



# Wentworthville Station Easy Access Upgrade Traffic, Transport and Access Impact Assessment

Client // Transport for NSW

Office // NSW

Reference // 15S1212000

Date // 08/12/14

# Wentworthville Station

## Easy Access Upgrade

### Traffic, Transport and Access Impact Assessment

Issue: A 08/12/14

Client: Transport for NSW

Reference: 15S1212000

GTA Consultants Office: NSW

#### Quality Record

Issue	Date	Description	Prepared By	Checked By	Approved By	Signed
A	08/12/14	Final	Brigette Humphrey-Robinson, Rhys Hazell	Rhys Hazell	Brett Maynard	

Blank Report  
140829 v7.9)

© GTA Consultants (GTA Consultants (NSW) Pty Ltd) 2014  
The information contained in this document is confidential and intended solely for the use of the client for the purpose for which it has been prepared and no representation is made or is to be implied as being made to any third party. Use or copying of this document in whole or in part without the written permission of GTA Consultants constitutes an infringement of copyright. The intellectual property contained in this document remains the property of GTA Consultants.



MELBOURNE • SYDNEY • BRISBANE • CANBERRA  
ADELAIDE • GOLD COAST • TOWNSVILLE  
[www.gta.com.au](http://www.gta.com.au)

# Executive Summary

---

## Background and Upgrade Works

Transport for New South Wales, through the Transport Projects Division is proposing to upgrade Wentworthville Railway Station as part of the Transport Access Program (TAP) which is a NSW Government initiative involving many transport facility upgrades throughout NSW.

The main objective of the program is to provide better access to, within and around public transport interchanges, railway stations and surrounding station precincts, along with improvements in station amenities and general customer facilities.

Wentworthville Railway Station, located in the western suburbs of Sydney, has been earmarked for inclusion in the Easy Access Upgrade Projects to improve the customer experience, accessibility for those with a disability, modal interchange facilities and general station precinct.

The Proposal is designed to improve pedestrian access to and from the station, increase Wentworthville Stations ability to cope with the predicted future patronage demands, improve pedestrian flow, passenger information services and wayfinding between transport modes.

The Proposal would include the following key features:

- retention, repairs and repainting of the existing footbridge structure
- retention of the existing ramps
- installation of four new lifts:
  - one at each station entrance
  - one to Platform 1-2
  - one to Platform 3-4
- replacement of all stairs with new stairs
- widening of the existing footbridge between the new platform lifts
- provision of passenger information displays and ticket vending machines
- demolition of the existing retail concession on the footbridge to allow for the platform lift
- station building upgrades to provide accessible customer and staff areas and facilities including waiting rooms, family accessible toilet, and new male/ female amenities
- pedestrian access and transport interchange improvements in The Kingsway and Wentworth Avenue.

Construction is anticipated to commence in mid-2015 and would take up to 2 years to complete.

## Existing Conditions

Wentworthville Railway Station is currently the 86<sup>th</sup> busiest station within the Sydney Trains network, with approximately 3,000 passengers recorded entering and exiting the station during an average weekday in 2011. Existing station facilities include a bicycle rack with capacity for 5 bicycles, pedestrian crossings on Wentworth Avenue and The Kingsway, footpath network linking to the surrounding network, parallel parking on Wentworth Avenue, a taxi rank on The Kingsway and a bus zone on Wentworth Avenue. The car park at the western end of The Kingsway is mostly used by commuters, in addition to the on-street parking supply.

The station is accessed by more than 1,000 rail users during the weekday AM peak hour. Reasonable traffic volumes were recorded on Wentworth Avenue and The Kingsway, with approximately 300 vehicles and 200 vehicles two-way during the AM and PM peaks respectively.

Site observations indicate that the demand for unrestricted parking was high, with low-moderate demand for other short-term parking. Informal kiss and ride activity was observed on both sides of the station.

The station is serviced by the T1 Western Line and T5 Cumberland Line. There are also several bus stops within walking distance of the station, serviced by 3 local bus routes linking to Blacktown, Parramatta, Merrylands and Westmead.

### Operational and Construction Impacts

TfNSW predicts that daily rail patronage at Wentworthville Railway Station is expected to increase by 40% between 2011-2016 and 2031-2036. The pedestrian improvements (including new stairs and lift access) would provide adequate capacity to accommodate this expected growth, while also enabling direct and safe travel routes, with an overall improved user experience and connectivity.

Pedestrian capacity assessment using Fruin Theory concludes that peak pedestrian activity 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.

The proposed kiss and ride facilities (capacity for approximately 8 vehicles) on both sides of the station would improve both the passenger interchange to/ from private vehicles, and local traffic operations in the station precinct.

Improved bicycle facilities in the station forecourt areas would improve visibility and quality of these facilities in combination with passive surveillance, encouraging cycling as a viable mode choice for local residents accessing the station. Appropriate weather protection should be provided for the proposed bicycle parking.

Minor changes to the location and/ or restrictions of existing on-street car parking are proposed, with negligible impacts anticipated. Improvements to the accessible parking spaces in the northern precinct and increased accessible provisions would promote equitable access at the station.

Further consideration during detailed design of suitable pedestrian facilities and LATM devices, as well as road carriageway widths for bus and heavy vehicle access, would be required.

Construction vehicles would use designated approach and departure routes with mitigation measures to ensure safety at all times, especially at the site access locations and through local areas. Construction traffic generation is expected to be minor and have a negligible impact on existing traffic conditions. It is anticipated that the primary site compound would be located in temporary lands to the north of the station, with appropriate vehicle routes available.

Notwithstanding the likely limited impacts of construction on traffic operation of the surrounding network, a Construction Traffic Management Plan and Traffic Control Plans (TCP) would likely need to be prepared and submitted to the RMS (TMC) and Council's Traffic Committee to appropriately manage the use of the designated construction routes and site interfaces. On-street parking impacts as a result of construction workers or localised construction activities would need to be appropriately managed given the high demand for existing parking by commuters accessing Wentworthville Railway Station. Further consideration of appropriate traffic management and staging methodologies during road works activities would be required to minimise the impact to road user safety and the station operation.

# Table of Contents

---

<b>1. Introduction</b>	<b>1</b>
1.1 Background	1
1.2 Project Objectives	1
1.3 Wentworthville Railway Station Upgrade	2
1.4 Study Area	2
1.5 Study Scope	3
1.6 References	3
<b>2. Existing Conditions</b>	<b>5</b>
2.1 Site Context	5
2.2 Existing Station Facilities	5
2.3 Public Transport	7
2.4 Taxi and Kiss and Ride Facilities	11
2.5 Walking and Cycling	12
2.6 Road Network	17
2.7 Traffic Volumes	19
2.8 Parking Demand	20
2.9 Travel Mode Choice	22
2.10 Road Safety	23
<b>3. Proposed Station Precinct Improvements</b>	<b>25</b>
3.1 Overview	25
<b>4. Operational Traffic Impacts</b>	<b>28</b>
4.1 Future Demand	28
4.2 Public Transport	28
4.3 Pedestrians	28
4.4 Cyclists	30
4.5 Kiss and Ride and Taxi	30
4.6 Proposed Precinct Layout	31
4.7 Traffic Generation and Parking Demand	31
4.8 Property Access	31
4.9 Road Safety	31
<b>5. Construction Traffic Impacts</b>	<b>33</b>
5.1 Construction Activity	33
5.2 Construction Stage Impacts	33
5.3 Recommended Mitigation Measures	35
5.4 Construction Traffic Management	36

## Appendices

---

### A: Swept Paths

#### Figures

---

Figure 1.1:	Wentworthville and its Surrounding Environs	3
Figure 2.1:	Wentworthville Railway Station Precinct	5
Figure 2.2:	Existing Transport Facilities	6
Figure 2.3:	Wentworthville Railway Station Facilities	7
Figure 2.4:	Wentworthville Railway Station Patronage	8
Figure 2.5:	Bus Stop Locations and Bus Routes	10
Figure 2.6:	Kiss and Ride Locations	11
Figure 2.7:	Pedestrian Facilities and Station Access	12
Figure 2.8:	Bicycle Facilities	14
Figure 2.9:	Pedestrian Desire Lines and Cycling Facilities	16
Figure 2.10:	The Kingsway (looking east towards station)	17
Figure 2.11:	Station Street (looking south to Dunmore Street intersection)	18
Figure 2.12:	Wentworth Avenue (looking west)	19
Figure 2.13:	2011 Census Data Journey to Work Data (TZ 1084, TZ 1005 and TZ 1006)	22
Figure 2.14:	2011 JTW – Employed Residents Commuting from TZ 1084, TZ 1005 and TZ 1006	22
Figure 2.15:	Recorded Crash History (2009-2013)	24
Figure 3.1:	Wentworthville Railway Station Proposed Layout	26
Figure 4.1:	Illustration of Fruin Theory Walkway Levels of Service	30
Figure 5.1:	Construction Vehicle Routes (Northern Side)	34
Figure 5.2:	Construction Vehicle Routes (Southern Side)	34

#### Tables

---

Table 2.1:	Train Service Frequencies	7
Table 2.2:	Wentworthville Railway Station Barrier Counts 2004 – 2012	9
Table 2.3:	Bus Service Frequencies	9
Table 2.4:	Weekday AM Peak Hour Pedestrian Generation (7:30am-8:30am)	14
Table 2.6:	Peak Hour Parking Demand for Southern Side of Station	21
Table 2.7:	Crash Statistics Summary	23
Table 4.1:	Forecast Station Patronage [1]	28
Table 4.2:	Pedestrian Level of Service on Walkways	29
Table 4.3:	Pedestrian LOS Assessment	29

# 1. Introduction

---

## 1.1 Background

Transport for New South Wales, through the Transport Projects Division is proposing to upgrade Wentworthville Railway Station as part of the Transport Access Program (TAP) which is a NSW Government initiative involving many transport facility upgrades throughout NSW.

The main objective of the program is to provide better access to, within and around public transport interchanges, railway stations and surrounding station precincts, along with improvements in station amenities and general customer facilities. This would ensure an enhanced experience for public transport customers by delivering accessible, modern, secure and integrated transport infrastructure.

The planning and delivery of transport infrastructure as part of TAP would focus on the following:

- Upgrading existing railway stations to improve access, particularly for those with a disability, the elderly and parents with prams.
- Providing modern buildings and facilities for all modes that meet the needs of a growing population.
- Providing transport interchanges that support an integrated network and allow seamless transfers between all modes for all customers.
- Improving safety and security measures, such as extra lighting, help points, fences and other security features.
- Improving signage and wayfinding.

The TAP has funding to deliver a series of projects ranging from small works such as ramp and access upgrades, through to larger projects including new stations, whole of station upgrades, transport interchanges and multi-deck commuter car parks.

Transport for NSW engaged GTA Consultants to prepare a Traffic, Transport and Access Impact Assessment (TT&AIA) for the Wentworthville Station Easy Access Upgrade.

