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194-214 Oxford Street & 2 Nelson Street Planning Proposal Traffic Report

A - F i n a l

Client // Stargate Property Group
Office // NSW
Reference // N102340
Date // 21/09/2016

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Planning Proposal Traffic Report

Issue: A-Final 21/09/2016

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Quality Record

Issue	Date	Description	Prepared By	Checked By	Approved By	Signed
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1. Introduction

1.1 Background

Stargate Property Group lodged a Planning Proposal in 2015 with Waverley Council for a proposed mixed use development on land located at 194-214 Oxford Street and 2 Nelson Street, Bondi Junction. As a result of the pre-gateway review, the project has been amended and therefore, an updated version of the 2013 supporting traffic report is needed to ensure consistencies with the revised schemes as well as to demonstrate the traffic and transport infrastructure of Bondi Junction can accommodate the redevelopment of the site.

The future development incorporates 2 towers with a total of 94 residential dwellings with 831sq.m ground floor retail and associated basement parking.

The proposal will incorporate the following:

- basement car parking
- 1 level of ground floor retail
- 10 levels of residential space at both Site A and Site B
- 1 level of plant

GTA Consultants was commissioned by Stargate Property Group in August 2016 to update the 2013 transport impact assessment in accordance with the revised future development. GTA Consultants also reviewed the proposed land dedication on Oxford Street for future road widening as part of the VPA and the creation of a shared pedestrian way in the centre of the site along Osmund Lane.

1.2 Purpose of this Report

This report sets out an assessment of the anticipated transport implications of the future development, including consideration of the following:

i existing traffic and parking conditions surrounding the site
ii opportunities and constraints to development
iii the transport impact of the development proposal on the surrounding road network.

1.3 References

In preparing this report, reference has been made to the following:

- an inspection of the site and its surrounds
- Waverley Council Development Control Plan (DCP) 2012
- traffic and car parking surveys undertaken by GTA Consultants in March 2013 as referenced in the context of this report
- Architectural Design Report, West Oxford Street – Planning Proposal prepared by MHNDU, 19/09/2016
- Waverley Sustainable Transport Action Plan 2007
- other documents and data as referenced in this report.

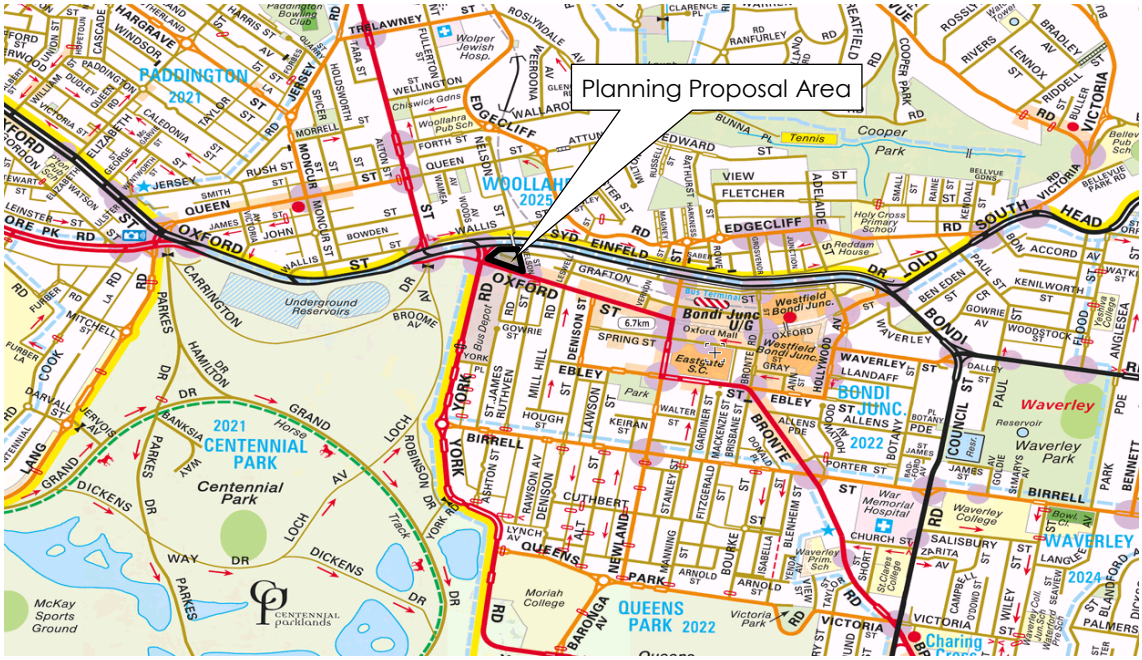
2. Existing Conditions

The subject site is located at 194-214 Oxford Street and 2 Nelson Street, Bondi Junction. The site has a frontage to Oxford Street, York Street, Syd Einfield Drive, Nelson Street and Osmund Lane. The site currently has a land use classification as commercial and residential land uses and is occupied by retail shops, offices, specialist food shopping stores, cafes, restaurants and hotels / pubs with residential dwellings located above ground floor of these retail premises or business premises (shop top housings).

The surrounding properties predominantly include shop top housing developments and adaptations of 2 / 3 storey existing buildings with the Sydney Buses bus depot immediately to the south of the site. The Centennial Park is located directly south-west of the site, as well as residential development existing within the surrounding area to the north and east of the site.

The location of the subject site and its surrounding environs is shown in Figure 2.1.

Figure 2.1: Subject Site and Its Environs



(Reproduced with permission from Sydway)

2.1 Road Network

2.1.1 Adjoining Roads

Syd Einfeld Drive

Syd Einfeld Drive is a key east-west corridor connecting Bondi Junction to Anzac Parade and further to the Sydney CBD. It is a two-way road configured with a 3-lane carriageway in each direction. There is a significant volume of right turning traffic from Syd Einfeld Drive accessing Oxford Street on the western end at the Oxford Street/ York Road intersection. The intersection of Oxford Street/York Road is a busy intersection and does experience vehicle queuing in peak

periods. The Syd Einfeld Drive / Old South Head Road intersection on the eastern end of Oxford Street is also a busy intersection with vehicle queues in peak periods.

Oxford Street

Oxford Street in the vicinity of the site is classified as a council road and is aligned in an east-west direction. It is a two-way road configured with a four-lane12 metre wide carriageway, set within a 20-metre-wide road reserve.

Short-term metered kerbside parking is permitted on Oxford Street adjacent to the eastern end of the planning proposal area. Oxford Street is shown in Figure 2.2 and carries approximately 15,000 vehicles per day[1].

York Road

York Road is classified as a Roads and Maritime Services (RMS) regional road and in the vicinity of the site is aligned in a north-south direction. It is a two-way road configured with a four-lane, including two kerbside parking lanes, 12-metre-wide carriageway, set within an approximately 20-metre-wide road reserve. Unrestricted parking is permitted on York Road adjacent to the planning proposal area. York Road is shown in Figure 2.3 and carries approximately 16,000 vehicles per day[2].

Figure 2.2: Oxford Street

Figure 2.3: York Road

2.1.2 Surrounding Intersections

The following intersections currently exist in the vicinity of the site:

- York Road/ Oxford Street (Signalised)
- Nelson Street/ Oxford Street (Signalised)

2.2 Traffic Volumes

GTA Consultants undertook traffic movement counts on key roads in the vicinity of the site on 14 March 2013 during the following peak periods:

- 7:30am and 9:00am
- 4:30pm and 6:00pm

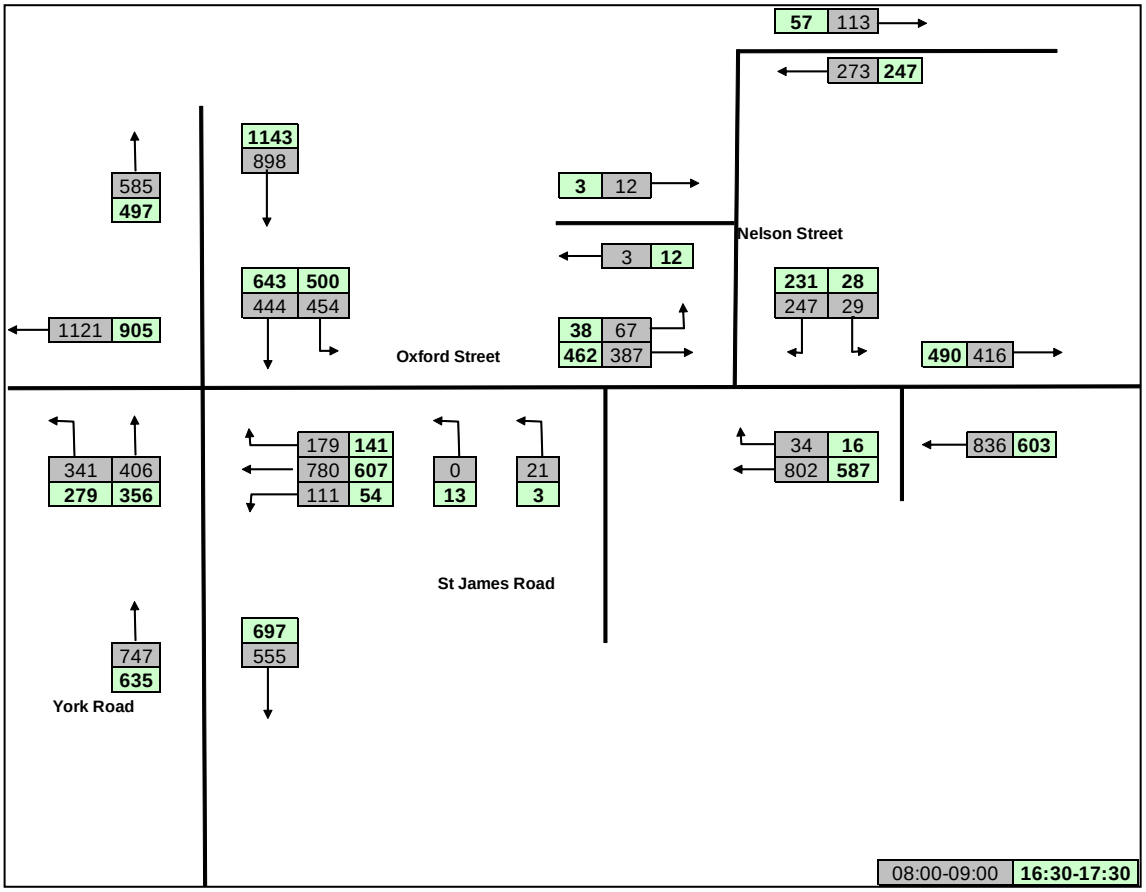
[1] Based on the peak hour traffic counts undertaken by GTA in March 2013 and assuming a peak-to-daily ratio of 8% for arterial roads and 10% for local roads.

[2] Based on the peak hour traffic counts undertaken by GTA in March 2013 and assuming a peak-to-daily ratio of 8% for arterial roads and 10% for local roads.

A review of the RMS AADT traffic data along Syd Einfield Drive, 20m North of Oxford Street was carried out to determine the traffic growth in the area. The data shows a -3% growth in traffic in the area from year 2006 to 2016 and a -0.4% growth from year 2013 to 2016 (eastbound direction only). Therefore, the 2013 traffic data without the background growth is considered appropriate.

The AM and PM peak hour traffic volumes are summarised in Figure 2.4, with full results contained in Appendix A.

Figure 2.4: Existing AM / PM Peak Hour Traffic Volumes



2.3 Intersection Operation

The operation of the key intersections within the study area have been assessed using SIDRA INTERSECTION[3], a computer based modelling package which calculates intersection performance.

The commonly used measure of intersection performance, as defined by the RMS, is vehicle delay. SIDRA INTERSECTION determines the average delay that vehicles encounter and provides a measure of the level of service.

Table 2.1 shows the criteria that SIDRA INTERSECTION adopts in assessing the level of service.

[3] Program used under license from Akcelik & Associates Pty Ltd.

Table 2.1: SIDRA INTERSECTION Level of Service Criteria

Level of Service (LOS)	Average Delay per vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way & Stop Sign
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	Near capacity	Near capacity, 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 70	Extra capacity required	Extreme delay, major treatment required

Table 2.2 presents a summary of the existing operation of the intersection, with full results presented in Appendix B of this report.

Table 2.2: Existing Operating Conditions

Intersection	Peak	Leg	Degree of Saturation (DOS)	Average Delay (sec)	95th Percentile Queue (m)	Level of Service (LOS)
York Road/ Oxford Street	AM	York Road - S	0.72	38	140	C
		Oxford Street - E	0.63	13	131	A
		York Road - N	0.72	14	144	A
	PM	York Road - S	0.38	24	91	B
		Oxford Street - E	0.61	14	104	A
		York Road - N	0.75	8	148	A
Nelson Street/ Oxford Street	AM	Oxford Street - E	0.49	7	44	A
		Nelson Street - N	0.64	24	47	B
		Oxford Street - W	0.43	9	50	A
	PM	Oxford Street - E	0.26	8	54	A
		Nelson Street - N	0.79	55	101	D
		Oxford Street - W	0.35	8	78	A

On the basis of the above assessment, the Oxford Street/ York Road intersection has capacity to accommodate increased traffic generation associated with the Planning Proposal.

2.4 Public Transport

The nearest railway station to the planning proposal area is Bondi Junction Railway Station, approximately 750 metres east of the planning proposal area. Bondi Junction Railway Station is served by the T4 Eastern Suburbs and Illawarra Line with services between Bondi Junction and Waterfall/ Cronulla via Central.

Bus services operated by Sydney Buses provide a link between the Eastern Suburbs and the Sydney CBD, Inner West and Lower North Shore. Bus stops are located on Oxford Street, west of Nelson Street for eastbound services, and east of York Street for westbound services. An overview of the bus network is presented in Figure 2.5.

Figure 2.5: Bus Network

Source: Sydney Buses (August 2016)

A review of the public transport available in the vicinity of the site is summarised in Table 2.3.

Table 2.3: Public Transport Provision

Service	Route #	Route Description	Location of Stop	Distance to Nearest Stop	Frequency On/Off Peak
Bus	333	North Bondi to City Circular Quay	Oxford St near Waverley Bus Depot	20m	9 minutes peak / 30 minutes off peak
Bus	352	Marrickville Metro to Bondi Junction via Oxford St, Crown St & King St			20 minutes peak / 30 minutes off peak
Bus	355	Marrickville Metro to Bondi Junction via Moore Park & Erskineville			30 minutes peak /off peak
Bus	380	Watsons Bay to City Circular Quay via Bondi Junction			10 minutes peak / 24 minutes off peak
Bus	389	North Bondi to Maritime Museum			5 minutes peak / 35 minutes off peak
Bus	440	Bronte to Rozelle			8 minutes peak / 20 minutes off peak
Bus	M40	Bondi Junction to Chatswood			10 minutes peak / 15 minutes off peak
Train	n/a	T4 Eastern Suburbs and Illawarra Line	Bondi Junction	750m	3 minutes peak / 10 minutes off peak

2.5 Pedestrian Infrastructure

Pedestrian paths are located on both sides of streets within the planning proposal area.

