Blue Mountains is situated within the West Subregion and soon to follow will be a new delivery plan for the West Subregion which is likely to have revised housing and employment targets including for the Blue Mountains, although with similar increasing growth trends over the coming decades.

The proposed Wentworth Falls Station Easy Access Upgrade 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 the *Long Term Transport Master Plan* (TfNSW, 2012a). The plan provides a clear direction for transport over the next 20 years, while building on current commitments. The *Long Term Transport Master Plan* complements and builds on the visions and goals established in *NSW 2021* and this Proposal would support growth and improvements in the safe and efficient management of transport in the Sydney region.

The *Disability Action Plan 2012-17* (TfNSW, 2012c) 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 Disability Action 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 in consideration of the objectives outlined in this Plan.

Finally, Blue Mountains City Council has prepared a draft *Blue Mountains Bike Plan 2020* which recognises the increasing popularity of cycling in the Blue Mountains region and sets two primary goals which are to double the number of bicycle trips made in the Blue Mountains and to reduce the number of bicycle crashes and casualties (BMCC, 2010). The Bike Plan identifies the need to enhance the bicycle network which also includes improving facilities at train stations. The Proposal would see the addition of a bicycle racks with capacity for six bicycles installed on both sides of the station (total capacity for 12 bicycles). The existing bicycle lockers on the eastern side of the station would be retained.

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 Wentworth Falls Station Easy Access 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

As part of the development of concept design options, TfNSW consulted with Sydney Trains and Blue Mountains City Council. Sydney Trains were involved in the TfNSW workshops to identify key issues and decide on a preferred option.

Meetings were held with Blue Mountains City Council in 2013 and 2014 and the following key issues were raised by the Council for consideration during the development of the preferred option:

- the design of the Proposal must consider heritage values of the station and of the adjacent Station Street Precinct Conservation Area
- trees on Station Street should be retained for their visual and aesthetic value
- Coronation Park should not be accessed during construction or adversely impacted by the Proposal
- supportive of bicycle facilities to be installed on both sides of the station
- supportive of no net loss of spaces for commuter parking
- noted importance of existing taxi rank and that existing bus stop arrangements were adequate.

The preferred option incorporates many of these considerations, including new bicycle racks on both sides of the station and a refined location for the lift to allow for the retention of trees on Station Street.

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 4 provides details of consultation requirements under the Infrastructure SEPP.

Table 4 Infrastructure SEPP consultation requirements

Clause 13 Consultation with Councils – development with impacts on council related infrastructure and services	Relevance to the Proposal
<p>Consultation is required where the Proposal would result in:</p> <ul style="list-style-type: none"> • 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. 	<p>The Proposal would take place on land in the rail corridor with assets like the car park managed by Blue Mountains City Council. The Proposal would also require drainage works to connect to Council’s stormwater system.</p> <p>Consultation with Blue Mountains City Council has been undertaken as part of the options development and would continue through the next stages of the Proposal.</p>
Clause 14 Consultation with Councils – development with impacts on local heritage	Relevance to the Proposal
<p>Where railway station works:</p> <ul style="list-style-type: none"> • substantially impact on local heritage item (if not also a State heritage item) • substantially impact on a heritage conservation area. 	<p>Wentworth Falls Station is listed on the heritage schedule of the Blue Mountains LEP. The Proposal is also located adjacent to the Station Street Precinct Conservation Area and War Memorial in Coronation Park. Consultation with Blue Mountains City Council has been undertaken regarding the proposed works and would continue through the next stages of the Proposal.</p>
Clause 15 Consultation with Councils – development with impacts on flood liable land	Relevance to the Proposal
<p>Where railway station works:</p> <ul style="list-style-type: none"> • impact on land that is susceptible to flooding – reference would be made to ‘Floodplain Development Manual: the management of flood liable land’. 	<p>The Proposal is not located on land that has been identified as being flood liable land.</p> <p>Consultation with Blue Mountains City Council is not required under this clause.</p>

Clause 16 Consultation with public authorities other than Councils	Relevance to the Proposal
<p>Where development is undertaken adjacent to land reserved under the <i>National Parks and Wildlife Act 1974</i>, OEH and other agencies specified by the Infrastructure SEPP where relevant.</p> <p>Although not a specific Infrastructure SEPP requirement, other agencies TfNSW may consult with could include:</p> <ul style="list-style-type: none"> • RMS • Sydney Trains • OEH. 	<p>Consultation with other public authorities as specified in this clause is not required. However consultation with Sydney Trains would be ongoing through the next stages of the Proposal. RMS may be consulted as part of the development of the Construction Traffic Management plan for the Proposal.</p>

5.3 Consultation strategy

TfNSW’s overall approach to stakeholder engagement is built on a philosophy of ‘no surprises’. Ensuring the community and key stakeholders are fully informed and given the opportunity to provide feedback during the planning process is fundamental to the success of a project.

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 Public display

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

- public display of the REF at various locations
- distribution of a project update up to a radius of approximately 500 metres to the station to local community and rail commuters, where appropriate, outlining the Proposal and inviting feedback on the REF
- advertisement of REF public display in local newspapers with a link to the 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 approximately six weeks.

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

1. Blue Mountains City Council
2. Wentworth Falls Library
3. Transport for NSW Information Centre, Ground Floor, 388 George Street, Sydney.

The REF would also be available on the TfNSW website. Information on the Proposal would be available through the Project Infoline (1800 684 490) or by email.

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.

5.5 Aboriginal community involvement

An Aboriginal Heritage Inventory Management System (AHIMS) search was undertaken for the area covered by the Proposal (the area around Wentworth Falls Station) plus a 50 metre radius on 24 September 2014. No Aboriginal sites are recorded in or near the location, and no Aboriginal places have been declared in or near the location.

The extensive landscape modification that has occurred across the study area suggests that intact evidence of Aboriginal land use is unlikely to occur within the study area boundaries. 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.

5.6 Ongoing consultation

At the conclusion of the public display period for this REF, TfNSW would acknowledge receipt of feedback from each respective respondent. The issues raised by the respondents would be considered by TfNSW before determining whether to proceed with the Proposal (refer Figure 1, page 14).

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, Council and other key stakeholders informed of the process, identify any further issues as they arise, and develop additional mitigation measures to minimise the impacts of the Proposal. The interaction with the community would be undertaken in accordance with a Community Liaison Plan by the Contractor to be developed prior to the commencement of construction.

6 Environmental impact assessment

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

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 2.

6.1 Traffic and transport

A Traffic, Transport and Access Impact Assessment has been undertaken by GTA Consultants for the Proposal (GTA, 2014). The assessment included desktop analysis and a site inspection. Detailed traffic counts or modelling were not considered necessary 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

Wentworth Falls Station

Wentworth Falls Station is located between Bullaburra and Leura Railway Stations on the Sydney Trains Blue Mountains Line. It is the 172nd busiest station within the Sydney Trains network, with approximately 1,440 passengers recorded entering and exiting the station during an average weekday in 2012. Trains services to Sydney in the morning peak period depart every 10-20 minutes and generally once an hour in the off peak. Train services to Katoomba from the city arrive every 15 minutes during the afternoon peak and every 30-60 minutes during other times.

Wentworth Falls Station is busier during the morning and afternoon peak periods and reflects its use as both a commuter station to and from Sydney CBD and key employment zones together with non-peak use as a local station.

Road network and traffic

Wentworth Falls Station is accessible via Station Street on the western side and Railway Parade on the eastern side with the Great Western Highway to the south acting as the main road corridor providing access to Wentworth Falls.

Station Street is a two-way local road providing the primary access to Wentworth Falls Station and town centre. It provides the only railway crossing in the vicinity of the station, linking the residential areas north and east of the station with the town centre, commuter car parking and the Great Western Highway. Station Street has a posted speed limit of 50 km/hr, with short-term parallel parking along both sides.

Railway Parade is a north-south link travelling adjacent to and east of the railway line. It intersects with Station Street, immediately north of the railway crossing and links all areas on the eastern side including the eastern commuter car park and residential areas. Railway Parade has a posted speed limit of 50 km/hr and a three tonne gross load limit.

The Great Western Highway is a two-way State Road (HW 5) which extends between the Sydney CBD and Bathurst. It is aligned in an east-west direction adjacent to Wentworth Falls Railway Station. The Great Western Highway has a posted speed limit of 60 km/hr through Wentworth Falls and intersects Station Street, providing access to the Wentworth Falls town centre. A 40 km/hr School Zone for the Blue Mountains Grammar School is provided for west of Wentworth Falls.

GTA Consultants completed a sample of traffic movement counts (am/pm on weekday) to understand traffic through the area and Wentworth Falls Station traffic demand. Overall, the station generates up to 90 vehicle movements during a typical morning peak hour. This equates to approximately 10 percent of the Station Street traffic during this period.

Commuter car parking

Three commuter car parks are provided at Wentworth Falls Station; one on the eastern side of the railway line accessed via Railway Parade and two on the western side with access via Station Street. The commuter car park supply comprises approximately 127 parking spaces as summarised below:

- eastern car park: 40 long stay spaces
- north western car park: 34 long stay (including two accessible) and six short stay spaces
- south western car park: 40 long stay and seven short stay spaces.

In addition there is unrestricted parking (38 spaces) also available on the western side of Plantation Street, west of the town centre. Parking along Station Street is generally short-stay, with a combination of angled and parallel spaces. On this basis, there is an overall long stay parking supply of approximately 152 spaces, which may be used by commuters at Wentworth Falls Station.

Onsite observations confirmed that there is strong parking demand in the vicinity of the station, particularly in the north western car park. The commuter parking demand is estimated to be in the order of 100-120 vehicles, with the majority of commuters parking in the available commuter car parks and a small portion parking along Plantation Street.

Taxi and Kiss and Ride facilities

No formal Kiss and Ride facilities are provided in the immediate vicinity of Wentworth Falls Station. Onsite surveys confirmed that the majority of Kiss and Ride occurs in Station Street, particularly at the bus stop and adjacent to the taxi rank close to the station access. Minor activity was also observed internally in the north western car park, particularly in the timed spaces, and at the southern end of the eastern car park. Overall, at least 20 vehicles per hour use Station Street as an informal Kiss and Ride area and approximately 10 vehicles per hour in the car parks.

A taxi rank, with capacity for two taxis, is located on the eastern side of Station Street at the western station access. Frequent taxi activity was observed, with generally one passenger either dropped off or picked up for every train arrival at Wentworth Falls Station.

Bus operations

Bus stops are provided within a short walking distance from Wentworth Falls Station, including on Station Street (to the west) and the Great Western Highway to the south. The buses are operated by Blue Mountains Bus Company and provide services linking Katoomba with Wentworth Falls north (route 685) along Station Street and Katoomba with Springwood (route 690K) along the Great Western Highway.

In addition, school set down/pick up occurs at both stops, with routes 525 and 528 observed to use the Station Street bus stop, while the majority of others use the Great Western Highway bus stops.

Pedestrian access

Access to the station platform is provided from the east and west via stairs and the footbridge. The footbridge also connects residential properties along Railway Parade on the eastern side of the station with the Wentworth Falls village on the western side, and is generally well utilised across the day.

The key pedestrian desire lines for the station are accommodated by established footpaths. These extend along both sides of Station Street. The majority of pedestrian activity at the station is associated with commuter car parking, set down and pick up and school children walking between the station and Blue Mountains Grammar School via the Great Western Highway. Frost Lane, in combination with the pedestrian crossing, also serves pedestrian activity through the town centre and between Blue Mountains Grammar School and the station.

GTA Consultants completed pedestrian demand surveys in mid November 2014 during the weekday AM (6am-9pm) and PM (4pm-6pm) peak periods. Up to 265 people access Wentworth Falls Station during the AM peak hour, with a 60:40 split between those exiting and those entering. Large groups of school children were a significant contributor to the total pedestrian volumes, particularly those leaving the station. The PM peak pedestrian activity was approximately 50 percent of that observed during the AM peak period. This is likely to be attributed to the high volume of school children using the station during the AM peak period, with their corresponding PM activity generally occurring prior to the typical peak period. It is also worth noting that up to 15 percent of people were not necessarily accessing the station itself, rather utilising the pedestrian footbridge for a variety of other reasons.

Cycleways and bicycle access

The Great Western Highway is recognised by Blue Mountains City Council as a regional on-road cycling route, with a shared path also provided. The existing shared path facility runs along the northern side of the Great Western Highway, west of Station Street and along the southern side of the Great Western Highway, east of Station Street, with cyclists required to cross at the Station Street traffic signals.

Existing bicycle facilities include two bicycle lockers provided within the eastern car park. Informal bicycle parking also occurs on Station Street at the entry to the station. At the time of the site inspections, both bicycle lockers were occupied.

6.1.2 Potential impacts

(a) Construction phase

Construction routes

The surrounding road network is well established and would provide direct access to and from the site. Figure 8 has been prepared by GTA Consultants to illustrate the likely access routes to each side of the Proposal. School zones have been highlighted and it is recommended that, where practicable, construction vehicles avoid passing these locations when active. The Great Western Highway school zone would likely prove difficult to avoid and other mitigation measures, including thorough driver induction and traffic control, would be required to maximise safety.

Sinclair Crescent is the desirable approach and departure route via its intersection with the Great Western Highway, noting that the Railway Parade/Station Street intersection arrangement would not typically be suitable for heavy vehicles. The Sinclair Crescent route mostly avoids construction vehicles travelling through the town centre. However, the low level overhead trees need to be considered during construction and particularly once the size of construction vehicles is known. Vehicle layover opportunities are also available in Sinclair Crescent and are frequently used by other heavy vehicles.

The rail corridor land located at the southern end of the station (on the eastern side) would be used as the primary site compound, with direct access via the existing access along Railway Parade. The layout for the site compound should ensure access can be achieved for the larger construction vehicles and plant.

The configuration of the existing car park necessitates that construction vehicles travel through the car park to access the temporary construction compound area. Appropriate measures to ensure the safety of all users are required noting that the car park generally has increased levels of activity during the morning and afternoon peak periods.

It is anticipated that construction vehicles would also make use of the eastern kerbside lane along Station Street to cater for temporary works on the western side. Should an on-street works zone be required at any stage, prior approval would be required from Blue Mountains City Council.

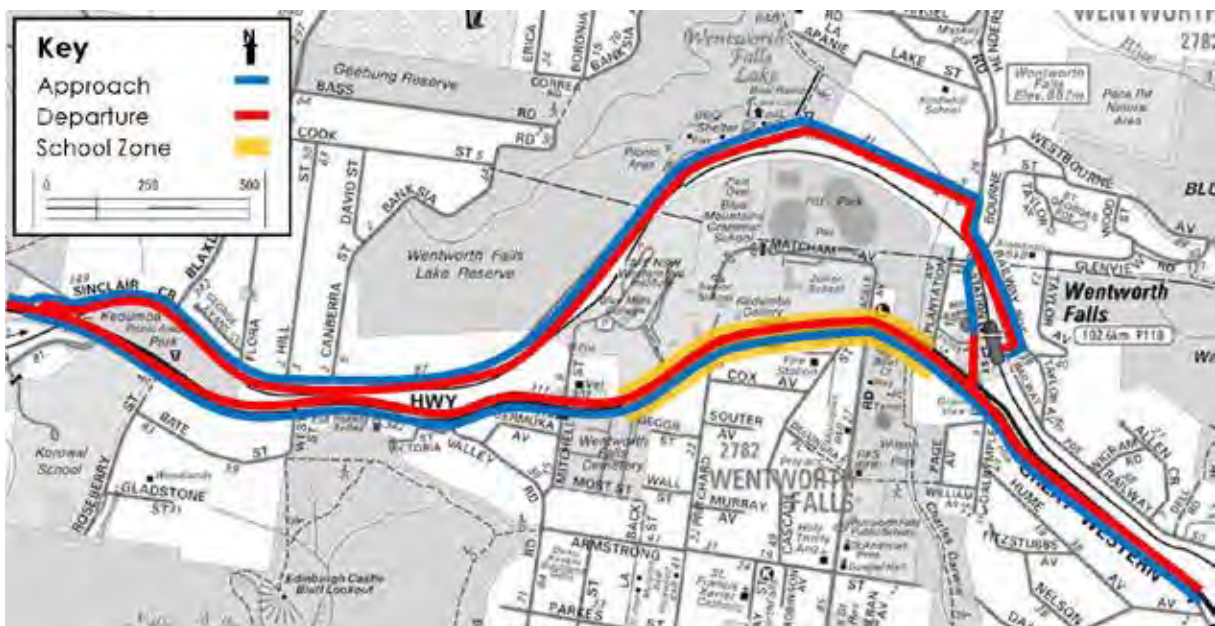


Figure 8 Potential construction vehicle route (GTA, 2014)

Traffic impacts

Traffic generated by the construction would include construction worker light vehicles (including utility vans), as well as heavy vehicles for periodic delivery and removal of materials, plant and equipment. Vehicle types and sizes would vary depending on the required use, but include medium and large rigid vehicles and articulated vehicles for import of bulk materials or spoil removal, as well as concrete trucks. The amount of fill material or spoil would be minor as the site is for the most part level and paved.

The traffic generated by construction at the site is anticipated to be manageable, with a negligible impact on existing traffic conditions. The interaction between the Proposal work site and Station Street, Railway Parade and Great Western Highway traffic and pedestrians would be managed by qualified personnel to maximise safety for all users at all times.

Negligible impact on pedestrian and vehicle access to surrounding properties is expected during construction.

