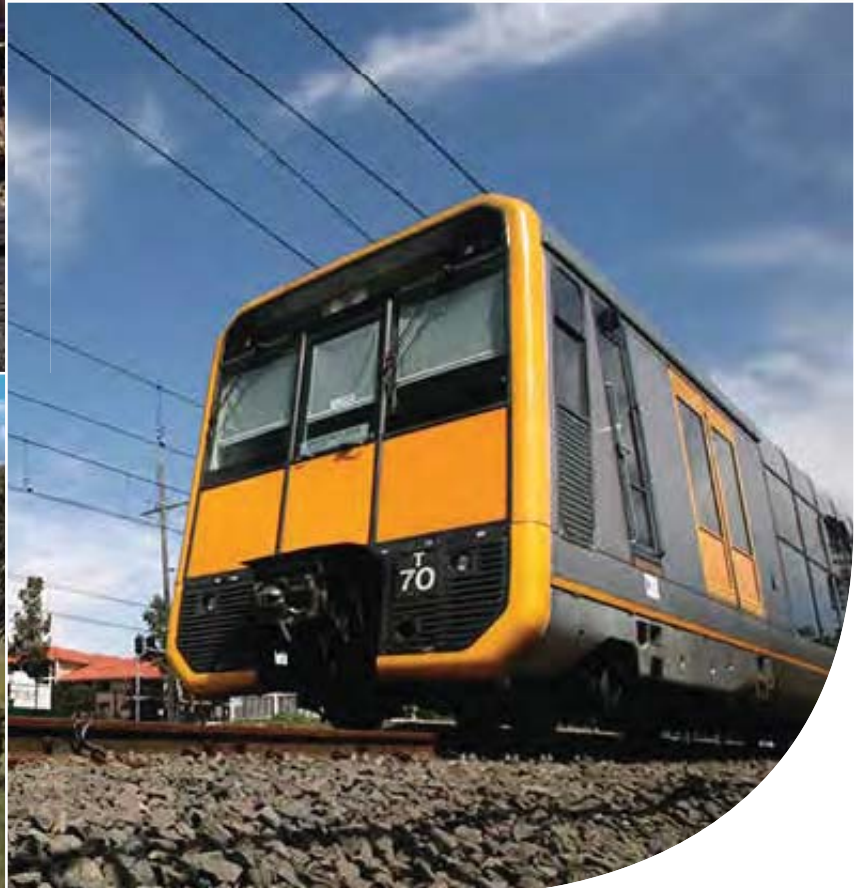


Botany Road, Coward Street and Henry Kendall Crescent, Mascot

Indicative Scheme | Transport and Movement Study

Prepared for NSW Land and Housing Corporation | 28 November 2017



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Botany Road, Coward Street and Henry Kendall Crescent, Mascot

Final

Report J17114RP2 | Prepared for NSW Land and Housing Corporation | 28 November 2017

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Date 28 November 2017

Date 28 November 2017

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Document Control

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1 Introduction

1.1 Background

EMM has been commissioned by NSW Land and Housing Corporation (LaHC) to review the road traffic and transport implications of a consolidated site redevelopment of existing Social Housing at 776 & 792-794 Botany Road, Mascot and 33-37 Henry Kendall Crescent, Mascot in the Bayside local government area (LGA).

The consolidated site is located within the core commercial precinct of Botany Road which has many commercial premises located along both sides of Botany Road as it passes through the Mascot area.

The site is approximately 7 km south of the Sydney CBD and is within, or close to, a number the major commercial and employment precincts of the Eastern City District sub region, including the Green Square - Mascot Strategic Centre; Port Botany with its adjacent industrial estates; Sydney Airport; Randwick with its Health and Education Precinct; and the Eastgardens - Maroubra Junction Strategic Centre. These centres provide a wide range of locally accessible commercial and other employment opportunities and education, community, social and recreational facilities for residents of the Mascot area of Sydney.

1.2 Scope of this report

The traffic and transport access requirements for the proposed development are assessed in this report, generally in accordance with the requirements of the RTA (now RMS) 2002 Guide to Traffic Generating Developments, the relevant Council development control plan (DCP) and AS 2890 requirements for vehicle access and off street car parking.

No new direct vehicular access is proposed to and from the new site buildings at the Botany Road frontage, although the existing ambulance station facility on the site will retain its existing access, when it is rebuilt. This report assesses the impact of the additional site generated car traffic on Henry Kendall Crescent and Coward Street and the existing access intersection with Botany Road.

Elsewhere there are generally relatively high daily traffic volumes using both Botany Road and Coward Street, travelling away from the locality of the site, such that the impacts from the additional site redevelopment traffic will rapidly diminish in proportional terms, once the future site traffic has travelled beyond the immediate site frontages to these two roads.

Botany Road is also a major public transport corridor for bus travel (which has dedicated bus lanes on some sections) and has high peak hour bus service frequencies in both directions. This provides high capacity for public transport travel and access to a range of destinations both along and away from the main Botany Road transport corridor. The assessment considers the use of other travel methods such as walking and cycling and the adequacy of the existing facilities and services in the local area for these travel modes.

This assessment is based on the following investigations:

- Existing locality traffic conditions, including morning and afternoon peak hour intersection traffic counts at the Botany Road and Coward Street intersection.
- Existing road widths and footpath facilities for Botany Road and Coward Street and other roads in the locality.

- Future peak hourly and daily traffic volumes, including the directional distribution of the future site generated traffic.
- Future site access and external road network impacts for the site access driveways and the external locality road network to the north, south, east and west of the site.
- Review of the internal site access and car parking dimensions to meet AS 2890 and relevant Bayside Council DCP Standards.
- Review of the internal and external site requirements for pedestrian, cyclist and public transport access.
- Consultation with the Bayside Council regarding local transport infrastructure requirements.

Referral to the RMS in accordance with the State Environmental Planning Policy (Infrastructure) 2007 ('Infrastructure SEPP') requirements will be undertaken at the Development Application (DA) Stage for the proposed development.

1.3 Indicative scheme

A selection of extracts from the proposed indicative scheme, showing the ground level and basement car park floor plans and building footprints for residential and retail components are included as Appendix A.

Also shown in Appendix A are architectural perspective views of the proposed streetscape treatments for Henry Kendall Crescent and Coward Street and a cross section of Botany Road at the site frontage.

The existing site layout and land uses are shown (by the air photo extract) in Figure 1.1, which shows the current building footprints of the five two storey residential blocks, comprising 25 dwellings, currently on the site. These residential buildings primarily overlook Coward Street and Henry Kendall Crescent and the ambulance station facility which occupies the north east corner of site overlooking Botany Road is also to be retained at the site, incorporated into the new site buildings.

The proposed site redevelopment will provide an estimated total of 155 future dwellings, with an average floor area of 85 sqm and approximately 723 sqm GLFA of commercial or retail floor space in two large ground floor office or shop tenancies, encompassing the remainder of the site Botany Road frontage south of the ambulance station.

With an assumed 70/30 proportional balance of future private and social housing at the site, this will provide approximately 110 future residential apartments for private sale and 45 future residential apartments to be retained as social housing.

A total of approximately 120 car parking will be able to be provided in a single level of basement car parking at the site, accessed by a single entry/exit driveway at the Henry Kendal Crescent frontage.

Provisionally, the future allocation of the site car parking will be approximately:

- 20 car parking spaces for the 723 sqm GLFA commercial/retail areas at the site,
- 80 car parking spaces for the 155 new residential dwellings at the site, and
- 20 car parking spaces for residential visitor car parking at the site.



KEY

- Ambulance station
- Existing social housing estate (25 dwellings)

Existing site layout plan for 25 dwellings in five residential blocks
Botany Road, Coward Street and Henry Kendall Crescent, Mascot
Indicative Scheme
Transport and Movement Study
Figure 1.1

1.4 Access and traffic circulation

The proposed new basement level car park access will be via a ramp from Henry Kendall Crescent, located approximately 55m north of the kerb line at the intersection with Coward Street.

As is shown on the photograph in Figure 1.2, Henry Kendall Crescent is a relatively narrow local road, with a kerb to kerb width of approximately 7.5 m. This permits only a single lane of traffic to travel along the centre of the road, if there are cars parked along both sides of the road.

Generally the future site access traffic will travel directly to and from Coward Street via the straight section of Henry Kendall Crescent and only a small proportion would use the other loop section of Henry Kendall Crescent which curves around to the north west and connects to Coward Street 80 m further to the west.

At the intersection of Coward Street and Henry Kendall Crescent, views of which are shown in Figure 1.3 and Figure 1.4, there is generally no parking permitted along the northern side of Coward Street, east of Henry Kendall Crescent, heading towards Botany Road, but on street parking is generally allowed along Coward Street at other locations.

There is a marked on road cycleway on Coward Street in both directions, adjacent to the car parking. The intersection visibility along Coward Street is generally adequate for turning traffic safety at most times of the day as the road is straight and level in both directions. However the visibility is potentially obstructed during the peak hours by traffic queues from Botany Road, further to the east in Coward Street.



Figure 1.2 View along Kendall Crescent northwards from the intersection with Coward Street



Figure 1.3 View along Coward Street looking east from Henry Kendall Crescent



Figure 1.4 View along Coward Street looking west from Henry Kendall Crescent

2 Strategic Context

2.1 Greater Sydney Commission

The future urban development strategies for both government and private developments in Sydney are now guided by the Greater Sydney Commission draft district plans (Greater Sydney Commission, 2017).

The former Botany (now Bayside) Council is located within the Eastern City District of Sydney. Extracts from the Draft Eastern City District Plan, October 2017, showing details relevant to future urban development and transport accessibility for the Bayside LGA are included in Appendix B.

A key feature for the Bayside LGA is the future short term (2016-2021) dwellings growth target of +10,150 dwellings, which is the second highest LGA housing growth target for the District (sub-region), second only to the City of Sydney LGA with +18,300 dwellings.

The Bayside LGA housing growth target is primarily linked to the availability of large sites, many of which are located in the former industrial areas of the LGA, such as the Mascot railway station precinct, Pagewood, Eastgardens and a number of other areas. There are nevertheless still opportunities for smaller and medium sized sites such as the subject land, which is bounded by Botany Road, Henry Kendall Crescent and Coward Street to also contribute towards meeting the future LGA housing growth target.

2.2 Metropolitan transport networks

The consolidated LaHC site at Mascot is located approximately 750 m due east (along Coward Street) from the centre of the Mascot Railway station precinct, which is a relatively convenient (10 minutes approximately) level walk for access to the heavy rail network Airport Rail line.

Due to the major port and airport functions which have historically dominated employment in the Mascot area, it is also well connected to Sydney's main road arterial network, as shown by the map in Figure 2.1.

The large number of major roads traversing the Mascot area, including Botany Road, Gardeners Road and Wentworth Avenue, provide convenient major road access in all directions for the residential population and the commercial businesses and employees in the Mascot area. This good road connectivity is also soon to be further improved, when the Westconnex Stage 2 and Stage 3 projects, including the related Sydney Airport gateway connection, are completed, which is due to happen in stages over the next 3-4 years approximately.

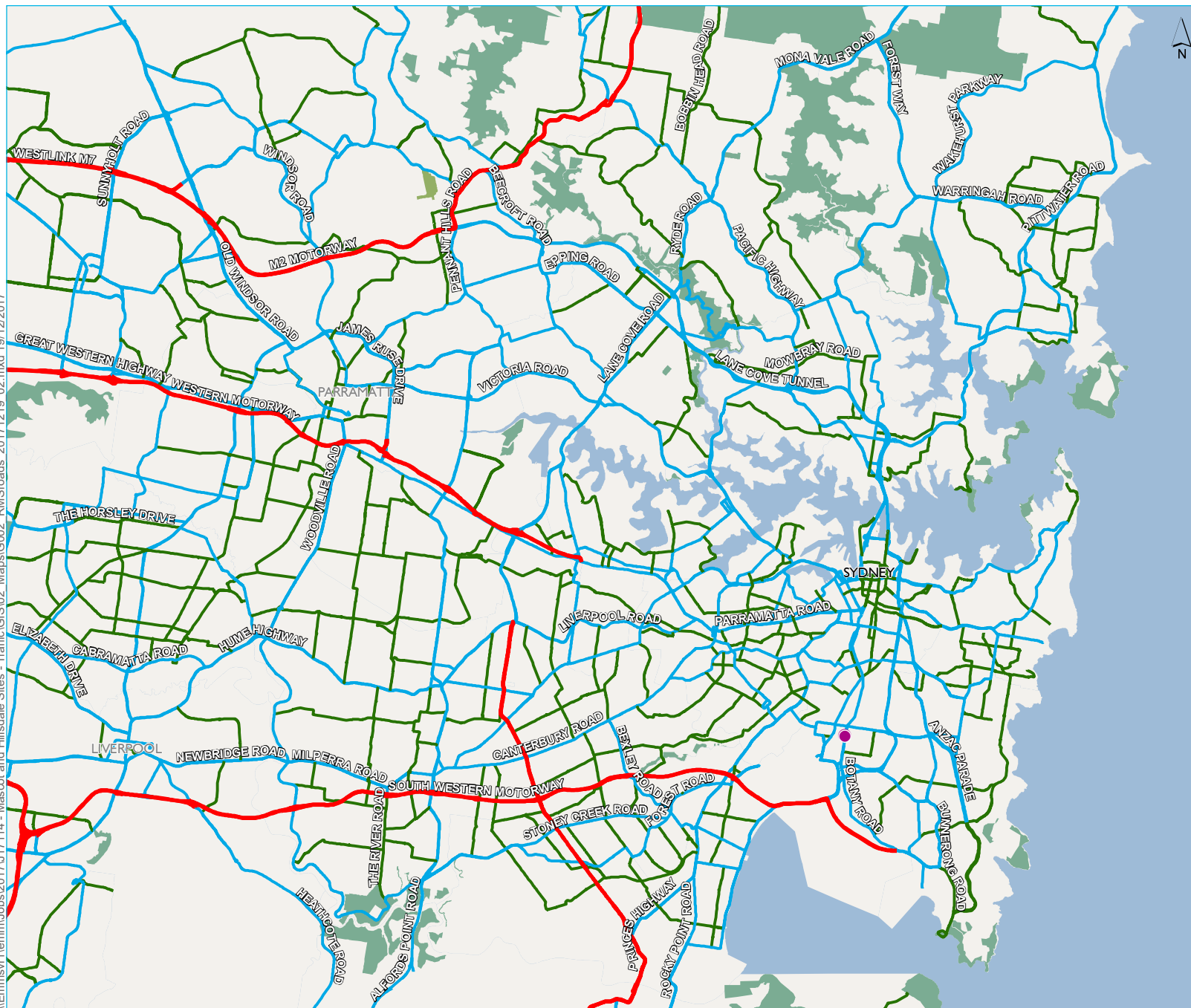
Along Botany Road and its connecting roads through the Mascot area, there are also many high frequency bus routes which operate throughout the daytime on both weekdays and weekends. These bus services include the route 309, 310, L09, X09, X10 and M20 bus services which travel directly to and from the Sydney CBD via Botany Road generally.

