

# **New Intercity Fleet – Springwood to Lithgow Rail Corridor Modifications**

**Traffic, Transport and Access Impact Assessment**

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## Traffic, Transport and Access Impact Assessment

Client: Transport for New South Wales  
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## Executive summary

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Transport for NSW (TfNSW) is procuring a New Intercity Fleet to service the Central Coast and Newcastle, the Blue Mountains and Wollongong. The New Intercity Fleet - Springwood to Lithgow Rail Corridor Modifications (the Project) comprises modifications to stations and other corridor upgrades extending from between Springwood Station and Faulconbridge Station up to and including Lithgow Station to facilitate the introduction of the new trains which are wider and longer than the existing trains.

AECOM has been commissioned by TfNSW to prepare a Traffic and Transport Impact Assessment as part of the Review of Environmental Factors (REF) for the Project. A qualitative assessment of the construction and operational impacts of the Project was undertaken, which also identifies mitigation measures to ameliorate any identified impacts.

The majority of the construction works would take advantage of pre-existing scheduled rail possessions and would not result in additional required possessions. It is anticipated that up to 10 rail possessions would be utilised over the two-year construction period. This would typically include shutdown periods of 48 hours over a weekend period; however, five of the 10 possession periods may extend for 12 days in the area between Newnes Junction Station and Lithgow Station. This would involve five day closures of one line either side of a weekend possession period.

As part of the proposed scope of works it is expected that between five to 10 medium / heavy vehicles and a number of light vehicles would be generated during each possession at each respective construction site. The majority of traffic is expected to be generated during the weekend possession periods.

Impacts on traffic during construction are expected to be temporary in nature. Traffic impacts would occur as a result of the movement of construction (dump trucks, flatbeds, etc.) and service vehicles (light trucks, cars, etc.) entering and exiting the Project site. These impacts would largely be locally concentrated, while the additional vehicle movements likely to occur along the Great Western Highway would have a minor effect given the existing high volume of heavy vehicles along the road corridor.

The increase in future road traffic during operation of the New Intercity Fleet is expected to be minimal and it is considered that the Project would have a negligible impact on traffic in the local road network.

In addition, as both the older and new wider trains would be running concurrently along the Blue Mountains Line, the cutting back of the platform at stations would result in a larger gap experienced by customers boarding or alighting from the trains at certain points along the platform. Impacts would be temporary in duration, lasting until the complete replacement of the aging fleet. Temporary measures noting the extra gap would be implemented to minimise disruptions to customers.

# 1 Introduction

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## 1.1 Background

AECOM has been commissioned by Transport for NSW (TfNSW) to undertake a Traffic and Transport Assessment for the New Intercity Fleet - Springwood to Lithgow Rail Corridor Modifications (the Project).

In 2014, the NSW Government announced that TfNSW would be procuring a New Intercity Fleet to service the Central Coast and Newcastle, the Blue Mountains and South Coast Line of the Intercity Trains Network.

Modifications to existing rail infrastructure are essential to accommodate and operate the new trains while meeting appropriate safety and design standards.

The New Intercity Fleet would:

- provide a more consistent and improved level of customer service for intercity customers
- facilitate the retirement of two electric train sets currently in operation
- reduce the costs of intercity operations
- increase capacity for intercity passengers.

## 1.2 Proposed works

The Project involves modifications along the Blue Mountains Line as part of the New Intercity Fleet Program, which would allow for the phase out of the existing intercity fleet and provide an accessible, modern, safe and comfortable travel experience for customers. The Project site is shown in Figure 1 and Figure 2.

The Project would ensure adequate width (and associated clearances) for the new trains to travel along the Blue Mountains Line and would include the following key elements:

- extension of platforms at Katoomba Station and Lithgow Station
- modifications to station platform edges (also known as platform coping)
- re-positioning of rail tracks (track slewing) along the length of the rail corridor
- modification of the existing platform canopy at Faulconbridge Station
- survey and geotechnical investigations
- signalling works to accommodate the new track position and platform modifications
- adjustment of the overhead wiring system and supporting structures as required.

New Intercity Fleet enabling works required at Mount Victoria Station and Zig Zag Station do not form part of this Project.

Subject to approval, construction is expected to commence in 2018 and take approximately two years to complete.

## 1.3 Study objectives

The Traffic and Transport Impact Assessment forms part of the Review of Environmental Factors (REF), which has been prepared to assess the environmental impacts of the Project.

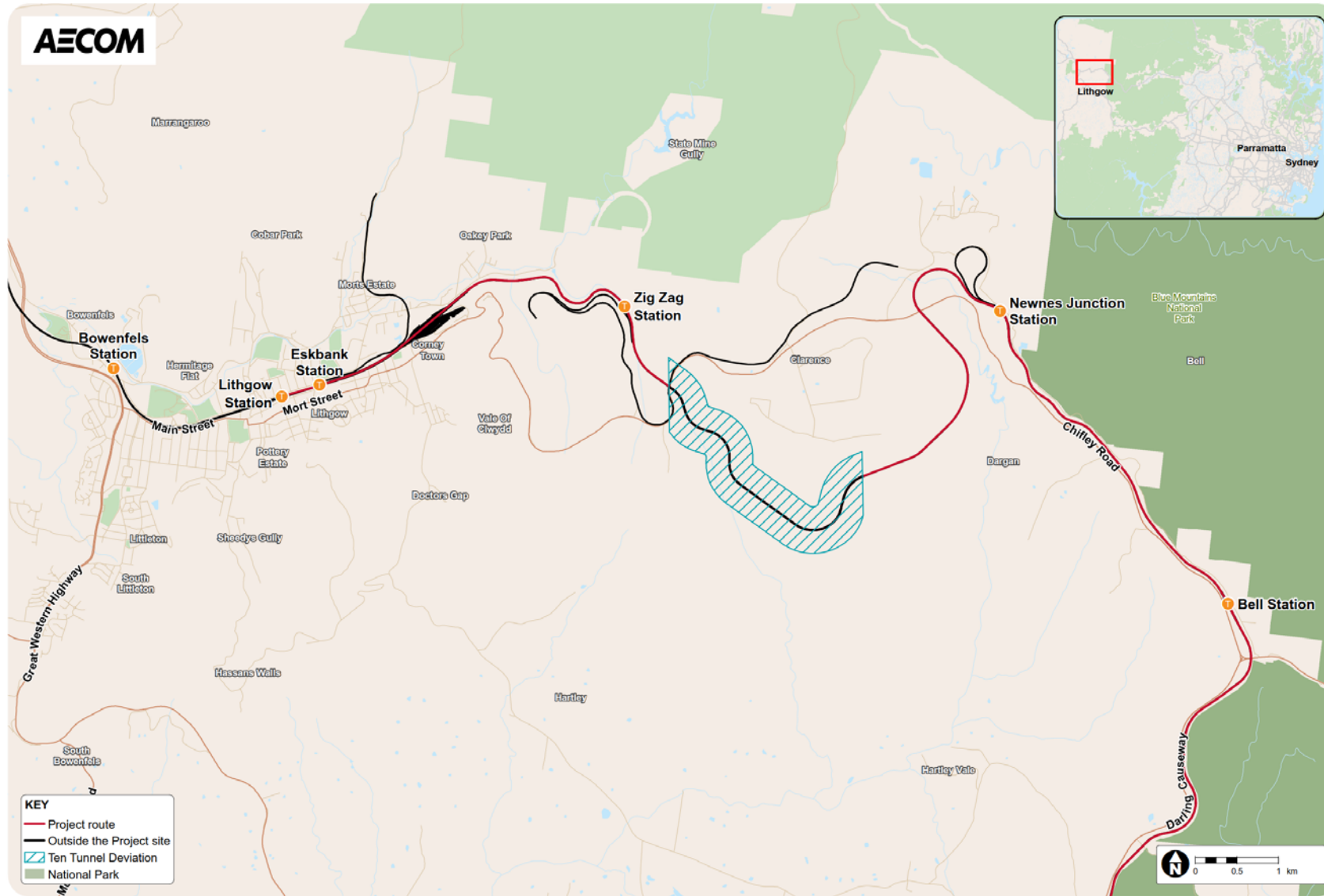
The purpose of this assessment is to undertake a qualitative assessment of the construction and operational impacts of the Project on traffic and transport and identify mitigation measures to minimise any identified impacts.