Parking impacts

It is anticipated that construction activities may have a temporary impact on provision of the commuter parking, with a degree of parking loss in the eastern and western commuter car parks.

Parking is likely to be most affected during activities where cranes are required to enter the car park to install new structures which would likely be over a weekend during a possession (up to two days at a time). Other works in the car park areas, such as establishing Kiss and Ride areas and accessible parking spaces, and the extension of the Railway Parade car park would also result in a temporary loss of a small number of parking spaces however works would be staged so that the number of parking spaces impacted would be minimised, (for example the permanent offset spaces in the eastern car park extension area would be established before works commence in the western car park, if possible).

Given that parking is generally in high demand in the local area, construction workers would be encouraged to car pool and make use of the available public transport for travel to and from the site.

Pedestrian access and other impacts

During the station interchange works, pedestrian access would at times be temporarily restricted along the footpaths of Station Street and Railway Parade. Construction works in the vicinity of any pedestrian and cyclist desire lines would be managed and controlled at all times to ensure that there is no impact to public safety.

Works to the footbridge (including bridge shortening and works to stairs on the western side, or works to install the new lifts, lit landings or canopies to connect to the footbridge) may require restricted access to the public. However, temporary stairs/bridge structures would be established to maintain the same level of service and access to the platforms, during such periods where access to the footbridge would be affected. Diversion signage would be in place to direct pedestrian traffic to the alternate rail crossing.

(b) Operational phase

The Proposal has been designed with the key focus on improving accessibility and has taken into account future patronage projections over the next 25 years, which is for a 21 percent increase in customers. It is not considered that the Proposal would have significant impacts on bus or rail operations and would likely bring about positive impacts in terms of contributing towards making railway transport more accessible to the community.

Traffic generation and parking demand

Given that the Proposal design provides a higher level of station accessibility and usability at Wentworth Falls Station, the improved commuter experience and upgraded facilities are likely to attract greater use. As a result, traffic activity is anticipated to marginally increase, with a negligible impact on the surrounding road network.

Two accessible parking spaces would be provided in the eastern car park near the new lift. The accessible spaces would replace three existing commuter parking spaces. Based on the indicative area available at the southern end of the eastern car park, there appears to be adequate additional capacity to offset the loss of the existing parking space from the western side. Any such layout would also include a turnaround area for ease of access and safety of all users.

The existing accessible spaces in the north western car park would be upgraded, with no traffic and parking impacts expected. In addition, the proposed Kiss and Ride in the north western car park would replace three existing commuter parking spaces (with two Kiss and Ride spaces) but parking losses on the western side would be offset by the addition of new parking spaces in the eastern car park. Based on this assessment, there would be no net loss of car parking as a result of the Proposal.

Road safety

The Proposal includes upgrades and improvements to the existing pedestrian access to Wentworth Falls Station, with improved interaction between vehicles and pedestrians, particularly in the north western car park. During detailed design of the eastern car park layout improvements, consideration would be undertaken for pedestrian safety. This is particularly relevant where the pedestrian footpath connects the car park with Railway Parade (to the south). A new dedicated pedestrian footpath would improve the interaction of pedestrians and vehicles in this location.

Station facilities

The Proposal includes provision of formalised Kiss and Ride facilities, including capacity for one vehicle in the eastern car park and two vehicles in the western car park. The Kiss and Ride facilities would be located at the station entries in both car parks and would include sheltered waiting areas which may be integrated in to the new station entrance canopies.

The provision for formal Kiss and Ride facilities on each side of the station would likely result in an increase in associated use. This is anticipated to relate to the change in station facilities and incentive to make use of upgraded, modern station facilities.

Additional parking for six bicycles would be provided on both sides of the station to accommodate future demand.

Pedestrians

The proposed pedestrian facilities including the new lifts, upgraded stairs and canopies would present obvious pedestrian benefits, particularly in improving the user experience by providing new and improved facilities.

Provision of lifts at the station access points and platforms, with accessible paths of travel would accommodate persons with a disability accessing the station platforms (not currently provided). The lifts would also provide improved access for the elderly and people with prams or luggage. The upgrade of the stairs and a new pedestrian connection at the north-western car park would also improve accessibility and safety for pedestrians, while the canopies would provide better all-weather protection and minimise slip hazards on stairs.

In addition, the provision of a direct pedestrian footpath linking the station with Railway Parade (to the north) would accommodate a primary pedestrian desire line through and within the eastern car park.

Based on the above, the proposed pedestrian improvements would result in coherent, direct and safe connections and the overall user efficiency and connectivity for the station would be enhanced.

To understand whether there is adequate capacity in the station surrounds to cater for future pedestrian demands while ensuring the safety and convenience for pedestrians, GTA Consultants used Fruin Theory as reproduced in the '*Transit Capacity and Quality of Service Manual – 2nd Edition – Part 7* (Fruin, 1987) which involves evaluating the pedestrian capacity and level of service (LOS) of an area.

To assess pedestrian LOS, GTA Consultants chose to use the criteria of 'Pedestrian Flow Rate'. Pedestrian flow rate, measured in pedestrians per metre per minute, is the number of pedestrians that pass a point during a specific period of time. The assessment indicated that based on existing pedestrian volumes, the existing footpaths would continue to operate at a good level of service (LOS A) on account of existing and forecast patronage and improved footpath capacity within the precinct. Overall, the access footpaths would operate well with no anticipated queuing or delay at any time or location.

Property access

The operation of the Proposal is not expected to have any impact on existing access to properties in the vicinity of the site.

6.1.3 Mitigation measures

A Construction Traffic Management Plan (CTMP) would be prepared by the Contractor in consultation with TfNSW, and provided to Blue Mountains City Council and the RMS. The CTMP would be the primary management tool to manage potential traffic impacts associated with construction. The CTMP, at a minimum, would include a description of:

- procedures for preparing and implementing TCPs
- final construction traffic approach and departure routes
- locations of access to and from the local road network and contractor parking
- details of construction signage, traffic controllers (in particular for reversing out of the site) and other community notification
- measures to limit temporary parking losses (e.g. staged construction in car parks)
- measures to maintain customer access to and from the station at all times (e.g. through temporary stairs and bridge structures)
- measures to maintain private property access unless otherwise agreed.

The size and layout of site compound would also be reviewed and, if required and where practicable, adjusted to enable heavy vehicles to turn within the compound area and to depart the site in a forward movement.

Refer to Table 11 for a list of proposed mitigation measures.

6.2 Urban design, landscape and visual amenity

A Visual Impact Assessment was undertaken by Green Bean Design for the Proposal (GBD, 2014). The findings of this assessment are summarised in this section. The assessment included desktop analysis, site inspection and creation of photomontages to provide an indication of what the Proposal may look like once complete.

6.2.1 Existing environment

The general urban landscape character surrounding Wentworth Falls Station is typical of both residential suburban settings and that of a main line rail and highway corridor adjoining a local commercial centre.

Residential areas to the east of Wentworth Falls Station extending along Railway Parade are defined by detached dwellings on larger allotments with front and rear gardens. Dwellings are generally set back from street frontages with tree planting along nature strips extending into residential properties.

By contrast, the general urban landscape character west of the rail corridor is defined by the Wentworth Falls local centre with a range of shops and services extending along Station Street. The Station Street streetscape creates a village atmosphere with constant low level vehicular and pedestrian activity throughout the local centre area. There is a visual diversity of colour, line and form associated with buildings and signage.

The existing station comprises a number of key visual elements:

- north and south bound rail lines, electrical conductors and steel gantries
- two platforms located on a single island
- footbridge and step access with railings
- station buildings, ticket office and passenger shelters/amenities
- station car park (east and west of the station)
- utility poles and wires
- bus stops and taxi rank (west of rail line)
- various security and safety fencing
- directional and informative signage.

The station precinct can be accessed from the west by pedestrians at the Station Street entry or through the station east car park. Steps extend up from the Station Street entry, and the east car park, to a footbridge which spans the rail corridor. The station buildings and ticket office are located on the island platform, which is accessed by a central double flight of steps from the footbridge. Bus stops and a taxi rank are also located on the Station Street side of the station.

Off street car park facilities are provided to the east and west of the station and rail corridor. The station precinct and adjoining road corridors contain a mix of mature indigenous and non-indigenous tree planting which provides some degree of screening within proximity to, and beyond the station precinct. Significant areas of tree planting continue along and beyond local residential street nature strips and throughout residential garden areas.

Coronation Park is located to the west of the station precinct and is bounded by the station pedestrian entry to the north and the car park to the south. The park is well maintained and contains an amenities building, seats and tables and the heritage listed Wentworth Falls War Memorial. The park layout creates an intimate space and provides opportunity for visual connectivity and continuity between Station Street and the station precinct.

Temporary receivers include pedestrians, train customers and motorists. Permanent receivers include:

- residential receivers to the east on Railway Parade and south on the Great Western Highway
- commercial properties west of the Proposal on Station Street.

6.2.2 Potential impacts

(a) Construction phase

While construction activities would tend to be more visible than the operational stage of the Proposal, the construction activities would be temporary and transient in nature. Views toward construction activities would be partially restricted by existing tree cover surrounding the station precinct. New elements typically introduced into the visual environment include:

- temporary fencing and hoardings
- road barriers and signage
- cranes and other construction plant
- scaffolding
- pedestrian fencing
- temporary site office and amenities.

Some construction activities, such as night works would require lighting installation for operational, safety and security purposes. Lighting installations would be placed to avoid light spill to adjoining road corridors and residential areas.

(b) Operational phase

Urban landscape effects

Visual Absorption Capability (VAC) is a classification system used to describe the relative ability of the urban landscape to accept modifications and alterations without the loss of character or deterioration of visual amenity. VAC relates to the physical characteristics of the urban landscape that are often inherent and quite static in the long term. In essence the VAC indicates the ability of an urban landscape setting to 'hide' development.

The VAC of an urban landscape is largely determined by inherent physical factors which include:

- the degree of visual penetration (view distance without obstruction) through surrounding buildings and tree cover
- the complexity of the urban landscape through bulk, scale, form and line.

Urban landscapes with a low visual penetration will have higher visual absorption capability values. Complex urban landscapes which include a mix of scale, form and line (together with some degree of vegetative screening) will also have high visual absorption capability values. The VAC of the urban landscape surrounding the Wentworth Falls Station and the area of proposed works exhibits a relatively high VAC.

Digital photographs were taken during the course of the fieldwork from three different locations to illustrate existing views in the vicinity and combined into a panorama (refer to Figure 9 for photo locations). The panoramic photographs were then annotated to show indicative elements of the Proposal, where relevant. The photomontages for the Proposal are included as Figure 10, Figure 11 and Figure 12.

The Visual Impact Assessment concluded that the Proposal and its associated infrastructure would have an overall low impact upon the urban landscape character of the station precinct and surrounding environment. The bulk and scale of constructed elements would be partially visually contained by existing mature tree planting within and beyond the station precinct as well as existing development within the Wentworth Falls local commercial centre. The Proposal design incorporates various architectural and engineered outcomes that visually minimise bulk and scale of constructed elements through modulation and articulation of structures.

Building form and height also responds to both existing constructed elements within and adjacent to the station precinct including existing station buildings. Mature tree planting within the west portion of the station precinct provides a backdrop to views of the Proposal which will be visible below tree canopies. The Proposal is unlikely to form any significant skyline view from surrounding receiver locations.

The assessment also concluded that the Proposal would result in a seamless integration to the existing station precinct and, as an upgrade to existing transport facilities, retain the station's existing function and purpose in its relation to surrounding land use. The Proposal integrates a high level of urban design and presents a rational approach to pedestrian and vehicular movement within the station precinct and connectivity to adjoining areas.

The final design of the new lifts and canopies would be undertaken so they are sympathetic to the original design of the existing heritage buildings through its form, scale and materiality. The materials and colour palette for new built elements would be sympathetic to the heritage context of the station and be visually recessive. The use of unobtrusive, modern, light materials such as glass panelling and slim frame elements would reduce the bulk of the Proposal, reducing the visual impact of additional items.



Source: Google Earth Pro 2014 Screen Knight View

Legend



Photomontage location

Photomontage locations



Wentworth Falls Station Easy Access Upgrade

Figure 9 Photomontage locations (GBD, 2014)



Photomontage PM 1 - Existing view south to south west toward Wentworth Falls Station from the east station car park



Photomontage PM 1 - View south to south west toward Wentworth Falls Station Proposal from the east station car park

Figure 10 View from Railway Parade south to south west towards station footbridge (PM1), (GBD, 2014)



Photomontage PM 2 - Existing view north to north east toward Wentworth Falls Station from Coronation Park



Photomontage PM 2 - View north to north east toward Wentworth Falls Station Proposal from Coronation Park

Figure 11 View from Coronation Park looking north east towards station (PM2), (GBD, 2014)



Photomontage PM 3 - Existing view south to south east toward Wentworth Falls Station from Station Street footpath



Photomontage PM 3 - View south to south east toward Wentworth Falls Station Proposal from Station Street footpath

Figure 12 View from Station Street looking south to south east towards station (PM3), (GBD, 2014)

Viewshed and potential impacts to receivers

For the purposes of the Visual Impact Assessment the viewshed is defined as the area of land surrounding and beyond the Proposal area which could be potentially affected by the Proposal. The viewshed for the Proposal is shown in Figure 13.

The visual significance of the Proposal on surrounding view locations would result primarily from a combination of the potential visibility of the Proposal infrastructure and the characteristics of the landscape between, and surrounding, the view locations and the Proposal. The potential degree of visibility and resultant visual significance is then partly determined by a combination of factors including:

- distance between view location and various elements within the Proposal
- duration of view from receiver locations toward various constructed elements
- predicted impact of the Proposal on existing visual amenity
- nature of predicted visual impacts
- visual sensitivity of locations from which views toward the Proposal exist.

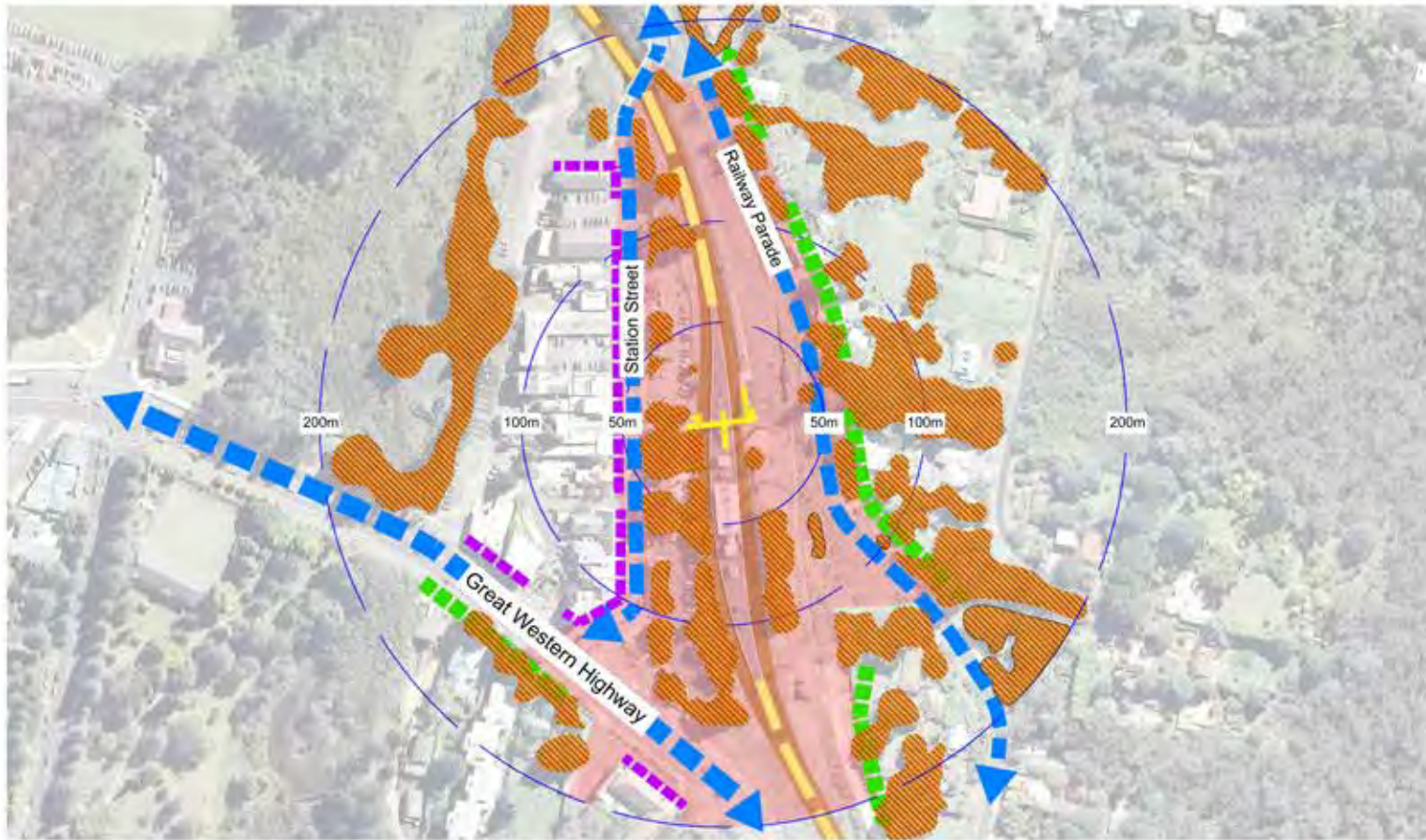
Green Bean Design has undertaken an assessment of the visual impact significance from 15 different receiver locations with regard to above criteria to determine an overall level of significance at each location. The level of visual significance is classified as either high, moderate, low or negligible. The results of the assessment are displayed in the Visual Significance Matrix reproduced at Table 5. The location of the receivers included in the assessment is shown in Figure 14.

