20 Illawong Avenue, Tamarama
Traffic Impact Assessment

Prepared for:

Midson

7 March 2019

The Transport Planning Partnership

20 Illawong Avenue, Tamarama
Traffic Impact Assessment

Client: Midson

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APPENDICES

1 Introduction

The Transport Planning Partnership (TTPP) Pty Ltd has prepared this traffic impact assessment report on behalf of Midson to accompany a Section 4.55 (S4.55) development application (DA) to be lodged with Waverley Municipal Council.

The application relates to an existing residential apartment building located at 20 Illawong Avenue, Tamarama containing 80 residential units and an at-grade parking area with capacity for around 55 cars to park informally.

A Section 96 modification (DA-125/2012/A) has been approved for the development site to increase the development provision from 80 to 82 units and provide a new, two-level basement car park with 88 car parking spaces, 12 motorcycle spaces and 82 bicycle lockers.

The S4.55 seeks approval to add an additional parking level to provide a total of 124 car spaces (an additional 26 spaces from the approved S96 DA). Motorcycle and bicycle parking are proposed to be provided at a rate of 15 and 120 spaces respectively. The report assesses the traffic implications associated with the proposal.

The remainder of the report is set out as follows:

- Chapter 2 discusses the existing conditions including a description of the subject site
- Chapter 3 provides a brief description of the proposed development
- Chapter 4 assesses the proposed on-site parking provision
- Chapter 5 examines the traffic generation and resultant traffic implications arising from the proposed development, and
- Chapter 6 presents the conclusions of the assessment.

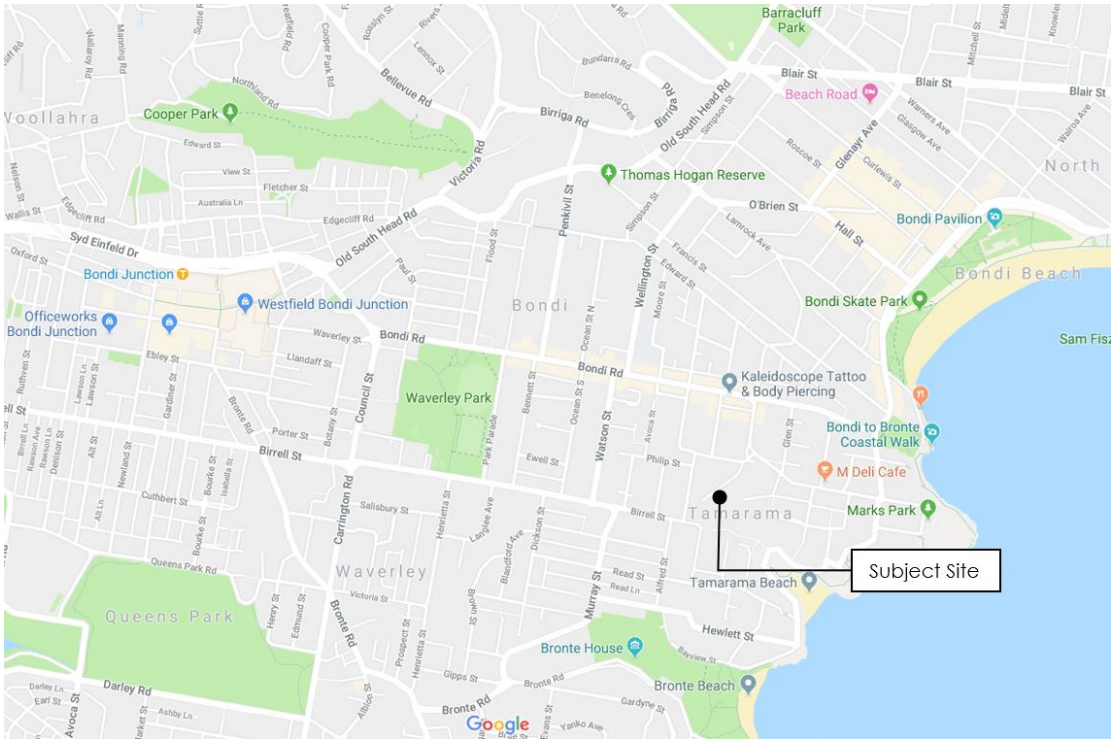
2 Existing Conditions Assessment

2.1 Site Description

The subject site is located at 20 Illawong Avenue, Tamarama and falls within the local government area of Waverley Municipal Council. The site is currently in use as a high-density residential development comprised of 80 apartment units. The site includes an at-grade car park accommodating approximately 55 car spaces and is accessed from Illawong Avenue.

A locality map of the subject site is shown in Figure 2.1.

Figure 2.1: Site Location Map



Source: Google Maps

Land uses surrounding the site are predominantly low and mid-density residential uses, although there are several commercial buildings within the vicinity of the site, as well as Tamarama Park immediately south-east.

2.2 Abutting Road Network

The subject site fronts Illawong Avenue cul-de-sac and is bound by Tamarama Park to the south and other residential buildings to the east and west. Illawong Avenue intersects with Farrellys Avenue and Fletcher Street to the north. A brief description of these roads is provided below.

2.2.1 Illawong Avenue

Illawong Avenue is a two-way local residential no through road that intersects Farrellys Avenue to the north and the subject site's existing on-site car park to the west. There are several unrestricted kerbside and 90-degree parking spaces provided on both sides of the street. The carriageway is approximately 13m wide.

2.2.2 Farrellys Avenue

Farrellys Avenue is a one-way local road aligned in an east-west direction between Illawong Avenue and Tamarama Street. There are several kerbside parking spaces provided on both sides of the carriageway. The street is approximately 7m wide.

2.2.3 Fletcher Street/ Denham Street

Fletcher Street functions as a two-lane, two-way local road generally aligned in an east-west direction between Marks Park and Denham Street. Kerbside parking spaces are provided on both sides of the carriageway, and the street has a posted speed limit of 50 km/hr. Fletcher Street is approximately 11m wide.

2.3 Existing Vehicle Access

Vehicle access to the existing site is provided by a two-way, four-metre-wide (approx.) driveway located at the southern end of Illawong Avenue. Vehicle access is restricted with residents permitted access with a key pass.

The existing driveway is shown in Figure 2.2.

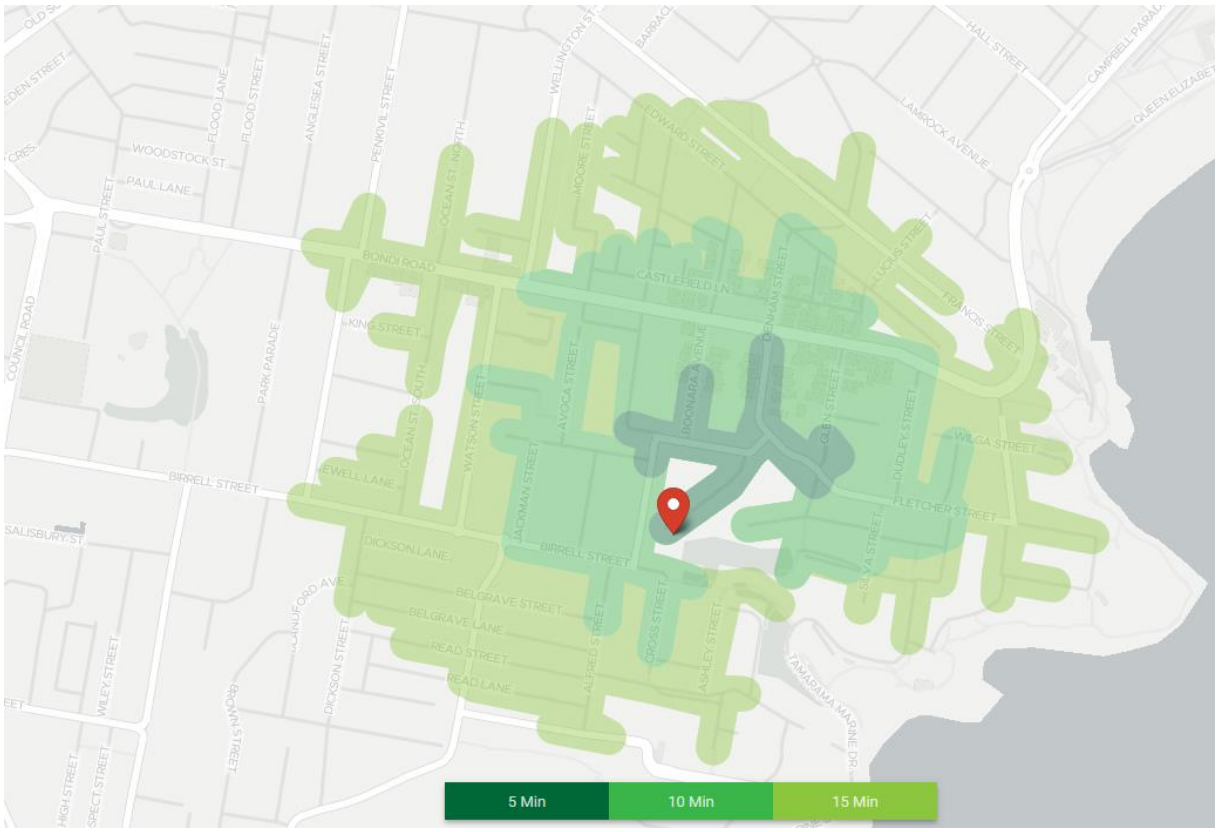
Figure 2.2: Existing Vehicle Access

2.4 Pedestrian Infrastructure

There are several well-established pedestrian facilities within the vicinity of the site that provide good access to the surrounding residential areas and public transport. All of the surrounding streets are provided with paved pedestrian foot paths, while a lack of formal crossing zones in the area are owed to the generally quiet residential nature of the nearby streets.

The pedestrian walking catchment within a 15-minute walking distance from the site is shown in Figure 2.3. It is noted that bus stops are the only form of public transport access nodes located within the measured catchment area as further discussed in Section 2.6.

Figure 2.3: Pedestrian Catchment Surrounding the Site (15-minute walking distance)



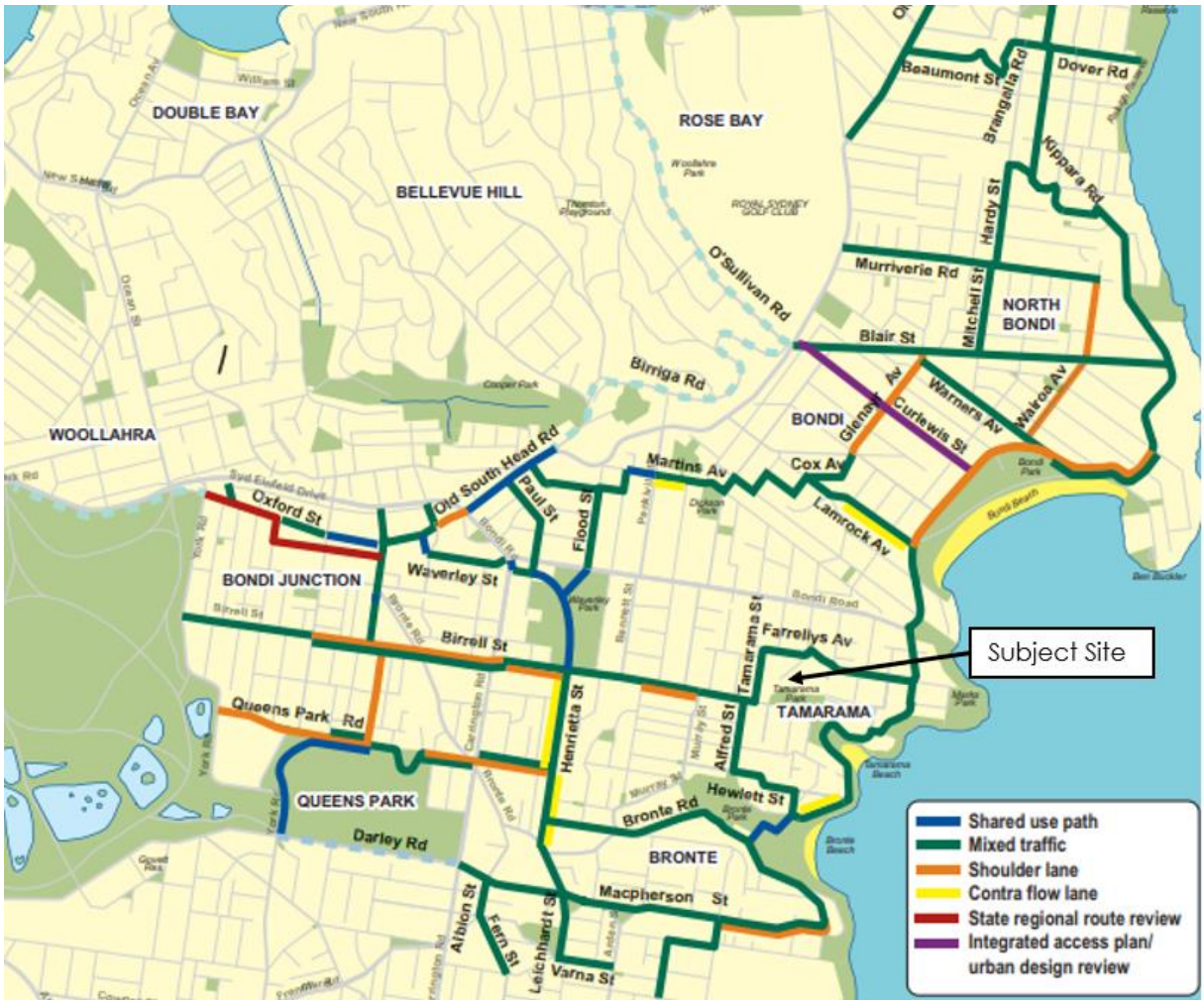
Source: www.app.targomo.com/demo

2.5 Cycle Infrastructure

The cycling network near the site comprises mixed traffic routes on low traffic residential streets, including along Farrellys Avenue and Tamarama Street.

The Bicycle Network Map for the Waverley Council area is shown in Figure 2.4.

Figure 2.4: Waverley Bicycle Network Map

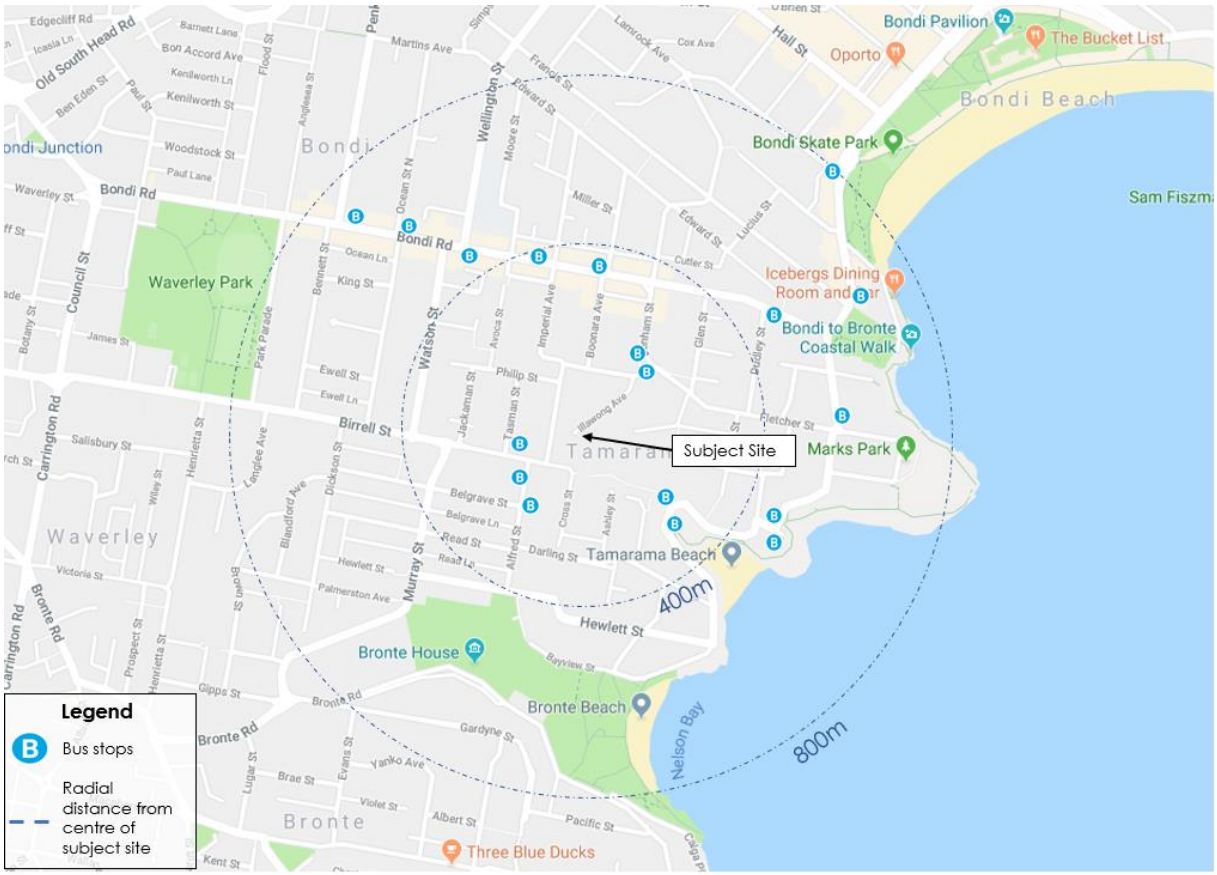


Source: http://www.waverley.nsw.gov.au/environment/sustainable_transport/cycling/cycling_maps_and_parking

2.6 Public Transport Facilities

The development site is not located within a reasonable walking distance of any rail services, with the nearest station – Bondi Junction – approximately 2.4 km from the site. However, there are several bus stops that fall within a 400-metre (5-minute walk) catchment radius of the development site, as indicated in Figure 2.5.

