BARKER RYAN STEWART
TOTAL PROJECT SOLUTIONS

Kulcher Pty Ltd

Concord West Precinct Transport Plan

March 2021

Item 3 - Attachment F - Transport Plan

ENGINEERING
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SURVEYING
CERTIFICATION

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1 Executive Summary

This report has been prepared in accordance with the *RMS Guide to Traffic Generating Developments* and the *RMS Traffic Modelling Guidelines* to identify the volume of additional traffic that will be generated by a new master-planned neighbourhood to be known as "Parkside" and the other potential developments within the Concord West precinct and to assess the impact of this additional traffic on the surrounding local road network.

The site of this new master-planned neighbourhood is a 6.8 hectare site bounded by Homebush Bay Drive in the west, the northern rail line in the east, Concord Avenue in the north and the Westpac Service Centre at 1 King Street in the south,

The Concord West Precinct is well connected to public transport, with rail and bus connections located within the precinct or an easy walking distance from the precinct. Concord West railway station is located on the eastern boundary of the precinct and is easily accessible by pedestrians via a full width concrete path paving.

The sustainable transport initiatives encourage the future residents and staff of future businesses to make greater use of public transport, cycling walking and car sharing for commuting and work-related journeys.

After the Planning Proposal is approved, Green Travel Plans should be prepared in support of any future development applications to Council for sites within the precinct. The plan should be developed using this Precinct Transport Plan as a guide.

The proposed Concord West Precinct works includes extensive upgrades to the existing pedestrian network to complement the existing footpaths and pedestrian crossings. These upgrades include the creation of a shared zone and an improved connection to the Concord West train station and rail underpass.

It is proposed to construct a separated dedicated cycle path along the length of Victoria Avenue and on King Street between Victoria Avenue and Station Avenue. This will formalise the bicycle link between the existing Sydney Olympic Park bike network and Council's proposed Queen Street short term future bike network.

The proposed works improve on Council's current Victoria Avenue on road bicycle route by upgrading it to a separated bicycle path and also continuing it towards King Street with more desirable and safer access to the existing Concord West station's bicycle facilities and the rail underpass adjacent to Station Avenue.

The proposed George Street / Pomeroy intersection works include two left turn slip lanes to and from the northern leg and additional peak hour parking restrictions. These proposed works will increase the capacity of the intersection to cater for the additional traffic that will be generated by the future growth in background traffic over a 10 year timeframe as well as the additional traffic that will be generated by redevelopment within the Concord West Precinct.

2 Introduction

Barker Ryan Stewart have been engaged by Kulcher Pty Ltd to prepare a Precinct Transport Plan to support a Planning Proposal for a new master-planned neighbourhood in the northern section of the Concord West Precinct.

This Precinct Transport Plan has been prepared in accordance with the NSW Government's '*Guide to Traffic Generating Developments*' (formerly RMS Guide), '*Traffic Modelling Guidelines*' and various Canada Bay Council documents that form part of the Concord West Transport and Access Strategy.

The purpose of this report is to identify the volume of additional traffic that will be generated by the new master-planned neighbourhood and the other potential developments within the Concord West precinct and to assess the impact of this additional traffic on the surrounding local road network.

The site of the new master-planned neighbourhood, to be known as "Parkside", is a 6.8 hectare site bounded by Homebush Bay Drive in the west, the northern rail line in the east, Concord Avenue in the north and the Westpac Service Centre at 1 King Street in the south, as shown below in Figure 2.1 and Figure 2.2.

Concord West station is located at the south-eastern corner of the site,

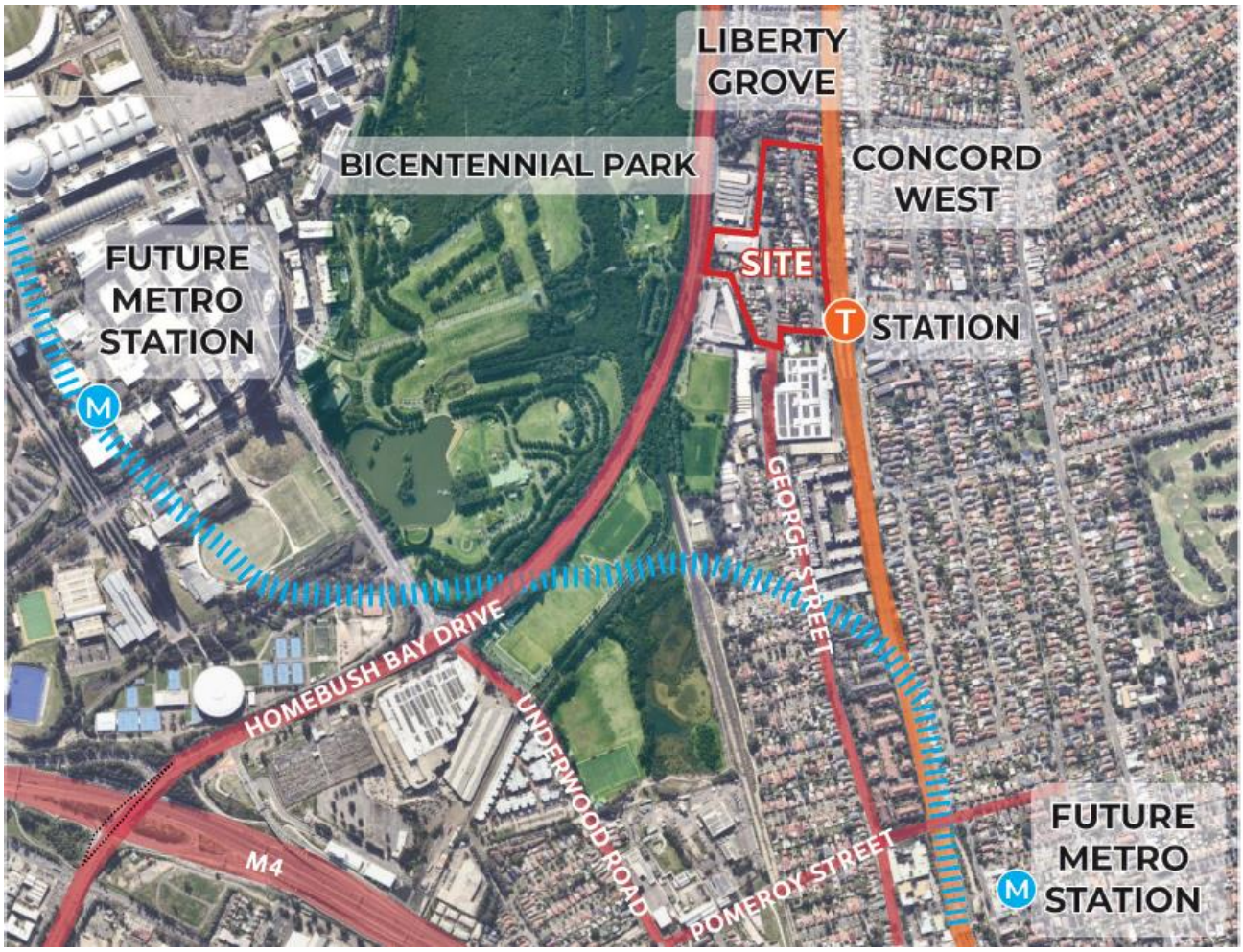

Figure 2.1: Locality Plan

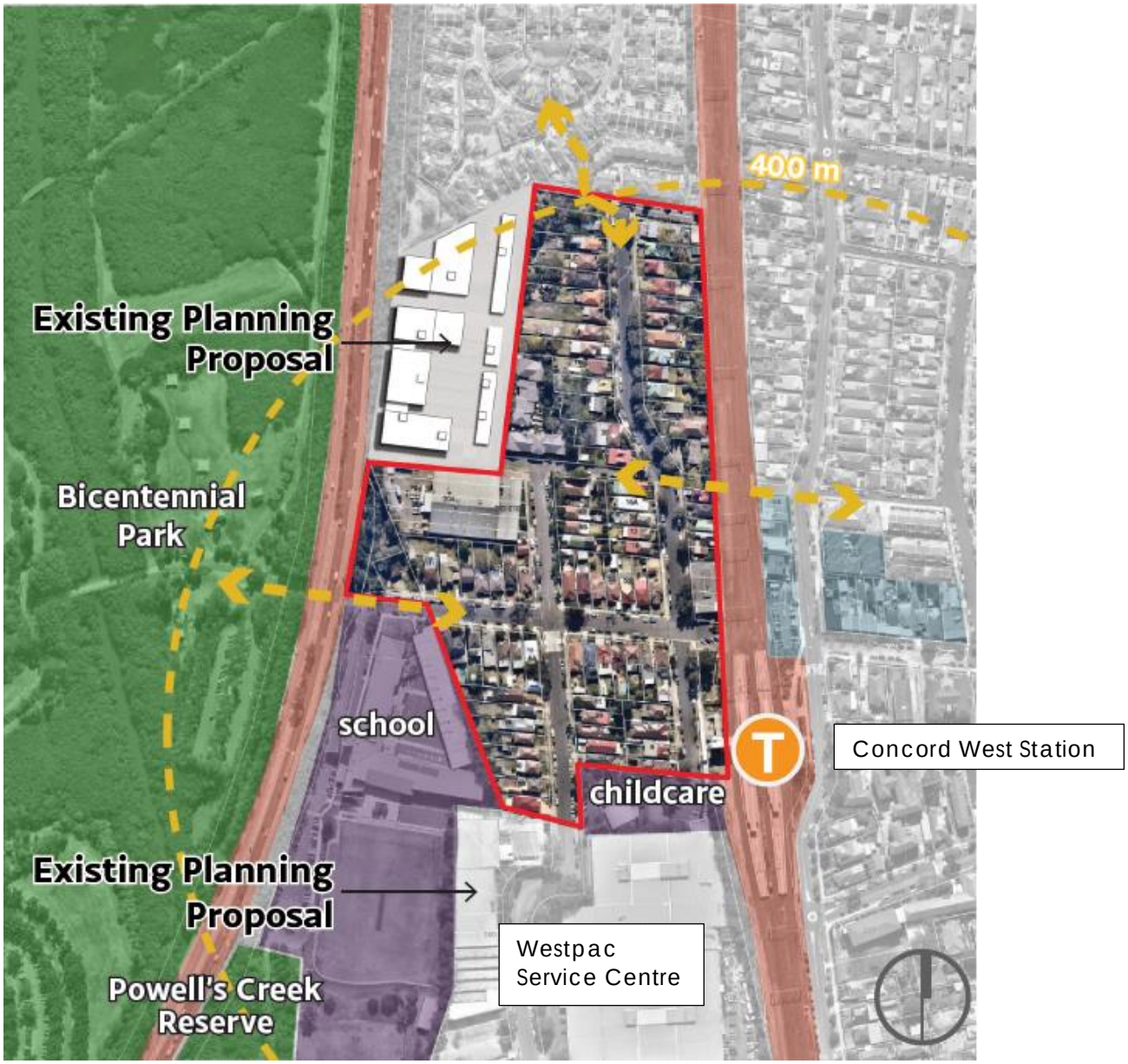

Figure 2.2: Detailed view of the site.

3 Concord West Transport and Access Strategy

3.1 Canada Bay Local Planning Strategy 2010 – Part 5 Transport and Access

The Canada Bay Local Planning Strategy 2010 Part 5 Transport and Access outlines the Transport and Access policies planning context and includes comments on the State Plan, Metropolitan Strategy, Inner West Subregion, Metropolitan Transport Plan – Connecting the Cities, Integrating Land Use Transport – Improving Transport Choice, Integrating Land Use Transport – The Right Place for Business, NSW Planning Guidelines for Walking and Cycling and the NSW Bike Plan 2012 – Action for Bikes.

These policies are summarised below:

State Plan

The state plan contains the following targets relevant to Transport and Access:

- Improved health through reduced obesity, smoking, illicit drug use and risk drinking.
- Increasing share of peak hour journeys on a safe and reliable public transport system.
- Safe roads.
- Jobs closer to home.

Metropolitan Strategy

The Sydney Metropolitan Strategy identifies the Sydney transport system based on the public transport network including rail, transit ways and bus services, ferries and taxis, the road network and walking and cycling networks.

Transport actions by the Metro Strategy positively impacting Canada Bay include:

- Improving local walking and cycling networks.
- Working in partnership with government agencies to increase capacity of rail and bus services.
- Improving the integration of public transport, and
- Improving transport planning.

Inner West Subregion Strategy

On an average weekday the residents of the Inner West Subregion make over 880,000 trips, at a rate of 3.9 trips per day. Over half of these trips start and finish in the Inner West Subregion.

Council's role to address the Inner West Subregional Strategy in relation to transport includes:

- Work in partnership with the Ministry of Transport to coordinate and implement the Strategic Bus Corridors.
- Work in partnership with the Department of Planning and the RMS in continuing to upgrade walking and cycling facilities to improve everyday access within neighbourhoods and to improve access to waterways, bushland, parks and centres.
- Continuation of existing work of the Bay Run as part of the Sharing Sydney Harbour Access Program.

Metropolitan Transport Plan – Connecting the Cities

In 2010 the NSW State Government released the Metropolitan Transport Plan Connecting the City of Cities, the benefits to the City of Canada Bay will include a Sydney Metro Station as part of the Sydney West Metro rail link.

Integrating Land Use Transport – Improving Transport Choice

These guidelines developed by the Department of Urban Affairs (now the Department of Planning) provide advice on how to better integrate land use and transport planning and provide greater transport choice.

Integrating Land Use Transport – The Right Place for Business

The Policy developed by the Department of Urban Affairs (now the Department of Planning) explains why business and services which generate transport demand should be in locations that offer a choice of transport to encourage people to make fewer and shorter trips.

NSW Planning Guidelines for Walking and Cycling

These guidelines aim to assist land use planners to improve consideration of walking and cycling in their work. It is anticipated that improving practice in planning for walking and cycling will create more opportunity for people to live in places with easy walking and cycling access to urban services and public transport.

NSW Bike Plan 2012 – Action for Bikes.

Action for bikes sets out a 10 year plan for the creation of a series of arterial bicycle networks across NSW. The plan advocates the construction of off-road cycle ways wherever practical when new roads are built and the creation of off-road cycle ways wherever possible.

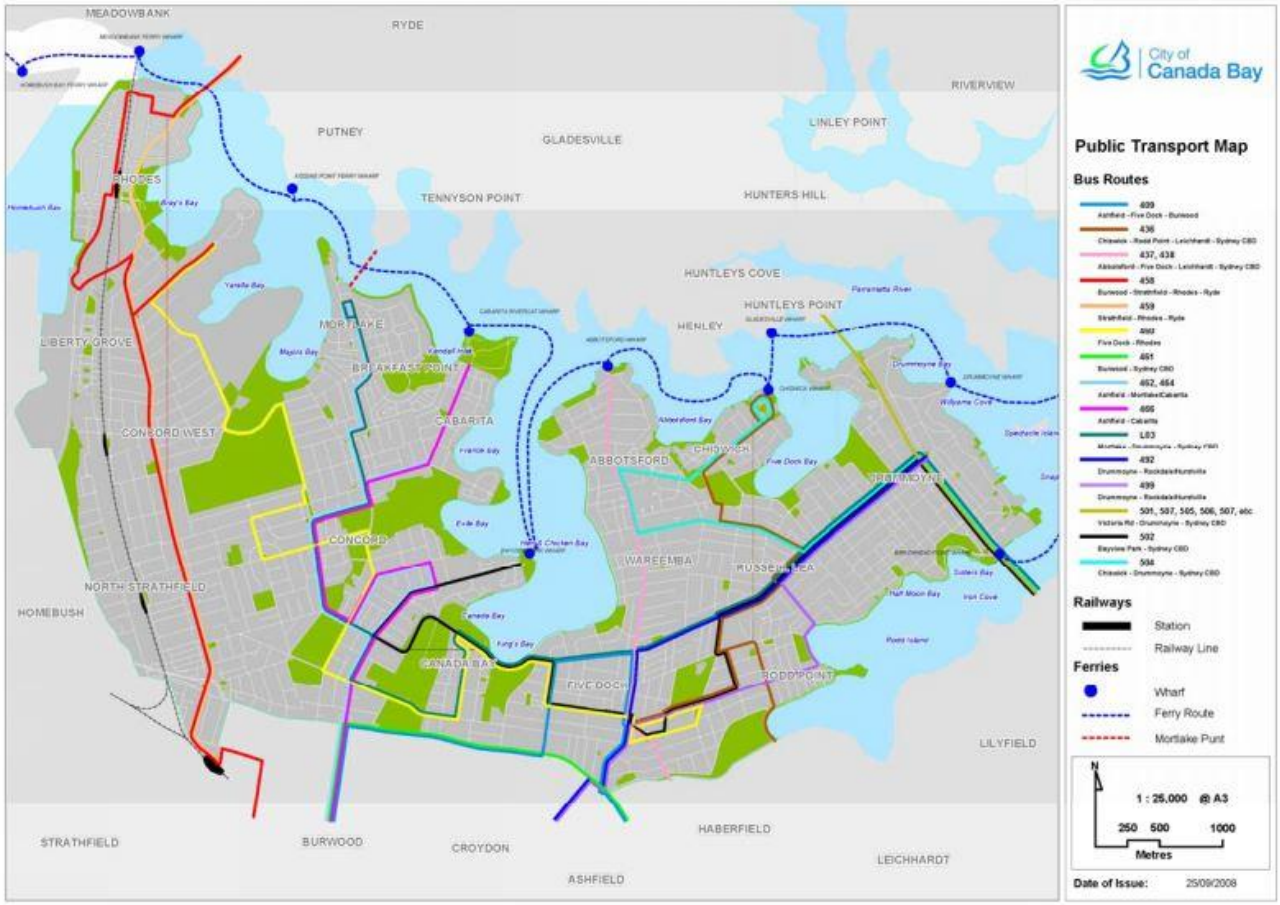

Figure 3.1: Canada Bay Public Transport Map (Extract from the Local Planning Strategy 2010)

3.2 Concord West Transport Report (by GTA)

In 2014 Canada Bay Council engaged GTA Consultants to prepare a Draft Concord West Transport Report. The purpose of the report was to assess the anticipated transport implications of the proposed re-zoning objective of the Concord West Precinct.

The report outlines that the Concord West Precinct study area is quite unique from a transport perspective with the area being bordered by the railway line to the east, Homebush Bay Drive to the west and Liberty Grove development to the north. As a result, all the traffic to the area is funnelled through George Street via the intersection with Pomeroy Street to the south.

The study area has good public transport accessibility with the Concord West Railway Station with frequent rail services located within a short walk to the majority of the study area (Appendix A). The railway line is complemented by bus services that operate along Concord Road to the east (Appendix B). The study area is also well positioned to the regional bicycle network (Appendix C).

The following image extracted from the study outlines the key issues identified by GTA Consultants.

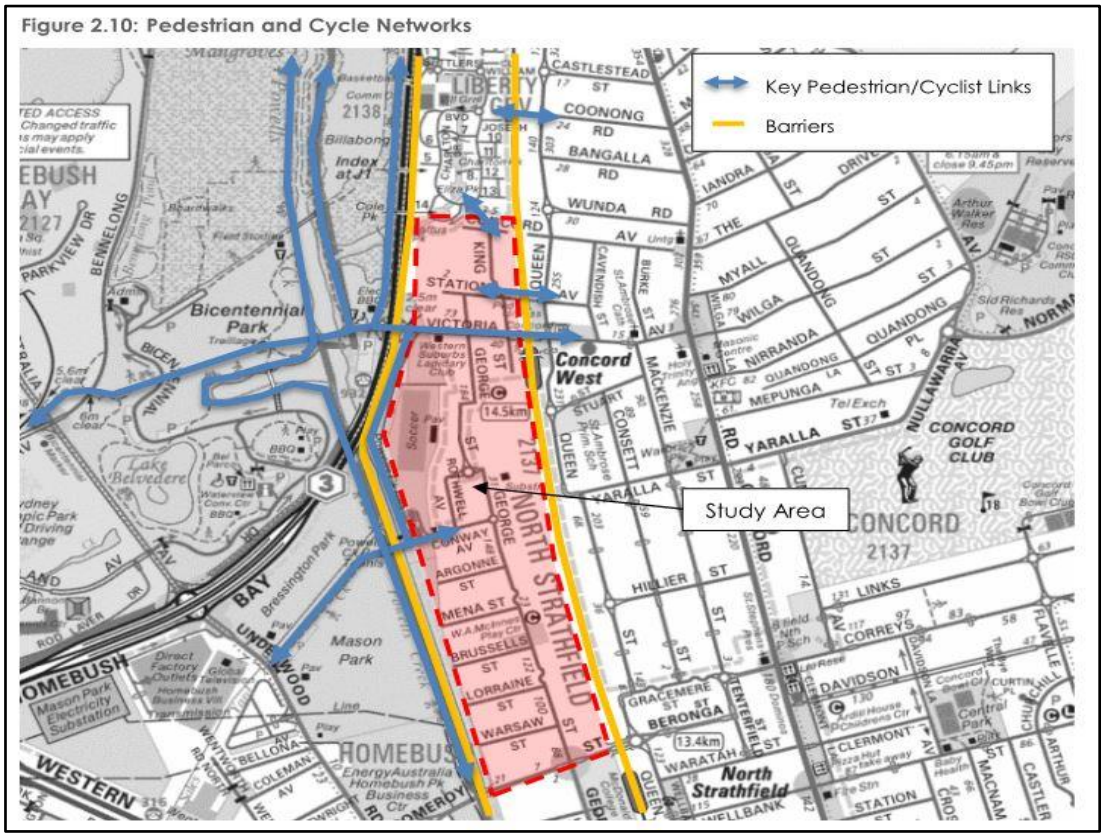

Figure 3.2: Pedestrian and cycle networks prepared by GTA Consultants

The report indicated that those who cycle to and from work are generally prepared to cycle up to 10km, Figure 3.3 below shows the 10km catchment around the study area.