All of the receiver locations, including residential dwellings, road corridors and public spaces beyond the station precinct have been determined to have an overall negligible to low visual significance with regard to the Proposal and its associated infrastructure. The negligible to low visual significance largely results from the screening effect of existing tree planting alongside the rail corridor and within surrounding areas which screens and filters views toward the Proposal.

Other impacts

The Proposal would include the installation of lighting, including in the car park for safety and security purposes. Such lighting would be designed and placed in accordance with relevant Australian Standards to minimise obtrusive effects to surrounding receivers.

The location and size of certain elements of the Proposal, such as the new station entrance and footbridge would result in shadows but any shadowing would be contained within the station precinct boundary away from road corridors and residential areas.



Source: Google Earth Pro 2014 Street View; Kenz

Legend

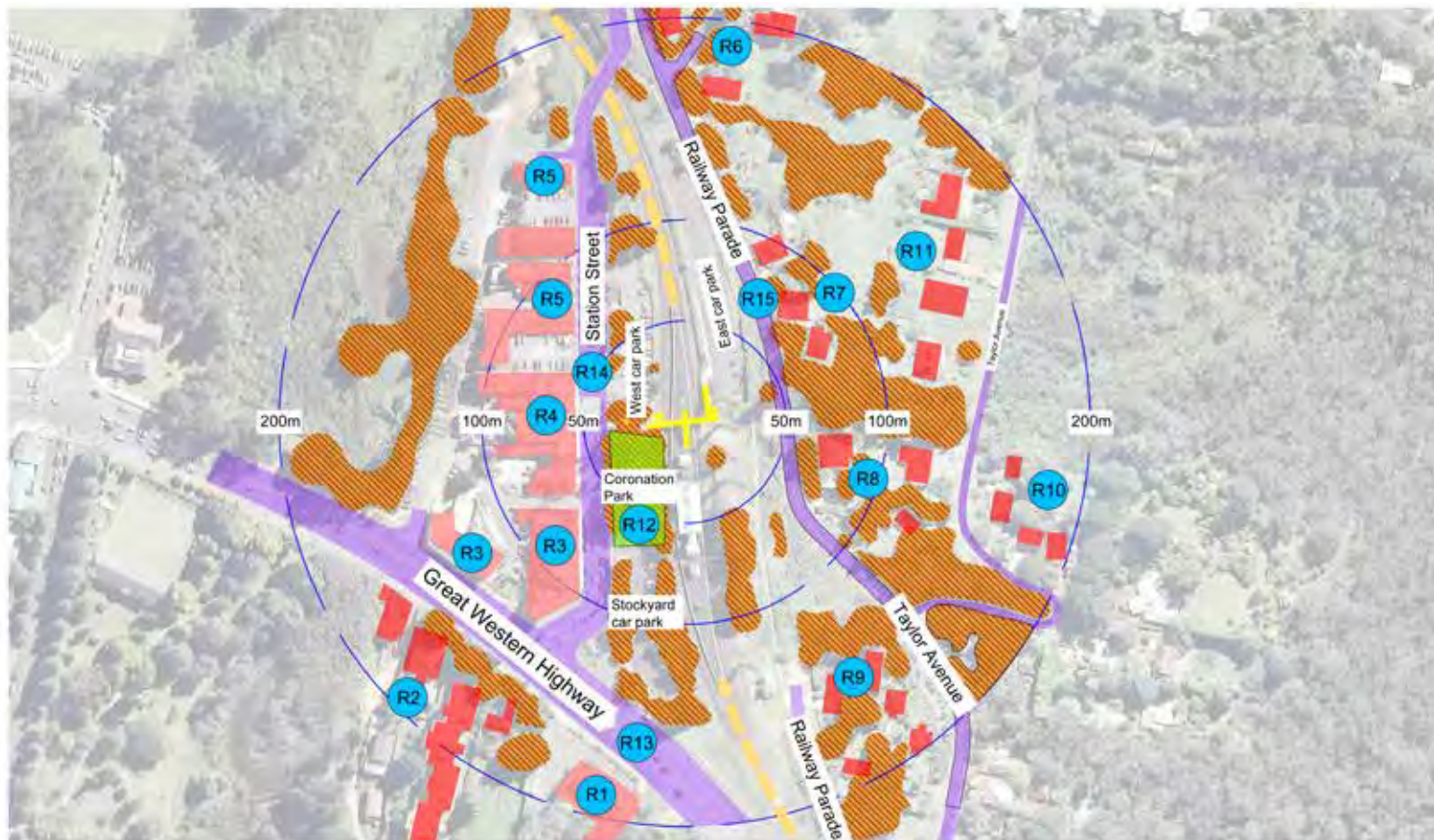
- Wentworth Falls Station footprint
- Rail corridor/view
- Building line blocking view beyond
- Primary view shed
- Road corridor view
- Residential interface
- Viewshed



Wentworth Falls Station Easy Access Upgrade



Figure 13 Proposal viewshed (GBD, 2014)



Source: Google Earth, Proj 2014, Sincere Knight Maps

Legend

- Wentworth Falls Station footprint
- Tree cover with screening potential
- Rail corridor
- Residential dwelling
- Commercial or workplace
- Road corridor
- Coronation Park

Receiver locations

Transport for NSW

 TRANSPORT ACCESS PROGRAM

GREEN BEAN DESIGN

 landscape architects

Wentworth Falls Station Easy Access Upgrade

Figure 14 Receiver locations for Visual Impact Assessment (GBD, 2014)

Table 5 Visual Significance Matrix (GBD, 2014)

Receiver viewpoint (Figure 14)	View direction and distance to Proposal	Description	Distance	Duration	Predicted impacts	Nature of impacts	Magnitude	Sensitivity	Significance
R1 Commercial - (Grand View Hotel)	North east - around 200 metres	Views toward the Wentworth Falls Station and the proposed works from the Grand View Hotel are partially blocked by tree planting north of the Great Western Highway and surrounding the car park.	Long	Long term	Neutral	Irreversible	Low	High	Low
R2 Residential dwellings	North east - around 200 metres	Views towards Wentworth Falls Station and the proposed works from residential dwellings to the south of the Great Western Highway are screened by adjoining tree planting and commercial development/tree planting north of the Great Western Highway.	Long	Long term	Neutral	Irreversible	Negligible	High	Negligible
R3 Commercial property (shops)	North east - around 100 metres	Views toward Wentworth Falls Station and proposed works from shops and cafes to the west side of Station Street are largely screened by tree planting within and surrounding Coronation Park.	Medium	Long term	Beneficial	Irreversible	Low	Medium	Negligible

Receiver viewpoint (Figure 14)	View direction and distance to Proposal	Description	Distance	Duration	Predicted impacts	Nature of impacts	Magnitude	Sensitivity	Significance
R4 Commercial property (shops)	South - between 50 and 100 metres	Views towards Wentworth Falls Station and proposed works from shops and cafes to the west side of Station Street are largely screened by tree planting within and surrounding Coronation Park and tree planting to the existing pedestrian entry.	Medium	Long term	Neutral	Irreversible	Low	High	Low
R5 Commercial property (shops)	South east - between 50 and 100 metres	Views towards Wentworth Falls Station and proposed works from shops and cafes to the west side of Station Street are largely screened by tree planting to the existing station entry and alongside the boundary to the station's western car park.	Medium	Long term	Neutral	Irreversible	Low	High	Low
R6 Residential dwellings	South - between 100 and 200 metres	Views towards Wentworth Falls Station and the proposed works are screened by tree planting surrounding residential dwellings and alongside the Railway Parade road corridor.	Long	Long term	Neutral	Irreversible	Negligible	High	Negligible
R7 Residential dwellings	South west - between 50 and 100 metres	Views towards Wentworth Falls Station and proposed works are partially screened by an embankment and tree/shrub planting along the eastern boundary of the car park and rail corridor.	Medium	Long term	Neutral	Irreversible	Low	High	Low

Receiver viewpoint (Figure 14)	View direction and distance to Proposal	Description	Distance	Duration	Predicted impacts	Nature of impacts	Magnitude	Sensitivity	Significance
R8 Residential dwellings	West - between 50 and 150 metres	Views towards Wentworth Falls Station and proposed works are screened by mature tree cover surrounding residential dwellings and an embankment rising to the west of the road corridor to rail corridor boundary.	Medium	Long term	Neutral	Irreversible	Negligible	High	Negligible
R9 Residential dwellings	North west - between 100 and 200 metres	Views towards Wentworth Falls Station and proposed works from residential dwellings between Railway Parade and Taylor Avenue are largely screened by deciduous and non-deciduous tree planting surrounding the residential dwellings and within the rail corridor.	Long	Long term	Neutral	Irreversible	Negligible	High	Negligible
R10 Residential dwellings	North - between 100 and 200 metres	Views towards Wentworth Falls Station and the proposed works from residential dwellings east of Taylor Avenue are screened by mature tree cover and rising landform to the west of the residential dwellings.	Long	Long term	Neutral	Irreversible	Negligible	High	Negligible
R11 Residential dwellings	South west- between 100 and 200 metres	Views towards Wentworth Falls Station and the proposed works from residential dwellings west of Taylor Avenue are screened by mature tree cover and rising landform to the west of the residential dwellings.	Long	Long term	Neutral	Irreversible	Negligible	High	Negligible

Receiver viewpoint (Figure 14)	View direction and distance to Proposal	Description	Distance	Duration	Predicted impacts	Nature of impacts	Magnitude	Sensitivity	Significance
R12 Coronation Park	North to north east- within 50 metres	Views towards Wentworth Falls Station and the proposed works from areas within the park would be partially screened and obscured by mature evergreen coniferous and deciduous tree planting within the park. Views would extend toward mid and east portions of the Proposal above and beyond existing station buildings (refer Photomontage PM2).	Short	Moderate term	Neutral	Irreversible	Medium	High	Low
R13 Great Western Highway	North - between 100 and in excess of 200 metres	Indirect views toward Wentworth Falls Station and proposed works from the Great Western Highway road corridor would be screened by a combination of constructed urban elements (noise wall), commercial development and tree planting to the south of the station precinct.	Long	Short term	Neutral	Irreversible	Negligible	Low	Negligible
R14 Station Street	East to south east - between 50 and 150 metres	Views towards Wentworth Falls Station and proposed works from the Station Street corridor are largely screened by tree cover alongside the eastern side of the corridor. Partial views extend across the western car park toward the Proposal (refer Photomontage PM3).	Medium	Short term	Neutral	Irreversible	Low	Low	Low

Receiver viewpoint (Figure 14)	View direction and distance to Proposal	Description	Distance	Duration	Predicted impacts	Nature of impacts	Magnitude	Sensitivity	Significance
R15 Railway Parade	Generally in excess of 50 metres	Views towards Wentworth Falls Station and the proposed works from the Railway Parade road corridor occur from vehicles travelling south in proximity to the combined entry/exit to the eastern station car park. Views toward the station and proposed works are screened from a significant portion of the road corridor by a vegetated embankment extending south alongside the road corridor and rising steeply to the rail corridor.	Medium	Short term	Neutral	Irreversible	Low	Low	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 11 for a list of proposed mitigation measures.

While the overall visual significance of the Proposal has been determined as negligible to low for the majority of surrounding receiver locations, mitigation measures should 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 (GBD, 2014) which is included in the list of proposed mitigation measures in Table 11.

The measures contained in the assessment 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. In addition, the detailed design would also look to incorporate contemporary light/transparent design, with modern materials and colours that are sympathetic to the existing station precinct.

6.3 Noise and vibration

An environmental Noise and Vibration Impact Assessment has been undertaken by SLR Consulting Australia (SLR) for the Proposal (SLR, 2014). The findings of the assessment are summarised in this section.

6.3.1 Existing environment

Sources of noise in the vicinity of the Proposal are typical of a suburban centre affected by road and rail traffic. Existing sources of vibration in the immediate area would most likely be attributable to trains passing through the station. Sensitive receivers within close proximity to the Proposal include:

- residential receivers to the east on Railway Parade
- Blue Mountains Grammar School located west of the Proposal on Matcham Avenue
- commercial properties west of the Proposal on Station Street
- Grand View Hotel located south of the Proposal on the Great Western Highway.

Two locations in the vicinity of the Proposal were selected for noise monitoring as they were considered representative of the range of potentially highest impacted receivers. Potential acoustic influences were also considered when selecting these locations.

SLR conducted operator-attended measurements on 3 November 2014, and continuous unattended noise monitoring for a period of ten days between 24 October and 3 November 2014 at a residential dwelling on Railway Parade (M2) and a commercial property on Great Western Highway (M1) (refer Figure 15). The noise measurements taken at this location were considered representative of the background noise level for neighbouring residential receivers and these levels have been used to inform the construction noise assessment.

As per the procedures outlined in the *Interim Construction Noise Guideline* (ICNG) (Department of Environment and Climate Change, 2009a), background noise monitoring results were used to establish a Rating Background Level (RBL), which is then used for noise assessment purposes (refer Table 6). The existing average noise level (L_{Aeq}) represents the average noise level over the monitoring period. The background noise level (L_{A90}) represents the noise level exceeded for 90 percent of the monitoring period and is also referred to as the RBL.

Six receivers were identified to be included in the noise assessment to make a conservative prediction of potential noise impacts, utilising background monitoring data to set Proposal Specific Noise Criteria (PSNC). Receivers are listed in Table 7 and shown in Figure 15.

Table 6 Summary of existing ambient noise levels (SLR, 2014)

Location	Period	Measurement parameter (dBA)	
		Rating Background Level (L_{A90})	Equivalent Continuous Level (L_{Aeq})
M1 -191 Great Western Highway	Daytime	56	70
	Evening	48	67
	Night time	38	67
M2 -8 Railway Parade	Daytime	39	60
	Evening	31	57
	Night time	32	54

Note: Daytime: 7am to 6pm, Evening 6pm to 10pm and Night time 10pm to 7am

Table 7 Representative noise receivers (SLR, 2014)

Receiver	Address	Description
R1	Matcham Avenue, Wentworth Falls	Blue Mountains Grammar School
R2	21 Station Street, Wentworth Falls	Commercial, single storey
R3	174 Great Western Highway, Wentworth Falls	Grand View Hotel
R4	8 Railway Parade, Wentworth Falls	Residential, single storey
R5	14 Railway Parade, Wentworth Falls	Residential, single storey
R6	20 Railway Parade, Wentworth Falls	Residential, single storey



Figure 15 Monitoring locations and potential receivers within vicinity of Proposal (SLR, 2014)

6.3.2 Potential impacts

(a) Construction phase

Noise

Proposal Specific Noise Criteria

Proposal specific noise criteria (PSNC) have been developed for receivers as per the procedures in the ICNG. The ICNG prescribes levels for certain receiver types such as commercial and schools and a method for establishing noise management levels for residential receivers (RBL + 10 dbA for standard construction hours; and RBL + 5dBA for out of hours). The 'highly noise affected' levels for residential receivers is 75 dBA. The PSNC for the Proposal are outlined in Table 8. Sleep disturbance noise goals have also been established for residential receivers which are 53 dBA (R3) and 47 dBA (R4, R5 and R6).

Table 8 Proposal Specific Noise Criteria for the Proposal (SLR, 2014)

Receiver	Standard construction hours ($L_{Aeq, 15 \text{ min}}$)	Out of hours ($L_{Aeq, 15 \text{ min}}$)		
		Daytime	Evening	Night time
R1 - school	55 dBA (external) 45 dBA (internal)		N/A	
R2 - commercial	70 dBA		N/A	
R3 - hotel	60 dBA (external) 50 dBA (internal)	60 dBA	60 dBA	45 dBA
R4 - residential	49 dBA	44 dBA	36 dBA	37 dBA
R5 - residential	49 dBA	44 dBA	36 dBA	37 dBA
R6 - residential	49 dBA	44 dBA	36 dBA	37 dBA

Noise modelling

Construction of the Proposal would be undertaken over a period of up to 20 months in various stages (refer Chapter 3 for more detail). Modelling of noise sources (trucks, excavators, grinders etc) for each construction activity was undertaken by SLR. The modelling took into account the construction staging of when certain construction plant would be operational and calculated a predicted noise level, based on the known Sound Power Levels for each item of plant. The model also accounts for natural land contours that can provide shielding from noise.

The noise modelling predicted at which locations there might be exceedances of the PSNC for the different phases of construction under a 'worst case' scenario. During construction, it is unlikely that all machinery would be operational at the same time, but taking a 'worst case' scenario approach helps to identify where noise impacts are likely to be a concern and assists in the formulation of mitigation measures.

In practice, noise levels will depend on the number of plant items and equipment operating at any one time and their precise location relative to the receiver of interest. Noise levels will vary due to the movement of plant and equipment about the worksites and the concurrent operation of plant. In some cases, reductions in noise levels will occur when plant are located in cuttings or behind embankments, buildings or other items of equipment.

Summary of noise impacts during standard hours

From the assessment, it is likely that for most construction scenarios the predicted noise levels would exceed the daytime PSNC and that all receivers would experience exceedances at various stages of the Proposal for works undertaken during standard construction hours. In addition there would be exceedances of the ICNG 'highly affected' criteria of 75 dBA during some activities at the receivers located on Railway Parade and Station Street.