Figure 2.5: Bus Stop Catchment Area



Source: Google Maps

These buses are generally high frequency and a number of these services, including the 333 and 380, provide access to Bondi Junction railway station within a ten-minute journey time.

A summary of the existing services within the vicinity of the site is provided in Table 2.1.

Table 2.1: Existing Bus Services

Service No.	Route Description	Bus Stop Location ID	Site Proximity	Approximate Frequency	
				Peak	Off-peak
381	Bondi Junction to Tamarama	202658	190m	25 min	40 min
360	Clovelly to Bondi Junction	2026105	200m	10 min	20 min
362	Bondi Beach to Coogee	2026111	220m	-	30 min
333	North Bondi to City Circular Quay	202656	470m	3-6 min	3-10 min
333N	North Bondi to City Circular Quay	202656	470m	Early services only, between 22:53-05:29	

380	Watsons Bay to Bondi Junction	202656	470m	15-30 min	15-30 min

Reference: www.transportnsw.info

A map displaying the Sydney bus network is shown in Figure 2.6.

Figure 2.6: Regional Bus Network

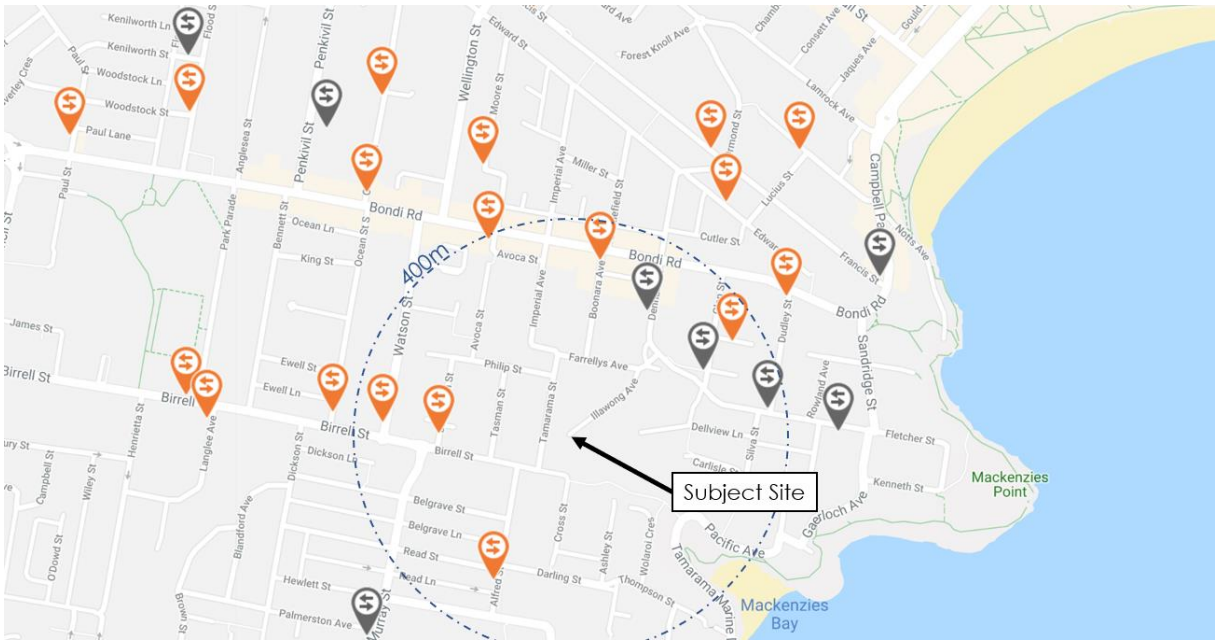
Source: Sydney Buses

2.7 Car Sharing Pods

Car sharing is a flexible, cost-effective alternative to car ownership and is a convenient and reliable way for residents to use a car when they need one. GoGet and Flexicar are car share companies operating in Australia, with a number of vehicles positioned within the area. Car share is a concept by which members join a car ownership club, choose a rate plan and pay an annual fee. The fees cover fuel, insurance, maintenance and cleaning. The vehicles are mostly sedans, but also include SUVs, station wagons and vans. Each vehicle has a home location, referred to as a "pod", either in a parking lot or on a street, typically in a densely-populated urban neighbourhood. Members reserve a car by web, telephone and use a key card to access the vehicle.

The locations of GoGet car sharing pods in the vicinity of the site are shown in Figure 2.7.

Figure 2.7: GoGet Car Sharing Vehicles

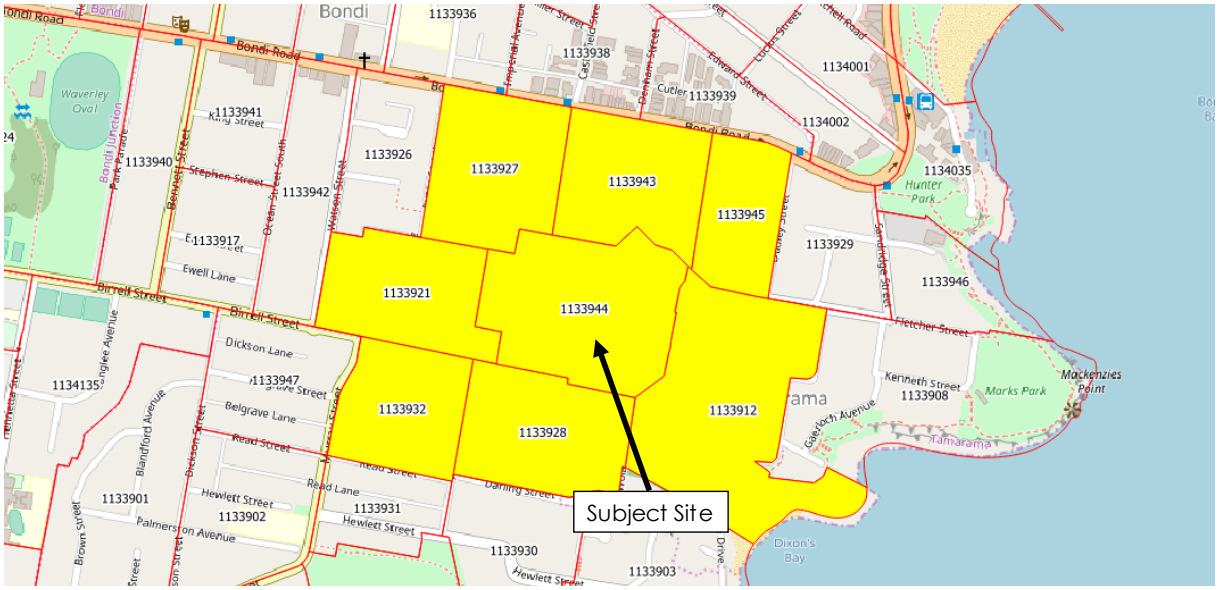


Source: www.goget.com.au

2.8 Method of Travel to Work Data

Method of Travel to Work (MTW) using 2016 census data from the Australian Bureau of Statistics has been obtained in order to understand the existing travel behaviour of residents living in the area surrounding the subject site. Eight 'level one' statistical areas (SA1) have been selected surrounding the subject site, as shown in Figure 2.8.

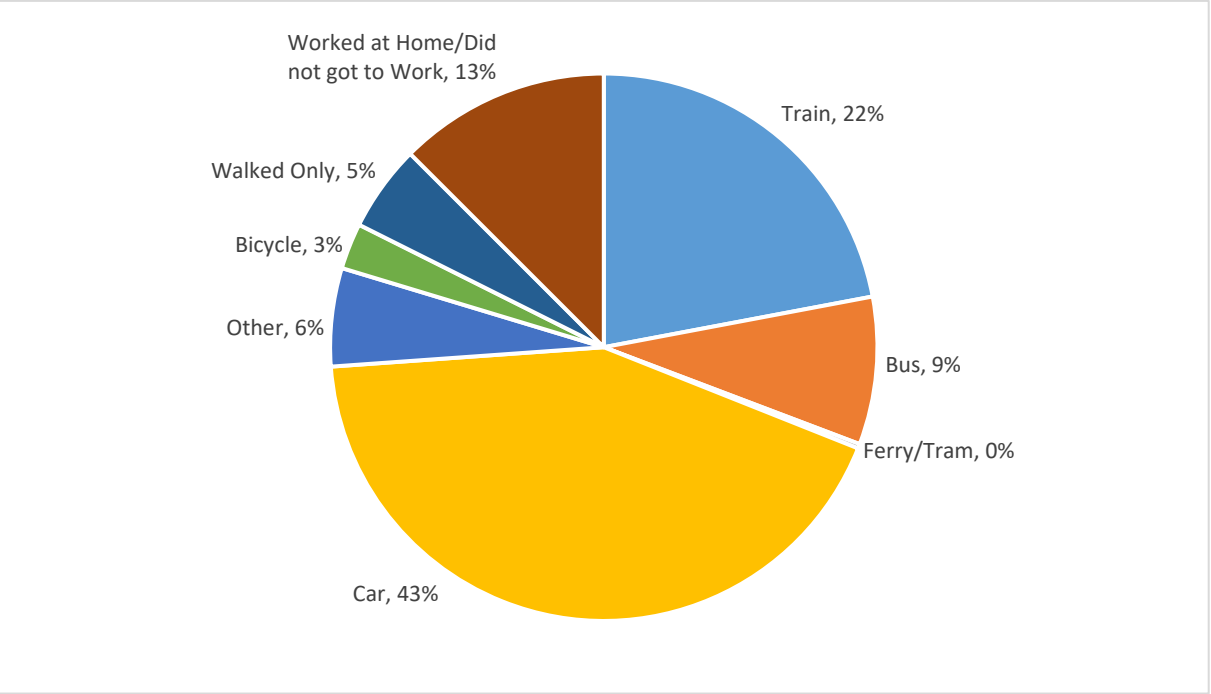
Figure 2.8: Selected SA1 Areas Surrounding the Subject Site



Source: Australian Bureau of Statistics 2016, Open Street Map

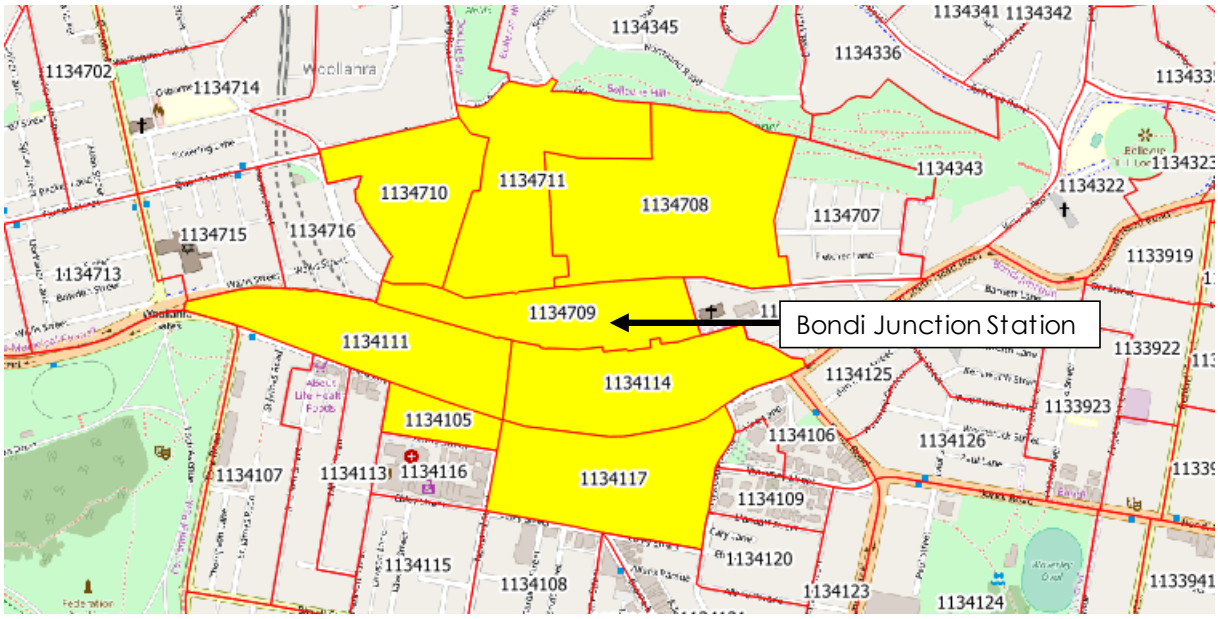
An analysis of the data in Figure 2.9 indicates that the predominant mode of travel among residents living in the selected statistical areas is car (43 per cent) followed by train (23 per cent). By comparison, despite the large number of high frequency bus services in the vicinity of the site, only a small number of residents travel to work by bus (9 per cent). However, this may be because some bus users subsequently use a train to reach their destination, which they considered to be their predominant mode of travel.

Figure 2.9: Travel to Work Mode Share for Residents near the Subject Site



This data was then compared to residents living within eight statistical areas surrounding Bondi Junction railway station, as shown in Figure 2.10.

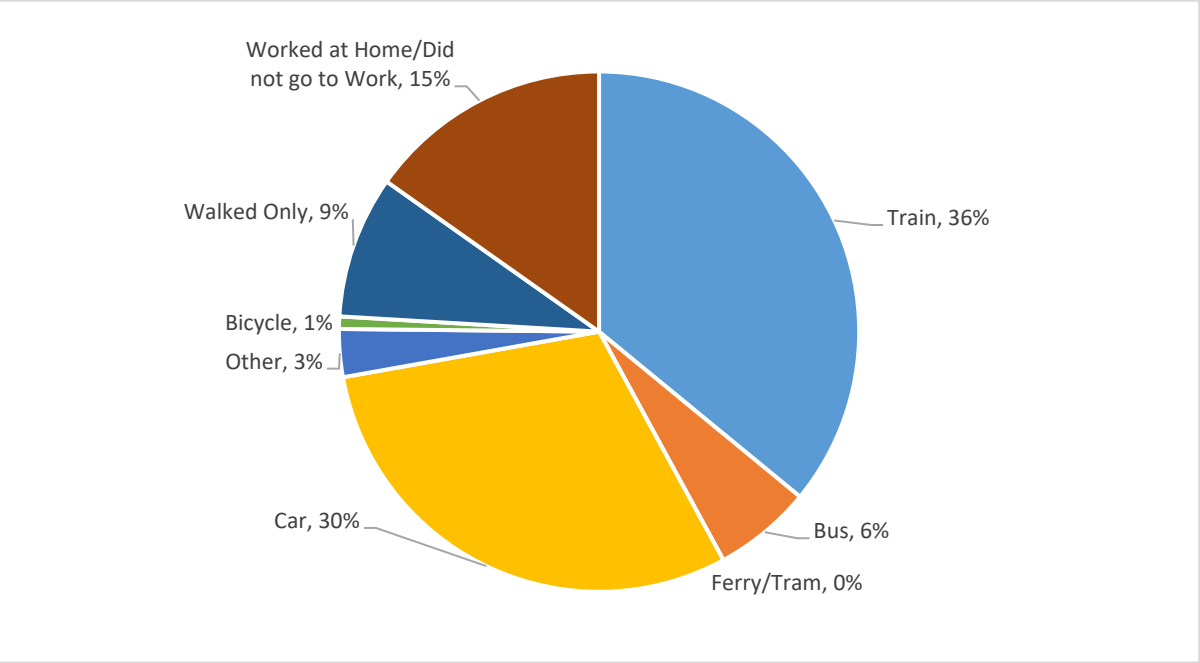
Figure 2.10: Selected SA1 Areas Surrounding Bondi Junction Railway Station



In this instance, an analysis of the data suggests that in the statistical areas surrounding the railway station, the predominant mode of travel is by train (36 per cent) followed by car (30 per cent). This indicates a simultaneous increase in rail mode share of 14 per cent and 13 per cent decline in the mode share for car. This highlights the relative dependency of residents in the vicinity of the site on car use as a result of a reduction in public transport accessibility.