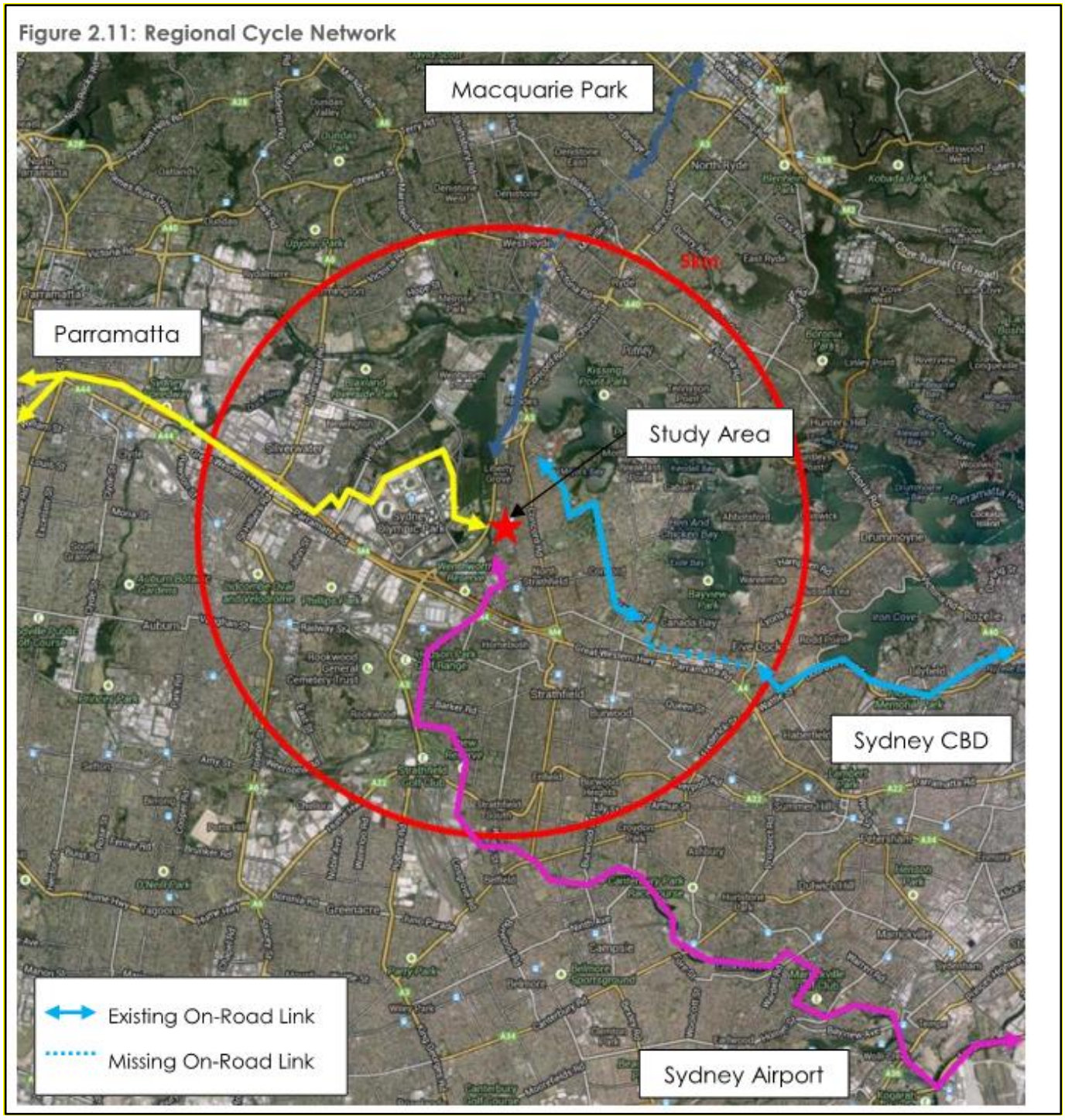

Figure 3.3: Regional cycle network prepared by GTA Consultants

3.3 Strategic Review of the Canada Bay Bike Plan

In 2014 Canada Bay Council engaged Transport and Urban Planning to prepare a Strategic Review of the Canada Bay Bike Plan that was prepared in 2005. The primary aim of the review was to rationalise the existing bike route network and prioritising the short and medium term works to improve and extend the network.

As a result of the review the 2005 bike routes have been rationalised and where possible combined into longer routes while some redundant and parallel routes have been replaced.

Two categories of routes were identified, Main Routes and Secondary Routes:

- *Main Routes are generally long and traverse a significant portion of the LGA and connect several destinations. These routes are where the majority of funds and resources should be allocated. There are 7 main routes.*
- *Secondary Routes are the remainder, generally shorter and provide links between main routes and/or to a single destination. There are 17 secondary routes.*

The short, medium and long term proposed Main Routes and Secondary Routes are shown on the City of Canada Bay bicycle network maps attached in Appendix C.

3.4 Sydney West Metro

In November 2016, the NSW Government announced the Sydney Metro West project – the city's next underground metro railway.

This new underground railway will connect Greater Parramatta and the Sydney CBD. The aim is to double rail capacity between these two areas, linking new communities to rail services and unlocking housing supply and employment growth between the two CBDs.

Figure 3.4 shows the Sydney West Metro Study Area. The locations of seven proposed metro stations have been confirmed at Westmead, Parramatta, Sydney Olympic Park, North Strathfield, Burwood North, Five Dock and The Bays. Further planning is underway to determine the location of a new metro station within the Sydney CBD and at Pyrmont.

Figure 3.4: Sydney West Metro.

Sydney Metro West features

- Faster, more frequent access to major employment and education centres like Parramatta, Sydney Olympic Park and The Bays
- A new metro station at Westmead – one of Australia's largest health and education precincts
- Delivering new rail services for the first time at Burwood North, Five Dock and The Bays
- A new metro station at Sydney Olympic Park – Sydney's sporting and entertainment super-precinct

- A new metro station at Pyrmont – delivering major benefits to the Pyrmont community and supporting plans to transform the harbourside suburb
- Integrated with the rest of Sydney's public transport system
- Fully accessible with lifts and level access between trains and platforms
- Next generation fully air-conditioned metro trains
- All Sydney Metro infrastructure like the stations, trains and railway tracks are owned by the NSW Government

3.5 The City of Canada Bay Local Strategic Planning Statement 2020

The City of Canada Bay Local Strategic Planning Statement (LSPS) is the core strategic planning document for the City of Canada Bay. It will guide the character of the local centres and neighbourhoods into the future. The LSPS brings together and builds on planning work found in Council's other plans, studies and strategies such as the Local Environmental Plan (LEP), Development Control Plans (DCP) and Contributions Plans. The LSPS will provide the reasoning for any future changes to Council's planning controls and shape how Council's local environmental plan (LEP) and development control plan (DCP) evolve over time.

The LSPS gives effect to the Eastern City District Plan, implementing priorities and actions at a local level. It is also informed by other state-wide and regional policies including the Future Transport Strategy 2056 and the State Infrastructure Strategy. The LSPS outlines how these plans will result in changes at the local level, such as new or improved transport connections.

3.6 Eastern City District Plan

The Eastern City District Plan is a 20-year plan to manage growth in the context of economic, social and environmental matters to achieve the 40-year vision for Greater Sydney. It contains the planning priorities and actions for implementing the Greater Sydney Region Plan, A Metropolis of Three Cities, at a district level and is a bridge between regional and local planning.

The Eastern City District covers the Bayside, Burwood, City of Canada Bay, City of Sydney, Inner West, Randwick, Strathfield, Waverley and Woollahra local government areas.

The District Plan informs local strategic planning statements and local environmental plans, the assessment of planning proposals as well as community strategic plans and policies. The District Plan also assists councils to plan for and support growth and change and align their local planning strategies to place-based outcomes. It guides the decisions of State agencies and informs the private sector and the wider community of approaches to manage growth and change. Community engagement on the District Plan has contributed to a plan for growth that reflects local values and aspirations, in a way that balances regional and local considerations.

3.7 Greater Sydney Region Plan – A Metropolis of 3 Cities

The Greater Sydney Region Plan (the Plan) sets a 40-year vision (to 2056) and establishes a 20-year plan to manage growth and change for Greater Sydney in the context of social, economic and environmental matters. It informs district and local plans and the assessment of planning proposals, assists infrastructure agencies to plan and deliver for growth and change and to align their infrastructure plans to place-based outcomes and informs the private sector and the wider community of the growth management and infrastructure investment intentions of government.

The Plan integrates land use, transport and infrastructure planning between the three tiers of government and across State agencies.

3.8 Australian Bureau of Statistics – Concord Census Data

The following extract was taken from the Australian Bureau of Statistics for Concord outlines the various travel to work methods as indicated by respondents in the 2016 census data.

In 2016 68.4% of respondents stated that they travelled to work by car compared to an average of 57.6% for NSW and 60.2% for Australia. A small proportion of people travelled to work via train, 4.6% of respondents compared to 6.2% on average for NSW and 3.9% on average for Australia.

Travel to work, top responses *Employed people aged 15 years and over*	Concord	%	New South Wales	%	Australia	%
Car, as driver	3,846	55.1	1,953,399	57.8	6,574,571	61.5
Train	751	10.8	252,786	7.5	488,012	4.6
Worked at home	328	4.7	163,026	4.8	503,582	4.7
Train, bus	292	4.2	60,155	1.8	104,122	1.0
Car, as passenger	237	3.4	144,820	4.3	489,922	4.6
People who travelled to work by public transport	1,582	22.6	540,215	16.0	1,225,668	11.5
People who travelled to work by car as driver or passenger	4,358	62.3	2,182,854	64.6	7,305,271	68.4

In Concord (State Suburbs), on the day of the Census, the most common methods of travel to work for employed people were: Car, as driver 55.1%, Train 10.8% and Worked at home 4.7%. Other common responses were Train, bus 4.2% and Car, as passenger 3.4%. On the day, 22.6% of employed people used public transport (train, bus, ferry, tram/light rail) as at least one of their methods of travel to work and 62.3% used car (either as driver or as passenger).

Figure 3.5: Australian Bureau of Statistics – Concord Census Data 2016

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4 Existing Public/Active Transport Options

The Concord West Precinct is well connected to public transport, with rail and bus connections located directly within the precinct or in easy walking distance to/from the precinct.

Train Service

Concord West railway station is located adjacent to the eastern boundary of the precinct and is easily accessible by pedestrians via a full width concrete path paving.

The station sits on the "T1 North Shore" and "T1 Epping" which allows access to the Sydney train system. The Sydney Trains Network Map is attached in Appendix A.

Bus Service

The site is located approximately 550 metres from the bus stops in Concord Road to the east of the site. The bus services that run along Concord Road include Bus Route 458, 459, M41 and N80.

The site is also 1.5km from the bus routes 450, 525 and 526 that run along Underwood Road. However, at a distance of 1.5km these routes may be considered a bit too far away to walk for most commuters that will live in the northern part of the Concord West Precinct.

Car Share

There are existing GoGet car share pods to the north of the precinct, the closest one being more than 1.2km away near IKEA in Rhodes.

Pedestrian Network

The site is well connected with pedestrian footpaths which allow easy access from the Concord West railway station to and from the Concord West Precinct and beyond.

This existing pedestrian network of footpaths on public roads could encourage people to walk from destination to destination or use a combination of public transport and walking.

Cycling Network

Queen Street on the eastern side of the railway line will become one of the main bicycle routes through the Concord West Area. A secondary bicycle route in Victoria Street to the north connects to the Sydney Olympic Park bike network. These routes link the precinct with a number of existing recommended off and on-road cycle routes as shown in the Canada Bay bike network maps. There are bike lockers and bike stands located at Concord West Station.

Photo 1: Concord West Station – With existing bicycle facilities in background

5 Proposed Sustainable Transport Initiatives

5.1 Introduction

A number of sustainable travel options have been incorporated into the Architectural and Landscape Architectural Precinct design (see plans at Appendix H). It is also recommended the management of the new buildings to be constructed within the precinct are to complement the existing transport options and provide a holistic strategy to positively influence the behaviour of future occupants within the precinct.

The overall precinct strategy should be based around two main 'streams':

- Reducing private car use with public transport as the primary mode for distance trips; and
- Pedestrian/cyclist provisions for shorter trips.

5.2 **Green Travel Plan (future DA's)**

After the Planning Proposal is approved, Green Travel Plans should be prepared in support of any future development applications to Council for sites within the precinct. The plan should be developed using this Precinct Transport Plan as a guide. The Green Travel Plans should provide information and recommendations on sustainable travel options within the precinct and would be readily available and structured in a manner that provides concise, relevant and easily understood information for the targeted readers.

The Green Travel Plans should be developed to demonstrate the sustainable transport initiatives being adopted in the proposal and the strategies to be used by the future strata corporation/building managers to encourage residents and staff of any businesses within the precinct to adopt the preferred modes.

5.3 Public Transport Opal Card

The Sydney public transport ticketing system has transitioned to the Opal card. Since the start of 2016 paper tickets have been phased out. The Opal carding system has advantages such as the provision of off-peak discounts, and daily and weekly caps. This encourages the use of public transport for the likely demographic that will reside within the Concord West Precinct. The figure below shows the one current Opal retailer (red flag) located approximately 100m to the east of the Concord West Precinct on the other side of the Railway line.

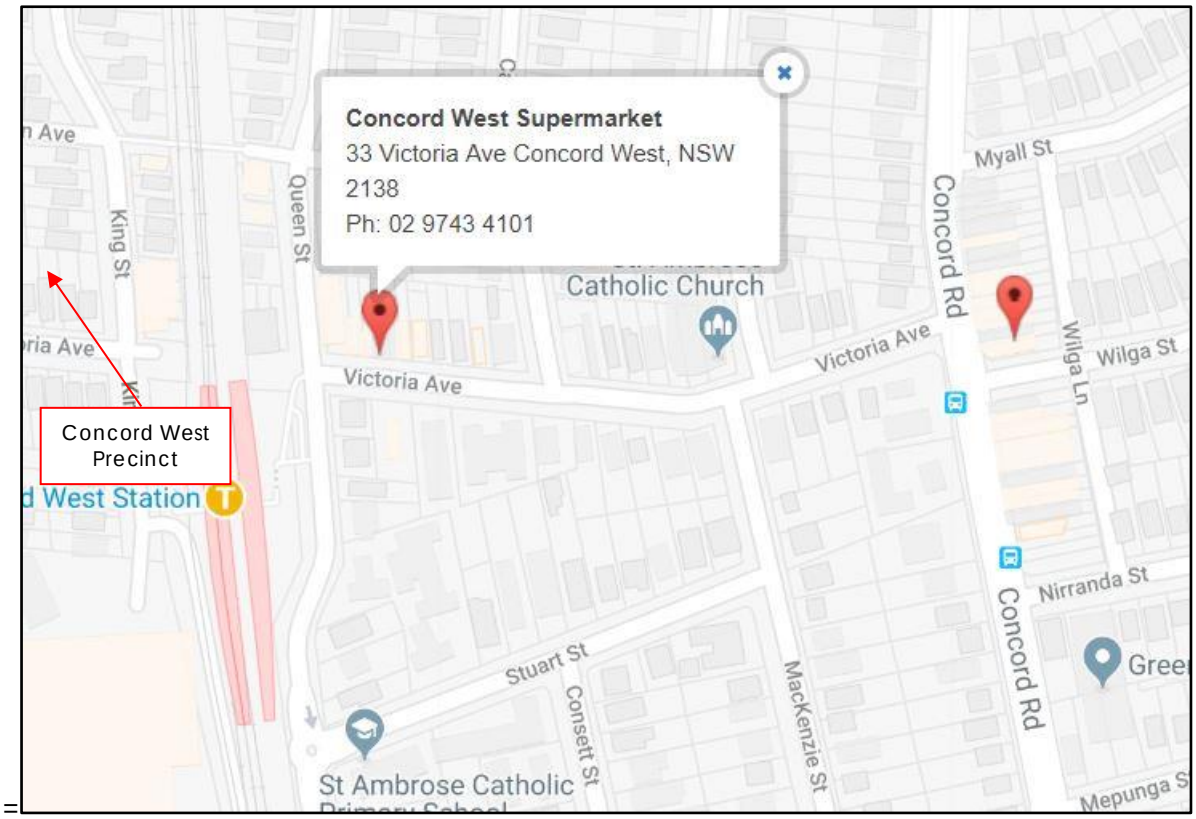

Figure 5.1: Existing Opal Card Retailer

Opal Outlet

The precinct's location provides very good access to public transport, being only a short walking distance to the Concord West train station and to a less convenient extent, the proximity to bus routes. As such, consideration should be given to future retailers operating within the precinct to consider also operating as an Opal Card retailer.

5.4 Car Share System

Car sharing schemes provide a convenient, affordable and sustainable transport option for residents and businesses. It enables sustainable travel habits, keeps people connected and provides an efficient use of parking space – a single car share vehicle can replace any number of private vehicles that would otherwise compete for local parking.

There are existing GoGet car share pods to the north of the site, the closest one being more than 1.2km near IKEA in Rhodes.

Figure 5.2: Car sharing pod locations

The concept of car share schemes is conducive to commercial, retail and residential developments located in the vicinity of a CBD. The membership and car hire rates preclude the need to maintain and register, let alone purchase a vehicle. For a location like Concord West Precinct, a car sharing space would enable residents living within the precinct an alternative transport option. Petrol is also included in the car hire, so the only financial considerations that car share customers need to be mindful of, is the membership and car hire rate.

GoGet's membership rates are tailored for specific users. Considering the location of the precinct it is likely to be an attractive travel option for the odd times cycling or catching public transport is not suitable. There are also other car sharing companies such as Popcar Sharing Pod and Flexicar.

As the closest GoGet is 1.2km away, consideration could be given to providing additional allocated car share pods within the precinct sufficient to adequately service the needs of a future population of more than 3,000 residents.

5.5 Pedestrians and Cyclists

Pedestrians

Extensive public pedestrian footpaths exist in the Concord West Precinct. As the precinct is located adjacent to the Concord West train station with a number of key public facilities within walking distance to the precinct.

This existing pedestrian network of footpaths on public roads would encourage people to walk from destination to destination or use a combination of public transport and walking.

The site's location has also been assessed using the "Walkscore" locational performance tool. The tool was developed in 2007, by Front Seat, using Google maps tools. This tool takes into account the number of facilities within close proximity and provides a numerical score between 0 and 100. A development with a score 0 would be heavily car dependant and 100 would indicate that numerous facilities are easily accessible.

Concord West has a walk score rating of 65 out of 100, which is defined on the Walkscore website as a *"Somewhat Walkable - Some errands can be accomplished on foot"*.

The proposed Concord West Precinct works includes extensive upgrades to the existing pedestrian network to complement the existing footpaths and pedestrian crossings. These upgrades include the creation of a shared zone and an improved connection to the Concord West train station and rail underpass.

The proposal also includes neighbourhood centre zoning with the opportunity for 2,000 to 3,000m² of retail / commercial floor space which will further improve the walkability of the precinct.

Bicycle Network and Facilities

In the near vicinity of the Concord West Precinct, Queen Street on the eastern side of the railway line will become one of the main bicycle routes through the Concord West Area. A secondary bicycle route in Victoria Street within the precinct connects to the Sydney Olympic Park bike network. These routes link the site with a number of existing recommended off and on-road cycle routes as shown in the Canada Bay bike network maps in Appendix C.

There is an existing secure bike locker and bike stands adjacent to the Concord West railway station.

It is proposed to construct a separated dedicated cycle path along the length of Victoria Avenue and on King Street between Victoria Avenue and Station Avenue (see Appendix H). This will formalise the bicycle link between the existing Sydney Olympic Park bike network and Council's proposed Queen Street short term future bike network (see Appendix C).

The proposed works improves on Council's current Victoria Avenue on road bicycle route by upgrading it to a separated bicycle path and also continuing it towards King Street with more desirable and safer access to the existing Concord West station's bicycle facilities and the rail underpass adjacent to Station Avenue.

6 Parking Assessment

The new master-planned neighbourhood, to be known as "Parkside", is estimated to yield 1,464 residential units and 2,797m² of retail space. Details of the proposed development yield are provided below in Table 6.1.