## 1.2 Project Objectives

The overall objectives of the Easy Access Upgrade projects include:

- Improving the customer experience (specifically by provision of canopies, improved interchange facilities and a high standard of urban design).
- Improving accessibility and compliance with the Disability Discrimination Act (DDA) and the Disability Standards for Accessible Public Transport (DSAPT).
- Improving modal access facilities and integration with surrounding precinct.
- Where possible, increasing station capacity to address identified congestion issues (if any) and to accommodate patronage growth to 2036.
- Upgrading transport modal interchange facilities and equipment to current standards.
- Improving amenity for customers, including general access to the station and precinct facilities.
- Facilitating future unmanned station operation through rationalisation of all station systems including security, ticketing and passenger information display.
- Reviewing precinct facilities for life expired elements and recommending appropriate action.

- Balancing the cost of ownership and maintenance with capital cost.
- Providing documentation and data inputs into the TfNSW Review of Environmental Factors (REF) to secure planning approval.
- Minimising construction stage impacts on passengers and station operations.

Specific design objectives include:

- Verifying compliance with functional and operational requirements.
- Promoting efficient and effective wayfinding.
- Minimising pedestrian conflict, congestion and crowding points.
- Minimising queuing at station and interchange facilities.
- Increasing accessibility for commuters with mobility impairment.
- Accommodating growth of patronage and changing travel and working patterns.
- Improving station functionality, covering improved access to ticketing, platform clearance rates and station control (including congestion and pinch points).

### 1.3 Wentworthville Railway Station Upgrade

The Proposal is designed to improve pedestrian access to and from the station, increase Wentworthville Stations ability to cope with the predicted future patronage demands, improve pedestrian flow, passenger information services and wayfinding between transport modes.

The Proposal would include the following key features:

- retention, repairs and repainting of the existing footbridge structure
- retention of the existing ramps
- installation of four new lifts:
  - one at each station entrance
  - one to Platform 1-2
  - one to Platform 3-4
- replacement of all stairs with new stairs
- widening of the existing footbridge between the new platform lifts
- provision of passenger information displays and ticket vending machines
- demolition of the existing retail concession on the footbridge to allow for the platform lift
- station building upgrades to provide accessible customer and staff areas and facilities including waiting rooms, family accessible toilet, and new male/ female amenities
- pedestrian access and transport interchange improvements in The Kingsway and Wentworth Avenue.

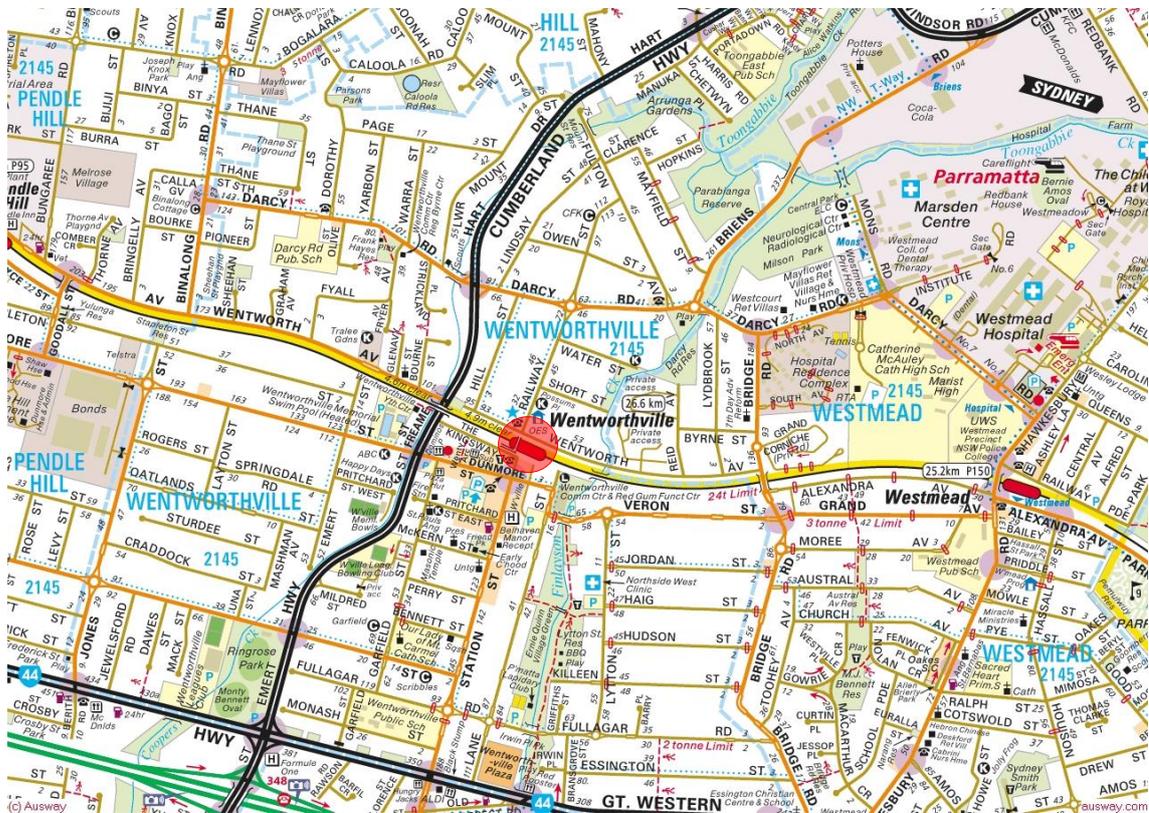
Construction is anticipated to commence in mid-2015 and would take up to 2 years to complete.

### 1.4 Study Area

Wentworthville Railway Station is located in the western suburbs of Sydney and between Wentworth Avenue and The Kingsway. The station precinct is located on the border of the City of Holroyd Local Government Area (LGA) and Parramatta City LGA, and is surrounded by Blacktown LGA to the north-west and Fairfield LGA in the south.

The local and regional context is shown in Figure 1.1.

Figure 1.1: Wentworthville and its Surrounding Environs



Basemap source: Sydney

## 1.5 Study Scope

This TT&AIA report sets out an assessment of the anticipated traffic, transport and access impacts of the proposed Wentworthville Station Easy Access Upgrade for inclusion in the Review of Environmental Factors (REF), including consideration of the following:

- o existing traffic and transport conditions and facilities in the vicinity
- o operational traffic impacts associated with the proposed facilities
- o construction impacts associated with the Proposal
- o potential mitigation measures required as a result of the impacts.

This assessment has been prepared noting the following:

- o stakeholder consultation was not conducted as part of this study
- o assumptions were made in regard to the proposed construction activities
- o pedestrian, traffic and parking surveys were conducted during the weekday AM and PM peak periods with the primary aim of capturing commuter behaviour
- o no modelling was completed as part of this project, noting that the Proposal is not expected to generate additional traffic.

## 1.6 References

In preparing this report, reference has been made to the following:

- o an inspection of the site and its surrounds
- o Australian Standard, Parking Facilities, Part 1: Off-Street Car Parking AS 2890.1:2004

- o Australian Standard, Parking Facilities, Part 6: Off-Street Parking for People with Disabilities AS 2890.6:2009
- o traffic and car parking surveys as referenced in the context of this report
- o plans for the proposed development prepared by Caldis Cook, Drawing Package Number TAP-1851-WBD-0001 - 0006, Revision A
- o other documents and data as referenced in this report.

## 2. Existing Conditions

### 2.1 Site Context

Wentworthville Railway Station is located approximately 26km west of the Sydney CBD between Pendle Hill and Westmead Stations on the Sydney Trains T1 Western Line and T5 Cumberland Line. It is currently the 86<sup>th</sup> busiest station within the Sydney Trains network, with 3,000 passengers recorded entering and exiting the station during an average weekday in 2011.

Wentworthville Railway Station is bounded by Wentworth Avenue to the north and The Kingsway/ Station Street to the south. Wentworthville town centre is located on the southern side of the station where the land is zoned as a mix of Local Centre and Public Recreation. The remainder of the area is dominated by low, medium and high density residential areas.

The location of Wentworthville Railway Station and the local area context is shown in Figure 2.1.

Figure 2.1: Wentworthville Railway Station Precinct



Basemap source: Sydney

### 2.2 Existing Station Facilities

Wentworthville Railway Station and surrounding precinct provides a range of integrated transport facilities including commuter car parks, bicycle storage, accessible parking and kiss and ride, with all existing facilities indicatively shown in Figure 2.2.

Figure 2.2: Existing Transport Facilities



- Key**
- Bicycle Rack
  - Commuter Parking
  - Disabled Parking
  - Short Stay Parking
  - 10 Car Parking Supply
  - 10 Bicycle Parking Supply

## 2.3 Public Transport

### 2.3.1 Passenger Rail Services

Wentworthville Railway Station is serviced by the T1 Western Line and T5 Cumberland Line. The journey between Wentworthville Railway Station and Central Station takes approximately 32-39 minutes during peak periods.

Train frequencies during the weekday AM, PM and Saturday peak hours are shown in Table 2.1.

**Table 2.1: Train Service Frequencies**

Direction	AM Peak (8:00am-9:00am)	PM Peak (5:00pm-6:00pm)	Saturday Peak (12:00pm-1:00pm)
Eastbound (Central)	15 minutes	15 minutes	30 minutes
Westbound (Richmond/Emu Plains)	15 minutes	15 minutes	30 minutes

A summary of facilities provided at Wentworthville Railway Station is detailed in Figure 2.3.

**Figure 2.3: Wentworthville Railway Station Facilities**

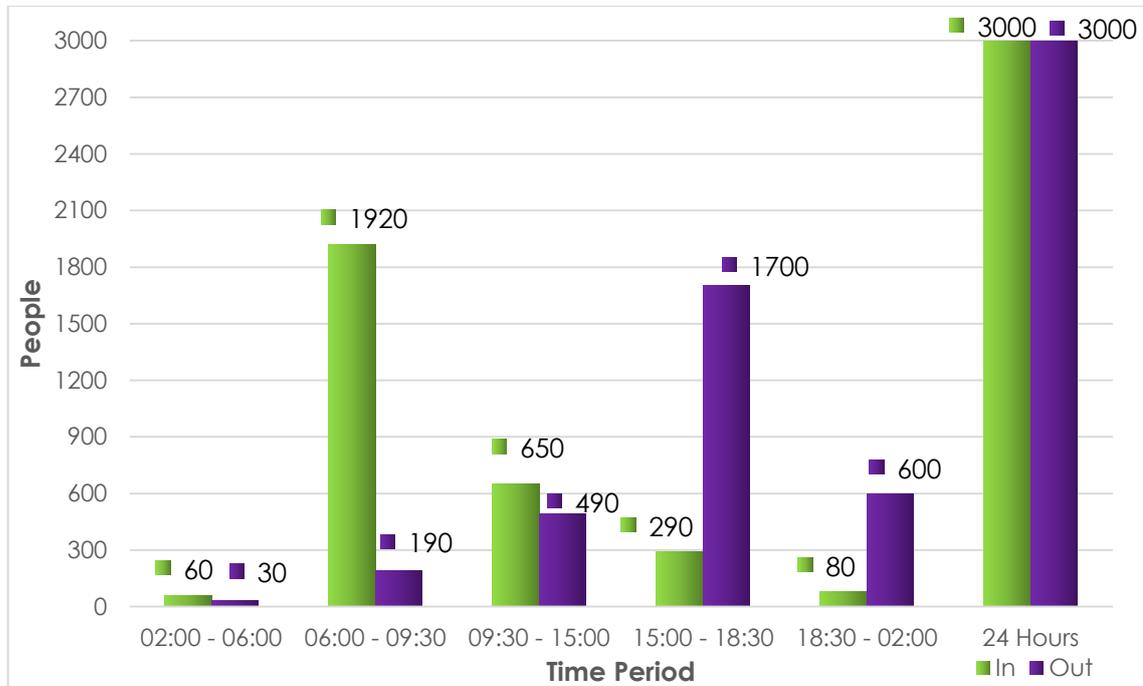
Getting around the station		Accessibility	
 Stairs	✓	 Hearing loop	✓
 Escalator	✗	 Platform tactile tiles	✗
 Lift	✗	 Portable boarding ramp	✓
 Ramp (1:7 gradient)	✓	 Wheelchair accessible toilet	✗
 Level crossing	✗	 Wheelchair accessible payphone	✗
		 Wheelchair accessible carspace/s	✓
General facilities		Transport interchanges	
 Ticket vending machine	✓	 Bus stop close by	✓
 Eftpos	✓	 Ferry wharf close by	✗
 Toilet	✓	 Taxi rank close by	✓
 Payphone	✓	 Bike racks or bike lockers	✗
 Passenger display screens	✓	 Kiss and ride	✓
 Emergency Help Point	✓	 Car park close by	✓

