



Transport for NSW

# St Peters Station Upgrade

Supporting Studies



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

# ST PETERS STATION

## Transport Access Program Traffic, Transport and Access Assessment

### Prepared for:

Transport for New South Wales  
7 Harvest Street  
Macquarie Park  
NSW 2113

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## BASIS OF REPORT

This report has been prepared by SLR Consulting Australia Pty Ltd (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Transport for New South Wales (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

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## DOCUMENT CONTROL

Reference	Date	Prepared	Checked	Authorised
630.30084.000000-R05-v1.0	5 March 2021	Charlie Seventekin	Charlie Seventekin	Kris Stone

## EXECUTIVE SUMMARY

### Background and upgrade work

Transport for New South Wales (Transport for NSW) has proposed the St Peters Station Upgrade (the Proposal). The Proposal forms part of the Transport Access Program (TAP) which is a New South Wales Government initiative to improve existing transport infrastructure, including train stations, so they are modern, accessible, and secure. The primary aim is to provide a station precinct that is accessible to those with a disability, limited mobility, parents / carers with prams, and customers with luggage.

The Proposal would include the following key elements:

- two new lifts, lift landings and lift canopies at the Sydney (eastern) end of Platforms 1/2 and 3/4, connecting to the existing eastern footbridge
- closure and removal of the concourse retail kiosk for the installation of a new lift servicing Platform 1/2
- new canopies and anti-throw screens to stairs on Platform 3/4
- new canopies along Platform 3/4 for weather protection
- a standalone canopy at the western end of Platform 1 for weather protection at the boarding assistance zone (BAZ)
- modifications to the existing footbridge safety screens at new lift interface locations
- reconfiguration of the existing concourse building to accommodate a new family accessible toilet, new installation main switch board (IMSB) and existing station systems. A new switchboard would supply the required power to the lifts (and other station systems) from a pad mount transformer
- provision of one kiss and ride area on Goodsell Street and two on Lord Street
- regrading of the footpaths and landscaping work at the station entrances from Lord Street, King Street and Goodsell Street
- provision of up to six additional bike hoops at Railway Lane and Lord Street
- platform regrading and the installation of new Tactile Ground Surface Indicators (TGSIs) along the platforms
- improvements to customer information and communications systems including wayfinding modifications, public address (PA) system modifications and new hearing induction loops as required
- improvements to station lighting and CCTV to improve safety and security
- electrical upgrades and service relocations and/or adjustments to accommodate the new infrastructure, including replacement of an existing transformer.

### Existing conditions

Station patronage data provided by Transport for NSW indicates that the average weekday passenger demand for the AM peak hour (08:00am – 09:00am) at St Peters Station was 1,407 persons in 2017.

Existing station facilities include the following:

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## EXECUTIVE SUMMARY

- a concourse that is built over the rail line that can be accessed via two alleyways from Princes Highway and Goodsell Street
- unsheltered bicycle parking racks near the north and south access points

The existing pedestrian footpaths constructed in the public road verges surrounding the station can generally be described as acceptable quality although several examples were noted of localised narrowing adjacent to utility poles, signposts, bins and fences. These localised reductions in the available path width on Lord Street make it difficult or unfeasible for a person travelling in a wheelchair or a parent / carer walking with a pram to navigate.

There are no formal car parks and kiss and ride areas in the vicinity of St Peters Station. There is one taxi shelter in Goodsell Street. No illegal or informal passenger drop-off activities were observed during a site inspection undertaken at 10:00am on Wednesday 21/10/2020. It should also be noted that no passenger drop-off demand data was made available to SLR with respect to existing conditions.

## Construction impacts

The following key construction-stage impacts are likely to be generated by the Proposal:

- increased construction vehicle traffic including light and heavy vehicles within the station precinct and along proximity roads and streets including Lord Street, Princes Highway, Goodsell Street, Concord Street and Bray Street for movement to / from the two proposed construction compounds
- some inconvenience for pedestrian and cyclist movements due to the construction zones and barriers along the footpath on Lord Street and Concord Street
- minor parking impacts on Lord Street near Princes Highway intersection and the construction compound - 2
- minor impacts on traffic flow and performance of nearby intersections
- closures of roads, cycleways and foot paths for short periods to enable the installation of lift shafts
- potential confusion and loss of amenity to customers accessing the station via temporary and changed facilities during construction
- short-term occupation of kerbside parking spaces, cycleways and foot paths by heavy vehicles facilitating construction
- minor travel delays on account of likely TCP implementation requiring general traffic, public transport, cyclists, and pedestrians to stop for construction traffic.

Construction impacts are considered to be manageable subject to the preparation and implementation of a Construction Traffic Management Plan (CTMP). The CTMP and subordinate Traffic Control Plans (TCPs) should review issues and identify solutions and temporary arrangements to avoid, mitigate and manage risk involving construction activities, users of the transport system, and residents.

## EXECUTIVE SUMMARY

### Operational impacts

Forecast station patronage data provided by Transport for NSW indicates that the St Peters Station annual customer demand will increase by 13.5% between 2017 and 2036 from 1,407 persons to 1,597 persons for the AM peak hour (08:00am – 09:00am). An additional 15% has also been evaluated as a 'factor of safety' to ensure a conservative assessment. As such, the forecast daily design patronage for a 2036-time horizon is 1,837 persons.

The Proposal would enable more direct, legible, and safe pedestrian routes in the immediate vicinity of the station. The Proposal would also improve compliance with the *Disability Discrimination Act* (DDA) and *Disability Standards for Accessible Public Transport* (DSAPT). Overall, the user experience including amenity and convenience would be improved.

The existing transport and interchange facilities would be enhanced through improved geometry, line marking and wayfinding signage as part of the Proposal. The Proposal would provide three kiss and ride areas and six additional bicycle parking hoops in the same general locale.

Changes to existing traffic capacity and performance are projected to be insignificant given the relatively minor nature and scale of the improvements delivered as part of the Proposal. Whilst there would be some increase in station utilisation as a result of improvements to accessibility and amenity, it is expected that these incremental increases would not result in a material increase in traffic demand or road network performance.

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## Glossary of terms

Term Meaning	Term Meaning
AADT	Annual Average Daily Traffic
ABS	Australian Bureau of Statistics
AS	Australian Standards
ASA	Asset Standards Authority
BTS	Bureau of Transport Statistics, a division of Transport for NSW
CBD	Central Business District
CTMP	Construction Traffic Management Plan
DDA	<i>Disability Discrimination Act 1992 (Commonwealth)</i>
DP&E	New South Wales – Department of Planning and Environment
DSAPT	Disability Standards for Accessible Public Transport
Fruin	John J Fruin, who pioneered studies on pedestrian flows and crowding levels. Fruin defined six levels of crowding for queueing areas, walkways, and stairways, and given in terms of Levels of Service (LOS).
HV	Heavy vehicles
I & S	Infrastructure and Services, a division of Transport for NSW (formerly Transport Projects Division)
JTW	Journey to Work
LEP	Local Environmental Plan
LGA	Local Government Area
LOS	Level of Service – a qualitative measure of flow and crowding, with LOS A as the ‘most pleasant’ and F the ‘least pleasant’ in terms of pedestrian flow and crowding.
m	metres
mm	millimetres
NSW	State of New South Wales
OOHW	Out of Hours Work
PEA	Preliminary Environmental Assessment
PLC	Presbyterian Ladies College

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Term Meaning	Term Meaning
pmm	pedestrians per metre per minute, a measure of pedestrian flow rate
Rail possession	Possession is the term used by railway building/maintenance contractors to indicate that they have taken possession of the track (usually a block of track) for a specified period, so that no trains operate for a specified time. This is necessary to ensure the safety of workers and rail users.
RailCorp	Rail Corporation New South Wales (now Sydney Trains)
REF	Review of Environmental Factors
Roads Act	<i>Roads Act 1993 (NSW)</i>
TAP	Transport Access Program
TCP	Traffic Control Plan
TfNSW	Transport for New South Wales
TT&AIA	Traffic, Transport and Access Impact Assessment (this report)
TGSI	Tactile Ground Surface Indicator
TZ	Travel zone – a geographical unit used as a basis for travel data analysis and statistics.

# 1 Introduction

## 1.1 Background

Transport for NSW is responsible for strategy, planning, policy, procurement, regulation, funding allocation and other non-service delivery functions for all modes of transport in NSW including road, rail, ferry, light rail, point to point, cycling and walking.

Transport for NSW is the proponent for the St Peters Station Upgrade (the 'Proposal').

The NSW Government is committed to facilitating and encouraging the use of public transport, such as trains, by upgrading stations to make them more accessible, and improving interchanges around stations with other modes of transport such as buses, bicycles, and cars. The NSW Government is also committed to building a modern and up-to-date rail system that will play its part in making Sydney a more productive and liveable city.

## 1.2 Transport Access Program objectives

The St Peters Station Upgrade, the subject of this Review of Environmental Factors (REF), forms part of the Transport Access and More Trains More Services programs.

The Transport Access Program is an NSW Government initiative to provide a better experience for public transport customers by delivering accessible, modern, secure, and integrated transport infrastructure. The More Trains, More Services Program will transform the rail network and provide customers with more reliable, high capacity turn up and go services.

The Proposal would improve accessibility of the station in line with the requirements of the Commonwealth *Disability Discrimination Act 1992 (DDA)* and the *Disability Standards for Accessible Public transport 2020 (DSAPT)*. The Proposal would also ensure that customers at the station receive a continuing level of amenity, safety and comfort whilst improving timetable reliability.

## 1.3 More Trains, More Services Program

St Peters Station Upgrade also forms part of the More Trains, More Services Program, which is a program of staged investments that will progressively transform the rail network into a modern and reliable mass transit system using world class digital technology. The program is already delivering better customer outcomes through timetable enhancements and integration of Sydney Metro Northwest with the heavy rail network. The current stage of the More Trains, More Services Program will focus on delivering greater capacity, reliability and connectivity for customers on the T4 Eastern Suburbs & Illawarra Line, South Coast Line and T8 Airport and South Line.

As part of the broader network re-configuration strategy, customers will board and alight trains at St Peters from different platforms and these alternative platforms do not currently have sufficient canopy cover for customer amenity. The Proposal involves canopy upgrades to platforms at these stations to ensure that customers receive a continuing level of amenity, safety and comfort and spread evenly along the platform.

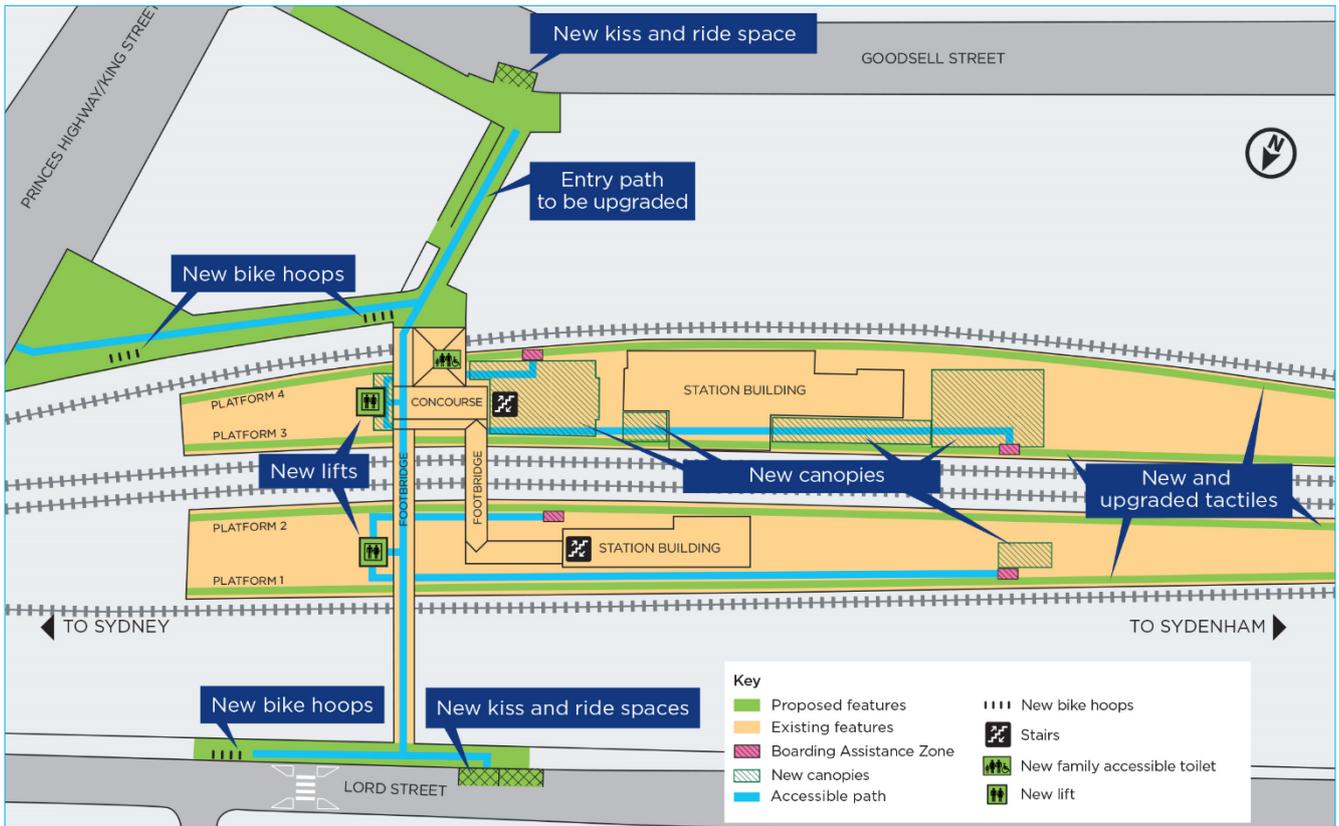
## 1.4 Proposal overview

The Proposal involves an upgrade of St Peters Station which would improve accessibility and amenity for customers.

The Proposal would include the following elements:

- two new lifts, lift landings and lift canopies at the Sydney (eastern) end of Platforms 1/2 and 3/4, connecting to the existing eastern footbridge
- closure and removal of the concourse retail kiosk for the installation of a new lift servicing Platform 1/2
- new canopies and anti-throw screens to stairs on Platform 3/4
- new canopies along Platform 3/4 for weather protection
- a standalone canopy at the western end of Platform 1 for weather protection at the boarding assistance zone (BAZ)
- modifications to the existing footbridge safety screens at new lift interface locations
- reconfiguration of the existing concourse building to accommodate a new family accessible toilet, new installation main switch board (IMSB) and existing station systems. A new switchboard that will supply the required power to the lifts (and other station systems) from a pad mount transformer
- provision of one kiss and ride area on Goodsell Street and two on Lord Street
- regrading of the footpaths and landscaping work at the station entrances from Lord Street, King Street and Goodsell Street
- provision of up to six additional bike hoops at Railway Lane and Lord Street
- improvements to customer information and communications systems including wayfinding modifications, public address (PA) system modifications and new hearing induction loops as required
- platform regrading and the installation of new Tactile Ground Surface Indicators (TGSIs) along the platforms
- improvements to station lighting and CCTV to improve safety and security
- electrical upgrades and service relocations and/or adjustments to accommodate the new infrastructure, including replacement of an existing transformer.

Figure 1 and Figure 2 show the general layout of key elements for the Proposal.



**Figure 1: Proposed General Station Schematic**

Source: TfNSW, February 2021



**Figure 2: Proposed General Station Layout – Axonometric View**

Source: Urban Design and Public Domain Plan: St Peters Station, Laing O'Rourke, December 2020

## 1.5 Objectives of this proposal

The specific objectives of the Proposal are as follows:

- provide a station that is accessible to those with a disability, the ageing and parents / carers with prams and customers with luggage
- improve customer experience (weather protection, better interchange facilities and visual appearance)
- minimise pedestrian conflict and crowding points
- improve integration with surrounding precinct
- improve customer safety
- improve wayfinding in and around the station
- respond to the heritage values of the site
- improve customer amenity.