Block	Site Area (m^2)	GFA (m2)	FSR	Residential GFA (m^2)	No. of Res Units	Retail GFA (m^2)
Block 1	3,413	8,489	2.5	8,489	96	
Block 2	3,235	8,042	2.5	8,042	91	
Block 3	3,461	12,371	3.6	11,933	135	438
Block 4	2,810	10,115	3.6	9,228	105	887
Block 5	3,346	12,019	3.6	12,019	136	
Block 6	5,037	16,059	3.2	16,059	182	
Block 7	2,784	9,974	3.6	8,894	101	1,080
Block 8	3,541	12,742	3.6	12,742	144	
Block 9	815	2,929	3.6	2,537	29	392
Block 10	1,016	3,654	3.6	3,654	41	
Block 11	2,874	5,733	2.0	5,733	57	
Block 12	2,833	8,501	3.0	8,501	85	
Block 13	3,126	6,236	2.0	6,236	62	
Block 14	2,942	5,820	2.0	5,820	58	
Block 15	2,173	4,349	2.0	4,349	43	
Block 16	2,725	5,460	2.0	5,460	55	
Block 17	2,182	4,356	2.0	4,356	44	
Total	**48,313**	**136,849**	**2.8**	**134,052**	**1,464**	**2,797**

Table 6.1: Proposed Development Yield

The parking requirement has been assessed based on the rates set out in City of Canada Bay Development Control Plan: Special Precincts – Concord West Precinct (Concord West DCP).

Concord West DCP stipulates the following maximum car parking provision within Concord West Precinct:

- Residential
  - 0.3 spaces per studio unit
  - 0.5 spaces per 1 bedroom apartment
  - 0.9 spaces per 2 bedroom apartment
  - 1.2 spaces per 3 bedroom apartment
  - 1 visitor space per 10 apartments
- Retail
  - 1 space per 70m2 GFA

The proposed apartment mix is not yet known at this stage. However, it is noted that the draft Canada Bay Local Strategic Planning Statement (LSPS) seeks to amend the Council Local Environmental Plan 2013 (LEP). The proposed changes include introduction of a new clause to increase diversity of apartment sizes. The proposal requires that residential flat buildings and mixed-use developments that include at least 10 dwellings to provide the following:

- at least 20% of the dwellings as self-contained studio or one-bedroom dwellings, and
- at least 20% of the dwellings as three or more-bedroom dwellings.

To estimate the indicative unit mix of the proposed development, it is assumed that 20% of all dwellings will be one-bedroom units and 20% will be three-bedroom units.

Table 6.2 shows the car parking requirement of the proposed development based on the Concord West DCP rates.

Table 6.2: Concord West DCP Parking requirement

	No. of Res Units	Retail GFA (m2)	Assumed Unit Mix			Maximum Parking Rate		Maximum Allowable Parking			
			1-bed	2-bed	3-bed	Residential	Retail	Resident	Visitor	Retail	Total
Block 1	96	0	20	56	20	0.3 spaces per studio + 0.5 spaces per 1 bedroom apartment + 0.9 spaces per 2-bedroom apartment + 1.2 spaces per 3-bedroom apartments + 0.1 visitor space unit	1 per 70m2 GFA	85	10	0	95
Block 2	91	0	19	53	19			80	10	0	90
Block 3	135	438	27	81	27			19	14	0	33
Block 4	105	887	21	63	21			92	11	18	121
Block 5	136	0	28	80	28			120	14	0	134
Block 6	182	0	37	108	37			160	19	0	179
Block 7	101	1,080	21	59	21			89	10	18	117
Block 8	144	0	29	86	29			127	14	0	141
Block 9	29	392	6	17	6			26	3	4	33
Block 10	41	0	9	23	9			32	4	0	36
Block 11	57	0	12	33	12			50	6	0	56
Block 12	85	0	17	51	17			75	9	0	84
Block 13	62	0	13	36	13			55	6	0	61
Block 14	58	0	12	34	12			51	6	0	57
Block 15	43	0	9	25	9			38	5	0	43
Block 16	55	0	11	33	11			49	6	0	55
Block 17	44	0	9	26	9			39	5	0	44
Total	1,464	2,797	300	864	300			1,187	152	40	1,379

7 Existing Traffic Conditions

7.1 Site Location

The intersection of George Street and Pomeroy Street is the only entry into the Concord West precinct, as it is bordered by Homebush Bay Drive to the west, and the T1 Epping railway line. Homebush Bay Drive is an access-controlled road with no property access to or from the Concord West precinct.

Figure 7.1: Aerial photo of George Street / Pomeroy Street, Concord West

7.2 Existing Road Conditions

George Street is the access road that runs north/south that facilitates a 'driveway' function for the precinct. It terminates in the south at Great Western Highway (Parramatta Road). In the vicinity of the site, it is generally a four-lane, two-way road with kerb-side parking permitted. It is generally a two-lane two-way road further away from the intersection. On the southern leg, there is a school speed zone (40km/h). Otherwise, the speed zone is a default 50km/h.

Pomeroy Street runs east/west from the intersection. It carries traffic to Homebush Bay Drive and Great Western Highway via Underwood Road. Like George Street, in the vicinity of the intersection, there are four lanes that drops to two further away from the intersection. On the eastern leg, there is another school zone (40km/h), that would otherwise be a default 50km/h.

The intersection is signalised with the only dedicated turning lane being the right turning into George Street north.

The adjacent intersection, 140 metres to the east of George Street, is the Pomeroy Street / Queen Street / Beronga Street intersection which is a 4-way, single lane roundabout.

Queen Street is a local road providing a north/south connection between Concord Road at Rhodes in the north and Parramatta Road, Strathfield in the south. It has a 13 metre wide pavement consisting of two, 3.5 metre wide travel lanes and two, 2.5 metre wide parking lanes.

7.3 Existing Traffic Volumes

Barker Ryan Stewart engaged Matrix Traffic to conduct traffic counts at the Pomeroy Street / George Street and Pomeroy Street / Queen Street intersections from 8.00am to 10.00am and 4.00pm to 6.00pm on Thursday 31st May 2018. The results of the traffic surveys are shown below in Figures 6.2 and 6.3. The full survey results are provided in Appendix A.

Further intersection counts were conducted in July 2020, however, when compared to the 2018 counts, these were considered to be unreliable due to the impact of the Covid-19 pandemic on traffic volumes and travel patterns. The 2018 traffic counts were considered to be more indicative of the normal traffic flow characteristics and were therefore retained as the base traffic volumes for intersection analysis.

The 2018 traffic counts include the traffic generated by the Victoria Avenue Public School (that was estimated in the 2014 GTA Report) however, since 2018 another school has commenced operation in Hamilton Street, North Strathfield, that generates traffic through the George Street / Pomeroy Street intersection. The traffic generated by this school (Our Lady of the Assumption) is assessed in Section 7.5 of this report.

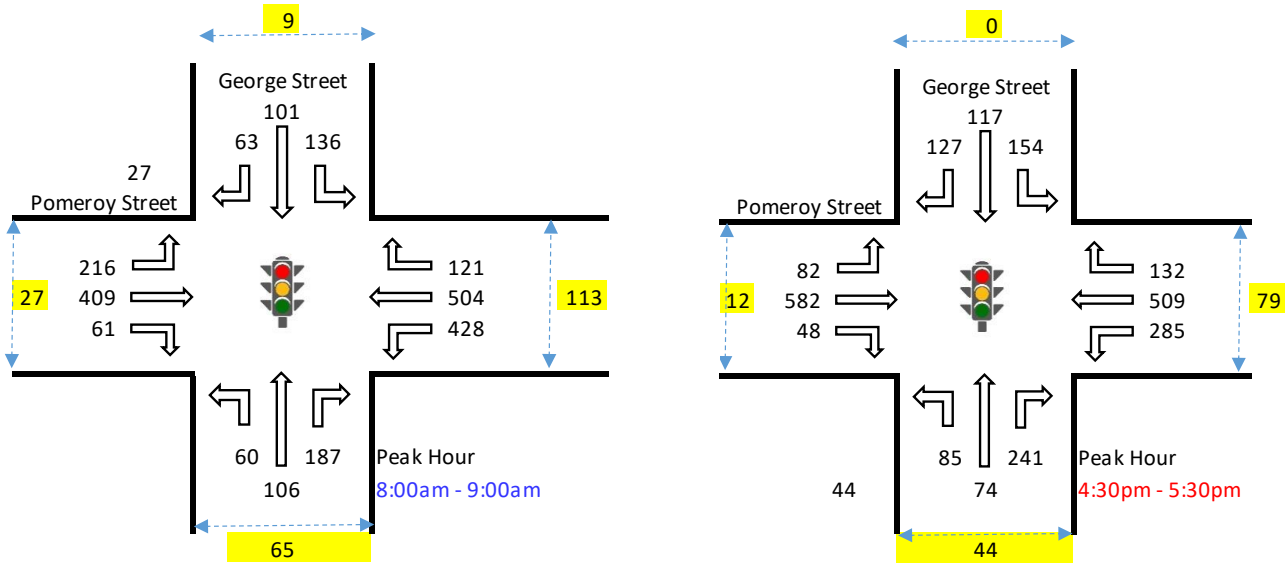

Figure 7.2: Traffic Counts Summary – AM Peak Hour Summary

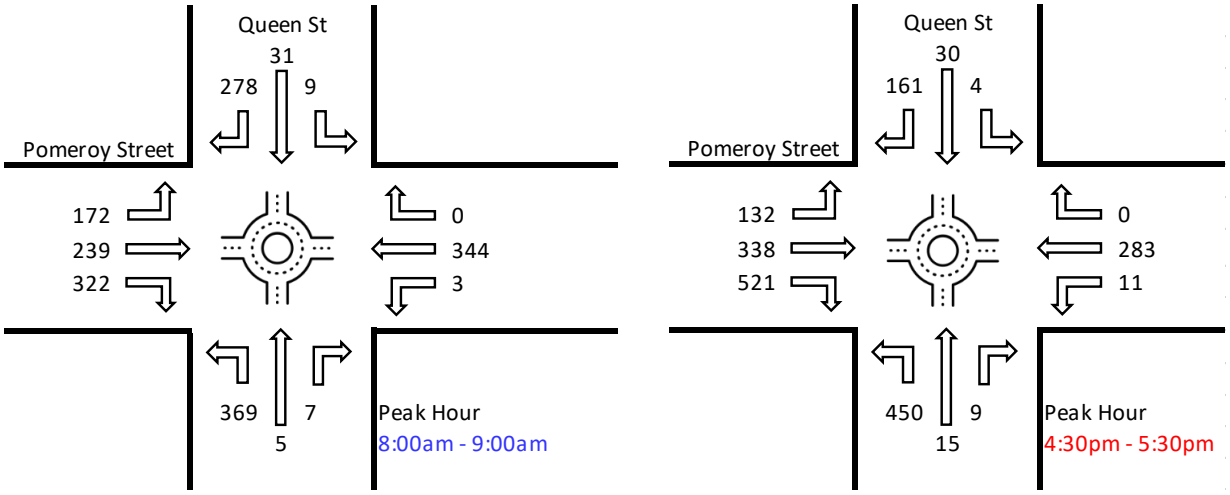

Figure 7.3: Traffic Counts Summary – PM Peak Hour Summary

7.4 Existing Signal Phasing

Phasing information from the intersection's History File on the 31st of May obtained from RMS provided the phase sequence, timing and average duration over every 15-minute period for 24 hours. The full history file is available in Appendix B.

The phasing diagram shows there are 3 phases:

- A Phase: All green on Pomeroy Street;
- B Phase: Controlled right turn from Pomeroy Street to George Street north; and
- C Phase: All green on George Street.

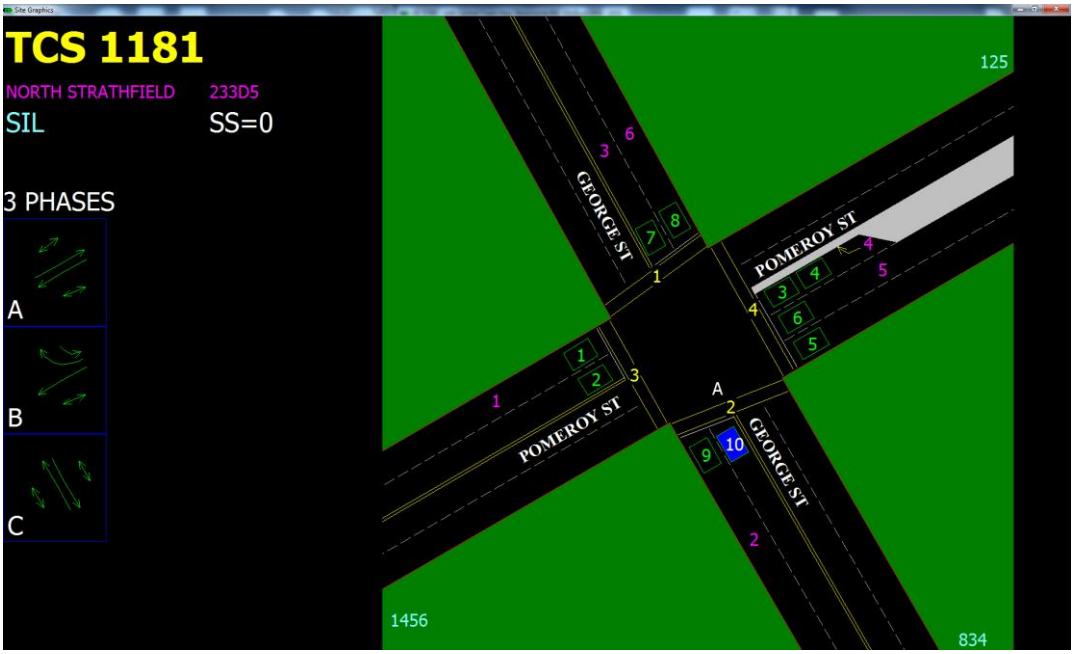

Figure 7.4: Phasing diagram

According to the phasing data below, during morning and afternoon peak periods, all phases ran. The morning peak was found to have an average cycle time of approximately 120 seconds while the afternoon peak was found to have an average cycle time of approximately 113 seconds.

Table 7.1: Cycle and Phase Averages – AM

Phase	0800-0815	0815-0830	0830-0845	0845-0900	Avg (s)
A	42	56	54	61	53
B	15	16	18	20	17
C	30	41	70	58	50
Total	*87*	*113*	*142*	*139*	*120*

Table 7.2: Cycle and Phase Averages – PM

Phase	1615-1630	1630-1645	1645-1700	1700-1745	Avg (s)
A	43	47	48	48	47
B	16	15	20	18	17
C	38	42	55	61	49
Total	*97*	*104*	*123*	*127*	*113*

7.5 Existing Vehicle Trip Distribution

The existing proportion of traffic which utilises each movement at the intersection represents the sum distributions of trips generated locally and further afield. As such, the anticipated distribution of additional trips generated by changes to the Concord West Precinct and the neighbouring school at Hamilton Street, North Strathfield are assumed to conform to this distribution.

7.5.1 Existing and Approved Primary School – North Strathfield

As identified above, since the 2018 traffic surveys, a new primary school has commenced operation in Hamilton Street, North Strathfield (DA2015/0408) with a capacity for up to 450 students and 27 staff with ancillary child care.

Trip generation rates for this site have been adopted from the 2014 GTA report that included the now operational Victoria Avenue Primary School at Concord West which also included child care. Based on the JRPP report (2012SYE119) the school would contain a maximum of 600 students and 72 staff. The trip generation rates for this school were ultimately based on the McLaren Report prepared on behalf of the Department of Education, which were 0.356 peak hour vehicle trips (PHVTs) per student and 0.5 PHVTs per staff. The new school at Hamilton Street, North Strathfield will accommodate up to 450 students and 27 staff, resulting in the following peak hour trip generation.

Table 7.3: Estimated traffic generation for 1A Hamilton Street, North Strathfield

Period	Direction	Traffic Generation		
		Student Trips	Staff Trips	Total
AM Peak Hour 8am-9am	In	80	13.5	94
	Out	80	0	80
PM Peak Hour 3pm-4pm	In	80	13.5	94
	Out	80	0	80

Note that the PM peak hour for the school falls outside the intersection peak hour and has been discounted from further analysis.

The distribution of trips at the George Street / Pomeroy Street intersection are illustrated below in Figure 7.5 (Concord West Precinct) and Figure 7.6 (new school in Hamilton Street). All additional traffic that will be generated by future developments has been distributed proportionately as shown below.

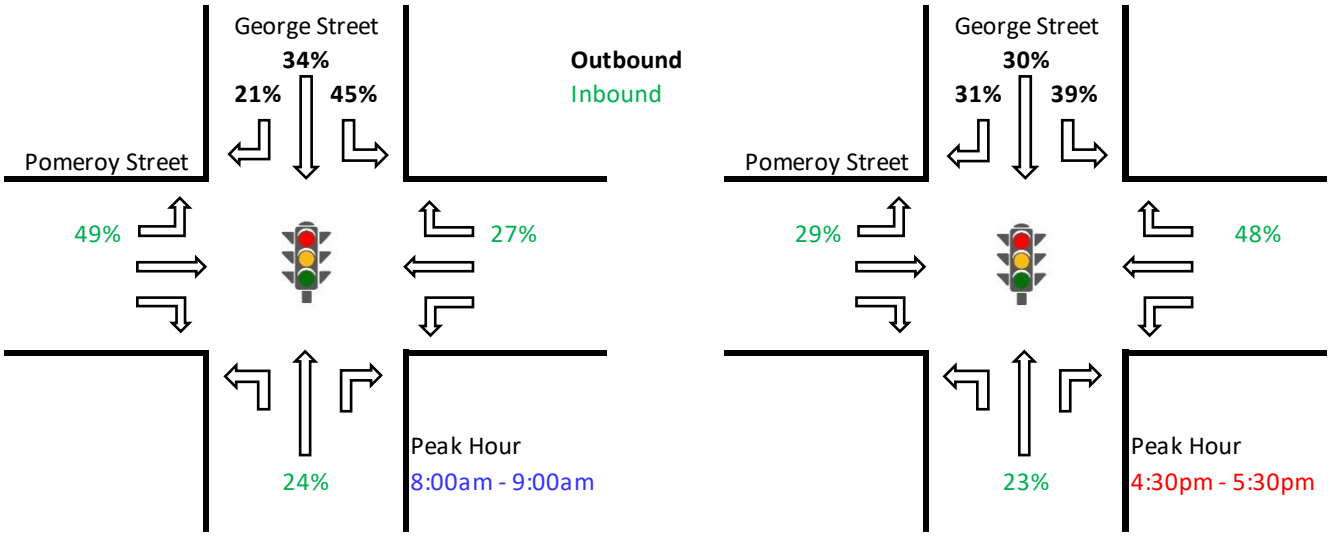

Figure 7.5: Traffic Distribution – Percentage split from the Concord West Precinct

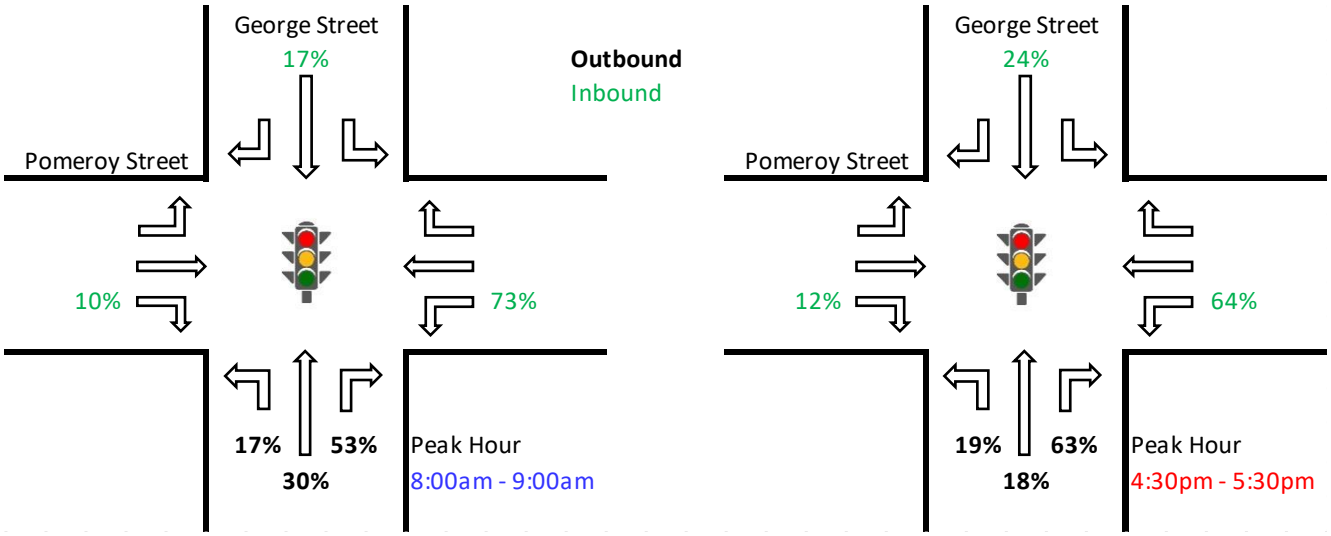

Figure 7.6: Traffic Distribution – Percentage split from Hamilton Street school traffic

The traffic volumes generated by the new school have been added to the AM peak volumes recorded in May 2018 in accordance with the above distribution.

7.6 Existing Intersection Operation

Based on the information outlined in the previous sections and site observations, the Pomeroy Street / George Street and Pomeroy Street Queen Street / Beronga Street intersections have been modelled using SIDRA 8 software to obtain a baseline for their operational performance.

The below movement summaries show the results of the Sidra modelling during the morning and afternoon peak periods (8.00am to 9.00am and 4.30pm to 5.30pm).

