PARKING

ASSESSMENT

REPORT

FOR

LAKE MACQUARIE YACHT CLUB

BELMONT

6 JUNE 2009

BJ Bradley & Associates
Consulting Civil and Traffic Engineers
P O Box 2030
Gateshead Business Centre
GATESHEAD NSW 2290
Phone and Fax: 02 49485212
Mobile: 0412 490 859
Email: bjbradle@tpg.com.au

1.0 INTRODUCTION

Lake Macquarie Yacht Club proposes to undertake extensions and renovations to the existing Club building that has operated on the Belmont site for many decades.

The proposed redevelopment will provide enhanced amenities for Club members and also visitors and increase the number of wet berths for the increasing demand for recreational boating.

2.0 LOCALITY DIAGRAM

3.0 EXISTING PARKING FOR LAKE MACQUARIE YACHT CLUB

The existing Lake Macquarie Yacht Club development consists of a two-storey building, car parking and boat storage facilities and berthing facilities for yachts and power boats.

The existing Lake Macquarie Yacht Club development contains the following components:

Ground Floor	
Auditorium	295 m^2
Bar	24 m^2
Cool Room / Storage	88 m^2
Yacht Brokerage	8 m^2
Office	7 m^2
Reception / Office	20 m^2
Foyer	28 m^2
Kitchen	86 m^2
Restaurant	102 m^2
First Floor	
Function Room	80 m^2
	Total Gross Floor Area = 738 m^2
Moorings	
Marina berths	85
Dry berths	19
Swing moorings	12

Note: The Yacht Brokerage Office should be treated as a shop but due to its small size and the relationship between the Club's functions and the Yacht Brokerage it has been treated in the overall calculations for the Club as the parking difference would be negligible.

The parking requirement for the existing Lake Macquarie Yacht Club development, based on the requirements of Council's DCP No. 1 and also AS 3692 – 2001, is as follows:

DCP No. 1 requirement for Clubs – Licensed, (less than 1,500 m^2)

1 space, plus 1 space per 15 m^2 GFA

738 m^2 @ 1 space per 15 m^2	= 49.2 spaces,
Plus 1 space	= 1
Total	= 50.2 ➔ Say 51 spaces.

The moorings component can be obtained from the recommendations in AS 3692 – 2001, as follows.

Wet Berths:	03 – 0.6 spaces per berth
Dry berths	0.2-0.4 spaces per berth
Swing moorings	03 – 0.6 spaces per berth

At any one time at the Lake Macquarie Yacht Club, less than 50% of boats are involved in racing. A significant number of boats rarely leave their moorings. It is suggested that a mid-range rate would be appropriate for the Lake Macquarie Yacht Club based on observed usage rate history.

Wet berths	0.45 spaces per berth (for racing clubs – 50% racing)	
84 berths @ 0.45 spaces per		= 37.8 spaces
Dry berths	0.3 spaces per berth (for racing clubs – 50% racing)	
19 berths @ 0.3 spaces per berth		= 5.7 spaces
Swing Moorings	0.45 spaces per mooring	
12 moorings @ 0.45 spaces per mooring		= 5.4 spaces
Total Theoretical car parking requirement		99.1 ➔ Say 100 spaces

The existing Lake Macquarie Yacht Club provides 94 car spaces.

The existing Lake Macquarie Yacht Club has a parking deficiency of approximately 6 spaces.