Safe crossing points in vicinity of the site include the following pedestrian crossings:

- south approach of the Oxford Street/ York Road intersection (signalised)
- west and north approaches of Oxford Street/ Nelson Street intersection (signalised)
- east and south approaches of Oxford Street/ Denison Street intersection (zebra crossing).

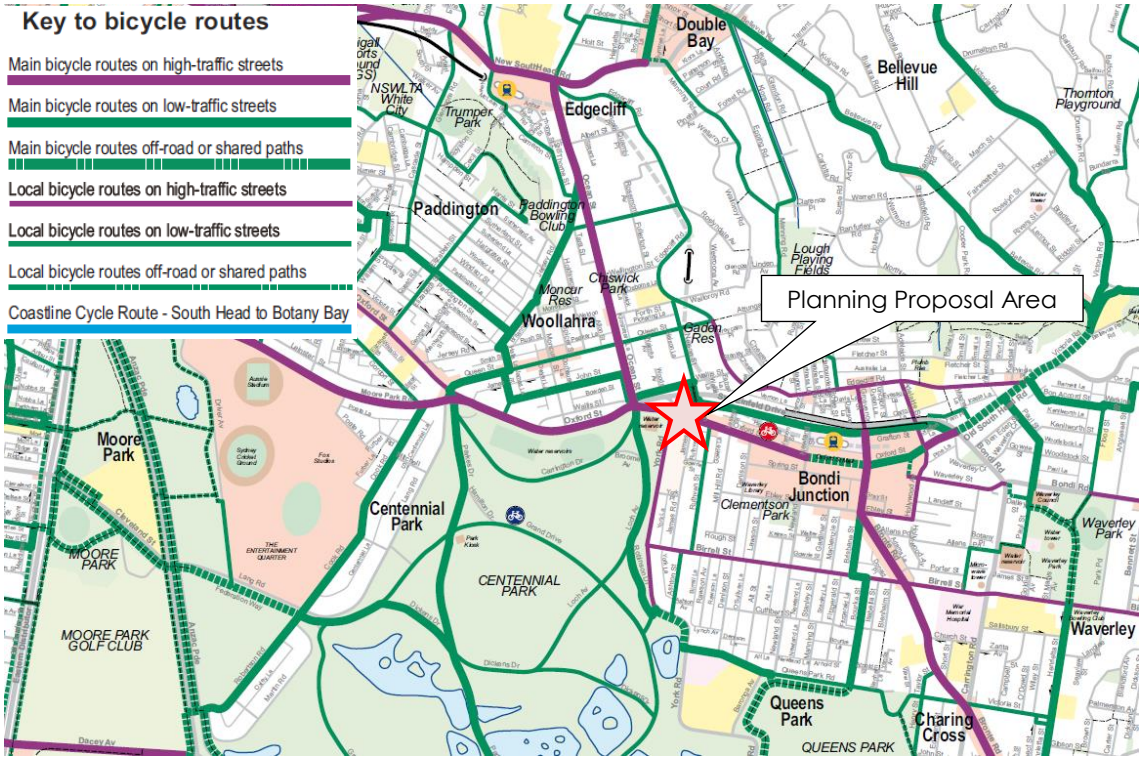
2.6 Cycle Infrastructure

A main bicycle route on high-traffic street facility is located along Oxford Street while a local bicycle routes on high-traffic street facility is located along York Road.

The route to Centennial Park along Oxford Street is via mixed-traffic with buses exiting Waverley Bus Depot onto Oxford Street. This presents a hazard to westbound cyclists as do buses waiting at the adjacent bus stop which also serves as a layover area for buses between services. From the intersection of York Road to the entrance of Centennial Park, westbound cyclists travel on-street, however some cyclists were observed to use the footpath.

Figure 2.6 presents the existing bicycle network in the vicinity of the planning proposal area.

Figure 2.6: Existing Bicycle Network



Source: Waverley Council and Woollahra Municipal Council (August 2016)

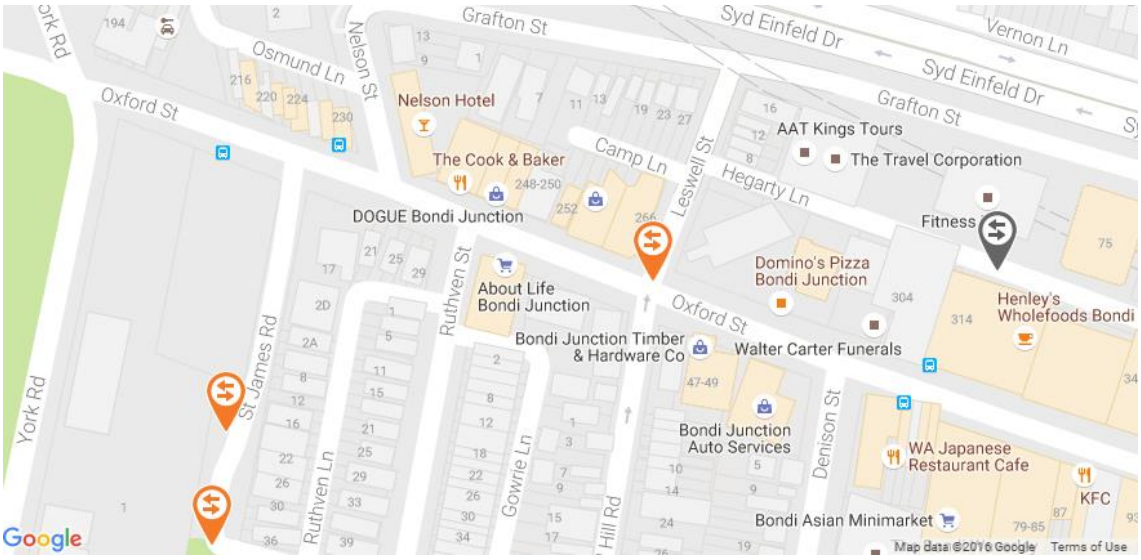
2.7 Local Car Sharing Initiatives

Four GoGet car sharing pods are located in the surrounding area at:

- St James Road
- Mill Hill Road
- Gowrie Street
- Hegarty Lane

Figure 2.7 shows the location of the GoGet Car share pods.

Figure 2.7: GoGet Car Share Pods



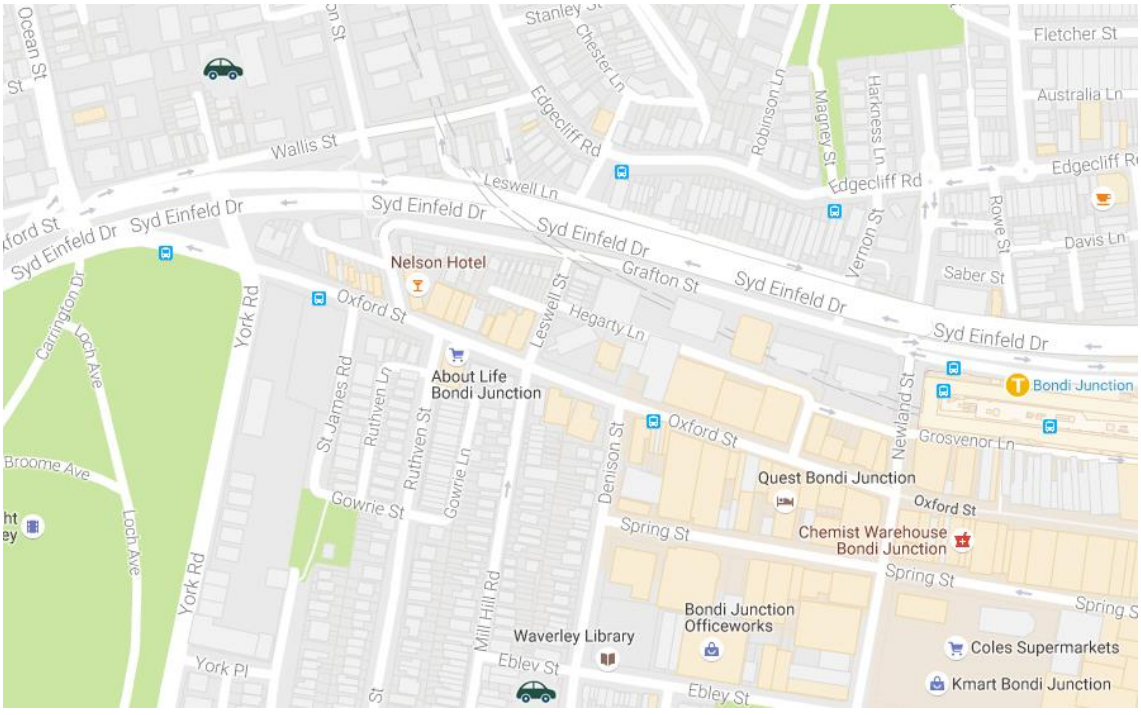
Source: GoGet website, accessed 07 September 2016.

Two Car Next Door car sharing vehicles are located in the surrounding area at:

- Woods Avenue
- Denison Street

Figure 2.8 shows the location of the Car Next Door vehicles.

Figure 2.8: Car Next Door Vehicle Locations



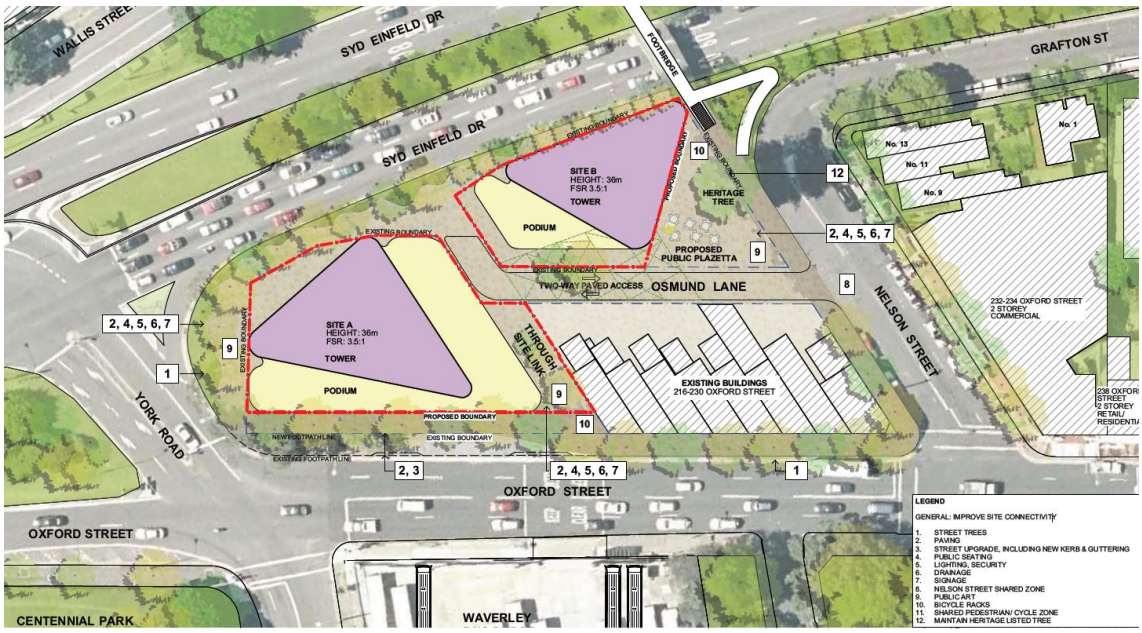
Source: Car Next Door website, accessed 07 September 2016.

3. Development Proposal

3.1 Overview

The subject sites comprised of Site A and Site B. The proposed sites in the context of the surrounding areas is shown in Figure 3.1.

Figure 3.1: Proposed Subject Site (Site A and Site B)



Source: Architectural Design Report, West Oxford Street – Planning Proposal prepared by MHNDU, 19/09/2016

3.2 Land Uses

The proposal includes the construction of a mixed use development with one, two, and three bedrooms and retail uses, as summarised in Table 3.1.

Table 3.1: Development Schedule

Use		Unit/ Size
Residential	Studio	8 units
	1 Bedroom	41 units
	2 Bedroom	22 units
	3 Bedroom	23 units
Subtotal		**94 units**
Retail		831sq.m

3.3 Vehicle Access

The Waverley Council DCP 2012 suggests that *Vehicular crossings should be provided from rear lanes where possible*. The proposed access to the development would be from Osmund Lane (off Nelson Street).

3.4 Car Parking

The proposed planning area is designated as Parking Zone 1 within the Waverley DCP 2012, which refers to "High accessibility to public transport and services, high density and prone to traffic congestion". Therefore, it is recommended that a "low" parking provision rate is applied to the development and are summarised in Table 3.2 below.

Table 3.2: Car Parking Requirements for Multi Dwelling/Unit Housing and Shop Top Housing

Use		Unit/ Size	DCP Parking Rate	Parking Space
Residential	Studio	8 units	0.6 space/ unit	5
	1 Bedroom	41 units	0.6 space/ unit	25
	2 Bedroom	22 units	0.9 space/ unit	20
	3 Bedroom	23 units	1.4 space/ unit	32
	Visitor		0.2 space/ unit	19
Subtotal		**94 units**		**101**

Based on the above, the future development would be required to provide a total of 101 car parking spaces as per the requirements of the DCP 2012.

We understand that a site specific DCP is currently being prepared to accompany the Planning Proposal. Given the site's highly accessible location, in close proximity to public transportation infrastructure, restricting car parking provision within the development would encourage alternate transport facilities such as cycling and public transport.

In addition, motorcycle parking would be provided in accordance with Waverley DCP 2012 where three motorcycle spaces are to be provided for every 15 car spaces provided.

3.5 Pedestrian and Bicycle Facilities

Bondi Beach to Centennial Park (via Bondi Junction) is a key pedestrian and cycling route that includes a section of Oxford Street in the vicinity of the planning proposal area. The Waverley DCP 2012 places strong focus on pedestrian and cyclist safety.

The Waverley Transport Plan outlines that increasing bicycle safety and improving pedestrian amenity could improve the traffic, pedestrian and cyclist movements around Bondi Junction. Medium term (3-5 years) action for improving pedestrian movements includes the provision of crossing on all approaches at Oxford Street/York Road intersection. However, provision of a pedestrian crossing on Oxford Street East approach at the intersection of York Road would result in excessive delays and longer queues to traffic from York Road North. Long term (6-10 years) action for cycling involves identifying opportunities to reduce space allocated to cars to widen active travel corridors.