## 1.6 Study scope

SLR Consulting (SLR) has been commissioned by Transport for NSW to prepare this Traffic, Transport and Access Impact Assessment which would form part of the REF for the Proposal. This report assesses the anticipated traffic, transport and access impacts associated with the Proposal. The following matters are addressed as part of this assessment:

- existing traffic, transport and access conditions and facilities
- operational traffic impacts associated with the proposed facilities
- construction impacts associated with the Proposal
- potential mitigation measures recommended to avoid, mitigate or manage impacts.

This assessment has been prepared noting the following:

- stakeholder consultation was not conducted by SLR as part of this study
- construction activity assumptions were provided by Transport for NSW
- no traffic modelling or pedestrian count surveys were completed as part of this project, nor by other consultants during the concept design development phase given the Proposal is not anticipated to change existing, or generate any significant additional, vehicle and pedestrian traffic demand.

## 1.7 Study area

St Peters Station is located approximately 5.5 kilometres south of the Sydney CBD and within the local government jurisdiction of the Inner West Council. The station is situated in St Peters and bordered by Newtown and Erskineville.

The study area incorporates the station, the immediate fronting roads of Princes Highway / King Street and Lord Street as well as the intersection of Princes Highway / King Street / Sydney Park Road, surrounding footpath system, and two proposed construction compounds in relation to the Proposal.

The area and transport systems surrounding the study area have also been considered, however these are not the primary area influenced by the Proposal.

The study area adopted by SLR is illustrated in Figure 3.



**Figure 3: St Peters Station study area**

Base map source: Nemap, 2020

## 1.8 References

The following has been relied upon and / or referenced in undertaking this assessment:

- a site inspection undertaken by SLR staff on Wednesday 21<sup>st</sup> of October 2020
- Australian Standards AS2890 – Part 5 (2020): On-street car parking
- Australian Standards AS2890 – Part 6 (2009): Off-street car parking for people with disabilities
- St Peters Station Design Report, Arcadis, dated 20/11/2020
- Architectural Drawings, Laing O'Rourke, dated 20/11/2020
- RailCorp (May 2010). *Engineering Standard: Stations and Buildings – Station Design Standard Requirements: ESB 003 – Station Functional Spaces.*

## 2 Existing conditions assessment

### 2.1 Surrounding land uses

Located within the Inner West Council LGA, the subject site is bound by the provisions of the *Marrickville Local Environment Plan (LEP) 2011* and the *Marrickville Development Control Plan (DCP) 2011*. It should also be noted that the Inner West Council has commenced preparation of the draft *Inner West Local Environment Plan (LEP) 2020* which consolidates the three existing LEPs for the former Ashfield, Leichhardt and Marrickville LGAs, following their amalgamation.

The *Marrickville LEP 2011 Land Zoning Map Sheet LZN\_004* designates the land on which the station is located as ‘SP2 Infrastructure’ and defines Princess Highway / King Street as classified roads whilst Lord Street is a local road.

Land surrounding the station is mainly classified as “R2 – low density residential”, “R4 – high density residential”, “SP2 – Infrastructure” and “RE1 – Public Creation”.

An extract from the Marrickville LEP 2011 map is provided in Figure 4.

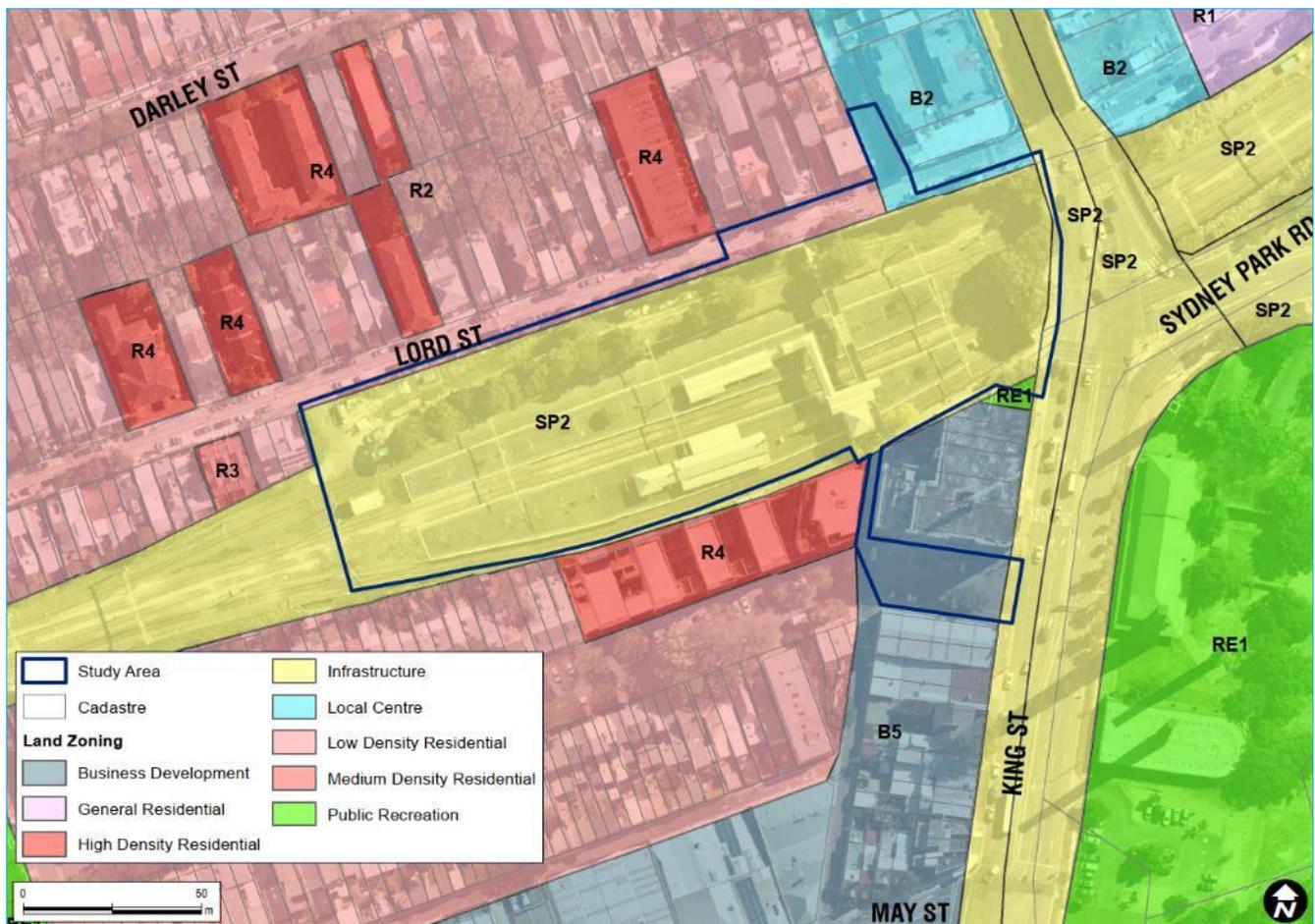


Figure 4: Surrounding land uses

Base map source: Nearmap, 2020

## 2.2 Movement network

St Peters Station is surrounded by Princes Highway (State Road A36) to the east and Lord Street (local road) to the north. There are three pedestrian access points to St Peters Station:

- Princes Highway via an alleyway
- Goodsell Street via an alleyway
- direct access from Lord Street.

The location of the station within the local road network is shown in Figure 5 and the characteristics of the nearby key roads and streets are summarised in Table 1.



**Figure 5: Local context and surrounding road network**

Base map source: Nearmap, 2020

Road Name	Posted Speed Limit	School Zone	Configuration
Princes Highway (State Road A36)	Arterial Road: 60km/h	No	7 marked lanes, divided carriageway, no stopping and clearway restrictions apply in the weekday peak traffic hours.  <u>Station frontage:</u> Princes Highway / King Street / Sydney Park Road signalised intersection
Lord Street	Local Road: 50km/h	No	1 unmarked lane, one-way traffic, typically unrestricted parking on southern side of carriageway and 1P parking on the northern side of carriageway.
Goodsell Street	Local Road: 50km/h	No	2 unmarked lanes, undivided carriageway, typically short-term parking (excludes parking permit holders) on either side of the carriageway.
May Lane	Alleyway – Pedestrians and Cyclists only	No	Approximately 3.5-metre-wide alleyway with no vehicular traffic.

**Table 1: Surrounding road network characteristics**

## 2.3 Station access and facilities

### 2.3.1 Station facilities

The following accessibility and convenience features are currently installed at the station:

- Opal integrated ticketing card top-up systems
- emergency help point
- hearing loop
- a public address (PA) system to broadcast audible / verbal announcements to passengers.

### 2.3.2 Pedestrians

#### 2.3.2.1 St Peters Station access

There are three pedestrian access points to St Peters Station, being from Lord Street, Goodsell Street and Princes Highway. All three accesses require users to navigate stairs in order to reach train platforms as indicated in Figure 6.



**Figure 6: Access stairs to platforms at St Peters Station**

Given the lack of ramps or lifts, the St Peters Station does not currently accommodate persons with a disability, mobility impaired or elderly persons, or parents and carers with prams and is not DSAPT compliant.

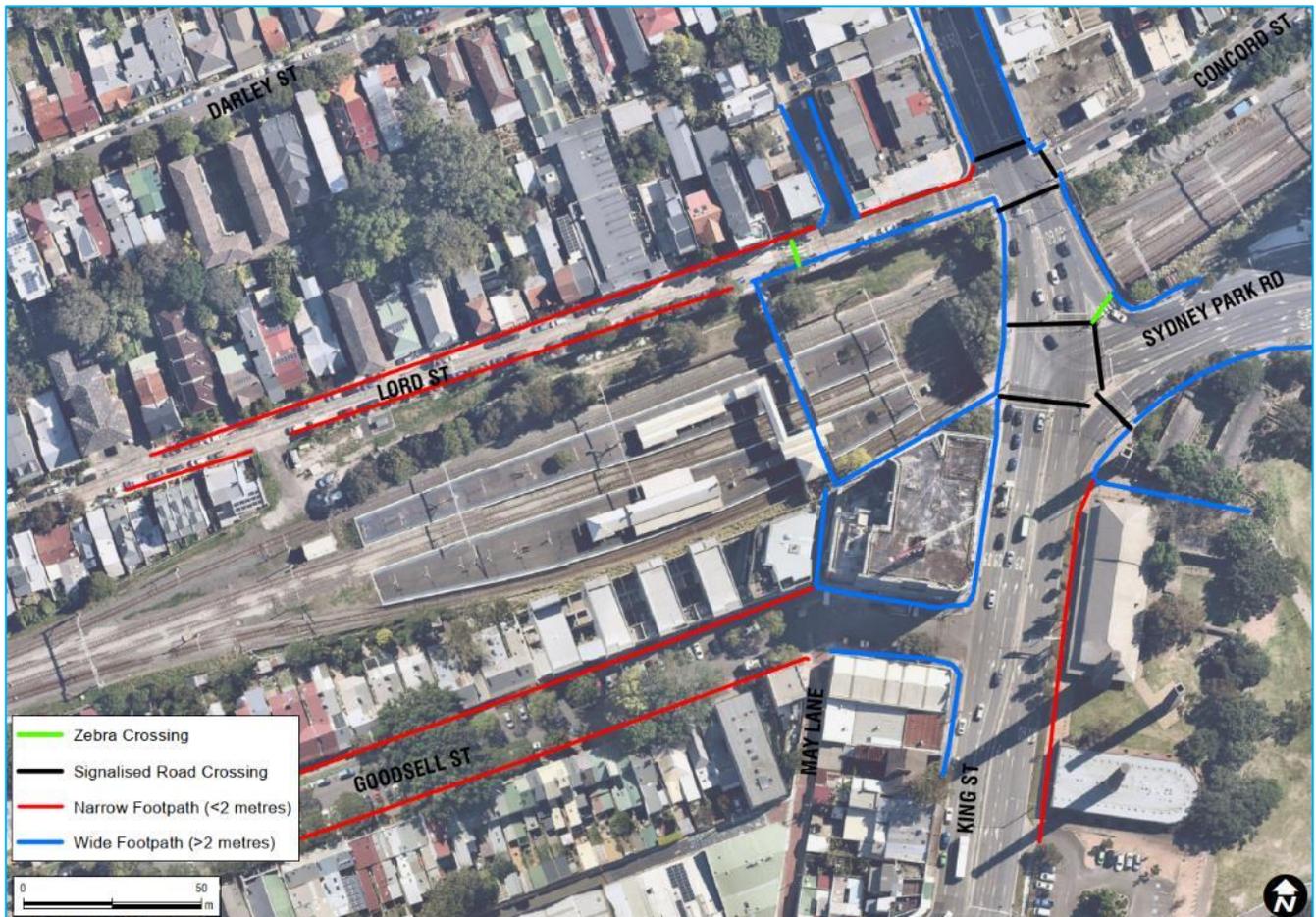
### 2.3.2.2 Local pedestrian infrastructure

There are pedestrian footpaths on either side of Princes Highway, Goodsell Street and Lord Street. The verge adjacent to the Princes Highway station entrance accommodates a pocket park where there are a number of trees and a bench providing some recreational space to the members of the community.

The footpath network surrounding the station has the following attributes:

- Princes Highway – approximately 3.5-metre-wide footpath on both sides of the carriageway (a railway overpass)
- Lord Street – approximately two-metre-wide footpath on the southern side and 1.5-metre-wide footpath on the northern side of the carriageway with a number of impediments (i.e. signposts, power poles, residents' rubbish bins)
- Goodsell Street – approximately two-metre-wide footpath on the southern side and approximately three-metre-wide footpath on the northern side of the carriageway.

The extent of the surrounding pedestrian infrastructure is illustrated in Figure 7.



**Figure 7: Local pedestrian infrastructure**

Base map source: Nearmap, 2020

### 2.3.2.3 Pedestrian demand Study

No pedestrian count survey data was collected as part of the assessment for Princes Highway, Goodsell Street and Lord Streets; however, very low pedestrian activity was observed during the site inspection on Wednesday, 21<sup>st</sup> of October 2020. This could be associated with the ongoing COVID-19 pandemic.

## 2.3.3 Cyclists

### 2.3.3.1 St Peters Station access

At present, there are no means of transporting a bicycle to the station platform without having to carry it down (and up) a flight of stairs.

There is a total of five bicycle parking racks available at Railway Lane (three) and Lord Street (two) access points at St Peters Station. It is anticipated that these five racks can accommodate up to 10 bicycles.



