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Prepared for

WALKER HOMEBUSH PTY LTD

Traffic Impact Assessment
Preliminary Planning Proposal

Proposed Mixed Use Development
55-67 Parramatta Road & 12-24 Powell Street, Homebush

Ref: 0346r01
18/12/2017

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Document Control

Project No: 0346r01

Project: 55-67 Parramatta Road & Powell Street, Homebush

Client: Walker Homebush Pty Ltd

Revision History

Revision	Date	Details	Author	Approved by
-	28/11/2017	Draft	A. Jaggannath	J. Mulhaire
I	12/12/2017	Issue I	S.Hu	J. Mulhaire
II	18/12/2017	Issue II	S.Hu	J. Mulhaire

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Appendices

1 Introduction

1.1 Overview

Ason Group has been engaged by Walker Homebush Pty Ltd to prepare a Traffic Impact Assessment (TIA) in support of a Preliminary Planning Proposal to amend the planning controls that apply to 55-67 Parramatta road and 12-24 Powell Street, Homebush (the Site). The Site is located in the Local Government Area of Strathfield Municipal Council (the Council), and is therefore subject to that Council's controls.

The Preliminary Planning Proposal (PP) requests the maximum Floor Space Ratio (FSR) of 2:1 be increased to FSR 7.3:1 to facilitate a mixed-use development that is generally consistent with the Parramatta Road Urban Transformation Strategy (PRUTS) 2016. The PRUTS prepared by Urban Growth provides guidance on planning for the Parramatta Road corridor.

This TIA provides an assessment of the relevant traffic, transport and parking implications of the requested FSR. In preparing this TIA, Ason Group has referenced key planning documents, these include:

- Strathfield Consolidated Development Control Plan 2005 (DCP)
- Strathfield Local Environmental Plan 2012 (LEP)
- Parramatta Road Corridor Urban Transformation Strategy, November 2016 (PRCUTS).
- Parramatta Road Corridor Urban Transformation – Planning and Design Guidelines, November 2016 (Parramatta - PDG)
- Parramatta Road Corridor Urban Transformation Strategy – Precinct Transformation Report, November 2016 (the Parramatta Precinct Transportation Report)
- Parramatta Road Corridor Urban Transformation Strategy – Infrastructure Schedule, November 2016 (the Parramatta Precinct Infrastructure Schedule)
- Sydney CBD to Parramatta – Strategic Transport Plan, November 2016

This TIA also references general access, traffic and parking guidelines, including:

- Roads and Maritime Services, *Guide to Traffic Generating Developments* (RMS Guide)
- Roads and Maritime Services, *Guide to Traffic Generating Developments*, Updated Traffic Surveys – Technical Direction, TDT 2013/04a (RMS Guide Update)

- *The Integrated Public Transport Service Planning Guidelines, Sydney Metropolitan Area* - Transport for NSW, December 2013 (TfNSW Public Transport Planning Guidelines)
- Australian Standard 2890.1: Parking Facilities – Off Street Car Parking (AS 2890.1)
- Australian Standard 2890.2: Parking Facilities – Off Street Commercial Vehicle Facilities (AS 2890.2)

1.2 Report Structure

The report is structured as follows:

- Section 2 provides a summary of the proposed development
- Section 3 describes the existing site conditions and land use
- Section 4 summarises the key strategic planning context for the site
- Section 5 describes planned public transport, pedestrian and cycling links.
- Section 6 outlines the parking requirements applicable to the proposed development.
- Section 7 assesses the traffic impacts of the development including the Site's projected trip generation and forecasted network performance
- Section 8 discusses the site access and internal design principles of the development
- Section 9 summarises the key strategic actions and transport planning principles (delivery mechanisms) outlined in the Parramatta Precinct Transport Report and the relevance of the subject Proposal.
- Section 10 provides a summary of the key conclusions.

2 Overview of Proposal

2.1 Summary of Proposed Development

A detailed description of the Proposal is included in the Planning Report prepared by Ethos Urban. PTW Architects have prepared a reference design to identify indicative development yields, which informs this TIA. It would include residential flat buildings, ground floor retail and commercial and a child care centre, with associated basement car parking. The following summarises the key aspects from a traffic perspective of the reference design:

- 577 residential units, comprising:
  - 187 one bedroom units,
  - 328 two bedroom units, and
  - 62 three bedroom units.
- 359m^2 GFA of commercial land use.
- 2,512m^2 GFA of retail land use.
- Childcare facility with capacity for 50 children.
- Provision of 571 car parking spaces in compliance with the relevant controls.
- Vehicular access from Powell Street

Reference should be made to the reference design prepared by PTW Architects, which are submitted separately. A copy of the relevant plans is reproduced at a reduced scale for context below.