As part of the redevelopment, a new shared zone along Osmund Lane and a three-metre wide setback of the site's frontage to Oxford Street would be proposed as part of the public domain improvements. Within the Waverley DCP 2012, for parking areas of larger than 10 car spaces, segregated routes for main pedestrian and bicycle movements must be created. Furthermore, the pedestrian and bicycle facilities should include line marking, pedestrian crossings, signage and where appropriate speed humps. The exit point requires the following safety devices to be installed within the boundary of the property:

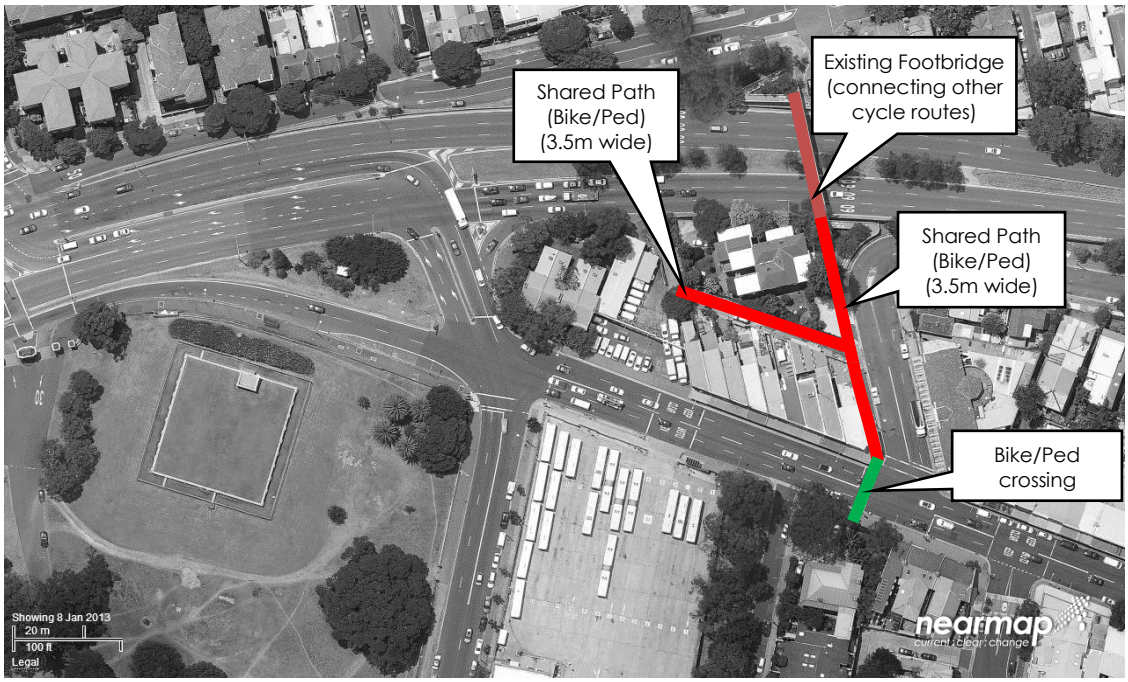
- Two stop signs
- A white, unbroken line at the exit point appropriate to accompany stop signs

- Two fish eye mirrors to improve sighting of pedestrians traversing the public footpath area
- Either a boom gate or a speed hump, or both, within eight metres of the exit point
- Speed limit of 10 km per hour with the vehicles lights being left on to be enforced within the property; which should be clearly sign posted.

Based on the Waverley Bike Plan 2013, a shared use path (SUP) can be located adjacent to Osmond Lane. They are used by both cyclists and pedestrians, with line marking and/or signage designating their legal status as a shared use path where pedestrians have the right of way. Osmond Lane should be designed with special pavements and landscaping with distinguishable footpaths.

Figure 3.2 shows the proposed infrastructure treatments to be carried out to meet a priority route standard and improve safety for cyclists and pedestrians in the vicinity of the site. These treatments can be included as part of the Council's broader Bondi Junction Complete Streets initiatives with the supports and contributions by Stargate Property Group.

Figure 3.2: Proposed Infrastructure Treatments for Cycle and Pedestrians



Base source: Nearmap

The suggested measures to be carried as part of the redevelopment could include the following:

- Upgrading pedestrian crossings
- Shared path for bike and pedestrian movements
- Way finding signage and line marking.

The suitability of the bicycle provisions is discussed in Section 5.3 of this report.

4. Sustainable Transport Infrastructure

4.1 Bicycle End of Trip Facilities

The bicycle parking requirements are set out in Section 8.1.2 of DCP 2012. A summary of the rates and recommended bicycle parking provisions are provided in Table 4.1.

Table 4.1: DCP 2012 Bicycle Parking Requirements

Use	Statutory Parking Rate
Multi dwelling/ unit housing	1 space/ dwelling unit
Commercial/ retail	1 space/ 150sq.m of floor space
Visitor	0.1 space/ dwelling unit

Bike parking is to be provided in accordance with requirements set out in the Australian Standard AS 2890.3 -1993 Parking facilities – Bicycle parking facilities. Access to bike parking areas are to be a minimum of 1.8m wide to allow passage of a pedestrians and bikes to pass each other and can be shared with vehicles within buildings and at entries to buildings. Bicycle parking for visitors is to be provided in an accessible on-grade location near a major public entrance to the development and is to be signposted. Retail premises should provide minimum 50% of the required bicycle parking at an accessible location on the footpath near the entry to the retail premises. For retail uses, end-of-trip facilities are to be provided at the following rates:

- one personal locker for each bike parking space
- one shower/change cubicle for up to 10 bike parking spaces
- two shower/change cubicles for 11 to 20 bike parking spaces are provided
- two additional showers/cubicles for each additional 20 bike parking spaces or part thereof.

Locker, change room and shower facilities should be located close to the bike parking area, entry/exit points, and within an area of security camera surveillance where there are such building security systems.

4.2 Public Transport

The site is accessible by public transport with a bus stop within 50m and a rail station within 750m.

5. Traffic Impact Assessment

5.1 Traffic Generation

An assessment of the following two intersections in the vicinity of the future development site was undertaken for the AM and PM weekday peak periods:

- Oxford Street/ York Road.
- Oxford Street/ Nelson Street.

Traffic generation estimates for the future development have been sourced from the *Guide to Traffic Generating Developments* (RMS, 2002) and *Technical Direction TDT 2013/ 04 Guide to Traffic Generating Developments Updated traffic surveys* (TDT 2013/ 04).

Estimates of peak hour traffic volumes resulting from the proposed planning area (Site A and Site B) proposal are set out in Table 5.1.

Table 5.1: Proposed Planning Area Traffic Generation Estimates

Site	Land Use	Units	Rate (trips/unit)		Traffic Generation			
			AM	PM	AM		PM	
					In	Out	In	Out
A and B	Residential Apartment	94	0.19/unit		4	14	14	4
	Retail	831sq.m	12.3/100sq.m		21	82	82	21
Total					**25**	**96**	**96**	**25**

Table 5.1 indicates that the future development could potentially generate 121 vehicle trips during the AM and PM peak hours.

5.2 Distribution and Assignment

The directional distribution and assignment of traffic generated by the future development would be influenced by a number of factors, including the:

i configuration of the arterial road network in the immediate vicinity of the site
ii existing operation of intersections providing access between the local and arterial road network
iii distribution of households in the vicinity of the site
iv surrounding employment centres, retail centres and schools in relation to the site.

However, for simplicity of the analysis, the distribution of future development traffic in the future year has been considered to be the same as in the base year.

The directional split of traffic (i.e. the ratio between the inbound and outbound traffic movements) was considered to be 20% and 80% in the AM and 80% and 20% in the PM respectively.

Based on the above, Figure 5.1 has been prepared to show the estimated marginal increase in turning movements in the vicinity of the subject property following full site development.

Figure 5.2 has been prepared to show the estimated marginal increase in turning movements in the vicinity of the subject property following full site development.

Figure 5.1: AM and PM Peak Hours Site Generated Traffic Volumes

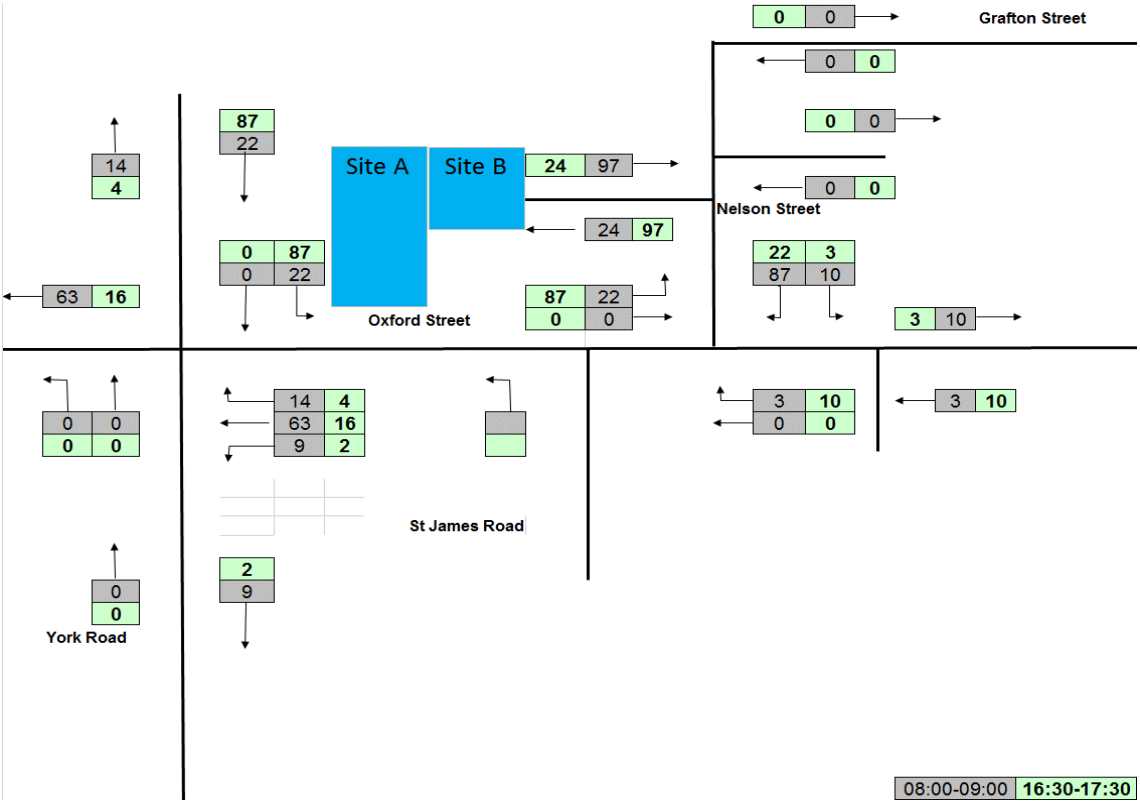
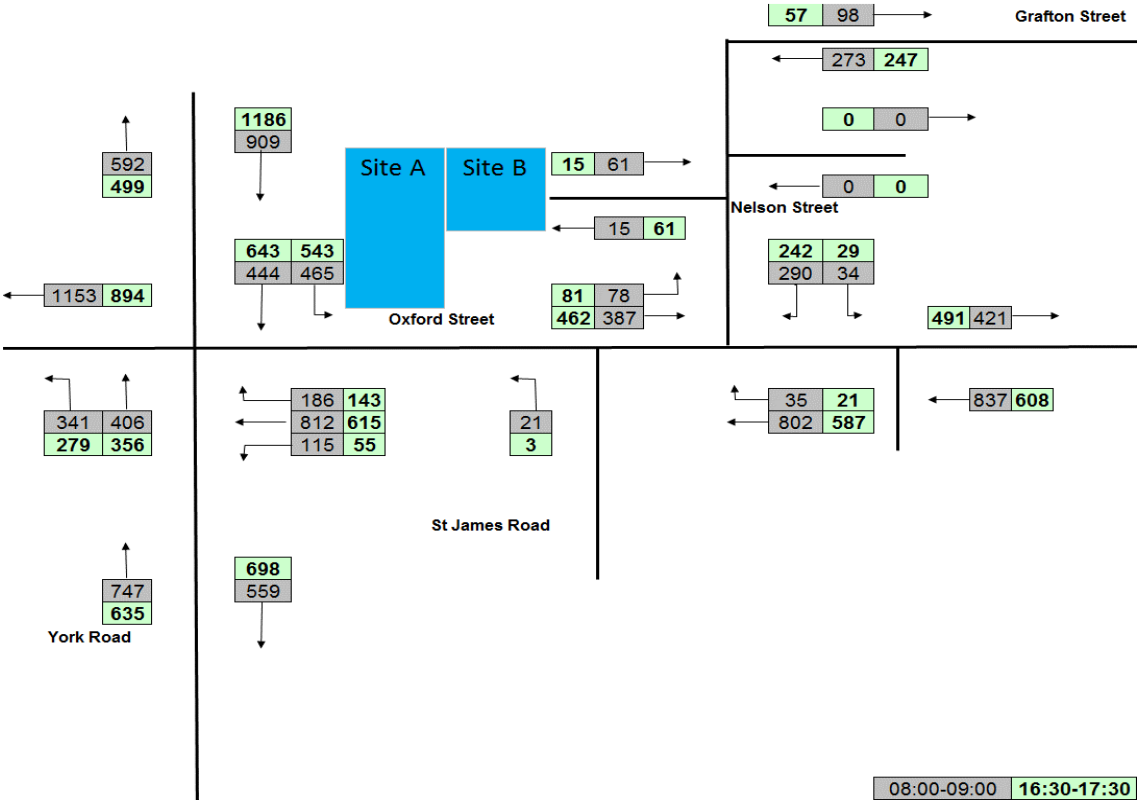


Figure 5.2: AM and PM Peak Hours Post Developments Traffic Volumes



5.3 Traffic Impact

Analysis was undertaken using a total trip generation of 121 vehicles in the AM and PM peak which will have impacts on the two key intersections that are being analysed.

Table 5.2 presents a summary of the post development future operation of the intersections, with full results presented in Appendix B of this report.

Table 5.2: Intersection Operation - Post Development (with Signal Optimization)

Intersection	Peak	Leg	Degree of Saturation (DOS)	Average Delay (sec)	95th Percentile Queue (m)	Level of Service (LOS)
York Road/ Oxford Street	AM	York Road - S	0.74	29	94	C
		Oxford Street - E	0.88	16	207	B
		York Road - N	0.84	12	110	A
	PM	York Road - S	0.43	14	47	A
		Oxford Street - E	0.85	13	86	A
		York Road - N	0.83	7	107	A
Nelson Street/ Oxford Street	AM	Oxford Street - E	0.62	11	55	A
		Nelson Street - N	0.59	18	43	B
		Oxford Street - W	0.53	11	52	A
	PM	Oxford Street - E	0.39	10	41	A
		Nelson Street - N	0.54	20	39	B
		Oxford Street - W	0.56	10	65	A

Against existing traffic volumes in the vicinity of the site, the additional traffic generated by the proposed rezoning could not be expected to compromise the safety or function of the Nelson Street/ Oxford Street intersection.