\* Works at Mount Victoria Station and Zig Zag Station do not form part of the Project

**Figure 1 Project site (part 1 of 2)**





**Figure 2 Project site (part 2 of 2)**

# 2 Existing traffic and transport conditions

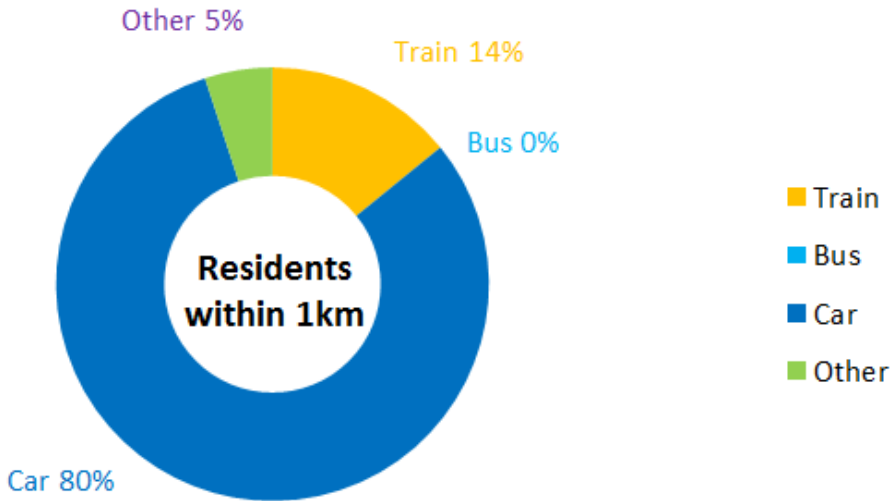
## 2.1 Study area

The Project would be undertaken between just west of Springwood Station and Lithgow Station on the Blue Mountains Line (the Project site), approximately 75 kilometres of rail line, which traverses through the local government areas of the Blue Mountains and Lithgow. The Project site is shown in Figure 1 and Figure 2.

The Project site is located within the Blue Mountains and bisects the Blue Mountains National Park. Stations within the study area serve the towns and villages of Faulconbridge, Linden, Woodford, Hazelbrook, Wentworth Falls, Leura, Katoomba, Medlow Bath, Blackheath, Mount Victoria, Bell, Clarence, Dargan and Lithgow.

## 2.2 Mode of travel

Travel data obtained from the TfNSW Transport Performance and Analytics unit (2017) provides an insight into the Journey to Work characteristics of residents and workers. The Transport Performance and Analytics unit uses the Australian Bureau of Statistics data collected during the 2011 Census, which includes information on the method of travel to work at a travel zone level. The mode of travel to work for people living within one kilometre of the Blue Mountains Line is presented in Figure 3.



Source: TfNSW, 2017

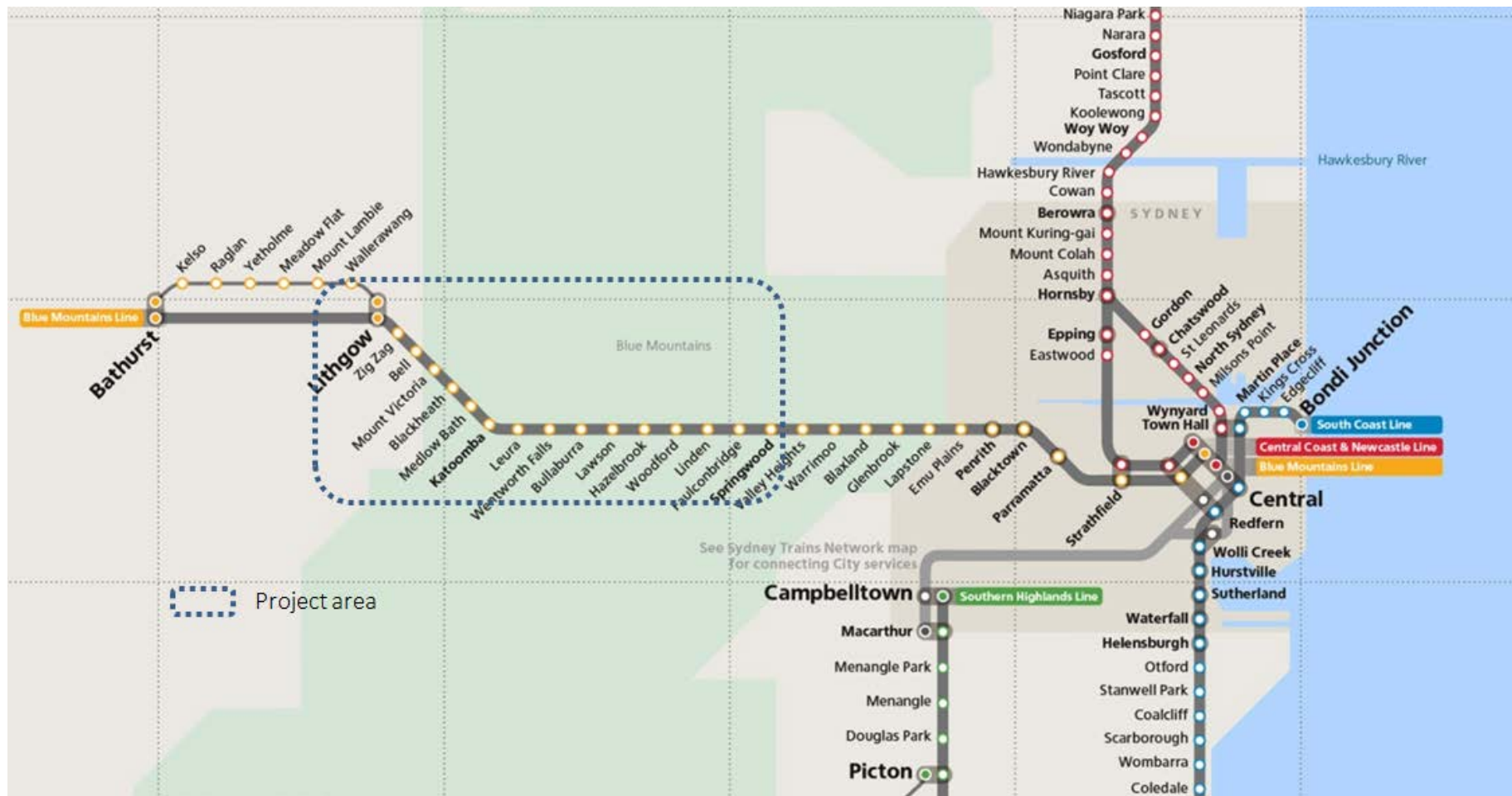
Figure 3 Blue Mountains Line – mode of travel

## 2.3 Blue Mountains Line

The Blue Mountains Line is an intercity rail service operated by NSW TrainLink serving the Blue Mountains and Lithgow region of NSW with train services between Bathurst and Central. NSW TrainLink also operates regional train and coach services along the Blue Mountains Line. As shown in Figure 4, there are 15 stations within the Project site, these include:

- Falconbridge Station
- Linden Station
- Woodford Station
- Hazelbrook Station
- Lawson Station
- Bullaburra Station
- Wentworth Falls Station
- Leura Station
- Katoomba Station
- Medlow Bath Station
- Blackheath Station
- Bell Station
- Newnes Junction Station (not in use)
- Eskbank Station (not in use)
- Lithgow Station.

Eskbank Station and Newnes Junction Station are located within the Project site, however are not open to the public. Mount Victoria Station and Zig Zag Station are located within the Project site; however do not form part of this Project.