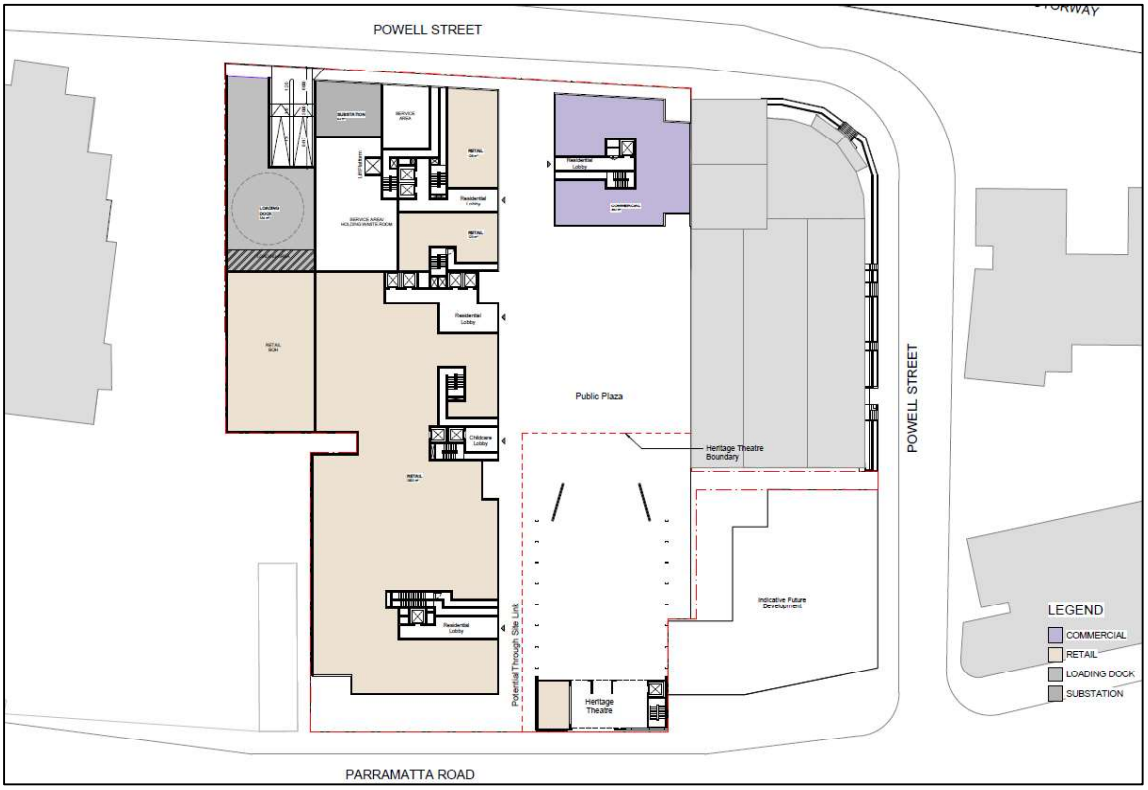


Figure 1: Ground Floor Layout

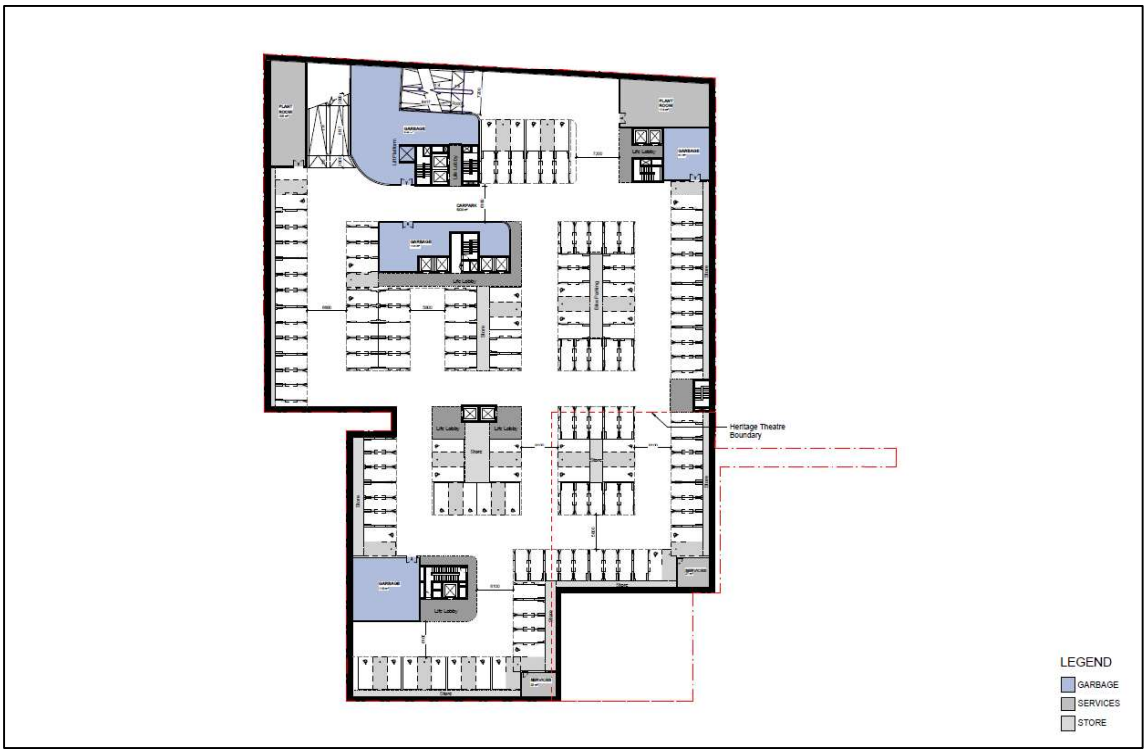


Figure 2: Basement 1 Layout

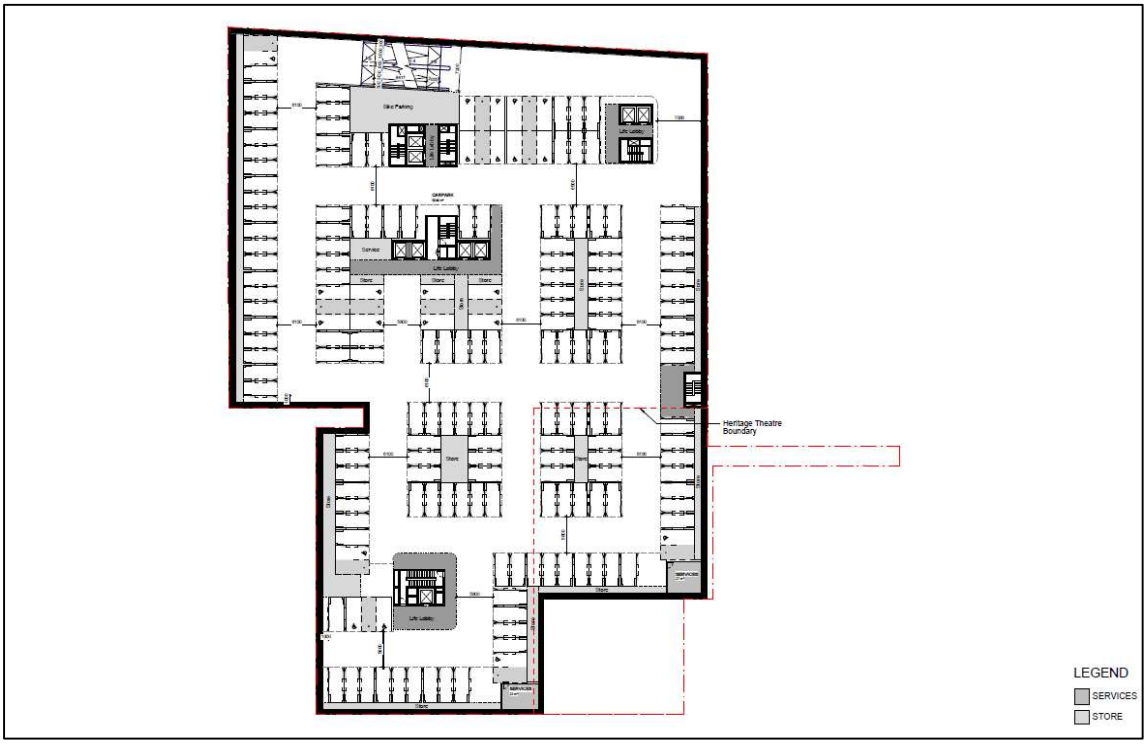


Figure 3: Basement 2 Layout

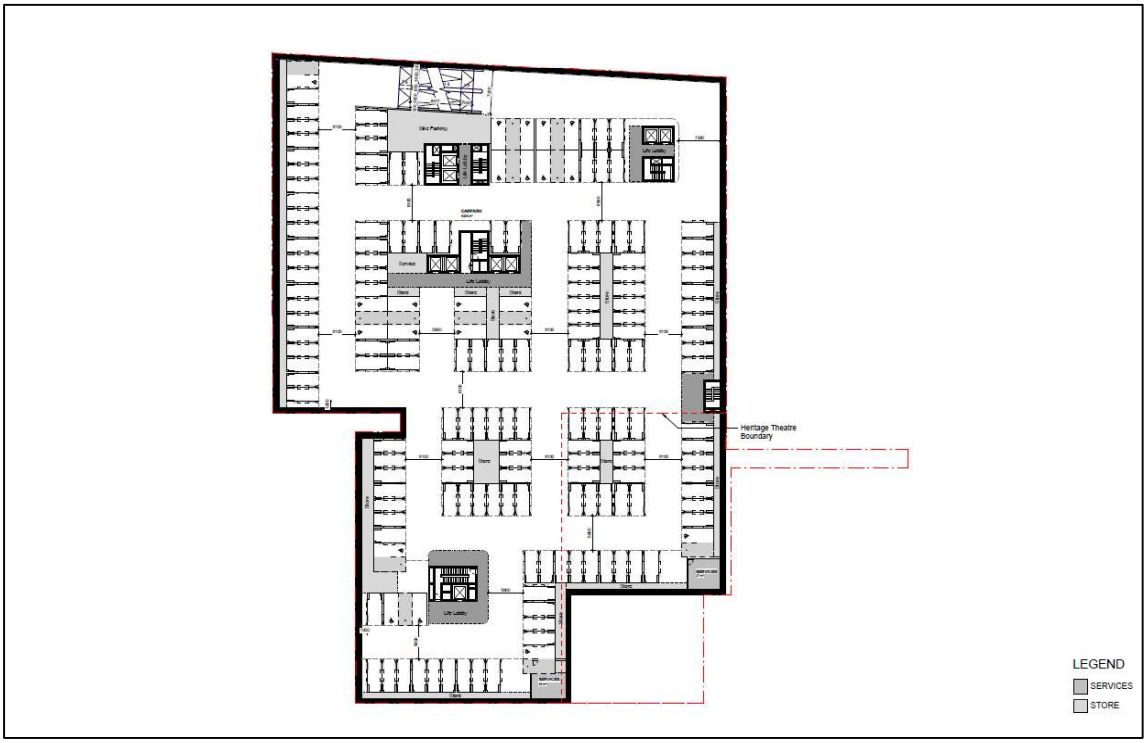


Figure 4: Basement 3 Layout

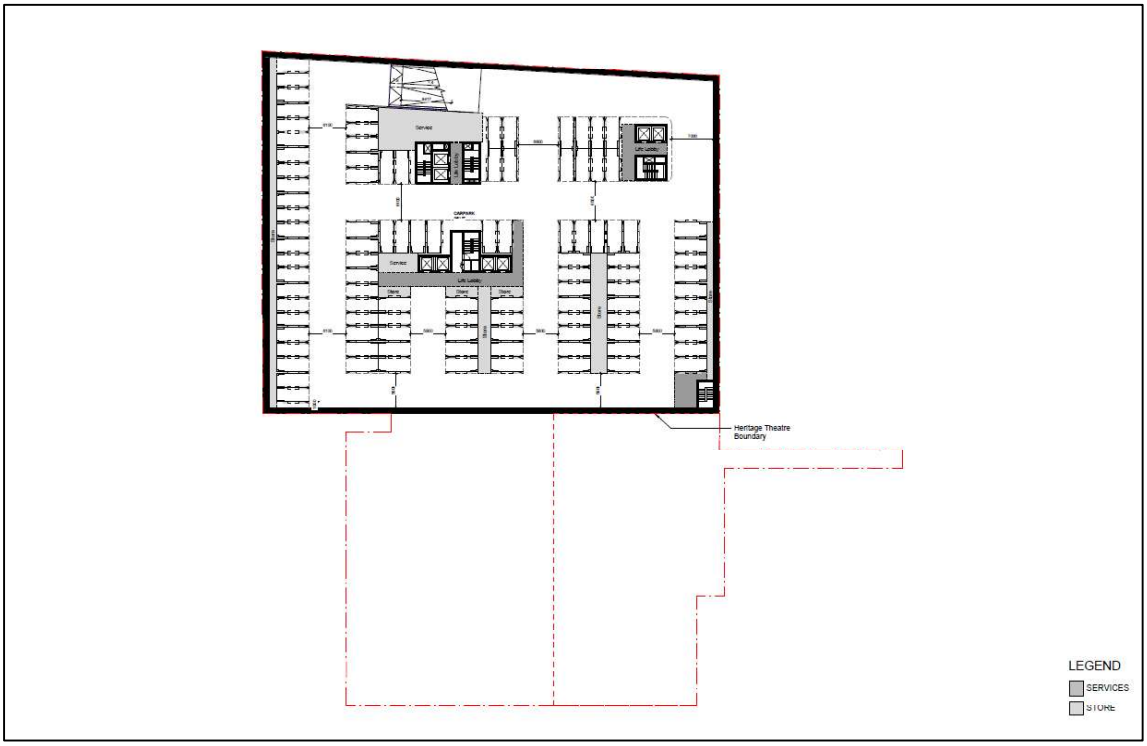


Figure 5: Basement 4 Layout

3 Existing Conditions

3.1 Site & Location

The Site is located within Strathfield Municipal Council Local Government Area in Homebush, approximately 11 kilometres west of Sydney City CBD and 10 kilometres south-east of Parramatta CBD. It has an area of 7,518m^2 with northern and southern frontages to Powell Street and Parramatta Road, respectively. Commercial developments adjoin the site to the west, and there are residential and commercial developments to the east. **Table 1** provides the site's legal description.

Table 1: Site Lot and Plan Number

Address	Lot and DP
12 Powell Street	Lot C DP 311068
14 Powell Street	Lot B DP 311068
16 Powell Street	Lot A DP 311068
59-67 Parramatta Road	Lot 19 DP477
55-57 Parramatta Road	Lot B DP310960
N/A	Lot C DP381982
	Lot B DP14460
	Lot C DP14460
	Lot D DP14460
	Lot E DP14460

A Site Plan is presented in **Figure 6** which provides an appreciation of the site and the existing conditions.

3.1.1 Existing Land Use

The Site is currently zoned Mixed-Use (B4) with a maximum FSR of 2:1 under the Strathfield Local Environment Plan 2012. It is unoccupied and contains a vacant building at the south-eastern corner, with the remainder of the site being undeveloped. Therefore, the site does not generate any traffic during the external road network peak periods.

3.1.2 Existing Site Access

Existing vehicle crossings are located at the eastern and northern Site boundaries, providing direct vehicular access to Powell Street.

3.1.3 Existing On-street Parking Controls

Unrestricted on-street parking is provided on both sides of Powell Street. Parking is not permitted on either side of Parramatta Road within the vicinity of the site. There are bus stops on both sides of the Parramatta Road immediately in front of the site.

3.2 Road Hierarchy

The key roads in the vicinity of the site are summarised in **Table 2**.

Table 2: Road Hierarchy

Road Name	Road Classification	AADT (vpd)	Comments
Parramatta Road (Great Western Highway)	State / Arterial		Parramatta Road is the southern Site boundary and generally runs in an east-west direction. It consists of three lanes in each direction, and connects with Underwood Street and Knight Street via signalised intersection and forms a priority controlled intersection with Powell Road that is restricted to left in / left out.
Underwood Road			Underwood Road has two-lanes in each direction and unrestricted on-street parking on both sides of the carriageway. It forms a priority controlled intersection with Powell Street to the west of the Site.
Powell Street			Powell Street is a local road that forms the northern Site boundary and connects with Parramatta Road (to the south east of the Site) and Underwood Street to the (north west of the Site). It has of two lanes in each direction and unrestricted on-street parking on both sides of the carriageway.

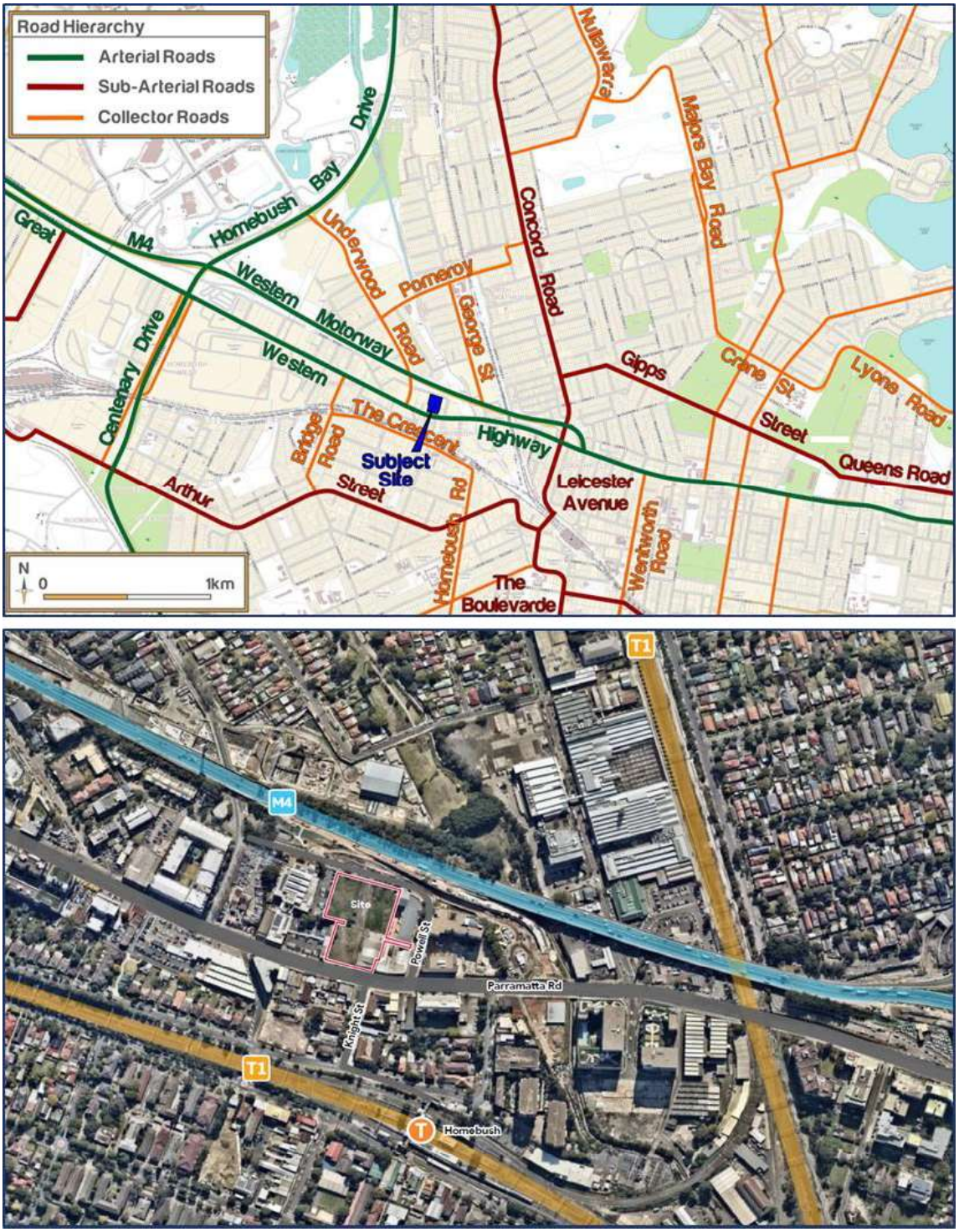


Figure 6: Site and Road Hierarchy

3.3 Existing Intersection Performance

The key intersections in the vicinity of the site are discussed below:

- Parramatta Road / Underwood Street signalised intersection operates with minimal delays; however observed queues occur on the Underwood Street approach and the right turn movement on Parramatta Road.
- Parramatta Road / Knight Street signalised intersection operates with the westbound queues from the adjacent signalised intersection (Parramatta Road / George Street to the east) intermittently extending across this intersection however on-site observations indicated that this has limited impact on the intersection performance.
- Parramatta Road / Powell Street priority controlled intersection operates satisfactorily however during peak periods; it experiences queued impacts from the intersection of Parramatta Road / George Street. It should however be noted that vehicles leaving Powell Street (left turn only) are assisted with appropriate gaps due to the proximity of the nearby signalised intersection of Parramatta Road / Knight Street to the west.

These intersections generally operate with acceptable delays during peak periods as outlined in the following baseline assessment.

3.3.1 Baseline SIDRA Performance Testing

The performance of the key intersections has been analysed using the SIDRA Intersection computer program. SIDRA modelling outputs a range of performance measures, in particular:

- *Average Vehicle Delay (AVD)* – The AVD (or average delay per vehicle in seconds) for intersections also provides a measure of the operational performance of an intersection and is used to determine an intersection's Level of Service (see below). For signalised intersections, the AVD reported relates to the average of all vehicle movements through the intersection. For priority (Give Way, Stop & Roundabout controlled) intersections, the AVD reported is that for the movement with the highest AVD.
- *Level of Service (LOS)* – This is a comparative measure that provides an indication of the operating performance, based on AVD.

The following table provides a recommended baseline for assessment as per the RMS Guide

Table 1: RMS Level of Service Summary

Level of Service	Average Delay per Vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way and Stop Signs
A	less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays & spare capacity	Acceptable delays & spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
E	57 to 70	At capacity; at signals, incidents will cause excessive delays. Roundabouts require other control mode	At capacity, requires other control mode
F	More than 70	Unsatisfactory and requires additional capacity.	Unsatisfactory and requires other control mode or major treatment.