The analysis shows that in the AM peak with the additional traffic, queues on Oxford Street east at the Oxford Street/ York Road intersection are estimated to be 207m long and additional capacity is therefore required at the approach.

SIDRA analysis of Oxford Street/ York Road intersection shows that provision of a short right turn lane of 25m on the Oxford Street east approach is likely to reduce queues and delays at this intersection.

5.4 Mitigating Measures and Intersection Works

SIDRA analysis of Oxford Street/ York Road intersection shows that provision of a short right turn lane of 25m on the Oxford Street east approach is likely to reduce queues to 124m and delays at this intersection. Table 5.3 presents a summary of the future operation of the intersection with mitigation, with full results presented in Appendix B and the proposed intersection layout presented in Appendix C of this report.

The Planning Proposal seeks to dedicate a three-metre-wide setback along about 60 metres of the site's frontage to Oxford Street which would more than adequate accommodate the additional turning lane.

Table 5.3: Intersection Operation - Post Development (with Right Turn Provision)

Intersection	Peak	Leg	Degree of Saturation (DOS)	Average Delay (sec)	95th Percentile Queue (m)	Level of Service (LOS)
York Road/ Oxford Street	AM	York Road - S	0.75	26	83	B
		Oxford Street - E	0.86	14	124	A
		York Road - N	0.85	11	97	A
	PM	York Road - S	0.43	14	47	A
		Oxford Street - E	0.85	13	86	A
		York Road - N	0.83	7	107	A

6. Conclusion

Based on the analysis and discussions presented within this report, the following conclusions are made:

i In the existing situation, the Oxford Street/ York Road and Oxford Street/ Nelson Street intersections have capacity to accommodate the increase in traffic generated by the Planning Proposal.

ii SIDRA analysis shows that in the AM peak with the additional traffic, queues on Oxford Street east at the Oxford Street/ York Road intersection are estimated to be 207m long and additional capacity is therefore required at the approach.

iii SIDRA analysis of Oxford Street/ York Road intersection shows that provision of a short right turn lane of 25m on the Oxford Street east approach is likely to reduce queues and delays at this intersection. The Planning Proposal seeks to dedicate a three-metre wide setback along about 60 metres of the site's frontage to Oxford Street which would be more than adequate accommodate the additional turning lane.

iv With the provision of a short right turn lane, the queues on Oxford Street east at the Oxford Street/ York Road intersection would be reduced to 124m.

v It is recommended that, in line with the Waverley Council DCP 2012, any vehicular crossing for the future development is provided from rear lanes and "low" parking provision rate is applied to the development.

vi A site specific DCP is currently being prepared to accompany the Planning Proposal.

vii The section of Oxford Street in the vicinity of the planning proposal area is a key pedestrian and cycling route and adequate measures should be incorporated to ensure safe and efficient connectivity.

viii The impact of the traffic associated with the development could be further reduced with the provision of various measures such as safe cycle routes, efficient public transport, adequate bus accessibility, better pedestrian routes and crossings and restricting car parking provision.

Appendix A

Survey Results

TURNING MOVEMENT SURVEY

York RoadoOxford StreetoBondi Junction

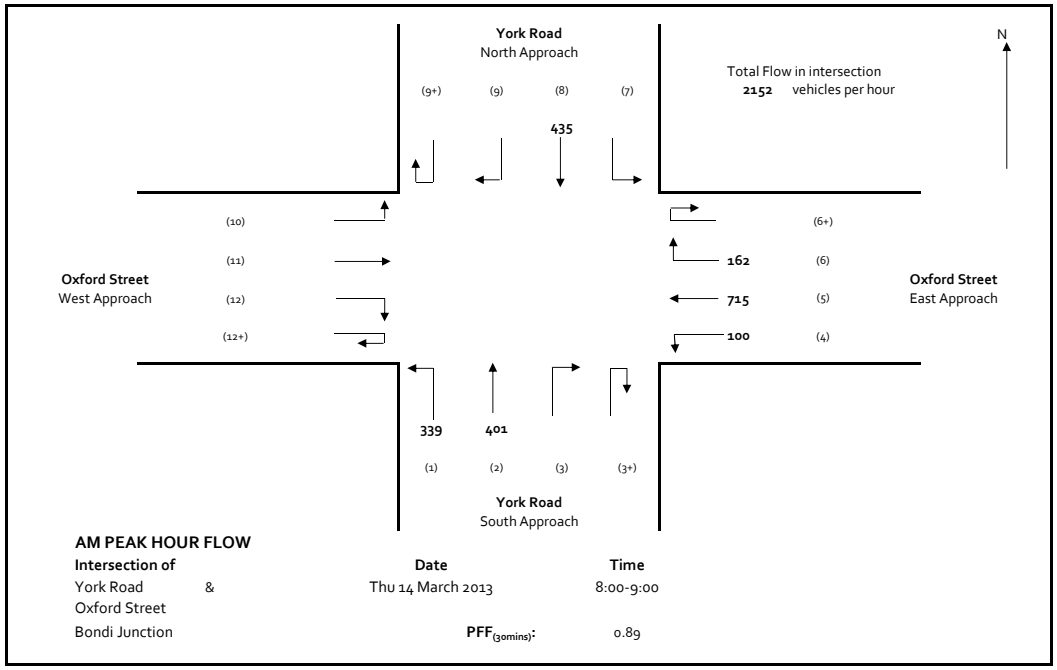
Date: Thu 14 March 2013

15 minute Data

Time	Movement																Total
	York Road South Approach				Oxford Street East Approach				York Road North Approach				Oxford Street West Approach				
	Left	Through	Right	U Turn	Left	Through	Right	U Turn	Left	Through	Right	U Turn	Left	Through	Right	U Turn	
	1	2	3	3+	4	5	6	6+	7	8	9	9+	10	11	12	12+	
6:00-6:15																	
6:15-6:30																	
6:30-6:45																	
6:45-7:00																	
7:00-7:15																	
7:15-7:30																	
7:30-7:45	52	104			19	167	38			89							470
7:45-8:00	44	51			9	114	36			64							317
8:00-8:15	80	75			14	191	70			110							540
8:15-8:30	123	134			31	174	37			165							664
8:30-8:45	80	96			32	168	40			85							501
8:45-9:00	56	96			23	182	15			75							447
9:00-9:15																	
9:15-9:30																	
9:30-9:45																	
9:45-10:00																	
Total	435	556	0	0	128	996	236	0	0	588	0	0	0	0	0	0	2939

Hourly flows

Time	Movement																Total
	York Road South Approach				Oxford Street East Approach				York Road North Approach				Oxford Street West Approach				
	Left	Through	Right	U Turn	Left	Through	Right	U Turn	Left	Through	Right	U Turn	Left	Through	Right	U Turn	
	1	2	3	3+	4	5	6	6+	7	8	9	9+	10	11	12	12+	
6:00-7:00																	
6:15-7:15																	
6:30-7:30																	
6:45-7:45																	
7:00-8:00																	
7:15-8:15																	
7:30-8:30	299	364			73	646	181			428							1991
7:45-8:45	327	356			86	647	183			424							2022
8:00-9:00	339	401			100	715	162			435							2152
8:15-9:15																	
8:30-9:30																	
8:45-9:45																	
9:00-10:00																	
Peak Hour	339	401			100	715	162			435							2152



AM PEAK HOUR FLOW

Intersection of		Date	Time
York Road	&	Thu 14 March 2013	8:00-9:00
Oxford Street			
Bondi Junction		**PFF$_{(30mins)}$:**	0.89

TURNING MOVEMENT SURVEY

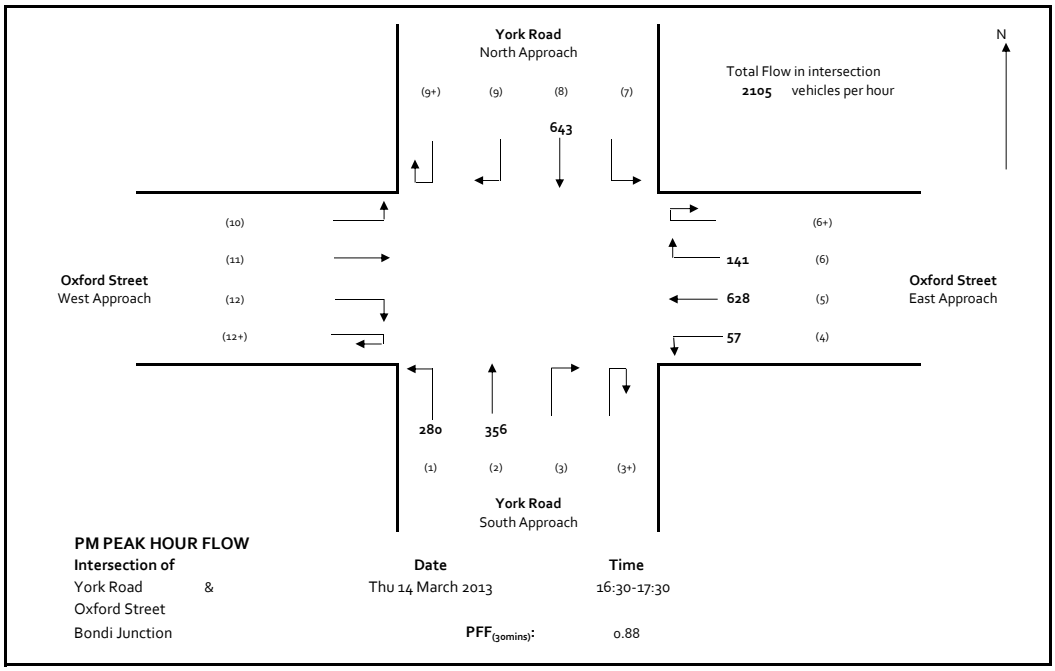
York RoadoOxford StreetoBondi Junction
Date: Thu 14 March 2013

15 minute Data

Time	Movement																Total
	York Road South Approach				Oxford Street East Approach				York Road North Approach				Oxford Street West Approach				
	Left 1	Through 2	Right 3	U Turn 3+	Left 4	Through 5	Right 6	U Turn 6+	Left 7	Through 8	Right 9	U Turn 9+	Left 10	Through 11	Right 12	U Turn 12+	
15:00-15:15																	
15:15-15:30																	
15:30-15:45																	
15:45-16:00																	
16:00-16:15																	
16:15-16:30																	
16:30-16:45	116	118			17	154	54			216							675
16:45-17:00	66	95			14	170	37			142							524
17:00-17:15	46	55			17	149	33			122							422
17:15-17:30	52	88			9	155	17			163							484
17:30-17:45	49	91			10	106	53			135							444
17:45-18:00	70	86			6	142	37			167							508
18:00-18:15																	
18:15-18:30																	
18:30-18:45																	
18:45-19:00																	
Total	399	533	0	0	73	876	231	0	0	945	0	0	0	0	0	0	3057

Hourly flows

Time	Movement																Total
	York Road South Approach				Oxford Street East Approach				York Road North Approach				Oxford Street West Approach				
	Left 1	Through 2	Right 3	U Turn 3+	Left 4	Through 5	Right 6	U Turn 6+	Left 7	Through 8	Right 9	U Turn 9+	Left 10	Through 11	Right 12	U Turn 12+	
15:00-16:00																	
15:15-16:15																	
15:30-16:30																	
15:45-16:45																	
16:00-17:00																	
16:15-17:15																	
16:30-17:30	280	356			57	628	141			643							2105
16:45-17:45	213	329			50	580	140			562							1874
17:00-18:00	217	320			42	552	140			587							1858
17:15-18:15																	
17:30-18:30																	
17:45-18:45																	
18:00-19:00																	
Peak Hour	280	356			57	628	141			643							2105



PM PEAK HOUR FLOW

Intersection of		Date	Time
York Road	&	Thu 14 March 2013	16:30-17:30
Oxford Street			
Bondi Junction		**PFF$_{(30mins)}$:**	0.88

TURNING MOVEMENT SURVEY

Intersection of Nelson Street & Oxford Street, Bondi Junction

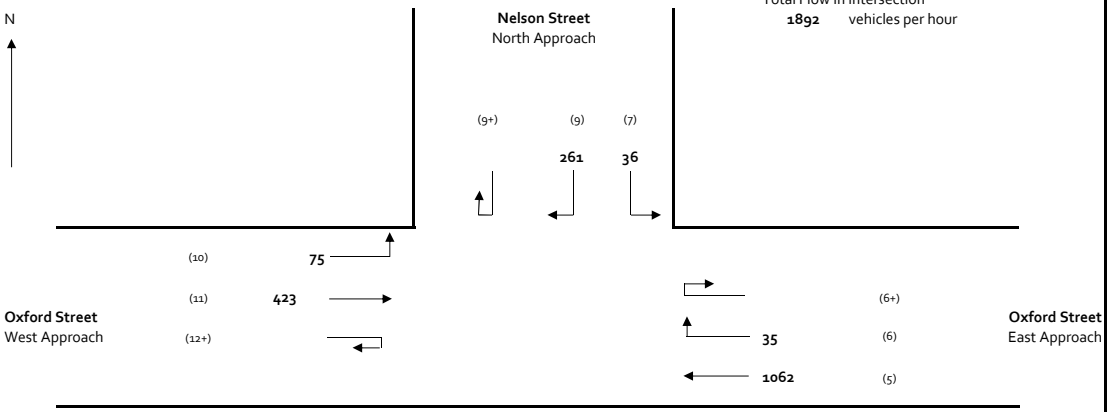
Date: Thu 14 March 2013

15 minute Data

Time	Movement									Total
	Oxford Street East Approach			Nelson Street North Approach			Oxford Street West Approach			
	Through 1	Right 2	U Turn 0	Left 3	Right 4	U Turn 0	Left 5	Through 6	U Turn 0	
6:00-6:15										
6:15-6:30										
6:30-6:45										
6:45-7:00										
7:00-7:15										
7:15-7:30										
7:30-7:45	180	9		11	47		12	94		353
7:45-8:00	266	4		7	65		14	112		468
8:00-8:15	280	14		15	69		19	111		508
8:15-8:30	255	4		8	63		17	93		440
8:30-8:45	261	13		6	64		25	107		476
8:45-9:00	174	5		9	62		11	86		347
9:00-9:15										
9:15-9:30										
9:30-9:45										
9:45-10:00										
Total	1416	49	0	56	370	0	98	603	0	2592