The full set of SIDRA analyses are attached in Appendix D.

MOVEMENT SUMMARY

Site: 101 [Pomeroy George - AM Base]

Network: N101 [Pomeroy AM Base]

Pomeroy George - AM Base
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: George Street														
1	L2	78	0.0	78	0.0	0.323	35.8	LOS C	9.1	63.5	0.79	0.70	0.79	32.4
2	T1	137	0.0	137	0.0	1.448	43.1	LOS D	47.3	330.8	0.79	0.74	0.86	30.9
3	R2	241	0.0	241	0.0	1.448	461.8	LOS F	47.3	330.8	1.00	2.10	3.57	3.6
Approach		456	0.0	456	0.0	1.448	263.3	LOS F	47.3	330.8	0.90	1.45	2.28	8.0
East: Pomeroy Street														
4	L2	523	0.0	523	0.0	0.513	22.0	LOS B	18.7	130.7	0.67	0.77	0.67	33.6
5	T1	531	0.0	531	0.0	0.671	17.1	LOS B	18.7	130.6	0.66	0.58	0.66	33.6
6	R2	127	0.0	127	0.0	0.351	37.2	LOS C	5.7	39.9	0.84	0.78	0.84	27.5
Approach		1181	0.0	1181	0.0	0.671	21.4	LOS B	18.7	130.7	0.68	0.69	0.68	32.7
North: George Street														
7	L2	143	0.0	143	0.0	0.226	34.6	LOS C	5.9	41.5	0.75	0.75	0.75	25.9
8	T1	123	0.0	123	0.0	0.909	71.4	LOS F	13.1	91.5	1.00	1.09	1.44	25.1
9	R2	66	0.0	66	0.0	0.909	75.9	LOS F	13.1	91.5	1.00	1.09	1.44	22.8
Approach		333	0.0	333	0.0	0.909	56.5	LOS D	13.1	91.5	0.89	0.94	1.15	24.7
West: Pomeroy Street														
10	L2	227	0.0	227	0.0	0.897	48.1	LOS D	31.5	220.6	0.82	0.91	1.03	28.6
11	T1	431	0.0	431	0.0	0.897	48.4	LOS D	31.5	220.6	0.83	0.94	1.11	16.9
12	R2	74	0.0	74	0.0	0.897	68.2	LOS E	11.6	81.3	0.86	1.03	1.34	24.1
Approach		732	0.0	732	0.0	0.897	50.3	LOS D	31.5	220.6	0.83	0.94	1.11	22.2
All Vehicles		2701	0.0	2701	0.0	1.448	74.4	LOS F	47.3	330.8	0.78	0.92	1.12	18.4

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.

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
P1	South Full Crossing	68	16.6	LOS B	0.1	0.1	0.53	0.53
P2	East Full Crossing	119	35.4	LOS D	0.3	0.3	0.77	0.77
P3	North Full Crossing	9	23.4	LOS C	0.0	0.0	0.63	0.63
P4	West Full Crossing	28	33.0	LOS D	0.1	0.1	0.74	0.74
All Pedestrians		225	28.9	LOS C			0.69	0.69

MOVEMENT SUMMARY

Site: PQ [Pomeroy Queen - AM Base]

Network: N101 [Pomeroy AM Base]

Pomeroy Queen - AM Base
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	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	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Queen Street														
1	L2	425	0.0	425	0.0	0.724	19.0	LOS B	8.0	55.8	0.96	1.18	1.47	23.9
2	T1	5	0.0	5	0.0	0.724	17.8	LOS B	8.0	55.8	0.96	1.18	1.47	31.7
3	R2	7	0.0	7	0.0	0.724	22.1	LOS B	8.0	55.8	0.96	1.18	1.47	33.5
Approach		438	0.0	438	0.0	0.724	19.0	LOS B	8.0	55.8	0.96	1.18	1.47	24.3
East: Beronga Street														
4	L2	3	0.0	3	0.0	0.488	9.0	LOS A	4.4	30.7	0.90	0.79	0.90	43.1
5	T1	385	0.0	385	0.0	0.488	9.6	LOS A	4.4	30.7	0.90	0.79	0.90	35.2
6	R2	1	0.0	1	0.0	0.488	14.3	LOS A	4.4	30.7	0.90	0.79	0.90	42.7
Approach		389	0.0	389	0.0	0.488	9.6	LOS A	4.4	30.7	0.90	0.79	0.90	35.3
North: Queen Street														
7	L2	9	0.0	9	0.0	0.437	11.5	LOS A	4.3	29.9	0.84	0.72	0.84	34.7
8	T1	33	0.0	33	0.0	0.437	10.4	LOS A	4.3	29.9	0.84	0.72	0.84	37.2
9	R2	305	0.0	305	0.0	0.437	14.6	LOS B	4.3	29.9	0.84	0.72	0.84	25.6
Approach		347	0.0	347	0.0	0.437	14.1	LOS A	4.3	29.9	0.84	0.72	0.84	27.5
West: Pomeroy Street														
10	L2	187	0.0	170	0.0	0.440	3.5	LOS A	3.9	27.3	0.10	0.53	0.10	43.8
11	T1	266	0.0	242	0.0	0.440	4.1	LOS A	3.9	27.3	0.10	0.53	0.10	47.0
12	R2	362	0.0	329	0.0	0.440	8.8	LOS A	3.9	27.3	0.10	0.53	0.10	47.7
Approach		816	0.0	741 N1	0.0	0.440	6.0	LOS A	3.9	27.3	0.10	0.53	0.10	46.6
All Vehicles		1991	0.0	1916 N1	0.0	0.724	11.2	LOS A	8.0	55.8	0.59	0.77	0.71	35.4

The SIDRA reports above show that the Pomeroy Street / George Street intersection is operating at oversaturated conditions in the AM peak, particularly due to the right turn movements in both of the George Street approaches. The poor operation of the right turn movement in the northern (southbound) approach also appears to be affecting the through movement, which is also over-saturated. The Pomeroy Street approaches, however, operate at an acceptable Level of Service D, although the western approach is almost at capacity with a degree of saturation of 0.897.

MOVEMENT SUMMARY

Site: 101 [Pomeroy George PM Base]

Network: N101 [Pomeroy PM Base]

Pomeroy George PM Base
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	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	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: George Street														
1	L2	89	0.0	89	0.0	0.153	27.7	LOS B	4.3	30.2	0.66	0.67	0.66	34.7
2	T1	78	0.0	78	0.0	0.684	29.9	LOS C	14.4	101.0	0.79	0.75	0.79	34.3
3	R2	254	0.0	254	0.0	0.684	38.9	LOS C	14.4	101.0	0.87	0.81	0.87	24.7
Approach		421	0.0	421	0.0	0.684	34.9	LOS C	14.4	101.0	0.81	0.77	0.81	29.2
East: Pomeroy Street														
4	L2	300	0.0	300	0.0	0.407	25.8	LOS B	13.5	94.5	0.69	0.74	0.69	32.2
5	T1	536	0.0	536	0.0	0.679	22.4	LOS B	18.7	131.1	0.73	0.66	0.73	30.3
6	R2	139	0.0	139	0.0	0.411	40.6	LOS C	6.5	45.4	0.83	0.78	0.83	26.5
Approach		975	0.0	975	0.0	0.679	26.0	LOS B	18.7	131.1	0.73	0.70	0.73	30.2
North: George Street														
7	L2	162	0.0	162	0.0	0.209	28.3	LOS B	6.0	41.9	0.68	0.73	0.68	28.4
8	T1	123	0.0	123	0.0	0.563	32.2	LOS C	11.7	81.8	0.83	0.75	0.83	34.0
9	R2	134	0.0	134	0.0	0.563	36.7	LOS C	11.7	81.8	0.83	0.75	0.83	31.8
Approach		419	0.0	419	0.0	0.563	32.1	LOS C	11.7	81.8	0.77	0.75	0.77	31.6
West: Pomeroy Street														
10	L2	86	0.0	86	0.0	0.792	30.6	LOS C	22.4	156.7	0.76	0.73	0.80	34.6
11	T1	613	0.0	613	0.0	0.792	29.8	LOS C	22.4	156.7	0.77	0.75	0.85	22.8
12	R2	53	4.0	53	4.0	0.792	43.1	LOS D	11.7	82.8	0.79	0.81	0.96	30.2
Approach		752	0.3	752	0.3	0.792	30.8	LOS C	22.4	156.7	0.77	0.75	0.85	25.5
All Vehicles		2566	0.1	2566	0.1	0.792	29.9	LOS C	22.4	156.7	0.76	0.73	0.79	29.1

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.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	46	21.6	LOS C	0.1	0.1	0.60	0.60
P2	East Full Crossing	83	28.8	LOS C	0.2	0.2	0.69	0.69
P3	North Full Crossing	1	21.6	LOS C	0.0	0.0	0.60	0.60
P4	West Full Crossing	13	26.7	LOS C	0.0	0.0	0.67	0.67
All Pedestrians		143	26.2	LOS C			0.66	0.66

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MOVEMENT SUMMARY

Site: PQ [Pomeroy Queen PM base]

Network: N101 [Pomeroy PM Base]

Pomeroy Queen PM base
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Queen Street														
1	L2	474	0.0	474	0.0	0.670	12.7	LOS A	6.7	46.7	0.86	0.97	1.11	30.0
2	T1	16	0.0	16	0.0	0.670	11.5	LOS A	6.7	46.7	0.86	0.97	1.11	37.8
3	R2	9	0.0	9	0.0	0.670	15.7	LOS B	6.7	46.7	0.86	0.97	1.11	39.1
Approach		499	0.0	499	0.0	0.670	12.7	LOS A	6.7	46.7	0.86	0.97	1.11	30.6
East: Beronga Street														
4	L2	12	0.0	12	0.0	0.400	10.3	LOS A	3.7	26.2	0.91	0.76	0.91	41.7
5	T1	298	0.0	298	0.0	0.400	10.9	LOS A	3.7	26.2	0.91	0.76	0.91	33.4
6	R2	1	0.0	1	0.0	0.400	15.6	LOS B	3.7	26.2	0.91	0.76	0.91	41.1
Approach		311	0.0	311	0.0	0.400	10.9	LOS A	3.7	26.2	0.91	0.76	0.91	33.9
North: Queen Street														
7	L2	4	0.0	4	0.0	0.346	20.7	LOS B	4.6	32.5	1.00	0.70	1.00	28.2
8	T1	32	0.0	32	0.0	0.346	19.5	LOS B	4.6	32.5	1.00	0.70	1.00	29.8
9	R2	169	0.0	169	0.0	0.346	23.7	LOS B	4.6	32.5	1.00	0.70	1.00	18.8
Approach		205	0.0	205	0.0	0.346	23.0	LOS B	4.6	32.5	1.00	0.70	1.00	21.2
West: Pomeroy Street														
10	L2	139	0.0	139	0.0	0.634	3.6	LOS A	8.1	56.5	0.19	0.53	0.19	42.5
11	T1	356	0.0	356	0.0	0.634	4.2	LOS A	8.1	56.5	0.19	0.53	0.19	45.7
12	R2	548	0.0	548	0.0	0.634	8.9	LOS A	8.1	56.5	0.19	0.53	0.19	46.4
Approach		1043	0.0	1043	0.0	0.634	6.6	LOS A	8.1	56.5	0.19	0.53	0.19	45.7
All Vehicles		2058	0.0	2058	0.0	0.670	10.4	LOS A	8.1	56.5	0.54	0.69	0.60	37.6

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The existing afternoon peak operates better than the morning peak. Not only is the overall LOS better than the morning, but the saturation levels and average delays are also better. This would be due largely to the absence of any school traffic.

8 Future Traffic Volumes

8.1 Future Background Traffic

Future traffic growth has been adopted from a study conducted by The Transport Planning Partnership (TTPP) in October 2020, based on the Sydney Strategic Travel Forecast Model (STFM) provided by TfNSW. The STFM is a strategic transport planning model that considers population and employment growth and is used for high level of assessment of major infrastructure proposals, transport strategies and policy decision making.

The STFM provides future year traffic volumes to determine the relative traffic growth between years for application to the baseline traffic to provide estimations for future year traffic conditions.
The model projects that there will be significant increases in traffic volumes along Pomeroy Street and George Street.

Figure 8.1 and Figure 8.2 show the estimated future traffic volumes over a 10-year planning horizon at the Pomeroy / George Street and Pomeroy Street / Queen Street / Beronga Street intersections.

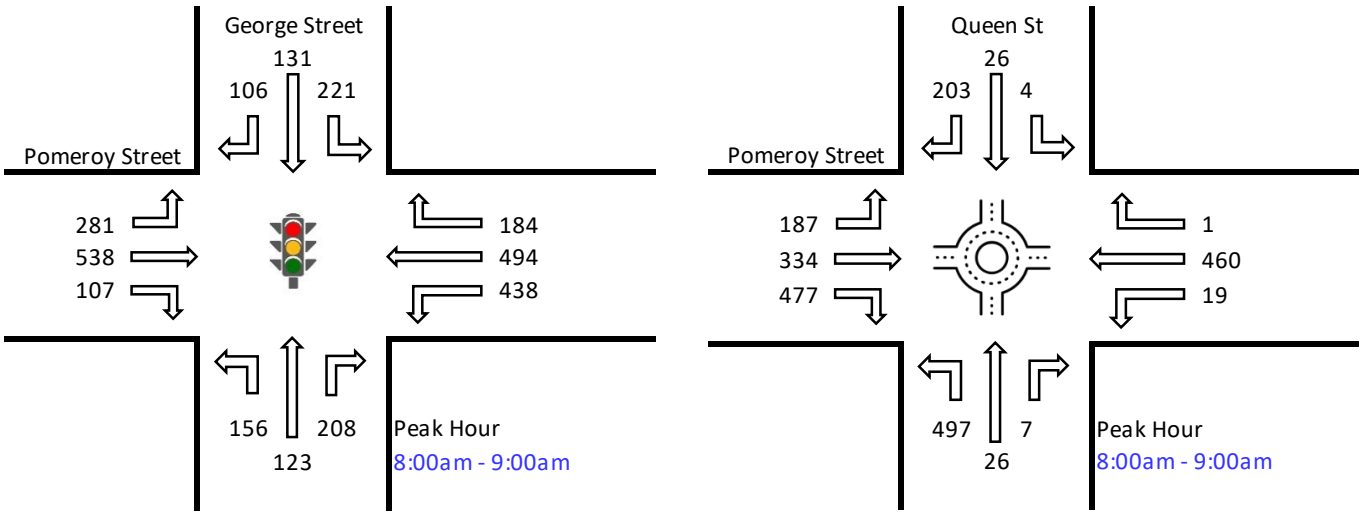


Figure 8.1: Future AM Background Traffic

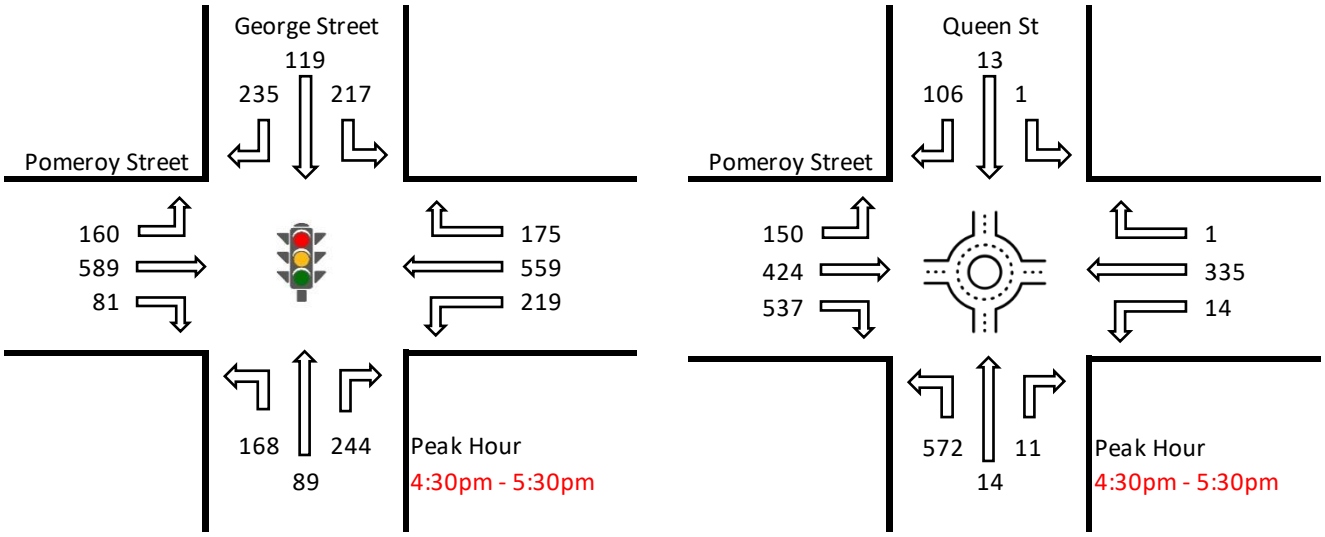


Figure 8.2: Future PM Background Traffic

As shown above, it is projected that there would be significant increase in traffic through George Street, however, it is noted that a large part of the area served by George Street has been included in the proposed development and the 2014 Masterplan. Therefore, there would be limited area that can be further developed to be able to generate such significant traffic growth.

However, for a conservative assessment, the STFM growth rates provided by TfNSW have been applied as they are.

8.2 Development Traffic

8.2.1 Parkside

The site of the new master-planned neighbourhood, to be known as "Parkside", is a 6.8 hectare site bounded by Homebush Bay Drive in the west, the northern rail line in the east, Concord Avenue in the north and the Westpac Service Centre at 1 King Street in the south.

Parkside is estimated to yield 1,465 residential units and 2,797m² of retail space.

Trip generation associated with the residential use has been estimated using the rates provided in Technical Direction TD13-04A. These rates are considered acceptable since all blocks are within 400 metres of Concord West Station.

The trip generation rates for the residential use are as follows:
- AM peak: 0.19 vehicle trips per unit
- PM peak: 0.15 vehicle trips per unit.

This equates to 278 AM trips and 220 PM trips.

The TTPP study suggested a peak hour trip rate of two vehicle trips per parking space for retail use. It assumed that 40 retail car spaces will be provided on site which equates to 80 peak hour trips (AM and PM).

Whilst it is expected that most of trips related to retail use will be contained within the Concord West precinct, for a conservative assessment, retail trips have been included in the development traffic volumes for Pomeroy Street and George Street.

The total vehicle trips that could be expected to be generated by the proposed Parkside development are therefore:

AM: 278 residential + 80 retail = 358 trips
PM: 220 residential + 80 retail = 300 trips

8.2.2 Concord West Masterplan

The masterplan was prepared in 2014 and provides a framework for the proposed rezoning of some industrial sites within the Concord West Precinct into residential zones.

The identified sites are as follows, with their potential yield in residential units:

- Site 1: 7 Concord Avenue – 255 units
- Site 2: 202-210 George Street – 86 units
- Site 3: 3 King Street – 20 units
- Site 5: 176-184 George Street – 157 units
- Site 6: 2-10 Rothwell Avenue – 141 units
- Site 7: 25 George Street – 126 units

The masterplan proposes to provide 785 residential units, however, two of the above sites (Sites 2 and 3) are within the area of the proposed Parkside development. The potential yield from the rezoning of the remaining industrial sites is therefore 785 – 106 = 679 units.

It is noted that parts of Site 1 and Site 7 of the 2014 Masterplan are outside the 400 metre catchment of Concord West train station. It is conservatively estimated that the properties outside the 400 metre catchment account for 20% of the overall dwellings.

The following trip generation rates for the dwellings within the 400 metres to 800 metres catchment.

- AM peak: 0.25 vehicle trips per unit.
- PM peak: 0.28 vehicle trips per unit.

These rates are based on the average rates obtained from a number of comparable sites sourced from research conducted by the former Roads and Maritime Services in 2012 and 2017.

8.2.3 Existing Industrial Lots

The estimated traffic generated by existing industrial activities within the precinct is based on the indicative GFA's in Figure 8.3 below. Where the buildings were 2-storey factory/offices, the offices were conservatively assumed to take up only 40% of the total site area.