Source: Sydney Trains website [http://www.sydneytrains.info/stations/station\\_details.htm](http://www.sydneytrains.info/stations/station_details.htm)

### 2.3.2 Rail Patronage

Rail patronage data for Wentworthville Railway Station is detailed in Figure 2.4. Across the 24 hour period, the station has an even split between station entries and exits<sup>1</sup>.

**Figure 2.4: Wentworthville Railway Station Patronage**



Source: *Compendium of Sydney Rail Travel Statistics* (8th Edition v1.1, Bureau of Transport Statistics, November 2012).

From Figure 2.4 it is evident that Wentworthville Railway Station is equally busy during the morning peak period of 6:00am-9.30am and the afternoon/ evening peak period of 3:00pm-6:30pm, which reflects its primary use as a commuter station to/ from Sydney CBD and key employment zones.

Historical barrier count data for Wentworthville Railway Station has also been gathered from information published by the Bureau of Transport Statistics<sup>2</sup>, covering the years 2004 to 2012, and given in terms of key time periods during the day. The barrier counts for 3.5-hour morning peak between 6:00am and 9:30am, as well as the totals for the day (24 hours), are shown in Table 2.2.

<sup>1</sup> Source: *2012 Compendium of Sydney Rail Travel Statistics* (8th Edition v1.1, Bureau of Transport Statistics, November 2012).

<sup>2</sup> From the Bureau of Transport Statistics website: <http://visual.bts.nsw.gov.au/barrier/>

**Table 2.2: Wentworthville Railway Station Barrier Counts 2004 – 2012**

Year	Time Period					
	6:00am – 9:30am			24 hours		
	In	Out	In + Out	In	Out	In + Out
2004	1,260	170	1,430	2,060	2,060	4,120
2005	1,260	170	1,430	2,060	2,060	4,120
2006	1,280	180	1,460	2,100	2,100	4,200
2007	1,500	140	1,640	2,280	2,280	4,560
2008	1,580	150	1,730	2,420	2,420	4,840
2009	1,680	160	1,840	2,570	2,570	5,140
2010	1,710	170	1,880	2,610	2,610	5,220
2011	1,920	190	2,110	3,000	3,000	6,000
2012	1,960	200	2,160	3,060	3,060	6,120

Source: Bureau of Transport Statistics

The data indicates that rail patronage has increased significantly in the 8 year period to 2012 and equates to an approximate 50% increase.

### 2.3.3 Bus Services

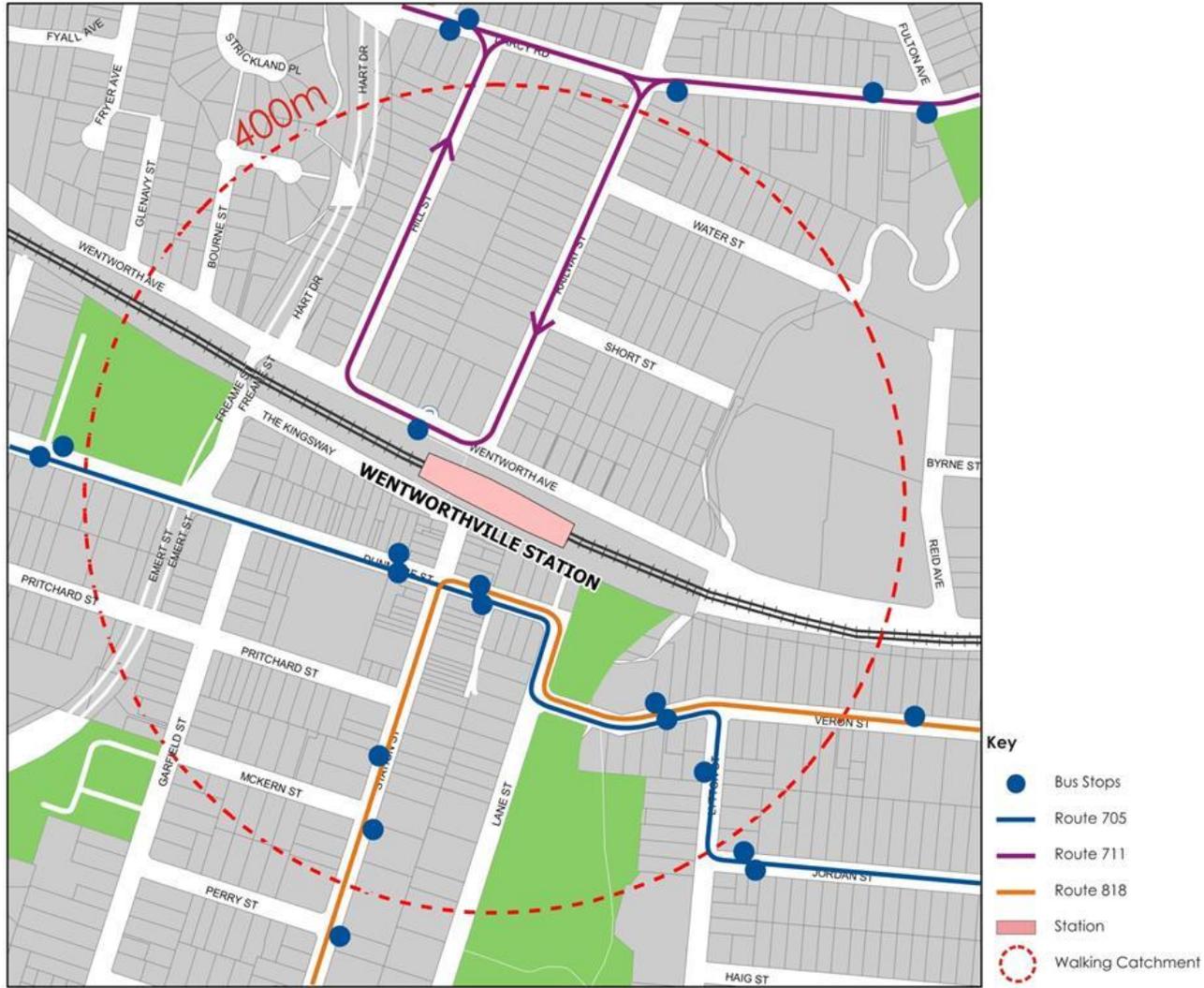
Bus stops have been provided within a typical walking distance from Wentworthville Railway Station, including Wentworth Avenue (north of the station) and Dunmore Street to the south. The buses are operated by Hillsbus and Transit Systems, providing services linking Blacktown with Parramatta (Route 705, 711), and Merrylands with Westmead (Route 818).

The bus stop locations and the routes in the vicinity of Wentworthville Railway Station are presented in Figure 2.5, with bus frequencies detailed in Table 2.3.

**Table 2.3: Bus Service Frequencies**

Route	Frequency
705 (Hillsbus)	20 services per day
711 (Hillsbus)	35 services per day
818 (Transit Systems)	11 services per day
<b>Total</b>	<b>66 services per day</b>

Figure 2.5: Bus Stop Locations and Bus Routes



## 2.4 Taxi and Kiss and Ride Facilities

There is no formal kiss and ride facility within the vicinity of Wentworthville station. At the time of the site visits, set-down/ pick-up activity on the northern side of the station was observed at the following locations:

- o accessible parking and bus zone on Wentworth Avenue
- o '2P' parking spaces along the southern side of Wentworth Avenue (East)
- o '2P' parking spaces along the eastern side of Railway Street.

Similarly, set-down/ pick-up activity on the southern side of the station was observed at the following locations:

- o taxi rank, No Parking zone on the northern side of The Kingsway
- o '1P' parking spaces along the southern side of The Kingsway.

The majority of these vehicles were observed to complete an illegal U-turn on the northern side, with The Kingsway roundabout allowing for such U-turns on the southern side.

A formal taxi rank is located adjacent to the station access ramps on The Kingsway with no formal taxi facilities on the northern side.

The informal kiss and ride locations are illustrated in Figure 2.6.

**Figure 2.6: Kiss and Ride Locations**



Informal set-down/ pick-up activity in accessible parking spaces on Wentworth Avenue



Informal set-down/ pick-up activity in '2P' parking along southern side of Wentworth Avenue



Informal set-down and pick-up activity along northern side of The Kingsway adjacent to station ramps



Informal set-down/ pick-up activity in '1P' parking along southern side of The Kingsway

## 2.5 Walking and Cycling

### 2.5.1 Pedestrian Infrastructure

Direct access to inbound and outbound platforms is available via ramps and stairs on Wentworth Avenue and The Kingsway. The ramps and stairs are connected to an elevated footbridge located towards the western end of the station platforms.

The key pedestrian desire lines are presented in Figure 2.9 with the majority being via by established footpaths. These include along both sides of Railway Street, Station Street and The Kingsway. The footpaths along the southern side of Wentworth Avenue do not extend for the length of commuter parking in each direction with pedestrians observed to make use of the road carriageway.

The pedestrian crossing on The Kingsway accommodates the majority of pedestrian movements to/ from the south, with a 2-3m wide footpath connecting the crossing with the southern station access. Similarly, a marked pedestrian crossing on the eastern side of the Wentworth Avenue/ Railway Street intersection connects the northern station access (stairs only) with footpaths provided on the northern and southern side of Wentworth Avenue and the broader town centre.

The Wentworth Avenue pedestrian crossing does not generally accommodate pedestrian demand for the station access ramp, which is located approximately 50m west of the stairs. As a result, mid-block pedestrian activity was prominent in the northern station precinct, particularly at this location.

Access to the station platforms is via a combination of ramps and stairs, thereby not complying with the Disability Discrimination Act (DDA).

Examples of the pedestrian facilities at Wentworthville Railway Station are provided in Figure 2.7.