\* Works at Mount Victoria Station and Zig Zag Station do not form part of this Project

**Figure 4 Blue Mountains Line**

### 2.3.1 Train services

Train services on the Blue Mountains Line vary in stopping patterns with trains commencing and terminating from Bathurst, Lithgow, Katoomba, Mount Victoria and Springwood stations. Limited stops services are provided during the morning and evening peak periods. Rail customers at Bell Station and Zig Zag Station are required to notify the guard to request trains to stop at the station. Table 1 provides a summary of services during the weekday.

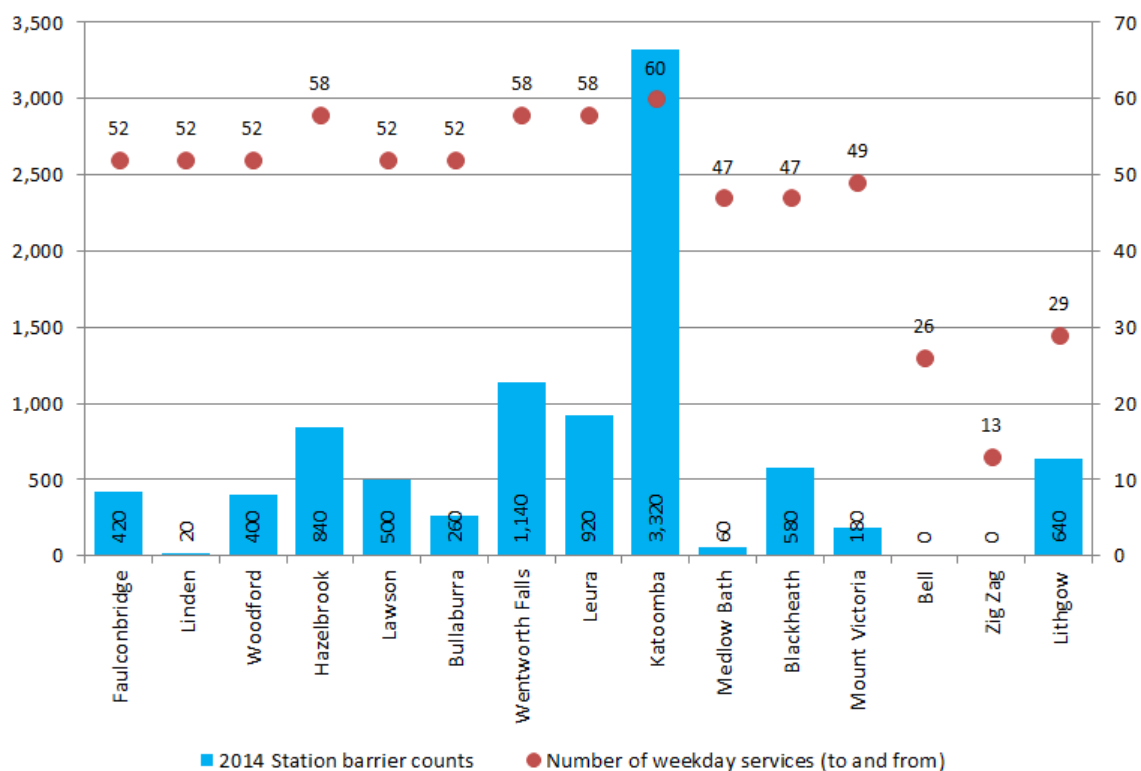
**Table 1 Blue Mountains Line weekday services**

Service	Total*	Service	Total*
Bathurst to Central (all services)	34	Central to Bathurst (all services)	34
commencing at Bathurst	2	terminating at Bathurst	2
commencing at Lithgow	13	terminating at Lithgow	13
commencing at Mount Victoria	11	terminating at Mount Victoria	10
commencing at Katoomba	5	terminating at Katoomba	6
commencing at Springwood	3	terminating at Springwood	3

\*Source: Sydney Trains, 2017

### 2.3.2 Rail customer demand

Figure 5 presents the station barrier counts for railway stations between Faulconbridge Station and Lithgow Station for 2014. The patronage data shows Katoomba Station is the most frequented station and reflective of the stopping patterns of train services on the Blue Mountains Line with 60 services provided at Katoomba Station during the weekday.



Source: TfNSW, 2014

**Figure 5 2014 station barrier counts**

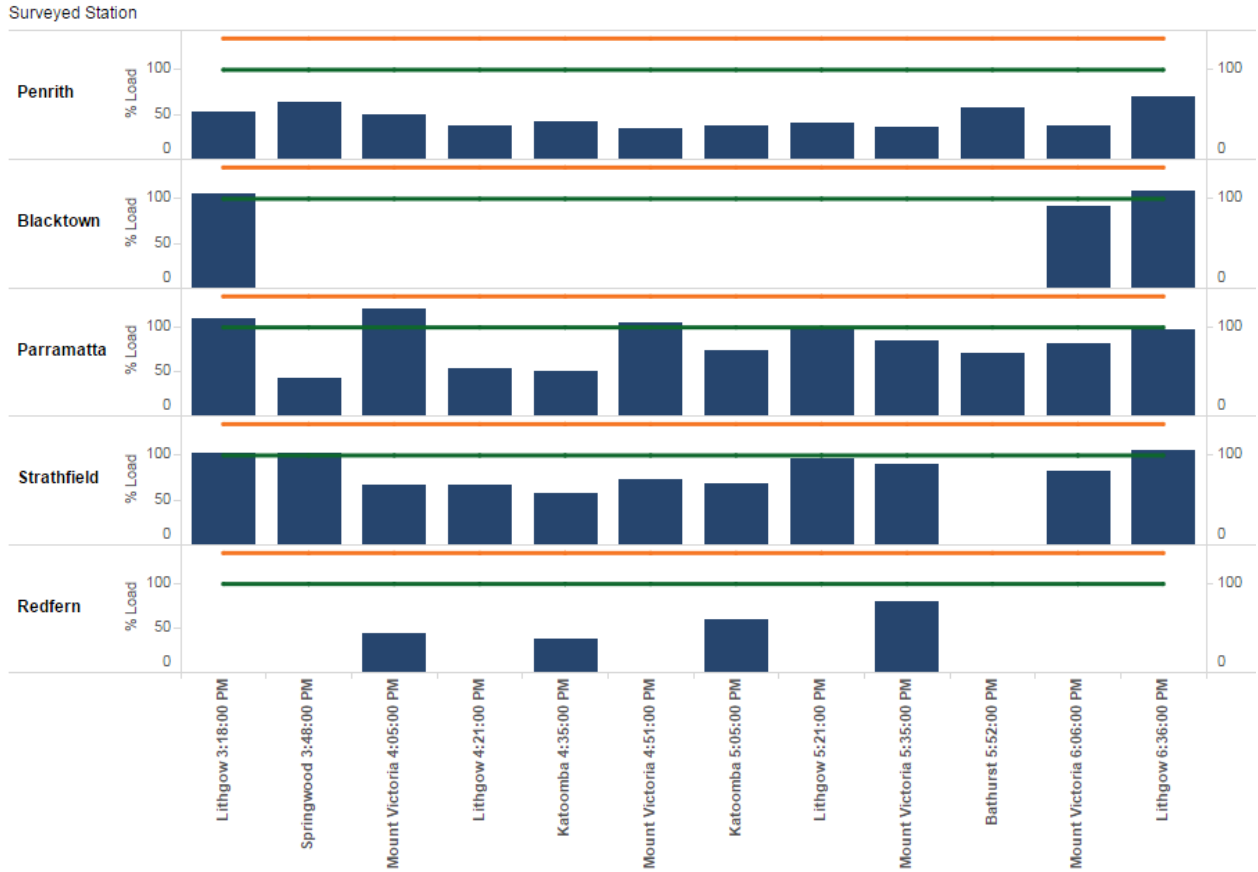
The capacity of trains on the Blue Mountains Line during the morning and evening periods are shown in Figure 6 and Figure 7 respectively.

Between 6:34am and 7:33am, two of the three services shown to operate on the Blue Mountains Line exceed seated capacity (100 per cent), meaning all seats are occupied at Parramatta. During the PM period, services are likely to exceed seated capacity at Strathfield and Parramatta, which then significantly reduce by the time services reach Penrith Station.