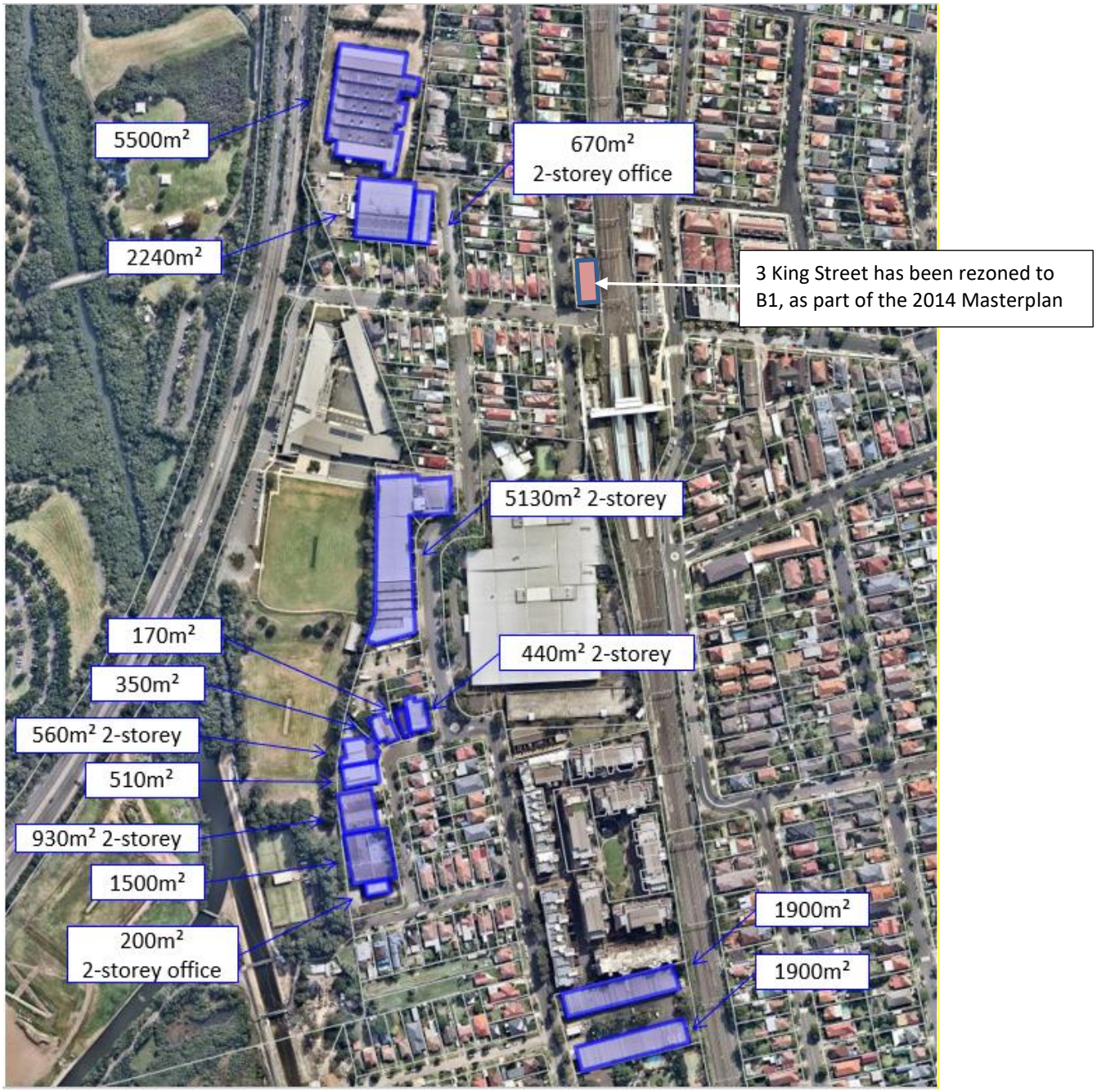


Figure 8.3: Existing Industrial Lots in the Concord West Precinct

Table 8.1: Trip Generation for Industrial Lots

Site	Warehouse GFA	AM and PM Trips	Office GFA	AM Trips	PM Trips
7 Concord Ave	5,500	27			
202-210 George St		-	1,340	21	16
204 George St	2,240	10			
180 George St	5,130	25	2,052	32	24
10 Rothwell Ave	440	2	176	3	2
10 Rothwell Ave	170	1			
8 Rothwell Ave	350	2			
4 Rothwell	560	3	224	4	3
4 Rothwell	510	3			
2A Rothwell	930	4			
2 Rothwell	1,500	7	400	7	5
9 George	1,900	10			
9 George	1,900	10			
Totals	21,130	106	4,192	67	50

Generation Rates:
Warehouse – 0.5 trips per 100m² GFA (AM and PM)
Office – 1.6 trips per 100m² GFA (AM) and 1.2 trips per 100m² (PM)

All lots above were seen to be in operation to some degree, however, to remain conservative and take into account industrial lots that are not at their full use a reduction factor of 0.8 has been applied resulting in an overall trip generation of:

Warehouse – 106 x 0.8 = 85 trips (AM and PM)
Office – 67 x 0.8 = 54 trips (AM); 50 x 0.8 = 40 trips (PM)

This estimated trip generation for the industrial developments has been subtracted from the total development traffic to account for the conversion of industrial zones to proposed residential zones.

8.2.4 Development Traffic Summary

The following table has been reproduced from the October 2020 TTPP Study to summarise the future traffic volumes that will be generated onto the road network by the proposed developments within the Concord West Precinct.

Table 8.2: Summary of Proposed Development Traffic

Land Use	Size	Trip Rate		Trip Generation	
		AM Peak	PM Peak	AM Peak	PM Peak
Residential	1,465 units	0.19 per unit	0.15 per unit	278	220
Retail	40 parking spaces	2 per parking space	2 per parking space	80	80
Residential (2014 Masterplan)	679 units				
Within 400m catchment	543 units	0.19 per unit	0.15 per unit	103	81
Within 400m-800m catchment	136 units	0.25 per unit	0.28 per unit	34	38
Existing Industrial (to be deducted)					
Warehouse	21,130 sqm warehouse GFA	0.5 per 100m² GFA	0.5 per 100m² GFA	-85	-85
Office	4,192 sqm office GFA	1.6 per 100m² GFA	1.2 per 100m² GFA	-54	-40
Total				356	294

Based on the above, the overall Concord West Precinct is estimated to generate an additional 356 vehicle trips in the morning peak period and 294 vehicle trips in the evening peak period.

The total future traffic volumes (Existing + Background + Development) at the Pomeroy Street / George Street and Pomeroy Street / Queen Street / Beronga Street intersections are shown below in Figure 7.4 and Figure 7.5.

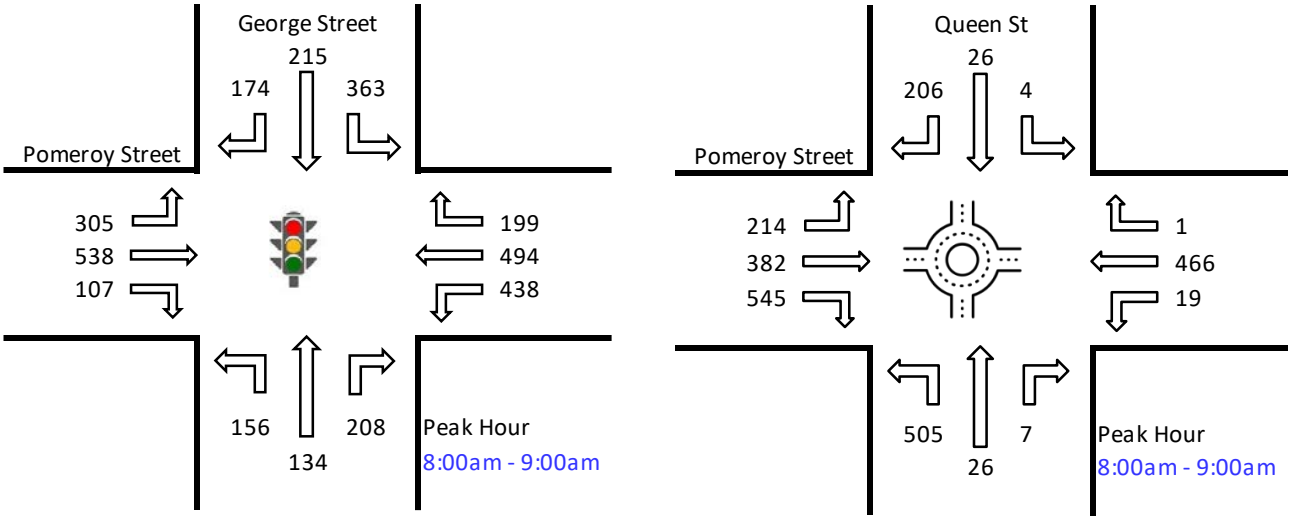


Figure 8.4: Existing + Background + Development AM Peak

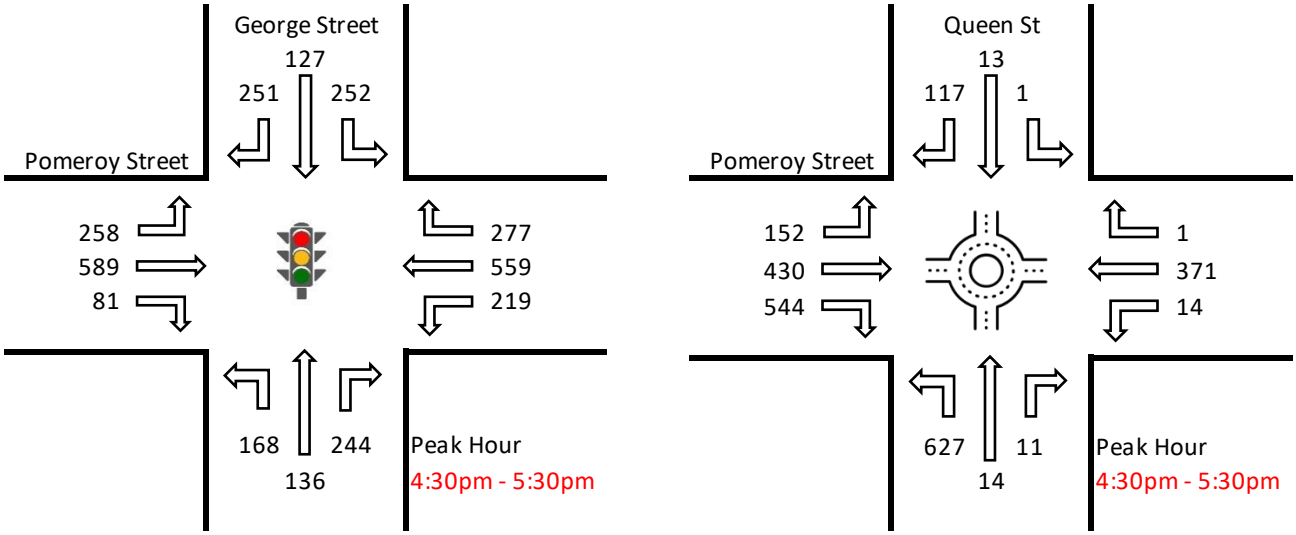


Figure 8.5: Existing + Background + Development PM Peak

9 Proposed Pomeroy Street / George Street Intersection Upgrade

The SIDRA analysis conducted for the existing intersection of Pomeroy Street and George Street (Section 6.6) demonstrates that the Pomeroy Street / George Street intersection is operating at oversaturated conditions in the AM peak, particularly due to the right turn movements in both of the George Street approaches. It is clear then that this intersection in its current arrangement does not have any spare capacity to cater for the future growth in background traffic nor any future development traffic.

The development consent for the Victoria Avenue Primary School at Concord West has included the requirement for a left turn slip lane on the north-eastern corner of the intersection to cater for the additional traffic generated by the school.

As part of the current planning proposal, it is recommended that the corner property at 88 George Street be acquired to facilitate the construction of a left slip lane for eastbound traffic in Pomeroy Street turning left into George Street. (See Figure 9.1 below).

Figure 9.1: Location of proposed left slip lane within the property of No. 88 George Street

Ultimately, the intention is to provide two left turn slip lanes adjacent to the northern leg of George Street.

Details of the proposed George Street/Pomeroy Street intersection upgrade plans prepared by BG&E are attached in Appendix C.

10 Traffic Assessment

The total future traffic volumes (Existing + Background + Development) outlined in Section 7.1.4 have been used in a Sidra model to assess the future operational performance of the Pomeroy Street / George Street and Pomeroy Street / Queen Street / Beronga Street intersections based on the upgrade options discussed in the previous section (two left turn slip lanes). Due to the close proximity of the two intersections (130 metres), they have been modelled as a network to ensure that the interaction between them is taken into consideration.

The existing limitations of the existing intersection arrangement make it clear that the proposed left turn slip lanes are essential to provide sufficient capacity for the estimated background growth as well as the additional traffic that will be generated by the future developments within the Concord West Precinct.

The results of the Sidra analysis are shown below in Table 9.1.

Table 10.1: SIDRA Summaries

Scenario	Peak	Leg	LOS	Average delay (seconds)	95% queue (metres)	DOS
Pomeroy St / George St Existing	AM	George St (South)	F	263.3	330.8	1.448
		Pomeroy St (East)	B	21.4	130.7	0.671
		George St (North)	D	56.5	91.5	0.909
		Pomeroy St (West	D	50.3	220.6	0.897
		Intersection	F	74.4	330.8	1.448
	PM	George St (South)	C	34.9	101.0	0.684
		Pomeroy St (East)	B	26.0	131.1	0.679
		George St (North)	C	32.1	81.8	0.563
		Pomeroy St (West	C	30.8	156.7	0.792
		Intersection	C	29.9	156.7	0.684
Pomeroy St / Queen St Existing	AM	Queen St (South)	B	15.5	42.0	1.066
		Beronga St (East)	A	9.4	28.0	0.464
		Queen St (North)	A	14.3	29.0	0.434
		Pomeroy St (West	A	10.2	28.8	0.648
		Intersection	D	47.8	217.7	1.066
	PM	Queen St (South)	A	12.7	46.7	0.670
		Beronga St (East)	A	10.9	26.2	0.400
		Queen St (North)	B	23.0	32.5	0.346
		Pomeroy St (West	A	6.6	56.5	0.634
		Intersection	A	10.4	56.5	0.670
Pomeroy St / George St Existing + Background + Development	AM	George St (South)	C	36.1	116.6	0.752
		Pomeroy St (East)	C	30.6	144.5	0.818
		George St (North)	C	30.2	87.0	0.873
		Pomeroy St (West	C	35.1	149.8	0.830
		Intersection	C	32.7	149.8	0.873
	PM	George St (South)	C	40.7	159.7	0.655
		Pomeroy St (East)	C	32.4	135.0	0.877
		George St (North)	C	36.4	135.8	0.854
		Pomeroy St (West	C	32.6	144.4	0.591
		Intersection	C	34.7	159.7	0.877
Pomeroy St / Queen St Existing + Background + Development	AM	Queen St (South)	F	135.0	372.2	1.105
		Beronga St (East)	C	31.0	99.3	0.768
		Queen St (North)	B	27.3	48.5	0.512
		Pomeroy St (West	A	6.5	90.8	0.740
		Intersection	C	42.3	372.2	1.105
	PM	Queen St (South)	D	54.9	232.1	0.999
		Beronga St (East)	A	11.0	33.3	0.514
		Queen St (North)	B	26.5	24.9	0.283
		Pomeroy St (West	A	6.5	84.9	0.720
		Intersection	B	22.1	232.1	0.999

The modelling results in Table 10.1show significant improvements in the operational performance of the Pomeroy Street / George Street intersection particularly in the AM peak period where the intersection level of service improved from F to C, the 95% queue length reduced by more than 50% from 308.8 metres to 149.8 metres and the degree of saturation decreased from 1.448 (oversaturated conditions) to 0.873. While this degree of saturation (0.873) indicates that the intersection is almost at capacity, it should be noted that the traffic volumes used in the analysis are very conservative and are considered to be the worst-case scenario.

The improvements in operational performance at the Pomeroy Street / George street intersection are dependent on the future provision of the proposed left turn slip lanes discussed in Section 8 of this report. There will also need to be extensions to the existing No Stopping restrictions on all approaches during the morning and afternoon peak periods, particularly along the northern side of Pomeroy Street west of the intersection, where a No Stopping distance of 200 metres will be required. It is acknowledged that extensive No Stopping restrictions may be unpalatable for the affected residents, however, these restrictions will only need to apply during peak periods and unrestricted parking will still be available for a major part of each weekday and on weekends.

The extent of peak period parking restrictions is shown in Figure 10.1 below.

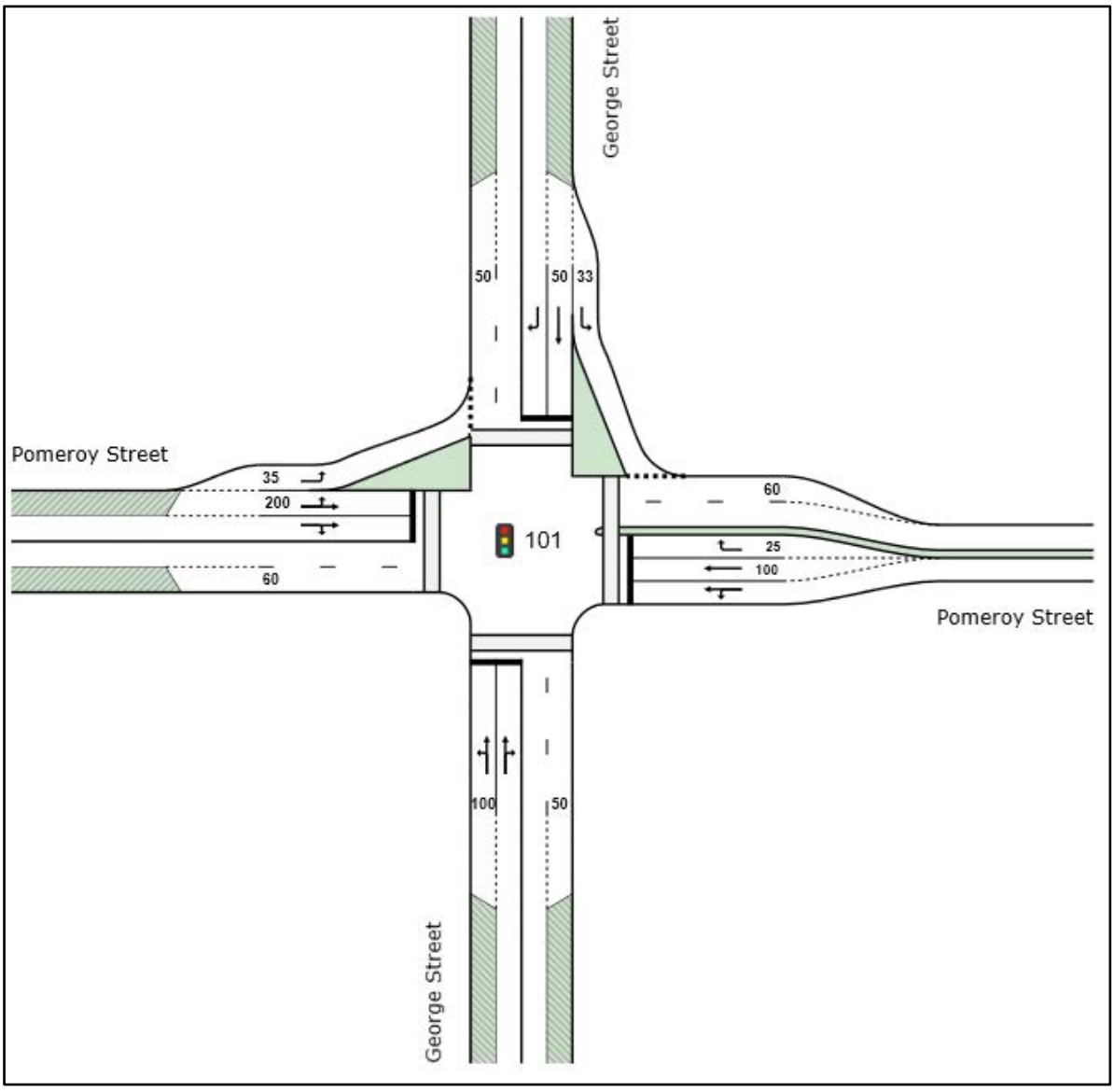


Figure 10.1: Pomeroy Street / George Street - Proposed intersection arrangement

The only adverse impact indicated in the modelling for the future scenario is the Queen Street (South) approach at the Pomeroy Street / Queen Street / Beronga Street intersection during the AM peak. The modelling indicates that this approach will be oversaturated and operate at a level of service F with a 95% queue length of 372 metres.

A traffic queue of this length would extend south to Shipley Avenue and potentially cause blockages at Waratah Street and Wellbank Street. However, due to the availability of alternative routes to Pomeroy Street it is likely that a queue of this magnitude will not eventuate. For example, drivers accessing Queen Street from Concord Road could choose to continue north to Correys Avenue and Gracemere Street to access Pomeroy Street from the north (see Figure 10.2 below). It is noted that the Queen Street (North) approach to the Pomeroy Street intersection is predicted to operate at a level of service B in the AM peak with a 95% queue of only 48.5 metres and a degree of saturation of 0.514, which indicates that there is ample spare capacity on this approach to cater for a reassignment of traffic from the Queen Street (South) approach.