A full breakdown of the mode share data for the selected statistical areas near Bondi Junction station are shown in Figure 2.11.

Figure 2.11: Travel to Work Mode Share for Residents near Bondi Junction Station



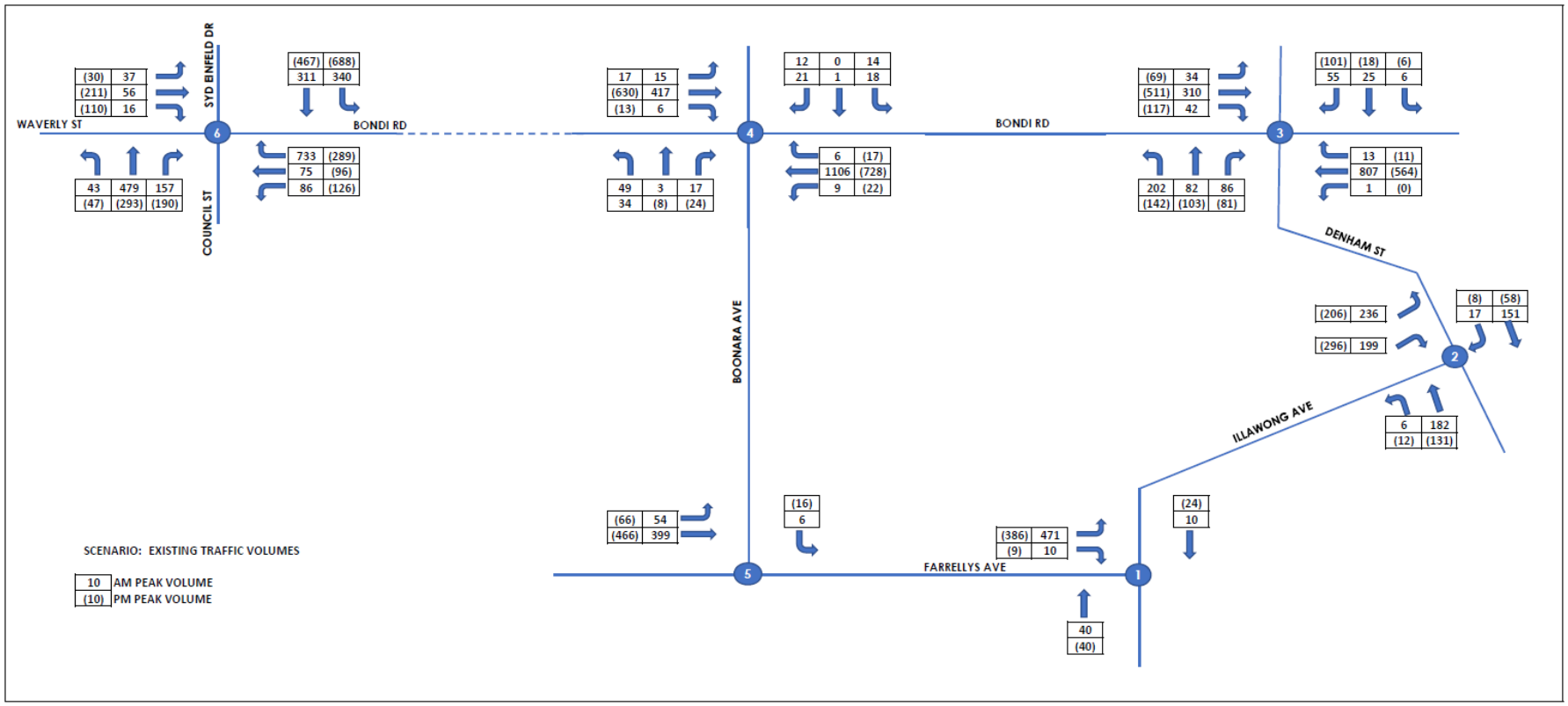
2.9 Traffic Volumes

Traffic survey data was collected at the following intersections nearby on Thursday 7 February 2019 during the hours of 7:00am to 9:00am and 4:00pm to 6:00pm:

- Farrellys Avenue – Illawong Avenue
- Denham Street – Illawong Avenue
- Boonara Avenue – Farrellys Avenue
- Bondi Road – Denham Street
- Bondi Road – Boonara Avenue
- Council St – Bondi Road.

The morning and afternoon peak hour volumes are presented in Figure 2.12, with full survey results provided in Appendix A.

Figure 2.12: Existing Peak Hour Volumes



3 Proposed Development

3.1 Development Description

The existing development includes 80 residential units within an eight-storey building.

The approved development comprises the addition of two three-bedroom units via an extra floor level (level 8) to the existing building. The development schedule for the total apartment building is as follows:

- 39 one-bedroom units,
- 34 two-bedroom units, and
- 9 three-bedroom units.

The S96 approval also included the provision of a new basement car park containing 88 car spaces including 79 resident spaces and 10 visitor spaces. This would replace the existing at-grade car park which accommodates around 55 cars (variable due to the informal nature of the parking arrangement).

A S4.55 modification is now proposed to provide 124 car parking spaces across a three-level basement car park. The 10 at-grade, visitor parking spaces are to be maintained as per the S96 approval. An additional 6 visitor spaces are to be provided within basement 1 of the car park.

3.2 Access and Loading

A new vehicular access is to be constructed at the location of the existing access at Illawong Avenue. The driveway will provide access to at-grade visitor parking spaces and a loading bay prior to a two-way ramp to the basement car park.

The loading and servicing arrangements are to be maintained as per the S96 approval (DA-125/2012/A). This includes a loading bay located at ground level, accommodating up to a 8.8m Medium Rigid Vehicle.

4 Parking Assessment

4.1 Car Parking Assessment

Parking requirements for the site have been assessed against the Waverley Council Local Development Plan (DCP) 2012. Reference has been made to both the rates set out in Amendment 6, formally adopted in September 2018 and the superseded Amendment 5, adopted in August 2016.

It is considered that the rates set by Amendment 5 are more relevant to the development proposal as a result of limited public transport accessibility in the area and the current demand for parking generated by the existing site.

In addition, the parking rates stipulated in Amendment 6 are noted to be obtained from the Roads and Maritime Services' *Guide to Traffic Generating Developments 2002* (herein, the Guide) with the Guide's minimum rates set as maximum. However, based on the *Apartment Design Guide (ADG)* which provides design criteria to achieve the principles in SEPP 65 (*State Environmental Planning Policy No 65 - Design Quality of Residential Apartment Development*), the Guide's rates are only applicable to "sites that are within 800 metres of a railway station or light rail stop in the Sydney Metropolitan Area".

Amendment 6 is noted to reference the Metropolitan Regional Centre (CBD) parking rates for site's within 800m of Bondi Junction Railway Station and the 'Metropolitan Subregional Centre' rates for site's outside this radius. The technical note *Car parking requirements in SEPP 65* as issued by the Department of Planning and Environment (DoPE), provides details on the application of 'Metropolitan Regional Centre (CBD)' and 'Metropolitan Subregional Centre' rates of the Guide. It is indicated that Metropolitan Regional Centre (CBD) should be applied to areas that are defined as a 'Strategic Centre' or 'Regional City Centre' in *A Plan for Growing Sydney*. Other sites near a railway or light rail stop, would be applied the 'Metropolitan Subregional Centre' rate.

While it is noted that *A Plan for Growing Sydney* has been superseded, the general understanding obtained from the technical note and ADG is that the rates from the Guide are not applicable to the subject site in Tamarama which is 2.4km from the nearest railway station.

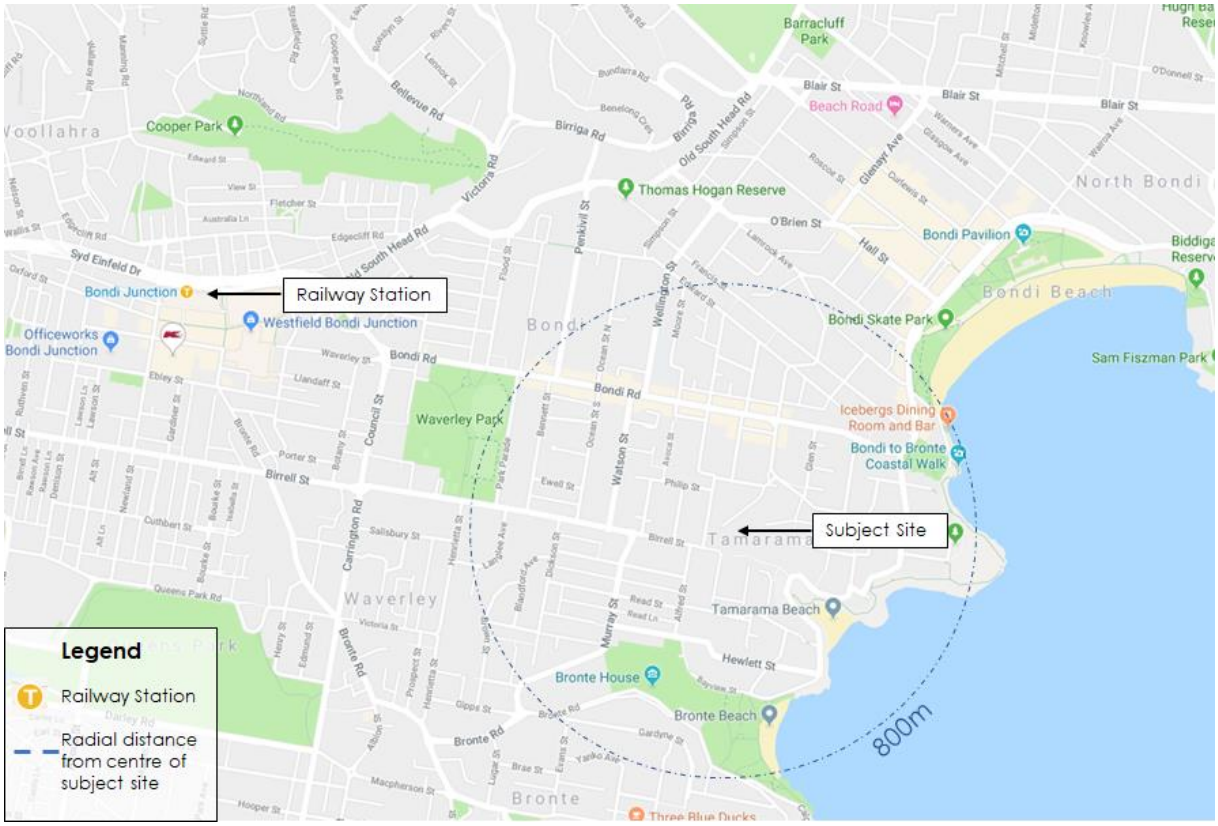
While it is understood that Council seeks to set maximum parking rates with an intention to reduce car ownership and usage, the adopted rates in Amendment 6 are considered inappropriate for a site in this location.

A detailed assessment of the car parking requirements of the site is detailed in the following sections.

4.1.1 DCP Requirement

The Waverley Council DCP provides separate parking rates for each of two Parking Zones. Parking Zone 1 is applicable to multi-dwelling residential developments in areas within 800 metres of Bondi Junction railway station, whereas Zone 2 is applicable for multi-dwelling residential developments outside of this radius. Parking Zone 2 rates are understood to be applicable to the proposed development, as shown in Figure 4.1.

Figure 4.1: Respective Locations of Subject Site and Railway Station



Source: Google Maps

Table 4.1 summarises the development's car parking requirement based on the parking rates provided in Amendment 6 and Amendment 5 for Zone 2. It is noted that the rate provided in Amendment 5 is a requirement, whereas Amendment 6 establishes a maximum rate.

Table 4.1: Development Parking Requirements

Land Use (Residential)	Size	Car Parking Rate		Applicable Requirement	
		DCP Amendment 5 (2016)	DCP Amendment 6 (2018)	DCP Amendment 5 (2016)	DCP Amendment 6 (2018)
1-bedroom	39	1	0.6	39	23
2-bedroom	34	1.5	0.9	51	31
3-bedroom	9	2	1.4	18	13
Resident sub total	**-**	**-**	**-**	**108**	**67**
Visitors	-	1 space per 5 units	1 space per 5 units	16	16
Total	**82**	**-**	**-**	**124**	**83**

Based on Table 4.1, the proposed development is permitted 83 car parking spaces including 67 resident spaces in accordance with Amendment 6. Comparatively, the previous Amendment 5 permitted a maximum of 124 car parking spaces including 108 resident spaces. This indicates a 33% reduction in permissible parking in the latest Amendment.

4.1.2 Adequacy of Parking Provision

With a belief that the Amendment 6/ Roads and Maritime Guide rates are inappropriate for the subject site noting the limited accessibility to public transport, it is proposed to provide parking at the rate required by Amendment 5, with a proposed provision of 124 spaces including 16 visitor spaces.

The car parking rates set out in the most recent DCP Amendment 6 are accompanied by a note in section 8.2.3 outlining the circumstances under which variations to parking rates may be permissible:

"a) Variations to the relevant parking standards will only be accepted where the applicant can demonstrate that the requirement cannot be reasonably achieved… or that exceeding the standard is in the public interest."

The proposed modification in providing a greater parking supply, will undoubtably reduce the sites impact on 'on-street' parking which is in high demand in the area. Site observations have indicated that residents from the site currently park on-street.

Inspection of the surrounding road network indicates that on-street parking is generally unrestricted and is already at or near capacity. This is shown in Figure 4.2, Figure 4.3 and Figure 4.4.

Figure 4.2: Illawong Avenue, 7th February 2019 AM Peak

Figure 4.3: Fletcher Street, 7th February 2019, PM Peak

Figure 4.4: Denham Street, 7th February 2019, PM Peak

More significantly, it is evident from inspection of the site's existing vehicle access that the current provision of car parking has resulted in frequent incidents of illegal parking on the driveway. This is shown in Figure 4.5, Figure 4.6 and Figure 4.7.

Figure 4.5: Illegal Parking on the Driveway #1

Figure 4.6: Illegal Parking on the Driveway #2

Figure 4.7: Illegal Parking on the Driveway #3

The provision of additional parking to the site is therefore justified, due to the existing parking stress noted on the surrounding road network and the prevalence of illegal parking in the vicinity of the site access.

Furthermore, the provision of a greater level of on-site parking is considered to be in the public interest.

To accommodate the actual estimated parking demand from the site, the parking rates set out within Amendment 5 are more appropriate to the proposed development.

4.2 Accessible Parking

The DCP Amendment 6 states that one accessible space be provided for every adaptable residential unit. The existing building does not contain any adaptable units. Therefore, no accessible parking spaces for residents are proposed.

4.3 Motorcycle Parking

The DCP Amendment 6 states that 1 motorcycle parking bay is to be provided for every 3 car parking bays.

However, motorcycle parking provision is proposed to be provided generally in line with the approved development, as an increase in car parking provision does not correlate to an increase in motorcycle parking provision. As such, a motorcycle parking rate based on the car parking provision is not appropriate in this case, where there is no modification to the approved number of apartment units.

The approved development includes a provision of 12 motorcycle spaces. It is proposed to provide 15 motorcycle spaces.