2.3 Bayside Council

The former Botany Council DCP for Car Parking (City of Botany Bay, 2013) is still applicable for the relevant areas of the now combined Bayside LGA, which include the suburb of Mascot.

This DCP recommends a range of standard car parking rates for residential and commercial developments in the former Botany Council areas which are all still current.

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- KEY**
- Site location
 - RTA classified roads
 - Auslink
 - State
 - Regional
 - NPWS reserve
 - State forest

Map of the NSW classified road network in the Botany – Mascot area

Botany Road, Coward Street and Henry Kendall Crescent, Mascot
Indicative Scheme
Transport and Movement Study
Figure 2.1



Source: EMM (2017); DFSI (2017); LPI (2015); GA (2015)

0 2.5 5 km
GDA 1994 MGA Zone 56

2.4 Agency consultation

As the site has frontage to a classified road (Botany Road) which has some vehicle access provision currently, the RMS should be consulted in relation to the proposed vehicle access provision for future site redevelopment.

However, as there are no proposed future vehicle access driveways required for the site residential development at either the Botany Road or Coward Street frontages, this consultation can be undertaken at a later date when more specific design details of the proposed development are known.

3 Existing traffic and transport networks

3.1 Locality and surrounding development

In the immediate locality of the consolidated development site, there is a mixed use precinct, including commercial, industrial, residential and recreational land uses clustered in groups around the key activity nodes, which developed historically around the major tram stop locations on Botany Road.

These types of land uses create a commercial development spine along Botany Road, with primarily residential and open space recreation areas developed in the streets behind.

This historic type of development pattern extends over the entire 1.3 km length of Botany Road, through Mascot, from Gardeners Road in the north to Wentworth Avenue in the south, as is shown on the map in Figure 3.1.

The large area of parkland (Mascot Memorial Park) which is located on the south west corner of the intersection of Botany Road and Coward Street is a centrally located asset which is available for use by both the residential and the commercial (workforce) populations in the Mascot centre.

Also the Mascot Primary School is conveniently located within a 300 m walking distance to the south of the site, along the western footpath of Botany Road. All the roads in this locality of Mascot, including Botany Road, Coward Street and Henry Kendall Crescent have adequate paved footpaths currently.

3.2 Road network

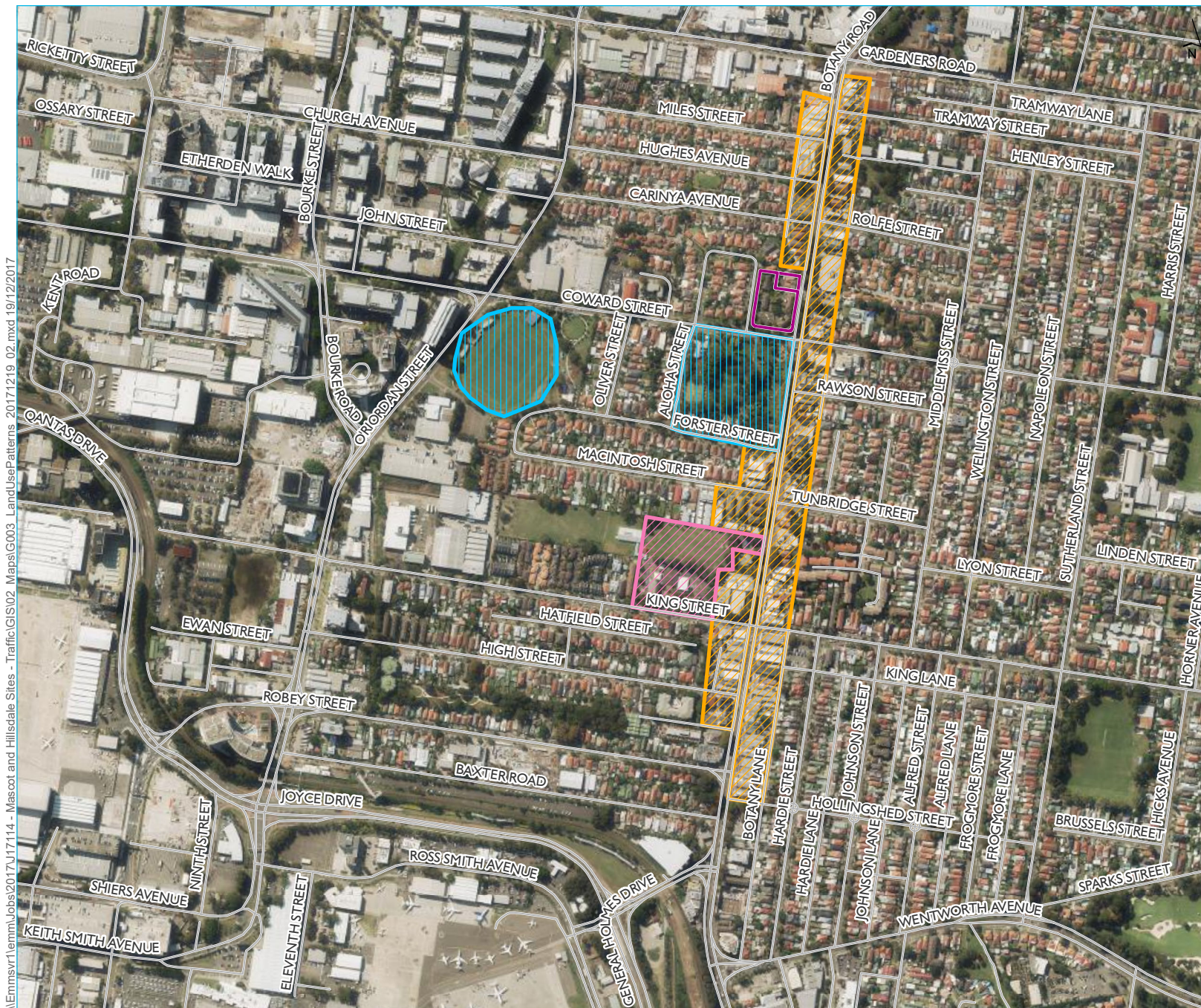
In the locality of the site at Mascot, the two major arterial roads (which are classified as State Roads in the NSW road hierarchy, Figure 2.1) are Botany Road and Gardeners Road.

Botany Road runs in a north-south direction directly past the site and Gardeners Road runs in an east-west direction, about 400 m north of the site.

Botany Road is a six lane arterial road, where the road carriageway width varies having three lane in each direction at some locations and two lanes northbound and four lanes southbound at other locations near the site as is shown by the photographs in Figure 3.1 and Figure 3.2. Where the carriageway changes configuration, this is usually undertaken in order to provide additional turning lanes at the major cross intersections, or bus lanes, as is shown on the two example road cross sections in Figure 3.1 and Figure 3.2.

Coward Street is one of two major east west collector roads in the Mascot area (the other is King Street) which complete the north-south and east-west grid of arterial and local roads.

These local collector roads also carry a combination of local and regional traffic movements. However, Coward Street has a 3 tonne load limit which limits its potential use by heavy vehicle traffic.



- KEY**
- Site location
 - Local Retail and Commercial facilities located along Botany Road
 - Primary school
 - Recreation sites
 - Road

Land use patterns along the
Botany Road corridor through
Mascot

Botany Road, Coward Street and
Henry Kendall Crescent, Mascot
Indicative Scheme
Transport and Movement Study
Figure 3.1



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Source: EMM (2017); DFSI (2017); LPI (2015); GA (2015)

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m
GDA 1994 MGA Zone 56

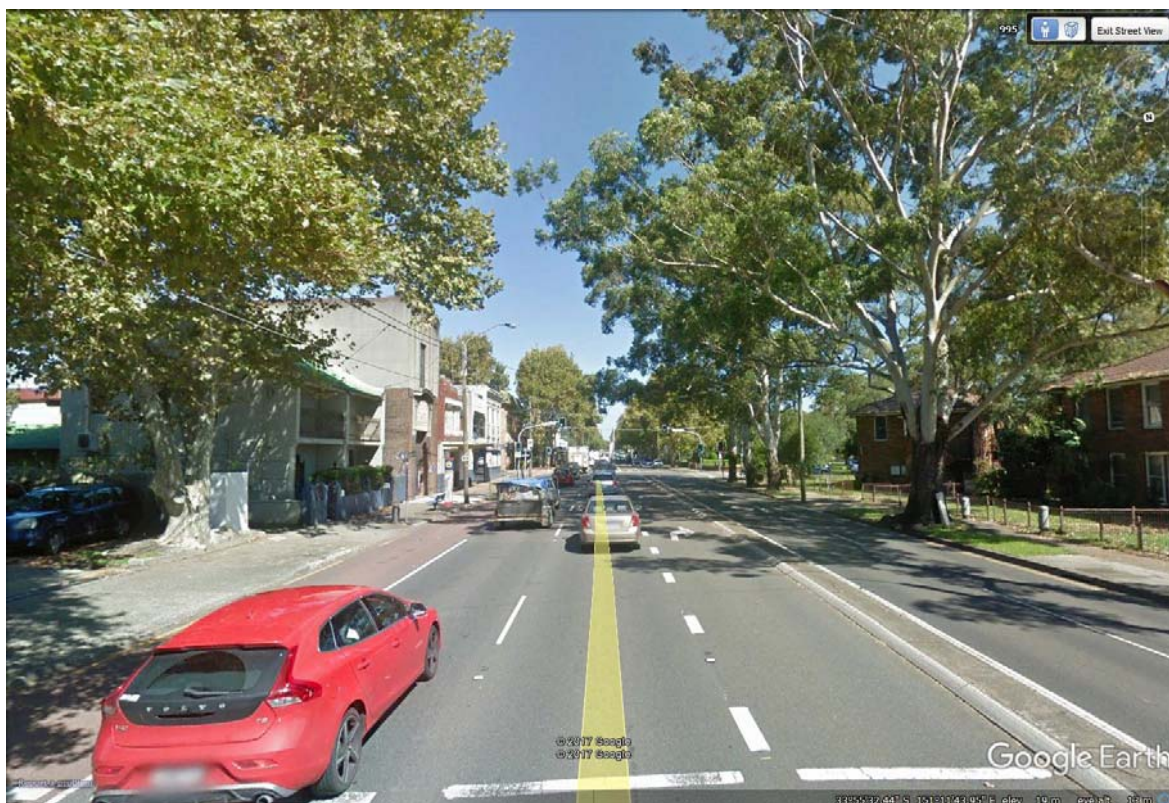


Figure 3.2 View showing the existing cross section of Botany Road, north of Coward Street



Figure 3.3 View showing the existing cross section of Botany Road, south of Coward Street

3.3 Traffic volumes

The peak hourly and daily traffic volumes for Botany Road and Coward Street have been determined from an intersection traffic count undertaken on Thursday 18 May 2017 and the most recent daily traffic volume data for Botany Road from the RMS website, which was 29,575 daily vehicles in 2009, north of King Street.

The 2017 intersection traffic count data is included as Appendix C to this report. The surveyed peak hourly traffic volumes, proportions of heavy vehicle traffic and the equivalent daily traffic volumes for these roads, for the northern, southern, eastern and western approaches to the traffic signal controlled intersection at Botany Road/Coward Street, are summarised in Table 3.1.

Table 3.1 Summary of traffic volumes at the Botany Road/Coward Street intersection

Road	Peak hour or daily volume	Volume north or east bound	Volume south or west bound	Combined volume ¹	Percentage of heavy vehicles ²
Botany Road, north	Morning peak	1,305	682	1,987	5.1%
	Afternoon peak	593	1,445	2,038	3.4%
	Daily volume			26,833	5.1%
Botany Road, south	Morning peak	1,491	727	2,218	4.7%
	Afternoon peak	749	1,446	2,195	3.5%
	Daily volume			29,575	4.7%
Coward Street, east	Morning peak	357	357	714	0.1%
	Afternoon peak	413	287	700	0.0%
	Daily volume			9,427	0.1%
Coward Street, west	Morning peak	336	477	813	0.5%
	Afternoon peak	367	396	763	0.8%
	Daily volume			10,507	0.8%

Notes: 1. The daily volumes for other routes are estimated from the ratio of the peak hourly to the daily traffic volume for Botany Road (south).
2. The percentage of heavy vehicles for the daily traffic is similar to the higher end of the range for the morning and afternoon traffic peak hours.

The existing daily traffic volume for Henry Kendall Crescent has not been surveyed but can be calculated based on the existing number of dwellings located along the street. Currently there are approximately 25 private dwellings plus the 25 existing social housing dwellings on the consolidated site, which primarily utilise Henry Kendall Crescent for their vehicular access.

The range of typical daily traffic generation rates which apply to these dwellings are 3.5 vehicle trips per dwelling per day for social housing and 7 vehicle trips per dwelling per day for older style private detached dwellings. This existing development therefore generates approximately 262 daily vehicle trips using Henry Kendal Crescent, of which approximately 131 vehicle trips daily use each of the two existing access intersections at Coward Street.

3.4 Intersections

A SIDRA intersection operations analysis has been undertaken for the existing morning and afternoon peak hour traffic volumes at the Botany Road/Coward Street intersection. The existing intersection layout, including the length of turning lanes and the intersection analysis results are shown in full in Appendix D.

The southbound bus only lane at the intersection is simulated by modelling it as a southbound left turn only lane, so that it can only be used by the left turning car traffic and the other southbound through car traffic cannot use it. The RMS criteria for assessing the levels of service at traffic signal controlled intersections are shown in Table 3.2. A summary of the SIDRA intersection analysis results including the maximum queue lengths on each intersection approach is presented in Table 3.3.

Table 3.2 Intersection level of service standards

Level of Service	Average delay (seconds per vehicle)	Traffic signals, roundabout
A	Less than 14	Good operation
B	15 to 28	Good with acceptable delays and spare capacity
C	29 to 42	Satisfactory
D	43 to 56	Operating near capacity
E	57 to 70	At capacity, At signals, incidents will cause excessive delays Roundabouts require other control mode
F	Greater than 71	Unsatisfactory with excessive queuing

Source: RTA, 2002.