Source: Bureau of Transport Statistics, 2016

Figure 6 Train line load survey – morning period



Source: Bureau of Transport Statistics, 2016

Figure 7 Train line load survey – evening period

### 2.3.3 Interchange facilities

The stations, with the exception of Medlow Bath Station, Eskbank Station and Zig Zag Station, provide a number of interchange facilities giving customers the opportunity to transfer between modes. These include bus stops, taxi ranks, bicycle storage, kiss and ride zones and car parking facilities. Table 2 provides a summary of interchange facilities provided at each station.

**Table 2 Interchange facilities**

Station	Interchange facilities*
Faulconbridge	<ul style="list-style-type: none"> <li>bus stop, kiss and ride and an off-street commuter car park on Railway Avenue (with 45 spaces and two accessible spaces)</li> </ul>
Linden	<ul style="list-style-type: none"> <li>bus stop</li> </ul>
Woodford	<ul style="list-style-type: none"> <li>bus stop, bicycle rack, locker, kiss and ride, off-street commuter car park on Great Western Highway (with 21 spaces, two accessible spaces and one staff space) and an on-street commuter car park on Railway Parade (with 17 spaces and one accessible space)</li> </ul>
Hazelbrook	<ul style="list-style-type: none"> <li>bus stop, taxi rank and an off-street commuter car park on Railway Parade (with 48 spaces and two accessible spaces)</li> </ul>
Lawson	<ul style="list-style-type: none"> <li>bus stop, taxi rank and an off-street commuter car park on nearby (with 18 spaces and two accessible spaces)</li> </ul>
Bullaburra	<ul style="list-style-type: none"> <li>bus stop, kiss and ride and an off-street commuter car park nearby (with 19 spaces and one accessible space)</li> </ul>
Wentworth Falls	<ul style="list-style-type: none"> <li>bus stop, taxi rank, bicycle rack, locker, kiss and ride, an off-street commuter car park on Railway Parade (with 40 spaces) and an off-street commuter car park on Station Street (with 42 spaces and two accessible spaces)</li> </ul>
Leura	<ul style="list-style-type: none"> <li>bus stop, taxi rank and parking provided around the Town Centre</li> </ul>
Katoomba	<ul style="list-style-type: none"> <li>bus stop, taxi rank, bicycle rack, locker, kiss and ride, an off-street commuter car park on Civil Place (with 80 spaces) and accessible car parking spaces provided on Bathurst Road</li> </ul>
Medlow Bath	<ul style="list-style-type: none"> <li>no facilities</li> </ul>
Blackheath	<ul style="list-style-type: none"> <li>bus stop, taxi rank, bicycle rack, locker, kiss and ride, an off-street commuter car park on Station Street (with 19 spaces) and two accessible parking spaces provided off Great Western Highway</li> </ul>
Bell	<ul style="list-style-type: none"> <li>kiss and ride</li> </ul>
Lithgow	<ul style="list-style-type: none"> <li>bus stop, taxi rank, bicycle rack, locker, kiss and ride, an on-street commuter car park on Railway Parade (with 50 spaces) and an off-street commuter car park (with 12 spaces and two accessible spaces)</li> </ul>

\* Interchange facilities based on Sydney Trains information and car parking numbers have been based on desktop review

Source: Sydney Trains, 2017



### 2.3.4 Pedestrian facilities

A summary of pedestrian facilities providing access to each station is provided in Table 3.

**Table 3 Pedestrian facilities**

Station	Pedestrian facilities
Faulconbridge	<ul style="list-style-type: none"> <li>pedestrian bridge over Great Western Highway and rail tracks with stairs to platform</li> </ul>
Linden	<ul style="list-style-type: none"> <li>pedestrian bridge over rail tracks with stairs to platform</li> <li>signalised crossing on Great Western Highway</li> <li>level crossing</li> </ul>
Woodford	<ul style="list-style-type: none"> <li>pedestrian bridge over Great Western Highway and pedestrian tunnel with stairs to platform</li> </ul>
Hazelbrook	<ul style="list-style-type: none"> <li>pedestrian bridge over Great Western Highway and rail tracks with stairs to platform</li> <li>zebra crossing on Railway Parade</li> </ul>
Lawson	<ul style="list-style-type: none"> <li>pedestrian tunnel with stairs to platform</li> <li>signalised crossing on Great Western Highway</li> </ul>
Bullaburra	<ul style="list-style-type: none"> <li>pedestrian bridge over rail tracks with stairs to platform</li> <li>separate pedestrian bridge over Great Western Highway</li> </ul>
Wentworth Falls	<ul style="list-style-type: none"> <li>pedestrian bridge over rail tracks with stairs to platform</li> <li>zebra crossing on Station Street</li> </ul>
Leura	<ul style="list-style-type: none"> <li>stairs to platform from Leura Mall overbridge</li> <li>zebra crossing on Leura Mall</li> </ul>
Katoomba	<ul style="list-style-type: none"> <li>pedestrian tunnel with stairs and lift to platform</li> </ul>
Medlow Bath	<ul style="list-style-type: none"> <li>pedestrian bridge over rail tracks with stairs to platform</li> <li>level crossing</li> </ul>
Blackheath	<ul style="list-style-type: none"> <li>pedestrian bridge over rail tracks with stairs to platform</li> <li>signalised crossing on Great Western Highway</li> <li>level crossing</li> </ul>
Bell	<ul style="list-style-type: none"> <li>level crossing</li> </ul>
Lithgow	<ul style="list-style-type: none"> <li>pedestrian bridge / concourse area over rail tracks with stairs and lift to platform</li> <li>zebra crossing on Main Street</li> </ul>

## 2.4 Bus services

Blue Mountains Transit operates the 600 series bus routes, which provides 12 bus routes that operate near to the stations providing customers the opportunity to transfer onto rail services. These bus routes connect residential areas to local transport interchanges, as well as employment and retail areas throughout the Blue Mountains region. The bus routes include:

- 685 – Katoomba to North Wentworth Falls via Leura
- 685H – Springwood to North Hazelbrook
- 686 – Katoomba to Scenic World via Echo Point
- 686G – Katoomba to Katoomba Golf Club via Cliff Dive
- 690H – Katoomba to Katoomba Hospital
- 690K – Katoomba to Springwood
- 690P – Springwood to Penrith
- 695 – Katoomba to South Leura via Leura
- 696 – Katoomba to South Katoomba via Clissold Street and Ada Street
- 697 – Katoomba to North Katoomba
- 698 – Katoomba to Blackheath
- 698V – Katoomba to Mount Victoria.

A summary of Blue Mountains Transit bus services at each station is provided in Table 4.

**Table 4 Blue Mountains Transit bus services**

Station	Bus routes
Faulconbridge	685H, 690K, 690P
Linden	685H, 690K
Woodford	685H, 690K
Hazelbrook	685H, 690K
Lawson	685H, 690K
Bullaburra	685H, 690K
Wentworth Falls	685, 690K
Leura	685, 690K
Katoomba	685, 686, 686G, 690H, 690K, 695, 696, 697, 698, 698V
Medlow Bath	685, 690K, 698, 698V
Blackheath	690K, 698, 698V
Bell	No bus service
Lithgow	Not served by Blue Mountains Transit

Source: TfNSW, 2017

Lithgow Station is not serviced by Blue Mountains Transit; however Lithgow Buslines operate bus services to and from Lithgow Station. These include routes:

- 100 – Littleton and Lithgow Hospital via Strathlone Estate and Kirkley Gardens
- 200 – Bowenfels via Coerwull and Lithgow Hospital
- 304 – McKellars Park and Oakley Park via Hermitage Flat and Morts Estate
- 500 – Vale of Clwydd via Hill Street
- 600 – Portland - Lithgow via Wallerwang (and return)
- 636 – Lithgow to Bathurst via Wallerwang, Portland, Meadow Flat, Mt Lambie, Yetholme (and return).

Additional regional coach services are provided at Lithgow Station and Mount Victoria Station providing bus links to the rest of NSW. Bell Station is currently not served by bus services.