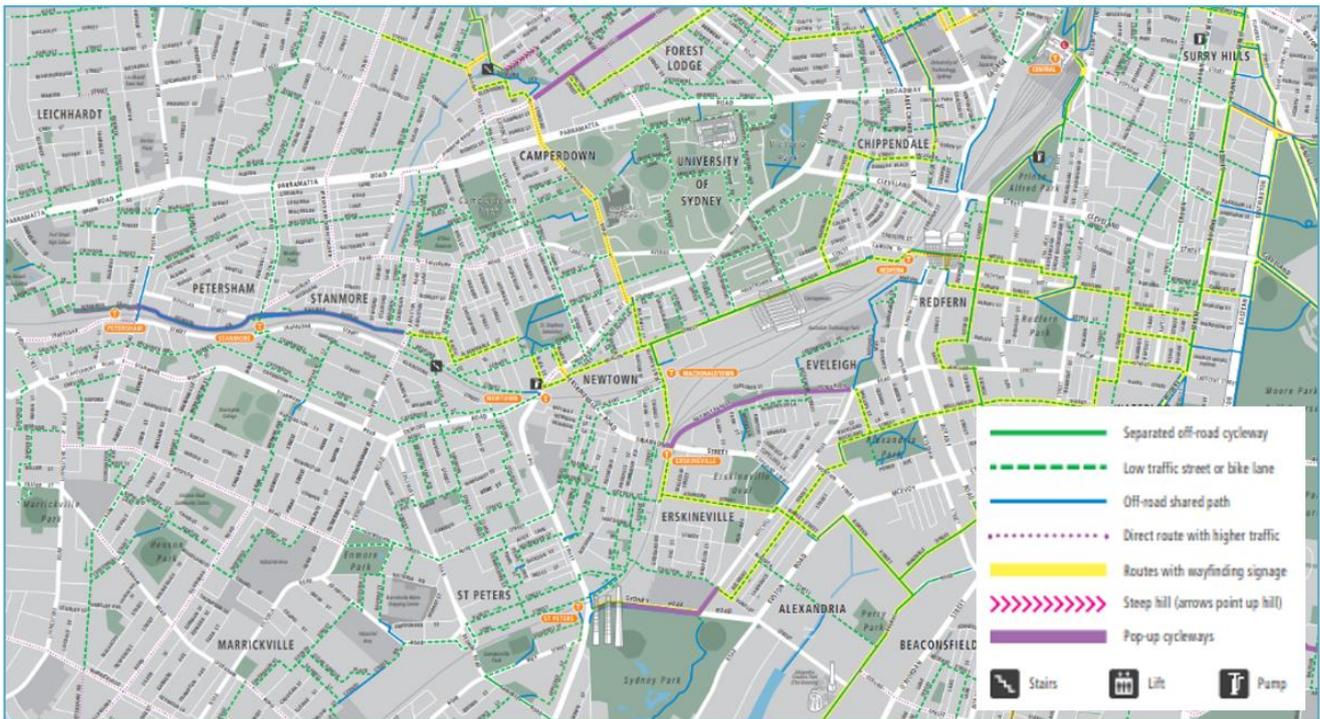


Figure 9: Cycling infrastructure – regional context

Source: City of Sydney Council Website, November 2020

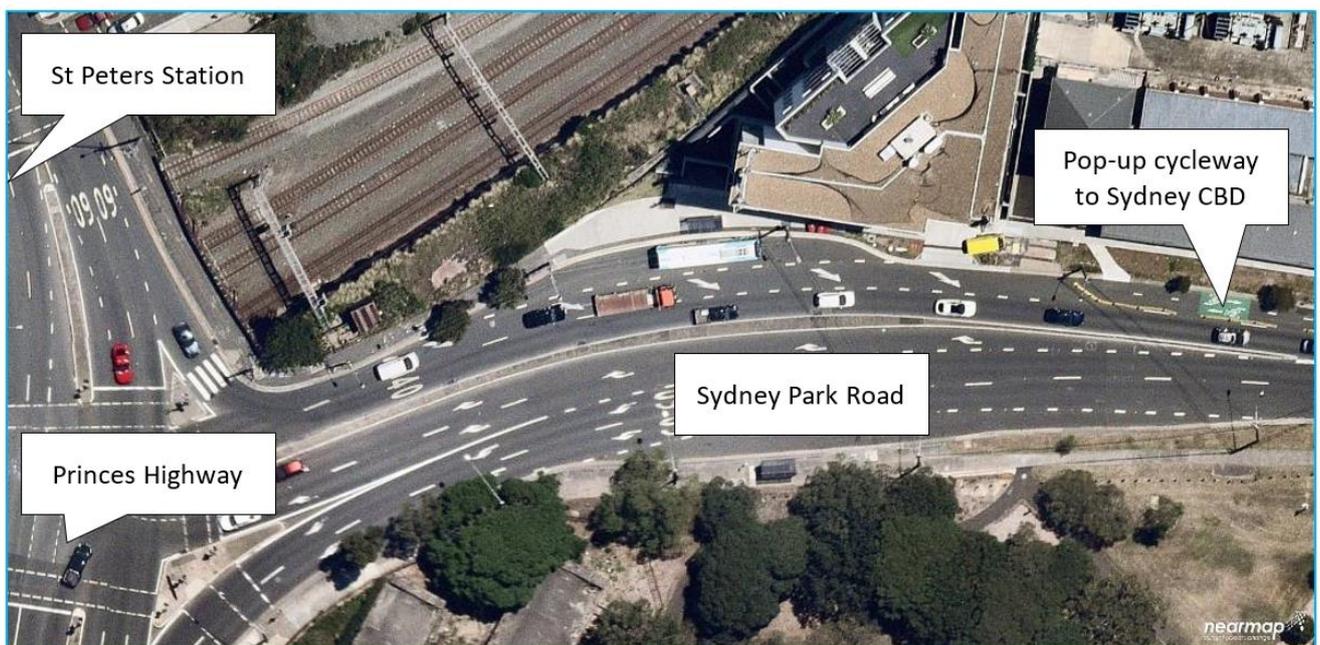


Figure 10: New pop-up cycleway on Sydney Park Road

Base map source: Nearmap, 2020

## 2.4 External transport network and interchange facilities

### 2.4.1 Rail

#### 2.4.1.1 Services

St Peters Station is part of T3 Bankstown Line and T8 Airport and South Line. The station is well serviced by frequent trains travelling between Bankstown and Lidcombe, Central Station.

Figure 11 provides an overview of T3 Bankstown Line.



Figure 11: Location of St Peters Station within Sydney Trains network

Source: <https://transportnsw.info/sydney-trains-network-map>

Service frequency of St Peters Station is summarised in Table 2.

Destination	Operating Days	Service Frequency
T3 - Central / Bankstown	Monday to Friday	Peak: approx. 5-10 mins Off-peak: approx. 15 mins
	Weekends and public holidays	approx. 15 mins
T8 – Central / Macarthur (South)	Monday to Friday	Peak: approx. 15 mins Off-peak: No service
	Weekends and public holidays	No service

**Table 2: St Peters Station service frequency**

Source - 1: <https://transportnsw.info/documents/timetables/93-T3-Bankstown-Line-20201025-20210227.pdf>

Source - 2: <https://transportnsw.info/documents/timetables/93-T8-Airport-South-Line-20201025-20210227.pdf>

#### 2.4.1.2 Patronage

Station patronage data provided by Transport for NSW indicates that the average weekday passenger demand for the AM peak hour (08:00am – 09:00am) at St Peters Station was 1,407 persons in 2017.

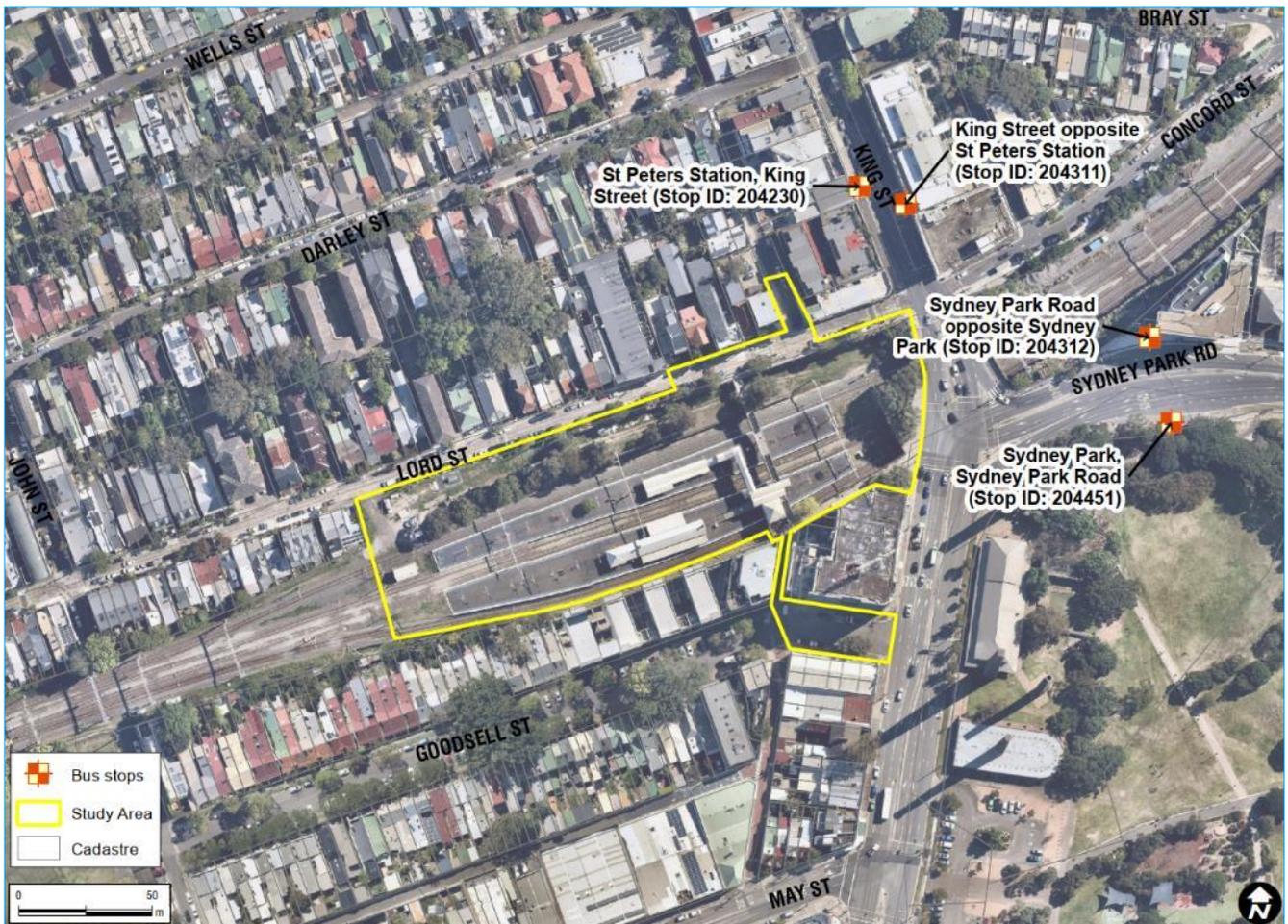
#### 2.4.2 Bus

##### 2.4.2.1 Services and Stops

There are four bus stops in close proximity to St Peters Station, as follows:

- two bus stops on King Street, to the north of St Peters Station (stop ID: 204230 in the northbound direction and 204311 in the southbound direction)
- two bus stops on Sydney Park Road, to the east of St Peters Station (stop ID: 204312 in the eastbound direction and stop ID: 204451 in the westbound direction).

The locations of these stops are shown in Figure 12.



**Figure 12: Bus stops in the vicinity of St Peters Station**

Base map source: Nearmap, 2020

Table 3 summarises the public bus routes that service these bus stops.

Service	Route	Bus Stop ID	Approximate Peak Hour Frequency	Approximate Off-Peak Hour Frequency
308	Marrickville Metro to Central Eddy Avenue via Redfern	204312 204451	15 minutes	30 minutes
348	Wolli Creek to Bondi Junction	204312 204451	10 minutes	N/A
370	Coogee to Leichhardt Marketplace	204230 204311	10 minutes	30 minutes
422	Kogarah to Central Pitt Street	204230 204311	10 minutes	30minutes

**Table 3: St Peters Station nearby bus services (stop ID: 207332)**

Source: <https://transportnsw.info/routes/bus>

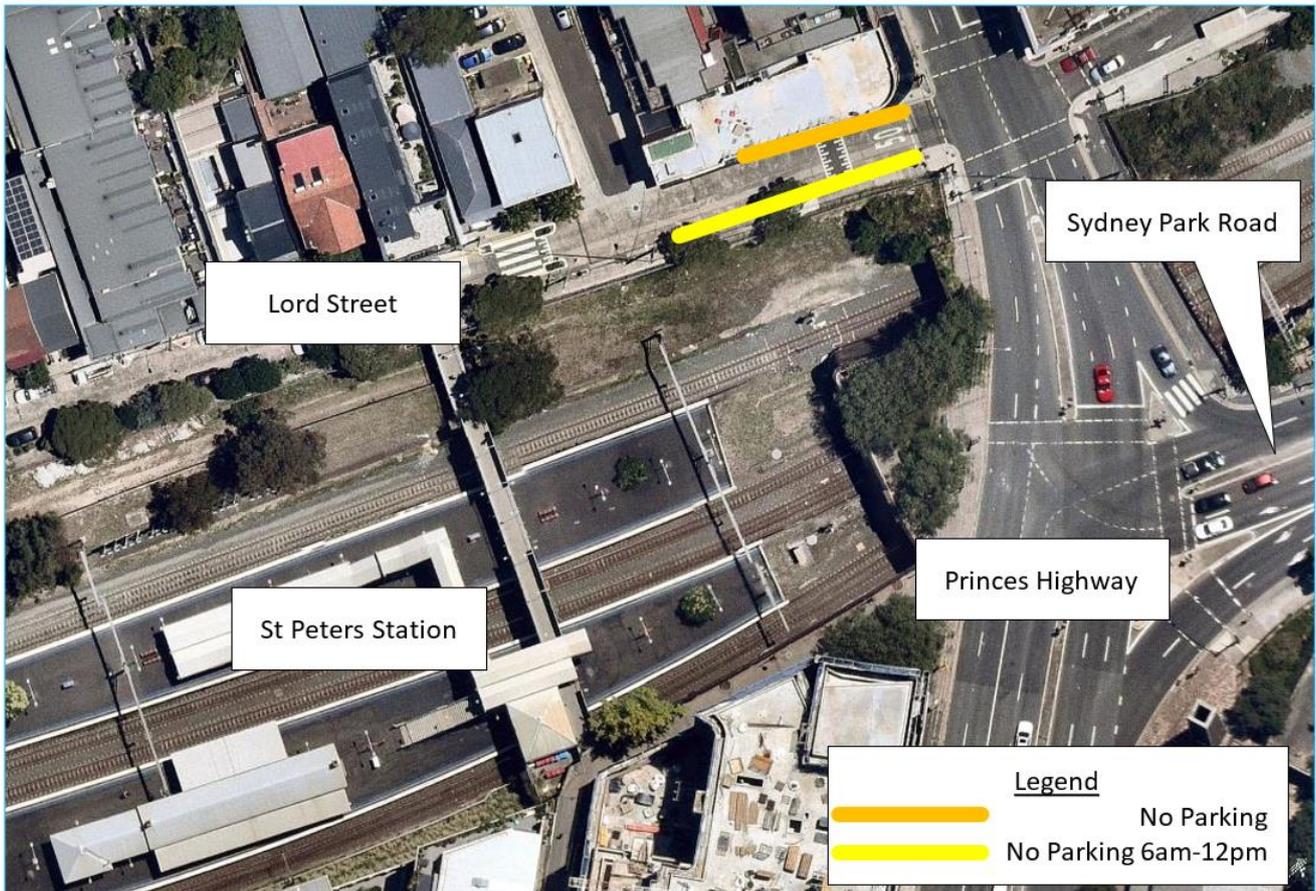
### 2.4.3 Kiss and ride and taxi zone

#### 2.4.3.1 Facilities

A site inspection and desktop analysis revealed that there are two sections of kerbside parking in Lord Street which can be used as informal kiss and ride areas in the vicinity of St Peters Station. Applicable restrictions at these two locations are “No Parking” which permits a vehicle to stand for up to 2-minutes as per NSW Parking Rules<sup>2</sup>. Mobility parking permit holders can legally park at this location for up to 5-minutes.