4.0 PROPOSED REDEVELOPMENT AT LAKE MACQUARIE YACHT CLUB

The proposed Lake Macquarie Yacht Club will contain the following components when the redevelopment is completed:

Ground Floor

Auditorium	287.7 m^2
Main Bar	40.8 m^2
Bar 2	18.9 m^2
Cool Room/Storage	60 m^2
Gaming Room	45.7 m^2
Yacht Brokerage	10.1 m^2
Office	11 m^2
Sailing School	10.1 m^2
Reception / Office	24.8 m^2
Foyer	61.7 m^2
Kitchen 1	64.7 m^2
Terrace	325.6 m^2
Restaurant	103.1 m^2

First Floor

Function Rooms (1 & 2 & pre-function)	326.8 m^2
Bar 3	12.4 m^2
Lobby	78 m^2
Kitchen 2	50.6 m^2
General Office / Sailing Office	33.3 m^2
Manager's Office	33.3 m^2

Total Gross Floor Area = 1297.5 m^2

Moorings

Marina berths	140
Dry berths	19
Swing moorings	8

5.0 PARKING REQUIREMENTS FOR REDEVELOPED YACHT CLUB

The parking requirement for the redevelopment of the Lake Macquarie Yacht Club, based on the requirements of Council's DCP No. 1 and also AS 3692 – 2001, is as follows:

DCP No. 1 requirement for Clubs – Licensed, (more than 1,500 m^2)

40 spaces, plus 1 space per 25 m^2 GFA

1,722.1 m^2 @ 1 space per 25 m^2	= 68.9 spaces,
Plus 40 spaces	= 40
Total	= 108.9 ➔ Say 109 spaces.

The moorings component can be obtained from the recommendations in AS 3692 – 2001, as follows.

Wet berths	0.45 spaces per berth (for racing clubs – 50% racing)	
140 berths @ 0.45 spaces per		= 63 spaces
Dry berths	0.3 spaces per berth (for racing clubs – 50% racing)	
19 berths @ 0.3 spaces per berth		= 5.7 spaces
Swing Moorings	0.45 spaces per mooring (for racing clubs – 50% racing)	
8 moorings @ 0.45 spaces per mooring		= 3.6 spaces
Total theoretical car parking requirement		181.3 ➔ Say 182 spaces

It is proposed that additional car parking will be providing on the northern and southern side of the existing car parking area within the existing lease boundaries. The car parking area adjustments will provide a total of 127 spaces and an agreement has been reached to provide an additional 24 spaces in the existing gravel area adjacent to the Lake edge south of Ada Street.

The redeveloped Lake Macquarie Yacht Club will provide a total of 151 car spaces.

The redeveloped Lake Macquarie Yacht Club will have a theoretical parking shortfall of approximately 31 spaces, assuming all components of the club are fully occupied at the one time.

However, the parking demand for the marina component is essentially during daylight hours, particularly when the racing season is operative.

The restaurant, bar and ground floor auditorium and terrace will be utilised more frequently during the day-time, whereas the two first floor function rooms and pre-function area would be generally more highly utilised during the evenings, unless a special function such as a wedding or similar function may be booked on odd occasions. It would be a highly unlikely scenario that a large function would be booked during the day on a race day because the Club would be very busy with racing activities.

The worst-case scenario would be summer day-time racing coinciding with a large function upstairs and the restaurant and bar areas being fully occupied. The club component is largely utilised by sailors during the day.

Night-time activities would include reduced demand from sailors after-racing and demand from the restaurant and bar areas including the terrace, and possibly the functions rooms.

The likely night-time peak parking demand is anticipated to be approximately 20% of the peak day-time parking demand for the marina component and 100% of the demand for the Club.

The likely night-time parking demand is therefore estimated to be:

Marina:	(20% demand)	≈ 15 spaces
Club Premises:	(100% demand)	≈ 109 spaces

Estimated Maximum Night-time Parking Demand = 124 spaces

The Lake Macquarie Yacht Club has arranged a lease of the TAFE premises car parking area on the eastern side of the Pacific Highway which is approximately a 390 metre walk from the Lake Macquarie Yacht Club's entrance.

Overflow parking during race days can be accommodated on Ada Street, Walter Street and within the nearby TAFE parking area.

Bicycle parking racks can be provided on-site as necessary. However, the experience at the Lake Macquarie Yacht Club is that few club patrons or boat owners or race participants utilise bicycles to attend the Lake Macquarie Yacht Club.