## 2.5 Road network

### 2.5.1 Key roads

The key existing roads in the vicinity of the Project site are shown in Figure 1 and Figure 2 and include:

- **Great Western Highway** – a major arterial road that carries around 24,000 vehicles a day through the Blue Mountains area. It is a state road that was upgraded to four lanes between Emu Plains and Katoomba (completed in mid-2015) as part of Roads and Maritime Services' Great Western Sydney Upgrade. The road is a key route providing access between Sydney and Central and Western NSW and a key freight route with heavy vehicles making up 12 per cent of traffic. A permanent classifier located on Great Western Highway, 260 metres west of Victoria Street, Mount Victoria indicates that during 2017, around 18 per cent of traffic along the road consisted of heavy vehicles. The road is generally adjacent to the rail corridor between Mount Victoria Station and Faulconbridge Station. The road forms part of the A32 and A44 road corridor, both of which are routes of national significance.
- **Bells Line of Road / Chifley Road** – a State road providing access between Sydney and Central and Western NSW that also plays an important role in providing access through the Blue Mountains area. The road performs a secondary role for cross-mountain traffic after the Great Western Highway. It is generally a two-way, two-lane road with opportunities intermittently provided to overtake. The road forms part of the B59 road corridor, which is a route of state significance.
- **Darling Causeway / Station Street** – a State road providing connections between Great Western Highway and Bells Line of Road / Chifley Road. It is a generally a two-way, two-lane road with opportunities intermittently provided to overtake and runs in a north-south direction west of the rail corridor.
- **Main Street / Mort Street** – a State road that forms part of the B59 road corridor. The road is generally a two-way, two-lane road providing access through Lithgow.

Local streets providing access to the stations within the Project site are shown in Table 5.

**Table 5 Local road access**

Station	Local road	Station	Local road
Faulconbridge	Sir Henry Parade	Katoomba	Bathurst Road and Goldsmith Place
Linden	Burke Road	Medlow Bath	Railway Parade
Woodford	Railway Parade	Blackheath	Station Street
Hazelbrook	Railway Parade	Bell	Sandham Road
Lawson	Loftus Street	Newnes Junction	Sandham Road
Bullaburra	Railway Parade	Eskbank	Inch Street
Wentworth Falls	Railway Parade and Station Street	Lithgow	Railway Parade and Main Street
Leura	Railway Parade		

### 2.5.2 B-double routes

Approved B-double routes in the vicinity of the Project site are shown on Figure 8 and include:

- Great Western Highway (A32)
- Chifley Road (B59)
- Darling Causeway
- Main Street (B59)
- Mort Street (B59).

The Great Western Highway is a key freight route, which generates a high volume of heavy vehicles. A permanent classifier located on Great Western Highway (station id – 6188 on Figure 9) 260 metres west of Victoria Street, Mount Victoria indicates that about 18 per cent of traffic along the road consisted of heavy vehicles.



**Figure 8 RMS approved B-double routes**

### **2.5.3 Traffic volumes**

Historical traffic data obtained from Roads and Maritime Services (RMS) count stations along Great Western Highway in the vicinity of the Project site is presented in Figure 9 and Table 6. RMS roadside collection devices along Great Western Highway include:

- 6188: 260 metres west of Victoria Street, Mount Victoria
- 6189: 1.67 kilometres west of Berghofer Drive, Little Hartley
- 6190: 330 metres west of Walker Street, Hartley
- 6193: 1.66 kilometres east of Coxs River Road, Little Hartley
- 99043: 180 metres west of Railway Parade, Bullaburra
- 99914: 50 metres west of Bellevue Road, Faulconbridge.



Source: Roads and Maritime Services, 2017; modified by AECOM, 2017

**Figure 9 Location of AADT data along Great Western Highway**

The Annual Average Daily Traffic (AADT) volumes over the past five years indicate traffic volumes along this section of the Great Western Highway between Springwood and Lithgow have mainly experienced minimal growth and in some instances have declined in volume.

**Table 6 Historical AADT data**

Station ID	2012	2013	2014	2015	2016	2017
6188	-	-	-	11,174	-	10,916
6189 (eastbound)	-	-	-	5,519	5,856	5,440
6190 (westbound)	-	-	-	4,902	4,754	4,633
6191	-	-	-	4,334	4,237	4,043
6193 (eastbound)	-	-	-	5,613	5,939	5,383
99043	22,141	21,240	-	-	-	-
99914	27,333	27,683	28,549	-	31,075	28,201

Source: Roads and Maritime Services, 2017

### 3 Construction activities

The proposed scope of work is outlined in Section 1.2. and summarised in Figure 10.

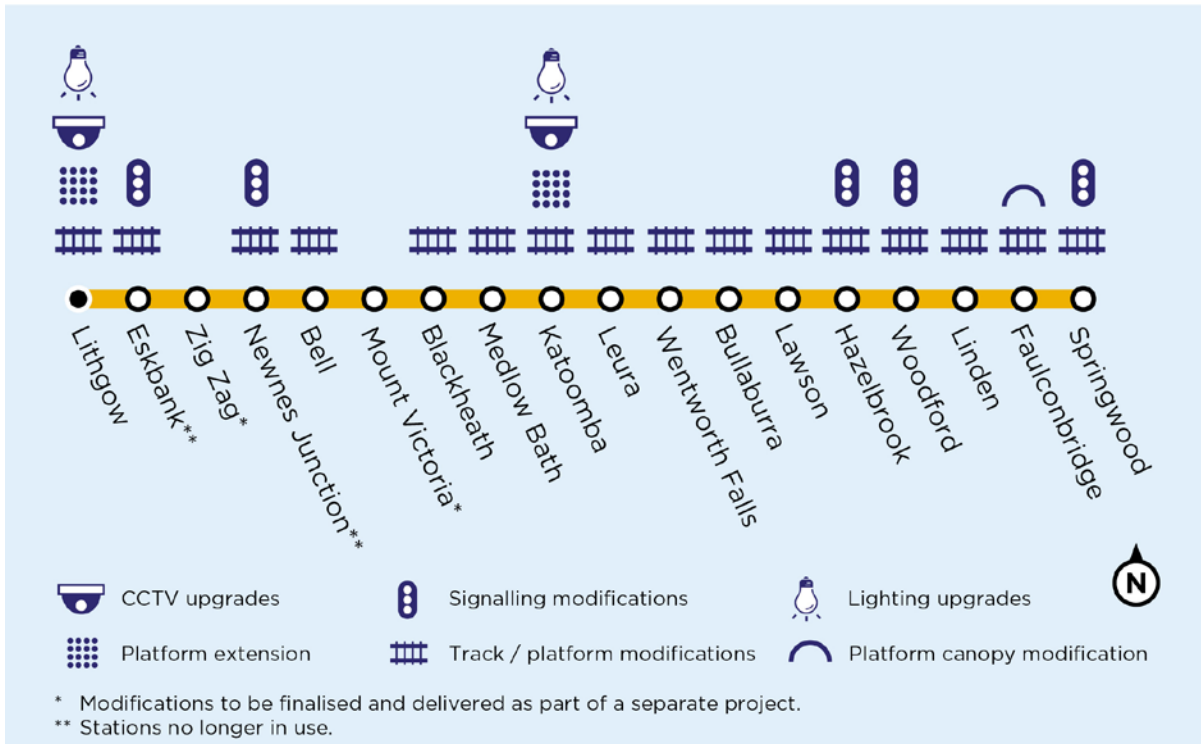


Figure 10 Scope of works for the project

#### 3.1 Construction vehicles

In facilitating these construction activities, various plant and equipment are likely to be required. These would include a combination of:

- trucks
- bobcat
- jack hammer
- excavator
- demolition saw
- concrete pump
- pilling rig
- concrete truck
- franna/mobile cranes
- lighting tower
- hi-rail plant (elevated work platforms / flatbed / hiab, etc.)
- coring machine
- water cart
- hi-rail dump truck
- generator
- suction trucks
- rail mounted trolley
- rail mounted elevated work platform
- road rail concrete truck
- vibrating roller / compaction plate
- road rail excavator
- elevated work platform
- hand tools.