Furthermore, the proposed provision is in line with the motorcycle parking requirements of nearby councils. Notably, the motorcycle parking rates stipulated by adjoining councils are:

- Randwick – 5% of car parking requirement

  Using this rate, the development with 124 car spaces would be required 6 motorcycle spaces
- Woollahra – 1 motorcycle space per 10 car spaces

  Using this rate, the development would be required 12 motorcycle spaces
- City of Sydney – 1 motorcycle space per 12 car spaces

  Using this rate, the development would be required 10 motorcycle spaces
- Bayside/Botany Bay DCP – no motorcycle parking requirement.

Based on the above, the proposed motorcycle parking provision is considered to be adequate and in line with typical motorcycle parking requirements.

4.4 Bicycle Parking

Bicycle parking rates for residential developments have been sourced from the Amendment 6 of the DCP. The bicycle parking rates and requirements for the proposed development is displayed in Table 4.2.

Table 4.2: Bicycle Parking Assessment

Land Use	Size	Minimum Bicycle Parking Rate		Minimum Bicycle Parking Requirement	
		Long-stay / resident / employee	Short-stay/ Visitor	Long-stay / resident / employee	Short-stay/ Visitor Total
Residential	82	1 space per dwelling	1 space per 10 dwellings	82	8

The proposed development is required to provide 82 secure bike parking facilities and eight visitor bike parking spaces.

The proposed development includes the provision of 120 bicycle parking spaces. Of these, 86 spaces will be provided in cages behind car spaces, 26 will be provided in locker stacker storage spaces, and a further eight visitor spaces (four bike racks) will be provided on the ground floor. Therefore, the provision of bicycle parking is compliant with DCP requirements.

4.5 Service Vehicle Parking

The service vehicle parking arrangements have been maintained as per the S96 approval.

4.6 Car Park Layout

The basement car park and associated access arrangements have been reviewed for compliance with Australian Standard design requirements, namely AS2890:2004. The review included assessment of the following:

- access road and ramp into the basement car park
- car park circulation,
- parking space and aisle dimensions, and
- bicycle parking and facilities.

The residential component of the proposed car park is compliant with Australian Standard as Class 1A car parking spaces (which have dimensions of 2.4m wide by 5.4m long with aisle width of 5.8m) and is expected to operate satisfactorily.

5 Traffic Impact Assessment

5.1 Traffic Generation

5.1.1 Existing Development Traffic Generation

Site visits were undertaken on 19th February 2019 to observe the traffic generation associated with the existing development. Measurements were taken of the number of vehicles entering and exiting the existing vehicle access. The results are detailed in Table 5.1and Table 5.2.

Table 5.1: AM Observed Traffic Generation

Time Interval	Hourly Traffic Generation		Total Two-Way Trips
	In	Out	
07:30-08:30	2	10	**12**
07:45-08:45	2	11	**13**
08:00-09:00	2	7	**9**

Table 5.2: PM Observed Traffic Generation

Time Interval	Hourly Traffic Generation		Total Two-Way Trips
	In	Out	
16:30-17:30	7	3	**10**
16:45-17:45	7	4	**11**
17:00-18:00	6	5	**11**

Table 5.1 and Table 5.2 indicate that the traffic generation associated with the existing development (i.e. from the existing 55 parking spaces) is in the region of 13 vph and 11 vph for each of the AM and PM peak hours respectively.

It should be noted that the observed traffic generation levels discussed above are likely to understate the total number of trips made by residents of the existing development. This is because several trips were omitted from these calculations where residents had parked in unrestricted spaces on Illawong Avenue rather than the on-site car park, which was at capacity.

5.1.2 Trip Rate of the Existing Site

Trip rates for the existing site have been therefore been conservatively based on trips per car space rather than trips per unit. This is because the proposed development comprises only a small increase in units (2 units) but a large increase in car park provision (approximately 59 spaces). Therefore, rates derived from car spaces will likely provide a more realistic measurement of the traffic generation of the development proposal.

The trip rates calculated for the AM and PM peak hours are shown in Table 5.3.

Table 5.3: Existing Site Trip Rates

Time Period	Car Park Size	Vehicle Trips	Vehicle Trips per Car Space
AM Peak Hour	55 spaces	13	0.24
PM Peak Hour		11	0.20

5.1.3 Proposed Development Traffic Generation

The proposed development includes the provision of 124 car parking spaces across a three-level basement car park.

Based on the trip rates of the existing development, the estimated traffic generation of the proposed development has been calculated as summarised in Table 5.4.

Table 5.4: Proposed Development Traffic Generation

Time Period	Trip Rate	Car Park Size	Traffic Generation
AM Peak Hour	0.24	124	30
PM Peak Hour	0.20		25

Therefore, the net increase in traffic generation is 14vph in the morning peak hour and 12vph in the afternoon peak hour as summarised in Table 5.5.

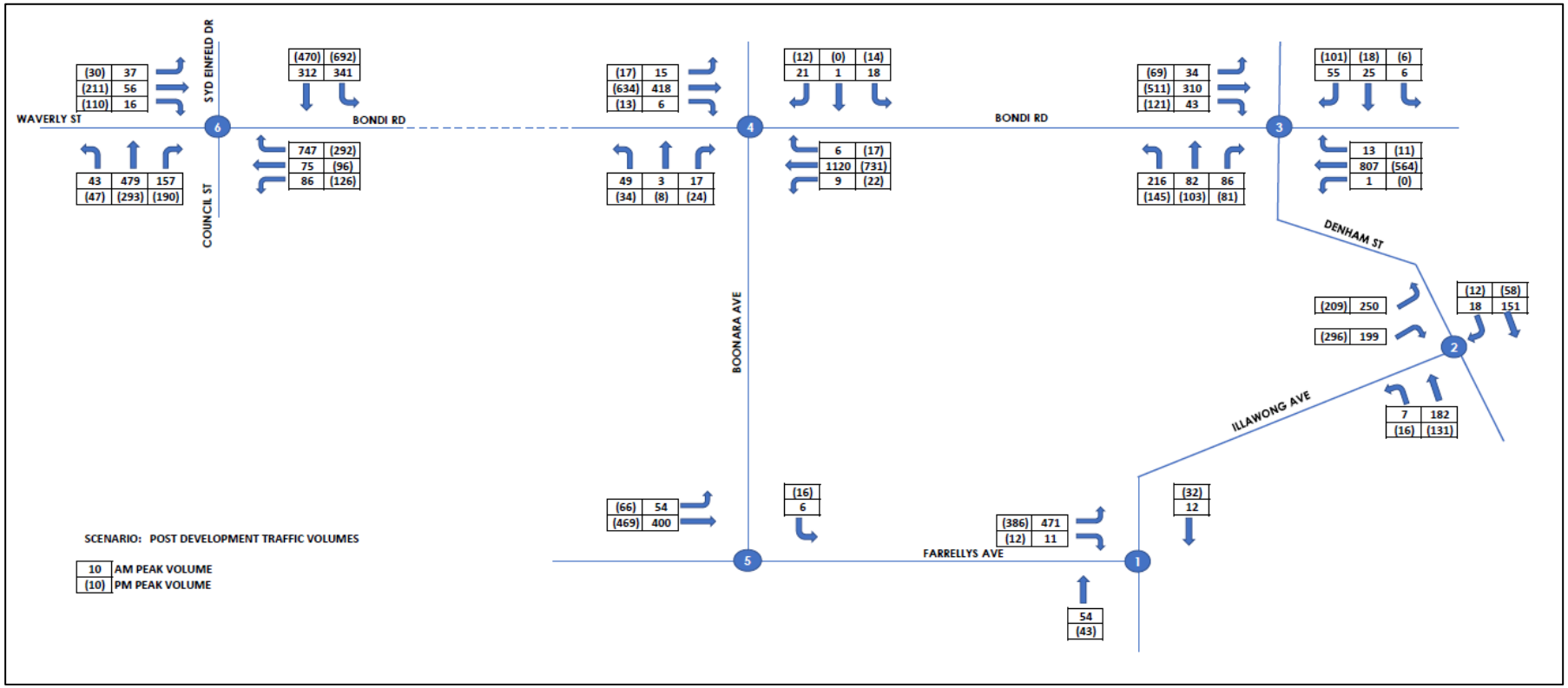
Table 5.5: Net Increase in Traffic Generation

Time Period	Traffic Generation		
	Proposed	Existing	Net
AM Peak Hour	30	13	17
PM Peak Hour	25	11	14

The net increase in traffic equates to around one additional vehicle (two-way) every three to four minutes. This is considered to be a negligible increase in traffic generation and would be imperceptible in the road network. In addition, it is noted that a number of residents are parking on-street. Therefore, some of the additional traffic generation to the site is already in the local road network. Therefore, the above assessment is conservative in its estimate of net increase in traffic to the road network.

Notwithstanding the above, intersection modelling of the local road network has been undertaken. The development traffic volumes as detailed in Table 5.5, has been distributed into the road network based on existing traffic patterns. The post development traffic volumes are shown in Figure 5.1.

Figure 5.1: Post Development Peak Hour Volumes



5.2 Intersection Analysis

5.2.1 Intersection Performance Criteria

The existing operation of the nearby intersections to the site have been assessed using SIDRA Intersection 8, a computer-based modelling package which assesses intersection performance under prevailing traffic conditions.

SIDRA calculates intersection performance measures such as 'average delay' that vehicles encounter and the level of service (LoS). SIDRA provides analysis of the operating conditions which can be compared to the performance criteria set out in Table 5.6.

Table 5.6: Level of Service Criteria for Intersection Operation

Level of Service	Average Delay (seconds per vehicle)	Traffic Signals, Roundabout	Give Way and Stop Signs
A	Less than 14	good operation	good operation
B	15 to 28	good with acceptable delays and spare capacity	acceptable delays and spare capacity
C	29 to 42	satisfactory	satisfactory, but accident study required
D	43 to 56	operating near capacity	near capacity and accident study required
E	57 to 70	at capacity At signals, incidents will cause excessive delays.	at capacity, requires other control mode
F	Greater than 71	unsatisfactory with excessive queuing	unsatisfactory with excessive queuing; requires other control mode

Source: Roads and Maritime Guide to Traffic Generating Developments, 2002

5.2.2 Modelling Results

SIDRA intersection modelling of the 2019 existing conditions has been undertaken and is summarised in Table 5.7.

Table 5.7: Existing Conditions Intersection Operation

Intersection	Control	Morning Peak		Afternoon Peak	
		Ave. Delay (s)	LoS	Ave. Delay (s)	LoS
Illawong Ave – Farrellys Ave	Priority	8	A	8	A
Denham St – Fletcher St – Illawong Ave	Priority	8	A	8	A
Denham St – Bondi Rd	Signals	13	A	13	A
Boonara Ave – Bondi Rd – Castlefield St	Priority	53	D	59	E
Boonara Ave – Farrellys Ave	Priority	7	A	7	A
Bondi Rd – Council St – Waverley St	Signals	33	C	30	C

The results in Table 5.7 indicate that the study intersections are generally operating satisfactorily with a LoS C or better. The exception is the intersection of Boonara Avenue, Bondi Road and Castlefield Street, where the right turning movements from the minor roads are experiencing notable delays.

SIDRA intersection modelling of the post development conditions of the study intersections are summarised in Table 5.8.

Table 5.8: Post Development Intersection Operation

Intersection	Control	Morning Peak		Afternoon Peak	
		Ave. Delay (s)	LoS	Ave. Delay (s)	LoS
Illawong Ave – Farrellys Ave	Priority	8	A	7	A
Denham St – Fletcher St – Illawong Ave	Priority	8	A	7	A
Denham St – Bondi Rd	Signals	12	A	13	A
Boonara Ave – Bondi Rd – Castlefield St	Priority	54	D	60	E
Boonara Ave – Farrellys Ave	Priority	7	A	7	A
Bondi Rd – Council St – Waverley St	Signals	33	C	30	C

Table 5.8 indicates that the estimated development traffic will have a negligible impact to the road network with delays and levels of services remaining consistent with existing conditions.

Detailed SIDRA results are provided in Appendix B.

6 Conclusion

The following summarises the key findings of this report.

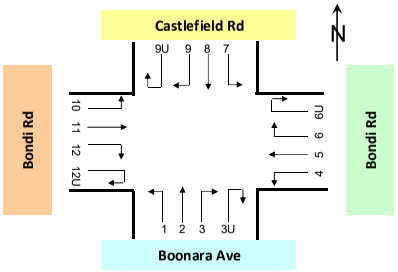
- The existing development includes 80 residential apartment units and an at-grade car park with an informal parking arrangement accommodating around 55 cars.
- A S96 approval has been given to the development to provide an additional two three-bedroom units to the existing site and a new basement car park accommodating 88 car spaces (including 78 resident spaces and 10 visitor spaces) and 12 motorcycle spaces.
- A S4.55 application is to be submitted to further increase the parking provision on site from 88 car spaces to 124 car spaces including 108 resident spaces and 16 visitor spaces.
- Amendment 6 of the DCP 2012 indicates the development is permitted a maximum of 83 spaces. However, the maximum rates adopted in Amendment 6 is not considered appropriate for the subject site noting:
  - Amendment 6 adopts Roads and Maritime rates from the Guide to Traffic Generating Developments. However, the Apartment Design Guidelines indicates that these rates are only applicable for sites located within 800m of a railway station. Noting that the site is located within 2.4km from a railway station, these rates are not appropriate.
  - The superseded Amendment 5 parking rates are considered to be more appropriate and reflective of the parking demand generated in the area. Amendment 5 permits a maximum parking provision of 124 spaces.
  - The on-street parking supply is at capacity surrounding the site and it is considered desirable to relieve some of the stress by encouraging residents off the streets to park on-site.
- Based on the above, it is proposed to provided parking between the requirements of Amendment 5 and Amendment 6, with a proposed provision of 124 spaces.
- The proposed development with an increase of 69 car spaces from existing conditions, is anticipated to generate a net increase of 14-17 vehicle trips per hour. This equates to one vehicle every three to four minutes (two-way) which is considered a negligible increase in traffic.
- Notwithstanding, SIDRA modelling of key intersections has been undertaken. Intersection modelling confirms that the proposed increase in development traffic would have a negligible impact to the road network.