However, there are no formal kiss and ride areas dedicated to pick-up and drop-off activities. The two informal pick-up and drop-off facilities in Lord Street are shown in Figure 13. Lord Street is one-way traffic and as such may not be a suitable kiss and ride for some users.

<sup>2</sup> <https://www.rms.nsw.gov.au/roads/safety-rules/road-rules/parking.html>



**Figure 13: No Parking Zones (Informal kiss and ride areas) near St Peters Station**

Base map source: Nearmap, 2020

There is currently one taxi shelter within the vicinity of St Peters Station, located in Goodsell Street.

#### 2.4.4 Parking

There is no commuter car parking facility available to the users of St Peters Station. A number of streets in the vicinity of St Peters Station provide unrestricted parking, however on-street parking in the morning peak hour near St Peters Station is typically limited.

### 2.5 Road safety

Crash statistics from the Transport for NSW Centre for Road Safety suggest that there were four reported crashes that resulted in serious injuries in the study area between 2014 and 2018. No fatal crashes were recorded.

A total of 20 incidents were noted for the period 2014-2018. A summary of this crash history is illustrated in Figure 14.



**Figure 14: Transport for NSW crash history near St Peters Station**

Source: Transport for NSW, 2020

A detailed summary of this crash history and causes of crashes are provided in Table 4.

Location	Crash ID	Year	Severity	Road User Movement (RUM) Code <sup>3</sup>	Description
May Street / Applebee Street	1160421	2018	Minor/Other Injury	71	Left off carriageway into object/parked vehicle
May Lane / Caroline Lane	1127618	2016	Moderate Injury	3	Playing, working, lying, standing on carriageway
Darley Street / John Street	1161595	2017	Non-Casualty (towaway)	71	Left off carriageway into object/parked vehicle
Darley Street / John Street	1141877	2017	Serious Injury	10	Cross traffic
Wells Street / Pearl Street	1098608	2016	Non-Casualty (towaway)	73	Right off carriageway into object parked vehicle
Princes Hwy / Bray Street	1103814	2016	Serious Injury	34	Lane change right

<sup>3</sup> <https://roadsafety.transport.nsw.gov.au/statistics/interpret-data.html>

Location	Crash ID	Year	Severity	Road User Movement (RUM) Code <sup>3</sup>	Description
Princes Hwy / Darley Street	1073270	2015	Non-Casualty (towaway)	30	Rear end
Princes Hwy / Lord Street / Concord Street	1150948	2017	Serious Injury	0	Near side
Princes Hwy / Lord Street / Concord Street	1137423	2017	Minor/Other Injury	30	Rear end
Princes Hwy / Lord Street / Concord Street	1159396	2018	Minor/Other Injury	10	Cross traffic
Princes Hwy / Sydney Park Road	1063302	2015	Non-Casualty (towaway)	32	Right rear
Princes Hwy / Sydney Park Road	1093523	2016	Non-Casualty (towaway)	39	Other same direction
Princes Hwy / Sydney Park Road	1145123	2017	Non-Casualty (towaway)	39	Other same direction
Princes Hwy / Sydney Park Road	1098722	2016	Minor/Other Injury	30	Rear end
Princes Hwy / Goodsell Street	1088865	2015	Minor/Other Injury	47	Emerging from drive
Princes Hwy / May Street	1094683	2016	Serious Injury	30	Rear end
Princes Hwy / May Street	1139616	2017	Minor/Other Injury	16	Left near
Princes Hwy / Access Road	1065316	2015	Moderate Injury	13	Right near
Princes Hwy / Access Road	1095260	2016	Non-Casualty (towaway)	21	Right through
May Street	1150682	2017	Minor/Other Injury	30	Rear end

**Table 4: Transport for NSW crash history in the vicinity of St Peters Station**

Source: Transport for NSW, 2020

A review of the recent crash data indicated that rear-end crashes were the main type of recurring crashes in the vicinity of St Peters Station. There was a recorded crash involving a pedestrian in 2018 (crash ID: 1159696). The RUM code indicates that this pedestrian was crossing Princes Highway near Lord Street intersection. Crash data also indicated that there were no reported crashes on Lord Street and Goodsell Street.

## 3 Proposal description

### 3.1 Station access upgrades

Details of the proposed works to take place at the station to improve accessibility are as follows:

- installation of two new lifts, lift landings and lift canopies at the Sydney (eastern) end of Platforms 1/2 and 3/4, connecting to the existing eastern footbridge
- provision of one kiss and ride area on Goodsell Street and two on Lord Street
- regrading of the footpaths and landscaping work at the station entrances from Lord Street, King Street and Goodsell Street
- provision of up to six additional bike hoops at Railway Lane and Lord Street
- platform regrading and the installation of new TGSi along the platforms.

### 3.2 Station building and platform modifications

Modifications to the station buildings would include:

- closure and removal of the concourse retail kiosk for the installation of a new lift servicing Platform 1/2
- new canopies and anti-throw screens to stairs on Platform 3/4
- new canopies along Platform 3/4 for weather protection
- a standalone canopy at the western end of Platform 1 for weather protection at the BAZ
- modifications to the existing footbridge safety screens at new lift interface locations
- reconfiguration of the existing concourse building to accommodate a new family accessible toilet, new IMSB and existing station systems. A new switchboard would supply the required power to the lifts (and other station systems) from a pad mount transformer
- improvements to customer information and communications systems including wayfinding modifications, PA system modifications and new hearing induction loops as required
- improvements to station lighting and CCTV to improve safety and security
- electrical upgrades and service relocations and/or adjustments to accommodate the new infrastructure, including replacement of an existing transformer.

### 3.3 Ancillary work

The following ancillary works required as part of the upgrade work would include:

- regarding and resurfacing of localised areas on the platforms to provide compliant paths of travel between the lift, boarding assistance zones, family accessible toilet and other facilities on the platforms
- resurfacing of other areas of the platform where impacted by construction activities
- new stormwater drainage connections from new canopies to the existing stormwater system
- services and utilities protection, adjustments and/or relocations to accommodate the new works

- upgrades to the station power supply to cater for the new lifts including:
  - Adjustment to existing power supply connection points
  - New cable routes
  - New main switchboard and distribution boards
- earthing and bonding of electrical equipment and new or modified structures
- adjustment to station furniture, rubbish bins, and upgrade or removal of the existing Telstra payphones
- new/upgraded wayfinding signage and other station signage.

## 3.4 Interchange facilities including external movement networks

### 3.4.1 Pedestrians

Modifications to pedestrian access include the installation of two new passenger lifts, with landing and canopy extensions to facilitate access from the existing footbridge to both island platforms.

It is also proposed to regrade the access paths on the southern access of the station from Goodsell Street and Princes Highway.

### 3.4.2 Bicycle parking

It is proposed that three additional bicycle parking hoops would be provided at each of Lord Street and Railway Lane station entrances.

### 3.4.3 Public transport

No changes to the bus capacity or operation of the existing stops are proposed.

### 3.4.4 Kiss and ride and taxi facilities

Modifications to the external vehicle facilities include the addition of two kiss and ride areas in Lord Street and one in Goodsell Street.

The existing taxi zone<sup>4</sup> in Goodsell Street would be retained. Works in Lord Street may include kerb / footpath adjustments or installation of a mountable kerb, and signage and line marking modifications.

### 3.4.5 Parking

No changes to existing general parking arrangements are proposed. It should also be noted that no accessible parking space would be provided as part of the Proposal.

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<sup>4</sup> This taxi zone in Goodsell Street is currently and temporarily serving as a "Works Zone" due to ongoing construction of a mixed-use development located at the intersection of Princes Highway and Goodsell Street.

## 4 Construction impacts

### 4.1 Construction work and compounds

Key construction activities associated with the Proposal involve the construction of two new lift internal renovation of the station building and addition of kiss and ride areas on Goodsell Street and Lord Street.

Earthwork and excavation are expected to be limited and would be required for the following activities:

- construction of the crane platform
- construction of two lift shafts
- construction of three kiss and ride areas
- localised platform regrading / resurfacing work
- construction of a pad for the new 200kVA transformer
- other minor civil works including footings and foundations for structures, drainage / stormwater works, and trenching activities for service adjustments and relocations and drainage upgrade works.

The amount of excavated material is expected to be up 250 cubic metres. Excavated material would be re-used on site where possible or disposed of in accordance with relevant legislative requirements.

The source and quantity of materials would be determined during the detailed design phase of the Proposal and would consider the requirements of the ISCA Infrastructure Sustainability Rating Scheme (v1.2). Materials would be sourced from local suppliers where practicable. Reuse of existing and recycled materials would be undertaken where practicable.

As part of the construction work, ancillary facilities would also be required to accommodate the needs of construction workers. Two adjacent compounds would be required to undertake the work listed above, one being a site office and parking area and another for the materials to be laid down.

Figure 15 indicates the proposed location of the “construction compound - 1” (site office and material lay down area), to be provided within the railway corridor with a vehicle access to / from Lord Street.



**Figure 15: Construction compound 1 within Railway Reserve off Lord Street**

Base map source: Nearmap, 2020

Figure 16 indicates the proposed location of the “construction compound – 2” (material lay down area), within the railway corridor with a vehicle connection to / from Concord Street.



**Figure 16: Construction compound 2 within railway corridor off Concord Street**

Base map source: Nemap, 2020

Neither construction compound would be able to accommodate any construction worker parking. A Construction Traffic Management Plan (CTMP) should be developed which confirms the location and arrangement for construction worker parking so as to ensure there are no impacts on local residents, businesses or commuters.

Subject to detailed design, other worksite areas may be established during the construction period and would be staged to minimise the inconvenience to the customers and adjacent public areas, and would include suitable demarcation hoarding or fencing, including for the following:

- worksite areas on the station platforms, ensure access to the station platform is available at all times when trains are running
- worksites in and around the existing footbridge for the lift installation.
- worksites external to the rail corridor for utility protection, adjustments or diversions and power supply upgrade work
- worksites for interchange work within the adjacent road reserves.

## 4.2 Hours of work

The majority of work would be undertaken during standard construction hours, which are as follows:

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

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

Out of hours works are required in some cases to minimise disruptions to customers, pedestrians, motorists and nearby sensitive receivers; and to ensure the safety of railway workers and operational assets. It is estimated that up to 19 rail shutdowns would be required to facilitate the following:

- services, piling and lift shaft installation on the platform
- installation of cable route from new transformer to main switchboard
- installation of new 200kVA pad-mount transformer

Out of hours works may also be scheduled outside rail shutdown periods. Approval from Transport for NSW would be required for any out of hours work and the affected community would be notified as outlined in Transport for NSW's *Construction Noise and Vibration Strategy* (Transport for NSW, April 2019).

## 4.3 Construction timing

Subject to approval, construction is expected to commence in 2021 and take around 24 months to complete. The construction methodology would be further developed during the detailed design of the Proposal by the nominated Contractor in consultation with Transport for NSW.

The proposed construction activities for the Proposal are identified in Table 5. This staging is indicative and is based on the current concept design and may change once the detailed design methodology is finalised. The staging is also dependent on the Contractor's preferred methodology, program and sequencing of work.

Each of the work identified in Table 5 can progress independently.

Stage / Duration	Activities
Site establishment and enabling works	<ul style="list-style-type: none"> <li>• establish site compound (erect fencing, site offices, amenities and plant/material storage areas etc.)</li> <li>• remove required vegetation to allow for construction access, site compound and laydown area</li> <li>• relocate or upgrade services / utilities where required</li> <li>• install safety barriers and hoarding around the nominated work zones on the platform.</li> </ul>
Lifts	<ul style="list-style-type: none"> <li>• demolish retail kiosk on concourse</li> <li>• remove fencing along footbridge in lift locations</li> <li>• construct lift foundations</li> <li>• install lift shafts and upper lift landing</li> <li>• install protection screens and external finishes</li> <li>• install lift shaft services, lift cars and fit out lift cars</li> <li>• install lighting / CCTV / PA services to lift landings</li> <li>• construct lift landing canopies</li> </ul>
Station entrance and interchange works	<ul style="list-style-type: none"> <li>• remove existing pavement at entrances to be regraded</li> <li>• install localised new paving on Lord Street</li> <li>• install new decorative paving and lighting on southern access way</li> <li>• install new signage for kiss and ride areas and taxi zones</li> <li>• install new signage and road markings for accessible parking spots</li> <li>• install new wayfinding signage</li> </ul>
Platform works	<ul style="list-style-type: none"> <li>• re-grade / resurface platform in localised areas</li> <li>• platform finishing works (line markings, tactile indicators etc.)</li> </ul>
Station building works	<ul style="list-style-type: none"> <li>• demolish all internal walls of concourse building and remove building services</li> <li>• demolish current booking office customer facing wall</li> <li>• install new main switchboard</li> <li>• build all internal walls in new building configuration and install new building services</li> <li>• build new customer facing booking office wall</li> <li>• building works and services / fit out for new family accessible toilet and staffroom basin</li> <li>• install new 200kVA transformer</li> <li>• construction of cable containment and cable reticulation/connection from new transformer to main switchboard</li> </ul>

Stage / Duration	Activities
Site de-mobilisation	<ul style="list-style-type: none"> <li>• cutover / commission digital PA / hearing induction loops / TGSi</li> <li>• test and commission CCTV cameras / station systems installation</li> <li>• test and commission new lifts / open to public</li> <li>• finishing works including fencing</li> <li>• site demobilisation</li> </ul>

**Table 5: Indicative construction staging for key activities**

## 4.4 Haulage Routes

A review of route planner application in the National Heavy Vehicles Regulator (NHVR) website<sup>5</sup> revealed that 19 metre articulated vehicles (AV) are permitted to approach and depart from St Peters Station via a number of routes<sup>6</sup>.

These routes are summarised in Table 6.

Approach / Departure	Proposed Route
Approach from north-west	Approach from Princes Highway (A22) then Lord Street*
Approach from north-east	Approach from Mitchell Road, then Sydney Park Road and Lord Street*
Approach from south	Approach from Princes Highway (A22) then Lord Street*

**Table 6: Proposed Haulage Routes**

\* Lord Street is subject to weight limits, special permits would be required

Figure 17 provides a visualisation of the summary provided in Table 6.