A worst-case exceedance during standard construction hours of the PSNC of up to 32 dBA is predicted at the most affected sensitive receiver location R4 and R5 at times during tree removal and landscaping activities in the eastern car park off Railway Parade. For most activities, the PSNC for the school would be met with the greatest exceedance also predicted for tree removal activities (7 dBA exceedance). This level of exceedance is common for these types of construction activities. It is noted that tree removal works would be restricted to the daytime only and would likely take place over one day.

In relation to construction traffic noise, the construction movements associated with the Proposal are considered to be an insignificant additional contribution to the ambient noise environment.

Summary of noise impacts during out of hours

Out of hours works would be required during possessions that typically extend 24-hours a day over a weekend. Up to around five possessions would occur during the construction period and the following activities are likely to be required during possessions or other out of hours periods:

- detailed site survey, services investigations and geotechnical investigation works within and around the tracks
- installation of temporary demarcation fencing/hoardings, etc to allow works to be undertaken during non-possession periods
- placement of temporary facilities on platform (if required) using cranes
- relocation of underground services to accommodate new/adjusted infrastructure
- repairs to existing footbridge and minor structure modifications located above and between tracks
- works to facilitate shortening of the existing footbridge and removal of existing stairs and replacement with new/relocated stairs using cranes
- installation of lift structural components, elevated landings and canopy components using cranes
- civil works including foundations and construction/installation of collision protection measures for structures adjacent to the tracks (if required)
- platform re-grading (if required) and installation of Tactile Ground Surface Indicators, where plant or personnel are required to work near the platform edge
- loading of materials over tracks (using crane) to be used for station building refurbishment works
- station building modification works where potential to impact on station operations, including cutover and commissioning of new ticket window
- testing and commissioning of station communications systems and equipment including augmentation of station CCTV and ticketing systems
- testing and commissioning/cutover of new lifts and upgraded station power supply.

The modelling has indicated that there would be exceedances of the out of hours PSNC at residential receivers by up to 37 dBA and exceedances of up to 34 dBA of the sleep disturbance criteria for a worst case scenario for the activities listed above. Residential receivers on Railway Parade are likely to be most affected during out of hours works. Out of hours works may also be scheduled outside possession periods, however, any out of hours works would be assessed in more detail and approved by TfNSW along with appropriate community notification and mitigation measures in place, in accordance with TfNSW's *Construction Noise Strategy* (TfNSW, 2012b).

Vibration

When assessing vibration there are two categories of vibration criteria, one related to the impact of vibration on building structures, and one relating to human comfort. The *Assessing Vibration: A Technical Guideline* (Department of Environment and Conservation, 2006) provides vibration criteria for human comfort. For intermittent vibration (like that which could result from construction machinery) the criteria is based on a concept of a vibration 'dose'. The maximum criteria level is 0.4 m/s^{1.75} for residences during the daytime and 0.26 m/s^{1.75} during the night time.

The German Standard *DIN 4150 1999-02 Standard Structural Vibration - Effects of vibration on structures* provides guidelines for vibration levels for building structures. For dwellings the Standard recommends a maximum allowable vibration velocity of 5 mm/s, and for commercial buildings a maximum allowable vibration velocity of 10 mm/s.

The Noise and Vibration Impact Assessment concluded that the separation distances from the nearest receiver to operation of vibration intensive plant would be sufficient to mitigate potential building impacts including cosmetic damage and would not result in exceedances of human comfort criteria at nearby receivers (SLR, 2014).

Wentworth Falls Station is listed as a heritage item on the Sydney Trains Section 170 Conservation and Heritage Register and listed in the heritage schedule of the Blue Mountains LEP 2005. The War Memorial in Coronation Park and the Station Street Precinct Conservation Area are also listed on the heritage schedule. To avoid structural impacts to heritage items the proposed works would be undertaken in accordance with the safe work distances outlined in the Noise and Vibration Assessment (SLR, 2014) and attended vibration monitoring or vibration trials would be undertaken where these distances are to be exceeded. In addition, building surveys of sensitive structures within the heritage curtilage would be undertaken in order to assess the potential for increased susceptibility to building damage from vibration.

(b) Operational phase

Operational activities at Wentworth Falls Station are not proposed to significantly change and as a result the existing noise and vibration levels are unlikely to change.

Key plant and equipment expected to be associated with the operation of the Proposal would include three lifts, padmount substation for power supply, lighting, electrical equipment including and communications/security equipment including security cameras. Mechanical plant required for operation of the lifts would be identified during detailed design and would be selected in order to achieve the acceptable noise levels identified in the *NSW Industrial Noise Policy* (EPA, 2000) and would be free from annoying sound characteristics such as tonality, low frequency, impulsive and intermittent 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, 2012b) and the Noise and Vibration Impact Assessment (SLR, 2014).

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, and 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. The CNVMP would also detail requirements for managing potential vibration impacts to heritage items through monitoring and nominating safe working distances.

The CNVMP would also be supported by the Community Liaison Plan to be prepared for the Proposal, which would detail community notification requirements which can range from letter box drops, phone calls to offers of alternative accommodation in some instances.

Refer to Table 11 for a list of proposed mitigation measures.

6.4 Indigenous heritage

6.4.1 Existing environment

An Aboriginal Heritage Inventory Management System (AHIMS) search was undertaken for the area covered by the Proposal (the area around Wentworth Falls Station) plus a 50 metre radius on 24 September 2014. No Aboriginal sites are recorded in or near the location, and no Aboriginal places have been declared in or near the location.

The Proposal is located in an area that has been highly modified for a range of uses associated with the railway. It is considered that the site has low archaeological potential and therefore it is unlikely that any Indigenous heritage items would be located in the vicinity of the Proposal, due to the past history of disturbance.

6.4.2 Potential impacts

(a) Construction phase

Construction of the Proposal would involve minor earthworks and other ground disturbance activities which have the potential to impact Indigenous sites, if present. As no known Indigenous heritage items are located in the vicinity of the Proposal and the potential for unknown items is low, the Proposal is unlikely to affect Indigenous heritage during construction.

(b) Operational phase

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

6.4.3 Mitigation measures

If unforeseen Indigenous objects are uncovered during construction, work should cease in the vicinity of the find and the TfNSW Project Manager and Environment Planning Manager are to be immediately notified to assist in co-ordinating next step which are likely to involve consultation with an archaeologist, the OEH and the 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 considered by this assessment, further assessment would be required.

Refer to Table 11 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 site inspection of the Proposal area which was undertaken on 24 October 2014. The findings of the assessment are summarised in this section.

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 2005 and Draft Blue Mountains LEP 2013, National Trust Register and the Register of the National Estate. Three items/conservation areas are located within or in the vicinity of the Proposal and are listed in Table 9.

The Greater Blue Mountains World Heritage area is located within 500 metres of the Proposal but would not be directly affected by the Proposal. The potential for indirect biodiversity impacts are addressed in Section 6.7 and in Appendix 1.

Table 9 Heritage items/areas within the vicinity of the proposed works

Heritage item	Address	LEP listing	Section 170 listing
Wentworth Falls Railway Station Group	Station Street	WF022	4801039
War Memorial, Coronation Park	13a Station Street	WF097	-
Station Street Precinct Conservation Area	Station Street	WF032	-

Wentworth Falls Railway Station Group

Wentworth Falls Railway Station was constructed between 1890 and 1891 in its current form. The heritage curtilage for the station (as defined by the RailCorp Section 170 listing) is shown in Figure 16. The island platform, Station Building, Lamp Room and Out of Shed buildings, and moveable heritage items are of heritage value as they demonstrate the key elements of the item and have a high degree of original fabric. Station elements are described in more detail in the sections below with information sourced from the heritage inventory listing.

Island platform (1890 and 1902)

The island platform is an elliptical shape that curves with the deviation of the railway line. The platform was originally built as a roadside platform but was converted in 1902 to an island platform when the railway line was duplicated. The platform is brick faced with a concrete and bitumen platform surface.

Station Building (1890)

The Station Building comprises a main building and a brick wing currently linked by a lower pavilion. The Station Building currently includes a waiting room, ticket room, Station Manager's office, Ladies waiting room and Ladies toilet and Men's toilet. The internal finishes include plaster ceilings with moulded plaster cornices and ceiling roses, plaster board ceiling panels with beading, and timber board ceilings with simple moulded cornices, enclosed and adapted fireplaces, more recent floor tiling and carpets and timber skirtings.

Externally, the Station Building features exposed brickwork and a corrugated metal gabled roof, extending as an awning to platforms on the east and west, among other features that contribute to its heritage value (note that a recent station refresh in 2014 included the stripping of red paint to reveal the original brickwork).

There is a standalone brick screen wall located to the south of the Station Building which screens the entrance to the Men's Toilet. The brick screen wall and associated curtain walls sit on a concrete slab, unlike the remainder of the Station Building structures, indicating it was incorporated to the precinct at a later date. The wall was visible in a photograph taken in 1900 of the station indicating that it is still an early component of the group.

In addition the sitting room furniture, station lighting, garbage bins, seating and signage is not original although not intrusive. Intrusive elements include the ticket and vending machines, CCTV cameras and public announcement speakers.

Out of Shed building (1902)

The Out of Shed building is a small square-shaped polychromatic brick shed located on the south side of the Station Building and is currently used for storage. The shed retains many original external features including gabled roof and decorative window sills.

Lamp Room (1890)

The former Lamp Room is a small rectangular shed with polychromatic brick face and corrugated metal gabled roof situated north of the Station Building. It retains many of its original external features. The former Lamp Room now is used for storage and internally has painted brick walls and a timber board ceiling. Lower sashes of the double hung windows have been blocked at one side while the other windows are fitted with toughened mesh glazing.

Footbridge (1994)

The current footbridge was built in 1994 and is a steel beam structure with concrete deck and stairs supported by steel columns. In addition, the footbridge is associated with a number of mature plantings at both the eastern and western station access points. The footbridge is of little heritage significance as it is a modern access point with no association with the original station buildings. The plantings are of moderate significance as they are representative of the aesthetics of the original station platform and would not be removed as part of the proposed works (refer Section 6.7).

Moveable heritage items

Moveable heritage items noted at the station included an old safe on concrete pedestal in the staff meal room, timber corner bench seats and 'Next Train' indicator boards in the waiting room and an old timber ticket window desk currently stored in the Lamp Room.

Statement of significance

The Wentworth Falls Railway Station Group is of local heritage significance demonstrating two major building construction phases on the upper Blue Mountains including the technological and engineering achievements in railway construction at the end of the 19th and early 20th centuries. The station was the terminus of the Blue Mountains railway line from July 1867 until the Mount Victoria section of the line opened in May 1868. The Wentworth Falls Railway Station is an example of a Federation free classical railway station combining architectural features of two distinct standard railway designs in order to adapt a roadside building into an island station building (which took place in 1890). It is a focal point within the Wentworth Falls village contributing to the urban character and setting of the town (State Heritage Inventory entry for Wentworth Falls Railway Station Group).

War Memorial, Coronation Park

The War Memorial in Coronation Park sits to the west of the station and comprises of a free standing column placed atop a stepped base.

Statement of significance

The War Memorial is of local heritage significance as a representative and finely proportioned example of an Interwar free classical monument and is characteristic of many interwar era war memorials across the state. The memorial is also of significance as it was designed by the prominent architect John Buchan Clamp. It recalls those from the village that died in wars throughout the 20th century and has provided a focus of community feeling since its unveiling in 1921.

Station Street Precinct Conservation Area

The Station Street Precinct Conservation Area encompasses Station Street from the Great Western Highway to the end of Coronation Park and includes a number of other locally listed heritage items. The Proposal would not require any works to be undertaken inside the conservation area (refer Figure 17). The potential for indirect impacts are discussed in Section 6.5.2.

Statement of significance

The group of shops, residences and restaurants associated with the Station Street Precinct Conservation Area have local historical and social significance as a representative group of early 20th century buildings associated with the railway and the development of the village. The group consists of a selection of federation period buildings including a number designed in the arts and crafts style.



Figure 16 Wentworth Falls Station Section 170 heritage curtilage

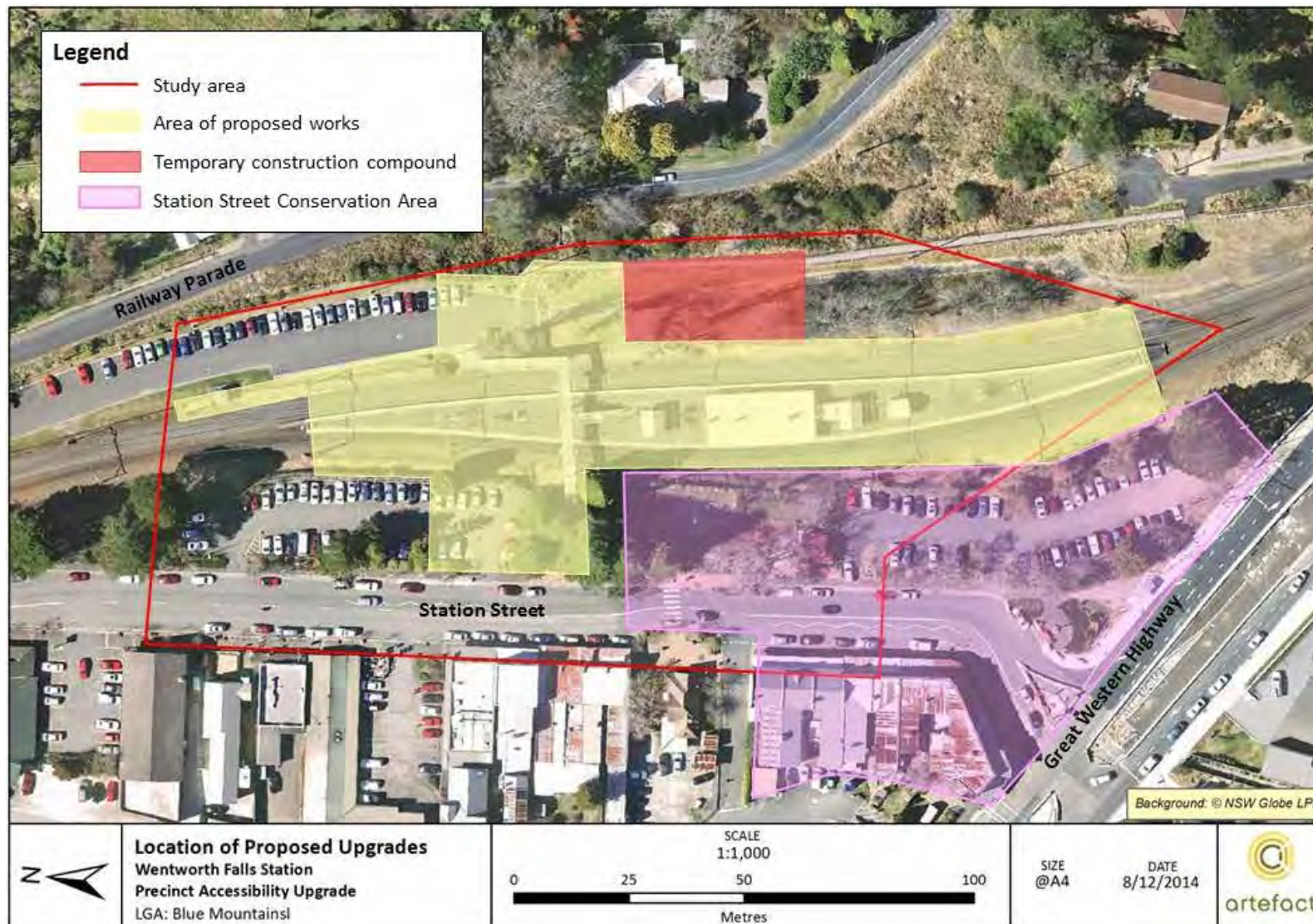


Figure 17 Station Street Precinct Conservation Area (Artefact Heritage, 2014)

6.5.2 Potential impacts

Archaeological potential

As a result of the high levels of previous disturbance within the Proposal area it is unlikely archaeological remains of former tracks or points, signalling or communication systems or other rail or station infrastructure is present. The archaeological potential of the study area has therefore, been assessed as low.

Wentworth Falls 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 new canopies and lifts, may alter the visual environment thereby potentially having an indirect impact to the station and other heritage items/conservation areas.

The potential impacts are detailed in the Statement of Heritage Impact (Artefact Heritage, 2014), and are summarised below. A summary of heritage impact is also provided in Table 10. The implementation of the mitigation measures contained in the Statement of Heritage Impact and this REF during the detailed design and construction phases would help to ensure that the heritage value of the station and buildings is maintained (refer Section 6.5.3).

Island platform (1890 and 1902)

The existing platform would be regraded to provide compliant crossfalls (i.e. transverse slope) of maximum 1 in 40 (where required). Other modifications include installation of ramps to allow for access into the Station Building, adjustments to cable pathways for electrical and communications/security systems, relocation (or replacement) of platform seating, and provision of Tactile Ground Surface Indicators along platform edges, for stairs, and at other required locations.

The proposed platform works would have a negligible heritage impact given the works do not involve major modifications. Relocation/replacement of seats would affect non-original elements of the station and is unlikely to have a visual impact. The addition of accessible ramps around the Station Building would have a minor visual impact (provided the mitigation measures are adopted, for example, choosing a colour for the ramps that is sympathetic to the surrounds) and would not greatly detract from the Station Building.