The local network performance is provided in **Table 2** which presents the SIDRA intersection modelling results of the key intersections under the existing scenario:

Table 2: Local Network Performance, Existing Scenario

Intersection	Control Type	Period	Intersection Delay (seconds)	Level of Service
Parramatta Road / Underwood Street	Signals	AM	21	B
		PM	25	B
Parramatta Road / Knight Street	Signals	AM	13	A
		PM	11	A
Parramatta Road / Powell Street	Priority	AM	5	A
		PM	5	A

The analysis which has assessed the existing intersection performance (in isolation) indicated that the key intersections in the locality operate satisfactorily under the 'baseline scenario. Relevant SIDRA Outputs are attached at **Appendix A**.

4 Strategic Planning Context

4.1 WestConnex

WestConnex aims to deliver motorway upgrades and connect the M4 and M5 motorways for Sydney's growing population and transport demands. The key benefits of WestConnex include easing congestion, reducing greenhouse gas emissions and supporting Sydney's long term economic growth. The following projects have been identified to meet the objectives of WestConnex:

- M4 Widening — The M4 widening provides additional lanes in each direction between Parramatta and Homebush. The total project value is estimated at $497 million, and opened to the public on July 2017.
- King Georges Road Interchange Upgrade — An upgrade of the M5 / King Georges Road interchange for the preparation of the new M5 project.

  The interchange upgrade was completed and open to traffic in December 2016, with a value of $131 million.
- New M5 Motorway — The new M5 tunnel will provide a connection between Beverly Hills and St Peters. It will connect to the future M4-M5 link and also provide access to Mascot and Alexandria. The M5 motorway is expected to be completed early 2020, with a project value of $4.355 billion.
- M4 East Extension — The M4 motorway currently terminates near Concord / Strathfield. This project involves the extension of the M4 motorway to the east. The motorway extension totals 6.5km in length (including 5.5km in tunnel) and will provide the future connection between the M4 – M5 motorway. The project is expected to be completed by 2019 with a value of $3.802 billion.
- M4-M5 Link — Currently in the planning stage, the M4-M5 link will provide a connection between Haberfield and St Peters via a tunnel, with provision to access the M4-M5 link at the Rozelle interchange. The future connections to Western Harbour Tunnel and Beaches Link are also under consideration.

In a local context, WestConnex will provide access to the M4 motorway via a westbound on-ramp connecting to Parramatta Road (between Powell Street and George Street), east of the subject Site. **Figure 7** and **Figure 8** provide an illustration of the proposed M4 on-ramp and the subject site context.

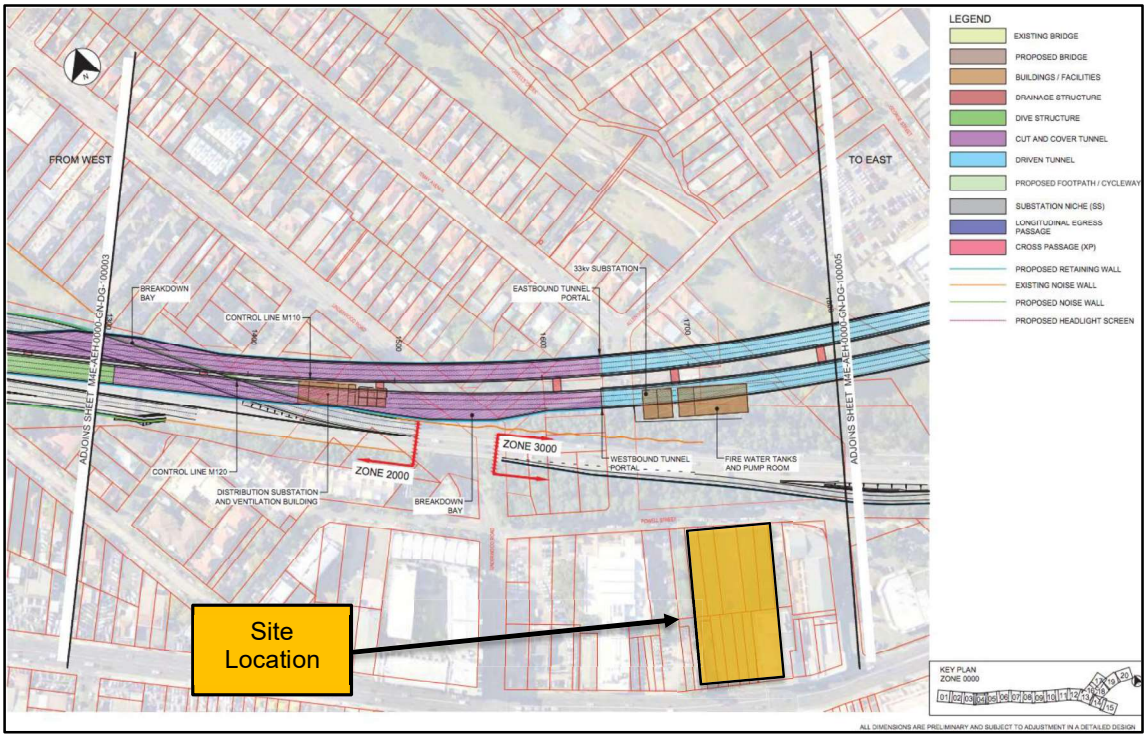


Figure 7: Proposed WestConnex M4 Westbound On-ramp

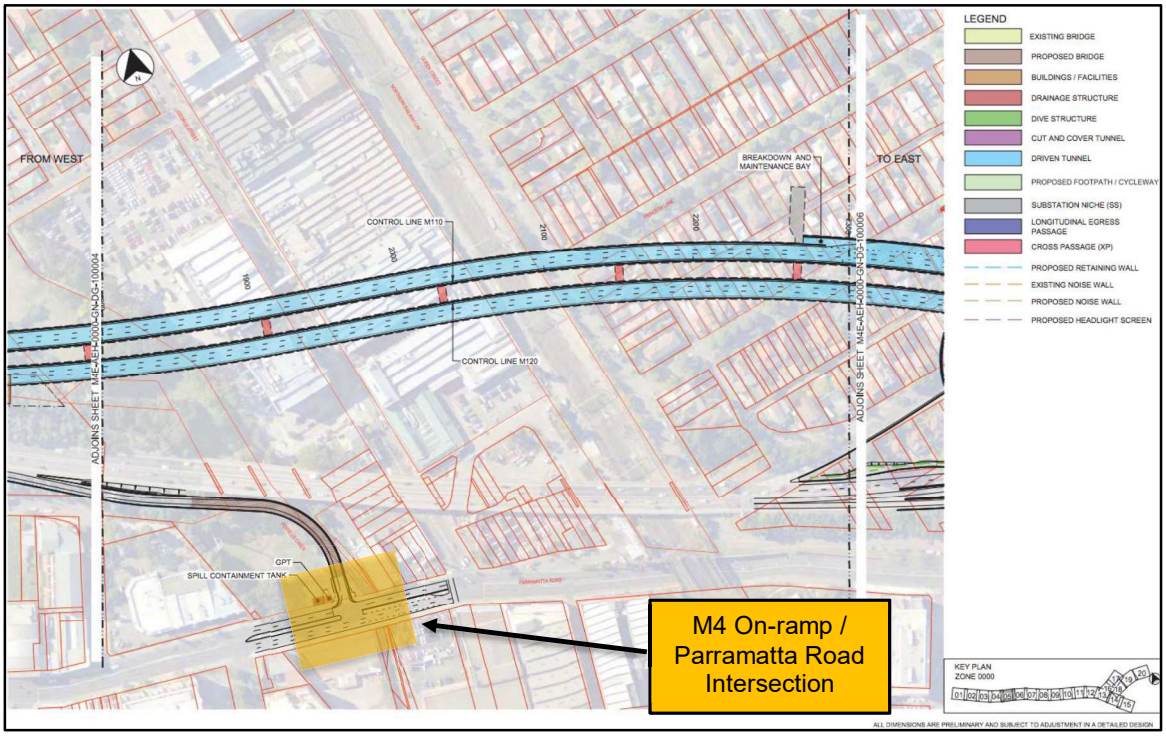


Figure 8: Proposed WestConnex M4 Westbound On-ramp / Parramatta Road Intersection

4.2 Parramatta Road Study Area and Corridor

The Site is within the Parramatta Road Urban Transformation Corridor, which includes land with direct frontage to Parramatta Road. The Parramatta Road Corridor (the Corridor) is planned as an urban renewal area focusing on increased housing, economic activity and social infrastructure. The Corridor is divided into 8 precincts (including the Homebush Precinct), which are identified as having the potential to support growth, with access to public transport, services, and jobs. The Urban Transformation Corridor is shown in **Figure 9.**

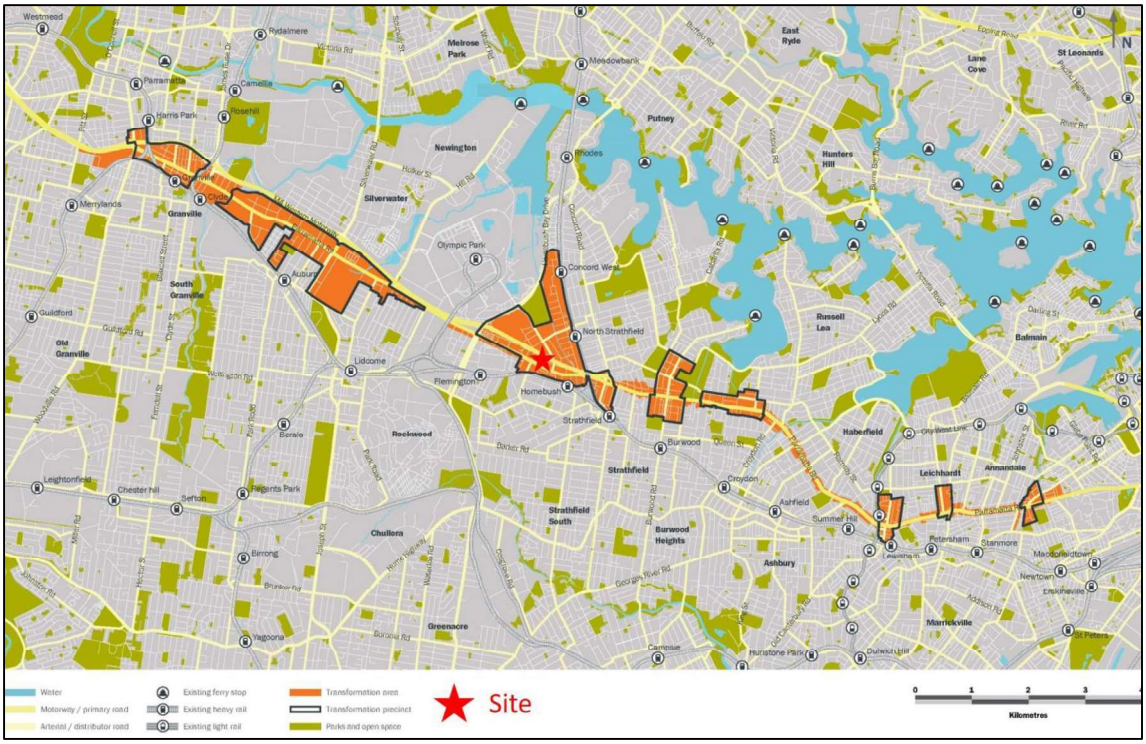


Figure 9 - Site with the Urban Transformation Corridor

One of the seven principles in the PRUTS is to provide "accessible and connected" modes of transport. This occurs over two stages, 2016-2023 and post 2023. Land Use change is expected to occur pre-2023, and the NSW government is currently exploring long term (post 2023) rail and light rail options to serve the corridor.

In order to satisfy the "accessible and connect" principle, the following strategic actions are outlined within the PRUTS:

- Strategic action for an integrated transport actions

- Strategic action for on-street rapid transit for Parramatta Road
- Strategic actions for street function framework

4.2.1 Homebush Precinct

The Site is within the Homebush Precinct, which has a vision to provide a residential hub with supporting mixed-use developments. An additional 5,250 dwellings and 7,250 jobs are targeted by 2050 to accommodate a population of 19,750.

The Parramatta Road Urban Transformation Strategy Planning and Design Guidelines (PDG) identifies Parramatta Road as a Movement Corridor and Powell Street as a local road. Both roads are also expected to be high pedestrian activity areas. **Figure 10** provides an illustration of the Homebush Precinct structure plan.