Appendix A

Traffic Surveys

Job No. : N4769
Client : TTPP
Suburb : Tamarama
Location : 1. Bondi Rd / Boonara Ave

Day/Date : Thu, 7 Feb 2019
Weather : Fine
Description : Classified Intersection Count
: Hourly Summary



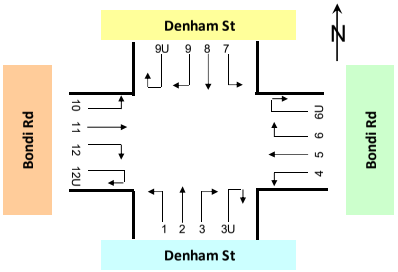
MATRIX Traffic and Transport Data

Approach	Boonara Ave												Bondi Rd											
Direction	Direction 1 (Left Turn)			Direction 2 (Through)			Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 5 (Through)			Direction 6 (Right Turn)			Direction 6U (U Turn)		
Time Period	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
7:00 to 8:00	42	1	**43**	4	0	**4**	13	0	**13**	0	0	**0**	8	0	**8**	979	51	**1,030**	8	0	**8**	0	0	**0**
7:15 to 8:15	43	2	**45**	4	0	**4**	13	0	**13**	0	0	**0**	8	0	**8**	1,046	53	**1,099**	6	0	**6**	0	0	**0**
7:30 to 8:30	46	3	**49**	3	0	**3**	17	0	**17**	0	0	**0**	9	0	**9**	1,054	52	**1,106**	6	0	**6**	0	0	**0**
7:45 to 8:45	39	5	**44**	3	0	**3**	24	0	**24**	0	0	**0**	13	0	**13**	1,041	56	**1,097**	11	0	**11**	0	0	**0**
8:00 to 9:00	33	7	**40**	3	0	**3**	25	2	**27**	0	0	**0**	14	1	**15**	967	51	**1,018**	11	0	**11**	0	0	**0**
AM Totals	**75**	**8**	**83**	**7**	**0**	**7**	**38**	**2**	**40**	**0**	**0**	**0**	**22**	**1**	**23**	**1,946**	**102**	**2,048**	**19**	**0**	**19**	**0**	**0**	**0**
16:00 to 17:00	37	3	**40**	5	0	**5**	18	1	**19**	0	0	**0**	20	0	**20**	656	47	**703**	16	0	**16**	0	0	**0**
16:15 to 17:15	36	2	**38**	4	0	**4**	20	1	**21**	0	0	**0**	19	0	**19**	663	44	**707**	19	0	**19**	0	0	**0**
16:30 to 17:30	31	2	**33**	4	0	**4**	24	1	**25**	0	0	**0**	22	0	**22**	684	36	**720**	15	0	**15**	0	0	**0**
16:45 to 17:45	33	1	**34**	8	0	**8**	23	1	**24**	0	0	**0**	22	0	**22**	693	35	**728**	17	0	**17**	0	0	**0**
17:00 to 18:00	36	1	**37**	8	0	**8**	30	0	**30**	0	0	**0**	18	0	**18**	674	33	**707**	13	0	**13**	0	0	**0**
PM Totals	**73**	**4**	**77**	**13**	**0**	**13**	**48**	**1**	**49**	**0**	**0**	**0**	**38**	**0**	**38**	**1,330**	**80**	**1,410**	**29**	**0**	**29**	**0**	**0**	**0**

Approach	Castlefield Rd												Bondi Rd											
Direction	Direction 7 (Left Turn)			Direction 8 (Through)			Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)			Direction 11 (Through)			Direction 12 (Right Turn)			Direction 12U (U Turn)		
Time Period	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
7:00 to 8:00	17	2	**19**	1	0	**1**	21	0	**21**	0	0	**0**	19	1	**20**	348	53	**401**	4	1	**5**	2	0	**2**
7:15 to 8:15	17	1	**18**	1	0	**1**	22	0	**22**	0	0	**0**	16	1	**17**	357	49	**406**	1	1	**2**	2	0	**2**
7:30 to 8:30	17	1	**18**	1	0	**1**	21	0	**21**	0	0	**0**	14	1	**15**	369	48	**417**	5	1	**6**	2	0	**2**
7:45 to 8:45	17	0	**17**	0	0	**0**	23	0	**23**	0	0	**0**	11	0	**11**	370	35	**405**	5	1	**6**	1	0	**1**
8:00 to 9:00	10	0	**10**	0	0	**0**	20	0	**20**	0	0	**0**	16	0	**16**	356	38	**394**	7	1	**8**	0	0	**0**
AM Totals	**27**	**2**	**29**	**1**	**0**	**1**	**41**	**0**	**41**	**0**	**0**	**0**	**35**	**1**	**36**	**704**	**91**	**795**	**11**	**2**	**13**	**2**	**0**	**2**
16:00 to 17:00	21	0	**21**	2	0	**2**	8	1	**9**	0	0	**0**	22	0	**22**	563	27	**590**	15	0	**15**	2	0	**2**
16:15 to 17:15	19	0	**19**	1	0	**1**	9	1	**10**	0	0	**0**	18	0	**18**	553	25	**578**	15	0	**15**	3	0	**3**
16:30 to 17:30	15	0	**15**	0	0	**0**	12	1	**13**	0	0	**0**	14	0	**14**	574	26	**600**	12	0	**12**	3	0	**3**
16:45 to 17:45	14	0	**14**	0	0	**0**	10	2	**12**	0	0	**0**	18	0	**18**	606	24	**630**	13	0	**13**	3	0	**3**
17:00 to 18:00	11	0	**11**	0	0	**0**	9	1	**10**	0	0	**0**	21	0	**21**	617	28	**645**	15	0	**15**	2	0	**2**
PM Totals	**32**	**0**	**32**	**2**	**0**	**2**	**17**	**2**	**19**	**0**	**0**	**0**	**43**	**0**	**43**	**1,180**	**55**	**1,235**	**30**	**0**	**30**	**4**	**0**	**4**

Job No. : N4769
Client : TTPP
Suburb : Tamarama
Location : 2. Bondi Rd / Denham St

Day/Date : Thu, 7 Feb 2019
Weather : Fine
Description : Classified Intersection Count
: Hourly Summary



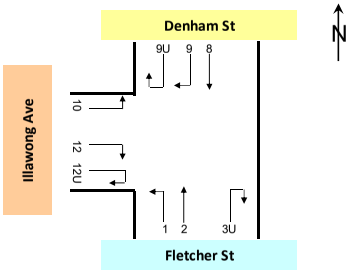
MATRIX Traffic and Transport Data

Approach	Denham St												Bondi Rd											
Direction	Direction 1 (Left Turn)			Direction 2 (Through)			Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 5 (Through)			Direction 6 (Right Turn)			Direction 6U (U Turn)		
Time Period	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
7:00 to 8:00	184	7	**191**	67	0	**67**	72	3	**75**	0	0	**0**	3	0	**3**	703	40	**743**	13	0	**13**	0	0	**0**
7:15 to 8:15	196	6	**202**	82	0	**82**	82	4	**86**	0	0	**0**	1	0	**1**	767	40	**807**	13	0	**13**	0	0	**0**
7:30 to 8:30	184	8	**192**	94	0	**94**	86	3	**89**	0	0	**0**	1	0	**1**	745	42	**787**	13	0	**13**	0	0	**0**
7:45 to 8:45	184	8	**192**	113	0	**113**	88	2	**90**	0	0	**0**	0	0	**0**	694	36	**730**	13	0	**13**	0	0	**0**
8:00 to 9:00	169	7	**176**	132	0	**132**	97	2	**99**	0	0	**0**	0	0	**0**	637	38	**675**	9	0	**9**	0	0	**0**
AM Totals	**353**	**14**	**367**	**199**	**0**	**199**	**169**	**5**	**174**	**0**	**0**	**0**	**3**	**0**	**3**	**1,340**	**78**	**1,418**	**22**	**0**	**22**	**0**	**0**	**0**
16:00 to 17:00	146	7	**153**	109	0	**109**	91	0	**91**	0	0	**0**	3	0	**3**	484	34	**518**	14	0	**14**	0	0	**0**
16:15 to 17:15	138	4	**142**	106	0	**106**	86	0	**86**	0	0	**0**	1	0	**1**	496	35	**531**	12	0	**12**	0	0	**0**
16:30 to 17:30	138	4	**142**	103	0	**103**	81	0	**81**	0	0	**0**	0	0	**0**	533	31	**564**	11	0	**11**	0	0	**0**
16:45 to 17:45	154	3	**157**	106	0	**106**	61	0	**61**	0	0	**0**	3	0	**3**	526	29	**555**	13	0	**13**	0	0	**0**
17:00 to 18:00	160	3	**163**	120	0	**120**	66	0	**66**	0	0	**0**	5	0	**5**	524	30	**554**	11	0	**11**	0	0	**0**
PM Totals	**306**	**10**	**316**	**229**	**0**	**229**	**157**	**0**	**157**	**0**	**0**	**0**	**8**	**0**	**8**	**1,008**	**64**	**1,072**	**25**	**0**	**25**	**0**	**0**	**0**

Approach	Denham St												Bondi Rd											
Direction	Direction 7 (Left Turn)			Direction 8 (Through)			Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)			Direction 11 (Through)			Direction 12 (Right Turn)			Direction 12U (U Turn)		
Time Period	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
7:00 to 8:00	5	0	**5**	18	1	**19**	97	2	**99**	0	0	**0**	30	3	**33**	264	38	**302**	45	7	**52**	0	0	**0**
7:15 to 8:15	6	0	**6**	17	1	**18**	99	2	**101**	0	0	**0**	30	4	**34**	268	42	**310**	35	7	**42**	0	0	**0**
7:30 to 8:30	6	0	**6**	18	1	**19**	104	1	**105**	0	0	**0**	24	1	**25**	281	39	**320**	44	7	**51**	0	0	**0**
7:45 to 8:45	6	0	**6**	17	1	**18**	108	1	**109**	0	0	**0**	31	1	**32**	310	38	**348**	44	6	**50**	0	0	**0**
8:00 to 9:00	8	0	**8**	17	0	**17**	93	1	**94**	0	0	**0**	34	2	**36**	310	35	**345**	51	4	**55**	0	0	**0**
AM Totals	**13**	**0**	**13**	**35**	**1**	**36**	**190**	**3**	**193**	**0**	**0**	**0**	**64**	**5**	**69**	**574**	**73**	**647**	**96**	**11**	**107**	**0**	**0**	**0**
16:00 to 17:00	4	0	**4**	23	0	**23**	43	0	**43**	0	0	**0**	62	0	**62**	493	32	**525**	107	3	**110**	0	0	**0**
16:15 to 17:15	6	0	**6**	21	0	**21**	46	0	**46**	0	0	**0**	62	0	**62**	495	27	**522**	116	3	**119**	0	0	**0**
16:30 to 17:30	6	0	**6**	25	0	**25**	55	0	**55**	0	0	**0**	69	0	**69**	487	24	**511**	114	3	**117**	0	0	**0**
16:45 to 17:45	6	0	**6**	25	0	**25**	54	0	**54**	0	0	**0**	66	0	**66**	484	28	**512**	93	2	**95**	0	0	**0**
17:00 to 18:00	9	0	**9**	30	0	**30**	60	1	**61**	0	0	**0**	63	1	**64**	475	27	**502**	93	1	**94**	0	0	**0**
PM Totals	**13**	**0**	**13**	**53**	**0**	**53**	**103**	**1**	**104**	**0**	**0**	**0**	**125**	**1**	**126**	**968**	**59**	**1,027**	**200**	**4**	**204**	**0**	**0**	**0**

Job No. : N4769
Client : TTPP
Suburb : Tamarama
Location : 3. Denham St / Illawong Ave

Day/Date : Thu, 7 Feb 2019
Weather : Fine
Description : Classified Intersection Count
: Hourly Summary



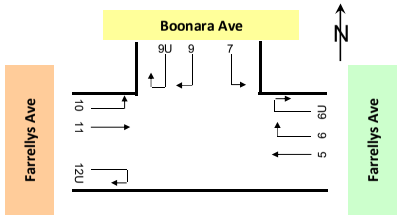
MATRIX Traffic and Transport Data

Approach	Fletcher St								
Direction	Direction 1 (Left Turn)			Direction 2 (Through)				Direction 3U (U Turn)	
Time Period	Lights	Heavies	Total	Lights	Heavies	Total		Lights	Heavies	Total
7:00 to 8:00	8	0	**8**	149	5	**154**		0	0	**0**
7:15 to 8:15	6	0	**6**	139	5	**144**		0	0	**0**
7:30 to 8:30	4	0	**4**	141	3	**144**		0	0	**0**
7:45 to 8:45	4	0	**4**	152	2	**154**		0	0	**0**
8:00 to 9:00	6	0	**6**	179	3	**182**		0	0	**0**
AM Totals	**14**	**0**	**14**	**328**	**8**	**336**		**0**	**0**	**0**
16:00 to 17:00	4	0	**4**	102	3	**105**		0	0	**0**
16:15 to 17:15	5	0	**5**	108	3	**111**		0	0	**0**
16:30 to 17:30	8	0	**8**	114	3	**117**		0	0	**0**
16:45 to 17:45	10	0	**10**	123	3	**126**		0	0	**0**
17:00 to 18:00	12	0	**12**	129	2	**131**		0	0	**0**
PM Totals	**16**	**0**	**16**	**231**	**5**	**236**		**0**	**0**	**0**

Approach	Denham St									Illawong Ave								
Direction	Direction 8 (Through)			Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)			Direction 12 (Right Turn)			Direction 12U (U Turn)		
Time Period	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
7:00 to 8:00	74	5	**79**	3	0	**3**	0	0	**0**	151	3	**154**	143	1	**144**	0	0	**0**
7:15 to 8:15	80	7	**87**	5	0	**5**	0	0	**0**	171	4	**175**	158	0	**158**	0	0	**0**
7:30 to 8:30	78	6	**84**	6	0	**6**	0	0	**0**	190	4	**194**	168	0	**168**	0	0	**0**
7:45 to 8:45	58	4	**62**	7	0	**7**	0	0	**0**	214	4	**218**	187	4	**191**	0	0	**0**
8:00 to 9:00	53	5	**58**	8	0	**8**	0	0	**0**	232	4	**236**	194	5	**199**	0	0	**0**
AM Totals	**127**	**10**	**137**	**11**	**0**	**11**	**0**	**0**	**0**	**383**	**7**	**390**	**337**	**6**	**343**	**0**	**0**	**0**
16:00 to 17:00	125	4	**129**	14	0	**14**	0	0	**0**	251	3	**254**	202	1	**203**	0	0	**0**
16:15 to 17:15	117	3	**120**	19	0	**19**	0	0	**0**	225	3	**228**	207	3	**210**	0	0	**0**
16:30 to 17:30	127	3	**130**	16	0	**16**	0	0	**0**	223	2	**225**	252	2	**254**	0	0	**0**
16:45 to 17:45	138	2	**140**	15	0	**15**	0	0	**0**	228	1	**229**	282	2	**284**	0	0	**0**
17:00 to 18:00	150	1	**151**	17	0	**17**	0	0	**0**	206	0	**206**	294	2	**296**	0	0	**0**
PM Totals	**275**	**5**	**280**	**31**	**0**	**31**	**0**	**0**	**0**	**457**	**3**	**460**	**496**	**3**	**499**	**0**	**0**	**0**

Job No. : N4769
Client : TTPP
Suburb : Tamarama
Location : 4. Boonara Ave / Farrellys Ave

Day/Date : Thu, 7 Feb 2019
Weather : Fine
Description : Classified Intersection Count
: Hourly Summary



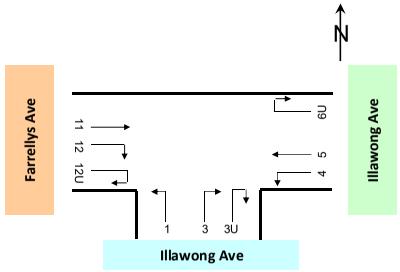
MATRIX Traffic and Transport Data

Approach		Farrellys Ave								
Direction		Direction 5 (Through)			Direction 6 (Right Turn)			Direction 6U (U Turn)		
Time Period		Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
7:00 to 8:00		0	0	**0**	0	0	**0**	0	0	**0**
7:15 to 8:15		0	0	**0**	0	0	**0**	0	0	**0**
7:30 to 8:30		0	0	**0**	0	0	**0**	0	0	**0**
7:45 to 8:45		0	0	**0**	0	0	**0**	0	0	**0**
8:00 to 9:00		0	0	**0**	0	0	**0**	0	0	**0**
AM Totals		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
16:00 to 17:00		0	0	**0**	0	0	**0**	0	0	**0**
16:15 to 17:15		0	0	**0**	0	0	**0**	0	0	**0**
16:30 to 17:30		0	0	**0**	0	0	**0**	0	0	**0**
16:45 to 17:45		0	0	**0**	0	0	**0**	0	0	**0**
17:00 to 18:00		0	0	**0**	0	0	**0**	0	0	**0**
PM Totals		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Approach	Boonara Ave									Farrellys Ave									
Direction	Direction 7 (Left Turn)				Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)			Direction 11 (Through)				Direction 12U (U Turn)		
Time Period	Lights	Heavies	Total		Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total		Lights	Heavies	Total
7:00 to 8:00	5	0	**5**		0	0	**0**	0	0	**0**	46	2	**48**	262	5	**267**		0	0	**0**
7:15 to 8:15	6	0	**6**		0	0	**0**	0	0	**0**	43	2	**45**	302	7	**309**		0	0	**0**
7:30 to 8:30	6	0	**6**		0	0	**0**	0	0	**0**	51	3	**54**	325	6	**331**		0	0	**0**
7:45 to 8:45	7	0	**7**		0	0	**0**	0	0	**0**	50	4	**54**	362	9	**371**		0	0	**0**
8:00 to 9:00	6	0	**6**		0	0	**0**	0	0	**0**	50	4	**54**	389	10	**399**		0	0	**0**
AM Totals	**11**	**0**	**11**		**0**	**0**	**0**	**0**	**0**	**0**	**96**	**6**	**102**	**651**	**15**	**666**		**0**	**0**	**0**
16:00 to 17:00	22	0	**22**		2	0	**2**	0	0	**0**	53	2	**55**	412	7	**419**		0	0	**0**
16:15 to 17:15	22	0	**22**		0	0	**0**	0	0	**0**	54	2	**56**	392	8	**400**		0	0	**0**
16:30 to 17:30	16	0	**16**		0	0	**0**	0	0	**0**	65	2	**67**	434	5	**439**		0	0	**0**
16:45 to 17:45	16	0	**16**		0	0	**0**	0	0	**0**	65	1	**66**	463	3	**466**		0	0	**0**
17:00 to 18:00	12	0	**12**		0	0	**0**	0	0	**0**	67	0	**67**	466	1	**467**		0	0	**0**
PM Totals	**34**	**0**	**34**		**2**	**0**	**2**	**0**	**0**	**0**	**120**	**2**	**122**	**878**	**8**	**886**		**0**	**0**	**0**