The works would require about 10 to 20 medium / heavy vehicle movements (5 to 10 vehicles) for each individual work site per possession. A small number of light / medium vehicles would also be required to service personnel and transport small equipment and other materials as needed to the work sites.

The size of vehicles used for haulage would be consistent with the access route constraints, safety and any worksite constraints. Some construction may require truck and trailer combinations or semi-trailers. Access arrangements for these vehicles would be defined in the Construction Traffic Management Plan (CTMP) prepared by the nominated Contractor during detailed design.

### 3.2 Working hours

Construction is expected to commence in 2018 and take around two years to complete. The construction staging would be further developed during the detailed design of the Project by the nominated Contractor in consultation with TfNSW.

Construction works would generally be undertaken during standard construction hours in accordance with the *Interim Construction Noise Guidelines* (Department of Environment, Climate Change and Water, 2009):

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

However, a large portion of the works would need to occur outside standard hours, which would be undertaken during routine rail possessions. Routine rail possessions are scheduled closures that would occur regardless of the Project when part of the rail network is temporarily closed and trains are not operating.

It is anticipated that this Project would utilise approximately 10 pre-existing, routine rail possessions over the two-year construction period. This would typically include shutdown periods of 48 hours over a weekend period; however, five of the 10 rail possession periods may extend for 12 days in the area between Newnes Junction Station and Lithgow Station. This would involve five day closures of one line on both sides of a weekend possession period.

Out of hours works would be required in some cases to minimise disruptions to customers, pedestrians, motorists, freight movements and nearby sensitive receivers; and to ensure the safety of railway workers and operational assets.

The indicative construction periods for each station are provided below:

- Faulconbridge Station – eight months
- Linden Station – eight months
- Woodford Station – four months
- Hazelbrook Station – four months
- Lawson Station – eight months
- Bullaburra Station – four months
- Wentworth Falls Station – eight months
- Leura Station – eight months
- Katoomba Station – 10 months
- Medlow Bath Station – eight months
- Blackheath Station – eight months



- Bell Station – eight months
- Newnes Junction Station – eight months
- Eskbank Station – eight months
- Lithgow Station – eight months.

### 3.3 Temporary facilities

It is expected that a number of temporary construction compounds are required to accommodate a site office(s), amenities, laydown and storage area for materials. The exact locations of the compound(s) would be finalised during detailed design, however it is not anticipated that all options would be required.

Potential temporary construction compound sites are described in the following sections. All of the areas nominated for the compounds are on land owned by Sydney Trains.

#### 3.3.1 Linden Station

One potential construction compound is proposed to the east of Linden Station which would be accessed via Burke Road as shown in Figure 11.

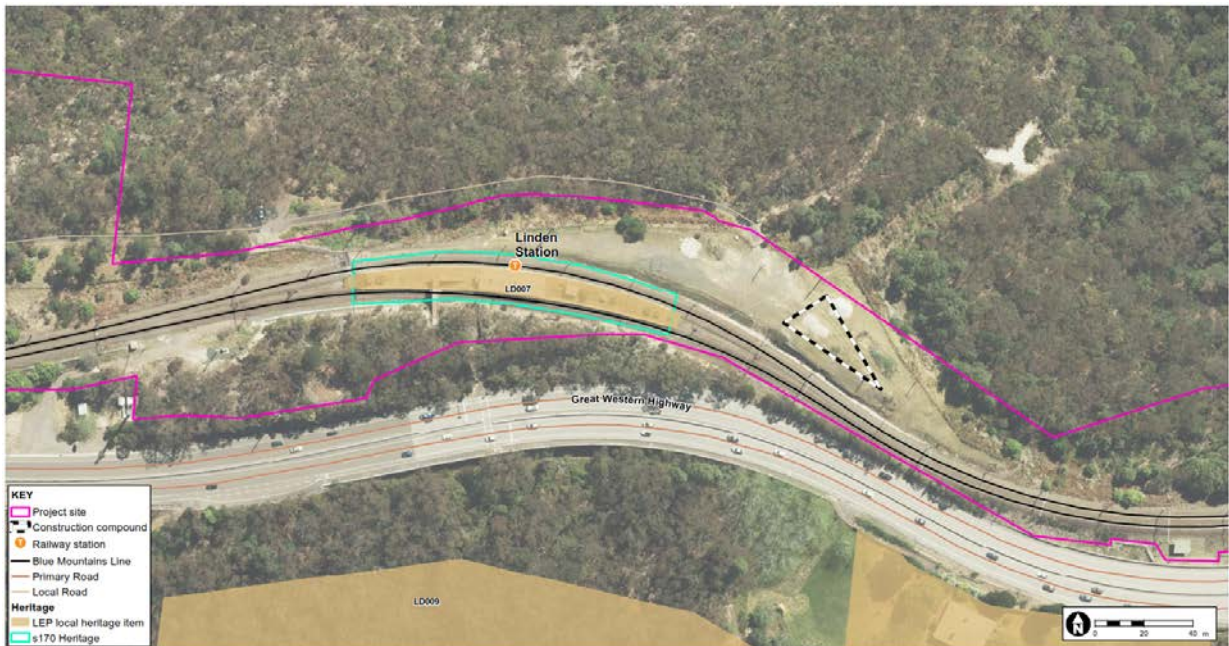


Figure 11 Potential site compound locations at Linden Station

### 3.3.2 Woodford Station

One potential construction compound is proposed to the north-east of the Woodford Station off-street commuter car park located on Great Western Highway as shown in Figure 12.



Figure 12 Potential site compound locations at Woodford Station

### 3.3.3 Katoomba Station

One potential construction compound location is proposed at Katoomba along the staff parking lot and accessible parking spaces on the south side of the station as shown Figure 13.

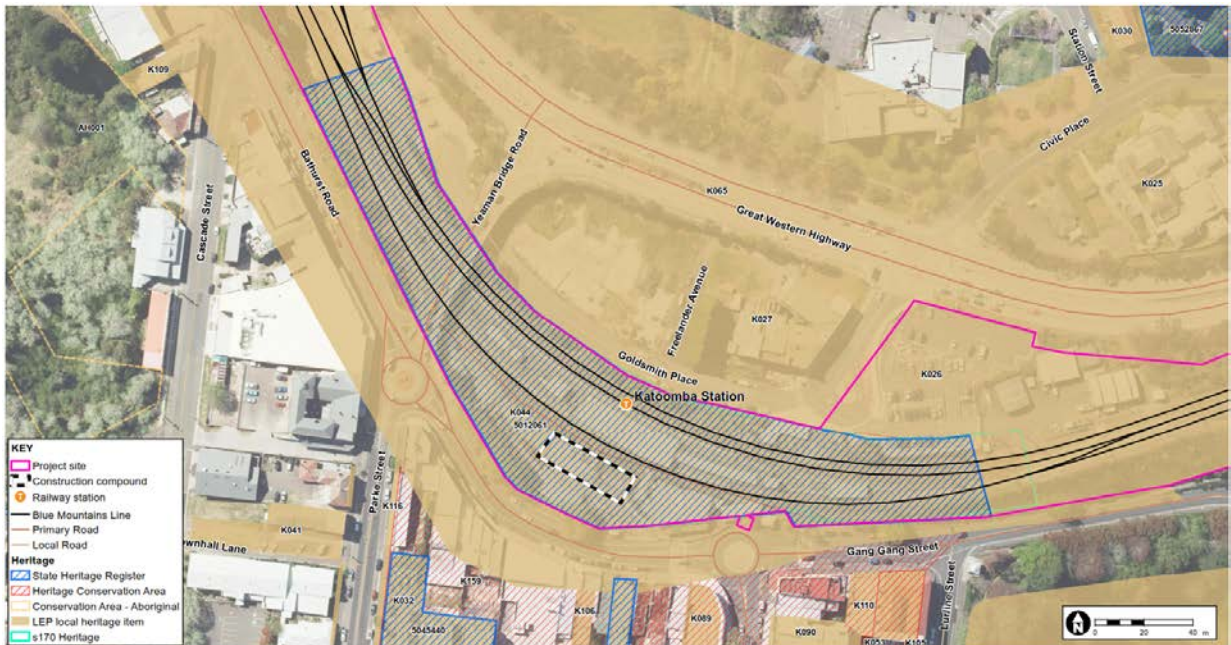


Figure 13 Potential site compound locations at Katoomba Station

### 3.3.4 Blackheath Station

One potential construction compound location is proposed to the south of the Blackheath Station off-street commuter car park located on Station Street as shown in Figure 14.