**Figure 2.7: Pedestrian Facilities and Station Access**



Raised pedestrian crossing across Wentworth Avenue connecting to station steps



Station access steps on Wentworth Avenue



Raised pedestrian crossing across at The Kingsway and Station Street



Pedestrian crossing connecting northern footpath of The Kingsway with commuter car park



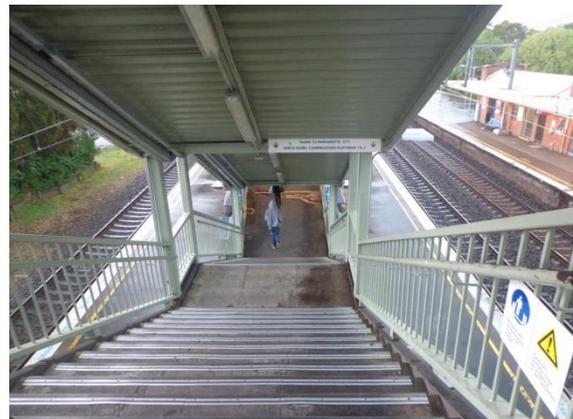
Pedestrian crossing on southern edge of commuter car park connecting to Dunmore Street



Station access ramps on The Kingsway



Pedestrian footbridge connecting all platforms



Pedestrian steps providing access to the platforms

## 2.5.2 Pedestrian Activity

GTA Consultants completed pedestrian demand surveys in early November 2014 during the weekday AM (6:00am-9:00am) and PM (4:00pm-7:00pm) peak periods. AM peak activity is summarised in Table 2.4, indicating that up to 1,217 pedestrians access Wentworthville Railway Station during the peak hour with a 90:10 split between in and out.

The PM peak pedestrian activity was approximately 20% less than the AM, with a similar directional split, albeit in the opposing direction.

**Table 2.4: Weekday AM Peak Hour Pedestrian Generation (7:30am-8:30am)**

Location	In	Out	Total
Northern side	551	30	581
Southern side	583	53	636
<b>Total</b>	<b>1,134</b>	<b>83</b>	<b>1,217</b>

Pedestrians predominantly make use of the stairs on each side of the station, with the northern precinct stairs accommodating up to 70% of all pedestrians and the southern precinct approximately 60%.

### 2.5.3 Cycling Infrastructure

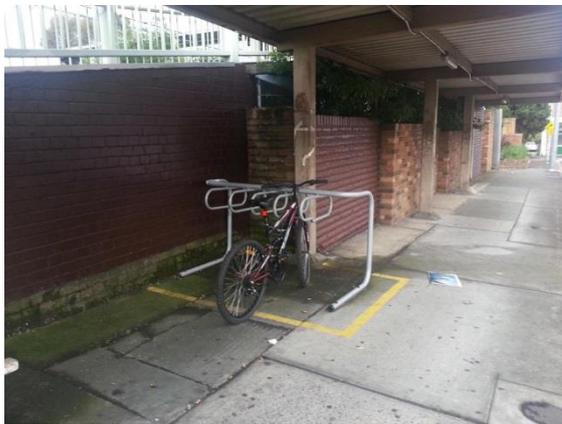
Railway Street and Wentworth Avenue are recognised as on-road cycle routes by Parramatta City Council, with cycle logos regularly positioned on the pavement of both roads (see Figure 2.9). Additional wayfinding signage is also provided to promote the cycling connections.

Bicycle facilities at the station include bike racks in the southern station precinct with capacity for five bicycles. At the time of the site visits, the bicycle parking was underutilised with only one bicycle rack occupied. There are no bicycle facilities in the northern station precinct.

On-site observations identified a reasonable level of informal bicycle parking on the northern side of Wentworth Avenue adjacent to the Police Station.

The bicycle facilities and demand surrounding Wentworthville Railway Station are shown in Figure 2.8.

**Figure 2.8: Bicycle Facilities**



Bike racks located under the station access steps on The Kingsway



Informal bike parking along Police Station fence on Wentworth Avenue

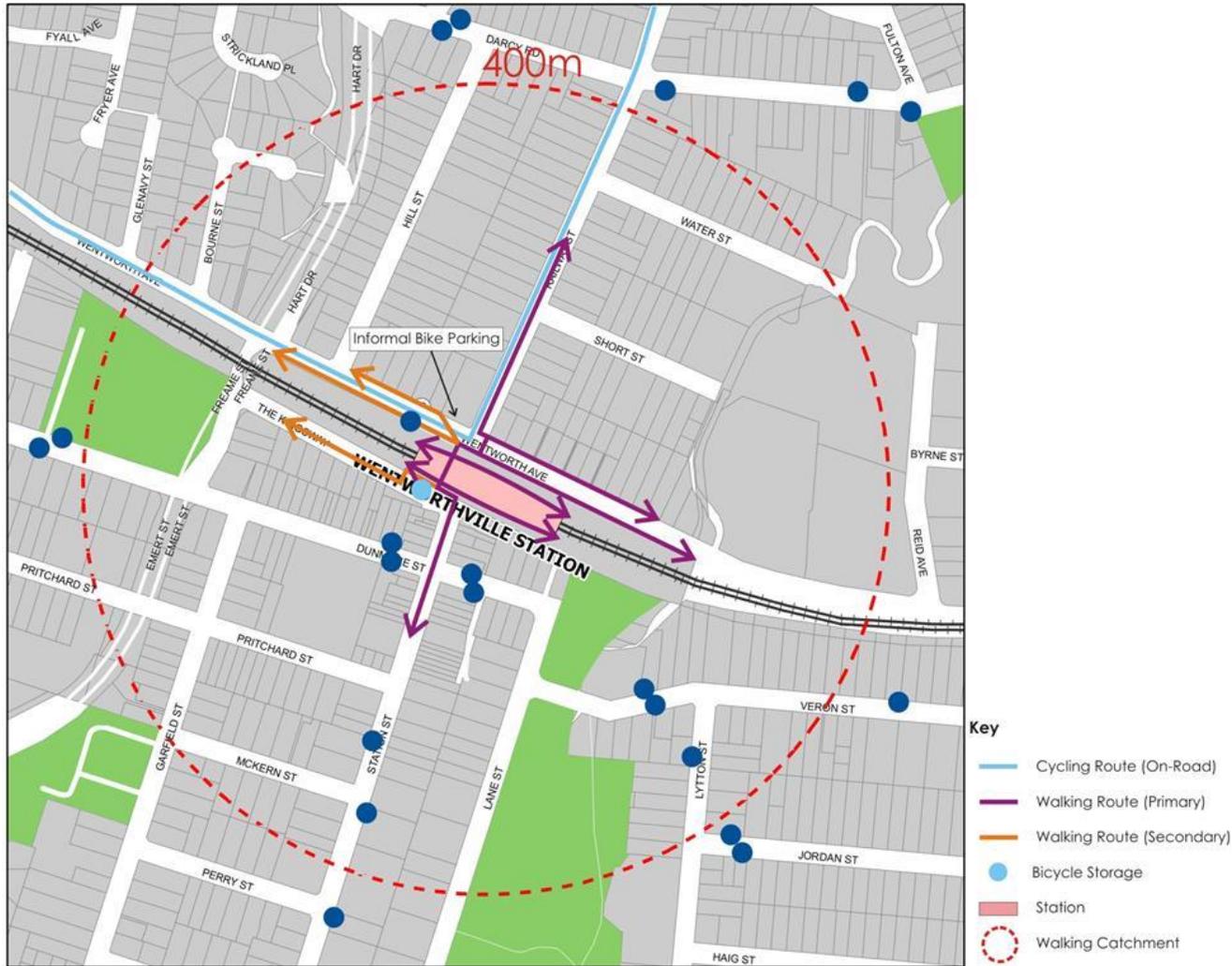


Bicycle logos on Railway Street



Bicycle wayfinding at the Wentworth Avenue/ Railway Street intersection

Figure 2.9: Pedestrian Desire Lines and Cycling Facilities



## 2.6 Road Network

### The Kingsway

The Kingsway is generally aligned in an east-west direction and provides a two-way road with one 3.5m wide carriageway in each direction. It is located on the southern side of Wentworthville Station and serves as a local street, continuing as Station Street further to the east and providing a small roundabout to the west. The roundabout primarily facilitates U-turn movements for set-down/ pick-up activity and connects to the commuter car park further to the west.

The Kingsway accommodates a raised pedestrian crossing on its bend with Station Street and another marked crossing immediately to the west of the roundabout. A taxi rank is also located on the northern side, adjacent to the station access ramp, with '1P' parking generally permitted on the southern side.

The Kingsway is shown in Figure 2.10.

**Figure 2.10: The Kingsway (looking east towards station)**



### Station Street

Station Street is a two-lane single carriageway with approximately 4.5m lane widths and is generally aligned in a north-south direction. It is located on the southern side of Wentworthville station and serves as a local street forming a signalised intersection with Dunmore Street.

1P parking is permitted along both sides, including one accessible parking bay on each side of the road north of Dunmore Street.

Station Street is shown in Figure 2.11.

Figure 2.11: Station Street (looking south to Dunmore Street intersection)



### Wentworth Avenue

Wentworth Avenue is a two-lane single carriageway with approximately 3.5m lane widths and is generally aligned in an east-west direction on the northern side of the station. It forms a priority controlled intersection with Railway Street opposite the station access stairs and with Hill Street approximately 150m to the west. It accommodates a designated on-street bicycle route to Toongabbie and Blacktown, traversing the Cumberland Highway to the west.

Wentworth Avenue provides for a raised pedestrian crossing on the eastern side of the Railway Street intersection, effectively connecting the footpaths in the vicinity. Parking comprises a mix of 2P and unrestricted parking on both sides east of the Railway Street intersection. To the west, a combination of 1/2P, 2P and unrestricted parking is on the northern side, with a bus zone, 2 accessible bays and unrestricted parking on the southern side.

Wentworth Avenue is shown in Figure 2.12.

Figure 2.12: Wentworth Avenue (looking west)



### Railway Street

Railway Street is a two-lane single carriageway with approximately 3m lane widths and is generally aligned in a north-south direction. It forms priority T-intersections along its length between the station at its southern end and Darcy Street where there is a roundabout controlled intersection.

Railway Street accommodates a designated on-street bicycle route to Winston Hills and permits a mix of 1/4P, 2P and unrestricted parking on both sides. A 1/4P parking restriction is limited to approximately 2 parking spaces located outside 2 Childcare centres, one on each side of the street.

### Dunmore Street

Dunmore Street is a four-lane single carriageway with approximately 3m lane widths and is generally aligned in an east-west direction. It forms a signalised intersection with Station Street and the Cumberland Highway further to the west. It combines with Lane Street to the east. It accommodates bus stops on both sides immediately east and west of the Railway Street intersection, along with 1P parking in the majority of locations.