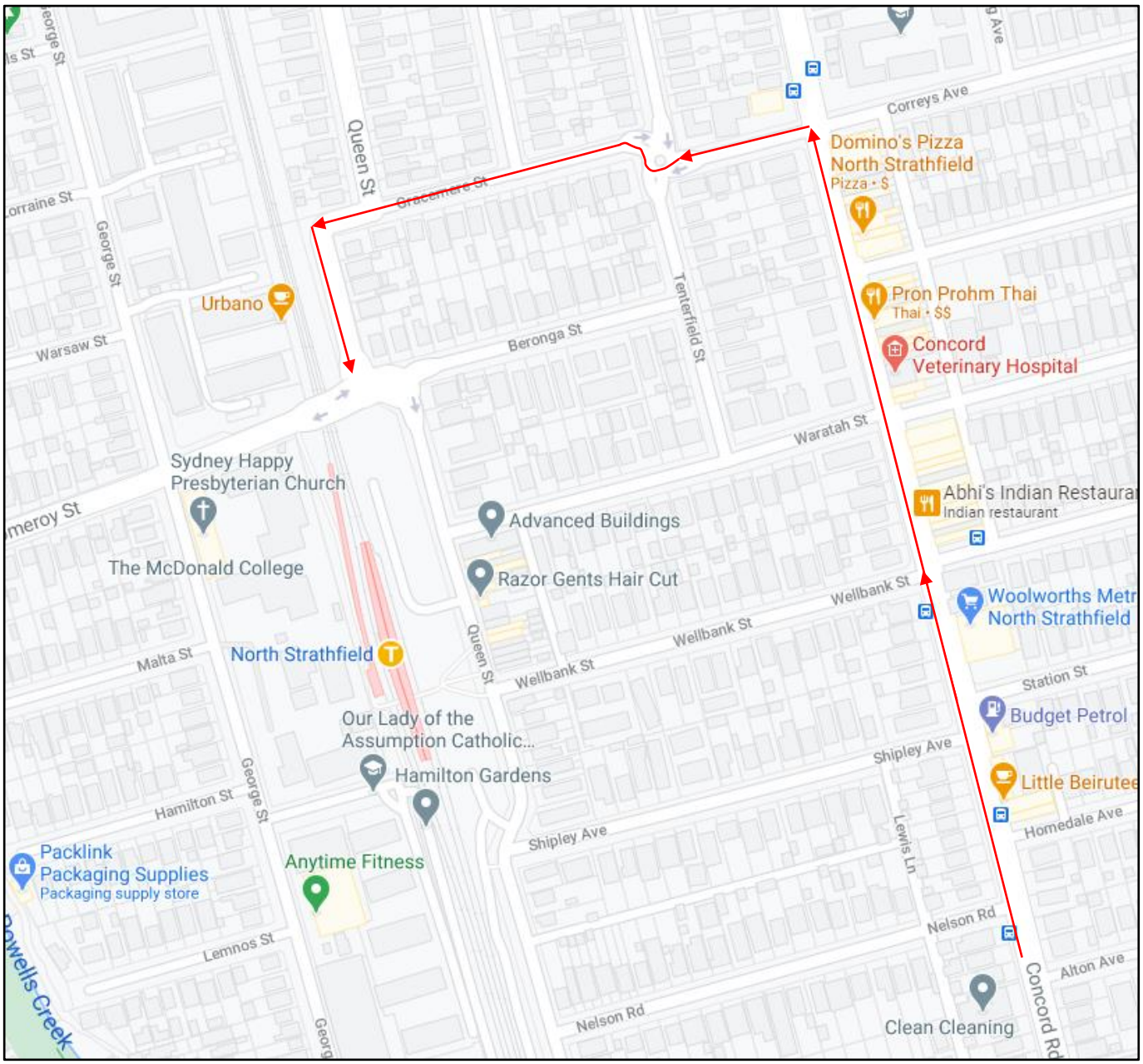


Figure 10.2: Alternative route to Pomeroy Street from the south

11 Conclusions/recommendations

This report has been prepared in accordance with the *RMS Guide to Traffic Generating Developments* and the *RMS Traffic Modelling Guidelines* to identify the volume of additional traffic that will be generated by a new master-planned neighbourhood to be known as "Parkside" and the other potential developments within the Concord West precinct and to assess the impact of this additional traffic on the surrounding local road network.

The site of this new master-planned neighbourhood is a 6.8 hectare site bounded by Homebush Bay Drive in the west, the northern rail line in the east, Concord Avenue in the north and the Westpac Service Centre at 1 King Street in the south,

The Concord West Precinct is well connected to public transport, with rail and bus connections located within the precinct or an easy walking distance from the precinct. Concord West railway station is located on the eastern boundary of the precinct and is easily accessible by pedestrians via a full width concrete path paving.

Sustainable transport initiatives, including the development and implementation of a Green Travel Plan, will encourage the future residents and staff of future businesses to make greater use of public transport, cycling walking and car sharing for commuting and work-related journeys.

The proposed Concord West Precinct works includes extensive upgrades to the existing pedestrian and cycleway network to complement the existing footpaths and pedestrian crossings. These upgrades include the creation of a shared zone and an improved connection to the Concord West train station and rail underpass.

The Parking Assessment for the precinct has concluded that a maximum of 1,375 spaces should be provided in the Concord West Precinct consisting of 1,187 residential, 152 visitor and 40 retail spaces.

Based on intersection traffic surveys conducted in May 2018, The Pomeroy Street / George Street and Pomeroy Street / Queen Street / Beronga Street intersections, SIDRA modelling shows that the Pomeroy Street / George Street intersection is operating at oversaturated conditions in the AM peak, particularly due to the right turn movements in both of the George Street approaches.

Proposed George Street / Pomeroy intersection works include two left turn slip lanes to and from the northern leg and additional peak hour parking restrictions. These proposed works will increase the capacity of the intersection to cater for the additional traffic that will be generated by the future growth in background traffic over a 10 year timeframe as well as the additional traffic that will be generated by redevelopment within the Concord West Precinct.

12 References

Canada Bay DCP 2017

Roads and Maritime Services, '*Guide to Traffic Generating Developments',* Version 2.2 dated October 2002.

Roads and Maritime Services, '*Technical Direction – Guide to Traffic Generating Developments – Updated Traffic Surveys',* Version TDT 2013/04a dated August 2013.

NSW Department of Planning, '*SEPP (Infrastructure) 2007*'.

Canada Bay Local Planning Strategy 2010 – Part 5 Transport and Access

Concord West Transport Report (by GTA)

Strategic Review of the Canada Bay Bike Plan

The City of Canada Bay Local Strategic Planning Statement 2020

Eastern City District Plan

Greater Sydney Region Plan

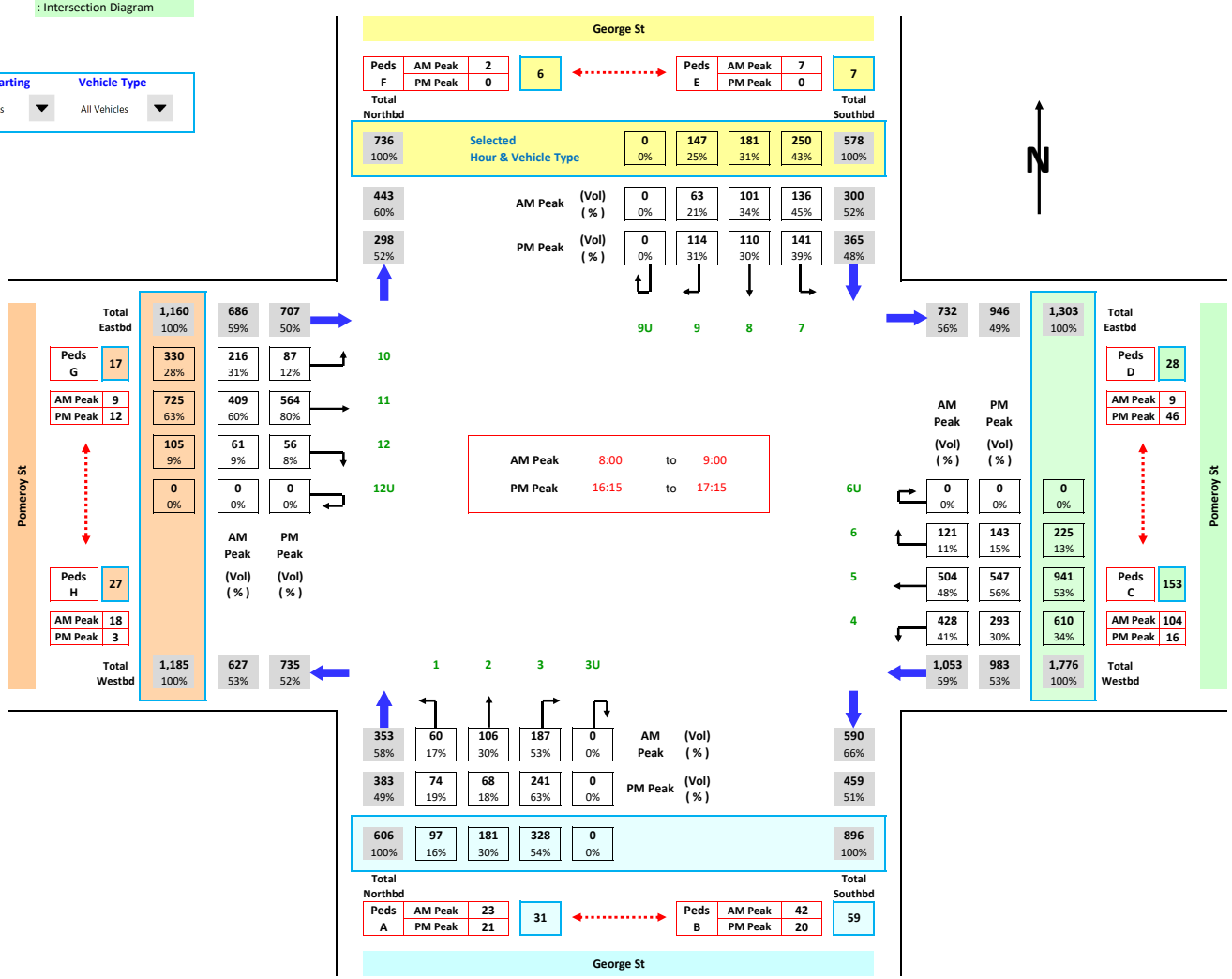
Appendix A
Traffic Counts

Job No. : N4225
Client : BRS
Suburb : Pomeroy St
Location : 1. Pomeroy St / George St

Day/Date : Thu, 31st May 2018
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram

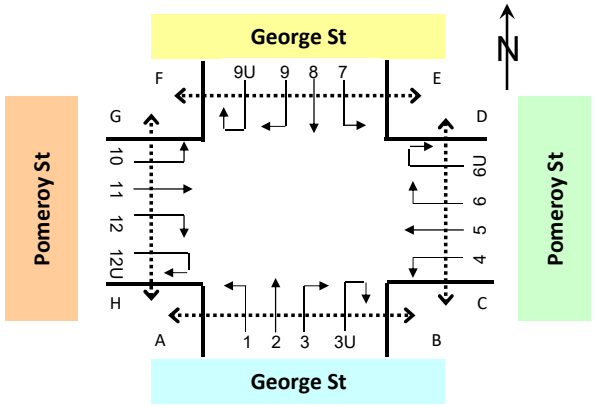
MATRIX Traffic and Transport Data

Hour Starting	Vehicle Type
AM Totals	All Vehicles



Job No. : N4225
Client : BRS
Suburb : Pomeroy St
Location : 1. Pomeroy St / George St

Day/Date : Thu, 31st May 2018
Weather : Fine
Description : Classified Intersection Count
: Pedestrian Data



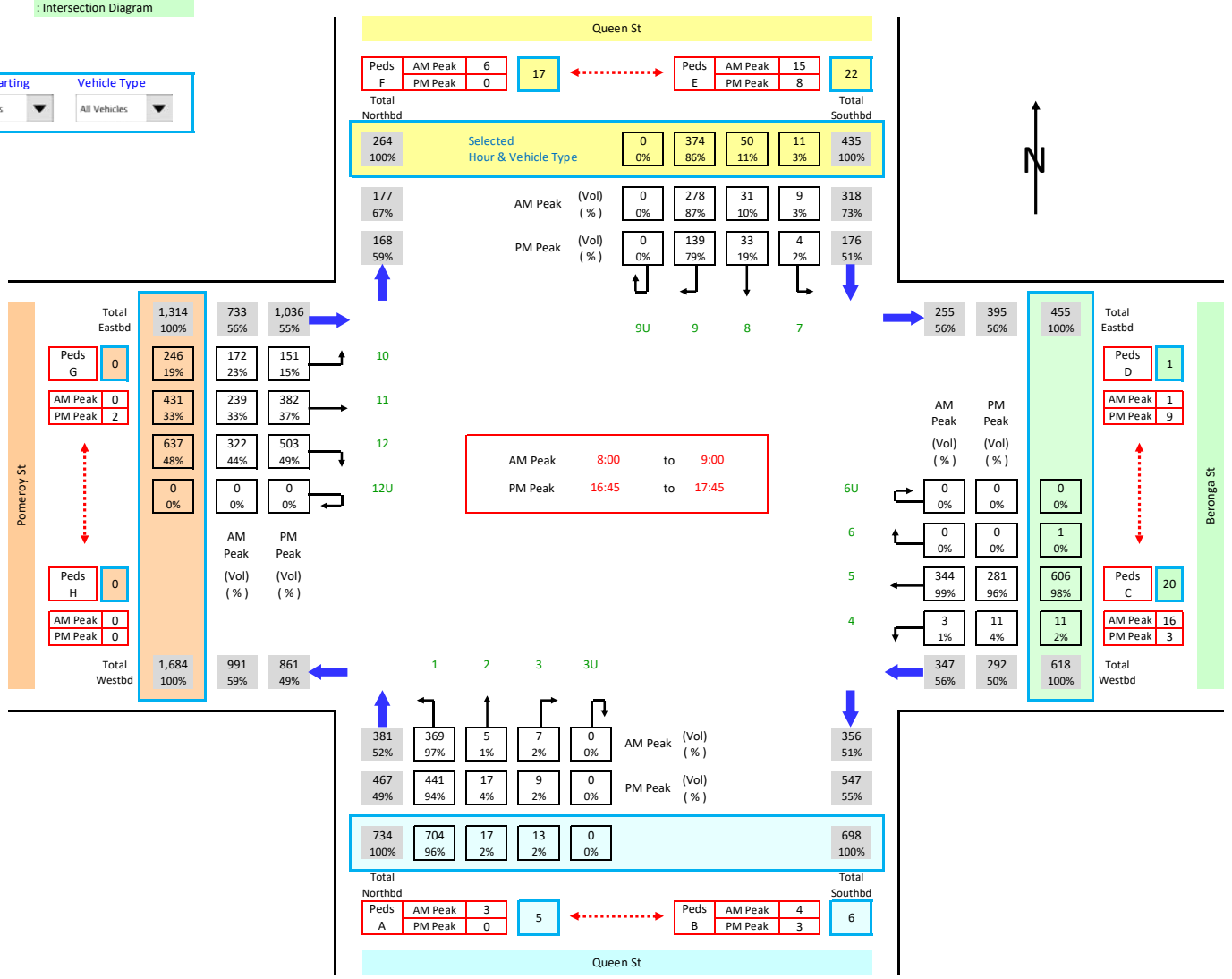
Direction	Pedestrians							
Time Period	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**
8:00 to 8:15	11	13	27	1	4	1	0	5
8:15 to 8:30	4	13	33	2	2	0	0	3
8:30 to 8:45	6	8	22	4	1	1	4	4
8:45 to 9:00	2	8	22	2	0	0	5	6
9:00 to 9:15	4	2	18	4	0	0	3	0
9:15 to 9:30	1	5	7	5	0	0	4	3
9:30 to 9:45	1	6	12	3	0	0	1	4
9:45 to 10:00	2	4	12	7	0	4	0	2
AM Totals	**31**	**59**	**153**	**28**	**7**	**6**	**17**	**27**
16:00 to 16:15	10	3	3	6	0	0	1	0
16:15 to 16:30	3	1	1	5	0	0	7	1
16:30 to 16:45	9	5	3	20	0	0	0	1
16:45 to 17:00	7	7	4	11	0	0	2	1
17:00 to 17:15	2	7	8	10	0	0	3	0
17:15 to 17:30	5	2	7	16	0	0	3	2
17:30 to 17:45	3	2	5	17	1	0	2	0
17:45 to 18:00	8	2	4	24	0	3	2	2
PM Totals	**47**	**29**	**35**	**109**	**1**	**3**	**20**	**7**

Job No. : N4225
Client : BRS
Suburb : Pomeroy St
Location : 3. Pomeroy St / Queen St

Day/Date : Thu, 31st May 2018
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram

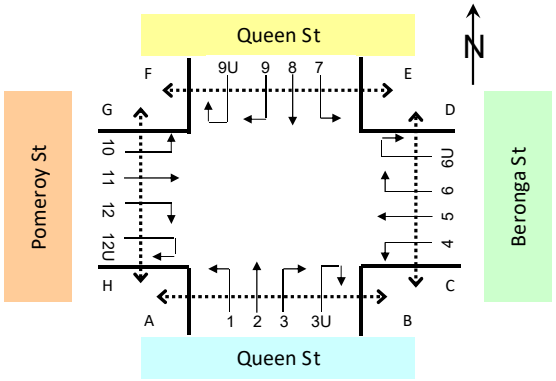
MATRIX Traffic and Transport Data

Hour Starting: AM Totals | Vehicle Type: All Vehicles



Job No. : N4225
Client : BRS
Suburb : Pomeroy St
Location : 3. Pomeroy St / Queen St

Day/Date : Thu, 31st May 2018
Weather : Fine
Description : Classified Intersection Count
: Pedestrian Data



MATRIX Traffic and Transport Data

Direction	Pedestrians							
Time Period	A	B	C	D	E	F	G	H
8:00 to 8:15	0	0	6	1	1	2	0	0
8:15 to 8:30	0	0	5	0	0	0	0	0
8:30 to 8:45	3	1	2	0	5	3	0	0
8:45 to 9:00	0	3	3	0	9	1	0	0
9:00 to 9:15	0	0	1	0	3	4	0	0
9:15 to 9:30	0	0	3	0	3	1	0	0
9:30 to 9:45	2	0	0	0	1	0	0	0
9:45 to 10:00	0	2	0	0	0	6	0	0
AM Totals	5	6	20	1	22	17	0	0
16:00 to 16:15	0	0	2	1	0	1	0	0
16:15 to 16:30	1	0	1	0	3	3	0	0
16:30 to 16:45	0	0	1	1	0	3	0	0
16:45 to 17:00	0	0	0	3	2	0	0	0
17:00 to 17:15	0	1	0	2	2	0	0	0
17:15 to 17:30	0	2	3	4	0	0	0	0
17:30 to 17:45	0	0	0	0	4	0	2	0
17:45 to 18:00	1	0	0	3	0	0	0	0
PM Totals	2	3	7	14	11	7	2	0

Appendix B
SCATS History File

Report: Periodic statistics for site 1181

15 minute intervals
From 12:00:00 AM to 11:59:59 PM, on 31 May 2018

Period: 12:00:00 AM to 12:15:00 AM

Data	Freq.	Min	Max	Avg	Total
? phase	1	147	147	147	147
A phase	9	15	166	72	652
C phase	9	7	13	11	101

Period: 12:15:00 AM to 12:30:00 AM

Data	Freq.	Min	Max	Avg	Total
A phase	13	12	185	54	708
B phase	1	14	14	14	14
C phase	13	6	22	13	178
Ped 4	3				

Period: 12:30:00 AM to 12:45:00 AM

Data	Freq.	Min	Max	Avg	Total
A phase	8	13	241	102	818
C phase	7	11	14	11	82

Period: 12:45:00 AM to 1:00:00 AM

Data	Freq.	Min	Max	Avg	Total
A phase	10	13	214	78	788
C phase	9	11	15	12	112

Period: 1:00:00 AM to 1:15:00 AM

Data	Freq.	Min	Max	Avg	Total
A phase	6	13	242	140	840
C phase	5	12	12	12	60

Period: 1:15:00 AM to 1:30:00 AM

Data	Freq.	Min	Max	Avg	Total
A phase	3	39	600	292	877
C phase	2	11	12	11	23

Period: 1:30:00 AM to 1:45:00 AM

Data	Freq.	Min	Max	Avg	Total
A phase	4	47	365	216	866
C phase	3	11	12	11	34

Period: 1:45:00 AM to 2:00:00 AM

Data	Freq.	Min	Max	Avg	Total
A phase	9	25	180	89	804
C phase	8	11	13	12	96

Period: 2:00:00 AM to 2:15:00 AM

Data	Freq.	Min	Max	Avg	Total
A phase	7	16	379	116	817

Ped 1	1				
Ped 2	5				
Ped 3	3				
Ped 4	10				

Period: 8:00:00 AM to 8:15:00 AM

Data	Freq.	Min	Max	Avg	Total
A phase	11	29	68	42	469
B phase	6	14	19	15	91
C phase	11	21	44	30	340
Ped 1	3				
Ped 2	9				
Ped 3	2				
Ped 4	10				

Period: 8:15:00 AM to 8:30:00 AM

Data	Freq.	Min	Max	Avg	Total
A phase	9	12	77	56	505
B phase	4	13	20	16	65
C phase	8	28	71	41	330
Ped 1	2				
Ped 2	6				
Ped 3	3				
Ped 4	6				

Period: 8:30:00 AM to 8:45:00 AM

Data	Freq.	Min	Max	Avg	Total
A phase	7	1	77	54	382
B phase	5	15	26	18	94
C phase	6	68	72	70	424
Ped 1	6				
Ped 2	4				
Ped 3	3				
Ped 4	6				

Period: 8:45:00 AM to 9:00:00 AM

Data	Freq.	Min	Max	Avg	Total
A phase	7	36	77	61	427
B phase	6	13	29	20	124
C phase	6	41	72	58	349
Ped 1	4				
Ped 2	5				
Ped 3	6				
Ped 4	5				