Job No. : N4769
Client : TTPP
Suburb : Tamarama
Location : 5. Farrellys Ave / Illawong Ave

Day/Date : Thu, 7 Feb 2019
Weather : Fine
Description : Classified Intersection Count
: Hourly Summary



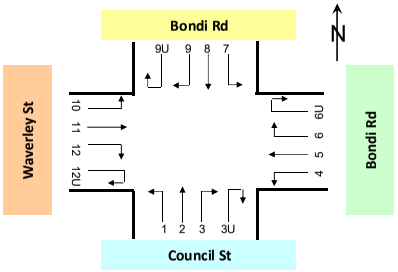
MATRIX Traffic and Transport Data

Approach	Illawong Ave									Illawong Ave								
Direction	Direction 1 (Left Turn)				Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 5 (Through)				Direction 6U (U Turn)	
Time Period	Lights	Heavies	Total		Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total		Lights	Heavies	Total
7:00 to 8:00	0	0	**0**		20	0	**20**	0	0	**0**	8	0	**8**	0	0	**0**		1	0	**1**
7:15 to 8:15	0	0	**0**		25	0	**25**	0	0	**0**	11	0	**11**	0	0	**0**		1	0	**1**
7:30 to 8:30	0	0	**0**		33	1	**34**	0	0	**0**	13	0	**13**	0	0	**0**		1	0	**1**
7:45 to 8:45	0	0	**0**		36	2	**38**	0	0	**0**	12	0	**12**	0	0	**0**		1	0	**1**
8:00 to 9:00	0	0	**0**		38	2	**40**	0	0	**0**	10	0	**10**	0	0	**0**		1	0	**1**
AM Totals	**0**	**0**	**0**		**58**	**2**	**60**	**0**	**0**	**0**	**18**	**0**	**18**	**0**	**0**	**0**		**2**	**0**	**2**
16:00 to 17:00	0	0	**0**		23	0	**23**	0	0	**0**	16	0	**16**	0	0	**0**		0	0	**0**
16:15 to 17:15	0	0	**0**		27	0	**27**	0	0	**0**	23	0	**23**	0	0	**0**		0	0	**0**
16:30 to 17:30	0	0	**0**		32	0	**32**	0	0	**0**	22	0	**22**	0	0	**0**		2	0	**2**
16:45 to 17:45	0	0	**0**		40	0	**40**	0	0	**0**	24	0	**24**	0	0	**0**		2	0	**2**
17:00 to 18:00	0	0	**0**		39	0	**39**	0	0	**0**	25	0	**25**	0	0	**0**		3	0	**3**
PM Totals	**0**	**0**	**0**		**62**	**0**	**62**	**0**	**0**	**0**	**41**	**0**	**41**	**0**	**0**	**0**		**3**	**0**	**3**

Approach		Farrellys Ave								
Direction		Direction 11 (Through)			Direction 12 (Right Turn)			Direction 12U (U Turn)		
Time Period		Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
7:00 to 8:00		271	5	**276**	4	0	**4**	0	0	**0**
7:15 to 8:15		301	6	**307**	5	0	**5**	0	0	**0**
7:30 to 8:30		319	5	**324**	5	0	**5**	0	0	**0**
7:45 to 8:45		354	8	**362**	6	0	**6**	0	0	**0**
8:00 to 9:00		377	9	**386**	9	0	**9**	0	0	**0**
AM Totals		**648**	**14**	**662**	**13**	**0**	**13**	**0**	**0**	**0**
16:00 to 17:00		429	6	**435**	11	0	**11**	0	0	**0**
16:15 to 17:15		403	8	**411**	14	0	**14**	0	0	**0**
16:30 to 17:30		436	6	**442**	12	0	**12**	0	0	**0**
16:45 to 17:45		467	4	**471**	10	0	**10**	0	0	**0**
17:00 to 18:00		462	2	**464**	12	1	**13**	0	0	**0**
PM Totals		**891**	**8**	**899**	**23**	**1**	**24**	**0**	**0**	**0**

Job No. : N4769
Client : TTPP
Suburb : Tamarama
Location : 6. Bondi Rd / Council St

Day/Date : Thu, 7 Feb 2019
Weather : Fine
Description : Classified Intersection Count
: Hourly Summary



MATRIX Traffic and Transport Data

Approach	Council St												Bondi Rd											
Direction	Direction 1 (Left Turn)			Direction 2 (Through)			Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 5 (Through)			Direction 6 (Right Turn)			Direction 6U (U Turn)		
Time Period	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
7:00 to 8:00	42	1	**43**	455	24	**479**	147	10	**157**	0	0	**0**	83	3	**86**	73	2	**75**	691	42	**733**	0	0	**0**
7:15 to 8:15	53	1	**54**	445	22	**467**	156	9	**165**	0	0	**0**	99	5	**104**	88	3	**91**	677	41	**718**	0	0	**0**
7:30 to 8:30	73	0	**73**	429	19	**448**	162	8	**170**	0	0	**0**	90	5	**95**	98	3	**101**	618	50	**668**	0	0	**0**
7:45 to 8:45	63	0	**63**	389	16	**405**	179	10	**189**	0	0	**0**	96	6	**102**	102	3	**105**	567	49	**616**	0	0	**0**
8:00 to 9:00	69	0	**69**	360	21	**381**	168	10	**178**	0	0	**0**	83	6	**89**	114	4	**118**	523	37	**560**	0	0	**0**
AM Totals	**111**	**1**	**112**	**815**	**45**	**860**	**315**	**20**	**335**	**0**	**0**	**0**	**166**	**9**	**175**	**187**	**6**	**193**	**1,214**	**79**	**1,293**	**0**	**0**	**0**
16:00 to 17:00	36	0	**36**	236	8	**244**	163	3	**166**	0	0	**0**	121	4	**125**	80	2	**82**	422	41	**463**	0	0	**0**
16:15 to 17:15	34	1	**35**	264	2	**266**	162	1	**163**	0	0	**0**	124	4	**128**	89	3	**92**	345	39	**384**	0	0	**0**
16:30 to 17:30	37	1	**38**	271	2	**273**	190	1	**191**	0	0	**0**	123	5	**128**	80	2	**82**	308	32	**340**	0	0	**0**
16:45 to 17:45	44	1	**45**	273	2	**275**	170	2	**172**	0	0	**0**	132	3	**135**	83	1	**84**	295	30	**325**	0	0	**0**
17:00 to 18:00	46	1	**47**	290	3	**293**	188	2	**190**	0	0	**0**	124	2	**126**	94	2	**96**	260	29	**289**	0	0	**0**
PM Totals	**82**	**1**	**83**	**526**	**11**	**537**	**351**	**5**	**356**	**0**	**0**	**0**	**245**	**6**	**251**	**174**	**4**	**178**	**682**	**70**	**752**	**0**	**0**	**0**

Approach	Bondi Rd												Waverley St											
Direction	Direction 7 (Left Turn)			Direction 8 (Through)			Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)			Direction 11 (Through)			Direction 12 (Right Turn)			Direction 12U (U Turn)		
Time Period	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
7:00 to 8:00	298	42	**340**	298	13	**311**	0	0	**0**	0	0	**0**	28	9	**37**	52	4	**56**	14	2	**16**	0	0	**0**
7:15 to 8:15	283	37	**320**	293	13	**306**	0	0	**0**	0	0	**0**	26	8	**34**	48	4	**52**	19	1	**20**	0	0	**0**
7:30 to 8:30	301	34	**335**	294	16	**310**	0	0	**0**	0	0	**0**	23	6	**29**	63	6	**69**	23	0	**23**	0	0	**0**
7:45 to 8:45	327	24	**351**	274	16	**290**	0	0	**0**	0	0	**0**	18	3	**21**	71	7	**78**	31	0	**31**	0	0	**0**
8:00 to 9:00	316	28	**344**	258	20	**278**	0	0	**0**	0	0	**0**	20	2	**22**	82	5	**87**	44	0	**44**	0	0	**0**
AM Totals	**614**	**70**	**684**	**556**	**33**	**589**	**0**	**0**	**0**	**0**	**0**	**0**	**48**	**11**	**59**	**134**	**9**	**143**	**58**	**2**	**60**	**0**	**0**	**0**
16:00 to 17:00	574	26	**600**	455	8	**463**	0	0	**0**	0	0	**0**	35	0	**35**	200	0	**200**	106	6	**112**	0	0	**0**
16:15 to 17:15	586	31	**617**	451	12	**463**	0	0	**0**	0	0	**0**	32	1	**33**	171	0	**171**	101	5	**106**	0	0	**0**
16:30 to 17:30	609	29	**638**	476	11	**487**	0	0	**0**	0	0	**0**	33	1	**34**	184	0	**184**	103	5	**108**	0	0	**0**
16:45 to 17:45	615	29	**644**	465	10	**475**	0	0	**0**	0	0	**0**	28	1	**29**	193	0	**193**	95	5	**100**	0	0	**0**
17:00 to 18:00	654	34	**688**	458	9	**467**	0	0	**0**	0	0	**0**	29	1	**30**	221	0	**221**	109	1	**110**	0	0	**0**
PM Totals	**1,228**	**60**	**1,288**	**913**	**17**	**930**	**0**	**0**	**0**	**0**	**0**	**0**	**64**	**1**	**65**	**421**	**0**	**421**	**215**	**7**	**222**	**0**	**0**	**0**

Appendix B

SIDRA Outputs

MOVEMENT SUMMARY

Site: 101 [[exAM] Illawong-Farrellys]

Site 5
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Illawong Avenue												
3a	R1	42	5.0	0.057	7.6	LOS A	0.2	1.3	0.46	0.71	0.46	51.6
Approach		42	5.0	0.057	7.6	LOS A	0.2	1.3	0.46	0.71	0.46	51.6
NorthEast: Illawong Avenue												
24a	L1	11	0.0	0.006	5.3	LOS A	0.0	0.0	0.00	0.59	0.00	53.3
Approach		11	0.0	0.006	5.3	NA	0.0	0.0	0.00	0.59	0.00	53.3
West: Farrellys Avenue												
10a	L1	501	1.9	0.271	5.3	LOS A	0.1	0.5	0.00	0.59	0.00	53.2
12	R2	9	0.0	0.271	5.8	LOS A	0.1	0.5	0.00	0.59	0.00	53.0
Approach		511	1.9	0.271	5.4	NA	0.1	0.5	0.00	0.59	0.00	53.2
All Vehicles		563	2.1	0.271	5.5	NA	0.2	1.3	0.04	0.60	0.04	53.0

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.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [[exPM] Illawong-Farrellys]

Site 5
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Illawong Avenue												
3a	R1	44	4.8	0.060	7.6	LOS A	0.2	1.4	0.46	0.71	0.46	51.6
Approach		44	4.8	0.060	7.6	LOS A	0.2	1.4	0.46	0.71	0.46	51.6
NorthEast: Illawong Avenue												
24a	L1	25	0.0	0.013	5.3	LOS A	0.0	0.0	0.00	0.59	0.00	53.3
Approach		25	0.0	0.013	5.3	NA	0.0	0.0	0.00	0.59	0.00	53.3
West: Farrellys Avenue												
10a	L1	496	0.8	0.267	5.3	LOS A	0.1	0.6	0.01	0.59	0.01	53.2
12	R2	11	0.0	0.267	5.8	LOS A	0.1	0.6	0.01	0.59	0.01	53.0
Approach		506	0.8	0.267	5.3	NA	0.1	0.6	0.01	0.59	0.01	53.2
All Vehicles		576	1.1	0.267	5.5	NA	0.2	1.4	0.04	0.60	0.04	53.1

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.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [[exAM] Denham-Fletcher-Illawong]

Site 3
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
SouthEast: Fletcher Street												
21	L2	6	0.0	0.103	5.6	LOS A	0.0	0.0	0.00	0.02	0.00	58.2
22	T1	192	1.6	0.103	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.8
Approach		198	1.6	0.103	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.8
NorthWest: Denham Street												
28	T1	163	3.2	0.098	0.1	LOS A	0.1	0.9	0.07	0.06	0.07	59.1
29	R2	18	0.0	0.098	6.1	LOS A	0.1	0.9	0.07	0.06	0.07	56.9
Approach		181	2.9	0.098	0.7	NA	0.1	0.9	0.07	0.06	0.07	58.9
SouthWest: Illawong Avenue												
30	L2	248	1.7	0.414	6.7	LOS A	2.3	16.5	0.41	0.68	0.46	52.2
32	R2	209	2.5	0.414	8.0	LOS A	2.3	16.5	0.41	0.68	0.46	51.7
Approach		458	2.1	0.414	7.3	LOS A	2.3	16.5	0.41	0.68	0.46	51.9
All Vehicles		837	2.1	0.414	4.2	NA	2.3	16.5	0.24	0.39	0.27	55.1

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.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [[exPM] Denham-Fletcher-Illawong]

Site 3
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
SouthEast: Fletcher Street												
21	L2	13	0.0	0.078	5.5	LOS A	0.0	0.0	0.00	0.05	0.00	57.9
22	T1	138	1.5	0.078	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	59.5
Approach		151	1.4	0.078	0.5	NA	0.0	0.0	0.00	0.05	0.00	59.4
NorthWest: Denham Street												
28	T1	159	0.7	0.094	0.1	LOS A	0.1	0.9	0.06	0.06	0.06	59.2
29	R2	18	0.0	0.094	5.9	LOS A	0.1	0.9	0.06	0.06	0.06	57.0
Approach		177	0.6	0.094	0.7	NA	0.1	0.9	0.06	0.06	0.06	59.0
SouthWest: Illawong Avenue												
30	L2	217	0.0	0.473	6.6	LOS A	3.0	21.3	0.39	0.67	0.45	52.2
32	R2	312	0.7	0.473	7.9	LOS A	3.0	21.3	0.39	0.67	0.45	51.7
Approach		528	0.4	0.473	7.4	LOS A	3.0	21.3	0.39	0.67	0.45	51.9
All Vehicles		856	0.6	0.473	4.8	NA	3.0	21.3	0.25	0.44	0.29	54.4

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.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [[exAM] Denham-Bondi]

Site 2
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 92 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Denham Street												
1	L2	213	3.0	0.137	4.4	LOS A	0.0	0.0	0.00	0.47	0.00	47.8
2	T1	86	0.0	0.420	33.0	LOS C	5.6	40.3	0.88	0.71	0.88	33.9
3	R2	91	4.7	0.420	38.9	LOS C	5.6	40.3	0.91	0.77	0.91	32.9
Approach		389	2.7	0.420	18.8	LOS B	5.6	40.3	0.40	0.59	0.40	40.0
East: Bondi Road												
4	L2	1	0.0	0.358	12.3	LOS A	8.9	64.6	0.49	0.43	0.49	44.8
5	T1	849	5.0	0.358	7.7	LOS A	8.9	64.6	0.49	0.44	0.49	45.2
6	R2	14	0.0	0.358	12.3	LOS A	8.5	62.1	0.49	0.44	0.49	44.8
Approach		864	4.9	0.358	7.8	LOS A	8.9	64.6	0.49	0.44	0.49	45.2
North: Denham Street												
7	L2	8	25.0	0.071	35.8	LOS C	1.0	7.6	0.83	0.63	0.83	34.3
8	T1	19	5.6	0.071	31.0	LOS C	1.0	7.6	0.83	0.63	0.83	34.7
9	R2	104	0.0	0.355	40.1	LOS C	4.2	29.2	0.91	0.77	0.91	32.1
Approach		132	2.4	0.355	38.5	LOS C	4.2	29.2	0.89	0.74	0.89	32.6
West: Bondi Road												
10	L2	36	11.8	0.086	10.9	LOS A	1.6	12.5	0.39	0.43	0.39	44.6
11	T1	326	13.5	0.431	8.7	LOS A	6.8	53.2	0.50	0.48	0.50	44.3
12	R2	44	16.7	0.431	14.0	LOS A	6.8	53.2	0.53	0.50	0.53	43.6
Approach		406	13.7	0.431	9.5	LOS A	6.8	53.2	0.49	0.48	0.49	44.2
All Vehicles		1792	6.2	0.431	12.8	LOS A	8.9	64.6	0.50	0.50	0.50	42.6