Station Building (1890)

The upgrade works to the Station Building are focused on addressing existing DDA deficiencies (such as non-compliant door widths and steps) and improving amenities for customers and staff. Proposed upgrades to staff facilities would be confirmed during detailed design but have been assessed in this REF. To achieve these objectives it is proposed to undertake mostly internal modifications. The following activities would be undertaken as part of reconfiguration to the Station Building (refer also to Figure 18 and Figure 19):

- demolition of existing waiting room wall that contains a non-operational former fireplace (refer Images 7 and 8) and partial demolition of two other internal walls to provide an enlarged waiting room and new doorway openings to the proposed ticket office and office/store where presently access is through single narrow doors
- demolition of an external concrete slab, brick screen wall and curtain walls located at the southern end of the existing Men's Toilet (refer Image 9) to provide an accessible path of travel via new ramp which is not currently accessible due to the slab/step and narrow door widths

- potential widening of external doorways to achieve DDA compliance (this may require new doors to be installed, and automatic door openers would likely be required) and an accessible path through the Station Building
- new accessible ticket window between the new waiting room and ticket office as the existing ticket window is not DDA compliant
- installation of a communications/equipment room inside the new waiting room (if not located in Out of Shed building or Lamp Room) to allow for station operations
- adjustment to the Station Building room layouts including required services, finishes and fit outs required to provide accessible customer and staff areas and facilities, including accessible paths of travel, an accessible ticket window, accessible waiting room, accessible toilets and accessible station operational areas.

The complete/partial demolition of internal walls and a former fireplace associated with the Station Building would have a moderate impact given changes are proposed to the original layout of the item and some of the existing fabric is to be impacted. However, the removal of the walls is considered to be a necessary upgrade to achieve compliance with the DDA and allow for the ongoing function as a Station Building.

The internal modifications including removal/partial removal of walls, door widening, installation of ticket window and communications/equipment room may impact original fabric such as cornices, adapted fire places, window and door fittings, skirting boards and ceiling roses. A detailed design of the works is not yet finalised, however, such impacts are considered as having a minor physical impact to original fabric of the building and minor visual impacts to and from the building.

Impacts would largely be contained to the interior of the building, and the original exterior appearance of the station would be retained (including chimneys) which are considered to be of heritage value. The proposed internal refurbishment works are unlikely to have a negative impact on the overall heritage significance of the station and would be mitigated through an archival recording.

The demolition at the southern end of the Station Building is necessary to provide for a DDA-complaint access ramp. These works would have a moderate physical impact on the original fabric of the building and minor visual impacts to and from the building. The walls are an early component of the station precinct however they are not considered to be an original part of the building. The walls are considered to have low heritage significance and their removal would have a minimal impact on the overall heritage significance of the station.



Figure 18 Existing Station Building layout

Note: Image is indicative only.



Image 7 Internal wall in current Station Manager's office proposed to be removed for larger waiting room

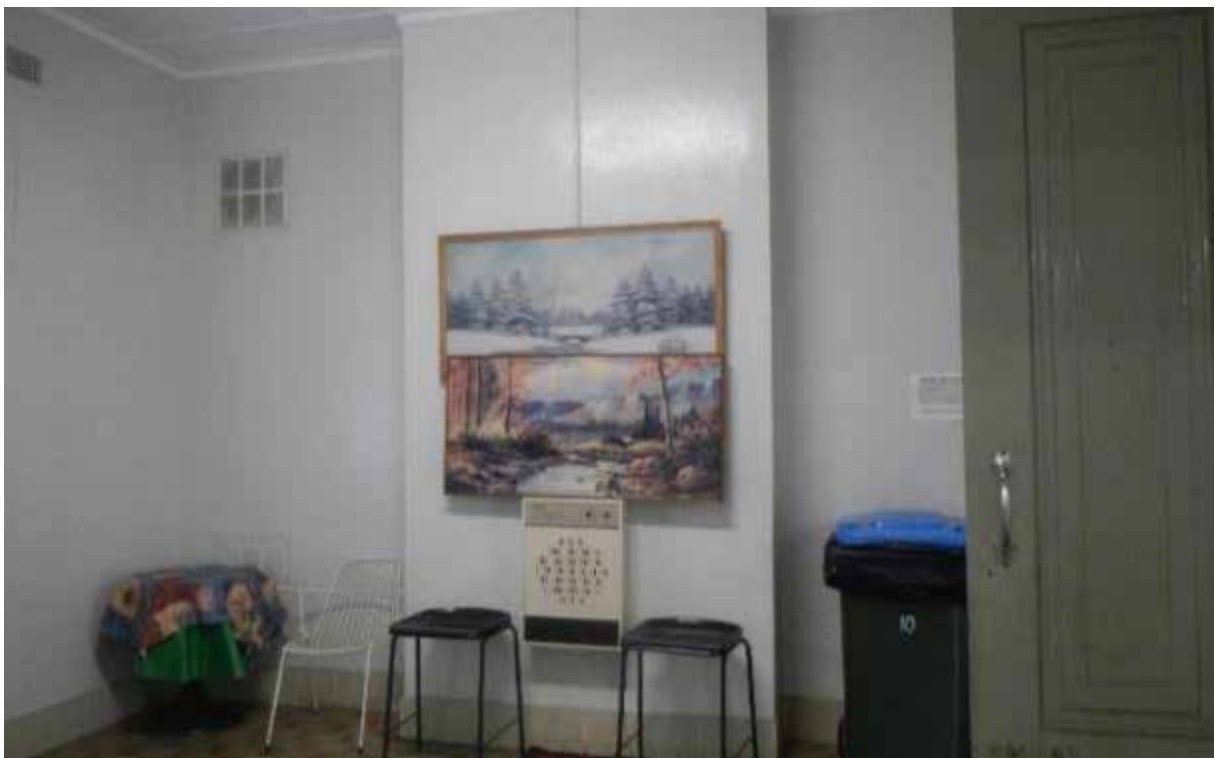


Image 8 Internal wall in Ladies Waiting Room proposed to be removed to allow for larger waiting room



Image 9 Slab, screen wall and curtain walls to the south of the Men's Toilet proposed to be removed

Out of Shed building (1902)/Lamp Room (1890)

The Out of Shed building or Lamp Room may be converted to be used as the communications/equipment room (subject to further investigations) and which may involve an internal fit out with installation of equipment, fixtures and some painting but would not require major modifications to the internal fabric. If established, there would be a need to provide air conditioning and cable pathways for the connection of services that could require some minor amendments to the external façade such as conduits or other cabling. Refer to Images 10 and 11 for photos of these existing buildings.

Impacts to the Out of Shed building and Lamp Room have been assessed as minor given the nature of the works that would be largely internal, with the external façade anticipated to remain intact. Should the detailed design identify the need for any works to the external façade, such elements would be minimal and/or concealed, and be painted in colours or installed with materials sympathetic to the surrounds.



Image 10 Out of Shed building



Image 11 Lamp Room

Footbridge (1994)

The shortening of the footbridge at the western end to allow for the new lift and new/relocated stairs, would result in a change to the original fabric. However given that the footbridge was constructed in 1994 and is not classed as a significant component of the heritage listing, such modifications would have a minor heritage impact.

The new canopies and lifts to be installed would introduce a new element into the existing visual environment and would be visible from the station and from nearby locations such as Coronation Park and the Station Street Precinct Conservation Area. The bulk and scale of these elements would be partially screened by existing mature trees within and beyond the station. Refer also to Section 6.2.2 for an assessment of visual impacts. In addition, a heritage architect would be engaged to assist in the development of the detailed design to ensure that it is considerate of the heritage values of the station and surrounds.

Moveable heritage

The existing timber corner bench seats and 'Next Train' indicators boards in the Waiting Room, old timber ticket window desk in the Lamp Room and the old safe in the staff meal room may be impacted by the Proposal. The detailed design of the Proposal would consider these items, however if their retention in situ is not appropriate or feasible then options to relocate, store or archive these items would be investigated.

Table 10 Summary of heritage impact

Development	Discussion
What aspects of the Proposal respect or enhance the heritage significance of the study area?	<p>The Proposal would allow Wentworth Falls Station to continue in its historical use as well as allowing for increased public access to the station and its amenities.</p> <p>The majority of the Proposal works would be limited to already modified items and therefore have a negligible to minor impact on the heritage significance of the study area.</p>
What aspects of the Proposal could have a detrimental impact on the heritage significance of the study area?	<p>Internal modifications to the Station Building, namely through the total or partial demolition of internal walls, would impact the original internal layout and fabric of the Station Building. The proposed communications/equipment room would also impact the original layout and fabric if situated in the Station Building. Such modifications are required to improve accessibility and station amenities and would be mitigated through archival recording.</p> <p>The addition of canopies and three lifts to the existing footbridge would not adversely affect the value of the existing footbridge itself given it was constructed in 1994 and is of little heritage significance. However the works would create a minor visual impact within the station, as well as to and from Coronation Park and the Station Street Precinct Conservation Area. The detailed design of these elements would be undertaken with consideration of the heritage values of the station and surrounds to mitigate potential visual impacts.</p>

Development	Discussion
Have more sympathetic options been considered and discounted?	<p>The reconfiguration to the interior of the Station Building is considered to be the most sympathetic option to allow for DDA-compliant accessibility to the station building. Currently, wheelchair access into the existing Booking Office and Waiting Room is not possible as entry can only be made via two narrow, single doorways.</p> <p>Externally, the removal of a slab, brick screen wall and curtain walls to the south of the Men's Toilet is considered to be the most sympathetic option in order to comply with the DDA. Under the DDA it is against the law for public toilets to be inaccessible to people with a disability. Access to the bathrooms is only available via this entry point. Therefore, there are no other practical alternatives to allow for DDA compliant access.</p>

War Memorial, Coronation Park

The Proposal works would not have a direct physical impact on the War Memorial in Coronation Park. Access for construction for the footbridge works would need to consider the proximity of Coronation Park and design development and methodology would ensure a minimised construction footprint that would not encroach in the Station Street Precinct Conservation Area.

However, the proposed works are likely to have a minor visual impact. These visual impacts are directly associated with the addition of three lifts and canopies to the existing footbridge; the relocation of public seating near the Station Building; the removal of an external wall to the south of the Men's Toilet, and upgrades to existing pedestrian footpaths and new seating at the Station Street shelter.

With the exception of the existing screen wall to the south of the Men's Toilet, the majority of the proposed works would impact items that have either been altered or incorporated into the precinct in the recent past and are therefore not considered to be significant elements of the study area.

Views of the Station Building from Coronation Park are currently shielded by a buffer of mature hedges and decorative plants that are to be retained. However, views towards the footbridge from Coronation Park were only partially shielded by mature trees (refer also to Section 6.2 for visual impact assessment).

Station Street Precinct Conservation Area

There are likely to be minor indirect impacts to the Station Street Precinct Heritage Conservation Area particularly related to views along Station Street into the Wentworth Falls Railway Station. These impacts include the proposed addition of DDA-compliant accessible paths, seating and the addition of three lifts and canopies to the pedestrian footbridge. These works are associated with recently modified or incorporated items and are considered to be minor in nature. Therefore, the proposed works are likely to have a minor visual impact to the Station Street Precinct Conservation Area.

6.5.3 Mitigation measures

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

The Contractor would be required to engage a heritage architect and give due consideration to the design of the external elements such as the lifts and canopies, along with the internal proposed alterations to the station buildings. The design would be prepared in consultation with TfNSW, Sydney Trains and NSW Trains (as required) and would confirm accessibility requirements and be developed in accordance with the recommended mitigation measures prescribed in the Statement of Heritage Impact (Artefact Heritage, 2014). This would include requirements that internal fit outs must retain or enhance existing features and that retention of the original fabric of buildings should occur where possible along with designing new elements in sympathetic colours, finishes and styles.

The final design would need to be approved by TfNSW, in consultation with Sydney Trains and NSW Trains (as required). Sydney Trains would also need to be provided a copy of relevant design and heritage documentation and notified of the construction commencement date so to allow for notification to the Heritage Division and update the Section 170 heritage listing, if required.

As the Wentworth Falls Railway Station Group, War Memorial and Station Street Precinct Conservation Area are listed on the Blue Mountains LEP 2005, the Blue Mountains City Council would also be notified of the proposed upgrade works.

A program of archival recording would be undertaken prior to the partial and complete demolition of existing walls associated with the Station Building and prior to the relocation (if required) of any moveable heritage items. This recording should include a photographic record of the walls, their original context, layout, building materials and methods used during their construction. The recording should be undertaken in accordance with guidelines *How to Prepare Archival Records of Heritage Items* (NSW Heritage Office, 1998). As these elements have limited heritage significance, the recording need only meet the minimum requirements for archival recording; measured drawings of the structures would not be necessary.

A CEMP would be prepared by the Contractor that would prescribe mitigation measures to be implemented during the construction period. This would include identifying the heritage curtilage and heritage items/area on Environmental Control Maps and specifying 'no-go' zones for construction activities including the Station Street Precinct Conservation Area and Coronation Park. The CEMP would also specify requirements for heritage inductions to be undertaken by all staff, and procedures for unexpected archaeological finds.

Refer to Table 11 for a list of proposed mitigation measures.

6.6 Socio-economic impacts

6.6.1 Existing environment

Wentworth Falls is a small town located in the Blue Mountains LGA. Wentworth Falls is home to around 6,000 people and is a popular tourist stop, given its proximity to the nearby Blue Mountains National Park. It is serviced by both regional and suburban train services and the Great Western Highway, linking Sydney and the Blue Mountains. Bus services also extend along Station Street and further south on the Great Western Highway (refer Section 6.1 for more detail on existing traffic and transport conditions).

Wentworth Falls Station is the 172nd busiest station in the Sydney Trains network with an average weekday patronage of 1,440 trips recorded in 2012 (Bureau of Transport Statistics station barrier counts). Approximately 12 percent of the Wentworth Falls population travel by train to work (Bureau of Transport Statistics, 2013).

The surrounding land use comprises a mix with a variety of receiver types. To the east of the station are residential receivers (refer Figure 3). To the west of the station is the Wentworth Falls village, part of the Station Street Precinct Conservation Area that comprises a number of small shops and businesses. Also adjacent to the station on the western side is Coronation Park, which houses a war memorial, and will also be the location of 100th anniversary commemorations of the Gallipoli landing, to be held on 25 April 2015.

Also in the vicinity, is the Blue Mountains Grammar School which is located west of the Proposal on Tusculum Road, and the Grand View Hotel located south on the Great Western Highway.

6.6.2 Potential impacts

(a) Construction phase

The construction of the Proposal has the potential to temporarily impact customers, pedestrians, residents, motorists and other receivers as a result of:

- temporary loss of parking in station car parks
- changes to accessing station entry points and platforms
- disruptions to station facilities and amenities
- increase in truck movements delivering site materials, plant and equipment
- construction noise, dust and visual impacts.

There would be no works undertaken in Coronation Park for the Proposal, and works would generally not be undertaken on public holidays, so Anzac Day celebrations would not be affected. Access for emergency services would be maintained at all times and it is not anticipated that access to private property, including businesses on Station Street, would be affected during construction of the Proposal as works are to occur on Sydney Trains land and adjacent car parking areas, away from private property and driveways.

(b) Operational phase

The Proposal would provide positive socio-economic benefits to Wentworth Falls and the Blue Mountains LGA, including:

- improved accessibility for customers at Wentworth Falls Station - including the provision of an accessible route for equitable access to the station platform through provision of accessible parking and lifts
- improved customer amenity and facilities at the station, including a larger waiting room, accessible toilets and canopies over the footbridge and stairs for weather protection
- improved connections with wider pedestrian and bicycle network through new pedestrian paths from both sides of the station to adjacent car parks and upgraded bicycle facilities
- improved transport interchange facilities including new Kiss and Ride zones and bicycle facilities on both sides of the station; and accessible seating at the existing Station Street shelter

- improved and safer traffic flow through the extension of the Railway Parade car park to include a turning area for vehicles in proximity to the new Kiss and Ride area
- potential increased use of public transport to and from Wentworth Falls.

No property acquisition would be required as a result of the Proposal.

6.6.3 Mitigation measures

Refer to Sections 6.1, 6.2 and 6.3 for discussion on the potential traffic, transport, visual and noise impacts arising from construction of the Proposal and the proposed management strategies.

Table 11 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 site personnel to purchase goods and services locally, helping to ensure the local community benefits from the construction of the Proposal
- the Community Liaison Plan would identify all potential stakeholders and the best practice methods for consultation with these groups during construction. The Plan would also encourage feedback and facilitate opportunities for the community and stakeholders to have input into the project, where possible
- the community would be kept informed of construction progress, activities and impacts in accordance with the Community Liaison Plan (to be developed by the Contractor prior to construction)
- contact details for a 24-hour construction response line, project infoline and email address would be provided for ongoing stakeholder contact throughout the construction phase.

6.7 Biodiversity

A Flora and Fauna Impact Assessment has been prepared by GHD for the Proposal which included a desktop assessment, literature review and site inspection of the Proposal area which was undertaken by an ecologist on 24 October 2014. The findings of the assessment are summarised in this section.

6.7.1 Existing environment

Threatened species and communities

The results of the database searches indicate the following threatened biota previously recorded or predicted to occur in the locality of the Proposal:

- 15 threatened ecological communities listed under the TSC Act and/or EPBC Act
- 29 threatened flora species listed under the TSC Act and/or EPBC Act
- 42 threatened fauna species listed under the TSC Act, FM Act and/or EPBC Act
- 14 migratory species listed under the EPBC Act.