<sup>5</sup> <https://www.service.nhvr.gov.au/#page=informationHub/routePlannerTool>

<sup>6</sup> Subject to construction traffic management plan (CTMP)

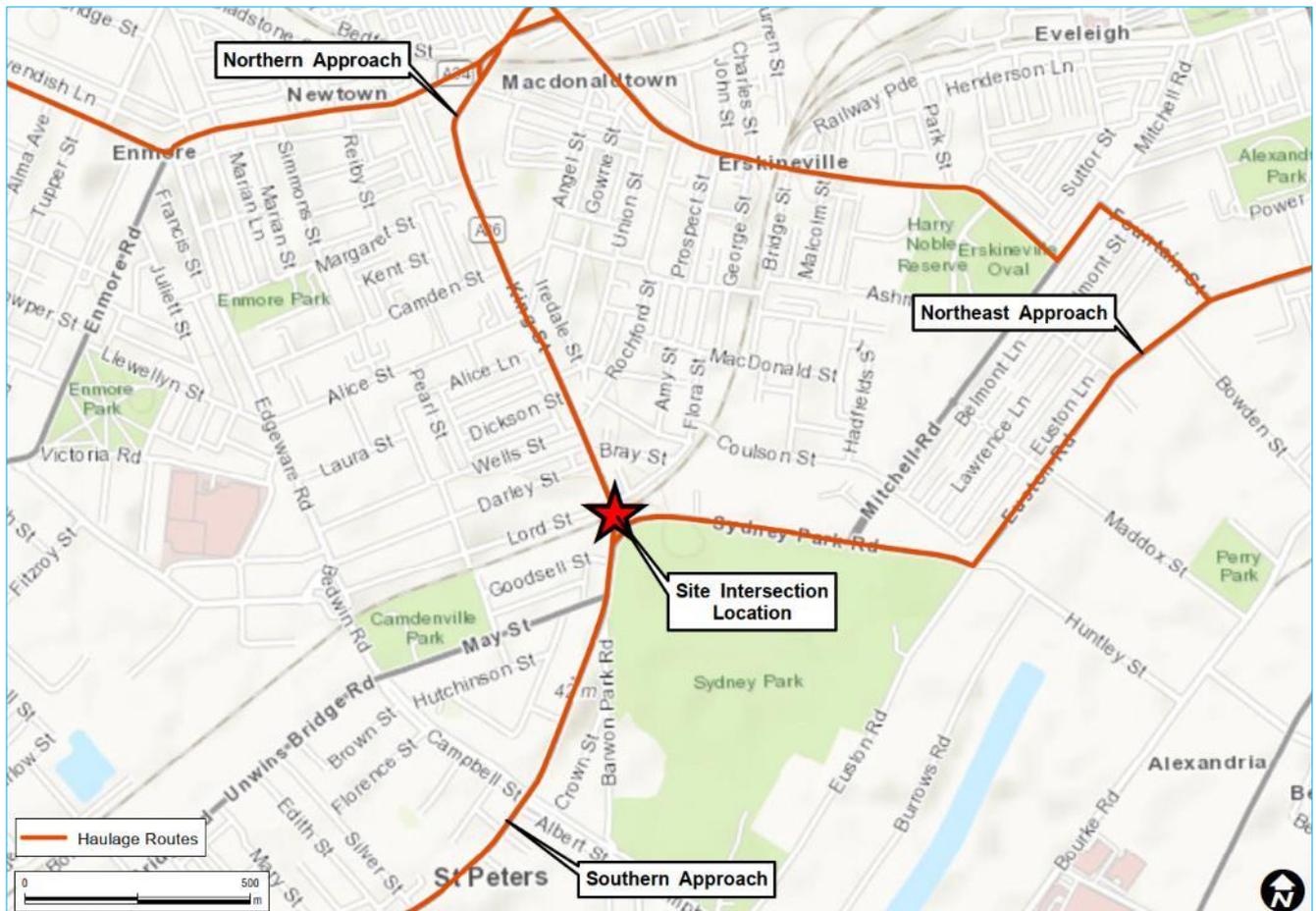


Figure 17: Proposed Haulage Routes for 19m Articulated Vehicles

## 4.5 Construction Vehicles Access

### 4.5.1 Access to Construction Compound - 1

Transport for NSW has identified two construction compounds as illustrated in Figure 15 and Figure 16.

Access to construction compound – 1 would be via Lord Street in the westbound direction, i.e. left in / left out. Construction vehicles would be required to turn left and access the site via the driveway crossover and enter the compound through the secure gates.

It should be noted that Lord Street is subject to weight limits (3-tonnes). Given the majority of construction vehicles would have a gross vehicle mass (GVM) of over 3-tonnes, special permits would need to be obtained from Inner West Council.

Direct access to construction compound – 1 is illustrated in Figure 18 and Figure 19.



**Figure 18: Access to construction compound – 1**



**Figure 19: Access to construction compound - 1**

Direct access to construction compound – 2 would be via Concord Street. There is a crossover access to the railway corridor that is located in the two-way segment of Concord Street, immediately opposite Bray Street.

The gate with access to the railway corridor is illustrated in Figure 20.



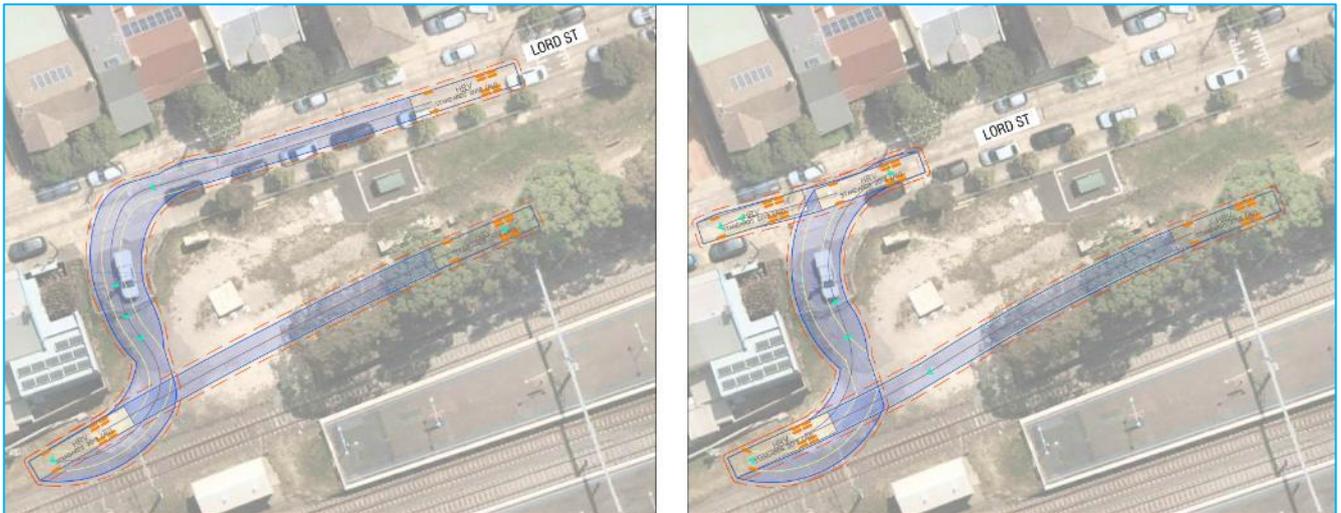
**Figure 20: Access to construction compound – 2**

Large construction vehicles would require active traffic management measures to enter and exit both compounds as they cannot perform some manoeuvres without otherwise conflicting with opposing traffic flows.

The information provided by Transport for NSW indicates that the largest vehicle making material deliveries to both compounds would be articulated vehicles (AV – 19 metres). Where articulated vehicles cannot perform safe manoeuvres due to narrow streets, heavy rigid vehicles (HRV - 12.5 metres) would be utilised.

SLR undertook a number of swept path assessments using AutoTURN for both design vehicles entering and exiting both construction compounds 1 and 2. Swept path assessments confirmed that the 19 metre AV design vehicles cannot enter and exit either of the construction compounds. As an alternative, HRV design vehicles are proposed for making material deliveries to both compounds.

Figure 21 and Figure 22 illustrate the swept path assessment of an HRV entering and exiting construction compound – 1. Active traffic management would be required at Princes Highway and Lord Street intersection as well as in Lord Street due to the narrow trafficable lane width. The removal of approximately six parking spaces would be required near the compound gate when an HRV makes a delivery to construction compound – 1.



**Figure 21: HRV (12.5 metre) swept path assessment at construction compound - 1**

Base Map Source: Nearmap, 2020



**Figure 22: HRV (12.5 metre) swept path assessment at Princes Hwy and Lord St intersection**

Base Map Source: Nearmap, 2020

Upon completing their material deliveries, it is recommended that HRV design vehicles exit into Railway Parade and then turn-right into Edinburg Road instead of travelling back to Princes Highway.

To enable the installation of two lift shafts, it is understood that an AV and a 200-tonne crane would also be needed in Lord Street and construction compound – 1, respectively. Based on discussions held during the site inspection, it is understood that the available kerbside space at the eastern end of Lord Street near the Princes Highway intersection would be sufficient to accommodate the 19 metre AV so that a 200-tonne crane parked in the construction compound – 1 could pick up the lift shaft from the AV parked in Lord Street.

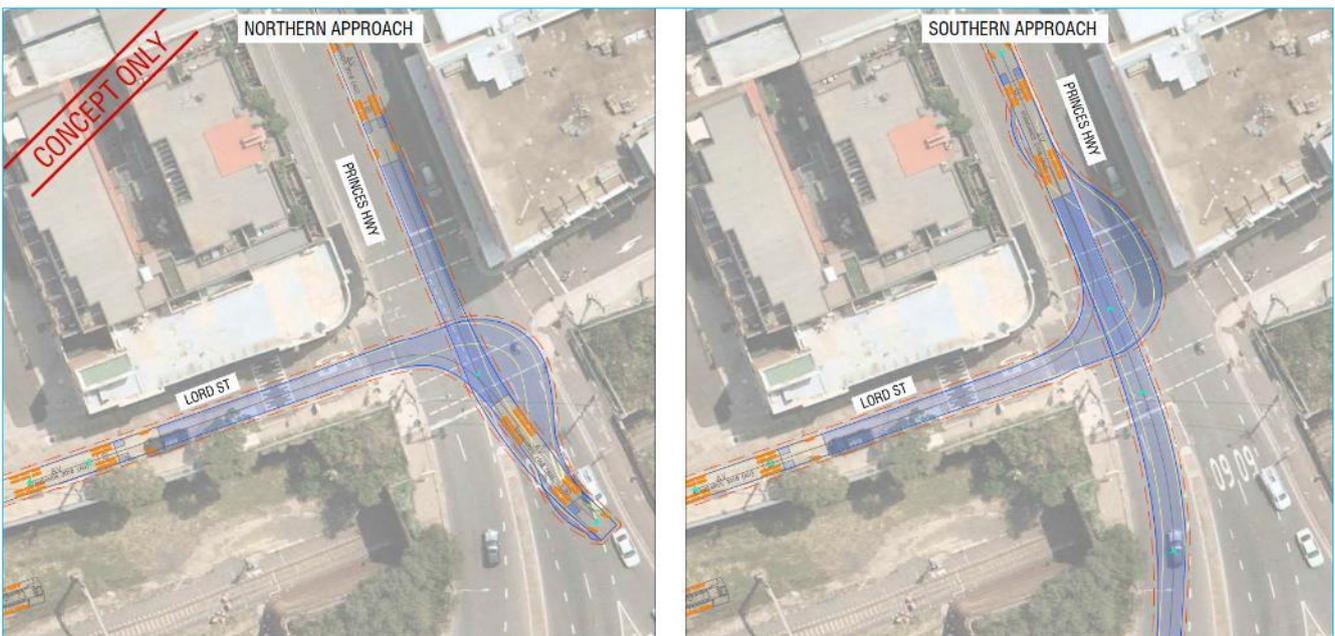
This crane is expected to be approx. 14.7 metre in length and swept path assessments confirmed it can enter and exit the construction compound – 1, as illustrated in Figure 23.



**Figure 23: 200-tonnes crane (14.7 metre) swept path assessment at construction compound – 1**

As indicated in Figure 23, the removal of the entire length of parking in Lord Street (approx. 18 spaces) between Princes Highway and compound gate would be required. However, it should be noted that this would only be required for short periods (up to two days), being the day the crane arrives and the day the crane departs.

Figure 24 indicates the proposed parking location of the AV in Lord Street, near Princes Highway intersection.

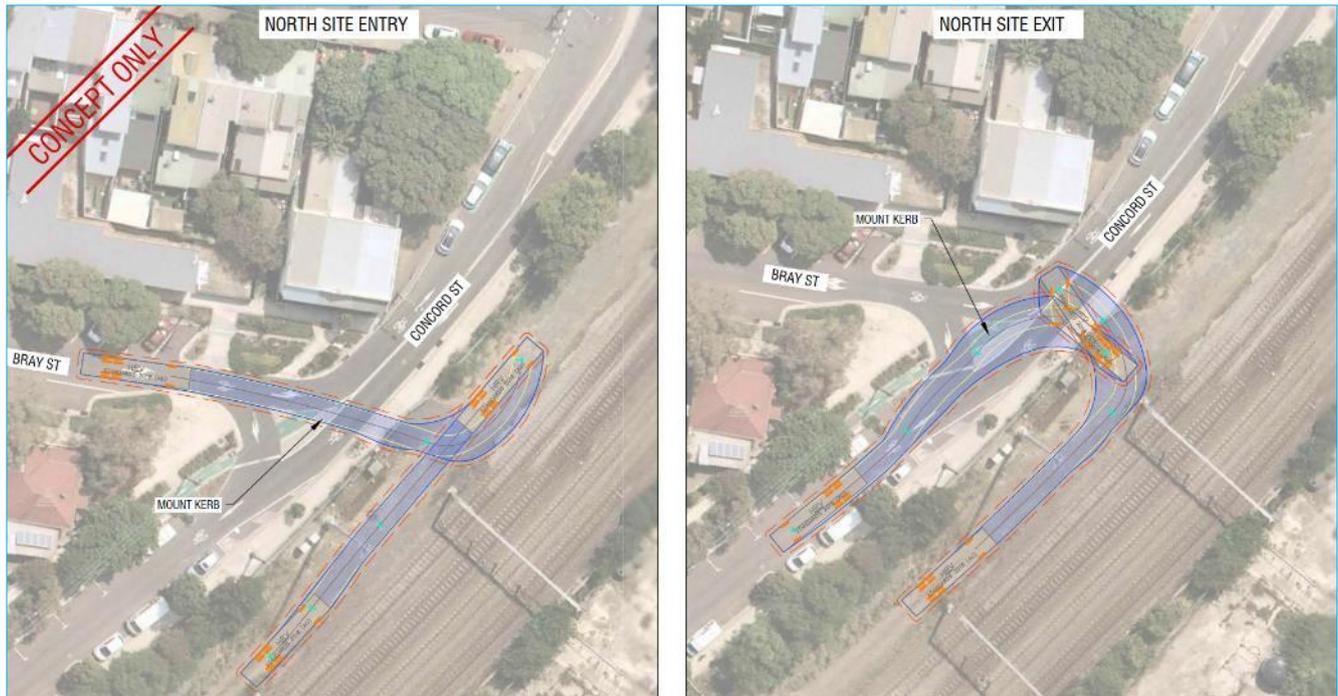


**Figure 24: Delivery of Lift Shafts with an AV**

#### 4.5.2 Access to Construction Compound - 2

The swept path assessment confirms that the AV design vehicle cannot enter and exit construction compound – 2 in a forward direction due to the limited manoeuvring space available in the road and rail reserves. Accordingly, it is recommended that materials to construction compound – 2 are delivered by HRV or smaller design vehicles only.

Figure 25 indicates that the HRV design vehicle can approach Bray Street from Princes Highway and enter and exit construction compound – 2 in a forward direction.



**Figure 25: HRV (12.5m) swept path assessment at construction compound - 2**

Base Map Source: Nearmap, 2020

The splitter island at Bray Street and Concord Street intersection is mountable and access to construction compound – 2 would require some construction vehicles mount this splitter island, as illustrated on Figure 25.

It is noted that the right-turn movement into Bray Street from Princes Highway is not permitted during the weekday peak hours (6-10AM, 3-7PM). Alternatively, Concord Street could be accessed from Princes Highway however this would require active traffic control management to enable construction vehicles to travel in the opposite direction along the one-way (east to west) Concord Street. In either scenario active traffic control measures would be required.

Full-size captures of all swept path assessments discussed in this report are provided in **Appendix A**.

Table 7 provides a summary of the swept path assessments SLR has undertaken at three locations where construction activities would be concentrated.

Construction compound	Travel Direction	19m AV	14.7m 200-tonnes Crane	12.5m HRV
Construction compound – 1 off Lord Street	Westbound on Lord Street	Access is not possible due to narrow carriageway in Lord Street.	Access is possible with active traffic management and removal of some parking. HRV should exit towards Railway Parade. The crane should exit towards Princes Highway, as removal of parking in one side of Lord Street would be required.	
Construction compound – 2 off Concord Street	Southbound on Concord Street	Access is not possible due to narrow carriageways in Bray Street and Concord Street.	Not assessed. Not required.	Access is possible with active traffic management.
	Eastbound on Bray Street			
Lord Street (eastern end, near Princes Highway intersection)	Eastbound on Lord Street	Access is possible with active traffic management. AV should reverse back into Princes Highway intersection with active traffic management.	Not assessed. Not required.	