## 2.7 Traffic Volumes

GTA Consultants completed traffic movement counts at the Wentworth Avenue/ Railway Street intersection and along The Kingsway during the AM and PM peak periods, with the following key results:

### Northern Station Precinct

- Two-way peak hourly traffic flows on Wentworth Avenue are in the order of 280 vehicles, occurring east of Railway Street during the PM peak (5:15pm-6:15pm).
- Two-way flows west of Railway Street were typically 50% less than those occurring east.
- The AM peak flows along Wentworth Avenue were approximately 15% less than the PM.
- Set-down and pick-up accounted for less than 5% of all traffic on Wentworth Avenue during the peak periods.

### Southern Station Precinct

- Two-way peak hourly traffic flows on The Kingsway are in the order of 210 vehicles, during the AM peak (7:00am-8:00am).
- The PM peak flows along The Kingsway were similar during the AM.
- Set-down and pick-up accounted for 30-40% of all traffic along The Kingsway during the peak periods.

## 2.8 Parking Demand

The Kingsway commuter car park facilitates the majority of long-stay parking in the vicinity of Wentworthville Railway Station with other on-street unrestricted parking within the northern precinct. Additionally, on-street parallel car parking with a range of time restrictions is available.

GTA Consultants conducted parking counts in the vicinity of the station during peak periods. The parking supply is illustrated in Figure 2.2, with results presented in Table 2.5 and Table 2.6 and summarised below:

### Northern Station Precinct

- 239 spaces are available in the northern station precinct, including 2 accessible spaces
- approximately 202 spaces (85%) of the total supply is unrestricted
- peak parking demand was 76% at 9:00am, with approximately 30 unoccupied spaces.

### Southern Station Precinct

- 236 spaces are available in the northern station precinct, including 6 accessible spaces
- approximately 168 (70%) of the parking supply is unrestricted
- peak parking demand was 81% at 9:00am, with no spare capacity available in unrestricted parking areas.

Overall, the peak parking demand for unrestricted parking was approximately 90%, which is indicative of the strong commuter parking activity surrounding Wentworthville Railway Station.

All of the 8 accessible parking spaces were unoccupied at the time of the surveys. It is expected that this is as a result of the non-compliant facilities at the station and the undesirable layout of the parking spaces themselves, particularly on Wentworth Avenue.

**Table 2.5: Peak Hour Parking Demand for Northern Side of Station**

Street	From	To	Side	Type	Supply (No.)	AM Peak Demand (09:00)		PM Peak Demand (17:30)	
						No.	%	No.	%
Wentworth Avenue	Railway Street	2P End	North	2P	7	2	29%	6	86%
		2P End	South	2P	12	3	25%	10	83%
		Reid Avenue	North	NR	22	22	100%	12	55%
			South	NR	32	32	100%	26	81%
	Police Station	North	1/2P	4	2	50%	2	50%	
	Police Station	Hill Street	North	2P	5	3	60%	5	100%
	Railway Street		South	NR	15	15	100%	13	87%
	Hill Street	Hill Street	Road End	North	NR	2	2	100%	1
Accessible Parking	-	South	NR	2	0	0%	0	0%	
Hill Street	Wentworth Avenue	Darcy Road	West	NR	29	15	52%	11	38%
			East	NR	43	27	63%	23	53%
Railway Street	Wentworth Avenue	2P End	West	2P	2	0	0%	2	100%
	2P End	Childcare Centre	West	NR	19	17	89%	10	53%
	Childcare Centre	-	West	1/4P	2	2	100%	1	50%
		Darcy Road	West	NR	13	13	100%	12	92%
	Wentworth Avenue	2P End	East	2P	3	1	33%	2	67%
	Childcare Centre	-	East	1/4P	2	0	0%	1	50%
		Short Street	East	NR	5	5	100%	4	80%
	Short Street	Water Street	East	NR	12	12	100%	10	83%
Water Street	Darcy Road	East	NR	8	8	100%	3	38%	
<b>TOTAL</b>					<b>239</b>	<b>181</b>	<b>76%</b>	<b>154</b>	<b>64%</b>

**Table 2.6: Peak Hour Parking Demand for Southern Side of Station**

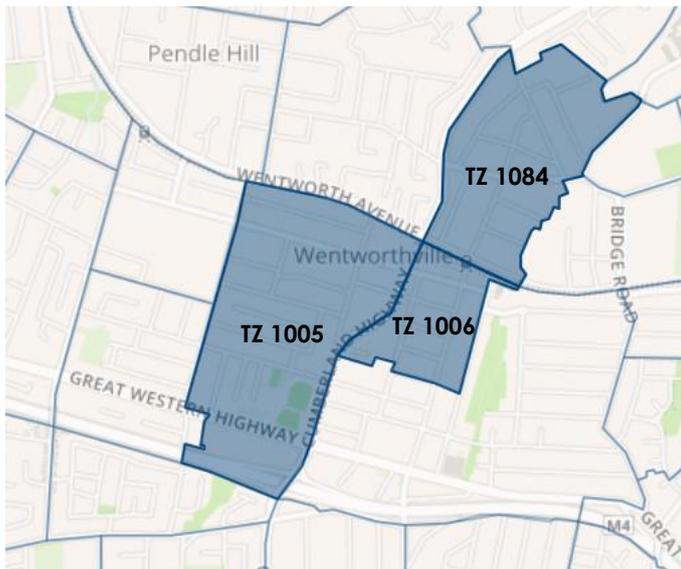
Street	From	To	Side	Type	Supply (No.)	AM Peak Demand (09:00)		PM Peak Demand (17:30)	
						No.	%	No.	%
The Kingsway Commuter Car Park	-	-	-	NR	168	168	100%	92	55%
	-	-	-	2P	44	18	41%	18	41%
	-	-	-	Accessible	4	0	0%	0	0%
The Kingsway	Commuter Car Park	Station Street	South	1P	10	2	20%	4	40%
Station Street	The Kingsway	Dunmore Street	East	1P	4	3	75%	3	75%
			East	Accessible	1	0	0%	0	0%
			West	1P	4	3	75%	1	25%
			West	Accessible	1	0	0%	0	0%
<b>TOTAL</b>					<b>236</b>	<b>194</b>	<b>81%</b>	<b>118</b>	<b>49%</b>

## 2.9 Travel Mode Choice

The Census *Journey to Work* (JTW) data 2011 is regarded as the most robust picture of existing travel patterns to/ from Wentworthville. The smallest geographical area for which JTW data is available is a Travel Zone (TZ). JTW data was analysed for the broader Wentworthville Railway Station catchment, to better understand the current travel patterns for people who live in the area.

The Wentworthville Railway Station catchment, which was analysed, is shown in Figure 2.13.

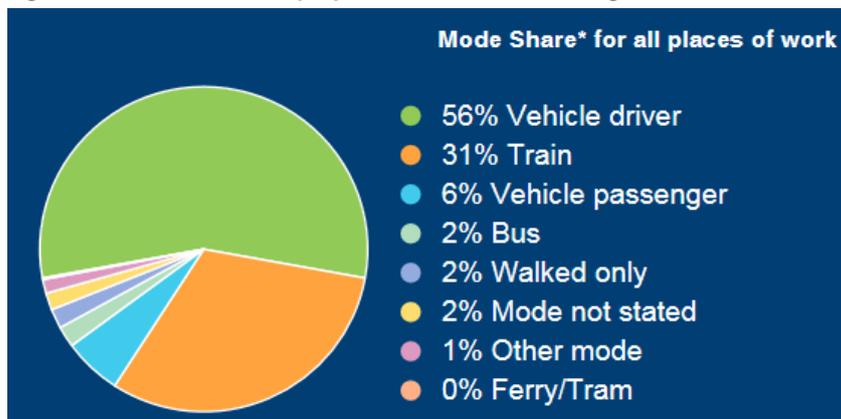
**Figure 2.13: 2011 Census Data Journey to Work Data (TZ 1084, TZ 1005 and TZ 1006)**



Basemap source: Bureau of Transport Statistics

The JTW data indicates that 56% (1,250) drive to work, with additional 6% (134) travelling as passengers. Further, it is noted that 33% (737) commute via public transport, comprising of 31% (692) who use train and 2% (45) who use bus. These statistics are summarised in Figure 2.14.

**Figure 2.14: 2011 JTW – Employed Residents Commuting from TZ 1084, TZ 1005 and TZ 1006**



Basemap Source: Bureau of Transport Statistics

The JTW data also indicates that Parramatta, Sydney Inner City, Ryde-Hunters Hill and Auburn areas are the primary trip generators, with 54% (1,250) people commuting to these areas. Other common work places include:

- o Blacktown (5%)

- o Merrylands – Guildford (4%)
- o Baulkham Hills (4%).

## 2.10 Road Safety

Recorded crash history (sourced from RMS) in the vicinity of Wentworthville Railway Station is presented in Table 2.7. The data includes the most recent 5 year period from January 2009 to December 2013 and indicates that a total of 81 crashes have occurred in the study area. The breakdown of these crashes is as follows:

- o 2 crashes occurred on The Kingsway between the Cumberland Highway and Station Street
- o 21 crashes occurred on Station Street between The Kingsway and Pritchard Street
- o 47 crashes occurred on Dunmore Street between the Cumberland Highway and Lane Street
- o 5 crashes occurred on Wentworth Avenue between the Cumberland Highway and Reid Avenue
- o 6 crashes occurred on Railway Street between Wentworth Avenue and Water Street.

Of particular note is that the majority of crashes occurred at intersections surrounding the station. The level of crashes at each intersection are consistent with the role and function of the surrounding road network, given that some streets carry a higher volume of traffic and pedestrian activity and peak period congestion. No crash trends relevant to the Proposal were evident.

The crash statistics are summarised in Table 2.7.

**Table 2.7: Crash Statistics Summary**

Location	Type of Crash	Number of Crashes
The Kingsway	Hit pedestrian	1
	Other crash type	1
Station Street	Intersection, adjacent approaches	2
	Opposing vehicles; turning	4
	Rear-end	1
	Lane change	1
	Parallel lanes; turning	1
	Hit pedestrian	10
	Other crash type	2
Dunmore Street	Intersection, adjacent approaches	7
	Opposing vehicles; turning	12
	Rear-end	10
	Lane change	1
	Parallel lanes; turning	2
	Hit pedestrian	9
	Off road on curve, hit object	1
	Out of control on curve	1
Wentworth Avenue	Hit pedestrian	4
	Off road on straight, hit object	1
Railway Street	Hit pedestrian	5
	Other crash type	1



## 3. Proposed Station Precinct Improvements

---

### 3.1 Overview

The Proposal is designed to improve pedestrian access to and from the station, increase Wentworthville Stations ability to cope with the predicted future patronage demands, improve pedestrian flow, passenger information services and wayfinding between transport modes.

As outlined in Section 1.3, the Proposal would include the following key features:

- retention, repairs and repainting of the existing footbridge structure
- retention of the existing ramps
- installation of four new lifts:
  - one at each station entrance
  - one to Platform 1-2
  - one to Platform 3-4
- replacement of all stairs with new stairs
- widening of the existing footbridge between the new platform lifts
- provision of passenger information displays and ticket vending machines
- demolition of the existing retail concession on the footbridge to allow for the platform lift
- station building upgrades to provide accessible customer and staff areas and facilities including waiting rooms, family accessible toilet, and new male/ female amenities
- pedestrian access and transport interchange improvements in The Kingsway and Wentworth Avenue.