No threatened flora, fauna or migratory species were identified during the survey. The Proposal site does not contain any intact vegetation communities; or threatened or endangered ecological communities. There is very limited potential habitat for threatened species, given the lack of intact vegetation and the highly modified nature of the area. It is also considered very unlikely that threatened fauna use the Proposal area for nesting or roosting purposes as no stags or hollow bearing trees were identified during the survey.

It is important to note that the Proposal is in close proximity to extensive tracts of native vegetation with the Blue Mountains National Park, and that the majority of threatened species records for the locality are associated with the national park, rather than the urbanised and developed areas of the township of Wentworth Falls. The Flora and Fauna Impact Assessment confirmed that the Greater Blue Mountains World Heritage Area (Including Blue Mountains National Park) would not be impacted by the Proposal given the nature of the proposed activities and separation distance (GHD, 2014).

Flora

With regards to existing vegetation, the Proposal area comprises well-established ornamental gardens, including numerous potted plants within the station precinct, areas of mown lawn, and other landscape plantings. It is assumed that the majority of plants have been planted, given their spacing and location, however it is likely that some of the smaller woody exotic species are the result of infestation from bird droppings or similar.

The majority of garden beds are mulched however areas outside of the station typically have an understorey of lawn species or low-growing ornamental plantings. This vegetation type occurs within the rail corridor, along the railway platform, and in the car park areas to the east and west of the station. The majority of species present are exotic pine or conifer species, as well as 'cottage garden'-style plants, many of which are pruned on a semi-regular basis. Mown lawns contain a dense understorey of mainly exotic grasses and occur where the vehicle turning area and temporary construction compound would be located.

Sixteen trees were identified within the Proposal site during the survey. This includes seven Deodars, two Silver Birches, two Lombardy Poplars, one European Ash, one Italian Cypress, one Bhutan Cypress, one Cottonwood and one Gowen Cypress. Refer to Figure 20 for the approximate location of these trees.

The majority of trees were in good health and had good structure. The age class of the trees observed within the Proposal site ranged from early mature to mature. The canopy height of trees generally reaches around 25 metres, with early mature trees ranging up to eight metres. Tree 3 was observed to have suppressed growth while Tree 15 had a sparse growth, possibly from a restricted root area.

No noxious weeds were identified in the Proposal area, with two noxious weeds (Blackberry and Small-leaved Privet) observed in areas adjacent to the Proposal.

Fauna

The vegetation within the Proposal site consists of maintained gardens, parks and lawns, dominated by exotic species and provides limited habitat complexity for native fauna. In addition, the Proposal area is exposed to high levels of disturbance from regular train, vehicle and human traffic. Species that are likely to utilise these habitats include opportunistic and resilient native fauna, typically associated with urban, modified or edge habitats. Species recorded during the surveys included the common Crested Pigeon, Grey Butcherbird, Noisy Miner, Grey Fantail and common small skinks.

Flowering exotic tree and shrub species are likely to provide some foraging resources for common nectarivorous birds, as well as refuge or nesting resources for small common birds. Open cleared and grassed areas within the rail corridor as well as gardens and rock retaining walls are likely to provide habitat for a range of small native reptiles, including small garden skinks, which may use the area for basking or sheltering purposes. Insect-eating birds such as the Eastern Yellow Robin or Magpie-lark may also utilise these open spaces.

Several of the exotic pines are quite large, and support relatively deep bark furrows. These trees may provide perching and foraging habitat for common woodland bird species, and may also provide potential diurnal microbat roosts.

Distinctive scats or pellets were not recorded within the subject site and it is unlikely that arboreal mammals will use the identified trees within the subject site for either foraging or nesting.

The Proposal area does not contain any watercourses; however Jamison Creek and Water Nymphs Dell are located in the vicinity and have the potential to provide potential habitat for a range of native fauna, including birds, amphibian, mammal and reptile species, as well as aquatic species such as fish and invertebrates.



Figure 20 Approximate location of trees in Proposal area (GHD, 2014)

6.7.2 Potential impacts

(a) Construction phase

As noted in Section 6.7.1, no threatened flora species or ecological communities were observed within the Proposal area, along with a very limited potential for threatened fauna to be present due to the absence of suitable habitat. As such the Proposal would not likely have a significant impact on any threatened species, population or ecological community or their habitats listed under the TSC Act. The Proposal would also be unlikely to have a significant impact on any threatened biota listed under the EPBC Act.

Potential biodiversity impacts associated with the construction of the Proposal are instead associated with direct and indirect impacts to native flora and fauna.

Direct impacts

The detailed design and construction of the Proposal is to be undertaken so that the trees on Station Street side can be retained to maintain the visual character of the area and provide shielding of new Proposal elements. While the trees in this area are not listed as threatened they provide habitat for native fauna, including perching and foraging habitat for common woodland bird species, and may also provide potential diurnal microbat roosts.

The area of vegetation clearing for the Proposal is to be limited to the removal of grass in the extended area of the Railway Parade car park and the removal of two Silver Birches and two Lombardy Poplars (Trees 11, 12, 13 and 16) to allow for the new path and lift on the eastern side (refer Figure 20). The removal of these trees and area of lawn would have a negligible impact on common fauna species in the Proposal area. Common birds may experience a loss of minor perching and limited foraging habitat within the Proposal site. The mortality of some garden skinks may also occur from the removal of these trees.

Other trees on the western side of the station may be impacted by the proposed works, but would not require removal although their health may be partially compromised. Such impacts may include:

- insignificant root loss to Trees 6 and 7 on their eastern side due to construction activities along the western side of the Proposal site
- possible impacts to the root zone of Tree 5 affected by path widening along the northern sector of Tree 5's Structural Root Zone (SRZ)
- loss of the south western portion of the SRZ of Tree 2 and also SRZ losses for Trees 3 and 4
- removal of the lower branches of Trees 3 and 4.

Indirect impacts

The Proposal has the potential to increase the introduction and spread of exotic plants and pathogens through increased visitation, fragmentation of vegetation and disturbance of soil. Increased weed invasion can lead to decreased diversity of native flora, compromised structural integrity of native vegetation communities and a decrease in habitat quality for native fauna. Weeds are present in the vicinity of the area, however no noxious weeds were identified in the Proposal area during the survey.

Environments downslope of the Proposal area (such as creeks and drainage lines) could potentially be impacted if there is erosion of exposed soil surfaces during construction. Sediment-laden runoff could affect water quality and aquatic ecosystems through the smothering of macro invertebrate organisms in the waterway, filling gaps of riffle habitat and reducing water clarity and therefore photosynthetic efficiency of water plants.

However such risks can be managed by the implementation of effective erosion and sedimentation controls.

The Proposal site is currently exposed to regular noise disturbance from trains and road traffic (particularly along the Great Western Highway). The Proposal would temporarily increase noise and vibration through the construction activities. However impacts from noise and vibration are not expected to affect native fauna.

(b) Operational phase

Operational activities at Wentworth Falls Station are not proposed to significantly change and as a result there would be no increased risk to biodiversity.

6.7.3 Mitigation measures

The Contractor is required to undertake the detailed design and construction of the Proposal with regard for the trees on Station Street which must be retained, and to also avoid impacts to any trees/vegetation located within the temporary construction compound (e.g. Tree 10). Tree Protection Zones (TPZ) would be established as per the recommendations in the Flora and Fauna Impact Assessment (GHD, 2014) to protect trees during construction. An arborist would inspect trees at the completion of excavation works, and again at the completion of all works to ascertain the percentage loss of SRZ in trees in close proximity to the works and advise on the health of tree and any remedial actions required.

TfNSW has prepared a *Vegetation Offset Guide* (TfNSW, 2013b) 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.

As some trees have been identified for removal on the eastern side (two medium and two small), the Flora and Fauna Impact Assessment has recommended that a minimum of 12 trees be planted to meet TfNSW's offset ratios. 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 in accordance with the recommendations of the Flora and Fauna Impact Assessment (GHD, 2014) and would include a range of other weed control, tree protection, and erosion and sedimentation control measures. Refer to Table 11 for a list of proposed mitigation measures.

6.8 Contamination, landform, geology and soils

A geotechnical assessment, including site walkover was undertaken as part of the development of the concept design (GHD, 2013). In addition a Hazard Material Risk Assessment was completed in October 2014 and a Phase 1 contamination investigation was undertaken by Greencap in accordance with the *Guidelines for Consultants Reporting on Contaminated Sites* (OEHL, 2011) and involved a desktop analysis and site inspection (Greencap, 2014). The findings of these investigations are summarised in this section.

6.8.1 Existing environment

Geology and soils

Wentworth Falls Station has been constructed at grade, so works associated with the Proposal would be undertaken on land with a relatively flat gradient. The surrounding landscape slopes roughly to the east and the station is situated close to the crest of a ridge running in a north-south direction.

The published geological series sheet for the area (Katoomba 1:50,000) indicates that the site is underlain by Banks Wall Sandstone (Goldbery & Bembrick, 1996). This unit is described as quartz sandstone slightly lithic, with minor inter-bedded claystone. This expectation was confirmed by the bedrock exposures observed at the site during the walkover, particularly in the rail cutting and along the Railway Parade road cutting situated to the east (GHD, 2013).

A review of the soil landscapes of *Katoomba 1:100,000 Soil Landscape Series Sheet* (King, 1994) indicates that the Proposal is located within the boundaries of the Medlow Bath soil landscape which is typically characterised moderately deep, well-drained earthy sands and yellow earth on crests and imperfectly drained grey earths on side slopes.

The geotechnical assessment undertaken to inform the concept design was based on a desktop assessment and site walk over. The report found that the subsurface conditions in the station area are expected to comprise fill and weathered sandstone bedrock which was observed in the rail and road cuttings at a number of locations (GHD, 2013).

According to the NSW Natural Resources Atlas, acid sulphate soils and salinity planning maps, the Proposal site does not have any elevated risk of acid sulphate soils or salinity (Greencap, 2014).

Contamination

Greencap as part of the Phase 1 contamination investigation undertook a review of historical photos and land titles, planning certificates, contaminated land register, groundwater bore database and existing soil and geological mapping. A site inspection of the Proposal was undertaken on 12 November 2014.

Based on this review it was not considered that there was a need to notify the EPA of contamination as per the requirements of the *Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997* (Department of Environment and Climate Change, 2009b). However the assessment noted that the site has been used as part of a railway network for over a century and a number of potential contamination sources were noted which included:

- contaminants from previous land use most notably the old rail siding underneath the western car par on Station Street
- filling material on the station platforms
- spills and leaks associated with kerosene that used to be stored onsite
- hazardous building materials onsite
- spills of diesel and concrete associated with the train derailment during the 1950s
- treatment of rail ballast for vermin and weed protection.

As a result of this land use, a number of contaminants of potential concern may be present such as asbestos, heavy metals, organochlorine pesticides, petroleum hydrocarbons, polycyclic aromatic hydrocarbons, polychlorinated biphenyls and Benzene, Toluene, Ethylbenzene and Xylenes (BTEX).

The assessment confirmed that for the station buildings that there was a low risk occurrence of asbestos, several locations with lead paint (in good to fair condition), presumed PCB's in light fittings, two occurrences of synthetic mineral fibres in good condition, and one instance of an ozone depleting substances in good condition. Generally, all materials would require minimal management unless they are to be physically removed, in which case this would be done by a licensed contractor under controlled conditions.

There may also be contaminated fill present onsite, in particular beneath the hardstand of the platform and within the footprint of the former rail siding on the western side. Soils underlying the former Gang Shed, Goods Shed (situated on the former rail siding) and Southern Storage Shed may have also been impacted from previous spills or leaks. The report recommended that further investigations be undertaken if materials in these areas are at risk of being exposed or disturbed during construction (Greencap, 2014).

6.8.2 Potential impacts

(a) Construction phase

The Proposal would require some excavation work for the installation for the lift shaft pits, eastern car park extension and new footpaths. Other trenching or excavation may be required for the relocation of services or tree 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 biodiversity such as through the introduction of sediments into waterways. Erosion and sedimentation risks for the Proposal are considered to be low, given the level slope of the area and that it is expected that erosion could be adequately managed through the implementation of standard measures as outlined in the 'Blue Book' *Managing Urban Stormwater, Soils and Construction* (Landcom, 2004).

In addition, given the past land use and findings of the geotechnical assessment, excavation 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 is potential for onsite contamination, chemical testing and visual characterisation would be undertaken to confirm the composition and nature of excavated material. Where spoil is classified as unsuitable for reuse it would be transferred to an appropriately licensed offsite facility.

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

(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/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.

An environmental risk assessment is to be undertaken prior to construction and must include a section on contamination as per the TfNSW Standard Requirements. Further investigations of potential contamination would be undertaken if areas identified in the contamination report (platform hardstand and former rail siding) are at risk of being exposed or disturbed during construction. Measures to mitigate potential impacts from any contaminated soil/materials during construction would be developed and implemented through a Waste Management Plan as part of the CEMP. All waste would be managed in accordance with relevant legislation.

Refer to Table 11 for a list of proposed mitigation measures.

6.9 Hydrology and water quality

6.9.1 Existing environment

Surface water and groundwater

The majority of the Proposal site is located on land mapped within the Sydney Drinking Water Catchment (refer Section 4.3.3 for more information). The nearest surface waterway is Jamison Creek located approximately 110 metres west of the Proposal site that flows in a northerly direction. Jamison Creek drains into the Wentworth Falls Lake located approximately 600 metres north west of the station. However, based on the topography it is considered that runoff from the Proposal site would drain towards the east into Water Nymphs Dell that flows into Blue Mountains Creek which is located approximately 220 metres to the east (Greencap, 2014).

Surface runoff within the vicinity of the Proposal is managed by Blue Mountains City Council's stormwater drainage system consisting mainly of at-grade stormwater pits, connected to an underground pipe network.

A review of the Department of Natural Resources Atlas website conducted on 12 November 2014 identified eight registered groundwater bores within a 1.5 kilometre radius of the site. No standing water level was provided for any of these bores and as such the available information is of limited use however, based upon local topography, it is inferred that groundwater would flow in a roughly easterly direction on site (Greencap, 2014).

Flooding

The one hundred year Average Recurrence Interval (ARI) storm event flood maps prepared by Blue Mountains City Council as part of the Draft Blue Mountains LEP have been reviewed and the mapping indicates that the Proposal area and adjacent streets are not located in the flood prone land. Flooding does occur approximately 110 metres west of the Proposal along Jamison Creek.

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.

Activities which 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 may need to be dewatered as a result of groundwater seepage or rainfall runoff. Incorrect dewatering can 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 and while the new design does result in an increase in impervious areas through the extension of the eastern car park, the Proposal would be designed in accordance with the relevant Sydney Trains, Sydney Water and Council standards and requirements.

6.9.3 Mitigation measures

As noted in Section 6.8.3, Erosion and Sediment Control Plans would be prepared and implemented for the Proposal to manage risks to water quality. Other mitigation measures that would be required for construction include regular vehicle and equipment maintenance along with spill kits and spill response procedures. Any dewatering would be undertaken in accordance with the TfNSW's *Water Discharge and Reuse Guideline* (TfNSW, 2013c).

Operational risks associated with localised flooding from an increase to impervious areas through the extension of the eastern car park would be addressed during detailed design of the Proposal.

Refer to Table 11 for a list of proposed mitigation measures.

6.10 Air quality

6.10.1 Existing environment

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 include:

- staff and customers at Wentworth Falls Station
- residential properties immediately east, and north and south of the station
- commercial properties to the west of the station
- recreational users of nearby parks
- Blue Mountains Grammar School.

The OEH undertakes air quality monitoring for five key air pollutants: ozone (O₃), nitrogen dioxide (NO₂), carbon monoxide (CO), sulphur dioxide (SO₂) and particulates less than 10 micrometres in diameter (PM₁₀), 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 at Richmond, St Marys, Vineyard and Prospect. The closest monitoring station is Richmond, about 50 kilometres from Wentworth Falls.

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 PM₁₀. Ozone levels were above the NEPM goal level at St Marys on two days in 2013.

A search of the daily regional air quality index for the Sydney North West region for the last year (December 2013 to November 2014) showed that the region experienced:

- very good air quality on 11.2 percent of days
- good air quality on 77.5 percent of days
- fair air quality on 9.0 percent of days
- poor air quality on 1.9 percent of days
- very poor air quality on 0 percent of days
- hazardous air quality on 0.3 percent of days.

6.10.2 Potential impacts

(a) Construction phase

The main air quality impacts that have the potential to occur during construction would be temporary impacts associated with dust particles and emissions of CO, SO₂, PM₁₀, nitrous oxides, volatile organic compounds (VOC), and polycyclic aromatic hydrocarbons (PAH) 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 new lifts to access the station platform
- construction of car park extension on eastern side of the station
- 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 result in a significant change in land use. Also, 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 11 provides a list of mitigation measures that are proposed to manage air quality issues during construction. They are 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. Such measures would be included in the CEMP to be prepared for the Proposal.

6.11 Other impacts

6.11.1 Services/utilities

The Proposal has the potential to impact services such as through direct impact from excavation activities or operation of other equipment, if services are not appropriately identified and protected or relocated.

The Proposal is located close to several underground services as identified in Section 3.2.8. In addition a new aboveground padmount substation would need to be installed to provide an upgraded power supply for the station and would be located close to the existing power supply infrastructure on the eastern side of the station (subject to detailed design). The detailed design of the Proposal would be undertaken to avoid services where feasible. Relocation or other works that may affect services would be undertaken in consultation with the respective utility authorities.