**Table 7: Summary of swept path assessments near St Peters Station**

It should be noted that the height of the overhead power lines and other major trees was not considered as part of the 2D swept path assessments.

The findings of the swept path assessments at these three locations would prescribe which route trucks can use in travelling to / from the construction compound. The future CTMP should consider these routes and constraints in resolving detail regarding access and traffic control measures.

## 4.6 Active transport impacts

The following impacts to pedestrians, cyclists and station customers are anticipated to arise from construction activities associated with the Proposal:

- reduction in size of footpath (or closures) adjacent to Lord Street, Princes Highway and Concord Street may require users to dismount and potentially deviate around construction work associated with the lift shafts
- increased safety risk due to the interaction of cyclists, pedestrians and construction vehicles at the proposed site compound access and / or parked construction vehicles on Lord Street, Princes Highway and Concord Street
- uneven surfaces and detours required during footpath closures and platform resurfacing work
- increased platform congestion due to localised platform closures and dedications during the resurfacing and regrading of the platform surfaces
- potential confusion and loss of amenity for customers due to the temporary relocation of station accesses and facilities

- detours required for potential footpath closures on Lord Street and Goodsell Street due to work associated with the installation of lift shafts and construction of kiss and ride areas.

These impacts are deemed to be manageable subject to the preparation and implementation of a CTMP and traffic control plans (TCPs) by a suitably qualified Contractor outlining how safety issues and other impacts may be mitigated.

## 4.7 Public transport impacts

Train services would be affected during scheduled rail shutdowns although these are not specific to the Proposal and would occur regardless and accordingly are not impacts arising from the Proposal. Buses would replace trains during rail shutdown periods. Accordingly, any construction activities occurring during rail shutdowns must consider additional buses and users. This should be addressed as part of the CTMP and TCPs.

Beyond rail shutdowns periods, the proposed construction work is expected to result in slightly reduced travel speeds due to the active traffic management needs which could increase travel times for bus services on Princes Highway during the delivery of lift shafts and other large materials.

## 4.8 Traffic impacts

Traffic generated by construction activities includes construction worker light vehicles (including utility vans), as well as heavy vehicles for periodic delivery and removal of materials, and construction plant and equipment. It is expected that articulated vehicles (AV 19 metres), cranes and heavy rigid vehicles (HRV 12.5 metres) would be needed on a minimal basis, only while the lift shafts are being delivered. Vehicle types and sizes would vary depending on the required use, but typically include medium and large rigid vehicles and articulated vehicles for import of bulk materials or spoil removal as well as for the transportation of plant and equipment.

The amount of fill material or spoil / demolition spoil would be minor due to the limited extent of excavation required for the Proposal. Specific oversize vehicles (i.e. 200-tonnes crane) may be required for prefabricated / precast elements such as canopy and lift shaft structure components, and steel beams. In such cases, specific permits would be required, and advance route planning would need to be undertaken in order to ensure that a suitable route with sufficient geometric capacity to accommodate these vehicles is chosen.

Existing traffic demands on Princes Highway<sup>7</sup> was sourced from TfNSW website indicated that the traffic volumes on Princes Highway near Enmore Road typically exceed 1,300 vehicles per hour in a typical weekday morning peak hour. Traffic generated as part of the construction work is not expected to exceed 25 light vehicles and 15 heavy vehicles per day during the peak construction periods. Based on this, construction demand is unlikely to cause significant impact to traffic flow or operational performance except when the lift shafts are being delivered as these activities would require the closure of Princes Highway and Lord Street intersection for a short period of time.

## 4.9 Parking impacts

As detailed in Section 4.1, it is proposed that two construction compounds would be made available to undertake the construction work.

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<sup>7</sup> Permanent counter data near intersection of Princes Highway and Enmore Road, dated November 2020

Access to construction compound - 1 is expected to have a minor impact on parking in Lord Street based on the swept path assessments SLR has undertaken, as illustrated in Figure 21 and Figure 23.

Temporary restrictions for approximately six parking spaces near the compound gate would be required to provide ease for the approach of HRV design vehicles, as illustrated in Figure 21.

The temporary removal of 18 car spaces in Lord Street between Princes Highway and the compound gate would be required in the lead up to, and immediately following, the lift shaft installation. It is anticipated that the loss of parking would be short term for a period of up to two days (being the day the crane arrives and the day the crane departs).

Parking arrangements for construction vehicles should be well planned to mitigate the influx of parking demand in the area and construction workers would be required to park away from the station and construction compounds, carpool or use public transport. The Contractor's CTMP should be prepared consistent with these requirements.

#### 4.10 Kiss and ride and taxi impacts

There are no existing formal kiss and ride areas in the vicinity of St Peters Station. The "no parking" area on Lord Street which is currently used as an informal kiss and ride would be unavailable during delivery of the lift shafts.

As mentioned earlier in this report, the taxi space in Goodsell Street is currently operating as "Work Zone" due to the ongoing construction of a mixed-use development at the intersection of Princes Highway and Goodsell Street.

#### 4.11 Property access impacts

Property access is to be maintained and unaffected by construction work where possible, however temporary obstruction of access may be required during activities such as the loading and unloading of oversize materials and plant. Should this be necessary all affected properties would be notified in advance of disruptions.

#### 4.12 Construction impact mitigation

To assist in minimising and mitigating any construction impacts on the operation of the surrounding active, public and vehicular transport networks, a CTMP would be prepared and submitted to Transport for NSW and/or the Inner West Council in preparation for the proposed work.

Preparation and submission of a CTMP should be the responsibility of the nominated Contractor for each phase of construction, and should specify the following at a minimum:

- necessary traffic control management activities for the delivery of lift shafts
- necessary permits required for construction vehicles to enter streets which are subject to turn bans or travel with oversized load if required (i.e. right turn into Bray Street from Princes Highway to access construction compound – 2 or travel in Lord Street with oversized load where 3-tonnes weight limit applies)
- construction approach and staging
- additional traffic demands associated with the construction work
- parking strategy for workers, heavy vehicles and plant

- 
- construction vehicle travel routes, including details of any road closures and alternative routes
  - design and location of the site compound ingress and egress location/s
  - temporary relocation of existing facilities such as crossings, parking or kiss and ride and taxi zones, including associated signage.

This plan would also incorporate additional detail on specific mitigation measures within a Traffic Control Plan (TCP) with the aim of not compromising the safety or amenity of the road network during construction. To achieve this, a TCP would include details of the following:

- signage to inform motorists and users of the surrounding active and public transport infrastructure of temporary changes to accommodate construction activity, including any static and variable signage and line marking to be installed in advance of and within the construction area to provide warning of any changes in conditions
- specific traffic measures required during the work, including lane and path closures, diversions, speed limit and other regulatory changes, temporary stoppage of traffic as well as other traffic control measures.

The construction planning should also include advance communication to the surrounding community regarding upcoming disruptions to traffic, transport and/or access arrangements as well as significant vehicle and plant movements. Work and disruptions should also be timed to occur outside of peak travel periods wherever possible in order to reduce any adverse traffic, transport or access impacts.

## 5 Operational impacts

### 5.1 Future demand

Forecast station patronage data provided by Transport for NSW indicates that the St Peters Station annual customer demand will increase by 13.5% between 2017 and 2036 from 1,407 persons to 1,597 persons for the AM peak hour (08:00am – 09:00am).

An additional 15% has also been evaluated as a ‘factor of safety’ to ensure a conservative assessment. As such, the forecast daily design patronage for a 2036-time horizon is 1,837 persons.

The projected passenger demands are summarised in Table 8.

Year	AM Peak Hour Demand	Assumed Peak Train (AM boarding)	Assumed Peak Train (PM alighting)
2017	1,407	Not Available	Not Available
2036	1,597	274	167
<b>Design (2036 + 15%)</b>	<b>1,837</b>	<b>315</b>	<b>192</b>

**Table 8: St Peters Station patronage demand and forecasts**

Source: St Peters Station Network Intermodal Integration Report, Arcadis, dated 20/11/2020.

### 5.2 Public transport

The Proposal is not projected to have any impact on the existing operation of public transport services, nor would it prejudice future planning and design for services. The existing timetable arrangements are not affected by the Proposal and the minimal increase in station demands would not require changes to existing train services.

If the Proposal is to impact public transport in any way, it is likely to be positive given the proposed accessibility enhancements would improve movement between transport modes.

### 5.3 Pedestrians

#### 5.3.1 Pedestrian improvements

The Proposal would enhance pedestrian accessibility given the inclusion of facilities such as two new lifts and new canopies for weather protection. Beyond station accessibility, these enhancements would also serve to improve the connection across the rail corridor and enhance user amenity.

The proposed two new lifts in particular, are integral in allowing all platforms and areas of the station to be accessed by persons with a disability or mobility impairment, which is currently not possible given the existing entrances do not have lifts. This would facilitate improved community outcomes by increasing the independence and mobility of the local community regardless of their level of mobility, therefore reducing reliance on private vehicles as a means of travel.

The proposed regrading and resurfacing of platforms and alleyways between the southern station entrance, Princes Highway and Goodsell Street would also provide similar benefits through eliminating trip hazards as well as enhancing circulation.

All footpaths that form part of the Proposal must be a minimum of 1.2 metres wide in accordance with DSAPT and AS1428, although 1.5 metres is desirable.

### 5.3.2 Capacity assessment

A number of capacity assessments were undertaken as part of the Concept Design Development in accordance with RailCorp’s Engineering Standard: Stations and Buildings - Station Design Standard Requirements: ESB 003 - Station Functional Spaces, which mandates a minimum standard of Level of Service (LOS) C as determined by the Fruin Theory.

Fruin’s theory assesses capacity in terms of pedestrian throughput within a certain width, in this case pedestrians per metre per minute (pmm), and then classifies the results according to the categories specified in Table 9.

Fruin’s Level of Service	Walkways (Platforms / Footbridges) Pedestrian Flow Rate (pmm)	Staircases Pedestrian Flow Rate (pmm)
A	0-23	0-16
B	23-33	16-23
C	33-49	23-33
D	49-66	33-43
E	66-82	43-56
F	>82	>56

**Table 9: Pedestrian level of service using the Fruin Theory**

These pedestrian capacity assessments were undertaken to determine whether it would be possible to achieve a Pedestrian Level of Service C in 2036 in the following sections of St Peters Station:

- platform access stairs
- station or footbridge access stairs
- footbridge
- platform area.

With assumed pedestrian forecast 2036 demand including +15% contingency, results of the assessment indicated that all elements of the station would operate at Level of Service C or better under the current timetable arrangements. Any congestion issues are expected to be mitigated with the high frequency rail services that will be introduced by 2030 as part of the More Trains More Services Program.

## 5.4 Cyclists

The Proposal would provide six additional bicycle parking hoops. Regrading of alleyways and access routes is also expected to provide benefits to the cyclists as a result of improved surface and reduced trip hazards.

The provision of two new lifts is expected to attract additional cyclists to the station as they no longer need to carry their bicycles up and down the stairs.

## 5.5 Kiss and ride and taxi facilities

The Proposal would provide a total of three new kiss and ride areas in Goodsell Street and Lord Street.

The taxi zone space in Goodsell Street is currently operating as a “Work Zone” space due to the ongoing construction of a mixed-use development located at the intersection of Princes Highway and Goodsell Street. It is expected that the taxi space would be reinstated upon the completion of this construction.

## 5.6 Parking

No changes to existing general parking arrangements are proposed. It should also be noted that no accessible parking space would be provided as part of the Proposal.

It is understood that a GoGet Car Share parking space located on Lord Street would be relocated further west to accommodate the proposed two new kiss and ride areas as part of the Proposal.

## 5.7 Traffic impacts

The Proposal is not projected to generate a material volume of additional traffic movements that would impact on the existing operational performance or capacity of the surrounding road network.

Given the key attraction of the Proposal is for persons with a disability and mobility impairments, the elderly, as well as parents / carers with prams - i.e. those who are unlikely to travel to the station via active or public transport - any new demand generated by the Proposal is likely to manifest in additional traffic. This increase is expected to be relatively small in magnitude and is thus unlikely to result in a significant deterioration in local traffic conditions.

## 5.8 Property access

The operation of the Proposal is not expected to have any impact on existing property access within the vicinity of the station.

## 5.9 Safety

The Proposal is expected to improve pedestrian safety and mobility to / from and surrounding the station with the installation of new lifts and regrading and resurfacing of localised areas on the platforms and alleyways that provide access to the station.

The provision of new kiss and ride areas in Goodsell Street and Lord Street is also likely to improve safety by minimising informal drop-offs and conflicts between pedestrians and vehicles.

## 6 Summary, conclusions and recommendations

The Proposal would include the following key elements:

- installation of two new lifts serving both island platforms
- localised regrading of the platform and surrounding footpaths
- reconfiguration of the existing concourse building to accommodate a new family accessible toilet
- provision of kiss and ride areas.

The following key construction-stage impacts are likely to be generated:

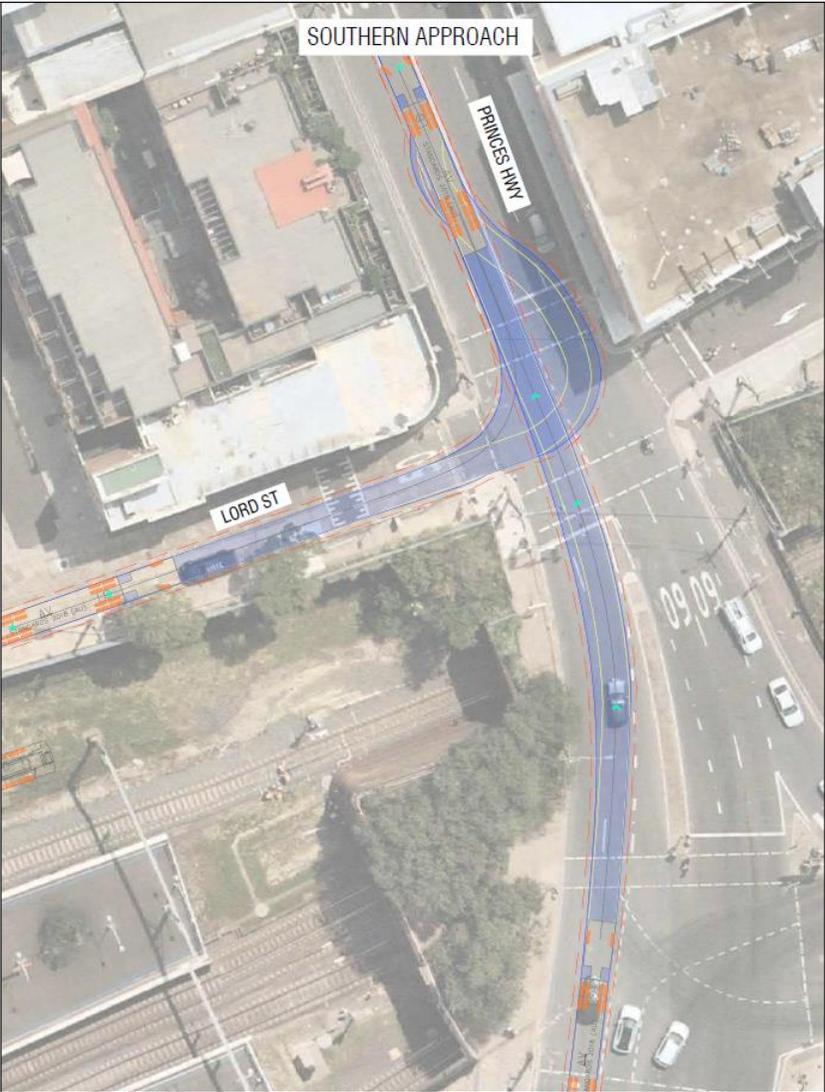
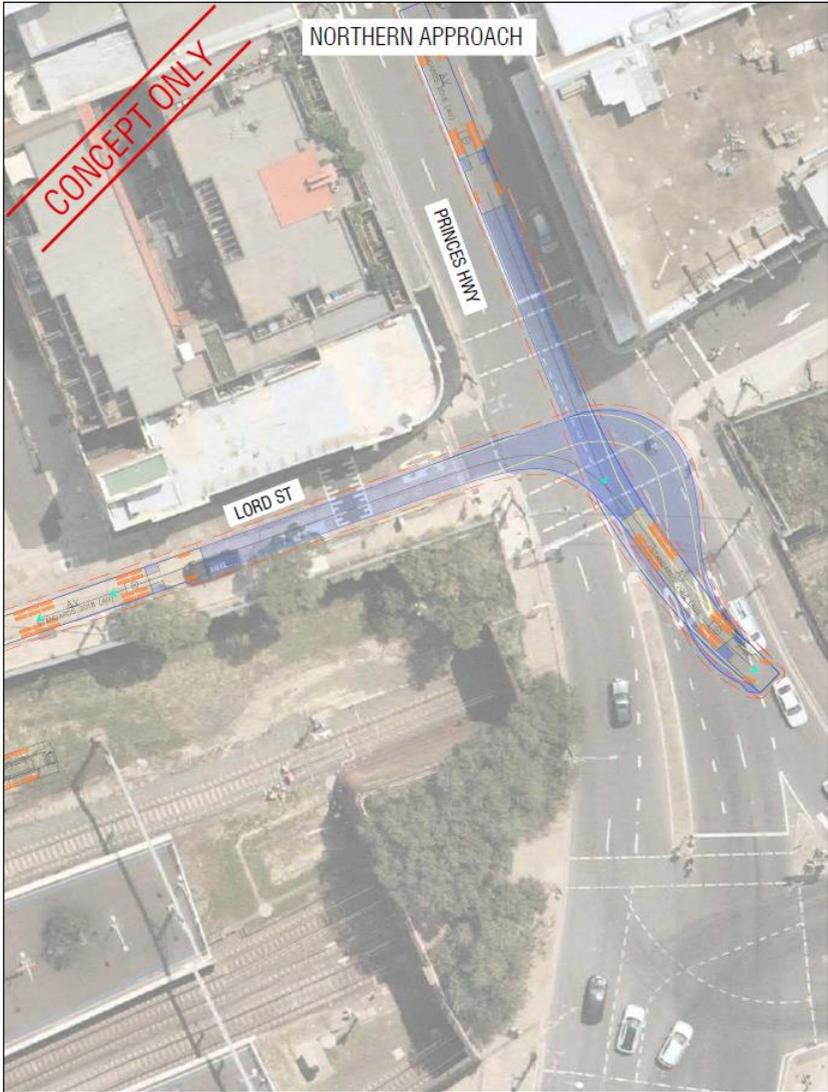
- increased construction vehicle traffic including light and heavy vehicles within the station precinct and along proximity roads and streets including Lord Street, Princes Highway, Goodsell Street, Concord Street and Bray Street for movement to / from the two proposed construction compounds
- some inconvenience for pedestrian and cyclist movements due to the construction zones and barriers along the footpath on platforms, Lord Street and Concord Street
- temporary loss of parking on Lord Street
- construction is expected to generate up to 40 vehicle movements per day on average. Based on this, construction is unlikely to cause significant impact to traffic flow or operational performance of nearby intersections. However, when the proposed two new lift shafts are delivered, the closure of traffic may be required for a short period of time.
- potential confusion and loss of amenity to customers accessing the station due to the temporary access arrangements during construction
- short-term occupation of kerbside parking spaces, cycleways and foot paths by heavy vehicles facilitating construction
- minor travel delays on account of likely TCP implementation requiring some users to stop for construction traffic.

Construction impacts are considered to be manageable subject to the preparation and implementation of a CTMP. The CTMP and subordinate TCPs should review issues and identify solutions and temporary arrangement to avoid, mitigate and manage risk involving construction activities, users of the transport system, and local residents.

The relatively minor scope of the Proposal is not anticipated to result in any material operational impacts. The Proposal would improve pedestrian connectivity and amenity, for all users including persons who experience mobility impairments.

# APPENDIX A

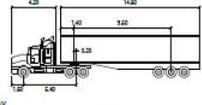
## Swept Path Assessments



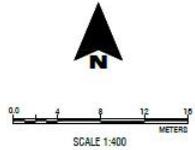
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**SWEPT PATH LEGEND**  
 - Vehicle Path  
 - Vehicle Body  
 - Body Clearance  
 - Front Wheels



AV			
Trailer Width	2.20	Lock-Up Lock Time	1:45
Trailer Height	2.20	Swinging Arm	1:25.3
Trailer Track	1.20	Swinging Arm	1:11.4

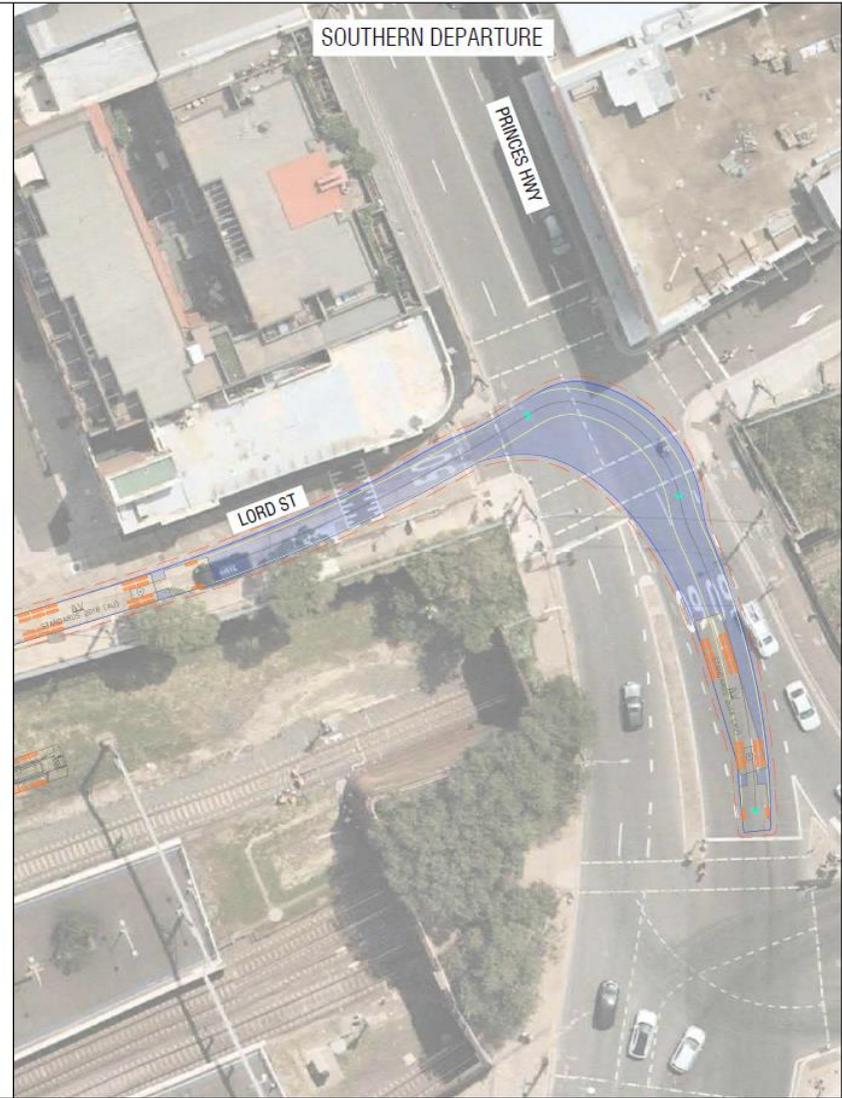


TNSW Transport Access Program

**St Peters Station**

**Swept Path Assessment**  
**AV**

FIGURE SK01-1



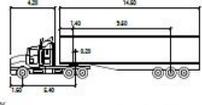
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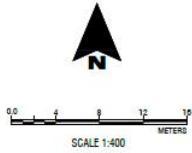
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**SWEPT PATH LEGEND**

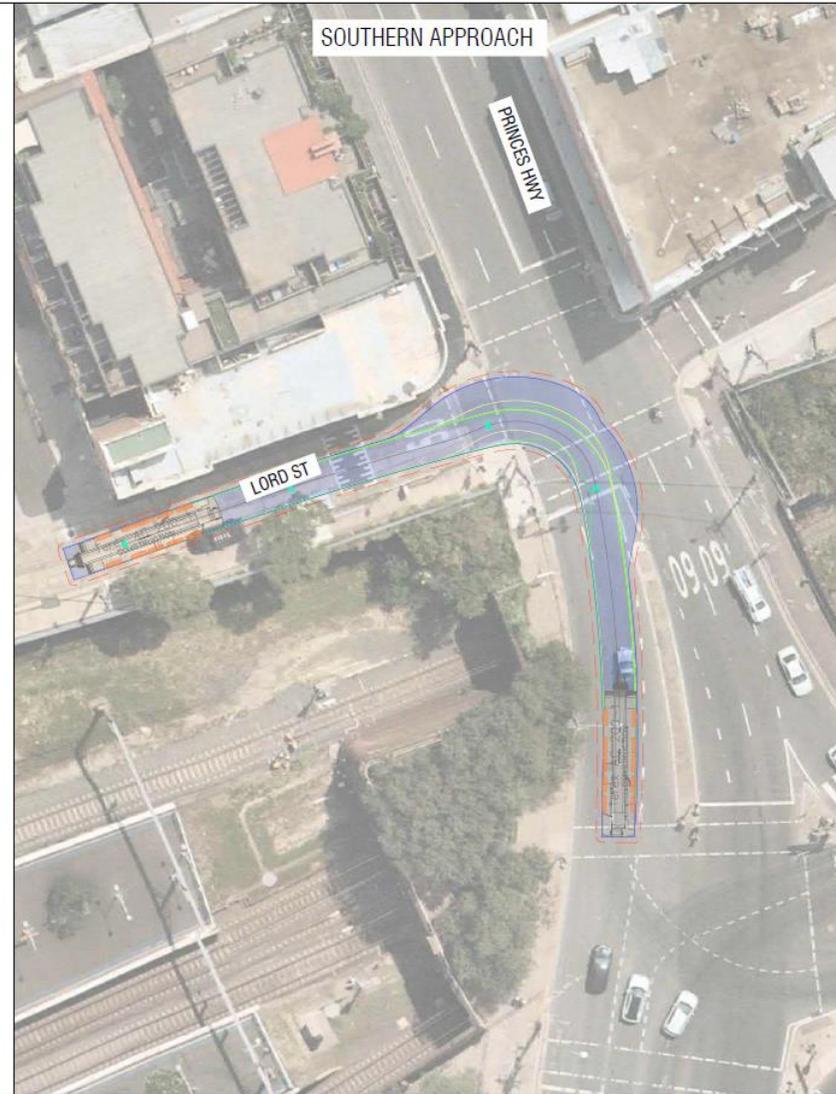
- Vehicle Path
- Vehicle Body
- Body Clearance
- Road Wheels



Trailer Width	2.20	Lock to Lock Time	1.40
Trailer Wheel	2.20	Swinging Angle	25.0
Trailer Track	2.20	Swinging Length	1.75
Trailer Truck	2.20		



TfNSW Transport Access Program  
**St Peters Station**  
**Swept Path Assessment**  
**AV**  
 FIGURE SK01-2

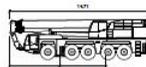


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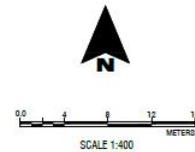
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**SWEPT PATH LEGEND**

- Vehicle Path
- Vehicle Body
- Body Clearance
- Front Wheels
- Rear Wheels



Height	1.2m
Wheel Track	1.5m
Wheel Spacing	1.2m



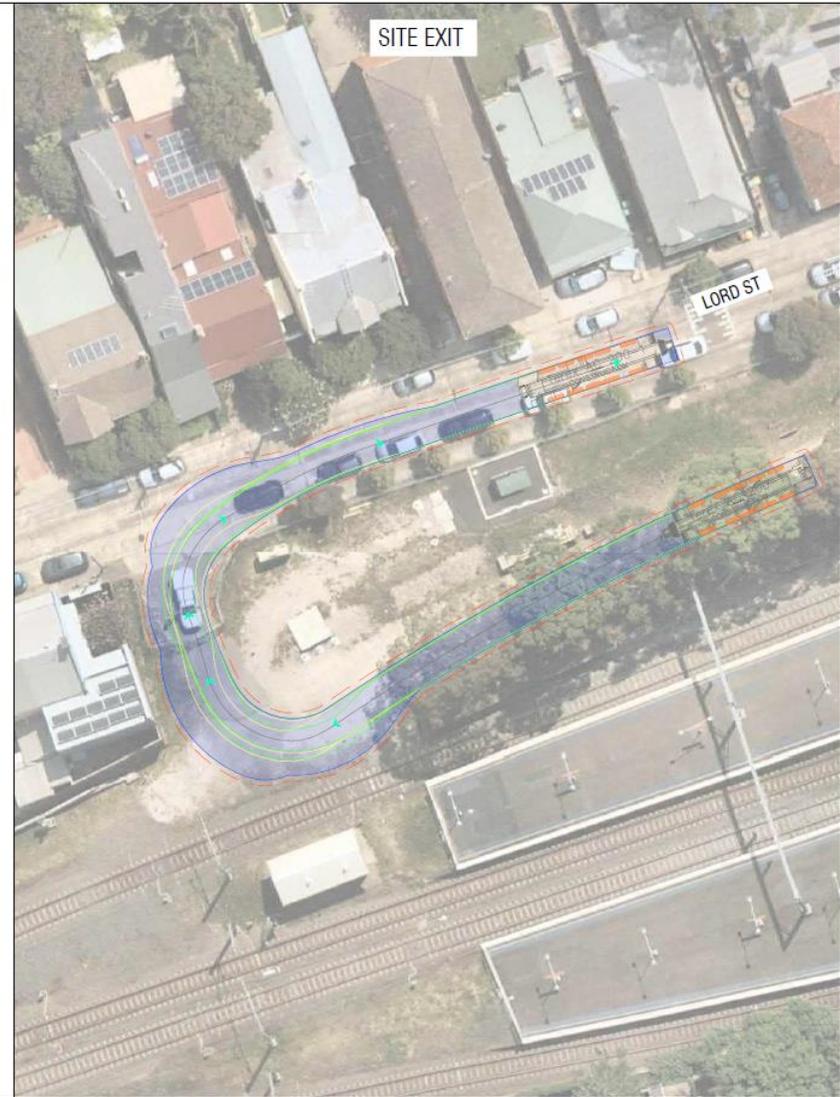
TfNSW Transport Access Program

St Peters Station

**Swept Path Assessment  
200t Crane**

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FIGURE SK02-1

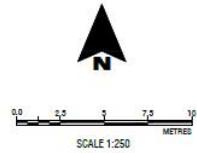
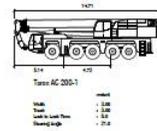