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
P1	South Full Crossing	53	40.3	LOS E	0.1	0.1	0.94	0.94
P2	East Full Crossing	53	21.8	LOS C	0.1	0.1	0.87	0.87
P3	North Full Crossing	53	40.3	LOS E	0.1	0.1	0.94	0.94
P4	West Full Crossing	53	21.8	LOS C	0.1	0.1	0.87	0.87
All Pedestrians		211	31.0	LOS D			0.90	0.90

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 [[exPM] Denham-Bondi]

Site 2
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 88 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Denham Street												
1	L2	149	2.8	0.096	4.4	LOS A	0.0	0.0	0.00	0.47	0.00	47.8
2	T1	108	0.0	0.432	31.1	LOS C	5.9	41.2	0.87	0.71	0.87	34.5
3	R2	85	0.0	0.432	36.8	LOS C	5.9	41.2	0.90	0.77	0.90	33.7
Approach		343	1.2	0.432	20.9	LOS B	5.9	41.2	0.50	0.62	0.50	39.1
East: Bondi Road												
4	L2	1	0.0	0.428	12.0	LOS A	5.8	42.7	0.47	0.40	0.47	45.0
5	T1	594	5.5	0.428	7.6	LOS A	5.8	42.7	0.47	0.41	0.47	45.2
6	R2	12	0.0	0.428	12.4	LOS A	5.5	40.5	0.48	0.42	0.48	44.6
Approach		606	5.4	0.428	7.7	LOS A	5.8	42.7	0.47	0.41	0.47	45.2
North: Denham Street												
7	L2	6	0.0	0.046	33.2	LOS C	0.7	4.7	0.81	0.61	0.81	35.2
8	T1	26	0.0	0.230	30.0	LOS C	2.6	18.0	0.84	0.67	0.84	34.6
9	R2	58	0.0	0.230	36.1	LOS C	2.6	18.0	0.86	0.74	0.86	33.5
Approach		91	0.0	0.230	34.1	LOS C	2.6	18.0	0.85	0.71	0.85	33.9
West: Bondi Road												
10	L2	73	0.0	0.389	12.8	LOS A	9.6	69.2	0.52	0.50	0.52	44.2
11	T1	538	4.7	0.389	8.8	LOS A	9.6	69.2	0.53	0.53	0.53	44.1
12	R2	123	2.6	0.389	14.9	LOS B	6.1	44.3	0.57	0.60	0.57	42.5
Approach		734	3.9	0.389	10.2	LOS A	9.6	69.2	0.54	0.54	0.54	43.8
All Vehicles		1774	3.7	0.432	12.7	LOS A	9.6	69.2	0.52	0.52	0.52	42.6

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
P1	South Full Crossing	53	38.3	LOS D	0.1	0.1	0.93	0.93
P2	East Full Crossing	53	20.1	LOS C	0.1	0.1	0.87	0.87
P3	North Full Crossing	53	38.3	LOS D	0.1	0.1	0.93	0.93
P4	West Full Crossing	53	20.1	LOS C	0.1	0.1	0.87	0.87
All Pedestrians		211	29.2	LOS C			0.90	0.90

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 [[exAM] Castlefield-Bondi-Boonara]

Site 1
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Boonara Avenue												
1	L2	52	6.1	0.283	9.9	LOS A	1.1	7.8	0.75	0.91	0.86	38.7
2	T1	3	0.0	0.283	36.4	LOS C	1.1	7.8	0.75	0.91	0.86	39.0
3	R2	18	0.0	0.283	48.6	LOS D	1.1	7.8	0.75	0.91	0.86	38.6
Approach		73	4.3	0.283	20.6	LOS B	1.1	7.8	0.75	0.91	0.86	38.7
East: Bondi Road												
4	L2	9	0.0	0.314	4.6	LOS A	0.0	0.0	0.00	0.01	0.00	49.4
5	T1	1164	4.7	0.314	0.1	LOS A	0.1	0.7	0.01	0.01	0.01	49.9
6	R2	6	0.0	0.314	8.1	LOS A	0.1	0.7	0.02	0.01	0.02	49.2
Approach		1180	4.6	0.314	0.1	NA	0.1	0.7	0.01	0.01	0.01	49.9
North: Castlefield Street												
7	L2	19	5.6	0.283	10.7	LOS A	1.0	6.9	0.85	0.96	0.97	34.1
8	T1	1	0.0	0.283	37.0	LOS C	1.0	6.9	0.85	0.96	0.97	34.3
9	R2	22	0.0	0.283	52.5	LOS D	1.0	6.9	0.85	0.96	0.97	34.0
Approach		42	2.5	0.283	33.3	LOS C	1.0	6.9	0.85	0.96	0.97	34.1
West: Bondi Road												
10	L2	16	6.7	0.009	4.6	LOS A	0.0	0.0	0.00	0.53	0.00	46.5
11	T1	439	11.5	0.260	0.7	LOS A	0.4	3.0	0.06	0.01	0.07	49.3
12	R2	6	16.7	0.260	18.5	LOS B	0.4	3.0	0.06	0.01	0.07	48.4
Approach		461	11.4	0.260	1.1	NA	0.4	3.0	0.06	0.03	0.07	49.2
All Vehicles		1756	6.4	0.314	2.0	NA	1.1	7.8	0.07	0.07	0.08	48.6

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.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [[exPM] Castlefield-Bondi-Boonara]

Site 1
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Boonara Avenue												
1	L2	35	3.0	0.390	15.8	LOS B	1.5	10.8	0.88	1.02	1.12	34.4
2	T1	8	0.0	0.390	38.9	LOS C	1.5	10.8	0.88	1.02	1.12	34.6
3	R2	25	4.2	0.390	53.0	LOS D	1.5	10.8	0.88	1.02	1.12	34.3
Approach		68	3.1	0.390	32.4	LOS C	1.5	10.8	0.88	1.02	1.12	34.4
East: Bondi Road												
4	L2	23	0.0	0.012	4.6	LOS A	0.0	0.0	0.00	0.53	0.00	46.6
5	T1	766	4.8	0.900	1.1	LOS A	1.2	9.0	0.07	0.01	0.23	49.1
6	R2	18	0.0	0.900	12.3	LOS A	1.2	9.0	0.07	0.01	0.23	48.4
Approach		807	4.6	0.900	1.5	NA	1.2	9.0	0.06	0.03	0.23	49.0
North: Castlefield Street												
7	L2	15	0.0	0.201	6.6	LOS A	0.6	4.7	0.80	0.83	0.82	35.0
8	T1	1	0.0	0.201	32.1	LOS C	0.6	4.7	0.80	0.83	0.82	35.2
9	R2	13	16.7	0.201	58.7	LOS E	0.6	4.7	0.80	0.83	0.82	34.7
Approach		28	7.4	0.201	30.7	LOS C	0.6	4.7	0.80	0.83	0.82	34.9
West: Bondi Road												
10	L2	19	0.0	0.191	4.6	LOS A	0.0	0.0	0.00	0.03	0.00	49.3
11	T1	663	3.8	0.191	0.3	LOS A	0.3	2.5	0.05	0.03	0.05	49.6
12	R2	14	0.0	0.191	10.8	LOS A	0.3	2.5	0.10	0.02	0.10	48.6
Approach		696	3.6	0.191	0.6	NA	0.3	2.5	0.05	0.03	0.05	49.5
All Vehicles		1600	4.1	0.900	3.0	NA	1.5	10.8	0.10	0.08	0.20	48.0

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.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [[exAM] Boonara-Farrellys]

Site 4
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
North: Boonara Avenue												
7	L2	6	0.0	0.006	7.0	LOS A	0.0	0.1	0.42	0.58	0.42	52.3
Approach		6	0.0	0.006	7.0	LOS A	0.0	0.1	0.42	0.58	0.42	52.3
West: Farrellys Avenue												
10	L2	57	7.4	0.251	5.7	LOS A	0.0	0.0	0.00	0.07	0.00	57.4
11	T1	420	2.5	0.251	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	59.3
Approach		477	3.1	0.251	0.7	NA	0.0	0.0	0.00	0.07	0.00	59.1
All Vehicles		483	3.1	0.251	0.8	NA	0.0	0.1	0.01	0.08	0.01	59.0

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.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [[exPM] Boonara-Farrellys]

Site 4
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
North: Boonara Avenue												
7	L2	17	0.0	0.017	7.3	LOS A	0.1	0.4	0.46	0.63	0.46	52.2
Approach		17	0.0	0.017	7.3	LOS A	0.1	0.4	0.46	0.63	0.46	52.2
West: Farrellys Avenue												
10	L2	69	1.5	0.290	5.6	LOS A	0.0	0.0	0.00	0.07	0.00	57.6
11	T1	491	0.6	0.290	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	59.3
Approach		560	0.8	0.290	0.7	NA	0.0	0.0	0.00	0.07	0.00	59.1
All Vehicles		577	0.7	0.290	0.9	NA	0.1	0.4	0.01	0.09	0.01	58.8

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.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [[exAM] Bondi-Council-Waverley]

Site 6
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 127 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Council Street												
1	L2	45	2.3	0.029	5.6	LOS A	0.0	0.0	0.00	0.53	0.00	54.9
1a	L1	504	5.0	0.390	35.6	LOS C	12.1	88.0	0.78	0.77	0.78	37.4
3	R2	165	6.4	0.251	35.2	LOS C	7.0	52.0	0.74	0.76	0.74	35.7
Approach		715	5.2	0.390	33.6	LOS C	12.1	88.0	0.72	0.75	0.72	37.8
East: Bondi Road												
4	L2	91	3.5	0.059	4.4	LOS A	0.0	0.0	0.00	0.47	0.00	47.8
5	T1	79	2.7	0.655	31.3	LOS C	17.6	128.6	0.81	0.77	0.81	34.2
6a	R1	772	5.7	0.655	36.1	LOS C	23.8	175.0	0.85	0.81	0.85	35.1
Approach		941	5.3	0.655	32.6	LOS C	23.8	175.0	0.77	0.77	0.77	36.0
NorthWest: Bondi Road												
27a	L1	358	12.4	0.226	4.7	LOS A	0.3	2.2	0.03	0.55	0.03	50.4
29a	R1	327	4.2	0.639	31.4	LOS C	14.1	102.2	0.74	0.76	0.74	39.3
Approach		685	8.4	0.639	17.5	LOS B	14.1	102.2	0.37	0.65	0.37	44.4
West: Waverley Street												
10b	L3	39	24.3	0.629	68.6	LOS E	6.2	48.3	1.00	0.81	1.05	27.3
11	T1	59	7.1	0.629	63.0	LOS E	6.2	48.3	1.00	0.81	1.05	26.6
12	R2	17	12.5	0.105	62.8	LOS E	1.0	7.6	0.94	0.70	0.94	27.8
Approach		115	13.8	0.629	64.8	LOS E	6.2	48.3	0.99	0.80	1.03	27.0
All Vehicles		2456	6.5	0.655	30.2	LOS C	23.8	175.0	0.65	0.73	0.65	37.9

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
P1	South Full Crossing	53	57.8	LOS E	0.2	0.2	0.95	0.95
P2	East Full Crossing	53	57.8	LOS E	0.2	0.2	0.95	0.95
P7B	NorthWest Slip/Bypass Lane Crossing	53	57.8	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	53	57.8	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		211	57.8	LOS E			0.95	0.95

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 [[exPM] Bondi-Council-Waverley]

Site 6
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 124 seconds (Site User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Council Street												
1	L2	49	2.1	0.032	5.6	LOS A	0.0	0.0	0.00	0.53	0.00	54.9
1a	L1	308	1.0	0.222	32.1	LOS C	6.5	45.8	0.72	0.73	0.72	38.9
3	R2	200	1.1	0.286	34.2	LOS C	8.3	58.9	0.74	0.77	0.74	36.1
Approach		558	1.1	0.286	30.5	LOS C	8.3	58.9	0.66	0.73	0.66	38.8
East: Bondi Road												
4	L2	133	1.6	0.084	4.4	LOS A	0.0	0.0	0.00	0.47	0.00	47.8
5	T1	101	2.1	0.424	31.4	LOS C	6.4	46.6	0.76	0.65	0.76	34.7
6a	R1	304	10.0	0.424	36.9	LOS C	11.9	90.8	0.81	0.76	0.81	34.8
Approach		538	6.5	0.424	27.9	LOS B	11.9	90.8	0.60	0.66	0.60	37.3
NorthWest: Bondi Road												
27a	L1	724	4.9	0.435	5.1	LOS A	3.6	25.9	0.17	0.60	0.17	50.1
29a	R1	492	1.9	1.114	180.2	LOS F	58.1	413.1	1.00	1.46	2.09	14.8
Approach		1216	3.7	1.114	75.9	LOS F	58.1	413.1	0.51	0.95	0.95	25.5
West: Waverley Street												
10b	L3	32	3.3	1.084	161.2	LOS F	28.4	199.6	1.00	1.52	2.05	16.0
11	T1	233	0.0	1.084	155.8	LOS F	28.4	199.6	1.00	1.52	2.05	15.7
12	R2	116	0.9	0.458	58.9	LOS E	6.6	46.6	0.97	0.79	0.97	28.8
Approach		380	0.6	1.084	126.7	LOS F	28.4	199.6	0.99	1.30	1.72	18.2
All Vehicles		2692	3.3	1.114	64.0	LOS E	58.1	413.1	0.63	0.89	0.93	27.7

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
P1	South Full Crossing	53	56.3	LOS E	0.2	0.2	0.95	0.95
P2	East Full Crossing	53	56.3	LOS E	0.2	0.2	0.95	0.95
P7B	NorthWest Slip/Bypass Lane Crossing	53	56.3	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	53	56.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		211	56.3	LOS E			0.95	0.95

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 [[ex+dAM] Illawong-Farrellys]

Site 5
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Illawong Avenue												
3a	R1	57	3.7	0.077	7.6	LOS A	0.2	1.7	0.46	0.72	0.46	51.6
Approach		57	3.7	0.077	7.6	LOS A	0.2	1.7	0.46	0.72	0.46	51.6
NorthEast: Illawong Avenue												
24a	L1	13	0.0	0.007	5.3	LOS A	0.0	0.0	0.00	0.59	0.00	53.3
Approach		13	0.0	0.007	5.3	NA	0.0	0.0	0.00	0.59	0.00	53.3
West: Farrellys Avenue												
10a	L1	496	1.9	0.269	5.3	LOS A	0.1	0.6	0.00	0.59	0.00	53.2
12	R2	12	0.0	0.269	5.8	LOS A	0.1	0.6	0.00	0.59	0.00	53.0
Approach		507	1.9	0.269	5.4	NA	0.1	0.6	0.00	0.59	0.00	53.1
All Vehicles		577	2.0	0.269	5.6	NA	0.2	1.7	0.05	0.60	0.05	53.0

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.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [[ex+dPM] Illawong-Farrellys]

Site 5
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Illawong Avenue												
3a	R1	45	4.7	0.055	7.0	LOS A	0.2	1.3	0.42	0.67	0.42	52.0
Approach		45	4.7	0.055	7.0	LOS A	0.2	1.3	0.42	0.67	0.42	52.0
NorthEast: Illawong Avenue												
24a	L1	34	0.0	0.018	5.3	LOS A	0.0	0.0	0.00	0.59	0.00	53.3
Approach		34	0.0	0.018	5.3	NA	0.0	0.0	0.00	0.59	0.00	53.3
West: Farrellys Avenue												
10a	L1	406	1.0	0.221	5.3	LOS A	0.1	0.6	0.01	0.59	0.01	53.2
12	R2	13	0.0	0.221	5.8	LOS A	0.1	0.6	0.01	0.59	0.01	53.0
Approach		419	1.0	0.221	5.4	NA	0.1	0.6	0.01	0.59	0.01	53.2
All Vehicles		498	1.3	0.221	5.5	NA	0.2	1.3	0.05	0.60	0.05	53.1