6.11.2 Waste

The construction of the Proposal would generate the following waste:

- asphalt and concrete
- earthworks spoil
- various building material wastes (including metals, timbers, plastics, concrete, carpeting 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 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.

A search of the Department of Planning and Environment's Major Projects Register, Sydney West Joint Regional Planning Panel Development and Planning Register, and Blue Mountains Development Application Register on 9 December 2014 identified no major developments in the nearby vicinity likely to be constructed at a similar time.

During construction the works would be co-ordinated with any other construction activities in the area with Council, Sydney Trains and any other developers identified to minimise cumulative construction impacts such as traffic and noise.

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 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.

Due to the small scale of the Proposal and the short term temporary nature of the 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 11.

It is anticipated that, once operational, the Proposal would result in an increase in use of public transport and a decrease in use of private motor vehicles by commuters to travel to and from Wentworth Falls. This shift in transport usage would reduce the amount of fuel consumed by private motor vehicles and would result in a 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 changes in the climate and understand the limitations of adaptation. The effects of climate change on the Sydney region can be assessed in terms of weather changes, storm intensity, flooding and increased risk of fire.

Climate change could lead to an increase in the intensity of rainfall events, whereby the rainfall expected to occur in a 100-year average recurrence interval flood event would occur more frequently. 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 of bushfires. The Proposal site is not situated on land mapped as bushfire 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 *Sustainable Design Guidelines – Version 3.0* (TfNSW, 2013a) and TfNSW's EMS. These Guidelines would be applied to the detailed design of the Proposal and require a number of mandatory and discretionary initiatives to be applied. Refer to Section 3.1.4 for more information regarding the application of the Guidelines.

Further positive impacts in relation to climate change and sustainability associated with the Proposal include encouraging a reduction in private vehicle use and increasing 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 include at a minimum the following management plans:

- Construction Traffic Management Plan
- Construction Noise and Vibration Management Plan
- Erosion and Sediment Control Plan
- Waste Management Plan.

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 11. These proposed measures would minimise the potential adverse impacts of the Proposal identified in Chapter 6, should the Proposal proceed.

Table 11 Proposed mitigation measures

Mitigation measures	
General	
1	An Environmental Controls Map (ECM) would be developed prior to commencement of construction in accordance with TfNSW's <i>Guide to Environmental Control Map</i> (TfNSW, 2013d). The ECM would be implemented for the duration of construction.
2	A project risk assessment including environmental aspects and impacts would be undertaken prior to the commencement of construction.
3	Weekly inspections to monitor environmental compliance and performance would be undertaken during construction.
4	Prior to the commencement of construction, all contractors would be inducted on the key project environmental risks, mitigation measures and conditions of approval.
5	Detailed design of the Proposal would be undertaken in accordance with the <i>Sustainable Design Guidelines - Version 3.0</i> (TfNSW, 2013a) and include appropriate fire management measures.
6	Service relocation would be undertaken in consultation with the relevant authority. Contractors would mark existing services on the ECM to avoid direct impacts during construction.

Mitigation measures

Traffic and site access

- 7 Prior to the commencement of construction a CTMP would be prepared as part of the CEMP and would include as a minimum:
- Procedures for preparing and implementing TCPs.
 - Final construction traffic approach and departure routes.
 - Locations of access to and from the local road network and contractor parking.
 - Details of construction signage, traffic controllers (in particular for reversing out of the site) and other community notification.
 - Measures to limit temporary parking losses (e.g. staged construction in car parks).
 - Measures to maintain customer access to and from the station at all times (e.g. through temporary stairs and bridge structures).
 - Measures to maintain private property access unless otherwise agreed.
- Consultation with the relevant roads authorities would be undertaken during preparation of the CTMP.
- 8 The size and layout of site compound would also be reviewed and, if required and where practicable, adjusted to enable heavy vehicles to turn within the compound area and to depart the site in a forward movement.
- 9 Heavy vehicles would be restricted to specified routes, with the aim of minimising impacts on local roads, high pedestrian areas and school zones. Where feasible, route markers would be installed for heavy vehicles along designated routes.
- 10 The impacts of construction traffic on the local road network and the impacts on intersection operation would be minimised by undertaking construction vehicle traffic movements outside of peak road traffic periods and outside of school peak periods, where practicable.
- 11 The queuing and idling of construction vehicles in residential streets would be minimised through staging of deliveries where practicable.
- 12 Communication would be provided to the community and local residents to inform them of impacts to vehicle movements and anticipated effects on the local road network relating to site works.
- 13 Access to all private properties and businesses adjacent to the works would be maintained during construction, unless otherwise agreed by relevant property owners.
- 14 Should road closure be required, signage would be erected to clearly delineate alternative access and that nearby businesses would operate as normal.
- 15 Pedestrian access to and from the station would be maintained at all times during construction.
- 16 The performance of all project traffic arrangements would be monitored during construction.
- 17 Road Occupancy Licences for temporary closure of roads would be obtained, where required.

Urban design, landscape and visual amenity

- 18 The detailed design of the Proposal would be undertaken with reference to the recommendations in the Visual Impact Assessment (GBD, 2014).
- 19 Worksite compounds would be screened, with shade cloth (or similar material, where necessary) to minimise visual impacts from key viewing locations.
- 20 Temporary hoardings, barriers, traffic management and signage would be removed when no longer required.

Mitigation measures

- 21 Light spill from the rail corridor into adjacent visually sensitive properties would 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.
- 22 All lighting would be designed and installed in accordance with the requirements of standards relevant to *AS 4282:1997 Controlling the Obtrusive Effects of Outdoor Lighting*.
- 23 Rehabilitation planting would be undertaken as early as possible to replace vegetation that provided screening to adjacent residential properties and sensitive visual receivers.
- 24 Graffiti would be removed in accordance with TfNSW's standard requirements.
- 25 Wayfinding signage would be installed as per TfNSW guidelines.

Noise and vibration

- 26 Prior to commencement of works, a CNVMP would be prepared and implemented in accordance with the requirements of the *Construction Noise Strategy* (TfNSW, 2012b) and the Noise and Vibration Impact Assessment for the Proposal (SLR, 2014). The CNVMP would take into consideration measures for reducing the source noise levels of construction equipment by construction planning and equipment selection where practicable.
- 27 Works would generally be carried out during normal work hours (i.e. 7am to 6pm Monday to Friday; 8am to 1pm Saturdays). While some out of hours works would be required (e.g. during possessions) an Out of Hours Work approval would need to be obtained from TfNSW by the Contractor.
- 28 To reduce the construction noise impact from human activities, reasonable and feasible noise mitigation options should be considered, including:
- Regularly training workers and contractors (such as at toolbox talks) on the importance of minimising noise emissions and how to use equipment in ways to minimise noise.
 - Using only the equipment necessary for the upgrade works at any one time.
 - 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 possible.
 - Switching off any equipment not in use for extended periods e.g. heavy vehicles engines should be switched off whilst being unloaded.
 - Avoiding deliveries at night/evenings wherever possible.
 - 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, throwing of metal items and slamming of doors.

Mitigation measures

- 29 To reduce the construction noise and vibration impacts from mechanical activities, reasonable and feasible noise mitigation options should be considered, including:
- Maximising the offset distance between noisy plant and adjacent sensitive receivers and determining safe working distances.
 - 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).
 - Fitting mufflers/silencers to pneumatic tools (e.g. breakers) and use residential-grade mufflers on plant.
 - Use of quieter and less vibration emitting construction methods where feasible and reasonable.
- 30 Work would be conducted behind temporary hoardings/screens wherever practicable. The installation of construction hoarding should take into consideration the location of residential receivers to ensure that 'line of sight' is broken, where feasible.
- 31 Where the $L_{Aeq(15minute)}$ construction noise levels are predicted to exceed 75 dBA, respite periods would be observed. This would include restricting the hours that very noisy activities can occur.
- 32 To avoid structural impacts to heritage items the proposed works would be undertaken in accordance with the safe work distances outlined in the Noise and Vibration Assessment (SLR, 2014) and attended vibration monitoring or vibration trials would be undertaken where these distances are to be exceeded. In addition, building/structure surveys of sensitive structures within the heritage curtilage or nearby heritage items would be undertaken in order to assess the potential for increased susceptibility to damage from vibration.

Indigenous heritage

- 33 All construction staff would receive basic training in the recognition of Indigenous cultural heritage material. This training would include information such as the importance of Indigenous cultural heritage material and places to both the Indigenous and non-Indigenous community, as well as the legal implications of removal, disturbance and damage to any Indigenous cultural heritage material and sites.
- 34 If unforeseen Indigenous objects are uncovered during construction, work should cease in the vicinity of the find and the TfNSW Project Manager and Environment Planning Manager are to be immediately notified to assist in co-ordinating next step which are likely to involve consultation with an archaeologist, the OEH and the 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.. Where required, further archaeological investigations and an Aboriginal Heritage Impact Permit would be obtained before works recommence.

Non-indigenous heritage

- 35 A suitably qualified and experienced heritage architect would be engaged to provide input to, and review of, the detailed design of the Proposal, including preparation of a specification and details for proposed changes to significant heritage fabric.
- 36 TfNSW would be consulted in regard to the final design of the canopies, lifts and station heritage building/s, and refurbishment/modifications to heritage building/s to be submitted to TfNSW for approval, in consultation with the Sydney Trains heritage team.

Mitigation measures

- 37 The final design of the new lifts and canopies should be sympathetic to the original design of the heritage building through its form, scale and materiality. The materials and colour palette for new built elements would be sympathetic to the heritage context of the station and be visually recessive. The use of unobtrusive, modern, light materials such as glass panelling and slim frame elements would reduce the bulk of the Proposal, reducing the visual impact of additional items.
- 38 The design of new DDA-compliant accessible paths, parking and seating should be sympathetic to the existing character of the area. For example, similar and/or sympathetic colour schemes to those existing within the area should be incorporated into the final design.
- 39 The detail of proposed ramps adjacent to historic structures is to consider visual and physical impacts to heritage structures to ensure long term conservation of historic fabric can be achieved.
- The design and materials used for proposed accessibility ramps around the Station Building and entrances to the station should be sympathetic to the historical characteristics of the area. For example, materials used in their construction should be consistent with the character of the station, and colour schemes should be unobtrusive.
- 40 The addition of a communications/equipment room to the interior of the Station Building would be considered further during detailed design. It is recommended that the alternative option to incorporate this room to the Out of Shed building or Lamp Room, be considered in order to mitigate the visual impacts to the interior of the Station Building (should the communications/equipment room be located within this building).
- If the latter option for the communications/equipment room is chosen, the Lamp Room or Out of Shed building would need to include provision for air conditioning and other codes and standards requirements and would involve modifications to the existing buildings. The installation of air conditioning should be sympathetic to the historical characteristics of the area and fabric of the building. For example, materials used in their construction should be congruent with the character of the station, and colour schemes should be unobtrusive.
- 41 The design of any new ticket window or door/doorways should be sympathetic to the existing materials/design used in the building.
- 42 As much as possible of the original fabric of the Station Building, and internal features would be retained in situ. Any wall demolition is to be partial, with cornices to be retained. Features such as ceiling roses and the external chimney, and openings in external walls are to be retained as far as possible, and moveable heritage items such as the 'Next Train' indicator boards, the timber corner bench seats, the old timber ticket window desk, and the old safe are to be relocated sympathetically elsewhere in the building.
- 43 Any new partitions/doorways are to be timber-framed to allow future removal. Any ceiling services are to be suspended/limited to avoid penetrations into the ceiling, and service penetrations into external walls are to be minimised. Any new fixtures (e.g. electrical or plumbing conduits) are to be sympathetically attached and any new architraves or timber detailing is to be reinstated or matched.
- 44 Investigations should be undertaken with regards to the moveable heritage items located in the Station Building and Lamp Room. Options for their retention or relocation as part of the proposed works would be determined in consultation with TfNSW and the Sydney Trains heritage team.
- 45 Investigations would be undertaken to consider relocating the vending machines currently attached to the exterior of the building into the new waiting room or other location as appropriate in order to reduce the visual impact to the Station Building façade.

Mitigation measures

- 46 A program of archival recording would be undertaken prior to the partial and complete demolition of existing walls associated with the Station Building. This recording should include a photographic record of the walls, their original context, layout, building materials and methods used during their construction. The recording should be undertaken in accordance with the guidelines *How to Prepare Archival Records of Heritage Items* (NSW Heritage Office, 1998). As these elements have limited heritage significance, the recording need only meet the minimum requirements for archival recording; measured drawings of the structures would not be necessary.
- 47 As the Wentworth Falls Railway Station Group, War Memorial in Coronation Park and Station Street Precinct Conservation Area are all listed on the Blue Mountain LEP 2005, the Blue Mountains City Council should be notified of the proposed upgrade works.
- 48 The Contractor would be required to prepare a CEMP that specifically addresses the heritage impacts and required mitigation measures.
- 49 Non-indigenous heritage items/conservation areas and the station curtilage would be identified on the Contractor's ECM.
- 50 A heritage induction would be provided to workers before construction begins, informing them of the location of known heritage items and guidelines to follow if unanticipated heritage items or deposits are located during construction.
- 51 Contractor personnel are not to access any within the Station Street Precinct Conservation Area as part of construction activities. This area and any other heritage 'no-go' zones for construction would be identified on the Contractor's ECM.
- 52 When undertaking platform works adjacent to the platform station buildings, the fabric of the station buildings would be protected from damage through the implementation of a suitable protective medium. Adequate measures would be taken to protect existing steps, posts, door jambs etc. from direct contact with any new surface materials.
- 53 To effectively mitigate potential impacts of vibration on the heritage platform buildings, activities that cause vibration would be managed in accordance with German Standard DIN 4150 - Part 3 (DIN 1999) heritage specifications.
- 54 Sydney Trains would be notified of the proposed works and provided with a copy of relevant heritage documentation (e.g. Statement of Heritage Impact). Changes to the form, fabric and landscape setting of the Wentworth Falls Railway Station Group should be recorded in the heritage inventory for this item.
- 55 Copies of the 'as built' construction plans, photographs illustrating the completed works and the Archival Record would be lodged with RailCorp's Office of Rail Heritage as a documentary record of changes to the station.
- 56 In the event that any unanticipated archaeological deposits are identified within the project site during construction, work likely to impact on the deposit would cease immediately and the TfNSW Project Manager and Environment Planning Manager are to be immediately notified to assist in co-ordinating next step which are likely to involve consultation with an archaeologist. Where it is required further, archaeological work and/or consents would be obtained for any unanticipated archaeological deposits prior to works recommencing at the location.

Socio-economic

- 57 Sustainability criteria for the Proposal would 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.
- 58 Feedback through the submissions process would be encouraged and facilitate opportunities for the community and stakeholders to have input into the project, where possible.

Mitigation measures

- 59 A Community Liaison Plan would be prepared by the Contractor to identify all potential stakeholders and best practice methods for consultation with these groups during construction. The plan would also encourage feedback and facilitate opportunities for the community and stakeholders to have input into the project, where possible.
- 60 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.
- 61 The community would be kept informed of construction progress, activities and impacts in accordance with the Community Liaison Plan to be developed prior to construction.

Biodiversity

- 62 All workers would be provided with an environmental induction prior to commencing work onsite. This induction would include information on the protection measures to be implemented to protect vegetation, penalties for breaches and locations of areas of sensitivity.
- 63 Disturbance of vegetation would be limited to the minimum amount necessary to construct the Proposal. The Contractor is required to undertake the detailed design and construction of the Proposal with regard for the trees on Station Street which must be retained, and to also avoid impacts to any trees/vegetation located within the temporary construction compound (e.g. Tree 10).
- 64 Tree Protection Zones (TPZs) should be established around trees to be retained, as nominated in the Flora and Fauna Impact Assessment (GHD, 2014). Tree protection should be undertaken in line with *AS 4970-2009 Protection of Trees on Development Sites* and should include exclusion fencing of TPZs.
- 65 Trees to be removed as nominated in the Flora and Fauna Impact Assessment (GHD, 2014) would be clearly demarcated onsite prior to construction, to avoid unnecessary vegetation removal. Trees to be retained would be protected through temporary protection measures discussed above.
- 66 In the event of any tree to be retained becoming damaged during construction, an arborist would be informed immediately to inspect and provide advice on remedial action where possible.
- 67 Should onsite works determine the removal or trimming of any additional trees, TfNSW's Tree Removal Application Form would need to be completed and submitted to TfNSW for approval.
- 68 Weed control measures would be developed and implemented by the CEMP to manage the dispersal and establishment of weeds during the construction phase of the project. This would include the management and disposal in accordance with the *Noxious Weeds Act 1993*.
- 69 Vehicles and other equipment would be used onsite would be cleaned to minimise seeds and plant material entering the site to prevent the introduction of further exotic plant species.
- 70 Mulching and watering would be undertaken until plants are established.
- 71 Offsets and/or landscaping would be undertaken in accordance with TfNSW's *Vegetation Offset Guideline* (TfNSW, 2013b) and in consultation with Blue Mountains City Council and Sydney Trains. Four trees are earmarked for removal and should be offset with 12 trees as advised in the Flora and Fauna Impact Assessment (GHD, 2014). Any additional clearing would also require tree offset planting.