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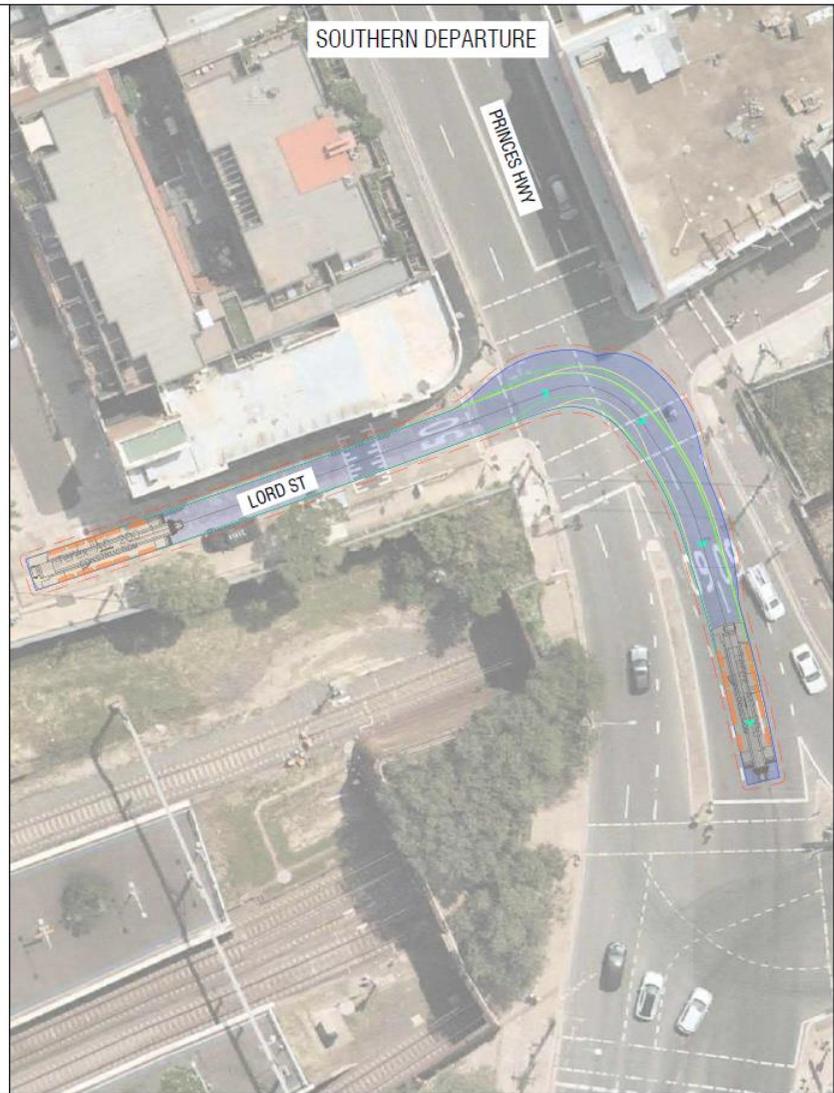
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- SWEPT PATH LEGEND**
- Vehicle Path
  - Vehicle Body
  - Body Clearance
  - Front Wheels
  - Rear Wheels



TfNSW Transport Access Program  
**St Peters Station**  
**Swept Path Assessment**  
**200t Crane**  
 FIGURE SK02-2

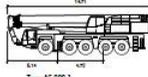


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**SWEPT PATH LEGEND**

- Vehicle Path
- Vehicle Body
- Body Clearance
- Rear Wheels
- Rear Wheels



Wheel	1000
Wheel Spacing	2000
Wheel Height	1000



TfNSW Transport Access Program

St Peters Station

**Swept Path Assessment  
200t Crane**

FIGURE SK02-3



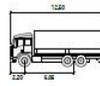
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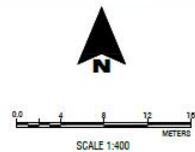
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**SWEEP PATH LEGEND**

- Vehicle Path
- Vehicle Body
- Body Clearance
- Floor Wipers



HRV	mm
Wheel	200
Track	200
Unit to Lock Time	0.5
Turning Angle	15.7



TfNSW Transport Access Program

St Peters Station

**Swept Path Assessment**

**HRV**

FIGURE SK03-1



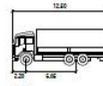
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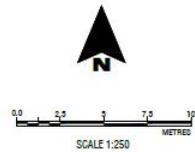
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**SWEPT PATH LEGEND**

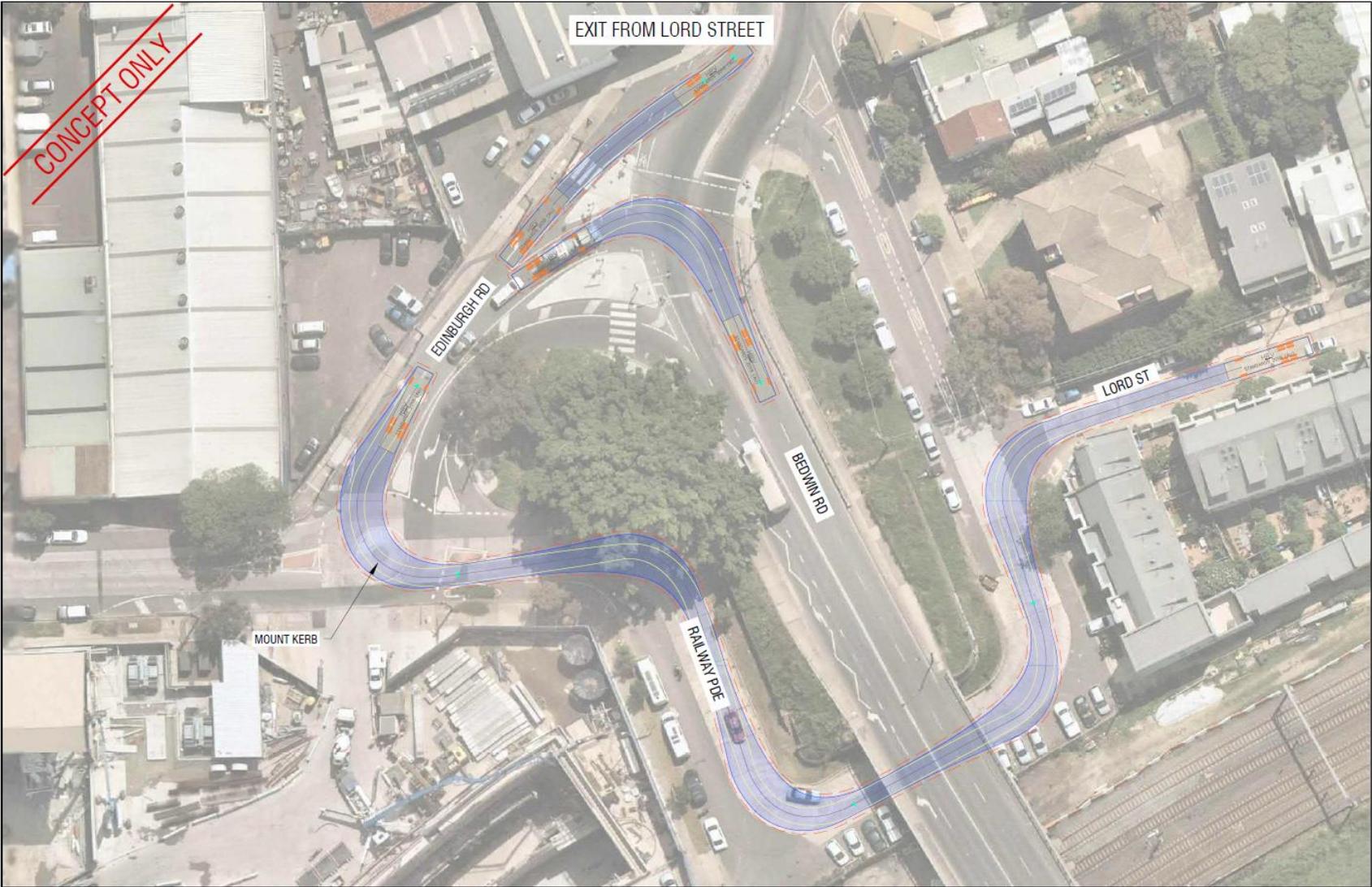
- Vehicle Path
- Vehicle Body
- Body Clearance
- Road Wheels



HRV  
 mm  
 Main 1200  
 Total Height 2500  
 Wheelbase 2500  
 Front Overhang 1500  
 Rear Overhang 500



TfNSW Transport Access Program  
**St Peters Station**  
**Swept Path Assessment**  
**HRV**  
 FIGURE SK03-2

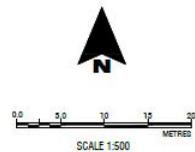
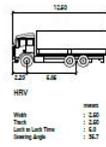


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**SWEEP PATH LEGEND**

- Vehicle Path
- Vehicle Body
- Body Clearance
- Road Widths

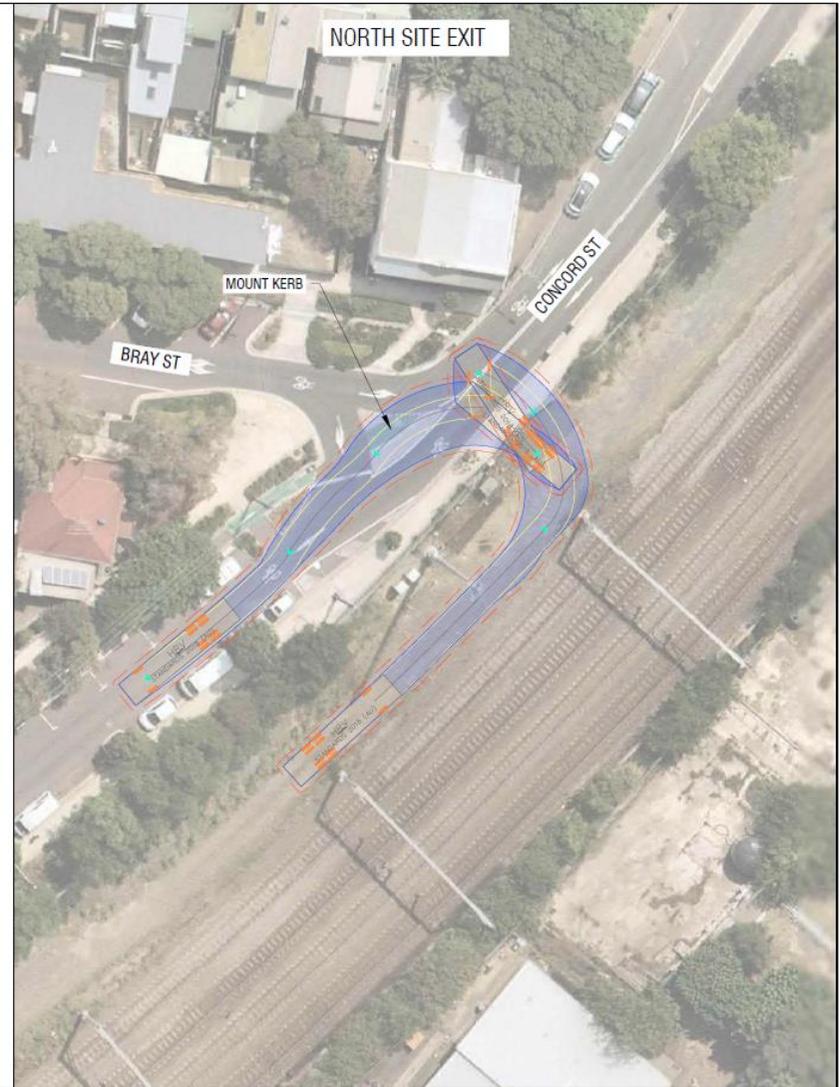
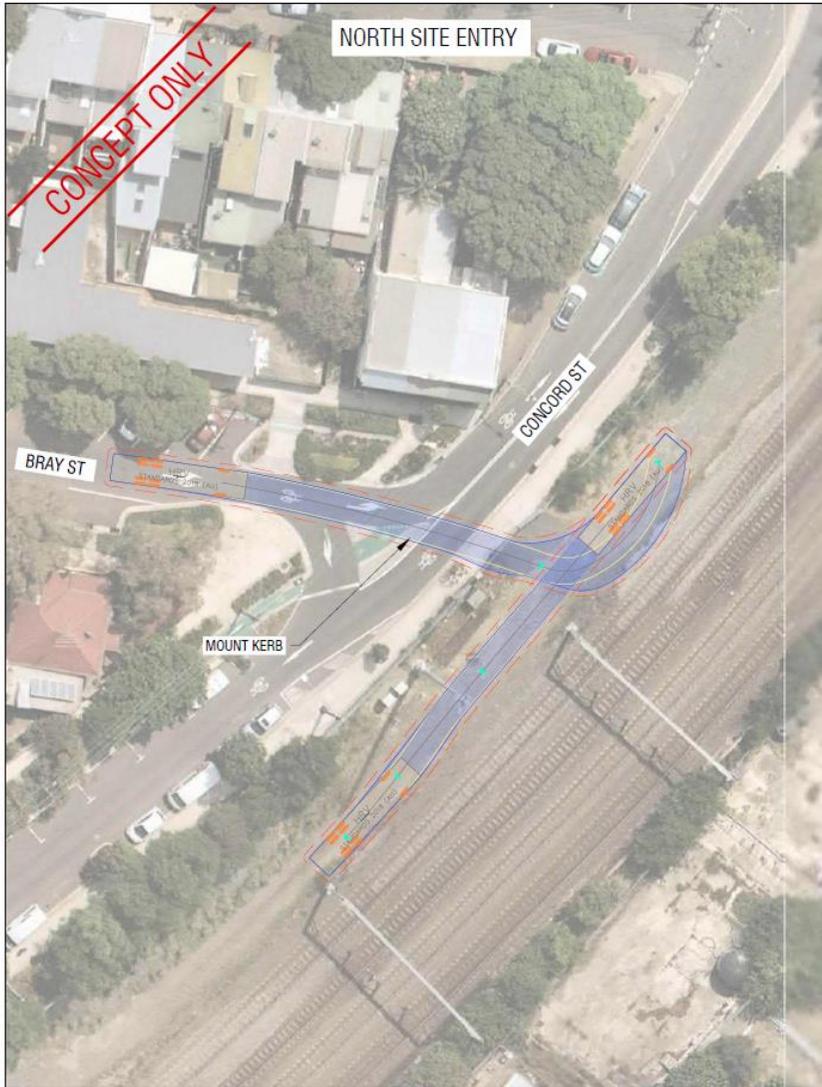


TfNSW Transport Access Program

St Peters Station

**Swept Path Assessment**  
**HRV**

FIGURE SK03-3

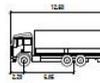


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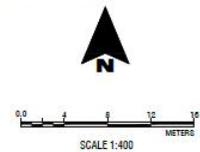
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**SWEPT PATH LEGEND**

- Vehicle Path
- Vehicle Body
- Body Clearance
- Road Wheels



HRV	12.5
Wheelbase	2.5
Height	1.5
Width	2.5
Clearance	0.7



TfNSW Transport Access Program

St Peters Station

**Swept Path Assessment**

**HRV**

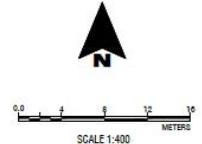
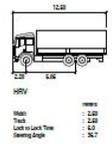
FIGURE SK03-4



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**SWEPT PATH LEGEND**  
 - Vehicle Path  
 - Vehicle Body  
 - Body Clearance  
 - Front Wheels



TfNSW Transport Access Program  
 St Peters Station  
**Swept Path Assessment  
 HRV**  
 FIGURE SK03-5

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