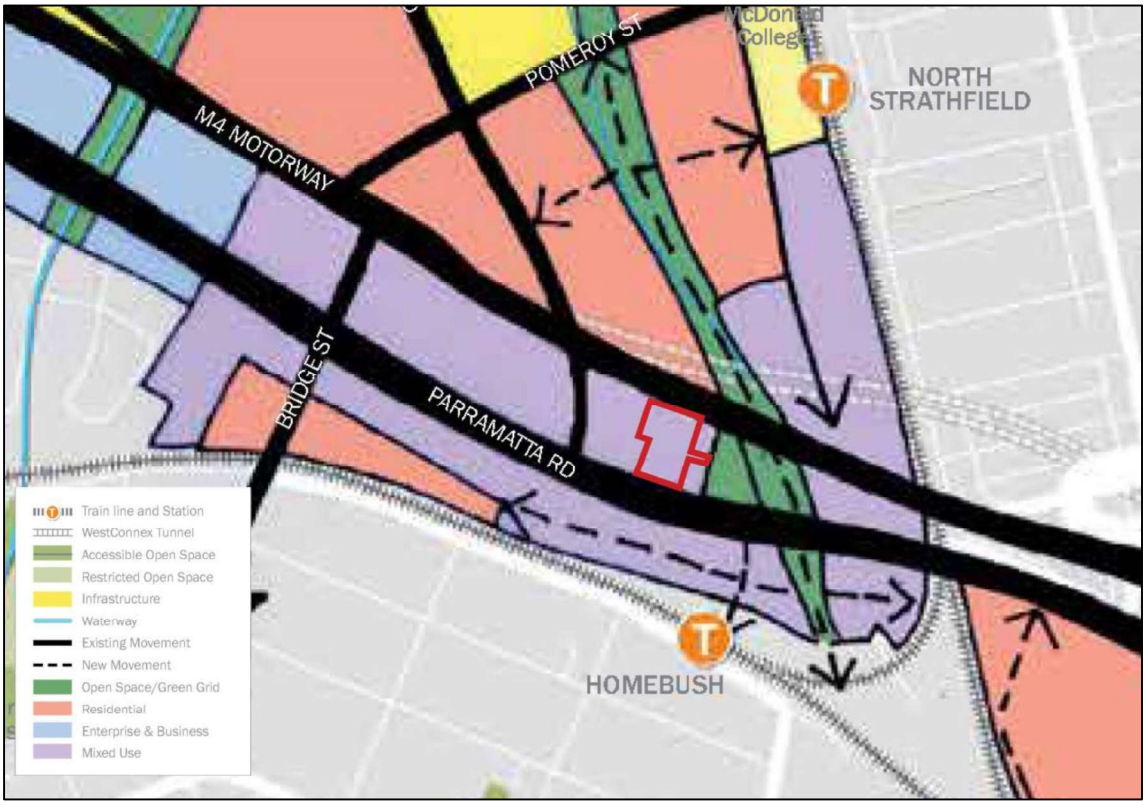


Figure 10: Homebush Precinct Structure Plan
Source: Parramatta – PDG

4.2.2 Transport Infrastructure Upgrades

The Paramatta Road Strategy Infrastructure Schedule identifies the following transport infrastructure upgrades to facilitate the Homebush precinct structure plan:

▪ **Parramatta Road / George Street**	Extension or duplication of the westbound right turn bay Extension of George Street to the south to create a four-leg intersection and facilitate development to the south Provision of additional capacity on the northern approach.
▪ **Pomeroy Street / George Street and Pomeroy Street / Underwood Street**	Detailed investigation is required of these intersections; however, capacity improvement options may be affected by the Parramatta Light Rail route
▪ **Parramatta Road / Cooper Street**	Upgrade to a signalised intersection (including pedestrian and cycle crossing) for improved connectivity to Strathfield
▪ **Parramatta Road / Derowie Avenue**	Upgrade to a signalised intersection for improved north-south traffic movement within the Homebush Precinct

It should be noted that these infrastructure improvements have been classified of regional importance and would be the responsibility of the RMS and Council, however the cost of each intersection upgrade is yet to be determined.

4.2.3 Parramatta Road Corridor Urban Transformation – Planning and Design Guidelines

The PDG has been developed to assist designers and planners to apply “best practice” design principles in order achieve the long-term visions of the PRCUTS. The PDG does not supersede current development controls, however it informs future controls in Local Environmental Plans and Development Control Plans for land located within the Parramatta Road corridor. The Guideline has been prepared to assist both planning professionals in local and State Government and in order to provide guidance to landowners and associated project development teams.

Under the PDG, the subject Site has been nominated for mixed land use zoning (B4), as illustrated in **Figure 11**. The following maximum parking rates are specified for the Homebush Precinct (Category 2):

- Residential
  - Studio 0.3 spaces per dwelling
  - 1-Bedroom 0.5 spaces per dwelling
  - 2-bedroom 0.9 spaces per dwelling
  - 3-bedroom 1.2 spaces per dwelling
  - Visitors 0.1 spaces per dwelling
- Commercial 1 spaces per 100m^2 GFA
- Retail 1 spaces per 70m^2 GFA

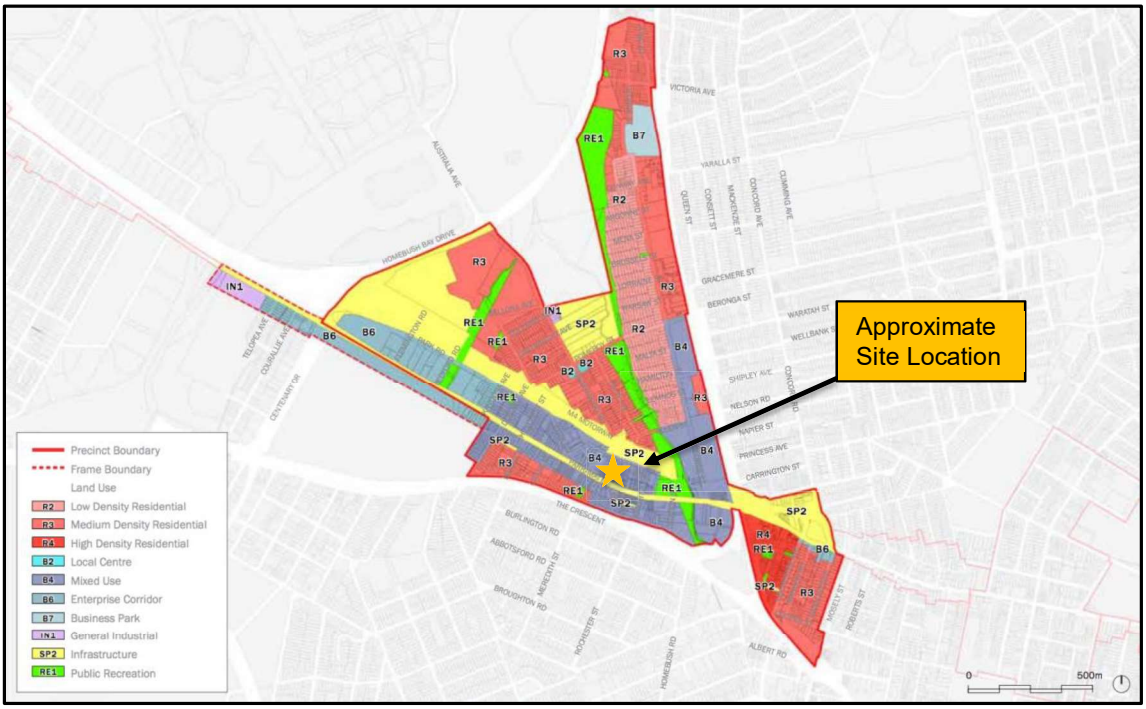


Figure 11: Recommended Land Zoning for Homebush Precinct

4.2.4 Parramatta Road Precinct Transportation Report (2015)

The Parramatta Road Precinct Transportation Report has been developed to establish high level strategic framework and provide an indicative development guidance for each precinct within the Parramatta Road corridor. The following transport planning principles have been adopted to achieve a liveable urban environment and facilitate future developments:

- "*Improve north-south connectivity across Parramatta Road for all road users.*
- *Improve street network permeability across the Corridor, particularly for pedestrians and cyclists.*
- *Improve the quality of public transport, walking and cycling networks, access and connectivity to and within Precincts and Frame Areas.*
- *Support an improved urban environment with areas designated for greater levels of street activity.*
- *Facilitate local access needs for new development to support the needs of residents and businesses.*
- *Encourage travel behaviour change to discourage car use and support more sustainable travel"*

The Parramatta Precinct Transport Report notes the NSW government has not undertaken modelling the Homebush Precinct to identify the future road network improvement under the future planning controls.

Planning Proposals are expected to be generally consistent with the PRCUTS, and **Table 3** outlines the key considerations to be addressed by any Preliminary Planning Proposal.

Table 3 - Parramatta Precinct Transport Report - Planning Proposal Considerations

Consideration	Relevant Section
Demonstrate consistency with the transport principles and Strategic Actions outlined in the Strategy, including any transport targets identified for the relevant Precinct or Frame Area	Section 9
Outline existing traffic and parking conditions	Section 3.1.3, 3.2 and 3.3
Assess the traffic generating qualities of the proposal(s)	Section 7
Consider existing and committed transport provision and its capacity to support the proposal(s)	Section 4 and 9
Identify mitigation measures to address transport impacts of the proposal(s).	Section 9

5 Public Transport, Cycling and Pedestrian Access

The Site is well serviced by local public transport infrastructure. The key rail and bus services local to the Site are presented in **Figure 12** and **Figure 13**, and summarised below.

5.1 Railway Services

The Integrated Public Transport Service Planning Guidelines, Sydney Metropolitan Area (Transport for NSW, December 2013) state that rail services influence the travel mode choices of areas within 800 metres walk (approximately 10 minutes) of a railway station. It is therefore noteworthy that the Site is located approximately 200 metres (3 minutes) walking distance to Homebush Station and 600m (9 minutes) walking distance to Strathfield Station. Homebush and Strathfield Stations are served by T1 North Shore and Western line services, with connections to the Sydney CBD, Parramatta CBD, Epping and Chatswood. Furthermore, both are also served by the T2 – Airport, Inner West and South Line providing connections to the Airport and Liverpool.

5.2 Bus Services

Having regard to the standard bus travel, the Integrated Public Transport Service Planning Guidelines state that bus services influence the travel mode choices of sites within 400 metres (approximately 5 minutes) of a bus stop. The Site is well serviced by three bus stops within 400 walking distance of the Site as shown in **Figure 12**; these include:

- Bus service X25 provides connections between Strathfield Station and Sydney Olympic Park with approximately 10 min – 15 min frequencies during the peak period.
- Bus service 525 provides connections between Parramatta and Burwood via Sydney Olympic Park, with a frequency of approximately every 15 minutes - 30 minutes during peak hour period.
- Bus service 526 provides connections between Burwood and Rhodes Shopping Centre with frequency of approximately every 15 minutes - 20 minutes during peak hour periods.
- Bus service 406 provides connections between Five Dock and Hurlstone Park with frequencies of approximately every 30 minutes during peak hour periods

5.3 Pedestrian Accessibility

Parramatta Road and Powell Street have footpaths that allow pedestrian access to Homebush Station to the south via Knight Street, and bus stops to the north, east and south. Pedestrian crossing facilities are provided at the signalised intersections of Parramatta Road / Underwood Street and Parramatta Road / Knight Street, which is in front of the site.

5.4 Existing Cycle Routes

There are currently limited cycling facilities and routes provided within the proximity of the development. With reference to **Figure 12,** numerous cycle routes are provided around the Site, including Queen Street, Pomeroy Street and Concord Road.

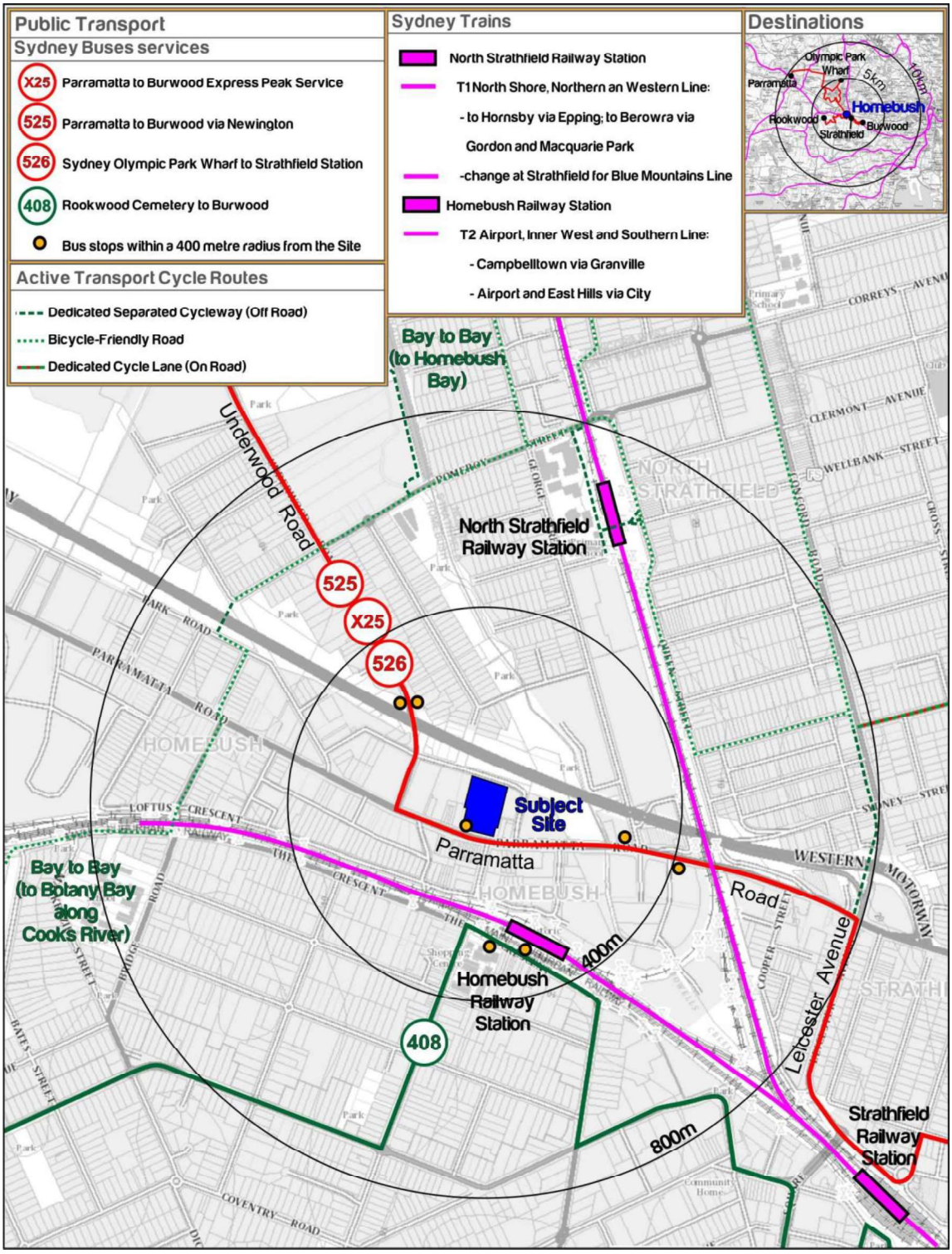


Figure 12: Public Transport Network

Figure 13: Site Locality Plan

6 Parking & Servicing Requirements

6.1 Council Car Parking Requirement

Parking proposed within the reference design has been reviewed in accordance with Strathfield Municipal Council DCP 20, Section 2.13 – Vehicular Access and Car Parking. **Table 4** provides an overview of Councils current parking requirement and the future PDG parking rates.