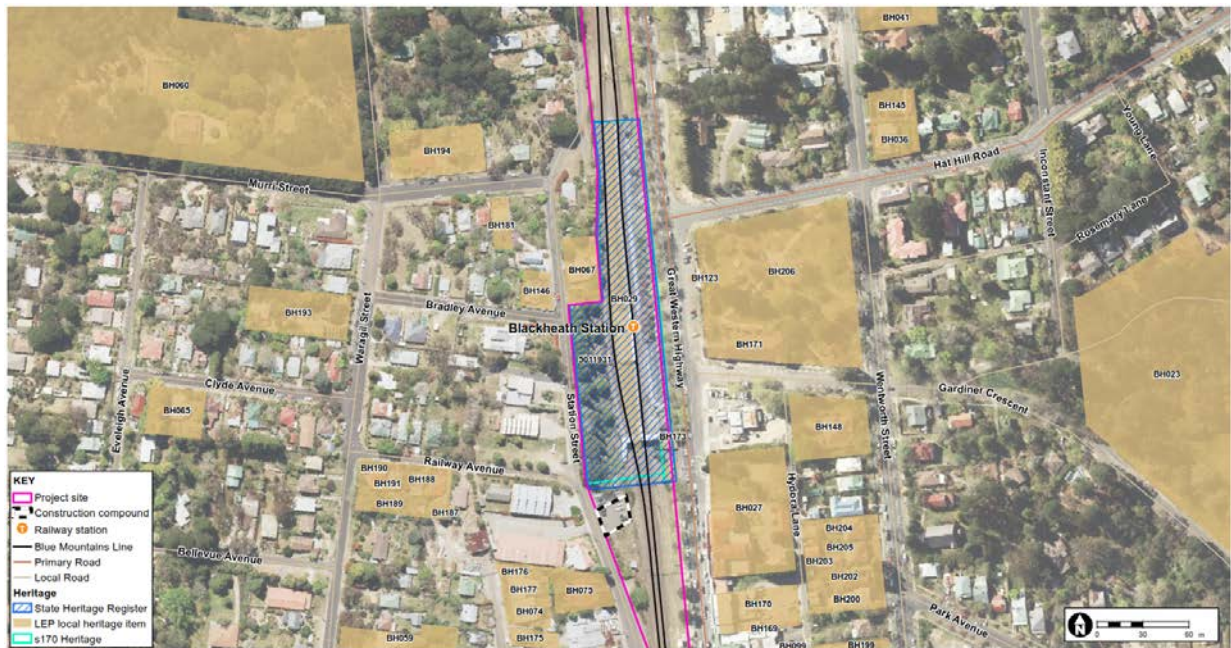


Figure 14 Potential site compound locations at Blackheath Station

### 3.3.5 Newnes Junction

The following two potential construction compound locations are proposed at Newnes Junction as shown in Figure 15:

- south-west of Newnes Junction Station
- north of the rail corridor approximately 1.8 kilometres south-east of Newnes Junction Station.



Figure 15 Potential site compound locations at Newnes Junction

### 3.3.6 Lithgow Station

The following potential construction compound locations are proposed at Lithgow as shown in Figure 16:

- north of Eskbank Station
- south-west of the platform in the off-street commuter car park.

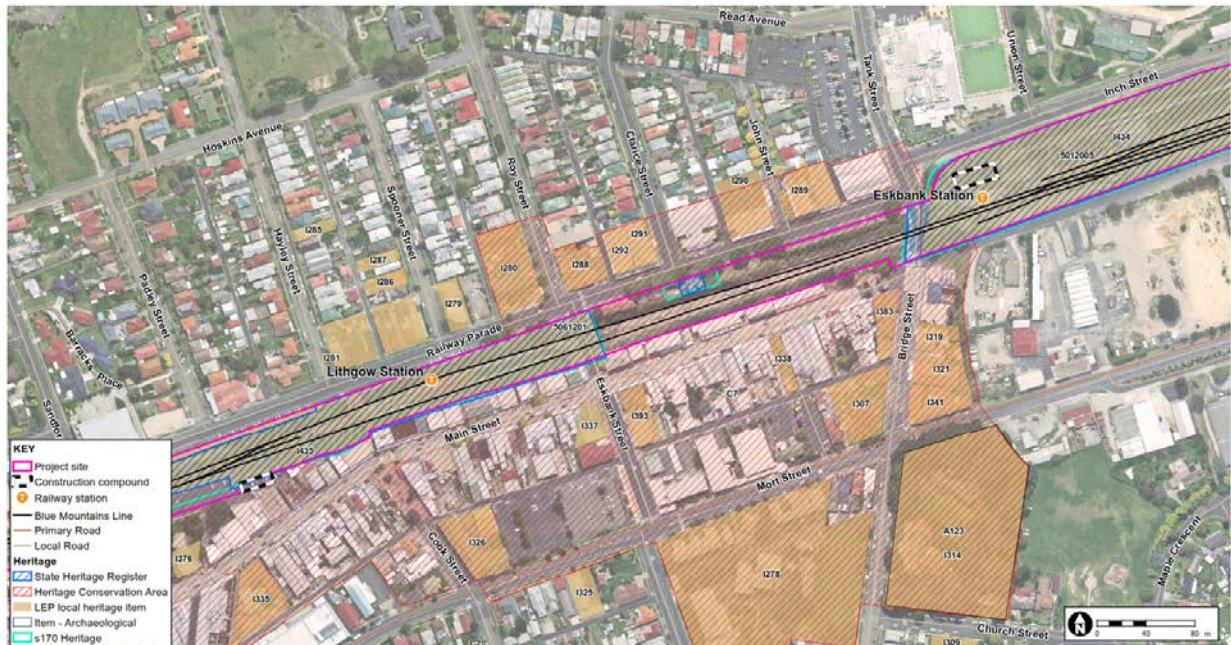


Figure 16 Potential site compound locations at Lithgow Station

### 3.4 Construction vehicle routes

Construction vehicles are generally expected to use the Roads and Maritime Services approved B-double road network (see Figure 8), which includes the Great Western Highway (A32), Chifley Road (B59), Darling Causeway, Main Street (B59) and Mort Street (B59).

These approved B-double roads would have sufficient road widths to accommodate larger vehicles, making them ideal for the haulage routes, however are subject to sign-posted restrictions.

It is likely that access to some compounds and access to the rail corridor would require the use of local roads (including those identified in Section 2.5.1). The final location and the most appropriate access to the temporary compounds, especially for large construction vehicles, would be determined during detailed design.

### 3.5 Site security, site access and signage

Access to work areas would consider:

- public safety
- safety of construction workers and equipment
- impact on local communities in terms of safety, noise and road damage
- ease of access for emergency vehicles
- site security, particularly outside work hours.

### **3.6 Worker induction**

All workers and sub-contractors engaged during the construction phase would be inducted prior to any commencement of works. The induction would identify the construction haulage routes, local speed zones, worksite protocols, staff parking facilities / public transport availability / carpooling opportunities and emergency / incident management strategies. Workers would be encouraged to park away from the station during the works, particularly during normal access times (i.e. outside of rail possession / closures).

### **3.7 Temporary diversions**

No temporary road diversions are anticipated at this stage. If required, the potential locations of temporary diversions will be identified in the CTMP and appropriate road occupancy licences would be sought as required. It is noted that diversions would be required for pedestrians and cyclists.

## 4 Construction impacts

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It is anticipated that up to 10 pre-existing rail possessions would be utilised over the two-year construction period. This would typically include shutdown periods of 48 hours over a weekend period; however, five of the 10 possession periods may extend for 12 days in the area between Newnes Junction Station and Lithgow Station. This would involve five day closures of one line on both sides of a weekend possession period.