The proposed Wentworthville Railway Station layout, including car parking arrangements, is shown in Figure 3.1.

Figure 3.1: Wentworthville Railway Station Proposed Layout

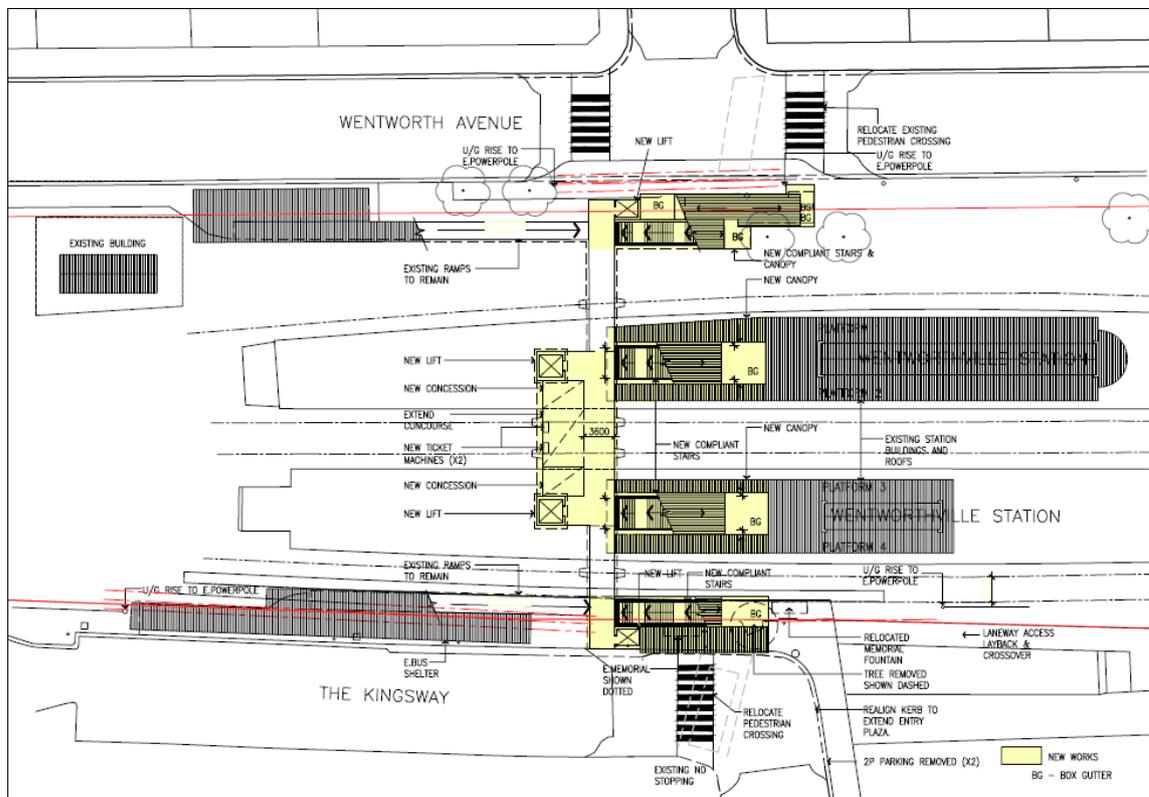


Image source: Caldis Cook design plans

### 3.1.1 Station Access

The Proposal includes the installation of 4 new lifts at the access points and on the station platforms. The lifts would allow access for those with a disability from the adjacent roadways to the station platform.

The existing stairs would be replaced with new DDA compliant stairs and new canopies provided over the stairs.

Improvements and upgrades would be made to the existing crossing facilities on Wentworth Avenue and The Kingsway, with road layout improvements to constrain the road widths and travel paths.

### 3.1.2 Integrated Transport Facilities

#### Kiss and Ride

Formalised kiss and ride facilities would be provided on both sides of the station, with a combined capacity for approximately 8 vehicles.

#### Bicycle Parking

The existing bicycle racks at the southern station forecourt would be upgraded, with additional bicycle racks provided at the northern station forecourt. The future capacity would be in the order of 20 bicycles.

## Car Parking

The existing accessible spaces located on Wentworth Avenue would be upgraded and an additional 2 short-term parking spaces provided along the northern side of the Kingsway.

## 4. Operational Traffic Impacts

### 4.1 Future Demand

Forecast station patronage data provided by Transport for NSW is provided in Table 4.1. This data indicates that rail patronage at Wentworthville Hill Railway Station is expected to increase to 8,690 persons per day and 3,042 in an average AM peak period. This equates to a 40% overall increase in persons per day.

**Table 4.1: Forecast Station Patronage [1]**

	Period in Years				
	2011-2016	2016-2021	2021-2026	2026-2031	2031-2036
Growth	4%	8%	17%	6%	4%
Daily Patronage (at the end of period)	6,240	6,740	7,880	8,360	8,690
AM peak	2,184	2,359	2,758	2,926	3,042

[1] Transport for NSW, Easy Access / Station Upgrade Projects 2014 (Project 1) Portion 4 (Wentworthville), Deed Exhibit B, Works Brief Appendix A (29/09/14)

### 4.2 Public Transport

The Proposal would not have any significant impacts on bus or rail operations. It would likely bring about positive impacts in terms of contributing towards making public transport more accessible to the community.

Further consideration for bus swept paths at the Wentworth Avenue/ Railway Street is required.

### 4.3 Pedestrians

The proposed pedestrian facilities, including the new lifts, upgraded stairs and upgraded crossings on Wentworth Avenue and The Kingsway would offer obvious pedestrian benefits, particularly in improving the user experience by providing new and improved facilities.

Provision of lifts to the station access points and platforms would allow access for those with a disability to the station platforms, noting access for those with a disability is not currently provided to the platforms. They would also provide improved access for elderly and people with prams or suitcases. The upgrade of the stairs would also improve accessibility and safety for pedestrians.

The proposed improvements to pedestrian crossing facilities on Wentworth Avenue and The Kingsway are expected to enhance pedestrian safety, by constraining the road carriageway. This could result in reduced vehicle travel speeds and reduced crossing widths to ensure a safer road environment along the station frontages.

Based on the existing pedestrian desire lines, the following should be investigated during detailed design:

- o Extension of the footpath along the southern side of Wentworth Avenue to better connect the station access points with the surrounding commuter parking.
- o Provision of suitable crossing facilities at the northern access ramp to accommodate the high demand for access to/from the west.

It is worth noting that the provision of any new pedestrian crossing facility is subject to Council and RMS approval, with consideration for the level of pedestrian and traffic volumes.

### Capacity Assessment

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 has used Fruin Theory<sup>3</sup> as reproduced in the 'Transit Capacity and Quality of Service Manual – 2<sup>nd</sup> Edition – Part 7'<sup>4</sup> 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.

Table 4.2 presents the LOS criteria based on 'Pedestrian Flow Rate' and Figure 4.1 presents a graphical representation of the walkway LOS.

**Table 4.2: Pedestrian Level of Service on Walkways**

LOS	Flow per Unit Width (p/ m/ min)
A	0-23
B	23-33
C	33-49
D	49-66
E	66-82
F	Variable

Table 4.3 presents the results of the pedestrian LOS assessment for the study location. The assessment was undertaken for the peak 15 minute intervals during the study hour. The walkway widths used are based on the estimated path widths at the existing and future access station points.

**Table 4.3: Pedestrian LOS Assessment**

Period	Peak Pedestrian Volume (p)		Walkway Width (m)	Flow Rate (p/ m/ min)	LOS
	(p/ 15min)	(p/ min)			
Existing	343	22.9	3.0	7-8	A
Future 2031-2036 [1]	480	32.0	3.0	10-11	A

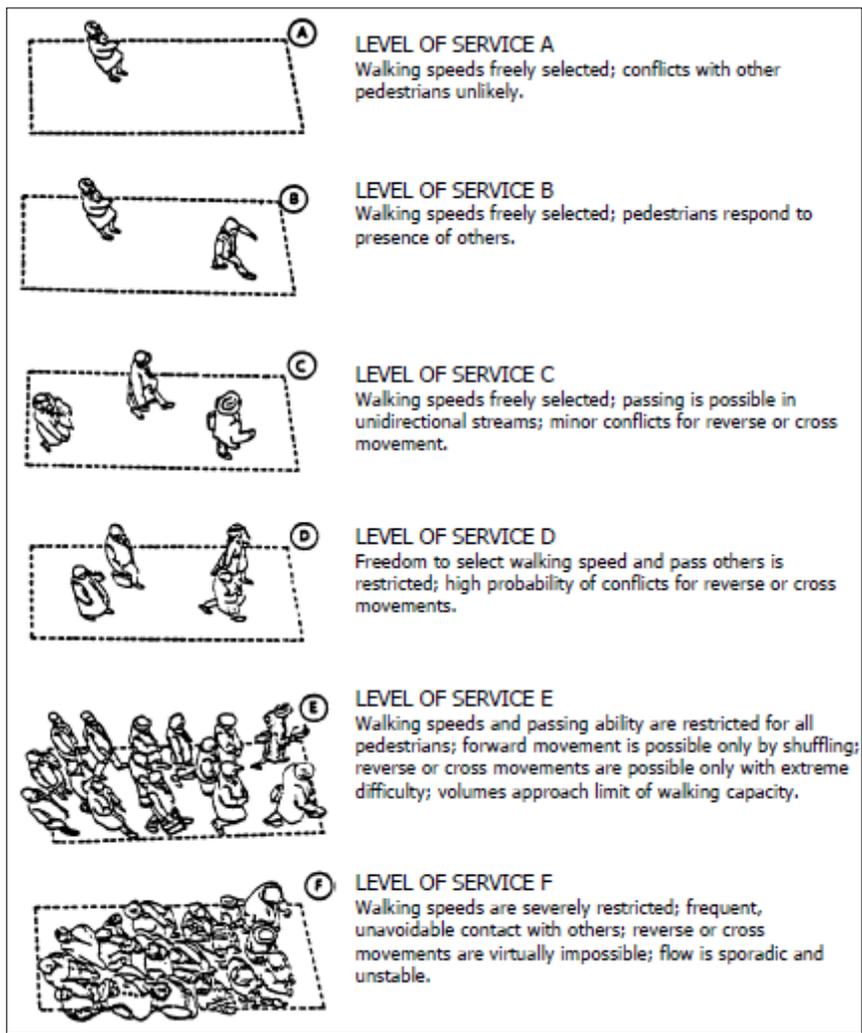
[1] Based on a forecast 40% increase in station patronage between 2011-2016 and 2031-2036 as detailed in Transport for NSW, Easy Access / Station Upgrade Projects 2014, Works Brief Appendix A (29/09/14)

Table 4.3 indicates that based on existing pedestrian volumes, the pedestrian LOS for the study location is 'A' and operates well over a 15 or 1 minute peak. In addition, the upgraded access points at Wentworthville Railway Station would be adequate to accommodate the expected growth in passenger demand. Overall, the access footpaths would operate well with no queuing or delay at any time or location.