Table 4 - Strathfield Council and PDG Parking Requirement

Use		Strathfield Council DCP – Minimum Parking Rate	Parramatta – PDG Maximum Parking Rate
Residential	1-bedroom	1 space per unit	0.5 space per unit
	2-bedroom	1 spaces per unit	0.9 space per unit
	3-bedroom	1.5 spaces per unit	1.2 space per unit
	Visitors	1 space per 5 units	0.1 space per unit
Commercial		1 spaces per 100m^2 Gross Floor Area	1 spaces per 100m^2
Retail		1 spaces per 25m^2 Gross Floor Area	1 space per 70m^2
Childcare Centre		1 visitor parking per employee 1 visitor space per 8 children (or part thereof) 2 additional parking for associated residence	-

These parking rates have been applied to the reference design in **Table 5**.

The employee numbers of the Childcare Centre are currently unknown and would be subject to further assessment at the relevant DA stage. It is intended to fully comply with Strathfield Municipal Council DCP requirement.

Table 5: Minimum Car Parking Rates

Land Use		Yield	Strathfield Council DCP Min Parking Requirements	Parramatta – PDG Max Parking Requirement	Reference design Parking Provision
Residential	One Bedroom	187 units	187	94	
	Two Bedroom	328 units	328	295	463
	Three or more Bedroom	62 units	93	74	
	Visitor	577 units	115	58	58
Commercial		359m^2	4	4	4
Retail		2,512m^2	100	36	36
Childcare Centre		50 children	7	-	
		employees	unknown	-	10
		2 additional spaces for associated residence	2	-	
Total			**836**	**561**	**571**

Application of Council's rates to the reference design yield results in a minimum requirement of 836 car parking spaces. Council's existing parking requirements would however be superseded by the Parramatta PDG.

In contrast to Council's parking requirements, the PDG parking controls limit parking to a maximum of 561 parking spaces for the residential and retail land use components. The childcare centre will require 10 parking spaces under Council's controls as associated residence is not considered in Preliminary planning stage. This results in a total parking provision for 571 spaces. Accordingly, the reference design developed by PTW architect includes a maximum of 571 spaces within basement car park. Accordingly, the proposed car parking provision is supportable confirming that compliance can be achieved with the maximum rates and demonstrating consistency with the Parramatta PDG Maximum provisions. The provision of 571 spaces would satisfy the PDG parking requirements, and takes into consideration the likely demand for childcare staff parking.

The Proposal would therefore be supported noting that parking compliance would be a matter for further detailed assessment at the relevant DA stage.

6.1.1 Bicycle Parking

Council's DCP Section 22.7 Part C requires bicycle spaces to be provided at the following rates for residential developments:

- 1 bicycle parking space per 5 units for residents within the residential car park area and,
- 1 bicycle parking space (in the form of rails) per 10 units for visitors in the visitor car parking area.

Subject to amendment of the planning controls as requested, a Development Application will be submitted for the project. Bicycle provisions will be detailed in that DA noting that the reference design is capable of compliance.

6.1.2 Servicing and Waste Collection

The reference design includes a loading dock accessed via a service vehicle access driveway to Powell Street, west of the basement car park access driveway. The loading dock has been designed to accommodate up to 8.8m Medium Rigid vehicles (MRV) trucks by providing a single loading bay assisted by a mechanical turntable. The loading bay space is provided with a clear width of 3.5m and a length of up to 13 metres, which meets the minimum requirements of AS 2890.2.

With regard to waste collection, garbage storerooms are provided on the basement level adjacent to the northern Site boundary. Prior to collection, waste would be transferred from the individual storerooms to a main storeroom located adjacent to the loading dock for collection by Council or a private contractor. In accordance with Councils DCP, the proposed development can demonstrate access via an 8.8m MRV as defined by the Australian Standards (AS2890.2). In summary, it is considered the reference design is capable of compliance with servicing and loading facilities, and this will be demonstrated in a future Development Application.

7 Traffic Assessment

7.1 Traffic Generation

The traffic impacts of the reference design have been assessed having regard for the RMS Guide to Traffic Generation Developments (2002). The current Preliminary Planning Proposal request for planning control amendments. The reference design indicative yield includes 577 residential dwellings, 359 m^2 of commercial floor space, 2,512m^2 of retail floor space and 419m^2 of childcare centre. The childcare centre provides a capacity of 50 children. The following generation rates were adopted for the relevant land uses:

- 0.19 trips per dwelling and 0.15 trips per dwelling during the AM and PM peak hour, respectively.
- 1.6 trips per 100m^2 commercial GFA during the AM peak hour, and 1.2 trips per 100m^2 retail GFA during PM peak hour.
- 4.6 trips per 100m^2 retail GFA during the PM peak hour, and 1.38 trips per 100m^2 retail GFA during AM peak hour (30% of PM peak).
- 0.8 trips per child and 0.7 trips per child during the AM and PM peak hour, respectively.

Application of these trip rates to indicative development yield results in a forecast peak hour traffic as follows:

- AM peak hour
  - 110 peak hour trips associated with the residential units.
  - 6 peak hour trips associated with the commercial development.
  - 35 peak hour trips associated with the retail development.
  - 40 peak hour trips associated with the child care centre.
- PM peak hour
  - 87 peak hour trips associated with the residential units.
  - 4 peak hour trips associated with the commercial development.
  - 116 peak hour trips associated with the retail development.
  - 35 peak hour trips associated with the child care centre.

Given the site does not currently generate any traffic, the total reference design traffic represents a net increase in traffic generation, as follows:

- 191 morning peak hour trips (74 arrival trips, 117 departure trips).
- 242 evening peak hour trips (113 arrival trips, 129 departures trips).

The impacts of these additional trips are assessed further below.

7.2 Traffic Distribution

Distribution of these trips has been estimated based on relevant Journey to Work census data of existing residents within the PWS Precinct, as summarised below:

- 59% of vehicles would depart from Powell Street and would travel eastbound via Parramatta Road. This is mostly associated with trips to/from Sydney CBD, inner west suburbs, eastern suburbs and south-eastern suburbs. Right turn onto Powell Street is banned, so the incoming vehicles would turn right at the Parramatta Road / Underwood Road intersection.
- 18% of vehicles arriving/departing to the west and south-west via Underwood Road and Parramatta Road. These trips are mainly associated with trips to/from Bankstown, Hurstville, Auburn, Merrylands and Liverpool.
- The remaining trips (23%) would use Underwood Road north-west of Powell Street and would not have any impact on any of the three intersections within the study area.

Having regard for these directional splits, the resulting impact on the operation of the critical intersections in the locality is discussed below.

7.3 Traffic Impacts – Existing Road Network

The additional traffic generated by the reference design is moderate and will result in approximately 3-4 additional vehicle movements every minute during the morning and evening peak periods. The impact of the reference design on the critical intersections in the locality have been assessed as a net increase over and above the existing on-street conditions using SIDRA 7.0 Intersection Modelling Software and the results of this analysis are summarised in **Table 4**.

Table 4: Local Network Performance, Cumulative Future Scenario

Intersection	Scenario	Period	Intersection Delay (seconds)	Level of Service
Parramatta Road / Underwood Road	Baseline	AM	21	B
		PM	25	B
	With Development	AM	28	B
		PM	39	C
Parramatta Road / Knight Street	Baseline	AM	13	A
		PM	11	A
	With Development	AM	14	A
		PM	12	A
Parramatta Road / Powell Street	Baseline	AM	5	A
		PM	5	A
	With Development	AM	5	A
		PM	5	A

The SIDRA analysis indicates that the 'net' traffic volumes arising from the reference design would result in only moderate increases in delay and importantly Level of Service (LoS) would remain unchanged, except for Parramatta Road / Underwood Road intersection where LoS changed from B to C. In summary, the traffic impact analysis concludes that the net traffic generation volumes are of a sufficiently low order that once distributed on to the surrounding road network, the impacts of these volumes at the key intersections would be negligible and the intersections would operate as currently occurs.

7.4 Traffic Impacts – Future

The Parramatta Road Urban Transformation Strategy which identifies an FSR of 5.01:1 for the subject site should be considered in comparison of the planning control amendment (FSR 7.3:1) requested as part of this application. For the purpose of this comparison, an indicative yield has been developed and a PRUTS compliance scheme would enable the delivery of:

- 387 units,
- 359m^2 GFA of commercial land use,
- 2,512m^2 GFA of retail land use.

- Childcare facility with capacity for 50 children. (consistent with the that outlined in the preceding sections).

Application of the adopted trip rates to indicative development yield for a PRUTS compliant scheme results in a forecast peak hour traffic as follows:

- 155 veh during the AM peak period and
- 213 trips during the PM peak.

The resultant net increase in traffic generation between the reference design (FSR 7.3:1) and the PRUTS scheme (FSR 5.01:1) would therefore equate to 36 veh/hr during the AM peak period and 29 veh/hr during the PM peak period. This represents less than 1 additional vehicle very minute.

Notwithstanding the above, the future traffic distribution on the external road network associated with the impact of the Westconnex ramp would likely alter the operational characteristics of Parramatta Road key intersections. Whilst the existing analysis estimates minimal impact (Section 7.3) It is likely that any upgrade works would be redundant in light of the long-term infrastructure planning within Homebush Precinct and Parramatta Road Corridor.

Bitzios are preparing a Precinct-wide traffic study on behalf of Strathfield, Burwood and Canada Bay Councils. It will identify suitable infrastructure requirements to ensure that the road network operates at an acceptable level. Furthermore, any future development of the Site in accordance with the PRUTS would be expected to contribute towards any recommended infrastructure works required to support the development of the Precinct, as part of the standard Special Infrastructure Contributions (SIC).

The Precinct-wide traffic analysis will incorporate the traffic generation for the site and further site-specific traffic modelling is therefore not required particularly as it is part of the planning proposal process. Precinct-wide infrastructure upgrades have not been finalised prior to a development application on the site, then additional localised traffic modelling may be required at that time.

All sites within the Precinct, (and the Parramatta Road urban renewal corridor more generally) would be expected to make infrastructure contributions in support of any Precinct-wide improvement works, including works related to improvements to pedestrian and cycle connectivity. The Site is well placed to take advantage of the existing and proposed public and active transport services within the Homebush Precinct. As such, future residents and employees will have convenient and suitable opportunities to travel to/from work without the use of a private vehicle. As such, the proposal will simultaneously assist in achieving the development and transport infrastructure outcomes envisaged for the Parramatta Road Corridor.

8 Design Commentary

8.1 Relevant Design Standards

The site access, car park and loading areas will be designed to comply with the following relevant Australian Standards:

- AS2890.1 for car parking areas;
- AS2890.2 for commercial vehicle loading areas;
- AS2890.6 for accessible (disabled) parking.

The following characteristics are noteworthy and would be accommodated in future detailed designed at the DA stage:

- A future project will provide User Class 1A and 3A car parking, with car park access via a local road (Powell Street). Accordingly, with 571 parking spaces, AS2890.1 requires a Category 3 access facility (6m entry lane, 4m exit lane and a 1-3m median).
- All resident and childcare staff parking spaces will be designed in accordance with a User Class 1A and will be provided with a minimum space length of 5.4m, a minimum width of 2.4m and a minimum parking aisle width of 5.8m.
- All childcare visitor and retail customer parking spaces will be designed in accordance with a User Class 3A and will be provided with a minimum space length of 5.4m, a minimum width of 2.6m and a minimum parking aisle width of 6.6m.
- All disabled and adaptable parking spaces will be provided in accordance with AS2890.6, which requires a space with a clear width of 2.4m and located adjacent to a minimum shared area of 2.4m.
- A minimum carriageway width of 5.5m is provided for vehicle circulation areas.

The reference design demonstrates that a future project will be capable of compliance with the above Standards, which will be incorporated into the design and addressed as standard conditions of consent.

8.2 Service Vehicle Access

Commercial (heavy) vehicle facilities within the reference design have been designed having regard to the operational requirements of the future tenants and the requirements of AS2890.2:

- The internal design of the service area is in accordance with the requirements of AS28090.2 for a maximum 8.8m long Medium Rigid Vehicle.
- A minimum clear head height of 4.5m within all areas traversed by service vehicles.
- A minimum bay width of 3.5m, and
- All service vehicles can enter and exit the site in a forward direction.