Table 3.3 Existing Botany Road/Coward Street intersection traffic performance

Peak hour	Ave delay (seconds)	LoS ¹	DoS ²	Max queue from north (m)	Max queue from south (m)	Max queue from east (m)	Max queue from west (m)
Morning peak hour (7.45 to 8.45 am)	79.4	F	1.024	162	442	191	181
Afternoon peak hour (4.30 to 5.30 pm)	128.3	F	1.166	1,059	105	203	314

Notes: 1. Level of Service.
2. Degree of Saturation.

The existing intersection operations SIDRA results in Table 3.3, show that the intersection is operating at Level of Service F, with significant peak hour traffic delays currently. Although the total intersection throughput traffic volumes are similar during the two peak periods. The average intersection traffic delays and maximum queue lengths are noticeably longer during the afternoon traffic peak hour when the maximum southbound traffic queue length on Botany Road can exceed 1 km.

The intersection local road maximum traffic queue lengths along the Coward Street eastbound (from the west) approach to the intersection are also noticeable, extending to over 180 m (maximum) during the morning traffic peak hour and over 310 m (maximum) during the afternoon traffic peak hour.

These maximum traffic queues currently extend past the relevant (site car park access) intersection of Henry Kendall Crescent with Coward Street. As a result, the roadway of Coward Street should preferably be marked with 'do not queue across intersection' road markings, such that the Coward Street eastbound traffic queues do not unreasonably obstruct the Henry Kendall Crescent egress traffic which is making a right turn onto Coward Street, to travel west, away from the intersection with Botany Road.

3.5 Pedestrian and cyclist access

The existing access provision and facilities for cycling and pedestrians in the locality of the site along Botany Road, Coward Street and Henry Kendall Crescent, is considered to be relatively good so as to maximise the potential local usage of these travel modes.

There are significant local commercial/retail facilities (Botany Road shops), school (Mascot Primary School) and recreation (parks and sports ovals) located within reasonable walking distance of the consolidated site. Many locally based journeys by either residents or visitors to the site can therefore be undertaken by either walking or cycling.

3.6 Public transport

Similarly, the Botany Road area of Mascot is very well served by buses, with six north-south bus routes (309, 310, X09, X10, L09 and M20) travelling via Botany Road and a further two cross regional bus routes (400 and 410) travelling via Botany Road and Coward Street, immediately adjacent to the site.

The STA bus routes network map showing these routes is illustrated by Figure 3.4 and a combined summary of the total numbers of morning and afternoon peak hour buses which are operating via these routes is listed in Table 3.4.

In total there are between twenty and thirty actual buses per hour travelling in each direction past the consolidated site, on either the core CBD based Botany Road bus routes, or the cross regional 400/410 bus routes, operating via Coward Street, which connect this area of Mascot to the Mascot railway station precinct, which is approximately 750 m further to the west, along Bourke Road.

This high bus service frequency provides a high capacity, with minimum waiting times, for public transport travel to and from the Mascot area of Bayside LGA to the major Sydney CBD based employment centres and other more locally based employment centres and travel destinations, within the Bayside and the adjoining Randwick LGA to the east.

Table 3.4 Summary of Botany Road and Coward Street peak hour bus services

Bus Route	Morning peak hour	7.45 to 8.45 am	Afternoon peak hour	4.30 to 5.30 pm
Number	Northbound buses	Southbound buses	Northbound buses	Southbound buses
309	5	7	9	4
310	4	4	4	5
X09	3	0	0	1
X10	2	0	0	1
L09	4	0	0	2
M20	5	5	5	6
X03	0	0	0	0
Total Botany Road	23	16	18	19
400	3	3	4	3
410	1	2	4	3
Total Cross Regional	4	5	8	6
Total All Routes	27	21	26	25

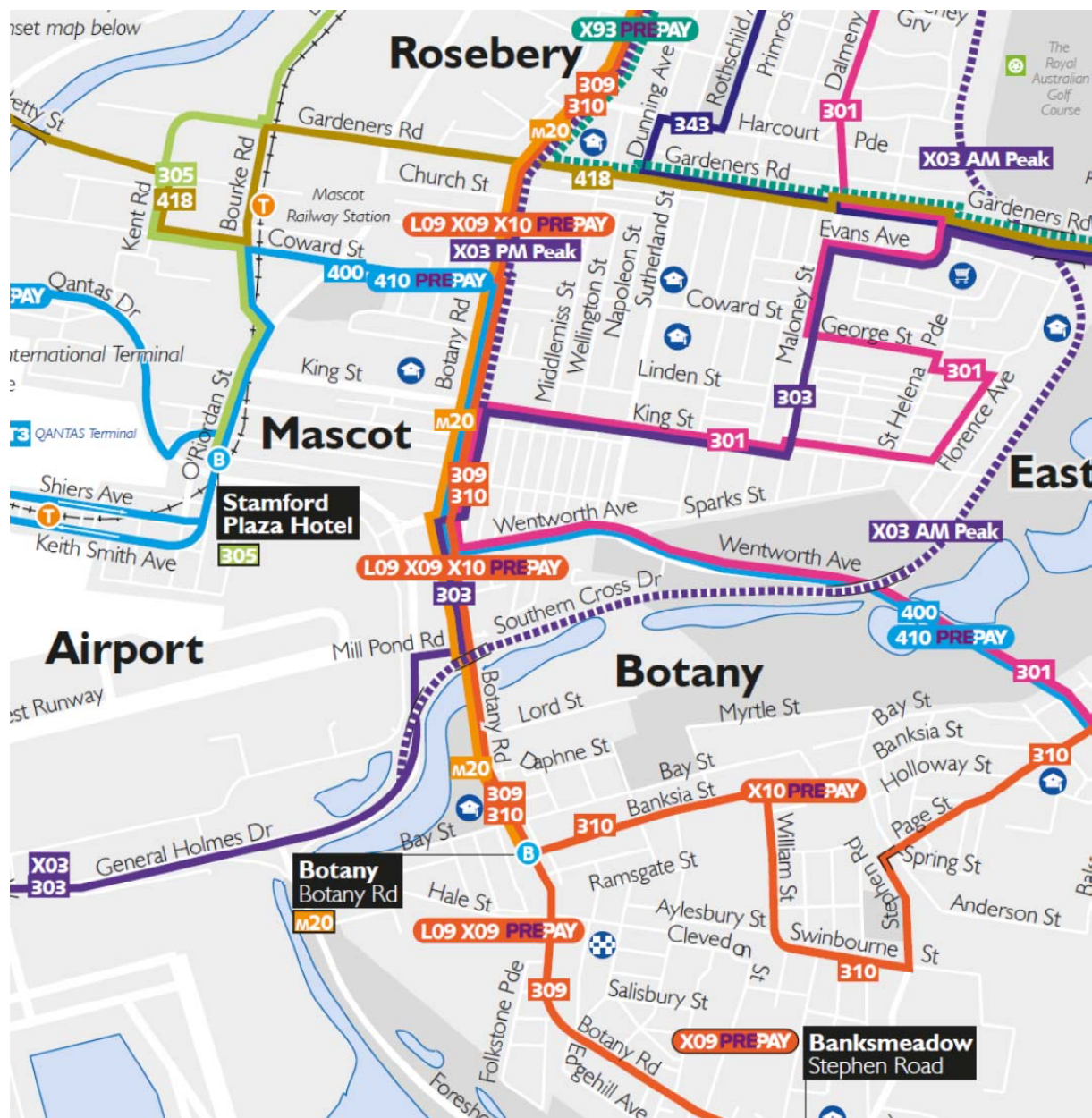


Figure 3.4 Map of STA bus routes in the Mascot area

4 Traffic and transport demand characteristics

4.1 Traffic generation

The additional future peak hourly and daily site generated traffic movements are calculated and summarised in Table 4.1, based on the difference between the standard RTA/RMS traffic generation rates (RTA-RMS 2002) for the proposed land uses (high density apartments within a sub-regional centre and office type commercial uses) and existing traffic generation rates for social housing in the LGA, which were determined from an EMM site traffic survey of the comparable LaHC social housing estate at 76-80 Beauchamp Road, Matraville, which was undertaken on Thursday 16 August 2017.

Table 4.1 Calculation of the increase in future site generated traffic

Definition of land use	Morning peak hour traffic generation rate	Afternoon peak hour traffic generation rate	Daily traffic generation rate	Morning peak hour vehicle trips	Afternoon peak hour vehicle trips	Daily vehicle trips
Existing social housing						
25 dwellings	0.23/unit	0.46/unit	3.5/unit	6	12	88
Proposed site uses						
155 dwelling	0.29/unit	0.29/unit	2.9/unit	45	45	450
723 sqm commercial	2/100 sqm	2/100 sqm	10/100 sqm	14	14	72
Combined future uses				59	59	522
Net additional traffic				53	47	434

From the calculation in Table 4.1 the net additional site generated daily traffic movements (after adjustment for the existing site generated residential traffic) are as follows:

- 53 additional peak hourly vehicle trips during the morning peak hour (7.45 to 8.45 am);
- 47 additional peak hourly vehicle trips during the afternoon peak hour (4.30 to 5.30 pm); and
- 434 additional daily vehicle trips on a typical weekday.

In this traffic impacts analysis, all the additional site generated vehicle traffic has been assumed to be using the Henry Kendall Crescent access driveway and to generally travel directly via Henry Kendall Crescent to the nearest (eastern) Coward Street intersection.

4.2 Directional distribution

Beyond the eastern intersection of Henry Kendall Crescent with Coward Street, the future directions of the site generated peak hourly traffic movements will be influenced by the general directional patterns of the Sydney Region morning and afternoon peak hourly traffic movements which are, in most areas of the city:

- Approximately 70% of car traffic is heading towards the centre of the city in the morning peak hour and away from the city centre in the afternoon peak hour, and

- Approximately 30% car traffic is travelling to or from other areas.

In the Mascot area, these traffic distributions will correspond to the following proportions of the future site peak hourly and daily traffic movements using the following routes:

- 40% of the future site traffic travelling via Botany Road, to and from the north;
- 30% of the future site traffic travelling via Coward Street, to and from the west;
- 20% of the future site traffic travelling via Botany Road, to and from the south; and
- 10% of the future site traffic travelling via Coward Street, to and from the east.

The future impacts of the daily and peak hourly site generated traffic movements on the major road network and at the Botany Road/Coward Street intersection are analysed and discussed in Sections 5.1 and 5.2 of this report.

4.3 Other travel modes

The high capacity and high service frequency of the bus routes which currently travel via Botany Road and Coward Street through this area of Mascot provide good opportunities for public transport based travel, including good connections, for work commuting and other travel purposes, by either the 400/410 bus routes or by walking or cycling, to and from the nearest railway station at Mascot.

In principle the future proportions of car based travel for future residents of, employees at and visitors to the site should be encouraged by travel demand management measures to be as low as possible for this type of mixed use residential/commercial development located at a non-CBD location, within the Eastern City District (sub region) of Sydney.

4.4 Car parking

The future planning for relatively low levels of car based travel for regular journeys such as weekday commuting, to and from the site, will be assisted by making the on-site provision of future car parking at the site as low as feasibly possible, given the current constraints of the Bayside Council DCP planning requirements and other relevant car parking design codes, for this type of development in other comparable areas of Sydney.

The potential use of car share car parking, with dedicated vehicles (eg Go-Get or similar) based permanently at the site, should also be considered as a future substitute for either resident or visitor car parking provision at the site, where a reduction in the overall total level of on-site car parking can be justified as historical research has shown that a lower number of go-get or similar car share vehicles will meet the same overall user car travel needs as a much larger number of privately owned vehicles.

The proposed level of on-site car parking is significantly lower than the standard Bayside Council DCP car parking requirements which are typically a minimum of 1 car parking space per dwelling with 1 car parking space per five dwellings for visitor car parking. However they are comparable with the alternative ARHSEPP car parking provisions for social housing which normally require 0.5 car parking spaces for a standard 2 bedroom dwelling in an accessible area.

Overall, a total of approximately 120 car parking are proposed to be provided in a single level of basement car parking at the site, as shown by the site basement level car parking plan, which is in Appendix A. All the proposed on site car parking will be accessed by a single site entry/exit driveway (ramp) which is proposed to be located at the Henry Kendal Crescent frontage.

Provisionally, the future allocation of the site car parking will be approximately:

- 20 car parking spaces for the 723 sqm GLFA commercial/retail areas at the site,
- 80 car parking spaces for the 155 new residential dwellings at the site, and
- 20 car parking spaces for residential visitor car parking at the site.

5 Impacts of the proposed development

5.1 Road network

The future traffic impacts of the additional site generated daily traffic movements, when distributed onto the external locality major road network (via Botany Road and Coward Street) is summarised in Table 5.1.

Table 5.1 Distribution of additional site generated traffic and daily traffic increases

Road	Direction	Current total daily AADT	Net additional site daily traffic	Future total route daily traffic	Route % daily traffic increase
Botany Road	north	26,833	174	27,007	0.6%
Botany Road	south	29,575	86	29,661	0.3%
Coward Street	east	9,427	43	9,470	0.5%
Coward Street	west	10,507	131	10,638	1.2%

On the external locality major road network, the proportionally generated site daily increases will generally be around 1% or less and will not generally be noticeable in comparison to the existing daily traffic volumes and traffic conditions on these routes.

At the actual site entry driveway location (to the basement car park) on the eastern section of Henry Kendall Crescent, the existing daily traffic volume using the road is relatively low (approximately 131 daily vehicle movements) and the proportional site daily increases will be correspondingly high at +331% (from 434 additional daily vehicle movements), resulting in a future total traffic flow of 565 daily vehicle movements.

However the overall route daily traffic volume for Henry Kendall Crescent will still remain within the environmental capacity limits for the lowest category of road (which is an accessway) that is defined by the RTA-RMS *Guide to Traffic Generating Developments, 2002*. This type of road has an environmental capacity of 100 vehicles per hour (which equivalent to 1,000 daily traffic movements) and the existing road cross section, which is approximately 7.5 metres wide between kerbs, will continue to be adequate for this road including the proposed development traffic.