Period: 9:00:00 AM to 9:15:00 AM

Data	Freq.	Min	Max	Avg	Total
A phase	11	17	77	37	414
B phase	8	13	19	15	124
C phase	10	21	63	36	362
Ped 1	2				
Ped 2	5				
Ped 3	3				
Ped 4	8				

Period: 4:30:00 PM to 4:45:00 PM

Data	Freq.	Min	Max	Avg	Total
A phase	9	27	76	47	423
B phase	6	13	25	15	95
C phase	9	8	72	42	382
Ped 2	7				
Ped 3	1				
Ped 4	6				

Period: 4:45:00 PM to 5:00:00 PM

Data	Freq.	Min	Max	Avg	Total
A phase	8	32	76	48	390
B phase	6	13	27	20	121
C phase	7	45	71	55	389
Ped 2	5				
Ped 3	3				
Ped 4	4				

Period: 5:00:00 PM to 5:15:00 PM

Data	Freq.	Min	Max	Avg	Total
A phase	7	18	66	48	341
B phase	7	14	22	18	130
C phase	7	35	72	61	429
Ped 2	4				
Ped 3	1				
Ped 4	6				

Period: 5:15:00 PM to 5:30:00 PM

Data	Freq.	Min	Max	Avg	Total
A phase	8	32	57	45	366
B phase	7	4	20	14	103
C phase	7	35	72	61	431
Ped 1	1				
Ped 2	2				
Ped 3	3				
Ped 4	4				

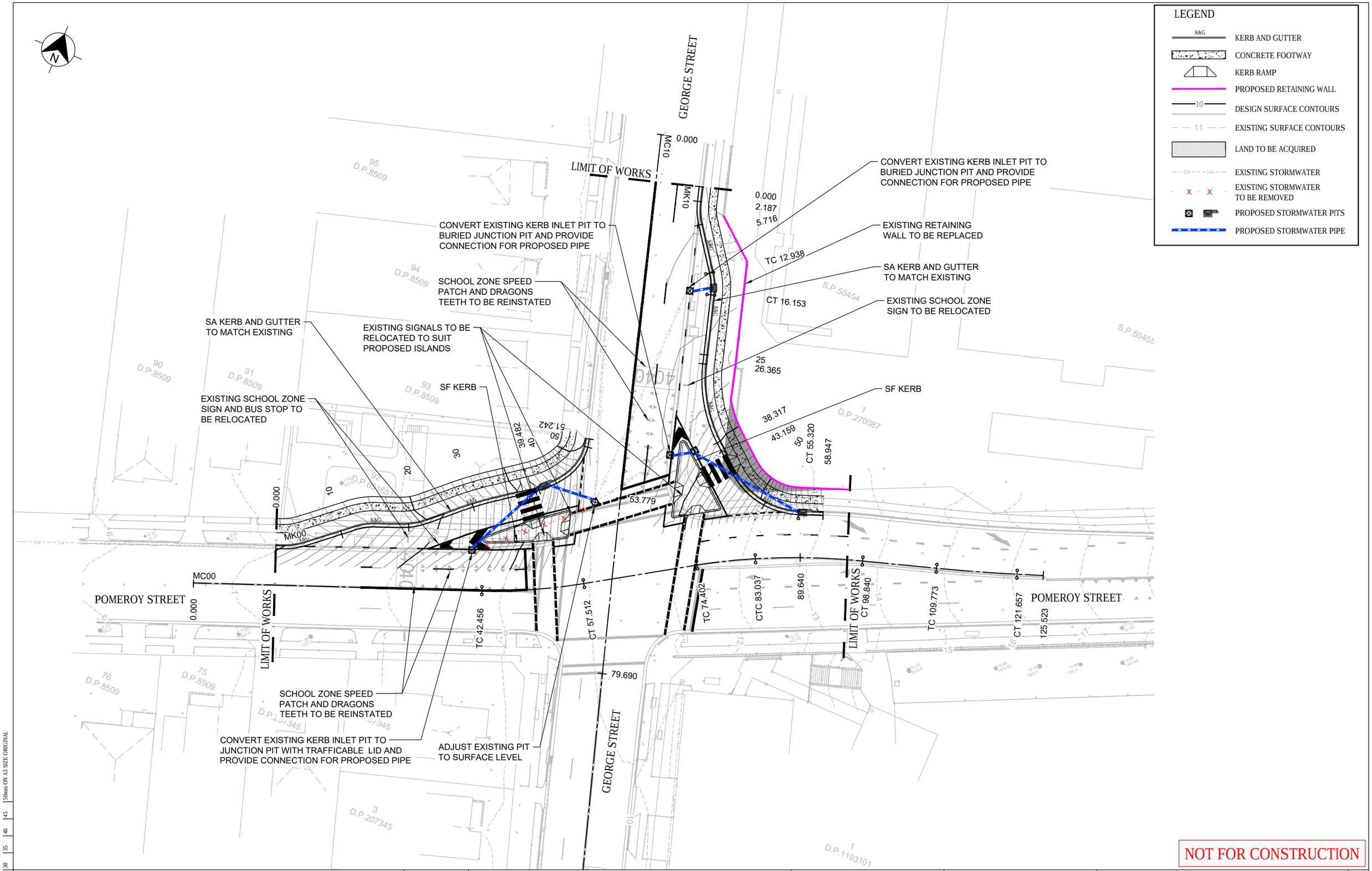
Period: 5:30:00 PM to 5:45:00 PM

Data	Freq.	Min	Max	Avg	Total
A phase	8	7	77	49	395
B phase	6	13	23	16	100
C phase	8	18	71	50	405
Ped 1	2				
Ped 2	3				
Ped 3	3				
Ped 4	7				

Period: 5:45:00 PM to 6:00:00 PM

Data	Freq.	Min	Max	Avg	Total
A phase	6	38	76	64	388
B phase	5	13	22	17	88
C phase	7	14	72	60	424
Ped 1	1				
Ped 2	4				
Ped 3	2				

Appendix C
Intersection Upgrade Plan



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DRAWING FILE LOCATION / NAME	DESIGN LOT CODE	DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING	PLOT DATE / TIME	PLOT BY	CLIENT	A3
P:\BGE\SYD\S18035\100 Draw\100.2 Civil\AutoCAD\Drawings\S18035-DRG-C-0010.dwg			28/06/2018 1:14:22 PM	gary.vallance	Transport Roads & Maritime Services	CITY OF CANADA BAY COUNCIL INTERSECTION OF GEORGE AND POMEROY STREET, NTH STRATHFIELD INSTALLATION OF TWO SLIP LANES GENERAL ARRANGEMENT PLAN

EXTERNAL REFERENCE FILES	REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
S18035-X-GEN_FIXED.dwg S18035-X-UT-SER.dwg S18035-X-CADA.dwg S18035-X-RD-DES-CHA.dwg S18035-X-RD-DES-CONT.dwg S18035-X-SURV_CONT.dwg	0	28.06.18	CONCEPT DESIGN ISSUE REVISION IN PROGRESS	-	-

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	NAME	DATE
TITLE		
DRAWN	G. VALLANCE	28.06.18
DRG CHECK	N. KELLY	28.06.18
DESIGN	N. KELLY	28.06.18
DESIGN CHECK	A. LAHOUD	28.06.18
DESIGN MNGR		
PROJECT MNGR		

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DESIGN SOUTH WEST

RMS REGISTRATION No. DSxxxx/xxxxxx — PART 1

ISSUE STATUS	EDMS No.	SHEET No.	ISSUE
CONCEPT DESIGN	SFxxxx/xxxxxx	C-0010	0

Appendix D
Sidra Movement Summaries

MOVEMENT SUMMARY

Site: 101 [Pomeroy George - AM Base]

Network: N101 [Pomeroy AM Base]

Pomeroy George - AM Base
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: George Street														
1	L2	78	0.0	78	0.0	0.323	35.8	LOS C	9.1	63.5	0.79	0.70	0.79	32.4
2	T1	137	0.0	137	0.0	1.448	43.1	LOS D	47.3	330.8	0.79	0.74	0.86	30.9
3	R2	241	0.0	241	0.0	1.448	461.8	LOS F	47.3	330.8	1.00	2.10	3.57	3.6
Approach		456	0.0	456	0.0	1.448	263.3	LOS F	47.3	330.8	0.90	1.45	2.28	8.0
East: Pomeroy Street														
4	L2	523	0.0	523	0.0	0.513	22.0	LOS B	18.7	130.7	0.67	0.77	0.67	33.6
5	T1	531	0.0	531	0.0	0.671	17.1	LOS B	18.7	130.6	0.66	0.58	0.66	33.6
6	R2	127	0.0	127	0.0	0.351	37.2	LOS C	5.7	39.9	0.84	0.78	0.84	27.5
Approach		1181	0.0	1181	0.0	0.671	21.4	LOS B	18.7	130.7	0.68	0.69	0.68	32.7
North: George Street														
7	L2	143	0.0	143	0.0	0.226	34.6	LOS C	5.9	41.5	0.75	0.75	0.75	25.9
8	T1	123	0.0	123	0.0	0.909	71.4	LOS F	13.1	91.5	1.00	1.09	1.44	25.1
9	R2	66	0.0	66	0.0	0.909	75.9	LOS F	13.1	91.5	1.00	1.09	1.44	22.8
Approach		333	0.0	333	0.0	0.909	56.5	LOS D	13.1	91.5	0.89	0.94	1.15	24.7
West: Pomeroy Street														
10	L2	227	0.0	227	0.0	0.897	48.1	LOS D	31.5	220.6	0.82	0.91	1.03	28.6
11	T1	431	0.0	431	0.0	0.897	48.4	LOS D	31.5	220.6	0.83	0.94	1.11	16.9
12	R2	74	0.0	74	0.0	0.897	68.2	LOS E	11.6	81.3	0.86	1.03	1.34	24.1
Approach		732	0.0	732	0.0	0.897	50.3	LOS D	31.5	220.6	0.83	0.94	1.11	22.2
All Vehicles		2701	0.0	2701	0.0	1.448	74.4	LOS F	47.3	330.8	0.78	0.92	1.12	18.4

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.

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
P1	South Full Crossing	68	16.6	LOS B	0.1	0.1	0.53	0.53
P2	East Full Crossing	119	35.4	LOS D	0.3	0.3	0.77	0.77
P3	North Full Crossing	9	23.4	LOS C	0.0	0.0	0.63	0.63
P4	West Full Crossing	28	33.0	LOS D	0.1	0.1	0.74	0.74
All Pedestrians		225	28.9	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: 101 [Pomeroy George - AM Base + Growth + Devt]

Network: N101 [Pomeroy AM + Growth + Devt]

Pomeroy George - AM Base + Growth + Devt
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	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	Aver. No. Cycles	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: George Street														
1	L2	164	0.0	164	0.0	0.256	29.5	LOS C	7.5	52.4	0.70	0.72	0.70	33.8
2	T1	141	0.0	141	0.0	0.752	34.7	LOS C	16.6	116.1	0.84	0.81	0.88	33.0
3	R2	219	0.0	219	0.0	0.752	42.1	LOS C	16.6	116.1	0.88	0.83	0.94	24.0
Approach		524	0.0	524	0.0	0.752	36.1	LOS C	16.6	116.1	0.81	0.79	0.85	30.0
East: Pomeroy Street														
4	L2	461	0.0	437	0.0	0.486	26.2	LOS B	16.9	118.1	0.72	0.78	0.72	31.7
5	T1	520	0.0	492	0.0	0.784	24.8	LOS B	20.6	144.5	0.74	0.68	0.78	29.3
6	R2	209	0.0	198	0.0	0.818	54.6	LOS D	11.6	81.0	0.97	0.93	1.20	23.0
Approach		1191	0.0	1127 N1	0.0	0.818	30.6	LOS C	20.6	144.5	0.77	0.77	0.83	28.7
North: George Street														
7	L2	382	0.0	382	0.0	0.444	13.8	LOS A	8.7	61.2	0.65	0.74	0.65	36.6
8	T1	226	0.0	226	0.0	0.873	25.5	LOS B	12.4	87.0	0.71	0.60	0.72	37.1
9	R2	183	0.0	183	0.0	0.873	70.1	LOS E	12.4	87.0	1.00	1.02	1.36	23.4
Approach		792	0.0	792	0.0	0.873	30.2	LOS C	12.4	87.0	0.75	0.76	0.83	31.9
West: Pomeroy Street														
10	L2	321	0.0	321	0.0	0.359	13.8	LOS A	6.8	47.6	0.62	0.72	0.62	41.1
11	T1	566	0.0	566	0.0	0.830	42.3	LOS C	21.4	149.8	0.87	0.87	1.02	18.8
12	R2	113	0.0	113	0.0	0.830	60.1	LOS E	16.4	114.7	1.00	0.99	1.20	25.7
Approach		1000	0.0	1000	0.0	0.830	35.1	LOS C	21.4	149.8	0.81	0.83	0.91	27.1
All Vehicles		3506	0.0	3443 N1	0.0	0.873	32.7	LOS C	21.4	149.8	0.78	0.79	0.86	29.3

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.

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

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
P1	South Full Crossing	68	21.1	LOS C	0.1	0.1	0.59	0.59
P2	East Full Crossing	119	29.5	LOS C	0.3	0.3	0.70	0.70
P3	North Full Crossing	9	28.7	LOS C	0.0	0.0	0.69	0.69
P4	West Full Crossing	26	27.4	LOS C	0.1	0.1	0.68	0.68

MOVEMENT SUMMARY

Site: 101 [Pomeroy George PM Base]

Network: N101 [Pomeroy PM Base]

Pomeroy George PM Base
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	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	Aver. No. Cycles	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: George Street														
1	L2	89	0.0	89	0.0	0.153	27.7	LOS B	4.3	30.2	0.66	0.67	0.66	34.7
2	T1	78	0.0	78	0.0	0.684	29.9	LOS C	14.4	101.0	0.79	0.75	0.79	34.3
3	R2	254	0.0	254	0.0	0.684	38.9	LOS C	14.4	101.0	0.87	0.81	0.87	24.7
Approach		421	0.0	421	0.0	0.684	34.9	LOS C	14.4	101.0	0.81	0.77	0.81	29.2
East: Pomeroy Street														
4	L2	300	0.0	300	0.0	0.407	25.8	LOS B	13.5	94.5	0.69	0.74	0.69	32.2
5	T1	536	0.0	536	0.0	0.679	22.4	LOS B	18.7	131.1	0.73	0.66	0.73	30.3
6	R2	139	0.0	139	0.0	0.411	40.6	LOS C	6.5	45.4	0.83	0.78	0.83	26.5
Approach		975	0.0	975	0.0	0.679	26.0	LOS B	18.7	131.1	0.73	0.70	0.73	30.2
North: George Street														
7	L2	162	0.0	162	0.0	0.209	28.3	LOS B	6.0	41.9	0.68	0.73	0.68	28.4
8	T1	123	0.0	123	0.0	0.563	32.2	LOS C	11.7	81.8	0.83	0.75	0.83	34.0
9	R2	134	0.0	134	0.0	0.563	36.7	LOS C	11.7	81.8	0.83	0.75	0.83	31.8
Approach		419	0.0	419	0.0	0.563	32.1	LOS C	11.7	81.8	0.77	0.75	0.77	31.6
West: Pomeroy Street														
10	L2	86	0.0	86	0.0	0.792	30.6	LOS C	22.4	156.7	0.76	0.73	0.80	34.6
11	T1	613	0.0	613	0.0	0.792	29.8	LOS C	22.4	156.7	0.77	0.75	0.85	22.8
12	R2	53	4.0	53	4.0	0.792	43.1	LOS D	11.7	82.8	0.79	0.81	0.96	30.2
Approach		752	0.3	752	0.3	0.792	30.8	LOS C	22.4	156.7	0.77	0.75	0.85	25.5
All Vehicles		2566	0.1	2566	0.1	0.792	29.9	LOS C	22.4	156.7	0.76	0.73	0.79	29.1

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.

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
P1	South Full Crossing	46	21.6	LOS C	0.1	0.1	0.60	0.60
P2	East Full Crossing	83	28.8	LOS C	0.2	0.2	0.69	0.69
P3	North Full Crossing	1	21.6	LOS C	0.0	0.0	0.60	0.60
P4	West Full Crossing	13	26.7	LOS C	0.0	0.0	0.67	0.67
All Pedestrians		143	26.2	LOS C			0.66	0.66

MOVEMENT SUMMARY

Site: 101 [Pomeroy George PM Base + Growth + Development]

Network: N101 [Pomeroy PM Base + Growth + Development]

Pomeroy George PM Base + Growth + Development
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 140 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	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	Aver. No. Cycles	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: George Street														
1	L2	177	0.0	177	0.0	0.242	34.8	LOS C	8.0	55.8	0.71	0.75	0.71	31.7
2	T1	143	0.0	143	0.0	0.655	40.5	LOS C	22.8	159.7	0.90	0.82	0.90	31.4
3	R2	257	0.0	257	0.0	0.655	45.0	LOS D	22.8	159.7	0.90	0.82	0.90	23.1
Approach		577	0.0	577	0.0	0.655	40.7	LOS C	22.8	159.7	0.84	0.80	0.84	28.4
East: Pomeroy Street														
4	L2	231	0.0	231	0.0	0.417	26.2	LOS B	16.6	116.4	0.66	0.69	0.66	32.6
5	T1	588	0.0	588	0.0	0.695	21.6	LOS B	16.9	118.1	0.66	0.61	0.66	30.6
6	R2	292	0.0	292	0.0	0.877	59.2	LOS E	19.3	135.0	0.81	0.93	1.07	22.0
Approach		1111	0.0	1111	0.0	0.877	32.4	LOS C	19.3	135.0	0.70	0.71	0.77	27.7
North: George Street														
7	L2	265	0.0	265	0.0	0.319	9.7	LOS A	3.9	27.4	0.45	0.66	0.45	39.8
8	T1	134	0.0	134	0.0	0.175	29.3	LOS C	5.8	40.9	0.69	0.57	0.69	35.8
9	R2	264	0.0	264	0.0	0.854	66.8	LOS E	19.4	135.8	0.98	0.97	1.20	24.0
Approach		663	0.0	663	0.0	0.854	36.4	LOS C	19.4	135.8	0.71	0.76	0.80	29.9
West: Pomeroy Street														
10	L2	272	0.0	272	0.0	0.591	38.6	LOS C	15.6	109.5	0.78	0.76	0.78	31.1
11	T1	620	0.0	620	0.0	0.591	29.5	LOS C	20.5	144.4	0.77	0.69	0.77	23.1
12	R2	87	2.4	87	2.4	0.591	36.0	LOS C	20.5	144.4	0.81	0.74	0.81	32.5
Approach		979	0.2	979	0.2	0.591	32.6	LOS C	20.5	144.4	0.78	0.71	0.78	27.3
All Vehicles		3329	0.1	3329	0.1	0.877	34.7	LOS C	22.8	159.7	0.75	0.74	0.79	28.2

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.

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
P1	South Full Crossing	43	21.2	LOS C	0.1	0.1	0.55	0.55
P2	East Full Crossing	65	34.4	LOS D	0.2	0.2	0.70	0.70
P3	North Full Crossing	1	21.2	LOS C	0.0	0.0	0.55	0.55
P4	West Full Crossing	16	32.3	LOS D	0.0	0.0	0.68	0.68
All Pedestrians		125	29.5	LOS C			0.65	0.65

MOVEMENT SUMMARY

Site: PQ [Pomeroy Queen - AM Base]

Network: N101 [Pomeroy AM Base]

Pomeroy Queen - AM Base
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	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	Aver. No. Cycles	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Queen Street														
1	L2	388	0.0	388	0.0	0.648	15.5	LOS B	6.0	42.0	0.90	1.08	1.24	26.9
2	T1	5	0.0	5	0.0	0.648	14.3	LOS A	6.0	42.0	0.90	1.08	1.24	34.8
3	R2	7	0.0	7	0.0	0.648	18.5	LOS B	6.0	42.0	0.90	1.08	1.24	36.4
Approach		401	0.0	401	0.0	0.648	15.5	LOS B	6.0	42.0	0.90	1.08	1.24	27.3
East: Beronga Street														
4	L2	3	0.0	3	0.0	0.464	8.8	LOS A	4.0	28.0	0.88	0.78	0.88	43.3
5	T1	362	0.0	362	0.0	0.464	9.4	LOS A	4.0	28.0	0.88	0.78	0.88	35.5
6	R2	1	0.0	1	0.0	0.464	14.1	LOS A	4.0	28.0	0.88	0.78	0.88	43.0
Approach		366	0.0	366	0.0	0.464	9.4	LOS A	4.0	28.0	0.88	0.78	0.88	35.6
North: Queen Street														
7	L2	9	0.0	9	0.0	0.434	11.7	LOS A	4.1	29.0	0.84	0.73	0.84	34.6
8	T1	33	0.0	33	0.0	0.434	10.6	LOS A	4.1	29.0	0.84	0.73	0.84	37.0
9	R2	293	0.0	293	0.0	0.434	14.8	LOS B	4.1	29.0	0.84	0.73	0.84	25.4
Approach		335	0.0	335	0.0	0.434	14.3	LOS A	4.1	29.0	0.84	0.73	0.84	27.3
West: Pomeroy Street														
10	L2	181	0.0	181	0.0	0.457	3.5	LOS A	4.1	28.8	0.10	0.53	0.10	43.8
11	T1	252	0.0	252	0.0	0.457	4.1	LOS A	4.1	28.8	0.10	0.53	0.10	47.0
12	R2	339	0.0	339	0.0	0.457	8.8	LOS A	4.1	28.8	0.10	0.53	0.10	47.8
Approach		772	0.0	772	0.0	0.457	6.0	LOS A	4.1	28.8	0.10	0.53	0.10	46.6
All Vehicles		1874	0.0	1874	0.0	0.648	10.2	LOS A	6.0	42.0	0.56	0.73	0.63	36.9

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.
Roundabout Capacity Model: SIDRA Standard.
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.