Swept path analysis is provided at Appendix B, which demonstrates the concept project is compliant with relevant sections of AS2890.2.

9 Parramatta Precinct Transport Guidelines

The reference design is consistent with the key strategic actions of the PRUTS (traffic related), and the transport planning principles (delivery mechanisms) outlined in the Parramatta Precinct Transport Report. **Table 6** provides an overview of the reference design components, demonstrating how it achieves the key transport planning objectives.

Table 6: Transport and Traffic Planning Strategy

Planning Proposal Considerations	Action Strategy / Transport Planning Principle	Response
Demonstrate consistency with the transport principles and Strategic Actions outlined in the Strategy, including any transport targets identified for the relevant Precinct or Frame Area	Strategic actions for an integrated transport network & Strategic actions for on-street rapid transit for Parramatta Road	The Site is well serviced by public transport services. Homebush and North Strathfield stations are located within walking distance and serviced by the T1 Line (Western, North Shore and Northern) and T2 Line (Airport, Inner West and South), connecting future residents to employment areas within the Sydney metropolitan area.
	Strategic actions for street function framework	The Parramatta Transport Report identifies the future road function of Powell Street and Parramatta Road as a 'local' and 'movement (State Arterial)', respectively, and Powell Street is expected to accommodate high pedestrian activity. The reference design provides vehicular access from Powell Street only and is therefore consistent with the land use interface requirement for local streets. In addition, the reference design includes a pedestrian link between Powell Street and Parramatta Road. No vehicle egress or ingress is proposed onto Parramatta Road, therefore its movement function will be maintained.
	Improve street network permeability across the Corridor, particularly for pedestrians and cyclists.	The signalised intersection of Parramatta Road and Knight Street is adjacent to the Site. Pedestrian crossing facilities at this intersection and the proposed pedestrian link through site would provide a new north-south pedestrian path across the Homebush precinct.
	Improve the quality of public transport, walking and cycling networks, access and connectivity to and within Precincts and Frame Areas.	The Proponent is committed to promoting alternate and active transport modes by implementing a Green Travel Plan (GTP). The site is located within walking distance of the existing public transport facilities, including Homebush and North Strathfield Rail Station. Notwithstanding, the Green Travel Plan will set targets for alternative transport use and encourage alternate modes by:

	Encourage travel behaviour change to discourage car use and support more sustainable travel choices.	1. Complying with Council bicycle parking rates and providing facilities for the retail/commercial tenancies. 2. Providing a Transport Access Guide (residents) and a Workplace Travel Plan (employees) outlining the available alternative transport modes. 3. Considering a car-share program within the future basement car park. Details of the GTP will be submitted with any future development application.
	Support an improved urban environment with areas designated for greater levels of street activity.	Pedestrian activity is encouraged in the reference design, including ground floor retail / commercial uses, a child care centre and a central plaza. These uses are connected to external pedestrian links / pathways via an internal pedestrian link.
	Facilitate local access needs for new development to support the needs of residents and businesses.	The reference design provides vehicular access via Powell Street and therefore maintains the street function of local roads (Powell Street) and movement roads (Parramatta Road) by providing access from the lower order road. The ground floor provides retail / commercial uses and a childcare centre are connected to external / on-street pedestrian pathways via a through site pedestrian link.
Outline existing traffic and parking conditions	N/A	The existing traffic and parking conditions are outlined and discussed in Section 3.1.3 and 3.2.
Assess the traffic generating qualities of the proposal(s)	N/A	As assessed in Section 7.1, the reference design is expected to generate 188 vehicles during the morning peak hour and 234 vehicles during the evening peak hour.
Consider existing and committed transport provision and its capacity to support the proposal(s)	N/A	Modelling for the Homebush Precinct is being undertaken by Strathfield, Burwood and Canada Bay Councils to determine road network improvements required to support the Parramatta Road Corridor Strategy. The reference design is expected to generate up to 234 vehicles during the evening peak hour, however intersection modelling of the existing road network demonstrates the signalised intersections within the vicinity of the Site (Parramatta Road / Underwood Street and Parramatta Road / Knight Street) would operate at acceptable delays and Level of Service.

		In addition, Journey-to-Work data reveals approximately 18% of residents within Homebush precinct commute to the west. Therefore, residents within the reference design would benefit from the new westbound M4 on-ramp located east of the Site
Identify mitigation measures to address transport impacts of the proposal(s).	N/A	The Site is well connected to pedestrian pathways and crossing facilities and existing public transport services such as the Homebush and North Strathfield Train Stations. The proponent will provide a GPT to encourage the use of public and active transport modes, thereby discouraging the reliance of private vehicles.

10 Conclusions

The key findings of this Traffic Impact Assessment are:

- This Preliminary Planning Proposal seeks amendments to planning controls in order to facilitate a mixed-use development. PTW have prepared a reference design that complies with the requested planning controls in order to facilitate assessment and associated works at 55-67 Parramatta Road and 12-24 Powell Street, Homebush. The Site is within Strathfield Municipal Council and the reference design has been assessed against the Strathfield DCP. The reference design consists of 577 residential units, 2,512m^2 of retail uses, 359m^2 of commercial uses and a 419m^2 childcare centre. Vehicular access is to be provided on Powell Street, via two vehicle crossings (a service vehicle driveway and a basement car park driveway).
- The Site is favourably located close to public transport facilities such as the Homebush and North Strathfield Train Stations, which will encourage new residents to use alternative transport modes and reduce reliance on other than private vehicles. Existing signalised pedestrian crossing facilities on Parramatta Road adjoining the site's southern frontage, which provides access to Homebush Station. Parramatta Road and Knight Street is a key Parramatta Road crossing.
- Intersection analysis demonstrates that key intersections within the vicinity of the Site currently operate with acceptable delays. In particular, Parramatta Road / Underwood signalised intersection operates at Level of Service B during both peak periods, and Parramatta Road / Knight Street signalised intersection and Parramatta Road / Powell Street priority controlled intersection currently operate at Level of Service A during both peak periods.
- Analysis of the reference design demonstrates that compliance would be achieved with maximum parking rates proposed under the Parramatta Planning and Design Guideline.
- The reference design is capable of complying with bicycle parking requirements and the Site is well located to existing public transport, reducing reliance of private vehicles.
- The access and basement design will be subject to detailed design at the DA stage, however a high-level review indicates that the reference design is designed in accordance with relevant Australian Standards (AS2890 series).
- The reference design will result in a net increase in traffic generation of 191 additional trips during the morning peak hour and 242 additional trips during the afternoon peak hour. The SIDRA intersection modelling was undertaken at the intersection of Parramatta Road / Underwood Street, Parramatta Road / Powell Street and Parramatta Road / Knight Street. The analysis indicates that these 'net' traffic volumes would result in only moderate increases in delay and queuing, hence the reference design is considered acceptable.

- The Parramatta Road Urban Transformation Strategy which identifies an FSR of 5.01:1 for the subject site should be considered in comparison of the planning control amendment (FSR 7.3:1) requested as part of this application. The resultant net increase in traffic generation between the reference design (FSR 7.3:1) and the PRUTS scheme (FSR 5.01:1) would therefore equate to 36 veh/hr during the AM peak period and 29 veh/hr during the PM peak period. This represents less than 1 additional vehicle very minute.
- Irrespective of the above, the future traffic distribution on the external road network associated with the impact of the Westconnex ramp would likely alter the operational characteristics of Parramatta Road key intersections. Accordingly, the traffic study being undertaken by Council to assess the precinct-wide traffic impacts will identify required infrastructure requirements to ensure that the road network operates at an acceptable level. Any future project on the Site will make monetary or works in contributions towards those infrastructure works.
- The reference design is consistent with the key traffic and transport strategic actions of the PRUTS, and the transport planning principles (delivery mechanisms) outlined in the Parramatta Precinct Transport Report.

Analysis of the reference design demonstrates that any future development of the site in accordance with the requested planning controls will have an acceptable impact on the existing road network, and will be capable for compliance with:

- Relevant Australian Standards for vehicle access, manoeuvring and parking
- Anticipated maximum parking rates
- Anticipated minimum bicycle facility requirements

It is anticipated that residents, visitors and workers will be encouraged to use public and active modes of transport given the site's location close to Homebush and North Strathfield Stations, an anticipated Parramatta Road rapid bus transit link and new pedestrian links to existing signalized crossing over Parramatta Road.

Any future DA for a mixed-use project will be subject to Sec 94 and Special Infrastructure Contributions toward road network upgrades, and will include detailed parking, manoeuvring and access designs, a Green Travel Plan and traffic impact assessment that will address transport issues in detail.

Appendix A

MOVEMENT SUMMARY

Site: 101 [Underwood_ Exist_ AM]

Network: N101 [AM]

Parramatta Road / Underwood Road Signalised T-intersection, Homebush
2017 Existing Road Conditions
2017 AM Base Traffic
Signals - Fixed Time Isolated Cycle Time = 117 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Parramatta Road (E)													
5	T1	1263	4.0	1263	4.0	0.468	7.0	LOS A	14.7	106.3	0.45	0.41	44.1
6	R2	312	4.0	312	4.0	0.891	67.9	LOS E	22.8	165.4	1.00	1.13	12.0
Approach		1575	4.0	1575	4.0	0.891	19.0	LOS B	22.8	165.4	0.56	0.55	29.6
North: Underwood Road (N)													
7	L2	137	4.0	137	4.0	0.479	47.0	LOS D	9.4	67.7	0.91	0.80	7.5
9	R2	202	4.0	202	4.0	0.479	50.7	LOS D	9.4	67.7	0.94	0.80	12.9
Approach		339	4.0	339	4.0	0.479	49.2	LOS D	9.4	67.7	0.93	0.80	11.0
West: Parramatta Road (W)													
10	L2	254	4.0	254	4.0	0.347	18.5	LOS B	10.5	75.8	0.54	0.66	26.5
11	T1	873	4.0	873	4.0	0.347	13.1	LOS A	11.0	79.4	0.55	0.51	23.5
Approach		1126	4.0	1126	4.0	0.347	14.3	LOS A	11.0	79.4	0.55	0.54	24.4
All Vehicles		3040	4.0	3040	4.0	0.891	20.6	LOS B	22.8	165.4	0.60	0.58	24.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.8 %
Number of Iterations: 5 (maximum specified: 10)

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P2	East Full Crossing	53	50.9	LOS E	0.2	0.2	0.93	0.93
P3	North Full Crossing	53	12.5	LOS B	0.1	0.1	0.46	0.46
All Pedestrians		105	31.7	LOS D			0.70	0.70

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [Underwood_ Exist_ PM]

Network: N101 [PM]

Parramatta Road / Underwood Road Signalised T-intersection, Homebush
2017 Existing Road Conditions
2017 PM Base Traffic
Signals - Fixed Time Isolated Cycle Time = 117 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Parramatta Road (E)													
5	T1	1114	4.0	1114	4.0	0.456	10.3	LOS A	15.3	110.6	0.53	0.48	39.1
6	R2	232	4.0	232	4.0	0.882	70.9	LOS F	17.1	124.1	1.00	1.12	11.6
Approach		1345	4.0	1345	4.0	0.882	20.8	LOS B	17.1	124.1	0.61	0.59	28.4
North: Underwood Road (N)													
7	L2	222	4.0	222	4.0	0.688	45.2	LOS D	17.3	125.2	0.95	0.85	7.8
9	R2	417	4.0	417	4.0	0.688	47.4	LOS D	17.3	125.2	0.96	0.84	13.6
Approach		639	4.0	639	4.0	0.688	46.6	LOS D	17.3	125.2	0.96	0.85	11.8
West: Parramatta Road (W)													
10	L2	201	4.0	201	4.0	0.423	21.9	LOS B	13.7	99.3	0.62	0.66	24.8
11	T1	1077	4.0	1077	4.0	0.423	16.5	LOS B	14.2	102.9	0.63	0.58	20.3
Approach		1278	4.0	1278	4.0	0.423	17.4	LOS B	14.2	102.9	0.63	0.59	21.2
All Vehicles		3262	4.0	3262	4.0	0.882	24.5	LOS B	17.3	125.2	0.69	0.64	21.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.9 %
Number of Iterations: 5 (maximum specified: 10)

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P2	East Full Crossing	53	43.7	LOS E	0.2	0.2	0.87	0.87
P3	North Full Crossing	53	14.9	LOS B	0.1	0.1	0.51	0.51
All Pedestrians		105	29.3	LOS C			0.69	0.69

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 102 [Knight_ Exist_ AM]

Network: N101 [AM]

Parramatta Road / Knight Street Signalised T-intersection, Homebush
2017 Existing Road Condition
2017 AM Base Traffic
Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Knight Street (S)													
1	L2	163	4.0	163	4.0	0.703	60.6	LOS E	9.7	70.0	1.00	0.85	5.6
3	R2	196	4.0	196	4.0	0.703	58.6	LOS E	11.3	81.8	1.00	0.85	5.7
Approach		359	4.0	359	4.0	0.703	59.5	LOS E	11.3	81.8	1.00	0.85	5.6
East: Parramatta Road (E)													
4	L2	197	4.0	197	4.0	0.193	8.8	LOS A	4.4	32.0	0.34	0.58	27.0
5	T1	1461	4.0	1461	4.0	0.521	6.8	LOS A	7.4	53.9	0.45	0.42	16.8
Approach		1658	4.0	1658	4.0	0.521	7.1	LOS A	7.4	53.9	0.44	0.44	18.9
West: Parramatta Road (W)													
11	T1	944	4.0	944	4.0	0.237	6.1	LOS A	6.2	44.7	0.37	0.32	39.0
Approach		944	4.0	944	4.0	0.237	6.1	LOS A	6.2	44.7	0.37	0.32	39.0
All Vehicles		2961	4.0	2961	4.0	0.703	13.1	LOS A	11.3	81.8	0.48	0.45	19.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.8 %
Number of Iterations: 5 (maximum specified: 10)