Hourly flows

Time	Movement									Total
	Oxford Street East Approach			Nelson Street North Approach			Oxford Street West Approach			
	Through 1	Right 2	U Turn 0	Left 3	Right 4	U Turn 0	Left 5	Through 6	U Turn 0	
6:00-7:00										
6:15-7:15										
6:30-7:30										
6:45-7:45										
7:00-8:00										
7:15-8:15										
7:30-8:30	981	31		41	244		62	410		1769
7:45-8:45	1062	35		36	261		75	423		1892
8:00-9:00	970	36		38	258		72	397		1771
8:15-9:15										
8:30-9:30										
8:45-9:45										
9:00-10:00										
Peak Hour	1062	35		36	261		75	423		1892



AM PEAK HOUR FLOW

Intersection of		Date	Time
Nelson Street	&	Thu 14 March 2013	7:45-8:45
Oxford Street			
Bondi Junction		$PFF_{(30mins)}$: 0.97	

TURNING MOVEMENT SURVEY

Intersection of Nelson Street & Oxford Street, Bondi Junction

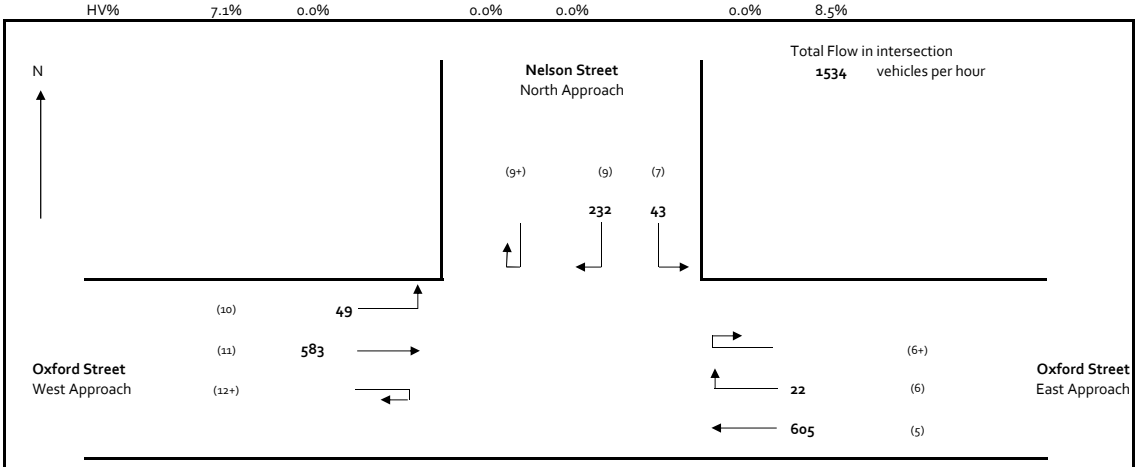
Date: Thu 14 March 2013

15 minute Data

Time	Movement									Total
	Oxford Street East Approach			Nelson Street North Approach			Oxford Street West Approach			
	Through	Right	U Turn	Left	Right	U Turn	Left	Through	U Turn	
	1	2	0	3	4	0	5	6	0	
15:00-15:15										
15:15-15:30										
15:30-15:45										
15:45-16:00										
16:00-16:15										
16:15-16:30										
16:30-16:45	145	2		10	47		13	121		338
16:45-17:00	170	4		11	71		9	124		389
17:00-17:15	158	5		7	63		13	127		373
17:15-17:30	138	5		6	52		6	113		320
17:30-17:45	146	6		9	48		16	167		392
17:45-18:00	163	6		21	69		14	176		449
18:00-18:15										
18:15-18:30										
18:30-18:45										
18:45-19:00										
Total	920	28	0	64	350	0	71	828	0	2261

Hourly flows

Time	Movement									Total
	Oxford Street East Approach			Nelson Street North Approach			Oxford Street West Approach			
	Through	Right	U Turn	Left	Right	U Turn	Left	Through	U Turn	
	1	2	0	3	4	0	5	6	0	
15:00-16:00										
15:15-16:15										
15:30-16:30										
15:45-16:45										
16:00-17:00										
16:15-17:15										
16:30-17:30	611	16		34	233		41	485		1420
16:45-17:45	612	20		33	234		44	531		1474
17:00-18:00	605	22		43	232		49	583		1534
17:15-18:15										
17:30-18:30										
17:45-18:45										
18:00-19:00										
Peak Hour	605	22		43	232		49	583		1534
Total	658	16	#VALUE!	34	233	#VALUE!	41	530	#VALUE!	
HV	47	0	0	0	0	0	0	45	0	
HV%	7.1%	0.0%		0.0%	0.0%		0.0%	8.5%		



PM PEAK HOUR FLOW

Intersection of		Date	Time
Nelson Street	&	Thu 14 March 2013	17:00-18:00
Oxford Street			
Bondi Junction		**PFF$_{(30mins)}$:** 0.91	

Appendix B

SIDRA INTERSECTION Results

LANE SUMMARY

Site: York Road/Oxford Street (AM Ex)

13S1356000 - 194-204 Oxford Street, Bondi Junction
AM Existing Conditions (08:00-09:00)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (User-Given Phase Times)

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: York Road - S													
Lane 1	385	0.6	536[1]	0.718	100	40.8	LOS C	19.1	134.5	Short (P)	70	0.0	NA
Lane 2	401	1.2	559[1]	0.718	100	36.3	LOS C	19.8	140.0	Full	500	0.0	0.0
Approach	786	0.9		0.718		38.5	LOS C	19.8	140.0				
East: Oxford Street - E													
Lane 1	480	8.7	1020	0.471	75[7]	11.7	LOS A	10.5	79.1	Full	90	0.0	0.0
Lane 2	646	8.6	1029	0.628	100	13.4	LOS A	17.4	130.5	Full	90	0.0	39.0
Approach	1126	8.7		0.628		12.7	LOS A	17.4	130.5				
North: York Road - N													
Lane 1	478	8.0	1598	0.299	100	3.1	LOS A	0.4	3.0	Full	30	0.0	0.0
Lane 2	467	2.0	648	0.721	100	25.1	LOS B	20.3	144.2	Full	30	0.0	100.0
Approach	945	5.0		0.721		14.0	LOS A	20.3	144.2				
Intersection	2858	5.3		0.721		20.2	LOS B	20.3	144.2				

Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
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.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the adjacent full-length lanes. Some upstream delays at entry to short lanes are not included.
7 Lane under-utilisation specified by the user

MOVEMENT SUMMARY

Site: York Road/Oxford Street (AM Ex)

13S1356000 - 194-204 Oxford Street, Bondi Junction
AM Existing Conditions (08:00-09:00)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: York Road - S											
1	L2	359	0.6	0.718	41.1	LOS C	19.1	134.5	0.90	0.83	31.9
2	T1	427	1.2	0.718	36.3	LOS C	19.8	140.0	0.90	0.79	25.9
Approach		786	0.9	0.718	38.5	LOS C	19.8	140.0	0.90	0.81	29.3
East: Oxford Street - E											
4	L2	117	9.9	0.471	15.2	LOS B	10.5	79.1	0.41	0.44	38.8
5	T1	821	8.3	0.628	11.4	LOS A	17.4	130.5	0.46	0.49	38.8
6	R2	188	9.5	0.628	16.7	LOS B	17.4	130.5	0.50	0.53	19.8
Approach		1126	8.7	0.628	12.7	LOS A	17.4	130.5	0.46	0.50	37.2
North: York Road - N											
7	L2	478	8.0	0.299	3.1	LOS A	0.4	3.0	0.03	0.51	35.1
8	T1	467	2.0	0.721	25.1	LOS B	20.3	144.2	0.79	0.70	30.5
Approach		945	5.0	0.721	14.0	LOS A	20.3	144.2	0.41	0.60	31.3
All Vehicles		2858	5.3	0.721	20.2	LOS B	20.3	144.2	0.57	0.62	32.4

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	15.5	LOS B	0.1	0.1	0.51	0.51
All Pedestrians		53	15.5	LOS B			0.51	0.51

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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PHASING SUMMARY

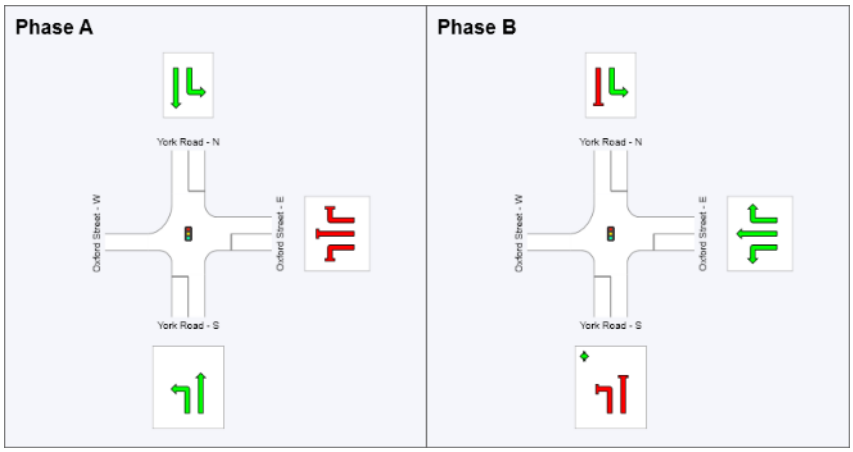
Site: York Road/Oxford Street (AM Ex)

13S1356000 - 194-204 Oxford Street, Bondi Junction
AM Existing Conditions (08:00-09:00)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (User-Given Phase Times)

Phase times specified by the user
Sequence: Site Observation
Movement Class: All Movement Classes
Input Sequence: A, B
Output Sequence: A, B

Phase Timing Results

Phase	A	B
Reference Phase	Yes	No
Phase Change Time (sec)	0	46
Green Time (sec)	40	68
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	46	74
Phase Split	38 %	62 %



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LANE SUMMARY

Site: York Road/Oxford Street (PM Ex)

13S1356000 - 194-204 Oxford Street, Bondi Junction
PM Existing Conditions (16:30-17:30)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (User-Given Phase Times)

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: York Road - S													
Lane 1	328	0.5	854	0.384	100	26.2	LOS B	12.3	86.6	Short (P)	70	0.0	NA
Lane 2	341	1.4	888	0.384	100	22.1	LOS B	12.8	90.5	Full	500	0.0	0.0
Approach	668	1.0		0.384		24.1	LOS B	12.8	90.5				
East: Oxford Street - E													
Lane 1	359	8.8	784	0.458	75[7]	13.3	LOS A	8.6	65.0	Full	90	0.0	0.0
Lane 2	485	7.1	795	0.611	100	15.1	LOS B	14.0	104.0	Full	90	0.0	18.1
Approach	844	7.9		0.611		14.3	LOS A	14.0	104.0				
North: York Road - N													
Lane 1	526	9.7	1580	0.333	100	3.1	LOS A	0.5	3.5	Full	30	0.0	0.0
Lane 2	677	2.0	908	0.746	100	11.6	LOS A	20.7	147.7	Full	30	0.0	100.0
Approach	1203	5.4		0.746		7.9	LOS A	20.7	147.7				
Intersection	2716	5.1		0.746		13.9	LOS A	20.7	147.7				

Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
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.

7 Lane under-utilisation specified by the user

MOVEMENT SUMMARY

Site: York Road/Oxford Street (PM Ex)

13S1356000 - 194-204 Oxford Street, Bondi Junction
PM Existing Conditions (16:30-17:30)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: York Road - S											
1	L2	294	0.4	0.384	26.7	LOS B	12.3	86.6	0.69	0.75	36.5
2	T1	375	1.4	0.384	22.1	LOS B	12.8	90.5	0.69	0.62	31.8
Approach		668	1.0	0.384	24.1	LOS B	12.8	90.5	0.69	0.67	34.5
East: Oxford Street - E											
4	L2	57	11.1	0.458	17.2	LOS B	8.6	65.0	0.44	0.43	37.7
5	T1	639	8.4	0.611	13.2	LOS A	14.0	104.0	0.49	0.50	37.7
6	R2	148	4.3	0.611	18.3	LOS B	14.0	104.0	0.53	0.55	18.5
Approach		844	7.9	0.611	14.3	LOS A	14.0	104.0	0.50	0.50	36.0
North: York Road - N											
7	L2	526	9.7	0.333	3.1	LOS A	0.5	3.5	0.03	0.51	34.9
8	T1	677	2.0	0.746	11.6	LOS A	20.7	147.7	0.57	0.52	38.6
Approach		1203	5.4	0.746	7.9	LOS A	20.7	147.7	0.34	0.51	38.0
All Vehicles		2716	5.1	0.746	13.9	LOS A	20.7	147.7	0.47	0.55	36.0

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	24.8	LOS C	0.1	0.1	0.64	0.64
All Pedestrians		53	24.8	LOS C			0.64	0.64

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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PHASING SUMMARY

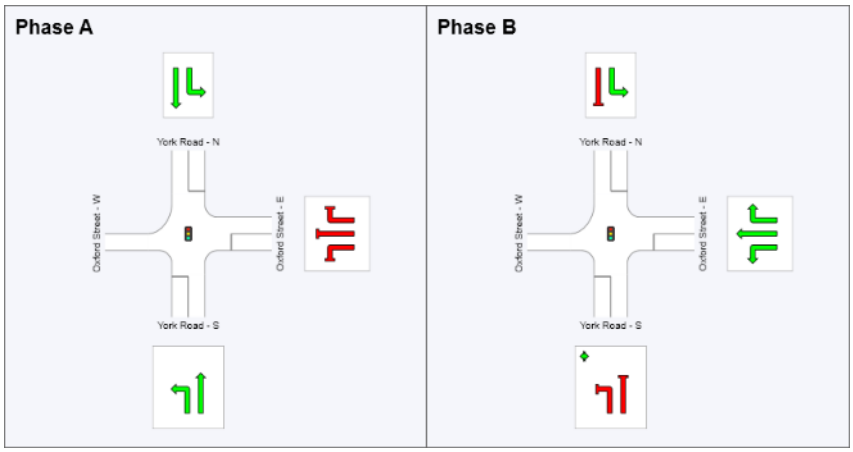
Site: York Road/Oxford Street (PM Ex)

13S1356000 - 194-204 Oxford Street, Bondi Junction
PM Existing Conditions (16:30-17:30)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (User-Given Phase Times)

Phase times specified by the user
Sequence: Site Observation
Movement Class: All Movement Classes
Input Sequence: A, B
Output Sequence: A, B

Phase Timing Results

Phase	A	B
Reference Phase	Yes	No
Phase Change Time (sec)	0	62
Green Time (sec)	56	52
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	62	58
Phase Split	52 %	48 %



Normal Movement		Permitted/Opposed	
Slip/Bypass-Lane Movement		Opposed Slip/Bypass-Lane	
Stopped Movement		Turn On Red	
Other Movement Class Running		Other Movement Class Stopped	
Mixed Running & Stopped Movement Classes			
Undetected Movement		Phase Transition Applied	

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LANE SUMMARY

Site: York Road/Oxford Street (AM Ex + Dev + Optimised

13S1356000 - 194-204 Oxford Street, Bondi Junction
AM Existing Conditions (08:00-09:00)
Existing + Development Traffic + Signal Optimisation
Signals - Fixed Time Coordinated Cycle Time = 70 seconds (Optimum Cycle Time - Minimum Delay)

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: York Road - S													
Lane 1	385	0.8	521	0.739	100	31.1	LOS C	12.8	90.5	Short (P)	70	0.0	NA
Lane 2	401	1.5	543	0.739	100	26.7	LOS B	13.3	94.5	Full	500	0.0	0.0
Approach	786	1.1		0.739		28.8	LOS C	13.3	94.5				
East: Oxford Street - E													
Lane 1	308	9.8	952	0.324	37[6]	8.5	LOS A	3.8	28.8	Full	90	0.0	0.0
Lane 2	864	9.4	985	0.877	100	18.9	LOS B	27.3	206.8	Full	90	0.0	82.8
Approach	1172	9.5		0.877		16.2	LOS B	27.3	206.8				
North: York Road - N													
Lane 1	489	8.5	1466	0.334	100	3.1	LOS A	0.3	1.9	Full	30	0.0	0.0
Lane 2	467	2.2	555	0.842	100	22.1	LOS B	15.4	110.0	Full	30	0.0	100.0
Approach	957	5.4		0.842		12.4	LOS A	15.4	110.0				
Intersection	2915	5.9		0.877		18.4	LOS B	27.3	206.8				

Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
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.