However, in recognition of the increased likely increased traffic usage of the section of this road between the site entry driveway and Coward Street, with southbound traffic attempting to turn independently, both left and right into Coward Street, with minimal delays, it will be appropriate to generally prohibit all parking (no stopping signposted) along Henry Kendall Crescent southbound between the site access driveway and Coward Street. This change to the southbound kerbside parking restriction will continue to facilitate as much as is reasonably possible, the free movement of car traffic in both directions along this section of Henry Kendall Crescent.

5.2 Intersections

The future intersection traffic impacts of the additional site generated peak hourly traffic movements, when travelling through the nearest external major road network (at Botany Road and Coward Street) is summarised in Table 5.2, where the detailed SIDRA intersection modelling results are also included in Appendix D, for the peak hour intersection operations before and after the additional site generated traffic.

Table 5.2 Comparison of Botany Road/Coward Street future intersection traffic performance

Peak hour	Ave delay (seconds)	LoS ¹	DoS ²	Max queue from north (m)	Max queue from south (m)	Max queue from east (m)	Max queue from west (m)
Existing Morning traffic peak hour (7.45 to 8.45 am)	79.4	F	1.024	162	442	191	181
Proposed Morning traffic peak hour (7.45 to 8.45 am)	83.2	F	1.023	168	460	201	192
Existing Afternoon traffic peak hour (4.30 to 5.30 pm)	128.3	F	1.166	1,059	105	203	314
Proposed Afternoon traffic peak hour (4.30 to 5.30 pm)	137.4	F	1.169	1,098	107	209	331

Notes: 1. Level of Service.

2. Degree of Saturation.

The intersection at Botany Road/Coward Street is already operating over capacity In both the morning and afternoon traffic peak hours at Level of Service F, with fairly long traffic delays and traffic queues.

The net effect of the additional project traffic which will be 30-40 additional vehicle movements per hour at the intersection, compared to the existing 3,000 vehicles per hour during both peaks currently, will be to generate about a 1% increase in the total peak hourly traffic movements at the intersection. This will have only a minimal effect on the peak hour traffic operation of the intersection.

The existing peak hourly intersection traffic queues would not change significantly at the intersection and the future average intersection delays would remain at approximately 80 seconds in the morning peak hour and a little over two minutes in the afternoon peak hour.

The most realistic way to address future road network traffic congestion in Sydney is to facilitate future residential development in the areas of Sydney which have direct and level walking access to high capacity public transport systems, such as the Airport Line railway station at Mascot, plus the large network of supporting bus routes in the Mascot locality. This maximises the future opportunities for non car based travel to occur with new developments throughout the Sydney region by allowing new residents and site visitors to travel to and from the site as much as possible by public transport or other sustainable travel modes.

5.3 Traffic safety

There are no specific new traffic safety concerns identifiable in the Mascot area from the additional development generated car traffic from the proposed development.

At most times of the day, the intersection visibility along Coward Street, from the eastern intersection with Henry Kendall Crescent is generally adequate for turning traffic safety as the road is straight and level in both directions. However this visibility is potentially obstructed during the peak hours by the intersection traffic queues further to the east nearer Botany Road.

In response to this visibility constraint, the roadway of Coward Street should preferably be marked with 'do not queue across intersection' road markings, so that the Coward Street eastbound traffic queues do not unreasonably obstruct the visibility for the Henry Kendall Crescent egress traffic which is trying to make a right turn onto Coward Street, to head west, away from the intersection at Botany Road.

5.4 Pedestrian and cyclist access

The existing access provision and facilities for cycling and pedestrians in this locality of Mascot along Botany Road, Coward Street and Henry Kendall Crescent, is considered to be relatively good and will maximise the potential local usage of these travel modes for local journeys to and from the local commercial/retail facilities (Botany Road shops) the nearby school (Mascot Primary School) and nearby recreation facilities (parks and sports ovals).

In principle the future proportions of non car based travel for future residents of, employees at and visitors to the site will be as high as feasibly possible for this type of mixed use residential/commercial development located in a non-CBD location, but still within the Eastern City District (sub region) of Sydney.

5.5 Public transport

The Botany Road area of Mascot is very well served by buses, with six north-south bus routes (309, 310, X09, X10, L09 and M20) travelling via Botany Road and a further two cross regional bus routes (400 and 410) travelling via Botany Road and Coward Street, immediately adjacent to the site.

The high capacity and high service frequency of the bus routes which currently travel via Botany Road and Coward Street through this area of Mascot, provide good opportunities for public transport based travel, for work commuting and other travel purposes, including good connections, by either the 400/410 bus routes or by walking or cycling, to and from the nearest railway station at Mascot.

Where necessary, with an increasing local population in the Mascot area, the existing bus service frequencies can be increased with additional peak hourly bus services to provide additional public transport commuting capacity on the existing bus routes, in response to the increased demand for these services.

6 Infrastructure and transport service requirements

6.1 Road network

On the external locality major road network, on Botany Road and Coward Street, the proportionally generated site daily increases will generally be 1% or less and will not generally be noticeable in comparison to the existing daily traffic volumes and traffic conditions on these routes.

On the Eastern section of Henry Kendall Crescent, where the existing daily traffic volume using the road is approximately 131 daily vehicle movements the proportional generated site daily increases will be correspondingly high with 434 additional daily vehicle movements. However the future total daily traffic volume for this road (565 daily vehicle movements) will remain within the environmental capacity threshold for the lowest category of road (an accessway) which is defined by the RTA-RMS *Guide to Traffic Generating Developments, 2002* as having up to 1,000 daily traffic movements.

There are no internal site roads proposed. All the internal site vehicular access will be accommodated via the basement car parking area, including garbage storage and collection. All the relevant areas of the site basement level will be designed in accordance with the AS 2890 and Council DCP car parking aisle and parking space dimensions.

6.2 Intersections

The existing Botany Road /Coward Street intersection is already operating at Level of Service F during both the morning and afternoon peak hour traffic periods. The predicted additional site generated traffic will be an additional 30-40 vehicle movements per hour approximately during both the peak hours, which will have only minimal effect on the future intersection traffic operations during these peak hours.

For traffic safety and traffic visibility reasons it is recommended that the roadway of Coward Street at the eastern Henry Kendall Crescent intersection should be marked with 'do not queue across intersection' road markings, so that the Coward Street eastbound traffic queues do not unreasonably obstruct the Henry Kendall Crescent egress traffic which is trying to make a right turn onto Coward Street, to head west, away from the intersection at Botany Road.

Also along the section of Henry Kendall Crescent between the site entry driveway and Coward Street, it will be appropriate to generally prohibit all parking (no stopping signposted) on the eastern (site frontage) side of the road, between the site access driveway and Coward Street, to facilitate as much as is practical, the future free movement of traffic in both directions along this section of Henry Kendall Crescent.

6.3 Cycling and pedestrian access

The existing access provision and facilities for cycling and pedestrians in this locality of Mascot along Botany Road, Coward Street and Henry Kendall Crescent are considered to be relatively good and will maximise the potential local usage of these travel modes for local journeys.

In principle the future extent of car based travel by future residents of, employees at and visitors to the site should be minimised by maximising the future use of either pedestrian or cycling journeys for travel to and from the local commercial/retail facilities (Botany Road shops), the nearby school (Mascot Primary School) and nearby recreation facilities (parks and sports ovals).

6.4 Public transport

Similarly to the future situation for pedestrian and cycling access, the future extent of car based travel to and from the site should be minimised by maximising the future use of public transport (either bus or rail based travel) for both locally and regionally based journeys from the site.

The high capacity and high service frequency of the bus routes which currently travel via Botany Road and Coward Street through this area of Mascot, provide good opportunities for public transport based travel, for work commuting and other travel purposes, including good connections, by either the 400/410 bus routes or by walking or cycling, to and from the nearest railway station at Mascot. These opportunities can be enhanced in the future with additional peak hourly bus services on the key routes to provide additional public transport commuting capacity in the future, in response to the likely increased demand for these services.

6.5 Car parking

The future potential supply of on-site car parking is constrained to a maximum of approximately 120 car parking spaces which can be provided in a single level of basement car parking at the site. Provisionally, the future allocation of this car parking will be approximately:

- 20 car parking spaces for the 723 sqm GLFA commercial/retail areas at the site,
- 80 car parking spaces for the 155 new residential dwellings at the site, and
- 20 car parking spaces for residential visitor car parking at the site.

The resultant levels of on-site car parking provision for new developments at the site will be significantly lower than the standard Bayside Council DCP car parking requirements which are typically a minimum of 1 car parking space per dwelling with 1 car parking space per five dwellings for visitor car parking.

However the proposed future on-site parking provision for residential uses is likely to be comparable with the alternative State Environmental Planning Policy (Affordable Rental Housing) 2009 car parking provisions for social housing which normally require 0.5 car parking spaces for a standard 2 bedroom dwelling in an accessible area.

References

City of Botany Bay, 2013, *Development Control Plan Part 3A, Car Parking*, adopted December 2014

Greater Sydney Commission, 2017, *Revised Draft Eastern City District Plan*, October 2017

RTA-RMS, 2002, *Guide to Traffic Generating Developments*, report prepared by NSW Road and Traffic Authority, now Roads and Maritime Services. October 2002

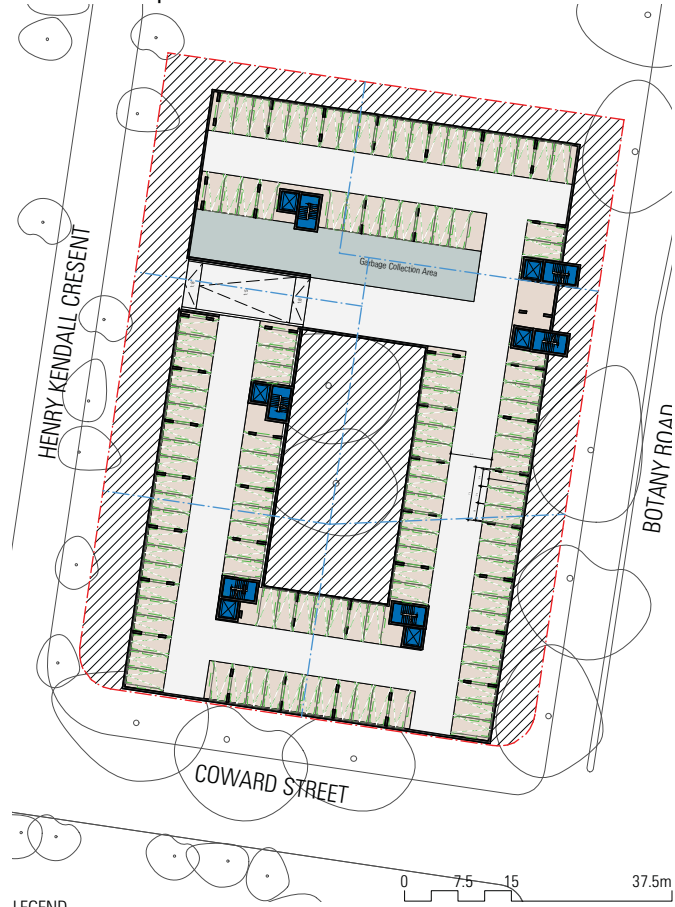
Appendix A

Proposed indicative scheme

INDICATIVE SCHEME

This scheme is indicative only and is included to demonstrate how a compliant scheme might be designed within the proposed controls

basement plan



- LEGEND
- circulation - horizontal
 - circulation - vertical
 - service room
 - parking area
 - parking circulation

ground floor plan (level 01)



- LEGEND
- circulation - horizontal
 - circulation - vertical
 - ambulance station
 - commercial / retail
 - 1 bedroom
 - 2 bedroom
 - 3 bedroom

typical floor plan



- LEGEND
- circulation - horizontal
 - circulation - vertical
 - service room
 - 1 bedroom
 - 2 bedroom
 - 3 bedroom

INTERFACE - BOTANY ROAD

BOTANY ROAD

Modulation in height, and significant articulation of each volume into discreet building elements. setback upper-floors and potential for continuous 2 storey parapet line



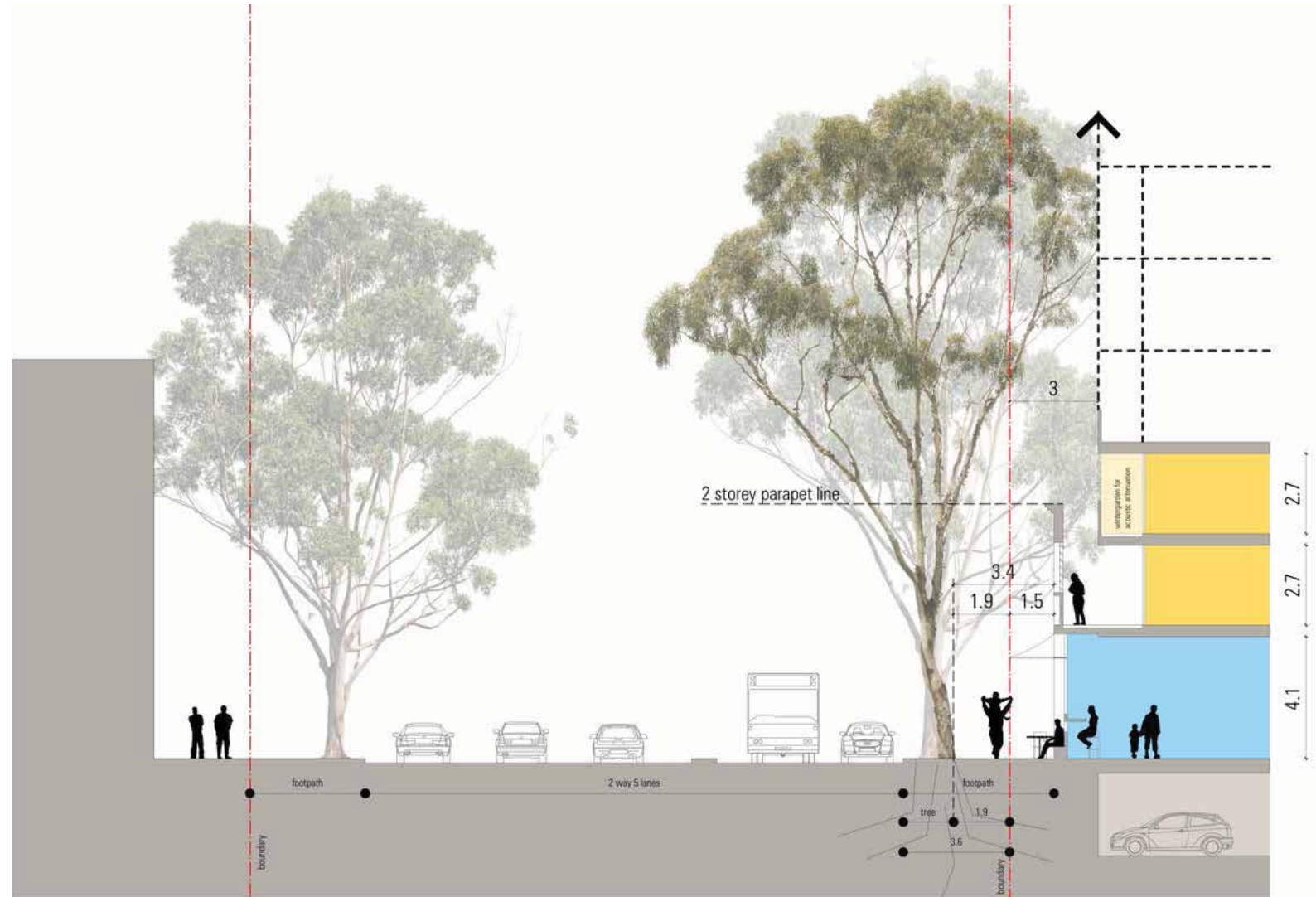
Mako Architects - Little Bay



SJB Architects - Melbourne



MHNDU - Bondi Junction



INTERFACE - COWARD STREET



This image is a preliminary rendering showing the intention of the ground floor treatment, and interface of residential frontages to Coward Street, and the landscape relationship to the park opposite. This ground floor interface should be characterised by:

- Generous landscaping to front terrace style accommodation.
- Level change at ground floor, raising entrance and habitable areas to increase privacy and aspect out over park.
- Two storey apartment typology at ground able to leverage full building depth thus enabling sunlight access from north, and views to park to the south.
- Raising bedroom, and more private spaces to the first floor.
- Residential scale and rhythm to the facade elements at ground and first floor

INTERFACE - HENRY KENDALL CRESENT

Collage Credit - Turner Architects, Balmain.