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	5.7	LOS A	0.1	0.1	0.31	0.31
P4	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		105	30.0	LOS C			0.63	0.63

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 102 [Knight_ Exist_ PM]

Network: N101 [PM]

Parramatta Road / Knight Street Signalised T-intersection, Homebush
2017 Existing Road Condition
2017 PM Base Traffic
Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Knight Street (S)													
1	L2	109	4.0	109	4.0	0.536	57.7	LOS E	7.1	51.7	0.98	0.80	5.8
3	R2	166	4.0	166	4.0	0.536	56.0	LOS D	8.2	59.3	0.97	0.80	5.9
Approach		276	4.0	276	4.0	0.536	56.7	LOS E	8.2	59.3	0.97	0.80	5.9
East: Parramatta Road (E)													
4	L2	176	4.0	176	4.0	0.169	8.6	LOS A	3.8	27.3	0.33	0.59	27.1
5	T1	1272	4.0	1272	4.0	0.455	6.3	LOS A	7.4	53.9	0.42	0.39	17.8
Approach		1447	4.0	1447	4.0	0.455	6.6	LOS A	7.4	53.9	0.41	0.41	19.8
West: Parramatta Road (W)													
11	T1	1295	4.0	1295	4.0	0.325	6.6	LOS A	9.2	66.4	0.40	0.35	37.9
Approach		1295	4.0	1295	4.0	0.325	6.6	LOS A	9.2	66.4	0.40	0.35	37.9
All Vehicles		3018	4.0	3018	4.0	0.536	11.2	LOS A	9.2	66.4	0.46	0.42	22.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.9 %
Number of Iterations: 5 (maximum specified: 10)

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	5.7	LOS A	0.1	0.1	0.31	0.31
P4	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		105	30.0	LOS C			0.63	0.63

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 103 [Powell_ Exist_ AM]

Network: N101 [AM]

Parramatta Road / Powell Street Priority T-intersection, Homebush
2017 Existing Road Conditions
2017 AM Base Traffic
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
East: Parramatta Road (E)													
5	T1	1658	4.0	1658	4.0	0.302	0.0	LOS A	9.7	69.9	0.00	0.00	59.9
Approach		1658	4.0	1658	4.0	0.302	0.0	NA	9.7	69.9	0.00	0.00	59.9
North: Powell Street (N)													
7	L2	29	4.0	29	4.0	0.020	4.9	LOS A	0.1	0.7	0.18	0.49	33.3
Approach		29	4.0	29	4.0	0.020	4.9	LOS A	0.1	0.7	0.18	0.49	33.3
West: Parramatta Road (W)													
10	L2	13	4.0	13	4.0	0.056	3.2	LOS A	0.0	0.0	0.00	0.07	31.2
11	T1	1127	4.0	1127	4.0	0.282	0.0	LOS A	0.0	0.0	0.00	0.01	59.7
Approach		1140	4.0	1140	4.0	0.282	0.0	NA	0.0	0.0	0.00	0.01	59.0
All Vehicles		2827	4.0	2827	4.0	0.302	0.1	NA	9.7	69.9	0.00	0.01	58.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.8 %
Number of Iterations: 5 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 103 [Powell_ Exist_ PM]

Network: N101 [PM]

Parramatta Road / Powell Street Priority T-intersection, Homebush
2017 Existing Road Conditions
2017 PM Base Traffic
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Parramatta Road (E)													
5	T1	1446	4.0	1446	4.0	0.262	0.0	LOS A	6.4	46.2	0.00	0.00	59.9
Approach		1446	4.0	1446	4.0	0.262	0.0	NA	6.4	46.2	0.00	0.00	59.9
North: Powell Street (N)													
7	L2	48	4.0	48	4.0	0.033	5.0	LOS A	0.2	1.1	0.21	0.49	33.1
Approach		48	4.0	48	4.0	0.033	5.0	LOS A	0.2	1.1	0.21	0.49	33.1
West: Parramatta Road (W)													
10	L2	17	4.0	17	4.0	0.072	3.2	LOS A	0.0	0.0	0.00	0.07	31.2
11	T1	1444	4.0	1444	4.0	0.361	0.0	LOS A	0.0	0.0	0.00	0.01	59.6
Approach		1461	4.0	1461	4.0	0.361	0.0	NA	0.0	0.0	0.00	0.01	58.9
All Vehicles		2956	4.0	2956	4.0	0.361	0.1	NA	6.4	46.2	0.00	0.01	58.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.9 %
Number of Iterations: 5 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 101 [Underwood_ Exist w Dev_ AM]

Network: N101 [AM]

Parramatta Road / Underwood Road Signalised T-intersection, Homebush
2017 Existing Road Conditions
2017 AM Base with Development Traffic
Signals - Fixed Time Isolated Cycle Time = 117 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Parramatta Road (E)													
5	T1	1263	4.0	1263	4.0	0.468	7.0	LOS A	14.7	106.3	0.45	0.41	44.1
6	R2	358	4.0	358	4.0	1.032	121.1	LOS F	37.2	269.1	1.00	1.28	6.8
Approach		1621	4.0	1621	4.0	1.032	32.2	LOS C	37.2	269.1	0.57	0.60	20.8
North: Underwood Road (N)													
7	L2	137	4.0	137	4.0	0.517	48.2	LOS D	10.0	72.5	0.93	0.81	7.3
9	R2	224	4.0	224	4.0	0.517	51.2	LOS D	10.0	72.5	0.95	0.81	12.8
Approach		361	4.0	361	4.0	0.517	50.1	LOS D	10.0	72.5	0.94	0.81	11.0
West: Parramatta Road (W)													
10	L2	267	4.0	267	4.0	0.352	18.5	LOS B	10.6	76.9	0.55	0.67	26.3
11	T1	873	4.0	873	4.0	0.352	13.1	LOS A	11.1	80.7	0.55	0.51	23.5
Approach		1140	4.0	1140	4.0	0.352	14.4	LOS A	11.1	80.7	0.55	0.55	24.4
All Vehicles		3122	4.0	3122	4.0	1.032	27.8	LOS B	37.2	269.1	0.61	0.60	19.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 3.3 %
Number of Iterations: 10 (maximum specified: 10)

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P2	East Full Crossing	53	50.9	LOS E	0.2	0.2	0.93	0.93
P3	North Full Crossing	53	12.5	LOS B	0.1	0.1	0.46	0.46
All Pedestrians		105	31.7	LOS D			0.70	0.70

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [Underwood_ Exist w Dev_ PM]

Network: N101 [PM]

Parramatta Road / Underwood Road Signalised T-intersection, Homebush
2017 Existing Road Conditions
2017 PM Base with Development Traffic
Signals - Fixed Time Isolated Cycle Time = 117 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Parramatta Road (E)													
5	T1	1114	4.0	1114	4.0	0.456	10.3	LOS A	15.3	110.6	0.53	0.48	39.1
6	R2	300	4.0	300	4.0	1.157	217.0	LOS F	39.9	288.9	1.00	1.52	4.1
Approach		1414	4.0	1414	4.0	1.157	54.2	LOS D	39.9	288.9	0.63	0.70	14.7
North: Underwood Road (N)													
7	L2	222	4.0	222	4.0	0.719	46.2	LOS D	18.3	132.5	0.96	0.86	7.6
9	R2	442	4.0	442	4.0	0.719	48.4	LOS D	18.3	132.5	0.97	0.86	13.4
Approach		664	4.0	664	4.0	0.719	47.7	LOS D	18.3	132.5	0.97	0.86	11.7
West: Parramatta Road (W)													
10	L2	222	4.0	222	4.0	0.431	22.0	LOS B	14.0	101.2	0.63	0.67	24.6
11	T1	1077	4.0	1077	4.0	0.431	16.6	LOS B	14.5	105.2	0.63	0.58	20.2
Approach		1299	4.0	1299	4.0	0.431	17.5	LOS B	14.5	105.2	0.63	0.60	21.2
All Vehicles		3377	4.0	3377	4.0	1.157	38.8	LOS C	39.9	288.9	0.70	0.69	15.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 4.6 %
Number of Iterations: 10 (maximum specified: 10)

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P2	East Full Crossing	53	43.7	LOS E	0.2	0.2	0.87	0.87
P3	North Full Crossing	53	14.9	LOS B	0.1	0.1	0.51	0.51
All Pedestrians		105	29.3	LOS C			0.69	0.69

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 102 [Knight_ Exist w Dev_ AM]

Network: N101 [AM]

Parramatta Road / Knight Street Signalised T-intersection, Homebush
2017 Existing Road Condition
2017 AM Base with Development Traffic
Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Knight Street (S)													
1	L2	163	4.0	163	4.0	0.703	60.6	LOS E	9.7	70.0	1.00	0.85	5.6
3	R2	196	4.0	196	4.0	0.703	58.6	LOS E	11.3	81.8	1.00	0.85	5.7
Approach		359	4.0	359	4.0	0.703	59.5	LOS E	11.3	81.8	1.00	0.85	5.6
East: Parramatta Road (E)													
4	L2	197	4.0	197	4.0	0.243	9.0	LOS A	5.9	42.7	0.36	0.54	27.4
5	T1	1507	4.0	1507	4.0	0.656	8.1	LOS A	7.4	53.9	0.53	0.51	14.8
Approach		1704	4.0	1704	4.0	0.656	8.2	LOS A	7.4	53.9	0.51	0.51	17.0
West: Parramatta Road (W)													
11	T1	944	4.0	944	4.0	0.237	6.1	LOS A	6.2	44.7	0.37	0.32	39.0
Approach		944	4.0	944	4.0	0.237	6.1	LOS A	6.2	44.7	0.37	0.32	39.0
All Vehicles		3007	4.0	3007	4.0	0.703	13.7	LOS A	11.3	81.8	0.52	0.49	18.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 3.3 %
Number of Iterations: 10 (maximum specified: 10)

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	5.7	LOS A	0.1	0.1	0.31	0.31
P4	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		105	30.0	LOS C			0.63	0.63

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 102 [Knight_ Exist w Dev_ PM]

Network: N101 [PM]

Parramatta Road / Knight Street Signalised T-intersection, Homebush
2017 Existing Road Condition
2017 PM Base with Development Traffic
Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Knight Street (S)													
1	L2	109	4.0	109	4.0	0.536	57.7	LOS E	7.1	51.7	0.98	0.80	5.8
3	R2	166	4.0	166	4.0	0.536	56.0	LOS D	8.2	59.3	0.97	0.80	5.9
Approach		276	4.0	276	4.0	0.536	56.7	LOS E	8.2	59.3	0.97	0.80	5.9
East: Parramatta Road (E)													
4	L2	176	4.0	176	4.0	0.224	8.9	LOS A	5.3	38.7	0.35	0.53	27.6
5	T1	1340	4.0	1340	4.0	0.604	7.5	LOS A	7.4	53.9	0.50	0.47	15.6
Approach		1516	4.0	1516	4.0	0.604	7.7	LOS A	7.4	53.9	0.48	0.48	17.8
West: Parramatta Road (W)													
11	T1	1295	4.0	1295	4.0	0.325	6.6	LOS A	9.2	66.4	0.40	0.35	37.9
Approach		1295	4.0	1295	4.0	0.325	6.6	LOS A	9.2	66.4	0.40	0.35	37.9
All Vehicles		3086	4.0	3086	4.0	0.604	11.6	LOS A	9.2	66.4	0.49	0.46	22.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 4.6 %
Number of Iterations: 10 (maximum specified: 10)

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	5.7	LOS A	0.1	0.1	0.31	0.31
P4	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		105	30.0	LOS C			0.63	0.63

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 103 [Powell_ Exist w Dev_ AM]

Network: N101 [AM]

Parramatta Road / Powell Street Priority T-intersection, Homebush
2017 Existing Road Conditions
2017 AM Base with Development Traffic
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
East: Parramatta Road (E)													
5	T1	1704	4.0	1704	4.0	0.337	0.0	LOS A	17.1	123.7	0.00	0.00	59.9
Approach		1704	4.0	1704	4.0	0.337	0.0	NA	17.1	123.7	0.00	0.00	59.9
North: Powell Street (N)													
7	L2	101	4.0	101	4.0	0.067	4.9	LOS A	0.3	2.4	0.19	0.50	33.2
Approach		101	4.0	101	4.0	0.067	4.9	LOS A	0.3	2.4	0.19	0.50	33.2
West: Parramatta Road (W)													
10	L2	13	4.0	13	4.0	0.056	3.2	LOS A	0.0	0.0	0.00	0.07	31.2
11	T1	1127	4.0	1127	4.0	0.282	0.0	LOS A	0.0	0.0	0.00	0.01	59.7
Approach		1140	4.0	1140	4.0	0.282	0.0	NA	0.0	0.0	0.00	0.01	59.0
All Vehicles		2945	4.0	2945	4.0	0.337	0.2	NA	17.1	123.7	0.01	0.02	56.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 3.3 %
Number of Iterations: 10 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 103 [Powell_ Exist w Dev_ PM]

Network: N101 [PM]