<sup>3</sup> Fruin, John J. 1987 *Pedestrian Planning and Design – Revised Edition*

<sup>4</sup> Transportation Research Board 2003 *Transit Capacity and Quality of Service Manual – 2<sup>nd</sup> Edition – Part 7*

Figure 4.1: Illustration of Fruin Theory Walkway Levels of Service<sup>5</sup>



Source: Transportation Research Board 2003 Transit Capacity and Quality of Service Manual – 2<sup>nd</sup> Edition – Part 7

## 4.4 Cyclists

Five bicycle rails would be provided on either side of the station, with capacity for 20 bicycles. With consideration for the existing demand, particularly in the northern station precinct, it is anticipated that this would be adequate to accommodate future demand.

Provision of new facilities at the northern and southern station access points is likely to increase awareness of such facilities, potentially with an associated increase in the cycling mode share.

## 4.5 Kiss and Ride and Taxi

The Proposal includes provision of formalised kiss and ride facilities in the northern and southern precinct, including capacity for approximately two vehicles to the north and approximately six vehicles to the south. The kiss and ride facilities would be located in close proximity to the primary access points, where informal kiss and ride activity is occurring under existing arrangements.

<sup>5</sup> Fruin, John J. 1987 *Pedestrian Planning and Design – Revised Edition*

These locations are close to the lifts and stairs/ ramps and upgraded station forecourt, thereby providing improved accessibility.

The provision of two 1P parking spaces along the northern side of The Kingsway is expected to reduce the Taxi rank by two spaces. Based on the existing utilisation of the Taxi rank, it is anticipated that there would be adequate capacity for Taxi storage in this area.

## 4.6 Proposed Precinct Layout

Significant works are proposed at the station including alterations to the immediate road network. Swept path assessment has been completed for the proposed kerb realignments on the northern and southern sides of the station (included in Appendix A). The swept path assessment highlights a number of constraints and other select considerations including the following:

### Northern Precinct

Appropriate sight lines for buses would be required at all times, noting that buses would be required to cross the centre line when turning into Wentworth Avenue. This could result in a pedestrian/ vehicle conflict.

The accessible car parking spaces should be designed in accordance with Australian Standard AS 2890.6:2009, (Parking Facilities, Part 6: Off-Street Parking for People with Disabilities).

### Southern Precinct

The road narrowing does not allow independent movements of two 12.5m large rigid vehicles. Although not desirable, given that there is limited truck activity in this area, the impact is expected to be negligible. However, further consideration during detailed design is recommended.

The proposed parking spaces should be designed in accordance with Australian Standard 2890.5:1993 (Parking Facilities, Part 5: On-Street Parking).

## 4.7 Traffic Generation and Parking Demand

Given that the Proposal provides a higher level of station accessibility and usability at Wentworthville Railway Station, the improved commuter experience and upgraded facilities are likely to attract greater commuter use, particularly in relation to kiss and ride. As a result, traffic activity is anticipated to marginally increase, with a negligible impact on the surrounding road network. The anticipated growth in patronage will also result in increased traffic accessing the station. This may put some minor further pressure on the Dunmore Street corridor. This corridor is likely to require further consideration by Council in the context of future town centre operation.

## 4.8 Property Access

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

## 4.9 Road Safety

The Proposal includes upgrades and improvements to the existing pedestrian crossings on Wentworth Avenue and The Kingsway to constrain the road carriageway, reduce travel speeds and ensure a safer road environment.

It is recommended that a Road Safety Audit be undertaken prior to construction works commencing.

## 5. Construction Traffic Impacts

---

### 5.1 Construction Activity

Construction works at Wentworthville Railway Station would be restricted to the standard hours of construction as follows:

- o 7:00am to 6:00pm Monday to Friday
- o 8:00am to 1:00pm Saturdays
- o no work on Sundays or public holidays.

The majority of works are able to be undertaken during non-possession times using appropriate safe working methods to protect the live network. Therefore the majority of works would be conducted during standard working hours.

However, some works outside of standard hours would be required during evenings, night periods and weekends during track possessions, and for key activities to minimise impacts to commuters and pedestrians. It is estimated that a total of eight possession periods would be required for the Proposal.

Where out of hours works are required, approval from TfNSW would be required and the affected community would be advised as outlined in the TfNSW's Construction Noise Strategy (TfNSW, 2012), and as per the Wentworthville Environmental Noise and Vibration Impact Assessment (SLR, 2014).

#### 5.1.1 Worker Induction

All workers and subcontractors engaged on-site would be required to undergo a site induction. The induction should include permitted access routes to and from the construction site for all vehicles, as well as standard environmental, WHS, driver protocols and emergency procedures.

Any workers required to undertake works or traffic control within the public domain would be suitably trained and covered by adequate and appropriate insurances. All traffic control personnel would be required to hold RMS accreditation in accordance with Section 8 of Traffic Control at Worksites.

### 5.2 Construction Stage Impacts

#### 5.2.1 Construction Vehicle Routes

The surrounding road network is well established and would provide direct access to/ from the site. Figure 5.1 and Figure 5.2 have been prepared to illustrate the likely access routes for each side of the railway line.

It is anticipated that rail corridor lands located at the western end of the station would be used as the primary site compound, with access via Wentworth Avenue. The layout for the site compound would ensure access by the largest design vehicle.

It is anticipated that construction vehicles would also make use of the northern kerbside lane along The Kingsway to cater for temporary works in this area. Should an on-street Works Zone be required at any stage, prior approval would be required from Council.

Figure 5.1: Construction Vehicle Routes (Northern Side)

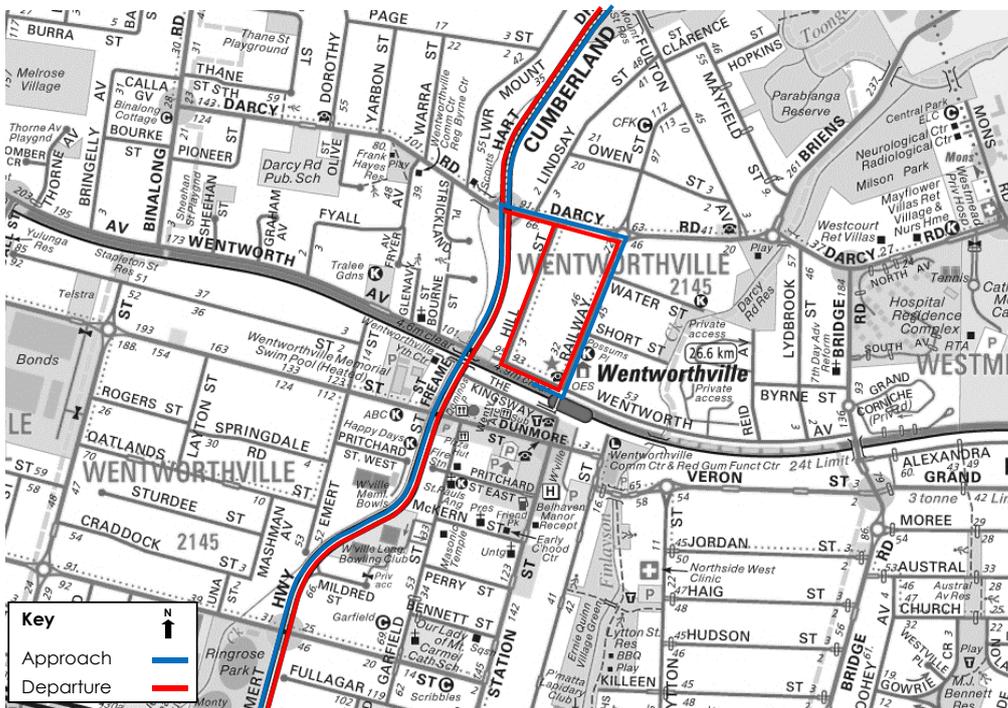
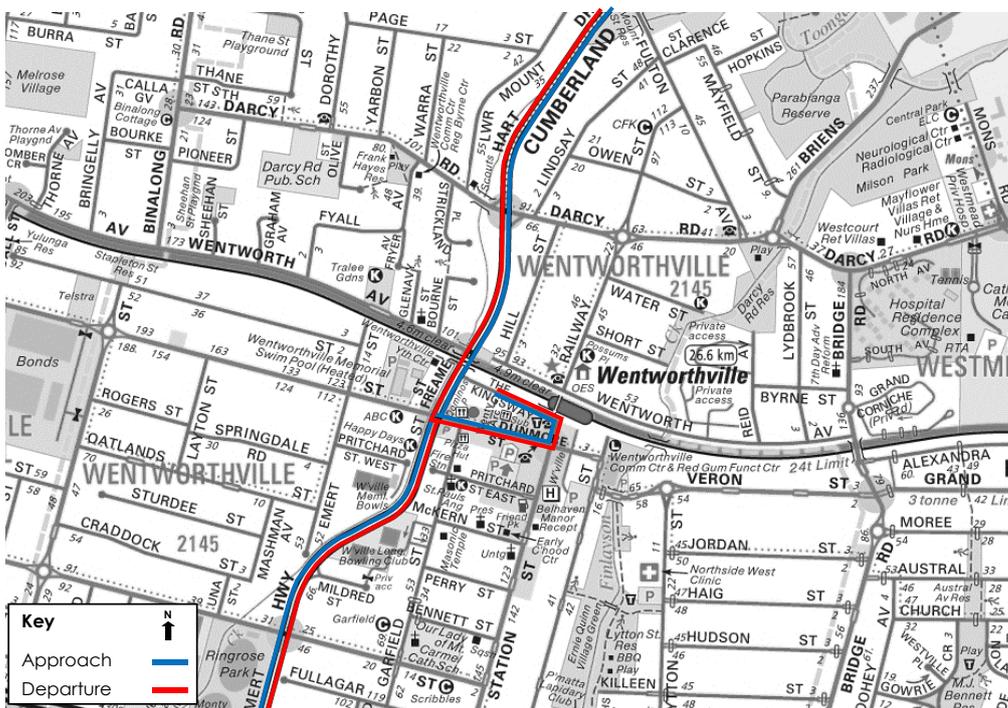


Figure 5.2: Construction Vehicle Routes (Southern Side)



Basemap source: Sydney

## 5.2.2 Traffic Impacts

Traffic generated by the construction works includes construction worker light vehicles (including utility vans), as well as heavy vehicles for periodic delivery and removal of materials, including 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 unknown at this stage, however given the size of the proposed works, construction traffic generation is expected to be minor and have a negligible impact on existing traffic conditions. The interaction between the work site and street frontages (including traffic and pedestrians) would be managed by qualified personnel to ensure safety for all users at all times. Specifically, partial road closures may be required in the northern and southern precincts to enable road works to be completed efficiently (subsequent to Council approval). Access to The Kingsway should be maintained, particularly on weekdays. On this basis, it is anticipated that stop/ slow traffic control or similar would be required to manage traffic at this location. Similar requirements may also exist at the Wentworth Avenue/ Railway Street intersection, depending on the extent of works.

Any works on weekends would not present significant traffic related impacts, with no known specific restrictions limiting access and/ or the work hours as specified.