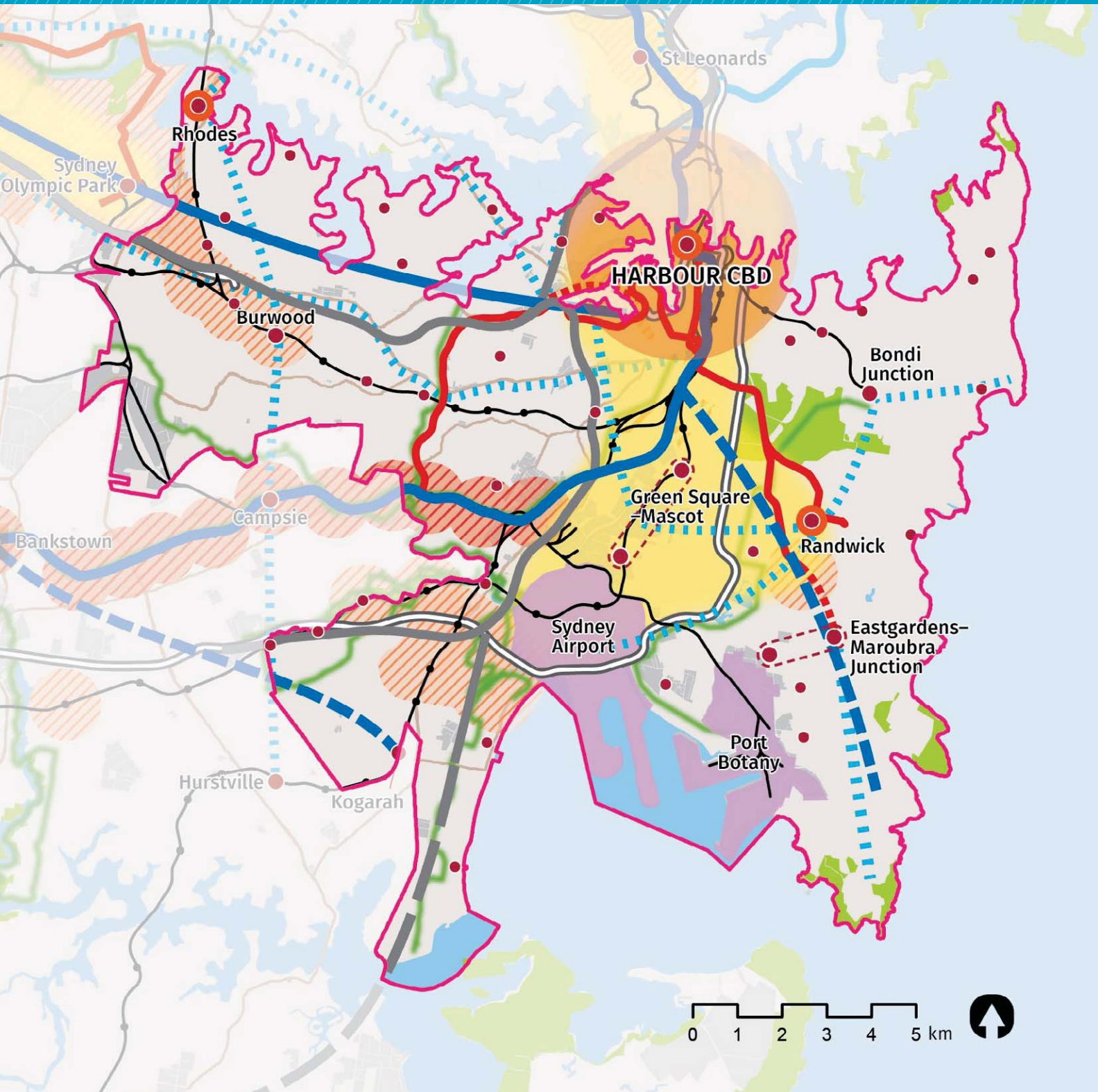
This image is a preliminary mixed media representation of the interface to Henry Kendall Crescent, using both massing envelope perspectives, and collage to demonstrate the built form and articulation. The interface condition should be characterised by the following:

- Generous setback and landscaping to building frontages,
- Retention of significant planting in front setback and along streetscape
- Domestic scale articulation of built form
- Setback upper floors to diminish building scale.
- Positive separation and articulation of built form along Henry Kendall Crescent.

Appendix B

Greater Sydney Commission

Eastern City District Structure Plan 2036



NOTE: Committed projects of: Western Harbour Tunnel & Beaches Link, F6 – WestConnex to President Avenue Kogarah, Parramatta Light Rail Stage 2 and Sydney Metro West are subject to final business case, no investment decision yet. Routes and stops for some transport corridors/projects are indicative only.

Housing



Existing and projected dwellings

	2016	2036
Eastern City District	466,500	624,000

Jobs



Centre job target ranges

	2016	2036
Bondi Junction	13,800	17,000–20,500
Burwood	10,300	12,000–14,000
Eastgardens-Maroubra Junction	6,900	8,000–9,000
Green Square-Mascot	59,500	75,000–80,000
Randwick	22,800	32,000–35,500
Rhodes	15,700	22,000–25,500
Harbour CBD*	496,900	662,000–732,000

*excluding North Sydney




















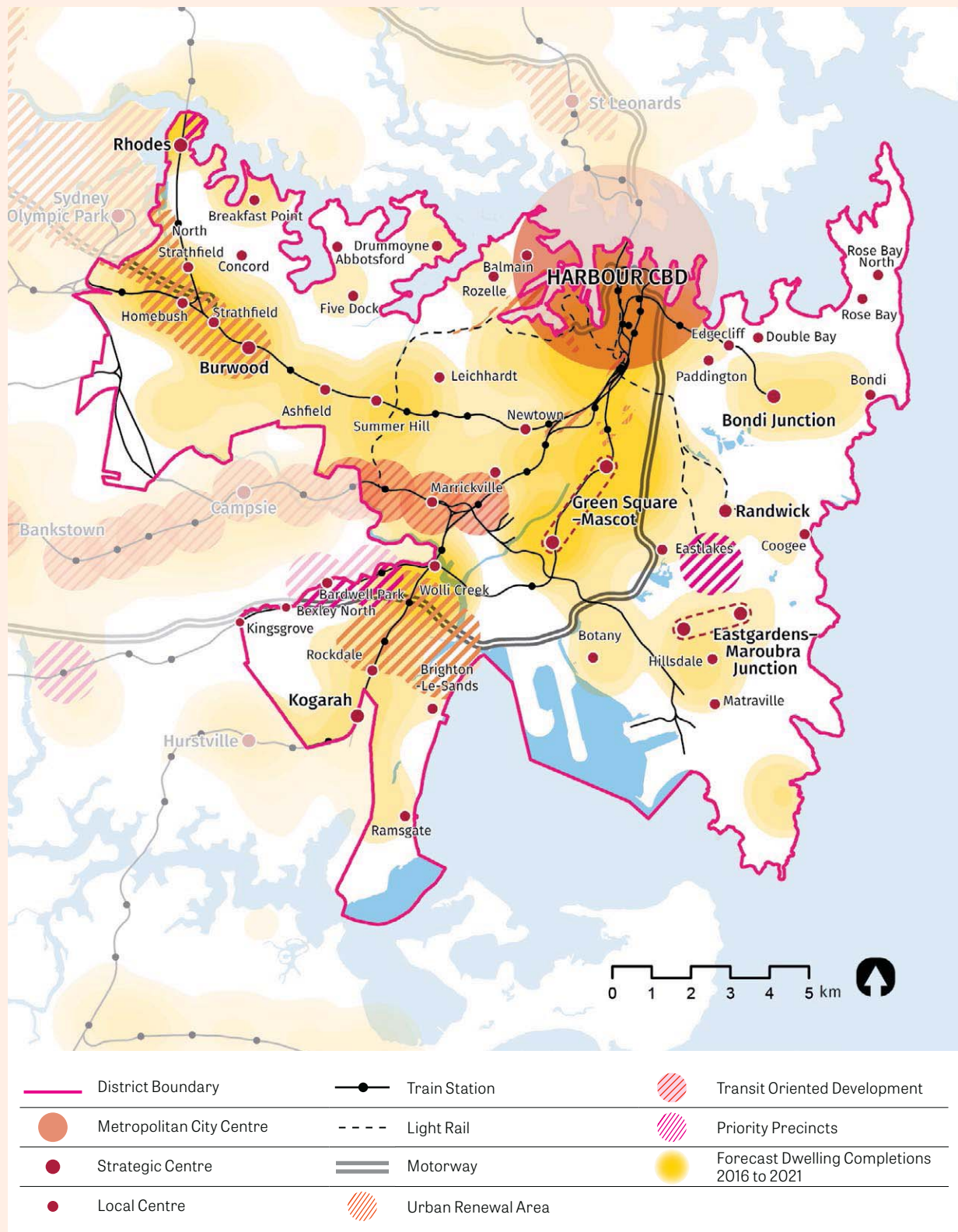
	Metropolitan City Centre		Waterways
	Health and Education Precinct		Train Station
	Strategic Centre		Committed Train Link
	Local Centre		Train Link / Mass Transit Investigation 10–20 years
	Economic Corridor		On Street Rapid Transit
	Trade Gateway		Motorway
	Industrial Land		Committed Motorway
	Transit Oriented Development		Road Investigation 0–10 years
	Urban Renewal Area		Green Grid Priority Project
	Major Urban Parkland and Reserve		

Figure 13: Eastern City District future housing supply



Source: Greater Sydney Commission, Department of Planning and Environment & NSW Government Housing Affordability Package

Housing strategies and targets

To address housing supply, housing strategies are to be developed by councils to:

- make provision to meet the five and 10-year (when agreed) housing targets and identify capacity to contribute to a rolling program to deliver the 20-year district strategic supply
- inform the Affordable Rental Housing Target for development precincts
- coordinate the planning and delivery of local and State infrastructure.

The NSW Department of Planning and Environment will prepare guidelines to support housing strategies as outlined in the draft *Greater Sydney Region Plan* in Objective 10.

Table 2 sets five-year housing targets for the Eastern City District which are the same as published in the November 2016 draft Central District Plan. These are based on the District's dwelling needs and the existing opportunities to deliver supply. They include all types of housing – traditional detached and attached houses, apartments, seniors housing, granny flats and aged care.

The five-year targets are generally consistent with known housing approvals and construction activity. These are minimum targets and largely reflect delivery potential under current planning controls.

Meeting housing demand over 20 years requires a longer-term outlook. The draft *Greater Sydney Region Plan* sets a District 20-year Strategic Housing Target of 157,500 dwellings; equating to an average annual supply of 7,875 dwellings over 20 years. The Commission will work with each council to develop 6–10 year housing targets.

Future Transport 2056 identifies city-shaping transport projects that will, in the long term, improve accessibility to jobs and services, and act as a stimulus for additional housing supply. To deliver the 20-year strategic housing target, councils should, in local housing strategies, investigate and recognise opportunities for long-term housing supply associated with city-shaping transport corridors, growing, emerging and new centres, and other areas with high accessibility.

Table 2: Eastern City District housing targets by local government area

LGA	0–5 year housing targets 2016–2021
Bayside	10,150
Burwood	2,600
Canada Bay	2,150
Inner West	5,900
Randwick	2,250
Strathfield	3,650
City of Sydney	18,300
Waverley	1,250
Woollahra	300
Eastern City District Total	46,550

Affordable Rental Housing Targets

Housing has a dual social and economic role across Greater Sydney. Communities require housing that meets changing demographic needs over time and that provides stability. At the same time housing has an economic productivity role by providing housing choice and affordability for a cross section of workers.

The Commission's research and testing of needs through stakeholder and community consultation reaffirms the critical importance of providing a diversity of housing outcomes across the housing continuum in Greater Sydney.

Ensuring a steady supply of market housing in locations well supported by existing or planned services and amenity with an emphasis on public transport access is outlined in Objective 10 in the draft *Greater Sydney Region Plan*.