6 Lane under-utilisation due to downstream effects

MOVEMENT SUMMARY

Site: York Road/Oxford Street (AM Ex + Dev + Optimised

13S1356000 - 194-204 Oxford Street, Bondi Junction
AM Existing Conditions (08:00-09:00)
Existing + Development Traffic + Signal Optimisation
Signals - Fixed Time Coordinated Cycle Time = 70 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: York Road - S											
1	L2	359	0.7	0.739	31.4	LOS C	12.8	90.5	0.96	0.89	34.8
2	T1	427	1.5	0.739	26.7	LOS B	13.3	94.5	0.96	0.89	29.7
Approach		786	1.1	0.739	28.8	LOS C	13.3	94.5	0.96	0.89	32.6
East: Oxford Street - E											
4	L2	122	10.9	0.324	11.3	LOS A	3.8	28.8	0.38	0.46	41.1
5	T1	854	9.1	0.877	15.4	LOS B	27.3	206.8	0.72	0.79	36.2
6	R2	196	10.4	0.877	22.5	LOS B	27.3	206.8	0.82	0.88	16.2
Approach		1172	9.5	0.877	16.2	LOS B	27.3	206.8	0.70	0.77	34.8
North: York Road - N											
7	L2	489	8.5	0.334	3.1	LOS A	0.3	1.9	0.03	0.51	35.1
8	T1	467	2.2	0.842	22.1	LOS B	15.4	110.0	0.93	0.89	32.0
Approach		957	5.4	0.842	12.4	LOS A	15.4	110.0	0.47	0.70	32.6
All Vehicles		2915	5.9	0.877	18.4	LOS B	27.3	206.8	0.70	0.78	33.5

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	12.0	LOS B	0.1	0.1	0.59	0.59
All Pedestrians		53	12.0	LOS B			0.59	0.59

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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PHASING SUMMARY

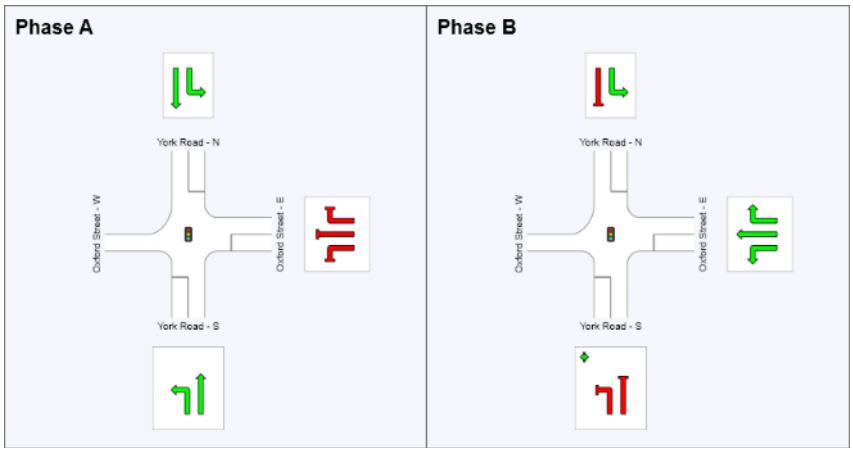
Site: York Road/Oxford Street (AM Ex + Dev + Optimised

13S1356000 - 194-204 Oxford Street, Bondi Junction
AM Existing Conditions (08:00-09:00)
Existing + Development Traffic + Signal Optimisation
Signals - Fixed Time Coordinated Cycle Time = 70 seconds (Optimum Cycle Time - Minimum Delay)

Phase times determined by the program
Sequence: Site Observation
Movement Class: All Movement Classes
Input Sequence: A, B
Output Sequence: A, B

Phase Timing Results

Phase	A	B
Reference Phase	Yes	No
Phase Change Time (sec)	0	26
Green Time (sec)	20	38
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	26	44
Phase Split	37 %	63 %



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LANE SUMMARY

Site: York Road/Oxford Street (PM Ex + Dev + Optimised

13S1356000 - 194-204 Oxford Street, Bondi Junction
PM Existing Conditions (16:30-17:30)
Existing + Development Traffic + Signal Optimisation
Signals - Fixed Time Coordinated Cycle Time = 75 seconds (Optimum Cycle Time - Minimum Delay)

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: York Road - S													
Lane 1	336	0.5	805	0.417	100	19.7	LOS B	8.5	59.6	Short (P)	70	0.0	NA
Lane 2	349	1.5	837	0.417	100	15.6	LOS B	8.8	62.3	Full	500	0.0	0.0
Approach	685	1.0		0.417		17.6	LOS B	8.8	62.3				
East: Oxford Street - E													
Lane 1	230	9.2	711	0.324	37[6]	10.6	LOS A	3.6	27.3	Full	90	0.0	0.0
Lane 2	646	7.5	735	0.879	100	18.9	LOS B	21.8	162.4	Full	90	0.0	59.5
Approach	876	8.0		0.879		16.7	LOS B	21.8	162.4				
North: York Road - N													
Lane 1	655	10.3	1469	0.446	100	3.1	LOS A	0.4	3.3	Full	30	0.0	0.0
Lane 2	741	2.3	854	0.868	100	14.1	LOS A	22.5	161.0	Full	30	0.0	100.0
Approach	1396	6.0		0.868		8.9	LOS A	22.5	161.0				
Intersection	2957	5.4		0.879		13.2	LOS A	22.5	162.4				

Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
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.

6 Lane under-utilisation due to downstream effects

MOVEMENT SUMMARY

Site: York Road/Oxford Street (PM Ex + Dev + Optimised

13S1356000 - 194-204 Oxford Street, Bondi Junction
PM Existing Conditions (16:30-17:30)
Existing + Development Traffic + Signal Optimisation
Signals - Fixed Time Coordinated Cycle Time = 75 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: York Road - S											
1	L2	301	0.4	0.417	20.2	LOS B	8.5	59.6	0.73	0.76	39.1
2	T1	384	1.5	0.417	15.6	LOS B	8.8	62.3	0.73	0.64	35.6
Approach		685	1.0	0.417	17.6	LOS B	8.8	62.3	0.73	0.69	37.6
East: Oxford Street - E											
4	L2	60	11.3	0.324	14.0	LOS A	3.6	27.3	0.45	0.46	39.6
5	T1	662	8.5	0.879	15.6	LOS B	21.8	162.4	0.76	0.77	36.1
6	R2	154	4.4	0.879	22.4	LOS B	21.8	162.4	0.86	0.88	16.2
Approach		876	8.0	0.879	16.7	LOS B	21.8	162.4	0.76	0.77	34.4
North: York Road - N											
7	L2	655	10.3	0.446	3.1	LOS A	0.4	3.3	0.04	0.51	34.8
8	T1	741	2.3	0.868	14.1	LOS A	22.5	161.0	0.79	0.79	36.8
Approach		1396	6.0	0.868	8.9	LOS A	22.5	161.0	0.44	0.66	36.4
All Vehicles		2957	5.4	0.879	13.2	LOS A	22.5	162.4	0.60	0.70	36.2

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	19.5	LOS B	0.1	0.1	0.72	0.72
All Pedestrians		53	19.5	LOS B			0.72	0.72

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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PHASING SUMMARY

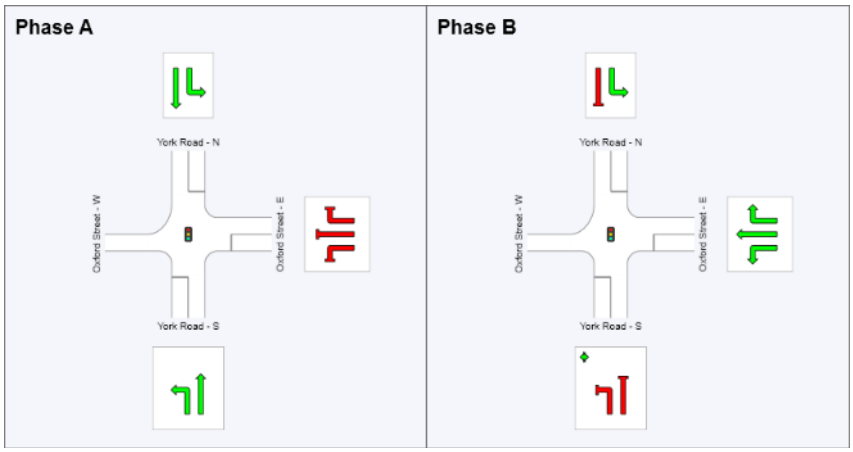
Site: York Road/Oxford Street (PM Ex + Dev + Optimised

13S1356000 - 194-204 Oxford Street, Bondi Junction
PM Existing Conditions (16:30-17:30)
Existing + Development Traffic + Signal Optimisation
Signals - Fixed Time Coordinated Cycle Time = 75 seconds (Optimum Cycle Time - Minimum Delay)

Phase times determined by the program
Sequence: Site Observation
Movement Class: All Movement Classes
Input Sequence: A, B
Output Sequence: A, B

Phase Timing Results

Phase	A	B
Reference Phase	Yes	No
Phase Change Time (sec)	0	39
Green Time (sec)	33	30
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	39	36
Phase Split	52 %	48 %



Normal Movement		Permitted/Opposed	
Slip/Bypass-Lane Movement		Opposed Slip/Bypass-Lane	
Stopped Movement		Turn On Red	
Other Movement Class Running		Other Movement Class Stopped	
Mixed Running & Stopped Movement Classes			
Undetected Movement		Phase Transition Applied	

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LANE SUMMARY

Site: York Road/Oxford Street (AM Ex + Dev + Optimised) RT

13S1356000 - 194-204 Oxford Street, Bondi Junction
AM Existing Conditions (08:00-09:00)
Existing + Development Traffic + Signal Optimisation
Signals - Fixed Time Coordinated Cycle Time = 60 seconds (Optimum Cycle Time - Minimum Delay)

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: York Road - S													
Lane 1	385	0.8	517	0.745	100	28.1	LOS B	11.3	79.5	Short (P)	70	0.0	NA
Lane 2	401	1.5	539	0.745	100	23.7	LOS B	11.7	83.0	Full	500	0.0	0.0
Approach	786	1.1		0.745		25.9	LOS B	11.7	83.0				
East: Oxford Street - E													
Lane 1	285	9.9	897	0.318	37[5]	8.7	LOS A	3.4	25.5	Full	90	0.0	0.0
Lane 2	690	9.1	800[1]	0.863	100	16.3	LOS B	16.4	124.1	Full	90	0.0	34.3
Lane 3	196	10.4	893	0.219	25[5]	11.0	LOS A	2.1	16.2	Short	25	0.0	NA
Approach	1172	9.5		0.863		13.6	LOS A	16.4	124.1				
North: York Road - N													
Lane 1	489	8.5	1415	0.346	100	3.1	LOS A	0.2	1.7	Full	30	0.0	0.0
Lane 2	467	2.2	550	0.849	100	19.9	LOS B	13.6	97.0	Full	30	0.0	100.0
Approach	957	5.4		0.849		11.3	LOS A	13.6	97.0				
Intersection	2915	5.9		0.863		16.1	LOS B	16.4	124.1				

Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
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.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the adjacent full-length lanes. Some upstream delays at entry to short lanes are not included.
5 Lane under-utilisation found by the program

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MOVEMENT SUMMARY

Site: York Road/Oxford Street (AM Ex + Dev + Optimised) RT

13S1356000 - 194-204 Oxford Street, Bondi Junction
AM Existing Conditions (08:00-09:00)
Existing + Development Traffic + Signal Optimisation
Signals - Fixed Time Coordinated Cycle Time = 60 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: York Road - S											
1	L2	359	0.7	0.745	28.4	LOS B	11.3	79.5	0.97	0.90	35.9
2	T1	427	1.5	0.745	23.7	LOS B	11.7	83.0	0.97	0.91	31.1
Approach		786	1.1	0.745	25.9	LOS B	11.7	83.0	0.97	0.90	33.9
East: Oxford Street - E											
4	L2	122	10.9	0.318	11.4	LOS A	3.4	25.5	0.42	0.49	40.9
5	T1	854	9.1	0.863	14.4	LOS A	16.4	124.1	0.62	0.70	37.3
6	R2	196	10.4	0.219	11.0	LOS A	2.1	16.2	0.39	0.65	21.9
Approach		1172	9.5	0.863	13.6	LOS A	16.4	124.1	0.56	0.67	36.6
North: York Road - N											
7	L2	489	8.5	0.346	3.1	LOS A	0.2	1.7	0.03	0.51	35.1
8	T1	467	2.2	0.849	19.9	LOS B	13.6	97.0	0.94	0.91	33.3
Approach		957	5.4	0.849	11.3	LOS A	13.6	97.0	0.48	0.71	33.6
All Vehicles		2915	5.9	0.863	16.1	LOS B	16.4	124.1	0.64	0.74	34.9

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	12.1	LOS B	0.1	0.1	0.63	0.63
All Pedestrians		53	12.1	LOS B			0.63	0.63