### 4.1 Customer and public access

Platform extension works at Katoomba Station and Lithgow Station are expected to impact pedestrian movements on the station platforms. The reduced space on the platforms may increase pedestrian congestion and reduce the amount of standing area for customers. Although Katoomba Station is the most frequented station on the Blue Mountains line, the likelihood of this occurring is low given the relatively low patronage in comparison to high patronage stations in the Sydney Metropolitan area. In addition, at both stations, the location of the platform extension works is away from main boarding points. Appropriate signage would be provided to mitigate any potential impacts to pedestrian movements on the platforms.

Construction work during rail possessions is not expected to impact pedestrians and customers given the restricted area in which construction works are to be carried out. This would largely be associated with the works undertaken at stations (e.g. platform extensions at Katoomba Station and Lithgow Station). Track slewing works and upgrades to overhead wiring works would be undertaken away from publicly accessible areas.

Replacement bus services would be provided at affected stations during any scheduled rail possessions utilised by the Project. These replacement bus services would provide rail customers a connection to a station that would continue to be served by a Blue Mountains Line / Main Western Line service during the weekend rail possession.

Outside of the rail possessions, access on and to the stations would be maintained during construction and any works to be undertaken within these areas would be managed and controlled at all times to ensure that there is no impact to public safety.

### 4.2 Interchange facilities

The Project would not result in impacts to interchange facilities during construction. Pedestrian and cycling access to and through the station precincts would be maintained during construction.

Works that cause temporary disruptions to pedestrian facilities surrounding stations have the potential for increased safety risks for pedestrians, due to potential interactions with construction plant and vehicles. There may be minor diversions in these locations which would be appropriately signposted to notify pedestrians of the temporary arrangements. Any interaction between construction vehicles and pedestrians would be managed and controlled by traffic controllers as appropriate. Impacts to pedestrians during construction would be managed through the CTMP.

### 4.3 Traffic

Impacts on traffic during construction would be temporary with predominate activity undertaken around the periods of rail possessions (when the majority of construction activities are undertaken). Traffic impacts would occur as a result of the movement of construction and service vehicles, particularly along Great Western Highway and local roads providing access to the compound sites.

Potential impacts caused by construction vehicle traffic would include:

- increased travel time due to reduced speed limits around construction sites
- increased travel time due to increased truck and construction machinery movements
- temporary partial or complete closure of roads and altered property accesses during construction.

Traffic generated by construction vehicles, including staff vehicles is likely to be minimal. Between five to 10 heavy vehicles and a number of light vehicles would be generated during each scheduled possession at each works site.

The additional vehicle movements, particularly along the Great Western Highway and local routes are unlikely to have more than minor impacts on traffic conditions given that the additional vehicle movements would be less than ten per cent of the existing total daily movements along the road corridors. The most appropriate local access route to the temporary compounds, especially for large construction vehicles, would be determined during detailed design. There may be localised impacts at construction access points. Heavy vehicles would be restricted to non-peak periods and rail possessions where possible to minimise disruptions to traffic.

#### **4.4 Parking**

The operation of commuter car parks at Woodford Station, Blackheath Station, Katoomba Station and Lithgow Station may be temporarily affected during the construction of the Project, with compound locations identified adjacent to and within existing off-street commuter parking facilities. The following commuter parking spaces would be temporarily affected during construction:

- about 14 commuter spaces at Woodford Station (making up about a third of the total number of commuter spaces available)
- about seven commuter spaces and three accessible spaces at Katoomba Station (making up about a fifth of the total number of commuter spaces available)
- about 11 commuter spaces at Blackheath Station (making up about half of the total number of commuter spaces available)
- about nine commuter spaces at Lithgow Station (making up a small portion of the total number of commuter spaces available).

This would in turn increase the demand for on-street parking within the local network in the short-term. While the stations would be closed during the possession, passengers may still use surrounding parking to catch the replacement bus service.

#### **4.5 Property access**

Access to individual properties could be temporarily affected by construction activities, either through the loss of existing access arrangements, or the alteration of access arrangements. However, property access would be maintained at all times, and any impacts would be short-term. Access to all properties would be maintained during construction unless agreed with the property owner in advance.



## 5 Operational impacts

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The New Intercity Fleet would provide a better experience for public transport customers by delivering an accessible, modern, safe and comfortable travel experience. The New Intercity Fleet Program aims to provide:

- a more consistent, improved experience for intercity customers which is comparable to that experienced by customers on other rail lines particularly in terms of reliability and capacity improvements to support the growing train network
- reduced operating and maintenance costs
- increased availability of trains on the network
- generally lower energy consumption
- improved amenity including wider seats with arm rests and more space, charging stations for mobile electronic devices, dedicated space for luggage, prams, bicycles and wheelchairs
- a less greenhouse gas intensive mode of travel per passenger.

### 5.1 Public transport

Once complete, the Project would not impact on the operation of public transport, interchange facilities, property access or parking in the vicinity of the stations. The platform extensions at Katoomba Station and Lithgow Station would allow customers' access to the longer trains, which are being provided to cater for patronage growth.

The procurement of the new trains would result in a period of time where the existing trains and new wider trains would be running concurrently along the Blue Mountains Line while the fleet is being progressively replaced. Modification of the platform coping at stations to accommodate the new trains would result in a larger gap experienced by customers boarding or alighting from the older trains at certain points along the platform. Impacts would be temporary in duration, until the full replacement of the older fleet has been completed. Measures including additional signage, additional station staff, physical platform gap filling solutions and communication strategies would be identified during detailed design to minimise disruptions to customers.

The Project would not result in operational traffic or access impacts.

## 6 Recommendations

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Mitigation measures provided in this section would be implemented to minimise traffic, transport and access impacts during construction and operation of the Project.

### 6.1 Construction Traffic Management Plan

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

- identifying traffic management requirements during construction
- ensuring adequate road signage at construction work sites to inform motorists and pedestrians of the work site ahead to ensure that the risk of road accidents and disruption to surrounding land uses is minimised
- maximising safety and accessibility for pedestrians and cyclists
- maintaining a reasonable level of public access across the rail corridor and to public transport services
- ensuring adequate sight lines to allow for safe entry and exit from the site
- ensuring that disruptions to traffic flows on public streets are minimised and, where unavoidable, managed in consultation with the relevant roads authority
- ensuring access to stations, businesses, entertainment premises and residential properties (unless affected property owners have been consulted and appropriate alternative arrangements made)
- managing impacts and changes to on and off street parking and requirements for any temporary replacement provision
- managing staff travel to and from the site, including ensuring parking locations for construction workers are away from stations during normal access and busy residential areas during rail possession / closure and details of how this will be monitored for compliance
- routes to be used by heavy construction-related vehicles to minimise impacts on sensitive land uses and businesses
- assessing suitability of local roads providing access to the proposed compound sites
- measures to manage traffic flows around the area affected by the Project, including as required regulatory and direction signposting, line marking and variable message signs and all other traffic control devices necessary for the implementation of the CTMP
- where practicable, avoid delivery of construction material during peak commuter travel periods and school drop off/pick up times
- limit off-site construction vehicle parking to designated areas.

Consultation with the relevant roads authorities would be undertaken during preparation of the CTMP, as required. The performance of all project traffic arrangements must be monitored during construction.

## 6.2 Mitigation measures

The following additional mitigation measures are recommended to minimise traffic, transport and access impacts:

- ensure public safety by providing appropriate measures as a result of impacts during construction such as the use of traffic controllers, signposting and temporary fencing/hoarding
- communication would be provided to the community and local residents to inform them of changes to rail services, parking, pedestrian access and/or traffic conditions including vehicle movements and anticipated effects on the local road network relating to site works
- road occupancy licences for temporary road closures and/or diversions would be obtained, where required
- temporary measures informing customers of the extra gap between the train and station platforms would be implemented to minimise disruptions to customers while both the existing and new fleet are operating on the Blue Mountains Line, including additional signage, community notification and education
- construction works would aim to minimise temporary loss of parking particularly during works at the stations (e.g. Katoomba Station and Lithgow Station platform extensions).

## 7 References

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