Appendix C

Intersection Traffic Count



R.O.A.R. DATA

Reliable, Original & Authentic Results
Ph.88196847, Mob.0418-239019

Lights

Time Per	NORTH Botany Rd			WEST Coward St			SOUTH Botany Rd			EAST Coward St			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
0630 - 0645	10	97	7	10	32	25	30	155	14	4	29	11	424
0645 - 0700	3	136	18	11	27	26	41	206	24	3	51	11	557
0700 - 0715	4	121	19	16	34	25	23	187	19	6	33	8	495
0715 - 0730	5	122	9	15	26	32	24	221	19	4	35	14	526
0730 - 0745	14	150	12	12	23	18	33	227	21	4	63	13	590
0745 - 0800	6	127	37	7	44	36	41	309	36	9	82	16	750
0800 - 0815	3	147	17	12	37	27	23	272	30	13	56	17	654
0815 - 0830	10	115	22	9	47	29	32	272	50	6	60	26	678
0830 - 0845	5	124	18	12	41	32	38	289	47	9	50	13	678
0845 - 0900	5	141	35	9	35	33	23	245	33	5	61	19	644
0900 - 0915	9	126	26	14	32	21	30	221	32	16	47	17	591
0915 - 0930	6	156	9	18	38	14	26	168	28	13	32	8	516
Period End	80	1562	229	145	416	318	364	2772	353	92	599	173	7103

Heavies

Time Per	NORTH Botany Rd			WEST Coward St			SOUTH Botany Rd			EAST Coward St			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
0630 - 0645	0	10	0	0	0	0	1	4	0	0	0	0	15
0645 - 0700	0	16	0	1	0	1	0	10	0	0	0	0	28
0700 - 0715	0	13	0	0	0	0	1	10	0	0	0	0	24
0715 - 0730	0	16	0	0	0	0	0	12	0	0	0	0	28
0730 - 0745	0	20	0	1	0	0	2	16	0	0	0	0	39
0745 - 0800	0	15	0	0	0	0	0	17	0	0	0	0	32
0800 - 0815	0	14	0	0	0	0	0	12	0	0	0	0	26
0815 - 0830	0	8	0	0	0	3	1	8	0	0	0	0	20
0830 - 0845	1	13	0	0	0	0	0	14	0	0	0	0	28
0845 - 0900	0	14	0	0	0	2	0	14	0	0	0	0	30
0900 - 0915	0	15	0	0	0	0	0	12	0	0	0	0	27
0915 - 0930	1	18	0	0	0	0	2	14	0	1	0	0	36
Period End	2	172	0	2	0	6	7	143	0	1	0	0	333

Combined

Time Per	NORTH Botany Rd			WEST Coward St			SOUTH Botany Rd			EAST Coward St			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
0630 - 0645	10	107	7	10	32	25	31	159	14	4	29	11	439
0645 - 0700	3	152	18	12	27	27	41	216	24	3	51	11	585
0700 - 0715	4	134	19	16	34	25	24	197	19	6	33	8	519
0715 - 0730	5	138	9	15	26	32	24	233	19	4	35	14	554
0730 - 0745	14	170	12	13	23	18	35	243	21	4	63	13	629
0745 - 0800	6	142	37	7	44	36	41	326	36	9	82	16	782
0800 - 0815	3	161	17	12	37	27	23	284	30	13	56	17	680
0815 - 0830	10	123	22	9	47	32	33	280	50	6	60	26	698
0830 - 0845	6	137	18	12	41	32	38	303	47	9	50	13	706
0845 - 0900	5	155	35	9	35	35	23	259	33	5	61	19	674
0900 - 0915	9	141	26	14	32	21	30	233	32	16	47	17	618
0915 - 0930	7	174	9	18	38	14	28	182	28	14	32	8	552
Period End	82	1734	229	147	416	324	371	2915	353	93	599	173	7436

Client : EMM
Job No/Name : 6451 MASCOT Traffic Count
Day/Date : Thursday 18th May 2017

Lights

Peak Time	NORTH Botany Rd			WEST Coward St			SOUTH Botany Rd			EAST Coward St			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
0630 - 0730	22	476	53	52	119	108	118	769	76	17	148	44	2002
0645 - 0745	26	529	58	54	110	101	121	841	83	17	182	46	2168
0700 - 0800	29	520	77	50	127	111	121	944	95	23	213	51	2361
0715 - 0815	28	546	75	46	130	113	121	1029	106	30	236	60	2520
0730 - 0830	33	539	88	40	151	110	129	1080	137	32	261	72	2672
0745 - 0845	24	513	94	40	169	124	134	1142	163	37	248	72	2760
0800 - 0900	23	527	92	42	160	121	116	1078	160	33	227	75	2654
0815 - 0915	29	506	101	44	155	115	123	1027	162	36	218	75	2591
0830 - 0930	25	547	88	53	146	100	117	923	140	43	190	57	2429

PEAK HOUR	24	513	94	40	169	124	134	1142	163	37	248	72	2760
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Heavies

Peak Per	NORTH Botany Rd			WEST Coward St			SOUTH Botany Rd			EAST Coward St			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
0630 - 0730	0	55	0	1	0	1	2	36	0	0	0	0	95
0645 - 0745	0	65	0	2	0	1	3	48	0	0	0	0	119
0700 - 0800	0	64	0	1	0	0	3	55	0	0	0	0	123
0715 - 0815	0	65	0	1	0	0	2	57	0	0	0	0	125
0730 - 0830	0	57	0	1	0	3	3	53	0	0	0	0	117
0745 - 0845	1	50	0	0	0	3	1	51	0	0	0	0	106
0800 - 0900	1	49	0	0	0	5	1	48	0	0	0	0	104
0815 - 0915	1	50	0	0	0	5	1	48	0	0	0	0	105
0830 - 0930	2	60	0	0	0	2	2	54	0	1	0	0	121

PEAK HOUR	1	50	0	0	0	3	1	51	0	0	0	0	106
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Combined

Peak Per	NORTH Botany Rd			WEST Coward St			SOUTH Botany Rd			EAST Coward St			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
0630 - 0730	22	531	53	53	119	109	120	805	76	17	148	44	2097
0645 - 0745	26	594	58	56	110	102	124	889	83	17	182	46	2287
0700 - 0800	29	584	77	51	127	111	124	999	95	23	213	51	2484
0715 - 0815	28	611	75	47	130	113	123	1086	106	30	236	60	2645
0730 - 0830	33	596	88	41	151	113	132	1133	137	32	261	72	2789
0745 - 0845	25	563	94	40	169	127	135	1193	163	37	248	72	2866
0800 - 0900	24	576	92	42	160	126	117	1126	160	33	227	75	2758
0815 - 0915	30	556	101	44	155	120	124	1075	162	36	218	75	2696
0830 - 0930	27	607	88	53	146	102	119	977	140	44	190	57	2550

PEAK HOUR	25	563	94	40	169	127	135	1193	163	37	248	72	2866
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Ph.88196847, Mob.0418-239019

Client : EMM

Job No/Name : 6451 MASCOT Traffic Count

Day/Date : Thursday 18th May 2017

Peds

Peds

PEAK HR



**TOTAL
VOLUMES
FOR COUNT
PERIOD**

© Copyright ROAR DATA



R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Mob.0418-239019

Client : EMM
Job No/Name : 6451 MASCOT Traffic Count
Day/Date : Thursday 18th May 2017

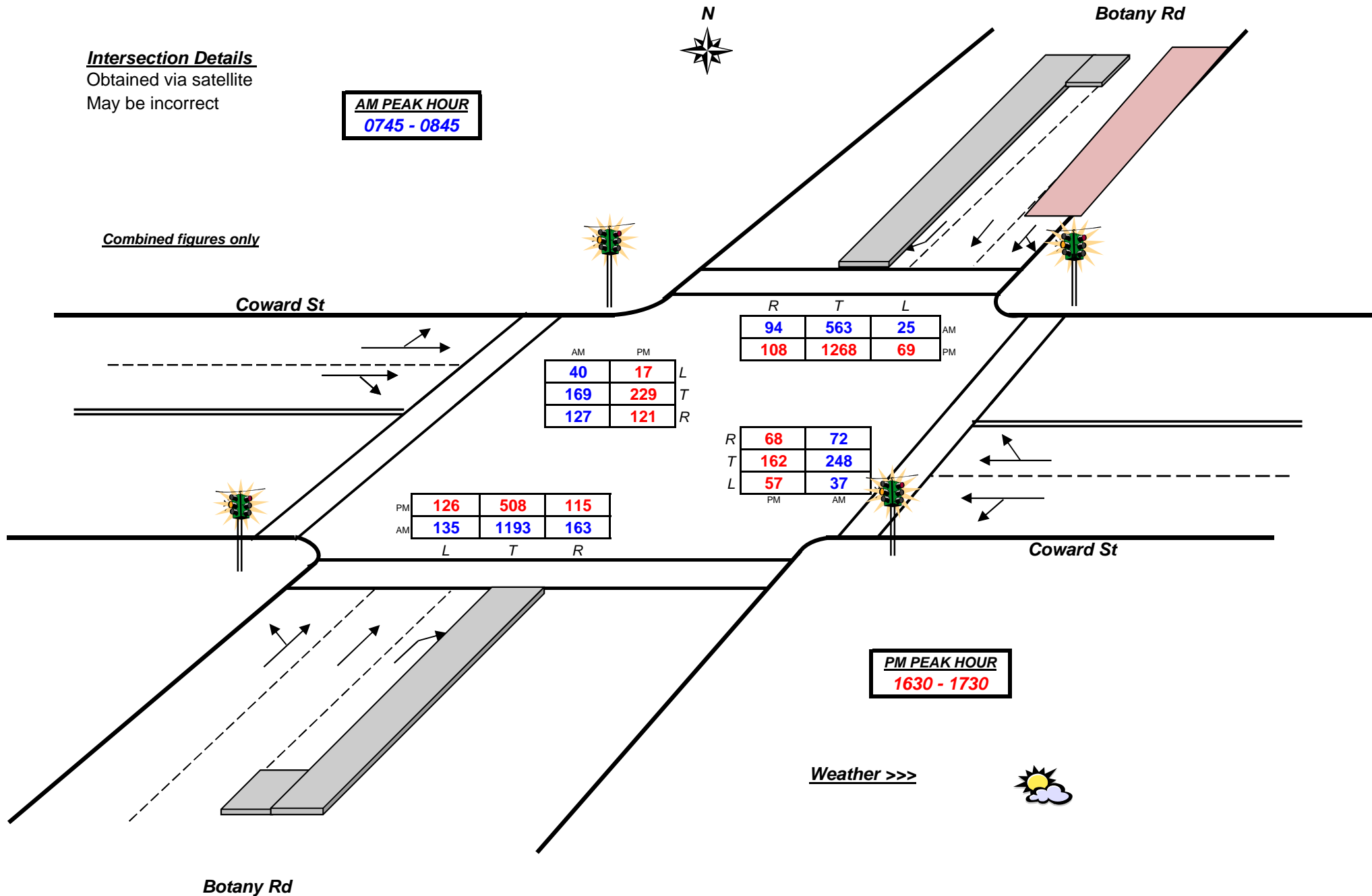
Intersection Details

Obtained via satellite

May be incorrect

AM PEAK HOUR
0745 - 0845

Combined figures only





R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Mob.0418-239019

Lights

Lights	NORTH			WEST			SOUTH			EAST			
	Botany Rd			Coward St			Botany Rd			Coward St			
Time Per	<u>L</u>	<u>T</u>	<u>R</u>	<u>L</u>	<u>T</u>	<u>R</u>	<u>L</u>	<u>T</u>	<u>R</u>	<u>L</u>	<u>T</u>	<u>R</u>	TOT
1530 - 1545	10	209	24	5	50	30	29	121	25	22	48	15	588
1545 - 1600	4	251	18	12	49	37	27	154	16	8	25	15	616
1600 - 1615	13	265	24	10	46	29	26	98	14	11	52	26	614
1615 - 1630	7	268	26	5	47	32	23	134	25	19	46	20	652
1630 - 1645	10	313	32	3	45	21	25	126	26	12	49	16	678
1645 - 1700	16	278	23	2	55	37	36	136	32	11	48	15	689
1700 - 1715	20	296	29	7	72	32	25	91	25	19	36	27	679
1715 - 1730	23	341	24	5	57	28	37	125	32	15	29	10	726
1730 - 1745	9	266	14	3	61	35	19	112	41	9	49	22	640
1745 - 1800	19	267	29	3	64	32	28	104	41	12	47	11	657
1800 - 1815	9	229	20	7	55	29	32	115	30	15	33	11	585
1815 - 1830	18	213	14	10	30	29	25	109	21	18	27	12	526
Period End	158	3196	277	72	631	371	332	1425	328	171	489	200	7650

Heavies

Heavies	NORTH			WEST			SOUTH			EAST			TOT
	Botany Rd			Coward St			Botany Rd			Coward St			
Time Per	L	T	R	L	T	R	L	T	R	L	T	R	
1530 - 1545	0	4	0	0	0	1	0	12	0	0	0	0	17
1545 - 1600	0	5	0	1	0	0	2	11	0	0	0	0	19
1600 - 1615	0	10	0	0	0	0	1	12	0	0	0	0	23
1615 - 1630	0	8	1	0	0	0	0	10	0	0	0	0	19
1630 - 1645	0	9	0	0	0	1	0	8	0	0	0	0	18
1645 - 1700	0	10	0	0	0	1	3	15	0	0	0	0	29
1700 - 1715	0	11	0	0	0	0	0	3	0	0	0	0	14
1715 - 1730	0	10	0	0	0	1	0	4	0	0	0	0	15
1730 - 1745	0	10	0	0	0	2	1	9	0	0	0	0	22
1745 - 1800	0	13	0	0	0	0	1	8	0	0	0	0	22
1800 - 1815	0	7	0	0	0	2	1	6	0	0	0	0	16
1815 - 1830	0	9	0	0	0	0	0	2	0	0	0	0	11
Period End	0	106	1	1	0	8	9	100	0	0	0	0	225

Combined

Combined	NORTH			WEST			SOUTH			EAST			TOT
	Botany Rd			Coward St			Botany Rd			Coward St			
Time Per	L	T	R	L	T	R	L	T	R	L	T	R	
1530 - 1545	10	213	24	5	50	31	29	133	25	22	48	15	605
1545 - 1600	4	256	18	13	49	37	29	165	16	8	25	15	635
1600 - 1615	13	275	24	10	46	29	27	110	14	11	52	26	637
1615 - 1630	7	276	27	5	47	32	23	144	25	19	46	20	671
1630 - 1645	10	322	32	3	45	22	25	134	26	12	49	16	696
1645 - 1700	16	288	23	2	55	38	39	151	32	11	48	15	718
1700 - 1715	20	307	29	7	72	32	25	94	25	19	36	27	693
1715 - 1730	23	351	24	5	57	29	37	129	32	15	29	10	741
1730 - 1745	9	276	14	3	61	37	20	121	41	9	49	22	662
1745 - 1800	19	280	29	3	64	32	29	112	41	12	47	11	679
1800 - 1815	9	236	20	7	55	31	33	121	30	15	33	11	601
1815 - 1830	18	222	14	10	30	29	25	111	21	18	27	12	537
Period End	158	3302	278	73	631	379	341	1525	328	171	489	200	7875