Mitigation measures

Soils and water

- 72 Prior to commencement of works, Erosion and Sediment Control Plans would be prepared 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. Measures would include:
- Stabilised surfaces would be reinstated as quickly as practicable after construction.
 - All stockpiled materials would be stored in bunded areas, covered appropriately and kept away from waterways to avoid sediment entering the waterways.
 - Sediment would be prevented from moving off-site and sediment laden water prevented from entering any watercourse, drainage line or drainage inlet.
 - Any material transported onto pavement surfaces would be swept and removed at the end of each working day.
- Erosion and sediment control measures would be implemented and maintained to:
- Prevent sediment moving off-site and sediment laden water entering any water course, drainage lines, or drain inlets.
 - Reduce water velocity and capture sediment onsite.
 - Minimise the amount of material transported from site to surrounding pavement surfaces.
 - Divert clean water around the site.
-
- 73 Erosion and sediment control measures would be established prior to any clearing and grubbing and site establishment activities.
-
- 74 Erosion and sediment control measures would be maintained and regularly inspected (particularly following rainfall events) to ensure their ongoing functionality.
-
- 75 Works would be avoided during heavy rainfall (or whilst the ground remains sodden) to minimise vehicle disturbance to the topsoil.
-
- 76 Erosion and sediment control measures would be left in place until the works are complete and areas are stabilised.
-
- 77 Vehicles and machinery would be properly maintained and routinely inspected to minimise the risk of fuel/ oil leaks.
-
- 78 All fuels, chemicals and hazardous liquids would be stored away from drainage lines, within an impervious bunded area in accordance with Australian Standards and EPA Guidelines.
-
- 79 Construction plant, vehicles and equipment would be refuelled off-site, or in a designated refuelling area.
-
- 80 Adequate water quality and hazardous materials procedures (including spill management procedures, use of spill kits and procedures for refuelling and maintaining construction vehicles/equipment) would be implemented in accordance with relevant EPA guidelines and the TfNSW Chemical Storage and Spill Management guidelines during the construction phase. All staff would be made aware of the location of the spill kit and be trained in its use.
-
- 81 The existing Sydney Trains and Council drainage systems would remain operational throughout the construction of the project.
-
- 82 Should groundwater be encountered during excavation works, groundwater would be managed in accordance with the requirements of the *Waste Classification Guidelines* (Department of Environment, Climate Change and Water, 2009) and *Water Discharge and Reuse Guideline* (TfNSW, 2013c).
-

Mitigation measures

83 In the event of an incident, works would cease in the immediate vicinity and the EPA would be notified by TfNSW if required, in accordance with Part 5.7 of the POEO Act.

Air quality

84 Methods for management of emissions would be incorporated into project inductions, training and pre-start talks.

85 Vehicle and machinery movements during construction would be restricted to designated areas and sealed/compacted surfaces where practicable.

86 Visual monitoring of dust would be undertaken, where visible levels of dust are high, onsite activities would be reviewed, with additional control measures and/or varied site operations implemented if required.

87 Stockpiles would be covered when not in use.

88 Dust would be visually monitored and where necessary the following measures implemented:

- Apply water (or alternate measures) to exposed surfaces that are causing dust generation. Surfaces may include unpaved roads, stockpiles, hardstand areas and other exposed surfaces (for example recently graded areas).
- Appropriately cover loads on trucks transporting material to and from the construction site. Securely fix tailgates of road transport trucks prior to loading and immediately after unloading.

89 Prevent where possible, or remove, mud and dirt being tracked onto sealed road surfaces.

90 Plant and machinery would be regularly checked and maintained in a proper and efficient condition.

Waste and contamination

91 A Waste Management Plan would be prepared by the Contractor 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 free of rubbish.

92 An appropriate Unexpected Finds Protocol, incorporating asbestos containing materials and other potential contaminants, would be included in the CEMP. This would include procedures for handling asbestos containing materials, including licensed contractor involvement as required, record keeping, site personnel awareness and waste disposal would be undertaken in accordance with WorkCover requirements.

93 An environmental risk assessment is to be undertaken prior to construction and must include a section on contamination as per the TfNSW Standard Requirements.

94 Further investigations of potential contamination would be undertaken if areas identified in the contamination report (Greencap, 2014) such as the platform hardstand and former rail siding, if they are at risk of being exposed or disturbed during construction.

95 All spoil would be tested to confirm presence of any contamination. Any contaminated spoil would be disposed of at an appropriately licensed facility.

Cumulative impacts

96 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.

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 Wentworth Falls Station - including the provision of an accessible route for equitable access to the station platform through provision of accessible parking and lifts
- improved customer amenity and facilities at the station, including larger waiting room, accessible toilets and canopies over the footbridge and stairs for weather protection
- improving connections with wider pedestrian network through new pedestrian paths from both sides of the station to adjacent car parks
- improved and safer traffic flow through the extension of the Railway Parade car park to include a turning area for vehicles
- improved transport interchange facilities including new Kiss and Ride zones and bicycle facilities on both sides of the station; and accessible seating at the Station Street shelter
- potential increased use of public transport to and from Wentworth Falls.

The likely key impacts of the Proposal are as follows:

- temporary noise and vibration impacts during construction
- temporary changes to vehicle and pedestrian movements to access the station and car parks 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
- introduction of new elements, such as canopies and lifts, into the visual environment.

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 7, and Appendices 1 and 2). 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.

References

- Artefact Heritage 2014. *Wentworth Falls Easy Access Upgrade Statement of Heritage Impact*. Artefact Heritage. Sydney.
- BMCC. 2010. *Draft Blue Mountains Bike Plan 2020*. Blue Mountains City Council. Sydney.
- BMCC. 2012. *Blue Mountains State of City Report 2008-2102*. Blue Mountains City Council. Sydney.
- Department of Environment and Climate Change. 2009a. *Interim Construction Noise Guideline*. Department of Environment and Climate Change. Sydney.
- Department of Environment and Climate Change. 2009b. *Duty to Report Contamination under the Contaminated Land Management Act 1997*. Department of Environment and Climate Change. Sydney.
- Department of Environment, Climate Change and Water. 2009. *Waste Classification Guidelines*. Department of Environment, Climate Change and Water. Sydney.
- Department of Environment and Conservation. 2006. *Assessing Vibration: A Technical Guideline*. Department of Environment and Conservation. Sydney.
- Department of Planning. 2007. *Draft North West Subregional Strategy*. Department of Planning. Sydney.
- Department of Planning. 2010. *Metropolitan Plan for Sydney 2036*. Department of Planning. Sydney.
- Department of Planning and Environment. 2014. *A Plan for Growing Sydney*. Department of Planning and Environment. Sydney.
- Department of Planning and Infrastructure. 2013. *Draft Metropolitan Strategy for Sydney 2031*. Department of Planning and Infrastructure. Sydney.
- Department of Premier and Cabinet. 2011. *NSW 2021 – A Plan to Make NSW Number One*. Department of Premier and Cabinet. Sydney.
- EPA. 2000. *NSW Industrial Noise Policy*. NSW Environment Protection Authority. Sydney.
- Fruin, John J. 1987. *Pedestrian Planning and Design – Revised Edition*. Elevator World, Alabama, USA.
- GBD. 2014. *Wentworth Falls Station Easy Access Upgrade Transport Access Program – Visual Impact Assessment*. Green Bean Design. Sydney.
- GHD. 2013. *Wentworth Falls Station Precinct Accessibility Upgrade Concept Plan Report*. GHD. Sydney.
- GHD. 2014. *Wentworth Falls Station Easy Access Upgrade – Flora and Fauna Impact Assessment*. GHD. Sydney.
- Goldbery R. & Bembrick C.S. 1996. *Katoomba 1:50 000 Geological Map, 8930-I*. Geological Survey of New South Wales. Sydney.
- Greencap. 2014. *Phase 1 Contamination Investigation – Wentworth Falls Railway Station*. Greencap NAA, Sydney.
- GTA. 2014. *Wentworth Falls Station Easy Access Upgrade Traffic, Transport and Access Impact Assessment*. GTA Consultants. Sydney.
- King, DP. 1990. *Soil Landscapes of the Katoomba 1:100,000 Sheet map and report*. Conservation and Land Management. Sydney.

- Landcom. 2004. *Managing Urban Stormwater: Soils and Construction, Volume 1, Fourth Edition*. Landcom, Sydney.
- Ministry of Transport. 2008. *Guidelines for the Development of Public Transport Interchange Facilities*. Ministry of Transport. Sydney.
- NSW Government. 2014. *Rebuilding NSW - State Infrastructure Strategy 2014*. NSW Government. Sydney.
- NSW Heritage Office. 1998. *How to Prepare Archival Records of Heritage Item*. NSW Heritage Office. Sydney.
- OEH. 2011. *Guidelines for Consultants Reporting on Contaminated Sites*. Office of Environment and Heritage, Sydney.
- OEH. 2014. *NSW Air NEPM Compliance Report 2013*. Office of Environment and Heritage. Sydney.
- SLR. 2014. *Environmental Noise and Vibration Impact Assessment – Wentworth Falls Station Easy Access Upgrade*. SLR Consulting Australia. Newcastle.
- TfNSW. 2012a. *NSW Long Term Transport Master Plan*. Transport for NSW, Sydney.
- TfNSW. 2012b. *Construction Noise Strategy*. Transport for NSW. Sydney.
- TfNSW. 2012c. *Disability Action Plan 2012-17*. Transport for NSW. Sydney.
- TfNSW. 2013a. *Sustainable Design Guidelines - Version 3.0*. Transport for NSW. Sydney.
- TfNSW. 2013b. *Vegetation Offset Guide*. Transport for NSW. Sydney.
- TfNSW. 2013c. *Water Discharge and Reuse Guideline*. Transport for NSW. Sydney.
- TfNSW. 2013d. *Guide to Environment Control Map*. Transport for NSW. Sydney.

Appendix 1 – Consideration of matters of National Environmental Significance

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

Factor	Impacts
<p>Any impact on a World Heritage property?</p> <p>The Greater Blue Mountains World Heritage Area occurs within the locality to the north and south of the Proposal and includes the Blue Mountains National Park which is within 500 metres of the Proposal. The Greater Blue Mountains World Heritage Area would not be impacted as it is separated by residential areas and the proposed activities are of a nature and scale that it is unlikely to impact the adjacent environment.</p>	nil
<p>Any impact on a National Heritage place?</p> <p>The Blue Mountains National Park is listed a registered item on the Register of the National Estate (non-statutory). The Blue Mountains World Heritage Area would not be impacted as it is separated by residential areas, and the proposed activities are of a nature and scale that it is unlikely to impact the adjacent environment.</p>	nil
<p>Any impact on a wetland of international importance?</p> <p>There are no wetlands of international significance in the vicinity of the Proposal.</p>	nil
<p>Any impact on a listed threatened species or communities?</p> <p>It is unlikely that the development of the Proposal would significantly affect any listed species of communities.</p>	nil
<p>Any impacts on listed migratory species?</p> <p>It is unlikely that the development of the Proposal would significantly affect any listed migratory species.</p>	nil
<p>Does the Proposal involve a nuclear action (including uranium mining)?</p> <p>The Proposal does not involve a nuclear action.</p>	nil
<p>Any impact on a Commonwealth marine area?</p> <p>There are no Commonwealth marine areas in the vicinity of the Proposal.</p>	nil
<p>Does the Proposal involve development of coal seam gas and/or large coal mine that has the potential to impact on water resources?</p> <p>The Proposal is for a transport facility and is not related to coal seam gas or mining.</p>	nil
<p>Additionally, any impact (direct or indirect) on Commonwealth land?</p> <p>The Proposal would not be undertaken on or near any Commonwealth land.</p>	nil

Appendix 2 – Consideration of clause 228

The table below demonstrates TfNSW's consideration of the specific factors of clause 228 of the EP&A Regulation in determining whether the Proposal would have a significant impact on the environment.

Factor	Impacts
<p>(a) Any environmental impact on a community?</p> <p>There would be some temporary impacts to the community during construction would be anticipated, particularly in relation to noise, traffic and access and visual amenity. Mitigation measures outlined in Chapter 7 would be implemented to manage and minimise adverse impacts.</p>	minor
<p>(b) Any transformation of a locality?</p> <p>The Proposal is unlikely to have result in a transformation of the locality surrounding Wentworth Falls Station. The station precinct would be enhanced by the Proposal.</p>	nil
<p>(c) Any environmental impact on the ecosystem of the locality?</p> <p>The Proposal would require removal of some street trees but given the Proposal's location with an urbanised environment and the low habitat value of the trees to be removed, impacts to biodiversity and ecosystems are expected to be negligible.</p>	nil
<p>(d) Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality?</p> <p>There would be some temporary impacts during construction particularly in relation to noise, traffic and access and visual amenity.</p> <p>During operation the Proposal would have positive impacts to the community through providing improved access to Wentworth Falls Station.</p>	minor
<p>(e) Any effect on a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or other special value for present or future generations?</p> <p>The Proposal would have a positive effect on public transport access and would be sympathetic to the existing surroundings.</p> <p>The station is a locally listed heritage item and is listed on the Section 170 Heritage and Conservation Register. The Proposal would result in some minor impacts to some parts of the station that are heritage listed. Impacts to minimise heritage would be realised through the implementation of the mitigation measures included in this REF and the Statement of Heritage Impact (Artefact Heritage, 2014).</p>	minor
<p>(f) Any impact on the habitat of protected fauna (within the meaning of the <i>National Parks and Wildlife Act 1974</i>)?</p> <p>The Proposal is unlikely to have any impact on the habitat of protected fauna.</p>	nil
<p>(g) Any endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air?</p> <p>The Proposal is unlikely to have any impact on endangering any species of animal, plant or other form of life, whether living on land, in water or in the air.</p>	nil
<p>(h) Any long-term effects on the environment?</p> <p>The Proposal is unlikely to have any long term effects on the environment</p>	nil

Factor	Impacts
<p>(i) Any degradation of the quality of the environment?</p> <p>The Proposal is unlikely to have any degradation on the quality of the environment.</p>	nil
<p>(j) Any risk to the safety of the environment?</p> <p>The Proposal is unlikely to cause any pollution or safety risks to the environment provided the recommended mitigation measures are implemented.</p>	nil
<p>(k) Any reduction in the range of beneficial uses of the environment?</p> <p>The Proposal is unlikely to have any reduction in the range of beneficial uses of the environment.</p>	nil
<p>(l) Any pollution of the environment?</p> <p>The Proposal is unlikely to cause any pollution or to the environment provided the recommended mitigation measures are implemented.</p>	nil
<p>(m) Any environmental problems associated with the disposal of waste?</p> <p>The Proposal is unlikely to cause any environmental problems associated with the disposal of waste.</p> <p>All waste would be managed and disposed of with a site-specific Waste Management Plan. Mitigation measures would be implemented to ensure waste is reduced, reused or recycled where practicable.</p>	nil
<p>(n) Any increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply?</p> <p>The Proposal is unlikely increase demands on resources that are or are likely to become in short supply.</p>	nil
<p>(o) Any cumulative environmental effect with other existing or likely future activities?</p> <p>Cumulative effects of the Proposal are described in Chapter 6. Where feasible, environmental management measures would be coordinated to reduce cumulative construction impacts. The Proposal is unlikely to have any significant long term impacts.</p>	minor
<p>(p) Any impact on coastal processes and coastal hazards, including those under projected climate change conditions.</p> <p>The Proposal would not affect or be affected by any coastal processes or hazards.</p>	nil

Appendix 3 – Neutral or Beneficial Effect Assessment

As required by Clause 12 of the *State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011*, the table below outlines the Neutral or Beneficial Effect Assessment for the Proposal to be undertaken by public authorities and that is being assessed under Part 5 of the EP&A Act.

NorBE Assessment – will there be a neutral or beneficial effect on water quality? (Assessment must consider surface and ground waters and must consider construction and operational stages)	
1. Are there any identifiable potential impacts on water quality? What pollutants are likely? Major potential pollutants are sediments (fine and coarse), nitrogen, phosphorus, pathogens and hazardous chemicals and contaminants such as oil/fuel. During construction and/or post construction?	During construction there is potential for: - sediment from excavations and stockpiles to enter waterways through nearby drains - oil spills from operation of equipment/machinery. There would be no operational risks to water quality.
2. For each pollutant list the safeguards needed to prevent or mitigate potential impacts on water quality (these may be Sydney Catchment Authority endorsed current recommended practices and/or equally effective other practices)?	The excavation works for the Proposal are small in scale and the risks to water quality have been assessed as low provided the mitigation measures prescribed in this REF are followed (refer Section 6.8 and Section 6.9). Erosion and Sediment Control Plan/s would be prepared for the Proposal that would specify controls that are consistent with the 'Blue Book' <i>Managing Urban Stormwater, Soils and Construction</i> (Landcom, 2004). Dewatering would be undertaken in accordance with TfNSW procedures. Refuelling of equipment would take place away from drains and spill kits would be available on site. These mitigation measures are to be included in the CEMP for the Proposal.
3. Will the safeguards be adequate for the time required? How will they need to be maintained?	Erosion and sedimentation controls would be established prior to commencement of works and would be maintained throughout the construction period.
4. Will all impacts on water quality be effectively contained on the site by the identified safeguards and not reach any water course, water body or drainage depression? Or will impacts on water quality be transferred outside the site for treatment? How? Why?	It is considered that the proposed mitigation measures prescribed in this REF would be adequate to prevent impacts to other water bodies or water courses.

NorBE Assessment – will there be a neutral or beneficial effect on water quality?
(Assessment must consider surface and ground waters and must consider construction and operational stages)

5. Is it likely that a neutral or beneficial effect on water quality will occur? Why?

The Proposal would have a neutral effect on water quality. The risks to water quality from the construction of the Proposal would be managed through the implementation of the soil and water mitigation measures contained in the CEMP.