MOVEMENT SUMMARY

Site: PQ [Pomeroy Queen - AM base + Growth + Devt]

Network: N101 [Pomeroy AM + Growth + Devt]

Pomeroy Queen - AM base + Growth + Devt
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	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	Aver. No. Cycles	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Queen Street														
1	L2	532	0.0	532	0.0	1.105	135.1	LOS F	53.2	372.2	1.00	3.13	6.53	5.1
2	T1	27	0.0	27	0.0	1.105	133.9	LOS F	53.2	372.2	1.00	3.13	6.53	8.1
3	R2	7	0.0	7	0.0	1.105	138.1	LOS F	53.2	372.2	1.00	3.13	6.53	9.2
Approach		566	0.0	566	0.0	1.105	135.0	LOS F	53.2	372.2	1.00	3.13	6.53	5.3
East: Beronga Street														
4	L2	20	0.0	20	0.0	0.782	30.4	LOS C	15.3	107.2	1.00	1.26	1.85	26.9
5	T1	491	0.0	491	0.0	0.782	31.0	LOS C	15.3	107.2	1.00	1.26	1.85	18.3
6	R2	1	0.0	1	0.0	0.782	35.7	LOS C	15.3	107.2	1.00	1.26	1.85	25.2
Approach		512	0.0	512	0.0	0.782	31.0	LOS C	15.3	107.2	1.00	1.26	1.85	18.7
North: Queen Street														
7	L2	4	0.0	4	0.0	0.512	24.7	LOS B	6.9	48.5	1.00	0.73	1.00	26.0
8	T1	27	0.0	27	0.0	0.512	23.5	LOS B	6.9	48.5	1.00	0.73	1.00	27.3
9	R2	217	0.0	217	0.0	0.512	27.8	LOS B	6.9	48.5	1.00	0.73	1.00	16.7
Approach		248	0.0	248	0.0	0.512	27.3	LOS B	6.9	48.5	1.00	0.73	1.00	18.4
West: Pomeroy Street														
10	L2	225	0.0	225	0.0	0.740	3.8	LOS A	13.0	90.8	0.26	0.51	0.26	42.4
11	T1	402	0.0	402	0.0	0.740	4.4	LOS A	13.0	90.8	0.26	0.51	0.26	45.6
12	R2	574	0.0	574	0.0	0.740	9.1	LOS A	13.0	90.8	0.26	0.51	0.26	46.3
Approach		1201	0.0	1201	0.0	0.740	6.5	LOS A	13.0	90.8	0.26	0.51	0.26	45.4
All Vehicles		2527	0.0	2527	0.0	1.105	42.3	LOS C	53.2	372.2	0.65	1.27	2.06	17.2

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.
Roundabout Capacity Model: SIDRA Standard.
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.

MOVEMENT SUMMARY

Site: PQ [Pomeroy Queen PM base]

Network: N101 [Pomeroy PM Base]

Pomeroy Queen PM base
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	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	Aver. No. Cycles	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Queen Street														
1	L2	474	0.0	474	0.0	0.670	12.7	LOS A	6.7	46.7	0.86	0.97	1.11	30.0
2	T1	16	0.0	16	0.0	0.670	11.5	LOS A	6.7	46.7	0.86	0.97	1.11	37.8
3	R2	9	0.0	9	0.0	0.670	15.7	LOS B	6.7	46.7	0.86	0.97	1.11	39.1
Approach		499	0.0	499	0.0	0.670	12.7	LOS A	6.7	46.7	0.86	0.97	1.11	30.6
East: Beronga Street														
4	L2	12	0.0	12	0.0	0.400	10.3	LOS A	3.7	26.2	0.91	0.76	0.91	41.7
5	T1	298	0.0	298	0.0	0.400	10.9	LOS A	3.7	26.2	0.91	0.76	0.91	33.4
6	R2	1	0.0	1	0.0	0.400	15.6	LOS B	3.7	26.2	0.91	0.76	0.91	41.1
Approach		311	0.0	311	0.0	0.400	10.9	LOS A	3.7	26.2	0.91	0.76	0.91	33.9
North: Queen Street														
7	L2	4	0.0	4	0.0	0.346	20.7	LOS B	4.6	32.5	1.00	0.70	1.00	28.2
8	T1	32	0.0	32	0.0	0.346	19.5	LOS B	4.6	32.5	1.00	0.70	1.00	29.8
9	R2	169	0.0	169	0.0	0.346	23.7	LOS B	4.6	32.5	1.00	0.70	1.00	18.8
Approach		205	0.0	205	0.0	0.346	23.0	LOS B	4.6	32.5	1.00	0.70	1.00	21.2
West: Pomeroy Street														
10	L2	139	0.0	139	0.0	0.634	3.6	LOS A	8.1	56.5	0.19	0.53	0.19	42.5
11	T1	356	0.0	356	0.0	0.634	4.2	LOS A	8.1	56.5	0.19	0.53	0.19	45.7
12	R2	548	0.0	548	0.0	0.634	8.9	LOS A	8.1	56.5	0.19	0.53	0.19	46.4
Approach		1043	0.0	1043	0.0	0.634	6.6	LOS A	8.1	56.5	0.19	0.53	0.19	45.7
All Vehicles		2058	0.0	2058	0.0	0.670	10.4	LOS A	8.1	56.5	0.54	0.69	0.60	37.6

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

MOVEMENT SUMMARY

Site: PQ [Pomeroy Queen PM base + Growth + Development]

Network: N101 [Pomeroy PM Base + Growth + Development]

Pomeroy Queen PM Base + Growth + Development
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	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	Aver. No. Cycles	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Queen Street														
1	L2	660	0.0	660	0.0	0.999	54.9	LOS D	33.2	232.1	1.00	1.93	3.47	11.2
2	T1	15	0.0	15	0.0	0.999	53.7	LOS D	33.2	232.1	1.00	1.93	3.47	16.7
3	R2	12	0.0	12	0.0	0.999	57.9	LOS E	33.2	232.1	1.00	1.93	3.47	18.5
Approach		686	0.0	686	0.0	0.999	54.9	LOS D	33.2	232.1	1.00	1.93	3.47	11.5
East: Beronga Street														
4	L2	15	0.0	15	0.0	0.514	10.4	LOS A	4.8	33.3	0.90	0.80	0.94	41.5
5	T1	391	0.0	391	0.0	0.514	11.0	LOS A	4.8	33.3	0.90	0.80	0.94	33.2
6	R2	1	0.0	1	0.0	0.514	15.7	LOS B	4.8	33.3	0.90	0.80	0.94	40.9
Approach		406	0.0	406	0.0	0.514	11.0	LOS A	4.8	33.3	0.90	0.80	0.94	33.7
North: Queen Street														
7	L2	1	0.0	1	0.0	0.283	23.9	LOS B	3.6	24.9	1.00	0.72	1.00	26.4
8	T1	14	0.0	14	0.0	0.283	22.7	LOS B	3.6	24.9	1.00	0.72	1.00	27.7
9	R2	123	0.0	123	0.0	0.283	26.9	LOS B	3.6	24.9	1.00	0.72	1.00	17.1
Approach		138	0.0	138	0.0	0.283	26.5	LOS B	3.6	24.9	1.00	0.72	1.00	18.5
West: Pomeroy Street														
10	L2	160	0.0	160	0.0	0.720	3.7	LOS A	12.1	84.9	0.25	0.51	0.25	42.4
11	T1	453	0.0	453	0.0	0.720	4.3	LOS A	12.1	84.9	0.25	0.51	0.25	45.6
12	R2	573	0.0	573	0.0	0.720	9.0	LOS A	12.1	84.9	0.25	0.51	0.25	46.3
Approach		1185	0.0	1185	0.0	0.720	6.5	LOS A	12.1	84.9	0.25	0.51	0.25	45.5
All Vehicles		2416	0.0	2416	0.0	0.999	22.1	LOS B	33.2	232.1	0.61	0.97	1.32	26.2

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.
Roundabout Capacity Model: SIDRA Standard.
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.

Appendix E
Parking Assessment

Traffic and Parking Assessment

TTPP REF: 20292

Date: 23 October 2020

Development Proposal

A planning proposal is to be lodged with City of Canada Bay Council seeking approval to increase residential densities and introduce a mixed-use hub, which consists of about 1,400 residential units and 2,800m² of retail floor space.

The indicative development yield is provided in Table 1 with the indicative precinct plan shown in Figure 1.

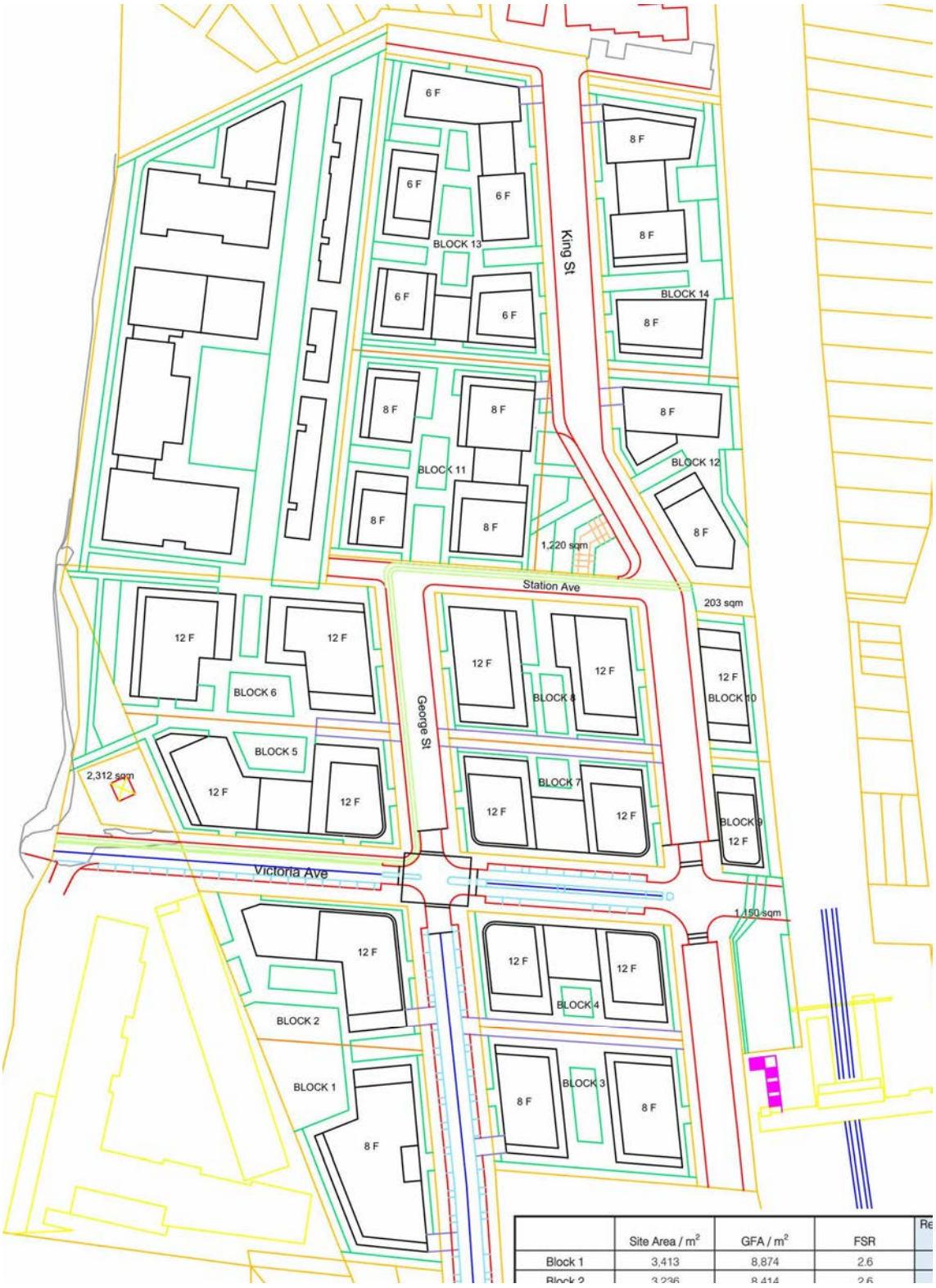
Table 1: Proposed Development Yield

	Site Area (m²)	GFA (m²)	FSR	Residential GFA (m²)	Avg Apartment Size (m²)	No. of Res Units	Retail GFA (m²)
Block 1	3,413	8,874	2.6	8,874	75	101	0
Block 2	3,236	8,414	2.6	8,414	75	95	0
Block 3	3,460	8,996	2.6	8,996	75	102	0
Block 4	2,811	10,079	3.6	8,817	75	97	1,262
Block 5	3,414	12,192	3.6	12,192	75	138	0
Block 6	4,954	15,810	3.2	15,810	75	179	0
Block 7	2,785	10,026	3.6	8,772	75	99	1,254
Block 8	3,541	12,748	3.6	12,748	75	144	0
Block 9	814	2,921	3.6	2,640	75	29	281
Block 10	1,017	3,624	3.6	3,624	75	41	0
Block 11	5,706	11,412	2	11,412	85	114	0
Block 12	2,709	6,150	2.3	6,150	85	62	0
Block 13	6,070	10,926	1.8	10,926	85	109	0
Block 14	4,371	9,525	2.2	9,525	85	95	0
Total	48,301	131,697	2.7	128,900	78	1,405	2,797

The Transport Planning Partnership
Suite 402, 22 Atchison Street
ST LEONARDS NSW 2065

Figure 1: Indicative Precinct Plan

Figure 2: Indicative Precinct Plan (Block Location)



Parking Assessment

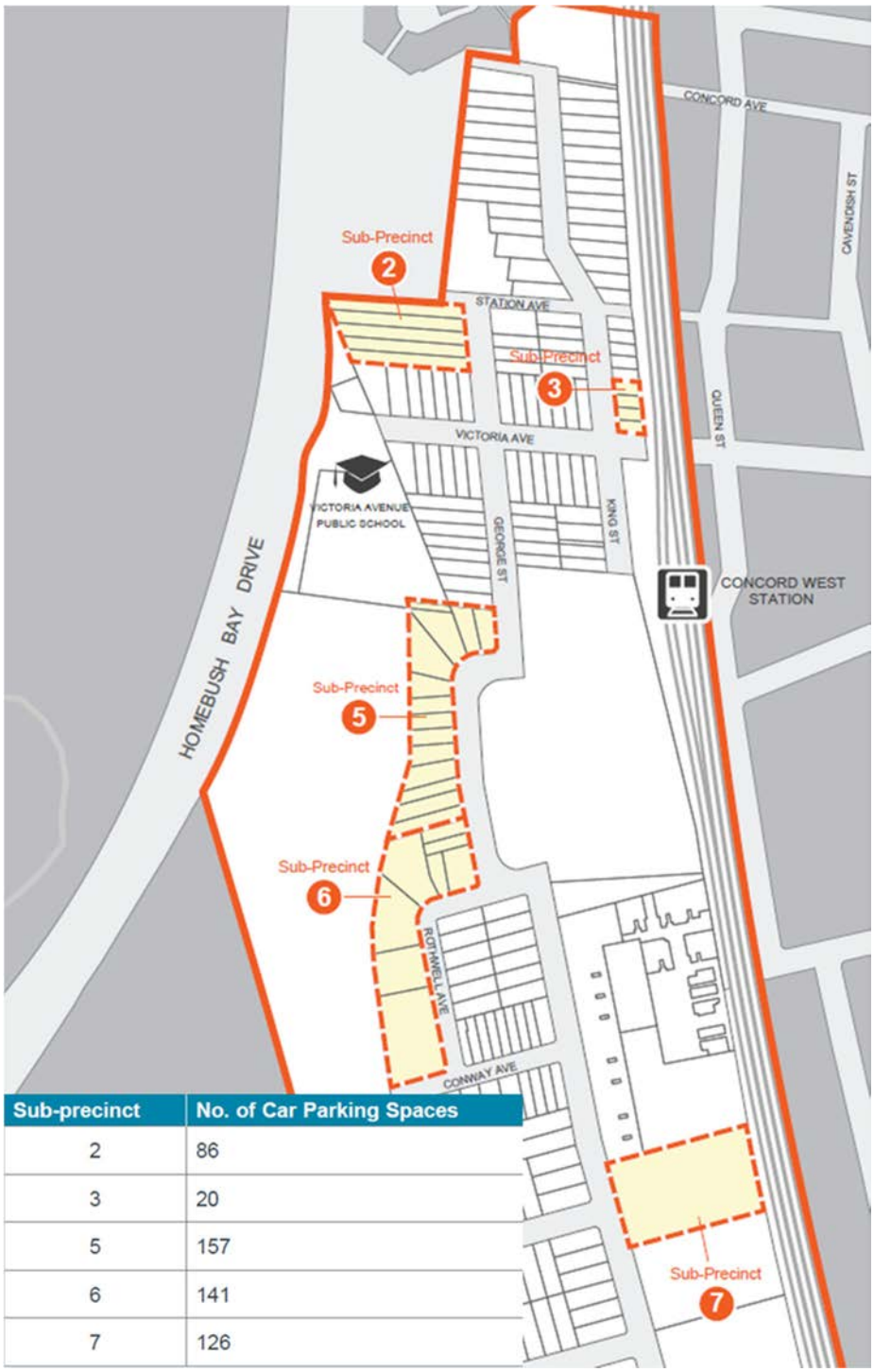
The parking requirement has been assessed based on the rates set out in City of Canada Bay Development Control Plan: Special Precincts – Concord West Precinct (Concord West DCP).

Concord West DCP stipulates the following maximum car parking provision within Concord West Precinct:

- Residential
  - 0.3 spaces per studio unit
  - 0.5 spaces per 1 bedroom apartment
  - 0.9 spaces per 2 bedroom apartment
  - 1.2 spaces per 3 bedroom apartment
  - 1 visitor space per 10 apartments
- Retail
  - 1 space per 70m^2 GFA

In addition, the car parking provision should not exceed individual maximums provided per sub-precinct shown in Figure 3.

Figure 3: Concord West DCP Maximum Car Parking Provision per Sub-precinct



Sub-precinct	No. of Car Parking Spaces
2	86
3	20
5	157
6	141
7	126

Source: City of Canada Bay Council DCP Special Precincts

Based on the above, Block 6 and Block 9 are within sub-precincts 2 and 3. Therefore, the maximum allowed car parking provision is 86 spaces for Block 6 and 20 spaces for Block 9.

The proposed apartment mix not yet known at this stage. However, it is noted that the draft *Canada Bay Local Strategic Planning Statement (LSPS)* seeks to amend the Council Local Environmental Plan 2013 (LEP). The proposed changes include introduction of a new clause to increase diversity of apartment sizes. The proposal requires that residential flat buildings and mixed use developments that include at least 10 dwellings to provide the following:

- at least 20% of the dwellings as self-contained studio or one-bedroom dwellings, and
- at least 20% of the dwellings as three or more bedroom dwellings.

To estimate the indicative unit mix of the proposed development, it is assumed that 20% of all dwellings will be one-bedroom units and 20% will be three-bedroom units.

Table 2 shows the car parking requirement of the proposed development based on the Concord West DCP rates.

Table 2: Concord West DCP Parking Requirement

	No. of Res Units	Retail GFA (m^2)	Assumed Unit Mix			Maximum Parking Rate		Maximum Allowable Parking			
			1-bed	2-bed	3-bed	Residential	Retail	Resident	Visitor	Retail	Total
Block 1	101	0	20	61	20	0.3 spaces per studio + 0.5 spaces per 1 bedroom apartment + 0.9 spaces per 2 bedroom apartment + 1.2 spaces per 3 bedroom apartments + 0.1 visitor space unit	1 per 70m^2 GFA	89	10	0	99
Block 2	95	0	19	57	19			84	10	0	94
Block 3	102	0	20	61	20			90	10	0	100
Block 4	97	1,262	19	58	19			85	10	18	113
Block 5	138	0	28	83	28			121	14	0	135
Block 6	179	0	36	107	36			158*	18*	0*	86*
Block 7	99	1,254	20	59	20			87	10	18	115
Block 8	144	0	29	86	29			127	14	0	141
Block 9	29	281	6	17	6			26*	3*	4*	20*
Block 10	41	0	8	25	8			36	4	0	40
Block 11	114	0	23	68	23			100	11	0	111
Block 12	62	0	12	37	12			55	6	0	61
Block 13	109	0	22	65	22			96	11	0	107
Block 14	95	0	19	57	19			84	10	0	94
Total	1,405	2,797	281	843	281			1,236*	141*	40*	1,315*

*Total parking provision for Block 6 and 9 should not exceed 86 car spaces and 20 car spaces, respectively.