Client : EMM
 Job No/Name : 6451 MASCOT Traffic Count
 Day/Date : Thursday 18th May 2017

Lights

Lights	NORTH			WEST			SOUTH			EAST			
	Botany Rd			Coward St			Botany Rd			Coward St			
Peak Time	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1530 - 1630	34	993	92	32	192	128	105	507	80	60	171	76	2470
1545 - 1645	34	1097	100	30	187	119	101	512	81	50	172	77	2560
1600 - 1700	46	1124	105	20	193	119	110	494	97	53	195	77	2633
1615 - 1715	53	1155	110	17	219	122	109	487	108	61	179	78	2698
1630 - 1730	69	1228	108	17	229	118	123	478	115	57	162	68	2772
1645 - 1745	68	1181	90	17	245	132	117	464	130	54	162	74	2734
1700 - 1800	71	1170	96	18	254	127	109	432	139	55	161	70	2702
1715 - 1815	60	1103	87	18	237	124	116	456	144	51	158	54	2608
1730 - 1830	55	975	77	23	210	125	104	440	133	54	156	56	2408

PEAK HOUR	69	1228	108	17	229	118	123	478	115	57	162	68	2772
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Heavies

Heavies	NORTH			WEST			SOUTH			EAST			TOT
	Botany Rd			Coward St			Botany Rd			Coward St			
Peak Per	L	T	R	L	T	R	L	T	R	L	T	R	
1530 - 1630	0	27	1	1	0	1	3	45	0	0	0	0	78
1545 - 1645	0	32	1	1	0	1	3	41	0	0	0	0	79
1600 - 1700	0	37	1	0	0	2	4	45	0	0	0	0	89
1615 - 1715	0	38	1	0	0	2	3	36	0	0	0	0	80
1630 - 1730	0	40	0	0	0	3	3	30	0	0	0	0	76
1645 - 1745	0	41	0	0	0	4	4	31	0	0	0	0	80
1700 - 1800	0	44	0	0	0	3	2	24	0	0	0	0	73
1715 - 1815	0	40	0	0	0	5	3	27	0	0	0	0	75
1730 - 1830	0	39	0	0	0	4	3	25	0	0	0	0	71

PEAK HOUR	0	40	0	0	0	3	3	30	0	0	0	0	76
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Combined

Combined	NORTH			WEST			SOUTH			EAST			TOT
	Botany Rd			Coward St			Botany Rd			Coward St			
Peak Per	L	I	R	L	I	R	L	I	R	L	I	R	
1530 - 1630	34	1020	93	33	192	129	108	552	80	60	171	76	2548
1545 - 1645	34	1129	101	31	187	120	104	553	81	50	172	77	2639
1600 - 1700	46	1161	106	20	193	121	114	539	97	53	195	77	2722
1615 - 1715	53	1193	111	17	219	124	112	523	108	61	179	78	2778
1630 - 1730	69	1268	108	17	229	121	126	508	115	57	162	68	2848
1645 - 1745	68	1222	90	17	245	136	121	495	130	54	162	74	2814
1700 - 1800	71	1214	96	18	254	130	111	456	139	55	161	70	2775
1715 - 1815	60	1143	87	18	237	129	119	483	144	51	158	54	2683
1730 - 1830	55	1014	77	23	210	129	107	465	133	54	156	56	2479

PEAK HOUR	69	1268	108	17	229	121	126	508	115	57	162	68	2848
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Ph.88196847, Mob.0418-239019

The diagram illustrates the traffic volumes at the intersection of Coward St and Botany Rd. It is divided into two main sections: the top section for the PM Peak (1630 - 1730) and the bottom section for the Total Volumes for the Count Period.

PM PEAK (1630 - 1730):

- Botany Rd (Northbound):** 593 (Total), 563 (Through), 30 (Left Turn).
- Botany Rd (Southbound):** 1405 (Total), 1228 (Through), 108 (Left Turn), 69 (Right Turn).
- Coward St (Eastbound):** 413 (Total), 68 (Left Turn), 68 (Through), 413 (Right Turn).
- Coward St (Westbound):** 162 (Total), 57 (Left Turn), 57 (Through), 287 (Right Turn).

TOTAL VOLUMES FOR COUNT PERIOD:

- Botany Rd (Northbound):** 1798 (Total), 1697 (Through), 101 (Left Turn).
- Botany Rd (Southbound):** 3738 (Total), 3631 (Through), 107 (Left Turn).
- Coward St (Eastbound):** 1117 (Total), 860 (Left Turn), 860 (Through), 1117 (Right Turn).
- Coward St (Westbound):** 1108 (Total), 1098 (Through), 10 (Left Turn).

A north arrow is located in the bottom right corner of the diagram.

Peds	NORTH	WEST	SOUTH	EAST	TOT
	Botany Rd	Coward St	Botany Rd	Coward St	
Peak Per	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	
1530 - 1630	28	12	44	41	125
1545 - 1645	22	10	46	29	107
1600 - 1700	23	12	48	32	115
1615 - 1715	25	10	53	39	127
1630 - 1730	29	9	49	34	121
1645 - 1745	23	10	50	29	112
1700 - 1800	26	4	43	27	100
1715 - 1815	19	3	40	18	80
1730 - 1830	18	3	38	17	76
PEAK HR	29	9	49	34	121

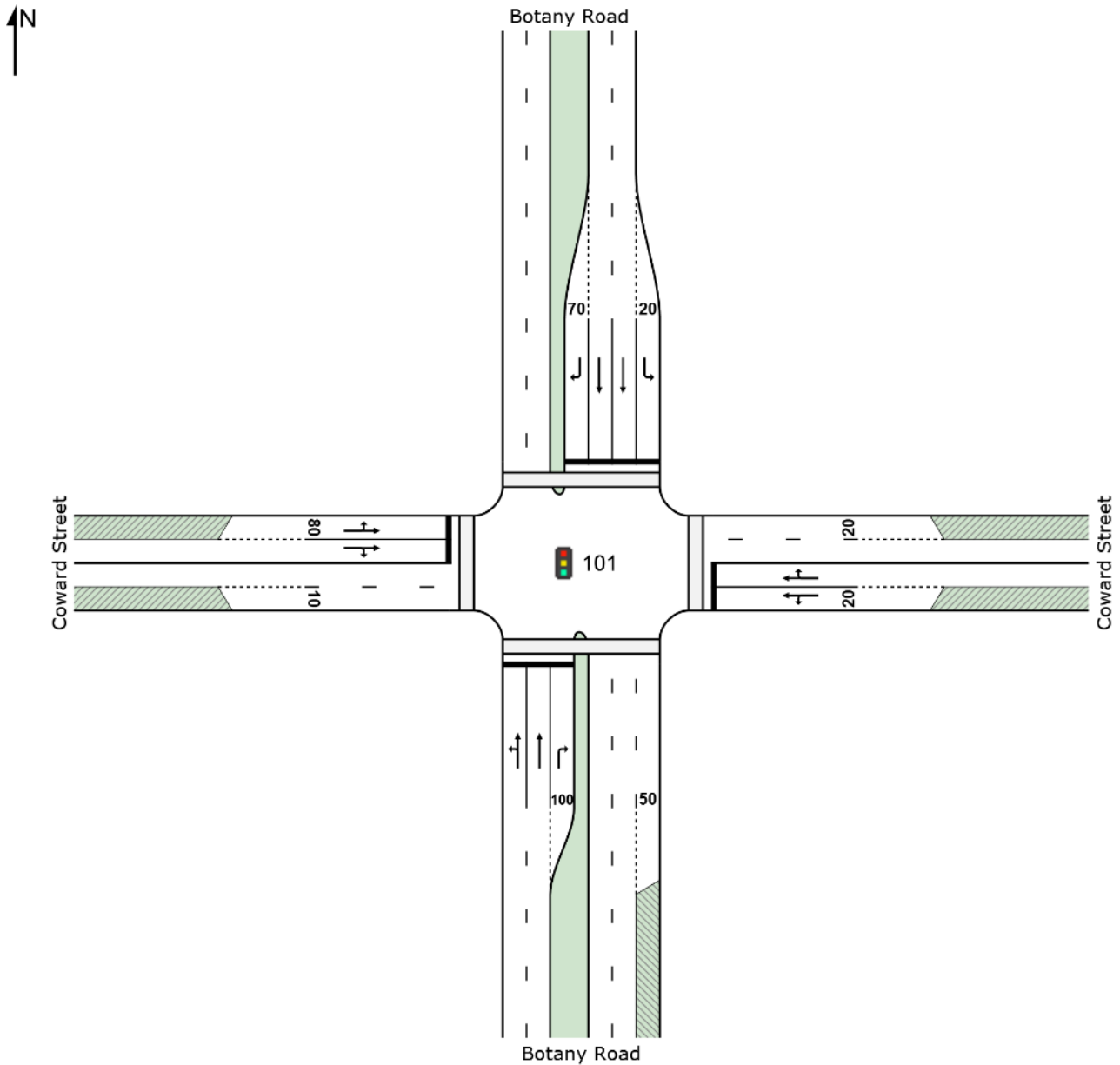
Appendix D

SIDRA Intersection Analysis

SITE LAYOUT

 **Site: 101 [Botany Road and Coward Street AM Peak]**

Existing Intersection
Signals - Fixed Time Isolated



PHASING SUMMARY

 **Site: 101 [Botany Road and Coward Street AM Peak]**

Existing Intersection

Signals - Fixed Time Isolated Cycle Time = 125 seconds (Optimum Cycle Time - Minimum Delay)

Phase Times determined by the program

Phase Sequence: Variable Phasing

Reference Phase: Phase F

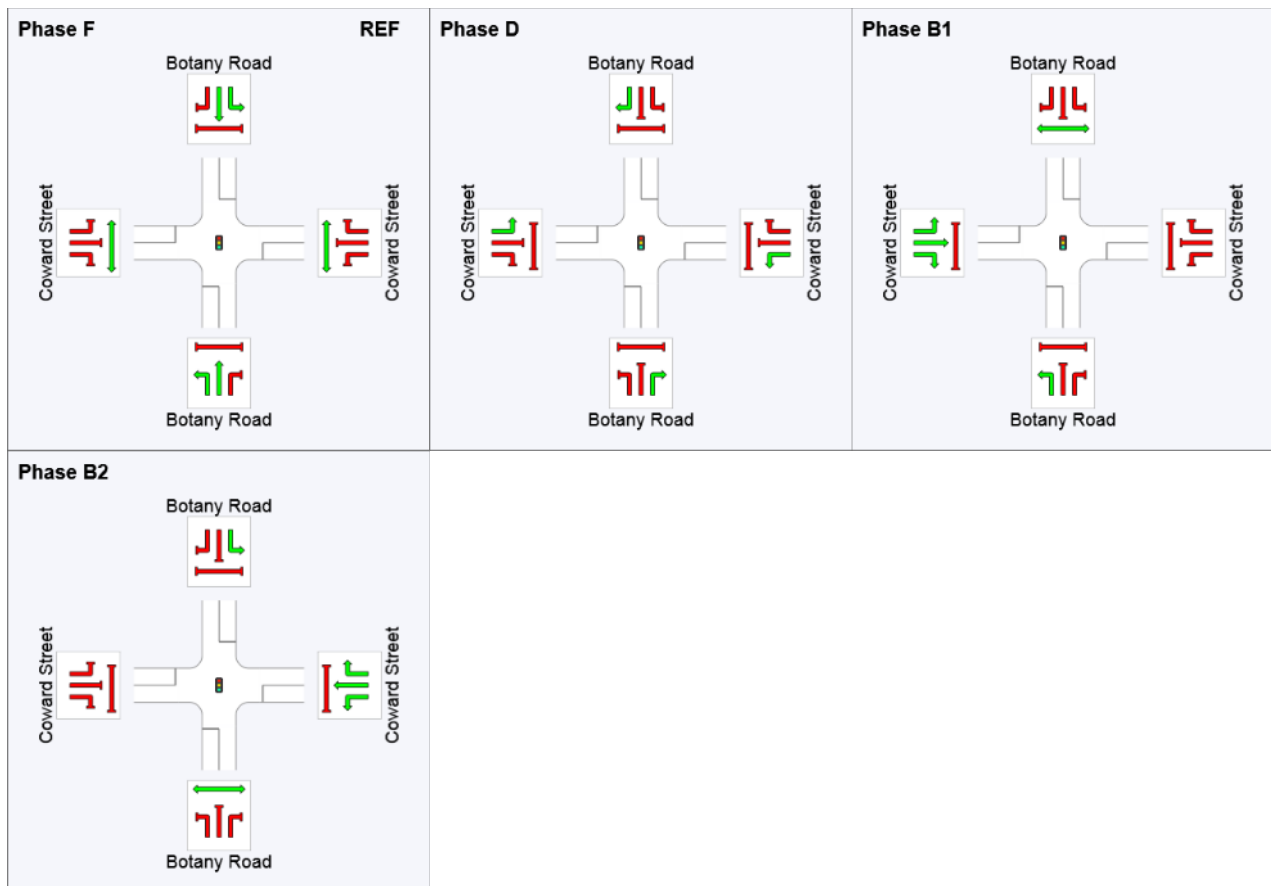
Input Phase Sequence: F, D, B1, B2

Output Phase Sequence: F, D, B1, B2

Phase Timing Results

Phase	F	D	B1	B2
Phase Change Time (sec)	0	54	72	96
Green Time (sec)	48	12	18	23
Phase Time (sec)	54	18	24	29
Phase Split	43 %	14 %	19 %	23 %

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.