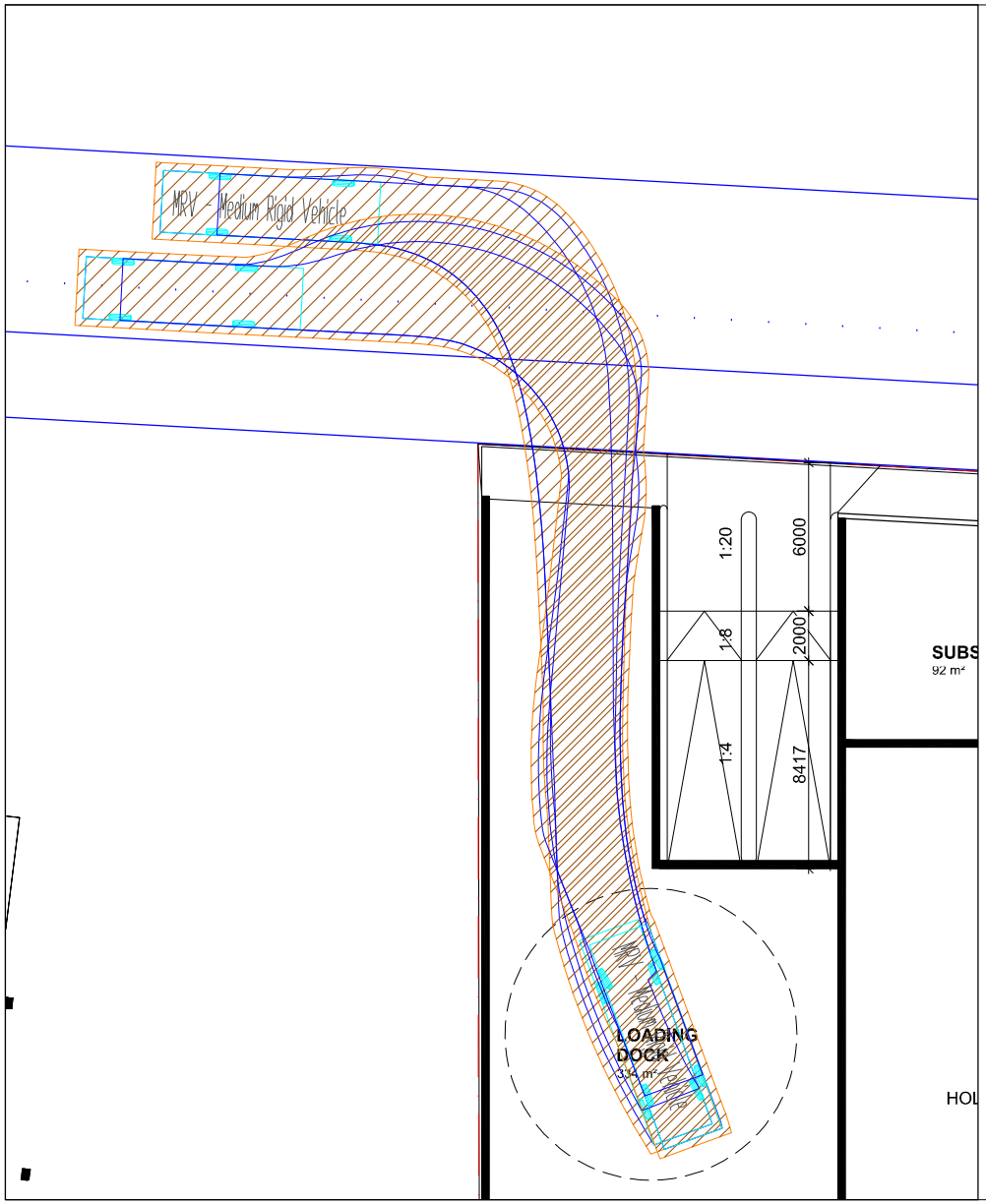
Parramatta Road / Powell Street Priority T-intersection, Homebush
2017 Existing Road Conditions
2017 PM Base with Development Traffic
Giveway / Yield (Two-Way)

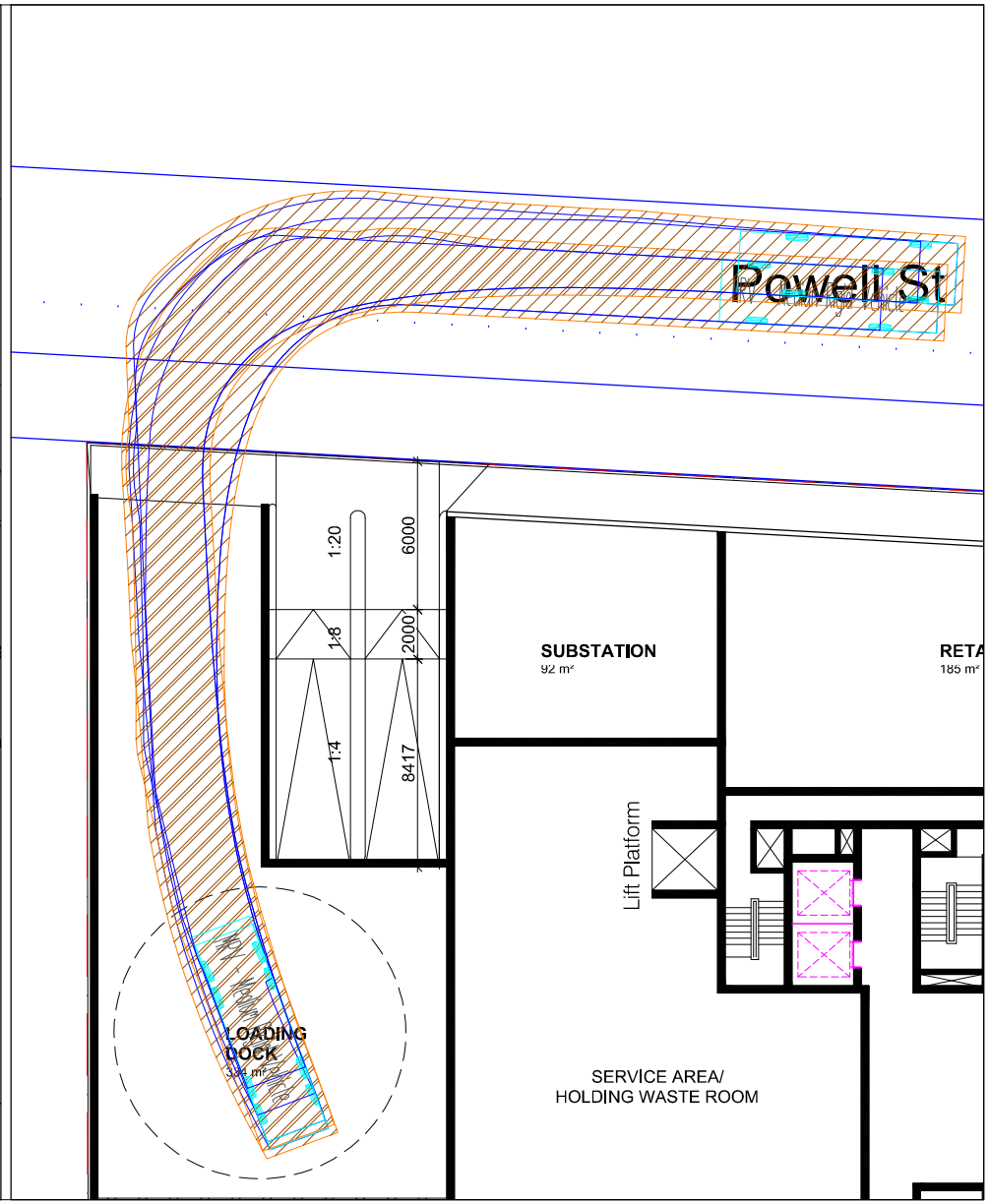
Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
East: Parramatta Road (E)													
5	T1	1515	4.0	1515	4.0	0.290	0.0	LOS A	13.5	97.4	0.00	0.00	59.9
Approach		1515	4.0	1515	4.0	0.290	0.0	NA	13.5	97.4	0.00	0.00	59.9
North: Powell Street (N)													
7	L2	129	4.0	129	4.0	0.088	5.0	LOS A	0.4	3.2	0.22	0.50	33.0
Approach		129	4.0	129	4.0	0.088	5.0	LOS A	0.4	3.2	0.22	0.50	33.0
West: Parramatta Road (W)													
10	L2	17	4.0	17	4.0	0.072	3.2	LOS A	0.0	0.0	0.00	0.07	31.2
11	T1	1444	4.0	1444	4.0	0.361	0.0	LOS A	0.0	0.0	0.00	0.01	59.6
Approach		1461	4.0	1461	4.0	0.361	0.0	NA	0.0	0.0	0.00	0.01	58.9
All Vehicles		3105	4.0	3105	4.0	0.361	0.2	NA	13.5	97.4	0.01	0.02	56.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 4.6 %
Number of Iterations: 10 (maximum specified: 10)

Appendix B





Revision notes:

Rev:	Date:	Notes:

Drawn By: AJ

Client: Walker Corporation

Project: AG0346
55-67 Parramatta Road & 12-24 Powell Street, Homebush

Drawing Title: Site Access - 8.8m MRV
Proposed Ground Floor Plans

Date: 18 December 2017

Scale @ A3: 1:200

Drawing Number: 01

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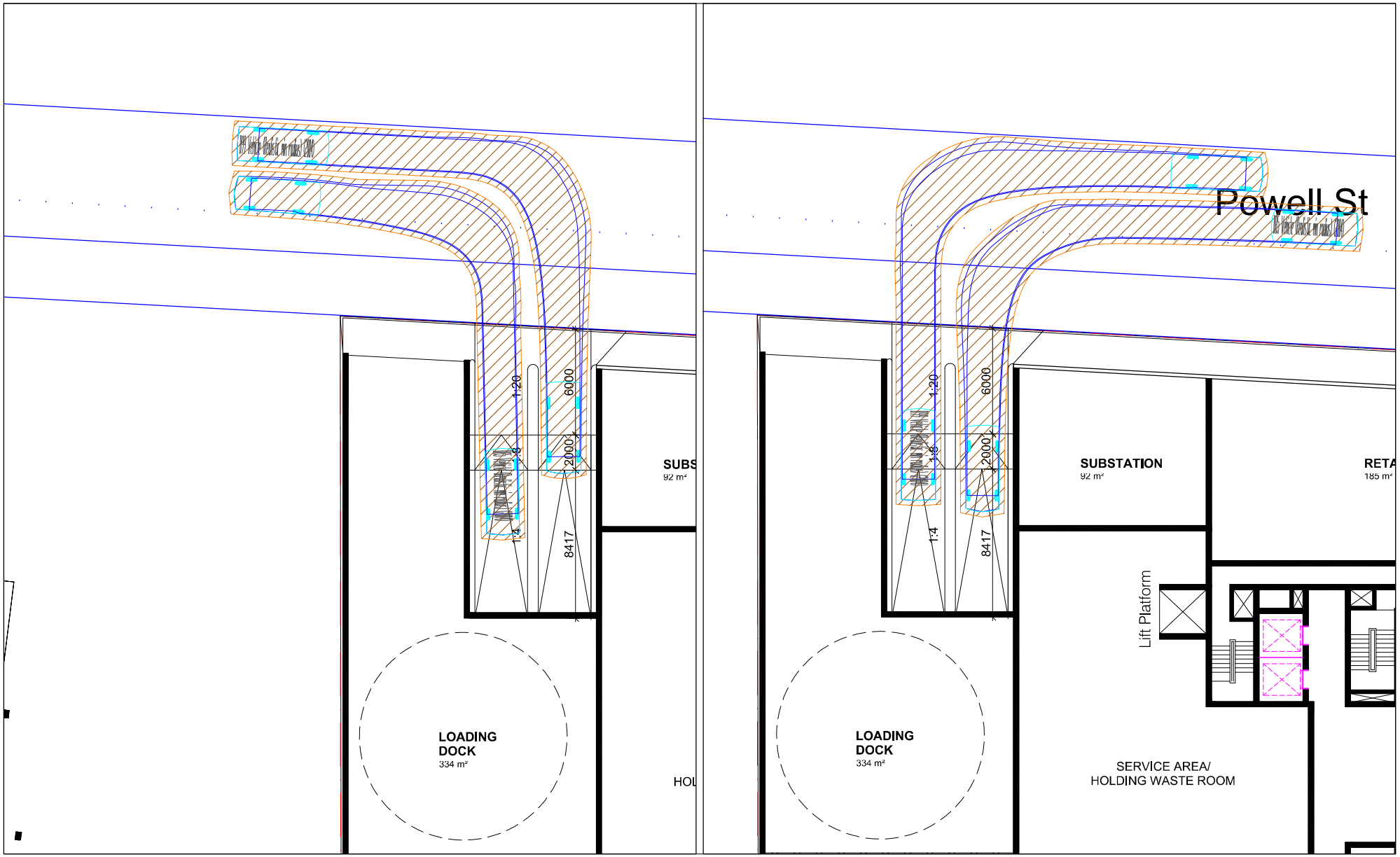

Revision notes:

Rev:	Date:	Notes:

Drawn By: AJ

Client: Walker Corporation

Project: AG0346
55-67 Parramatta Road & 12-24 Powell Street, Homebush

Drawing Title: Site Access - B99 / B85
Proposed Ground Floor Plans

Date: 18 December 2017

Scale @ A3: 1:200

Drawing Number: 02

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