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

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PHASING SUMMARY

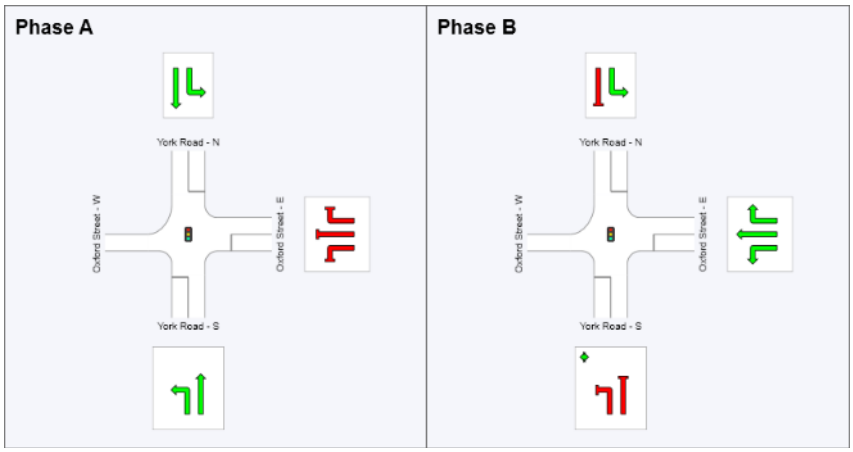
Site: York Road/Oxford Street (AM Ex + Dev + Optimised) RT

13S1356000 - 194-204 Oxford Street, Bondi Junction
AM Existing Conditions (08:00-09:00)
Existing + Development Traffic + Signal Optimisation
Signals - Fixed Time Coordinated Cycle Time = 60 seconds (Optimum Cycle Time - Minimum Delay)

Phase times determined by the program
Sequence: Site Observation
Movement Class: All Movement Classes
Input Sequence: A, B
Output Sequence: A, B

Phase Timing Results

Phase	A	B
Reference Phase	Yes	No
Phase Change Time (sec)	0	23
Green Time (sec)	17	31
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	23	37
Phase Split	38 %	62 %



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LANE SUMMARY

Site: York Road/Oxford Street (PM Ex + Dev + Optimised) RT

13S1356000 - 194-204 Oxford Street, Bondi Junction
PM Existing Conditions (16:30-17:30)
Existing + Development Traffic + Signal Optimisation
Signals - Fixed Time Coordinated Cycle Time = 55 seconds (Optimum Cycle Time - Minimum Delay)

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: York Road - S													
Lane 1	328	0.5	765	0.428	100	16.5	LOS B	6.4	44.8	Short (P)	70	0.0	NA
Lane 2	341	1.5	795	0.428	100	12.4	LOS A	6.6	46.8	Full	500	0.0	0.0
Approach	668	1.0		0.428		14.5	LOS A	6.6	46.8				
East: Oxford Street - E													
Lane 1	204	9.5	647	0.315	37[5]	9.9	LOS A	2.7	20.7	Full	90	0.0	0.0
Lane 2	501	8.7	587[1]	0.855	100	14.6	LOS B	11.5	86.3	Full	90	0.0	1.3
Lane 3	150	4.5	655	0.230	27[5]	12.9	LOS A	1.9	13.7	Short	25	0.0	NA
Approach	856	8.1		0.855		13.2	LOS A	11.5	86.3				
North: York Road - N													
Lane 1	572	11.8	1354	0.423	100	3.1	LOS A	0.3	2.1	Full	30	0.0	0.0
Lane 2	677	2.5	811	0.835	100	11.1	LOS A	15.0	107.2	Full	30	0.0	100.0
Approach	1249	6.8		0.835		7.4	LOS A	15.0	107.2				
Intersection	2773	5.8		0.855		10.9	LOS A	15.0	107.2				

Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
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.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the adjacent full-length lanes. Some upstream delays at entry to short lanes are not included.
5 Lane under-utilisation found by the program

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MOVEMENT SUMMARY

Site: York Road/Oxford Street (PM Ex + Dev + Optimised) RT

13S1356000 - 194-204 Oxford Street, Bondi Junction
PM Existing Conditions (16:30-17:30)
Existing + Development Traffic + Signal Optimisation
Signals - Fixed Time Coordinated Cycle Time = 55 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: York Road - S											
1	L2	294	0.4	0.428	17.0	LOS B	6.4	44.8	0.75	0.76	40.4
2	T1	375	1.5	0.428	12.4	LOS A	6.6	46.8	0.75	0.65	37.8
Approach		668	1.0	0.428	14.5	LOS A	6.6	46.8	0.75	0.70	39.3
East: Oxford Street - E											
4	L2	58	11.7	0.315	13.2	LOS A	2.7	20.7	0.51	0.50	40.0
5	T1	647	8.7	0.855	13.3	LOS A	11.5	86.3	0.71	0.72	38.2
6	R2	150	4.5	0.230	12.9	LOS A	1.9	13.7	0.48	0.66	20.2
Approach		856	8.1	0.855	13.2	LOS A	11.5	86.3	0.66	0.70	36.8
North: York Road - N											
7	L2	572	11.8	0.423	3.1	LOS A	0.3	2.1	0.04	0.51	34.7
8	T1	677	2.5	0.835	11.1	LOS A	15.0	107.2	0.78	0.77	39.1
Approach		1249	6.8	0.835	7.4	LOS A	15.0	107.2	0.44	0.65	38.2
All Vehicles		2773	5.8	0.855	10.9	LOS A	15.0	107.2	0.58	0.68	38.1

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	17.6	LOS B	0.1	0.1	0.80	0.80
All Pedestrians		53	17.6	LOS B			0.80	0.80

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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PHASING SUMMARY

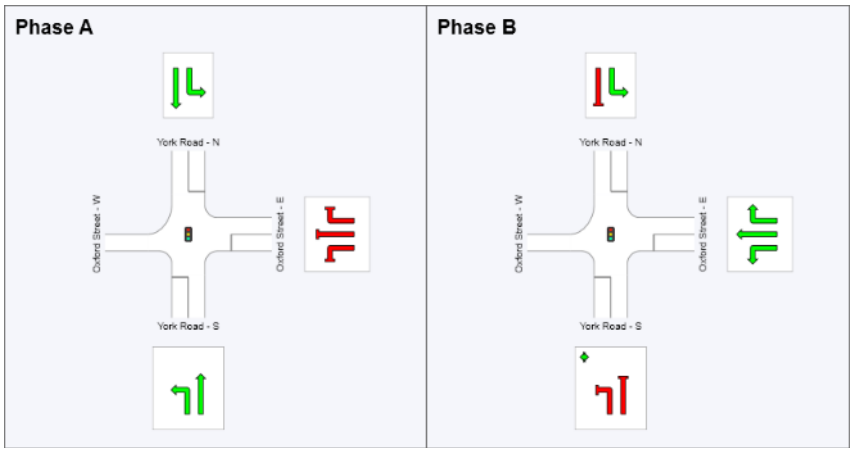
Site: York Road/Oxford Street (PM Ex + Dev + Optimised) RT

13S1356000 - 194-204 Oxford Street, Bondi Junction
PM Existing Conditions (16:30-17:30)
Existing + Development Traffic + Signal Optimisation
Signals - Fixed Time Coordinated Cycle Time = 55 seconds (Optimum Cycle Time - Minimum Delay)

Phase times determined by the program
Sequence: Site Observation
Movement Class: All Movement Classes
Input Sequence: A, B
Output Sequence: A, B

Phase Timing Results

Phase	A	B
Reference Phase	Yes	No
Phase Change Time (sec)	0	29
Green Time (sec)	23	20
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	29	26
Phase Split	53 %	47 %



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LANE SUMMARY

Site: Nelson Street/Oxford Street (AM Ex)

13S1356000 - 194-204 Oxford Street, Bondi Junction
AM Existing Conditions (8:00-09:00)
Signals - Fixed Time Coordinated Cycle Time = 55 seconds (User-Given Phase Times)

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
East: Oxford Street - E													
Lane 1	466	10.7	941	0.495	100	6.6	LOS A	5.8	44.1	Short (P)	40	0.0	NA
Lane 2	414	9.8	838	0.495	100	7.7	LOS A	5.5	41.6	Full	390	0.0	0.0
Approach	880	10.3		0.495		7.1	LOS A	5.8	44.1				
North: Nelson Street - N													
Lane 1	31	3.4	452	0.068	100	20.6	LOS B	0.6	4.6	Short	15	0.0	NA
Lane 2	260	2.0	406[1]	0.641	100	24.5	LOS B	6.6	47.1	Full	500	0.0	0.0
Approach	291	2.1		0.641		24.1	LOS B	6.6	47.1				
West: Oxford Street - W													
Lane 1	78	0.7	929	0.084	20[6]	11.1	LOS A	1.0	7.3	Full	90	0.0	0.0
Lane 2	400	8.0	957	0.418	100	8.6	LOS A	6.6	49.3	Full	90	0.0	0.0
Approach	478	6.8		0.418		9.0	LOS A	6.6	49.3				
Intersection	1648	7.8		0.641		10.6	LOS A	6.6	49.3				

Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
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.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the adjacent full-length lanes. Some upstream delays at entry to short lanes are not included.
6 Lane under-utilisation due to downstream effects

MOVEMENT SUMMARY

Site: Nelson Street/Oxford Street (AM Ex)

13S1356000 - 194-204 Oxford Street, Bondi Junction
AM Existing Conditions (8:00-09:00)
Signals - Fixed Time Coordinated Cycle Time = 55 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Oxford Street - E											
5	T1	844	10.7	0.495	6.9	LOS A	5.8	44.1	0.50	0.45	41.7
6	R2	36	0.0	0.495	11.9	LOS A	5.5	41.6	0.52	0.47	39.8
Approach		880	10.3	0.495	7.1	LOS A	5.8	44.1	0.50	0.45	41.5
North: Nelson Street - N											
7	L2	31	3.4	0.068	20.6	LOS B	0.6	4.6	0.79	0.67	34.0
9	R2	260	2.0	0.641	24.5	LOS B	6.6	47.1	0.93	0.84	27.7
Approach		291	2.1	0.641	24.1	LOS B	6.6	47.1	0.92	0.82	28.5
West: Oxford Street - W											
10	L2	71	0.0	0.084	11.5	LOS A	1.0	7.3	0.52	0.64	34.4
11	T1	407	8.0	0.418	8.6	LOS A	6.6	49.3	0.65	0.56	40.2
Approach		478	6.8	0.418	9.0	LOS A	6.6	49.3	0.63	0.57	39.1
All Vehicles		1648	7.8	0.641	10.6	LOS A	6.6	49.3	0.61	0.55	37.3

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P3	North Full Crossing	53	11.8	LOS B	0.1	0.1	0.66	0.66
P4	West Full Crossing	53	21.9	LOS C	0.1	0.1	0.89	0.89
All Pedestrians		105	16.8	LOS B			0.77	0.77

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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PHASING SUMMARY

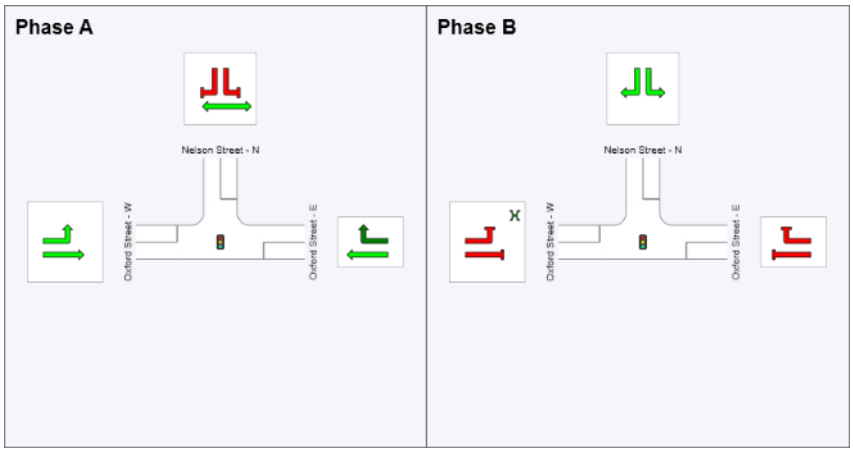
Site: Nelson Street/Oxford Street (AM Ex)

13S1356000 - 194-204 Oxford Street, Bondi Junction
AM Existing Conditions (8:00-09:00)
Signals - Fixed Time Coordinated Cycle Time = 55 seconds (User-Given Phase Times)

Phase times specified by the user
Sequence: Two-Phase
Movement Class: All Movement Classes
Input Sequence: A, B
Output Sequence: A, B

Phase Timing Results

Phase	A	B
Reference Phase	Yes	No
Phase Change Time (sec)	0	35
Green Time (sec)	29	14
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	35	20
Phase Split	64 %	36 %



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LANE SUMMARY

Site: Nelson Street/Oxford Street (PM Ex)

13S1356000 - 194-204 Oxford Street, Bondi Junction
PM Existing Conditions (16:30-17:30)
Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Phase Times)

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
East: Oxford Street - E													
Lane 1	332	8.0	1255	0.264	100	7.3	LOS A	7.2	53.6	Short (P)	40	0.0	NA
Lane 2	303	7.6	1148	0.264	100	8.0	LOS A	6.7	50.1	Full	390	0.0	0.0
Approach	635	7.8		0.264		7.7	LOS A	7.2	53.6				
North: Nelson Street - N													
Lane 1	29	0.0	379	0.078	100	44.5	LOS D	1.4	9.7	Short	15	0.0	NA
Lane 2	243	0.0	310[1]	0.785	100	56.3	LOS D	14.4	100.6	Full	500	0.0	0.0
Approach	273	0.0		0.785		55.0	LOS D	14.4	100.6				
West: Oxford Street - W													
Lane 1	87	5.2	1228	0.071	20[6]	8.4	LOS A	1.6	11.7	Full	90	0.0	0.0
Lane 2	439	9.7	1242	0.354	100	8.0	LOS A	10.3	78.0	Full	90	0.0	0.0
Approach	526	9.0		0.354		8.0	LOS A	10.3	78.0				
Intersection	1434	6.7		0.785		16.8	LOS B	14.4	100.6				

Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
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.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the adjacent full-length lanes. Some upstream delays at entry to short lanes are not included.
6 Lane under-utilisation due to downstream effects

MOVEMENT SUMMARY

Site: Nelson Street/Oxford Street (PM Ex)

13S1356000 - 194-204 Oxford Street, Bondi Junction
PM Existing Conditions (16:30-17:30)
Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Oxford Street - E											
5	T1	618	8.0	0.264	7.5	LOS A	7.2	53.6	0.41	0.37	41.1
6	R2	17	0.0	0.264	12.3	LOS A	6.7	50.1	0.41	0.38	39.7
Approach		635	7.8	0.264	7.7	LOS A	7.2	53.6	0.41	0.37	41.1
North: Nelson Street - N											
7	L2	29	0.0	0.078	44.5	LOS D	1.4	9.7	0.84	0.69	27.2
9	R2	243	0.0	0.785	56.3	LOS D	14.4	100.6	0.99	0.91	19.7
Approach		273	0.0	0.785	55.0	LOS D	14.4	100.6	0.97	0.89	20.6
West: Oxford Street - W											
10	L2	40	0.0	0.071	10.8	LOS A	1.6	11.7	0.34	0.44	35.9
11	T1	486	9.7	0.354	7.8	LOS A	10.3	78.0	0.43	0.40	40.8
Approach		526	9.0	0.354	8.0	LOS A	10.3	78.0	0.42	0.40	40.3
All Vehicles		1434	6.7	0.785	16.8	LOS B	14.4	100.6	0.52	0.48	33.3