### 5.2.3 Parking Impacts

Given that parking is generally in high demand in the local area, construction workers would be encouraged to car pool and/or make use of the available public transport for travel to and from the site. A small amount of parking may be possible on-site throughout the works programme however this should be clearly separated from commuter parking areas.

Given the localised extent of the works around the station, it is anticipated that the Proposal would not have any adverse impacts on the parking in the vicinity of the station.

### 5.2.4 Other Impacts

Construction activities would not typically present significant impacts on the surrounding area and users. This includes rail operations, bus operations and general traffic. Construction works in the vicinity of any pedestrian and cyclist desire lines would need to be managed and controlled at all times to ensure that there is no impact to public safety.

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

## 5.3 Recommended Mitigation Measures

Notwithstanding the limited impacts of construction on traffic operation of the surrounding network, a Traffic Control Plan (TCP) would likely need to be prepared and submitted to the RMS and/ or Council to appropriately manage the use of the designated construction routes and site interfaces.

As part of implementation of the TCP, standard signage warning approaching vehicles of the construction activity and heavy vehicle movements should be installed. This should include static signage to be in-place in advance of the works. Other possible mitigation measures to minimise traffic impacts during construction of the car park generally include:

- o Appropriate traffic management, including static signs, manual traffic control and provision of temporary barriers to control the proposed work areas and minimise delays.
- o Establishment of safe access points to work areas from the adjacent road network including safety measures such as barriers and warnings to pedestrians, maintaining

sight distance requirements and signage and the provision of traffic management measures such as those identified above.

- Use of traffic controllers to negotiate pedestrian and construction vehicle priority and access, if required.

The TCP should also outline how potential construction vehicle manoeuvres could be accommodated in and out of the construction sites. In addition, swept paths should be conducted to ensure that the largest vehicle could turn-around in The Kingsway.

## 5.4 Construction Traffic Management

A Construction Traffic Management Plan would be required to be prepared and submitted to Council's Local Traffic Committee and/ or RMS TMC. The plan should include a description of:

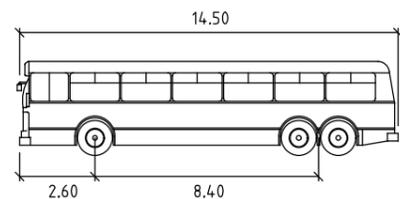
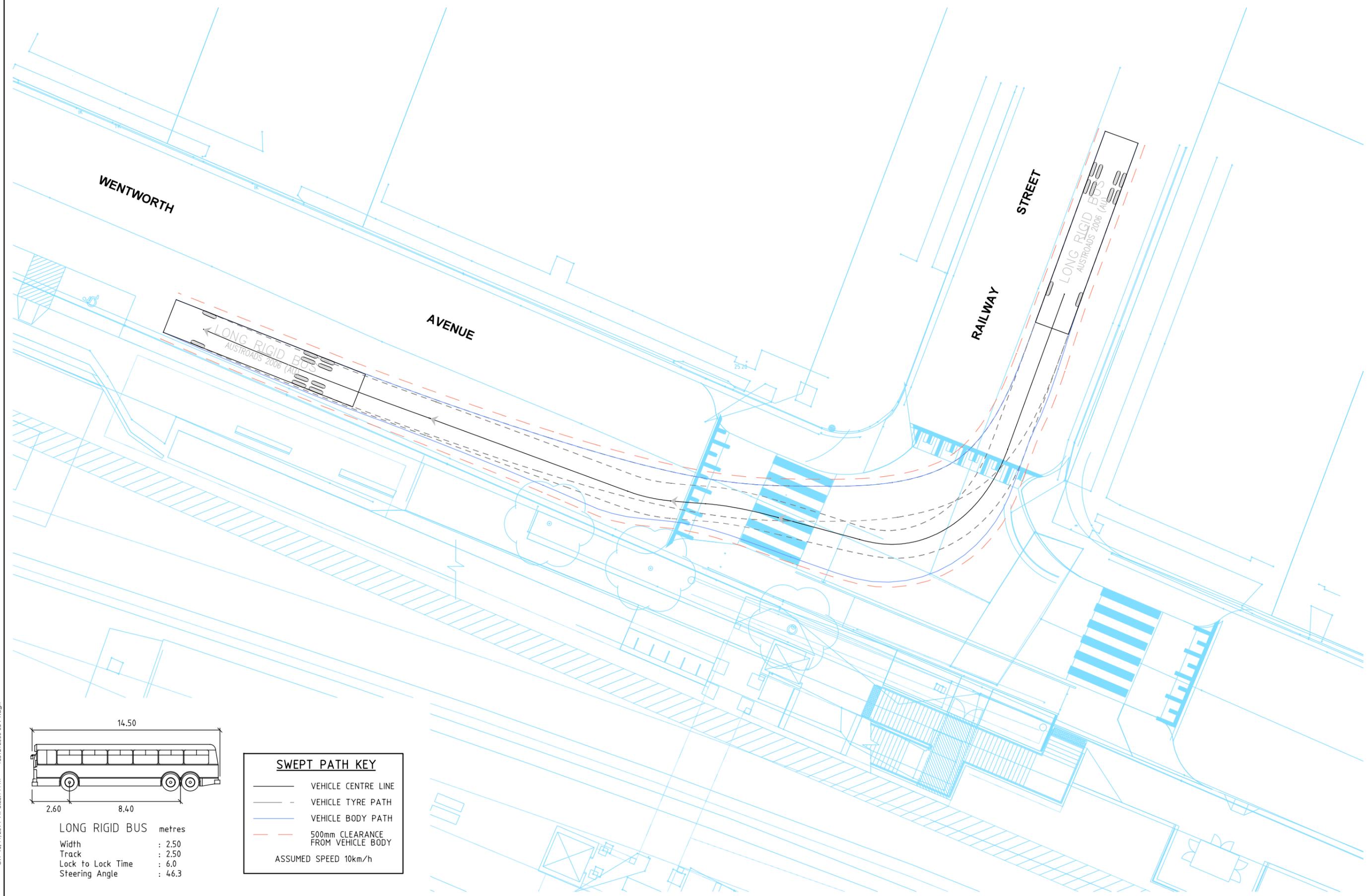
- Final construction traffic approach and departure routes.
- Locations of access to and from the local road network.
- Details of construction signage and traffic controllers.

# Appendix A

---

## Swept Paths

ON 13/11/2014 AT 3:28:14 PM ISS1212000-03-P1.dgn



LONG RIGID BUS metres  
Width : 2.50  
Track : 2.50  
Lock to Lock Time : 6.0  
Steering Angle : 46.3

**SWEPT PATH KEY**

- VEHICLE CENTRE LINE
- - VEHICLE TYRE PATH
- VEHICLE BODY PATH
- - 500mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 10km/h

Melbourne 03 9851 9600  
Sydney 02 8448 1800  
Brisbane 07 3113 5000  
Canberra 02 6263 9400  
Adelaide 08 8334 3600



**PRELIMINARY PLAN**  
FOR DISCUSSION PURPOSES ONLY  
SUBJECT TO CHANGE WITHOUT  
NOTIFICATION

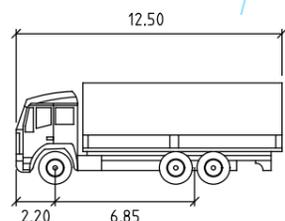
WENTWORTHVILLE RAILWAY STATION  
EASY ACCESS UPGRADE  
SWEPT PATH ASSESSMENT - 14.5m LONG RIGID BUS

DATE: 13.11.2014  
SCALE: 1:250@A3  
APPROVED: RMH  
DRAWING NO.: 15S1212000-03-01-P1

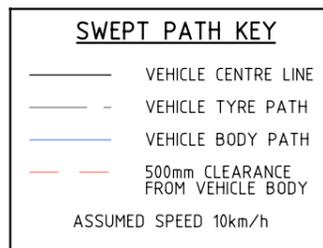


SHEET: 01 OF 02

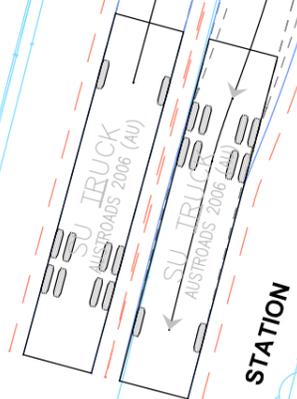
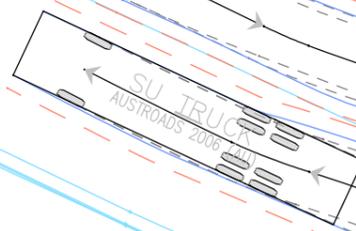
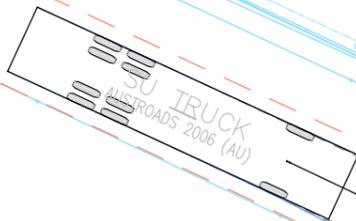
ON 13/11/2014 AT 3:28:16 PM 15S1212000-03-P1.dgn



SU TRUCK metres  
Width : 2.50  
Track : 2.50  
Lock to Lock Time : 6.0  
Steering Angle : 36.6



THE KINGSWAY



STREET

STATION

WENTWORTHVILLE RAILWAY STATION  
EASY ACCESS UPGRADE  
SWEPT PATH ASSESSMENT - 12.5m HRV

DATE: 13.11.2014  
SCALE: 1:250@A3



APPROVED: RMH  
DRAWING NO. 15S1212000-03-02-P1  
SHEET: 02 OF 02

Melbourne 03 9851 9600  
Sydney 02 8448 1800  
Brisbane 07 3113 5000  
Canberra 02 6263 9400  
Adelaide 08 8334 3600



PRELIMINARY PLAN  
FOR DISCUSSION PURPOSES ONLY  
SUBJECT TO CHANGE WITHOUT  
NOTIFICATION

Melbourne

A Level 25, 55 Collins Street  
PO Box 24055  
MELBOURNE VIC 3000  
P +613 9851 9600  
E melbourne@gta.com.au

Sydney

A Level 6, 15 Help Street  
CHATSWOOD NSW 2067  
PO Box 5254  
WEST CHATSWOOD NSW 1515  
P +612 8448 1800

Brisbane

A Level 4, 283 Elizabeth Street  
BRISBANE QLD 4000  
GPO Box 115  
BRISBANE QLD 4001  
P +617 3113 5000  
E brisbane@gta.com.au

Canberra

A Unit 4, Level 1, Sparta Building,  
55 Woolley Street  
PO Box 62  
DICKSON ACT 2602  
P +612 6243 4826

Adelaide

A Suite 4, Level 1, 136 The Parade  
PO Box 3421  
NORWOOD SA 5067  
P +618 8334 3600  
E adelaide@gta.com.au

Gold Coast

A Level 9, Corporate Centre 2  
Box 37  
1 Corporate Court  
BUNDALL QLD 4217  
P +617 5510 4800

Townsville

A Level 1, 25 Sturt Street  
PO Box 1064  
TOWNSVILLE QLD 4810  
P +617 4722 2765  
E townsville@gta.com.au

Perth

A Level 27, 44 St Georges Terrace  
PERTH WA 6000  
P +618 6361 4634  
E perth@gta.com.au