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.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [[ex+dAM] Denham-Fletcher-Illawong]

Site 3
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
SouthEast: Fletcher Street												
21	L2	7	0.0	0.103	5.6	LOS A	0.0	0.0	0.00	0.02	0.00	58.2
22	T1	192	1.6	0.103	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.8
Approach		199	1.6	0.103	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.7
NorthWest: Denham Street												
28	T1	159	3.3	0.096	0.1	LOS A	0.1	1.0	0.08	0.07	0.08	59.1
29	R2	19	0.0	0.096	6.1	LOS A	0.1	1.0	0.08	0.07	0.08	56.9
Approach		178	3.0	0.096	0.7	NA	0.1	1.0	0.08	0.07	0.08	58.8
SouthWest: Illawong Avenue												
30	L2	263	1.6	0.424	6.8	LOS A	2.4	17.4	0.41	0.68	0.46	52.2
32	R2	209	2.5	0.424	8.1	LOS A	2.4	17.4	0.41	0.68	0.46	51.6
Approach		473	2.0	0.424	7.3	LOS A	2.4	17.4	0.41	0.68	0.46	51.9
All Vehicles		849	2.1	0.424	4.3	NA	2.4	17.4	0.25	0.40	0.27	55.0

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.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [[ex+dPM] Denham-Fletcher-Illawong]

Site 3
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
SouthEast: Fletcher Street												
21	L2	17	0.0	0.080	5.5	LOS A	0.0	0.0	0.00	0.07	0.00	57.8
22	T1	138	1.5	0.080	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	59.4
Approach		155	1.4	0.080	0.6	NA	0.0	0.0	0.00	0.07	0.00	59.2
NorthWest: Denham Street												
28	T1	61	1.7	0.040	0.1	LOS A	0.1	0.6	0.10	0.10	0.10	58.7
29	R2	13	0.0	0.040	5.9	LOS A	0.1	0.6	0.10	0.10	0.10	56.5
Approach		74	1.4	0.040	1.1	NA	0.1	0.6	0.10	0.10	0.10	58.3
SouthWest: Illawong Avenue												
30	L2	220	0.0	0.446	6.3	LOS A	2.4	17.1	0.36	0.62	0.37	52.6
32	R2	312	0.7	0.446	6.9	LOS A	2.4	17.1	0.36	0.62	0.37	52.1
Approach		532	0.4	0.446	6.6	LOS A	2.4	17.1	0.36	0.62	0.37	52.3
All Vehicles		760	0.7	0.446	4.9	NA	2.4	17.1	0.26	0.46	0.27	54.1

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.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [[ex+dAM] Denham-Bondi]

Site 2
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 92 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Denham Street												
1	L2	224	2.8	0.145	4.4	LOS A	0.0	0.0	0.00	0.47	0.00	47.8
2	T1	86	0.0	0.427	33.0	LOS C	5.6	40.3	0.88	0.71	0.88	33.9
3	R2	91	4.7	0.427	39.0	LOS C	5.6	40.3	0.91	0.77	0.91	32.9
Approach		401	2.6	0.427	18.4	LOS B	5.6	40.3	0.39	0.59	0.39	40.2
East: Bondi Road												
4	L2	1	0.0	0.358	12.3	LOS A	8.9	64.6	0.49	0.43	0.49	44.8
5	T1	849	5.0	0.358	7.7	LOS A	8.9	64.6	0.49	0.44	0.49	45.2
6	R2	14	0.0	0.358	12.3	LOS A	8.5	62.1	0.49	0.44	0.49	44.8
Approach		864	4.9	0.358	7.8	LOS A	8.9	64.6	0.49	0.44	0.49	45.2
North: Denham Street												
7	L2	6	33.3	0.047	35.6	LOS C	0.6	5.0	0.82	0.62	0.82	34.3
8	T1	26	4.0	0.237	32.4	LOS C	2.8	19.7	0.85	0.69	0.85	33.8
9	R2	58	0.0	0.237	38.2	LOS C	2.8	19.7	0.87	0.74	0.87	32.9
Approach		91	3.5	0.237	36.4	LOS C	2.8	19.7	0.86	0.71	0.86	33.2
West: Bondi Road												
10	L2	36	11.8	0.087	10.9	LOS A	1.6	12.6	0.39	0.43	0.39	44.6
11	T1	326	13.5	0.433	8.7	LOS A	6.8	53.4	0.50	0.49	0.50	44.2
12	R2	45	16.3	0.433	14.0	LOS A	6.8	53.4	0.53	0.50	0.53	43.6
Approach		407	13.7	0.433	9.5	LOS A	6.8	53.4	0.49	0.48	0.49	44.2
All Vehicles		1763	6.3	0.433	12.1	LOS A	8.9	64.6	0.49	0.49	0.49	43.0

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
P1	South Full Crossing	53	40.3	LOS E	0.1	0.1	0.94	0.94
P2	East Full Crossing	53	21.8	LOS C	0.1	0.1	0.87	0.87
P3	North Full Crossing	53	40.3	LOS E	0.1	0.1	0.94	0.94
P4	West Full Crossing	53	21.8	LOS C	0.1	0.1	0.87	0.87
All Pedestrians		211	31.0	LOS D			0.90	0.90

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 [[ex+dPM] Denham-Bondi]

Site 2
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 88 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Denham Street												
1	L2	153	2.8	0.098	4.4	LOS A	0.0	0.0	0.00	0.47	0.00	47.8
2	T1	108	0.0	0.429	31.1	LOS C	5.9	41.2	0.87	0.71	0.87	34.6
3	R2	85	0.0	0.429	36.8	LOS C	5.9	41.2	0.90	0.77	0.90	33.7
Approach		346	1.2	0.429	20.7	LOS B	5.9	41.2	0.50	0.62	0.50	39.1
East: Bondi Road												
4	L2	1	0.0	0.428	12.0	LOS A	5.8	42.7	0.47	0.40	0.47	45.0
5	T1	594	5.5	0.428	7.6	LOS A	5.8	42.7	0.47	0.41	0.47	45.2
6	R2	12	0.0	0.428	12.4	LOS A	5.5	40.5	0.48	0.42	0.48	44.6
Approach		606	5.4	0.428	7.7	LOS A	5.8	42.7	0.47	0.41	0.47	45.2
North: Denham Street												
7	L2	6	0.0	0.058	33.3	LOS C	0.9	6.0	0.81	0.62	0.81	35.3
8	T1	19	0.0	0.058	28.7	LOS C	0.9	6.0	0.81	0.62	0.81	35.5
9	R2	106	0.0	0.362	38.1	LOS C	4.1	28.4	0.90	0.77	0.90	32.7
Approach		132	0.0	0.362	36.5	LOS C	4.1	28.4	0.89	0.74	0.89	33.2
West: Bondi Road												
10	L2	73	0.0	0.393	12.8	LOS A	9.7	70.3	0.52	0.50	0.52	44.2
11	T1	538	4.7	0.393	8.8	LOS A	9.7	70.3	0.53	0.53	0.53	44.0
12	R2	127	2.5	0.393	15.0	LOS B	6.1	44.3	0.57	0.61	0.57	42.4
Approach		738	3.9	0.393	10.3	LOS A	9.7	70.3	0.54	0.54	0.54	43.8
All Vehicles		1822	3.6	0.429	13.3	LOS A	9.7	70.3	0.53	0.53	0.53	42.3

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
P1	South Full Crossing	53	38.3	LOS D	0.1	0.1	0.93	0.93
P2	East Full Crossing	53	20.1	LOS C	0.1	0.1	0.87	0.87
P3	North Full Crossing	53	38.3	LOS D	0.1	0.1	0.93	0.93
P4	West Full Crossing	53	20.1	LOS C	0.1	0.1	0.87	0.87
All Pedestrians		211	29.2	LOS C			0.90	0.90

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 [[ex+dPM] Castlefield-Bondi-Boonara]

Site 1
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Boonara Avenue												
1	L2	36	2.9	0.397	16.1	LOS B	1.5	11.1	0.88	1.02	1.13	34.3
2	T1	8	0.0	0.397	39.5	LOS C	1.5	11.1	0.88	1.02	1.13	34.5
3	R2	25	4.2	0.397	54.0	LOS D	1.5	11.1	0.88	1.02	1.13	34.2
Approach		69	3.0	0.397	32.7	LOS C	1.5	11.1	0.88	1.02	1.13	34.3
East: Bondi Road												
4	L2	23	0.0	0.012	4.6	LOS A	0.0	0.0	0.00	0.53	0.00	46.6
5	T1	769	4.8	0.907	1.2	LOS A	1.3	9.5	0.07	0.02	0.25	49.0
6	R2	18	0.0	0.907	12.4	LOS A	1.3	9.5	0.07	0.02	0.25	48.3
Approach		811	4.5	0.907	1.6	NA	1.3	9.5	0.06	0.03	0.24	48.9
North: Castlefield Street												
7	L2	15	0.0	0.204	6.8	LOS A	0.6	4.8	0.81	0.84	0.83	34.8
8	T1	1	0.0	0.204	32.7	LOS C	0.6	4.8	0.81	0.84	0.83	35.0
9	R2	13	16.7	0.204	59.9	LOS E	0.6	4.8	0.81	0.84	0.83	34.5
Approach		28	7.4	0.204	31.4	LOS C	0.6	4.8	0.81	0.84	0.83	34.7
West: Bondi Road												
10	L2	18	0.0	0.192	4.6	LOS A	0.0	0.0	0.00	0.03	0.00	49.3
11	T1	667	3.8	0.192	0.3	LOS A	0.3	2.5	0.05	0.03	0.05	49.6
12	R2	14	0.0	0.192	10.8	LOS A	0.3	2.5	0.10	0.02	0.10	48.6
Approach		699	3.6	0.192	0.6	NA	0.3	2.5	0.05	0.03	0.05	49.5
All Vehicles		1607	4.1	0.907	3.0	NA	1.5	11.1	0.10	0.09	0.21	47.9

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.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [[ex+dAM] Boonara-Farrellys]

Site 4
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
North: Boonara Avenue												
7	L2	6	0.0	0.006	7.0	LOS A	0.0	0.2	0.42	0.58	0.42	52.3
Approach		6	0.0	0.006	7.0	LOS A	0.0	0.2	0.42	0.58	0.42	52.3
West: Farrellys Avenue												
10	L2	57	7.4	0.252	5.7	LOS A	0.0	0.0	0.00	0.07	0.00	57.4
11	T1	421	2.5	0.252	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	59.3
Approach		478	3.1	0.252	0.7	NA	0.0	0.0	0.00	0.07	0.00	59.1
All Vehicles		484	3.0	0.252	0.8	NA	0.0	0.2	0.01	0.08	0.01	59.0

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.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [[ex+dPM] Boonara-Farrellys]

Site 4
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
North: Boonara Avenue												
7	L2	17	0.0	0.017	7.4	LOS A	0.1	0.4	0.46	0.63	0.46	52.2
Approach		17	0.0	0.017	7.4	LOS A	0.1	0.4	0.46	0.63	0.46	52.2
West: Farrellys Avenue												
10	L2	69	1.5	0.292	5.6	LOS A	0.0	0.0	0.00	0.07	0.00	57.6
11	T1	494	0.6	0.292	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	59.3
Approach		563	0.7	0.292	0.7	NA	0.0	0.0	0.00	0.07	0.00	59.1
All Vehicles		580	0.7	0.292	0.9	NA	0.1	0.4	0.01	0.09	0.01	58.8

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.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [[ex+dAM] Bondi-Council-Waverley]

Site 6
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 127 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Council Street												
1	L2	45	2.3	0.029	5.6	LOS A	0.0	0.0	0.00	0.53	0.00	54.9
1a	L1	504	5.0	0.399	36.4	LOS C	12.2	89.3	0.79	0.77	0.79	37.1
3	R2	165	6.4	0.257	36.0	LOS C	7.1	52.7	0.75	0.76	0.75	35.4
Approach		715	5.2	0.399	34.4	LOS C	12.2	89.3	0.73	0.76	0.73	37.5
East: Bondi Road												
4	L2	91	3.5	0.059	4.4	LOS A	0.0	0.0	0.00	0.47	0.00	47.8
5	T1	79	2.7	0.652	30.6	LOS C	17.8	129.9	0.81	0.77	0.81	34.4
6a	R1	786	5.6	0.652	35.4	LOS C	24.0	176.1	0.85	0.80	0.85	35.4
Approach		956	5.2	0.652	32.1	LOS C	24.0	176.1	0.76	0.77	0.76	36.2
NorthWest: Bondi Road												
27a	L1	359	12.3	0.227	5.0	LOS A	1.3	10.3	0.13	0.58	0.13	50.2
29a	R1	328	4.2	0.660	49.0	LOS D	18.2	131.7	0.95	0.84	0.95	33.0
Approach		687	8.4	0.660	26.1	LOS B	18.2	131.7	0.52	0.70	0.52	40.2
West: Waverley Street												
10b	L3	39	24.3	0.629	68.6	LOS E	6.2	48.3	1.00	0.81	1.05	27.3
11	T1	59	7.1	0.629	63.0	LOS E	6.2	48.3	1.00	0.81	1.05	26.6
12	R2	17	12.5	0.105	62.8	LOS E	1.0	7.6	0.94	0.70	0.94	27.8
Approach		115	13.8	0.629	64.8	LOS E	6.2	48.3	0.99	0.80	1.03	27.0
All Vehicles		2473	6.5	0.660	32.6	LOS C	24.0	176.1	0.70	0.75	0.70	37.0

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
P1	South Full Crossing	53	57.8	LOS E	0.2	0.2	0.95	0.95
P2	East Full Crossing	53	57.8	LOS E	0.2	0.2	0.95	0.95
P7B	NorthWest Slip/Bypass Lane Crossing	53	57.8	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	53	57.8	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		211	57.8	LOS E			0.95	0.95

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 [[ex+dPM] Bondi-Council-Waverley]

Site 6
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 124 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Council Street												
1	L2	49	2.1	0.032	5.6	LOS A	0.0	0.0	0.00	0.53	0.00	54.9
1a	L1	308	1.0	0.184	25.9	LOS B	5.6	39.6	0.63	0.71	0.63	41.6
3	R2	200	1.1	0.240	27.7	LOS B	7.3	51.8	0.65	0.75	0.65	38.5
Approach		558	1.1	0.240	24.7	LOS B	7.3	51.8	0.58	0.71	0.58	41.3
East: Bondi Road												
4	L2	133	1.6	0.084	4.4	LOS A	0.0	0.0	0.00	0.47	0.00	47.8
5	T1	101	2.1	0.732	49.8	LOS D	8.0	58.4	0.91	0.82	1.04	29.6
6a	R1	307	9.9	0.732	55.2	LOS D	15.5	117.8	0.98	0.87	1.05	29.7
Approach		541	6.4	0.732	41.7	LOS C	15.5	117.8	0.73	0.76	0.79	32.7
NorthWest: Bondi Road												
27a	L1	728	4.9	0.438	5.1	LOS A	3.5	25.7	0.17	0.60	0.17	50.1
29a	R1	495	1.9	0.739	41.9	LOS C	26.1	185.6	0.94	0.86	0.94	35.4
Approach		1223	3.7	0.739	20.0	LOS B	26.1	185.6	0.48	0.70	0.48	42.9
West: Waverley Street												
10b	L3	32	3.3	0.742	57.2	LOS E	15.4	108.3	0.98	0.88	1.05	30.3
11	T1	233	0.0	0.742	51.8	LOS D	15.4	108.3	0.98	0.88	1.05	29.2
12	R2	116	0.9	0.311	50.3	LOS D	6.0	42.4	0.90	0.77	0.90	30.9
Approach		380	0.6	0.742	51.8	LOS D	15.4	108.3	0.96	0.84	1.00	29.8
All Vehicles		2702	3.3	0.742	29.8	LOS C	26.1	185.6	0.62	0.73	0.64	37.9

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
P1	South Full Crossing	53	56.3	LOS E	0.2	0.2	0.95	0.95
P2	East Full Crossing	53	56.3	LOS E	0.2	0.2	0.95	0.95
P7B	NorthWest Slip/Bypass Lane Crossing	53	56.3	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	53	56.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		211	56.3	LOS E			0.95	0.95

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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