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P3	North Full Crossing	53	9.2	LOS A	0.1	0.1	0.39	0.39
P4	West Full Crossing	53	44.3	LOS E	0.2	0.2	0.86	0.86
All Pedestrians		105	26.8	LOS C			0.63	0.63

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

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PHASING SUMMARY

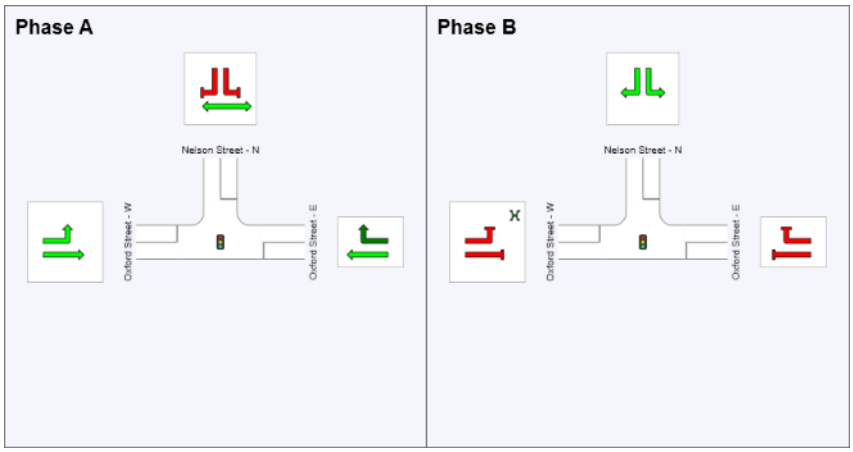
Site: Nelson Street/Oxford Street (PM Ex)

13S1356000 - 194-204 Oxford Street, Bondi Junction
PM Existing Conditions (16:30-17:30)
Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Phase Times)

Phase times specified by the user
Sequence: Two-Phase
Movement Class: All Movement Classes
Input Sequence: A, B
Output Sequence: A, B

Phase Timing Results

Phase	A	B
Reference Phase	Yes	No
Phase Change Time (sec)	0	89
Green Time (sec)	83	25
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	89	31
Phase Split	74 %	26 %



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LANE SUMMARY

Site: Nelson Street/Oxford Street (AM Ex + Dev + Optimised)

13S1356000 - 194-204 Oxford Street, Bondi Junction
AM Existing Conditions (8:00-09:00)
Existing + Development traffic + Signal Optimisation
Signals - Fixed Time Coordinated Cycle Time = 45 seconds (Optimum Cycle Time - Minimum Delay)

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
East: Oxford Street - E													
Lane 1	470	11.0	752	0.625	100	9.9	LOS A	7.2	55.2	Short (P)	40	0.0	NA
Lane 2	411	10.0	658	0.625	100	11.4	LOS A	6.6	50.4	Full	390	0.0	0.0
Approach	881	10.6		0.625		10.6	LOS A	7.2	55.2				
North: Nelson Street - N													
Lane 1	36	4.5	548	0.065	100	15.5	LOS B	0.6	4.1	Short	50	0.0	NA
Lane 2	306	2.6	516	0.593	100	18.4	LOS B	6.0	42.9	Full	500	0.0	0.0
Approach	342	2.8		0.593		18.1	LOS B	6.0	42.9				
West: Oxford Street - W													
Lane 1	82	0.0	727	0.113	21[5]	13.2	LOS A	1.1	7.8	Full	90	0.0	0.0
Lane 2	407	8.1	766	0.532	100	10.8	LOS A	6.9	51.5	Full	90	0.0	0.0
Approach	489	6.8		0.532		11.2	LOS A	6.9	51.5				
Intersection	1712	7.9		0.625		12.2	LOS A	7.2	55.2				

Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
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.

5 Lane under-utilisation found by the program

MOVEMENT SUMMARY

Site: Nelson Street/Oxford Street (AM Ex + Dev + Optimised)

13S1356000 - 194-204 Oxford Street, Bondi Junction
AM Existing Conditions (8:00-09:00)
Existing + Development traffic + Signal Optimisation
Signals - Fixed Time Coordinated Cycle Time = 45 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Oxford Street - E											
5	T1	844	11.0	0.625	10.4	LOS A	7.2	55.2	0.73	0.64	38.5
6	R2	37	0.0	0.625	15.5	LOS B	6.6	50.4	0.75	0.66	38.1
Approach		881	10.6	0.625	10.6	LOS A	7.2	55.2	0.73	0.64	38.5
North: Nelson Street - N											
7	L2	36	4.5	0.065	15.5	LOS B	0.6	4.1	0.73	0.66	35.9
9	R2	306	2.6	0.593	18.4	LOS B	6.0	42.9	0.90	0.81	30.1
Approach		342	2.8	0.593	18.1	LOS B	6.0	42.9	0.88	0.80	30.8
West: Oxford Street - W											
10	L2	82	0.0	0.113	13.2	LOS A	1.1	7.8	0.64	0.69	33.3
11	T1	407	8.1	0.532	10.8	LOS A	6.9	51.5	0.79	0.68	38.4
Approach		489	6.8	0.532	11.2	LOS A	6.9	51.5	0.77	0.68	37.2
All Vehicles		1712	7.9	0.625	12.2	LOS A	7.2	55.2	0.77	0.69	36.0

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P3	North Full Crossing	53	14.4	LOS B	0.1	0.1	0.80	0.80
P4	West Full Crossing	53	16.9	LOS B	0.1	0.1	0.87	0.87
All Pedestrians		105	15.7	LOS B			0.84	0.84

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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PHASING SUMMARY

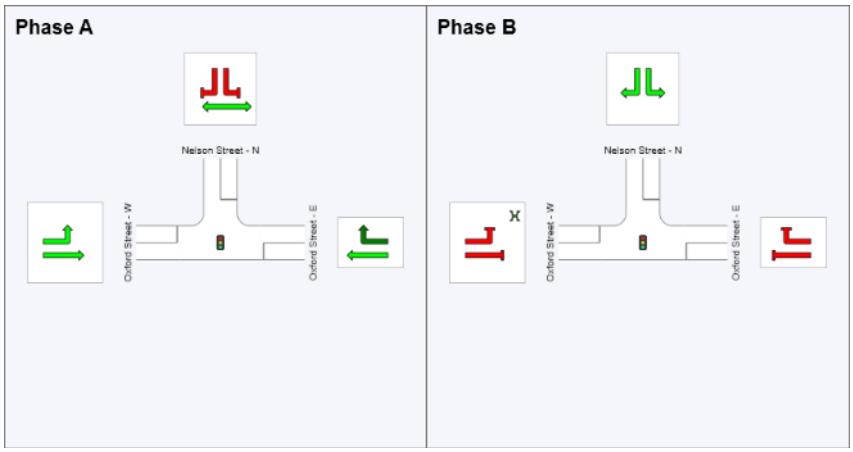
Site: Nelson Street/Oxford Street (AM Ex + Dev + Optimised)

13S1356000 - 194-204 Oxford Street, Bondi Junction
AM Existing Conditions (8:00-09:00)
Existing + Development traffic + Signal Optimisation
Signals - Fixed Time Coordinated Cycle Time = 45 seconds (Optimum Cycle Time - Minimum Delay)

Phase times determined by the program
Sequence: Two-Phase
Movement Class: All Movement Classes
Input Sequence: A, B
Output Sequence: A, B

Phase Timing Results

Phase	A	B
Reference Phase	Yes	No
Phase Change Time (sec)	0	25
Green Time (sec)	19	14
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	25	20
Phase Split	56 %	44 %



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LANE SUMMARY

Site: Nelson Street/Oxford Street (PM Ex + Dev + Optimised)

13S1356000 - 194-204 Oxford Street, Bondi Junction
PM Existing Conditions (16:30-17:30)
Existing + Development Traffic + Signal Optimisation
Signals - Fixed Time Isolated Cycle Time = 50 seconds (Optimum Cycle Time - Minimum Delay)

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
East: Oxford Street - E													
Lane 1	342	8.1	871	0.392	100	9.1	LOS A	5.4	40.8	Short (P)	40	0.0	NA
Lane 2	298	7.5	760	0.392	100	10.2	LOS A	4.9	36.6	Full	390	0.0	0.0
Approach	640	7.8		0.392		9.6	LOS A	5.4	40.8				
North: Nelson Street - N													
Lane 1	31	0.0	509	0.061	100	17.9	LOS B	0.6	3.9	Short	50	0.0	NA
Lane 2	255	0.0	473	0.538	100	20.7	LOS B	5.5	38.7	Full	500	0.0	0.0
Approach	285	0.0		0.538		20.4	LOS B	5.5	38.7				
West: Oxford Street - W													
Lane 1	93	0.9	838	0.111	20[6]	12.0	LOS A	1.3	8.9	Full	90	0.0	0.0
Lane 2	479	10.2	859	0.557	100	10.2	LOS A	8.5	64.6	Full	90	0.0	0.0
Approach	572	8.7		0.557		10.5	LOS A	8.5	64.6				
Intersection	1497	6.7		0.557		12.0	LOS A	8.5	64.6				

Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
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.

6 Lane under-utilisation due to downstream effects

MOVEMENT SUMMARY

Site: Nelson Street/Oxford Street (PM Ex + Dev + Optimised)

13S1356000 - 194-204 Oxford Street, Bondi Junction
PM Existing Conditions (16:30-17:30)
Existing + Development Traffic + Signal Optimisation
Signals - Fixed Time Isolated Cycle Time = 50 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Oxford Street - E											
5	T1	618	8.1	0.392	9.4	LOS A	5.4	40.8	0.69	0.59	39.4
6	R2	22	0.0	0.392	14.4	LOS A	4.9	36.6	0.70	0.61	38.7
Approach		640	7.8	0.392	9.6	LOS A	5.4	40.8	0.69	0.60	39.3
North: Nelson Street - N											
7	L2	31	0.0	0.061	17.9	LOS B	0.6	3.9	0.76	0.67	35.0
9	R2	255	0.0	0.538	20.7	LOS B	5.5	38.7	0.90	0.80	29.2
Approach		285	0.0	0.538	20.4	LOS B	5.5	38.7	0.88	0.78	29.9
West: Oxford Street - W											
10	L2	86	0.0	0.111	12.3	LOS A	1.3	8.9	0.58	0.66	33.9
11	T1	486	10.2	0.557	10.1	LOS A	8.5	64.6	0.76	0.66	38.8
Approach		572	8.7	0.557	10.5	LOS A	8.5	64.6	0.73	0.66	37.9
All Vehicles		1497	6.7	0.557	12.0	LOS A	8.5	64.6	0.74	0.66	36.2

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P3	North Full Crossing	53	13.0	LOS B	0.1	0.1	0.72	0.72
P4	West Full Crossing	53	19.4	LOS B	0.1	0.1	0.88	0.88
All Pedestrians		105	16.2	LOS B			0.80	0.80

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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PHASING SUMMARY

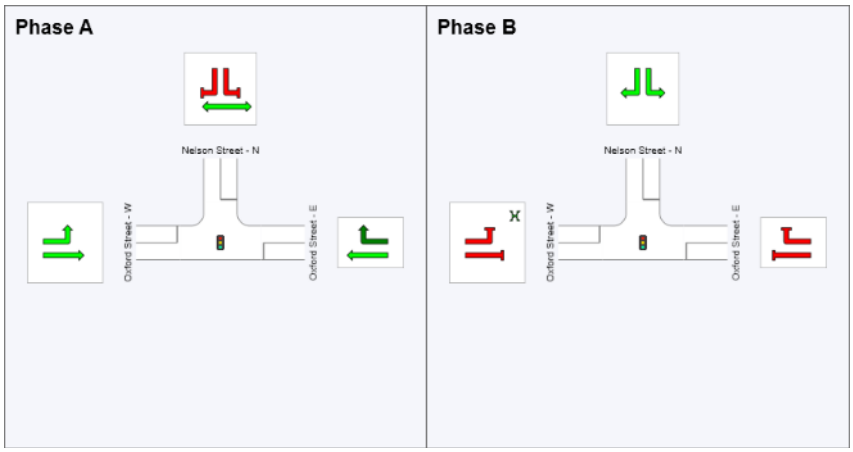
Site: Nelson Street/Oxford Street (PM Ex + Dev + Optimised)

13S1356000 - 194-204 Oxford Street, Bondi Junction
PM Existing Conditions (16:30-17:30)
Existing + Development Traffic + Signal Optimisation
Signals - Fixed Time Isolated Cycle Time = 50 seconds (Optimum Cycle Time - Minimum Delay)

Phase times determined by the program
Sequence: Two-Phase
Movement Class: All Movement Classes
Input Sequence: A, B
Output Sequence: A, B

Phase Timing Results

Phase	A	B
Reference Phase	Yes	No
Phase Change Time (sec)	0	30
Green Time (sec)	24	14
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	30	20
Phase Split	60 %	40 %



Normal Movement
Permitted/Opposed
Slip/Bypass-Lane Movement
Opposed Slip/Bypass-Lane
Stopped Movement
Turn On Red
Other Movement Class Running
Other Movement Class Stopped
Mixed Running & Stopped Movement Classes
Undetected Movement
Phase Transition Applied

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Appendix C

Proposed Mitigation - Oxford Street/York Road

STORAGE FOR 4 CARS

EXISTING KERBLINE
TO BE SHIFTED BY 4M

MOVE EXISTING STOP
LINE BY 1.7M

MOVE EXISTING CLEARWAY
LINE BY 2.5M

CURRENT BUS TERMINUS ACCESS
(EXIT TO OXFORD STREET ONLY)

OXFORD STREET

YORK ROAD

N

PRELIMINARY PLAN

FOR DISCUSSION PURPOSES
ONLY SUBJECT TO CHANGE
WITHOUT NOTIFICATION

GTAconsultants
www.gta.com.au

194 - 214 OXFORD STREET, BONDI JUNCTION
INTERSECTION OF OXFORD STREET AND YORK ROAD
PROVISION OF RIGHT TURN LANE

20 MAY '13
SCALE 1:500 @ A3
13S1356000-SK01-P1

PLOTTED BY : rebecca.fletcher ON 20/05/2013 AT 10:38:08 AM

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