REF: Reference Phase

VAR: Variable Phase

	Normal Movement		Permitted/Opposed
	Slip/Bypass-Lane Movement		Opposed Slip/Bypass-Lane
	Stopped Movement		Turn On Red
	Other Movement Class (MC) Running		Undetected Movement
	Mixed Running & Stopped MCs		Continuous Movement
	Other Movement Class (MC) Stopped		Phase Transition Applied

PHASING SUMMARY

 **Site: 101 [Botany Road and Coward Street PM Peak]**

Existing Intersection

Signals - Fixed Time Isolated Cycle Time = 150 seconds (Optimum Cycle Time - Minimum Delay)

Phase Times determined by the program

Phase Sequence: Variable Phasing

Reference Phase: Phase F

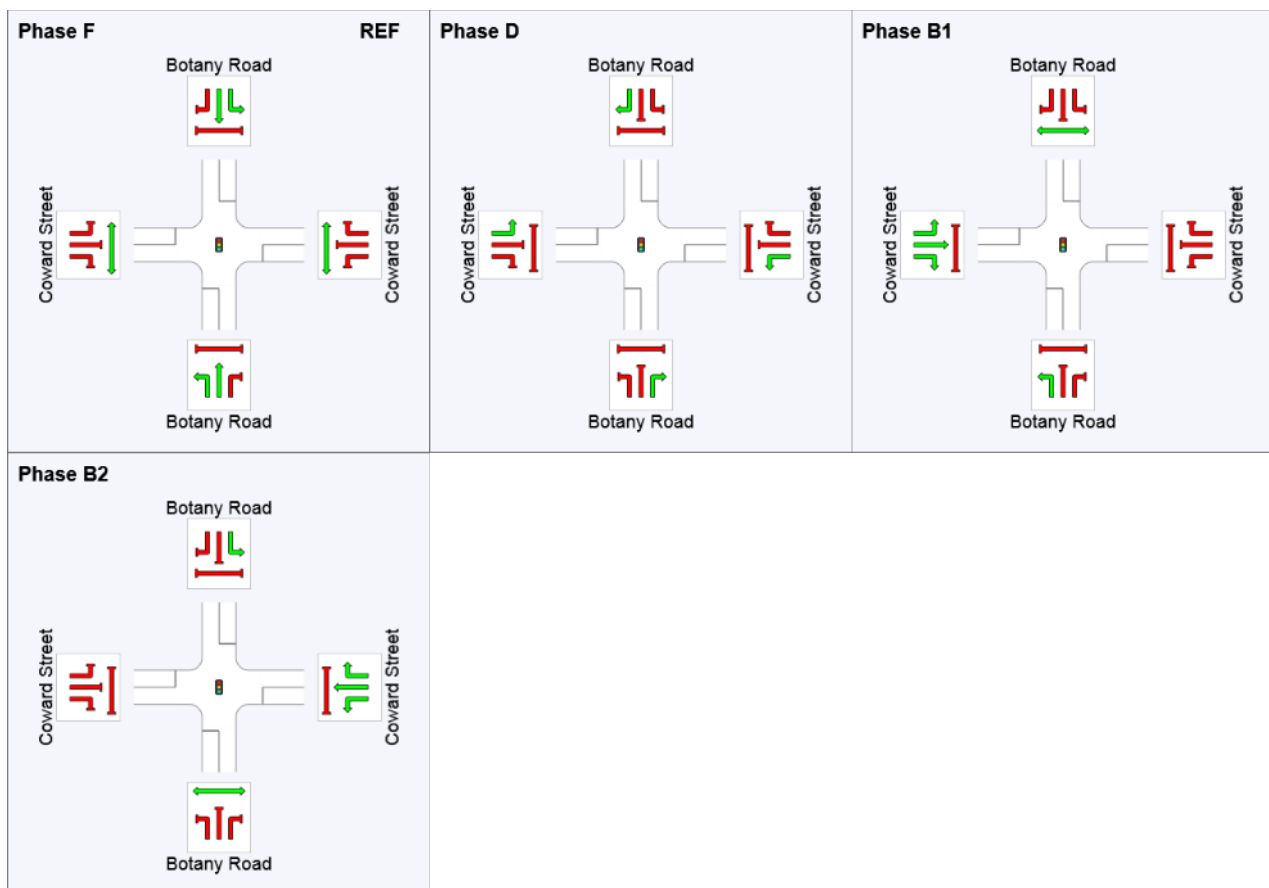
Input Phase Sequence: F, D, B1, B2

Output Phase Sequence: F, D, B1, B2

Phase Timing Results

Phase	F	D	B1	B2
Phase Change Time (sec)	0	82	97	124
Green Time (sec)	76	9	21	20
Phase Time (sec)	82	15	27	26
Phase Split	55 %	10 %	18 %	17 %

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.



REF: Reference Phase

VAR: Variable Phase

	Normal Movement		Permitted/Opposed
	Slip/Bypass-Lane Movement		Opposed Slip/Bypass-Lane
	Stopped Movement		Turn On Red
	Other Movement Class (MC) Running		Undetected Movement
	Mixed Running & Stopped MCs		Continuous Movement
	Other Movement Class (MC) Stopped		Phase Transition Applied

MOVEMENT SUMMARY

Site: 101 [Botany Road and Coward Street AM Peak]

Existing Intersection

Signals - Fixed Time Isolated Cycle Time = 125 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Botany Road											
1	L2	142	0.7	1.005	86.7	LOS F	58.2	419.6	1.00	1.21	22.4
2	T1	1256	4.3	1.005	89.2	LOS F	60.9	442.2	1.00	1.27	23.0
3	R2	172	0.0	0.962	93.1	LOS F	13.3	92.9	1.00	1.07	23.6
Approach		1569	3.5	1.005	89.4	LOS F	60.9	442.2	1.00	1.24	23.0
East: Coward Street											
4	L2	39	0.0	0.210	39.1	LOS C	2.9	20.3	0.87	0.74	37.0
5	T1	261	0.0	1.016	100.1	LOS F	27.2	190.5	0.98	1.20	22.5
6	R2	76	0.0	1.016	117.9	LOS F	27.2	190.5	1.00	1.29	20.8
Approach		376	0.0	1.016	97.4	LOS F	27.2	190.5	0.97	1.17	23.0
North: Botany Road											
7	L2	26	4.0	0.024	15.3	LOS B	0.6	4.4	0.41	0.65	46.8
8	T1	593	8.9	0.699	31.8	LOS C	21.5	161.8	0.83	0.72	39.4
9	R2	99	0.0	0.555	66.0	LOS E	6.0	42.0	1.00	0.78	28.4
Approach		718	7.5	0.699	35.9	LOS C	21.5	161.8	0.83	0.72	37.7
West: Coward Street											
10	L2	42	0.0	0.243	54.6	LOS D	4.0	28.1	0.91	0.74	31.9
11	T1	178	0.0	1.024	103.2	LOS F	25.6	180.9	0.98	1.19	21.8
12	R2	134	2.4	1.024	121.1	LOS F	25.6	180.9	1.00	1.29	20.2
Approach		354	0.9	1.024	104.2	LOS F	25.6	180.9	0.98	1.18	22.0
All Vehicles		3017	3.7	1.024	79.4	LOS F	60.9	442.2	0.96	1.10	25.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site 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 per ped	
P1	South Full Crossing	93	56.9	LOS E	0.3	0.3	0.96	0.96	
P2	East Full Crossing	29	30.3	LOS D	0.1	0.1	0.70	0.70	
P3	North Full Crossing	31	56.7	LOS E	0.1	0.1	0.95	0.95	
P4	West Full Crossing	23	30.3	LOS D	0.1	0.1	0.70	0.70	
All Pedestrians		176	48.9	LOS E			0.88	0.88	

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 [Botany Road and Coward Street AM Peak with the project traffic]

Existing Intersection

Signals - Fixed Time Isolated Cycle Time = 130 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Botany Road											
1	L2	146	0.7	1.009	90.6	LOS F	61.1	440.5	1.00	1.21	21.9
2	T1	1256	4.3	1.009	93.2	LOS F	63.3	459.6	1.00	1.26	22.4
3	R2	172	0.0	1.001	112.4	LOS F	15.0	104.9	1.00	1.12	21.0
Approach		1574	3.5	1.009	95.0	LOS F	63.3	459.6	1.00	1.24	22.2
East: Coward Street											
4	L2	39	0.0	0.211	41.1	LOS C	3.0	21.1	0.87	0.74	36.3
5	T1	263	0.0	1.023	105.9	LOS F	28.7	200.8	0.98	1.21	21.6
6	R2	76	0.0	1.023	124.4	LOS F	28.7	200.8	1.00	1.30	20.0
Approach		378	0.0	1.023	103.0	LOS F	28.7	200.8	0.97	1.18	22.2
North: Botany Road											
7	L2	26	4.0	0.024	15.7	LOS B	0.6	4.6	0.41	0.65	46.5
8	T1	593	8.9	0.704	32.9	LOS C	22.2	167.5	0.83	0.72	39.0
9	R2	106	0.0	0.620	69.5	LOS E	6.8	47.5	1.00	0.80	27.7
Approach		725	7.4	0.704	37.7	LOS C	22.2	167.5	0.84	0.73	37.0
West: Coward Street											
10	L2	56	0.0	0.240	54.5	LOS D	4.5	31.6	0.89	0.74	31.7
11	T1	181	0.0	1.014	102.8	LOS F	27.2	192.4	0.98	1.19	21.9
12	R2	141	2.2	1.014	117.9	LOS F	27.2	192.4	1.00	1.27	20.6
Approach		378	0.8	1.014	101.3	LOS F	27.2	192.4	0.98	1.16	22.4
All Vehicles		3055	3.7	1.023	83.2	LOS F	63.3	459.6	0.95	1.10	24.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site 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 per ped	
P1	South Full Crossing	93	58.4	LOS E	0.3	0.3	0.95	0.95	
P2	East Full Crossing	29	31.2	LOS D	0.1	0.1	0.69	0.69	
P3	North Full Crossing	31	59.2	LOS E	0.1	0.1	0.96	0.96	
P4	West Full Crossing	23	31.2	LOS D	0.1	0.1	0.69	0.69	
All Pedestrians		176	50.4	LOS E			0.87	0.87	

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 [Botany Road and Coward Street PM Peak]**

Existing Intersection

Signals - Fixed Time Isolated Cycle Time = 150 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Botany Road											
1	L2	133	2.4	0.350	26.3	LOS B	13.1	94.9	0.63	0.66	42.6
2	T1	535	5.9	0.350	22.4	LOS B	14.3	105.1	0.64	0.60	43.4
3	R2	121	0.0	1.086	175.9	LOS F	14.4	101.1	1.00	1.22	15.0
Approach		788	4.4	1.086	46.6	LOS D	14.4	105.1	0.69	0.70	33.5
East: Coward Street											
4	L2	60	0.0	0.228	41.9	LOS C	3.5	24.8	0.90	0.74	35.3
5	T1	171	0.0	1.102	171.5	LOS F	29.0	202.7	0.99	1.34	15.3
6	R2	72	0.0	1.102	188.2	LOS F	29.0	202.7	1.00	1.39	14.5
Approach		302	0.0	1.102	149.7	LOS F	29.0	202.7	0.98	1.23	17.0
North: Botany Road											
7	L2	73	0.0	0.058	13.9	LOS A	1.7	12.0	0.35	0.66	47.8
8	T1	1335	3.2	1.144	156.9	LOS F	147.3	1058.7	0.91	1.42	16.5
9	R2	114	0.0	1.020	132.9	LOS F	11.5	80.5	1.00	1.10	18.5
Approach		1521	2.8	1.144	148.2	LOS F	147.3	1058.7	0.89	1.36	17.2
West: Coward Street											
10	L2	18	0.0	0.276	67.3	LOS E	5.0	35.2	0.93	0.74	29.2
11	T1	241	0.0	1.166	189.7	LOS F	44.5	314.4	0.98	1.38	14.1
12	R2	127	2.5	1.166	236.5	LOS F	44.5	314.4	1.00	1.59	12.0
Approach		386	0.8	1.166	199.5	LOS F	44.5	314.4	0.99	1.42	13.6
All Vehicles		2998	2.7	1.166	128.3	LOS F	147.3	1058.7	0.86	1.18	19.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site 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 per ped	
P1	South Full Crossing	52	69.3	LOS F	0.2	0.2	0.96	0.96	
P2	East Full Crossing	36	23.6	LOS C	0.1	0.1	0.56	0.56	
P3	North Full Crossing	31	69.2	LOS F	0.1	0.1	0.96	0.96	
P4	West Full Crossing	9	23.5	LOS C	0.0	0.0	0.56	0.56	
All Pedestrians		127	53.0	LOS E			0.82	0.82	

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 [Botany Road and Coward Street PM Peak with the project traffic]

Existing Intersection

Signals - Fixed Time Isolated Cycle Time = 150 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Botany Road											
1	L2	137	2.3	0.356	26.8	LOS B	13.3	96.7	0.64	0.67	42.4
2	T1	535	5.9	0.356	23.0	LOS B	14.6	107.3	0.65	0.61	43.1
3	R2	121	0.0	1.086	175.9	LOS F	14.4	101.1	1.00	1.22	15.0
Approach		793	4.4	1.086	47.0	LOS D	14.6	107.3	0.70	0.71	33.4
East: Coward Street											
4	L2	60	0.0	0.230	41.6	LOS C	3.5	24.8	0.90	0.74	35.4
5	T1	173	0.0	1.114	179.3	LOS F	29.9	209.4	0.99	1.36	14.8
6	R2	72	0.0	1.114	197.0	LOS F	29.9	209.4	1.00	1.41	14.0
Approach		304	0.0	1.114	156.3	LOS F	29.9	209.4	0.98	1.25	16.4
North: Botany Road											
7	L2	73	0.0	0.058	14.2	LOS A	1.7	12.2	0.36	0.66	47.6
8	T1	1335	3.2	1.164	170.1	LOS F	152.8	1098.2	0.92	1.47	15.5
9	R2	122	0.0	1.096	182.8	LOS F	14.9	104.3	1.00	1.21	14.5
Approach		1529	2.8	1.164	163.7	LOS F	152.8	1098.2	0.90	1.41	16.0
West: Coward Street											
10	L2	28	0.0	0.277	65.6	LOS E	5.3	36.9	0.92	0.74	29.4
11	T1	244	0.0	1.169	195.4	LOS F	46.8	330.7	0.98	1.42	13.8
12	R2	133	2.4	1.169	238.5	LOS F	46.8	330.7	1.00	1.61	11.9
Approach		405	0.8	1.169	200.4	LOS F	46.8	330.7	0.98	1.43	13.6
All Vehicles		3032	2.6	1.169	137.4	LOS F	152.8	1098.2	0.86	1.21	18.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site 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.

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P4	West Full Crossing	9	24.1	LOS C	0.0	0.0	0.57	0.57	
All Pedestrians		127	53.2	LOS E			0.82	0.82	

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.



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