6.0 TRAFFIC ENVIRONMENT ON PACIFIC HIGHWAY

Pacific Highway runs generally north-south past Ada Street at Belmont. There is kerb and gutter on both sides of the Pacific Highway.

The Pacific Highway has two lanes for northbound through-traffic and a short left-turn lane approximately 26 metres long for the left-turn into Ada Street. The southbound carriageway has two lanes for through-traffic and a right-turn bay approximately 60 metres long for the right-turn into Ada Street.

The Pacific Highway has an uphill gradient towards the north past Ada Street, and a straight alignment.

There is a paved footpath along the eastern side of the Pacific Highway and along the western side north of Ada Street.

The speed zoning on the Pacific Highway is 60km/h.

7.0 TRAFFIC ENVIRONMENT ON ADA STREET

Ada Street is a short local a street aligned generally east-west that connects Walter Street with the Pacific Highway and provides access to the shore of Lake Macquarie and also access to the Lake Macquarie Yacht Club.

There is kerb and gutter along the northern side of Ada Street and also along the southern side from the Pacific Highway to just west of Walter Street.

There is no linemarking on Ada Street west of Walter Street, but there is a double barrier centreline marked on Ada Street between Walter Street and the Pacific Highway.

The speed zoning on Ada Street is 50km/h.

The western leg of Ada Street is signposted with Give-Way signs to give priority to traffic turning right and left into Ada Street from Walter Street and from Ada Street right into Walter Street.

Ada Street is also signposted with Give Way signs at the junction with the Pacific Highway.

Ada Street has a carriageway width of approximately 11.7 metres between the Pacific Highway and Walter Street and approximately 9.0 metres just west of Walter Street.

8.0 TRAFFIC ENVIRONMENT ON WALTER STREET

Walter Street is a local street aligned generally north-south that connects Ada Street and Macquarie Street.

There is kerb and gutter along both sides of Walter Street.

There is a paved footpath along the eastern side of Walter Street. The western footway is grassed.

Walter Street has a slight uphill gradient from Ada Street towards a crest at Victoria Street and a steeper downhill towards Macquarie Street north of Victoria Street.

Walter Street has a carriageway width of approximately 11.0 metres between kerb faces.

There is street lighting along Walter Street.

The speed zoning on Walter Street is 50km/h.

Four (4) raised thresholds have been strategically placed along Walter Street to minimise traffic using it as a bypass to Brooks Parade to avoid the traffic signals on the Pacific Highway at Belmont.

Walter Street has broken centreline markings along its length and short sections of double barrier centrelines close to Macquarie Street and Ada Street.

9.0 TRAFFIC ENVIRONMENT ON MACQUARIE STREET

Macquarie Street is a residential street aligned generally east-west between the Pacific Highway and Brooks Parade. Macquarie Street forms part of the State Road system, State Road No. 527.

Macquarie Street has a slight downhill gradient from the Pacific Highway towards Brooks Parade.

There is kerb and gutter on both sides of Macquarie Street.

There are paved footpaths on both sides of Macquarie Street.

Macquarie Street has a carriageway width of approximately 13.0 metres between kerb faces. There are two lanes for eastbound and westbound traffic along Macquarie Street between the Pacific Highway and Brooks Parade.

There is isolated street lighting along Macquarie Street.

There is double barrier linemarking on Macquarie Street between the Pacific Highway and Brooks Parade.

The speed zone on Macquarie Street between the Pacific Highway and the bend just west of Walter Street is 40km/h, and 60km/h generally north of the bend, along Brooks Parade.

There are traffic signals at the junction of Pacific Highway and Macquarie Street and also at the junction of Macquarie Street and Singleton Street.

10.0 TRAFFIC ENVIRONMENT ON VICTORIA STREET

Victoria Street is a short local a street aligned generally east-west that connects Walter Street with the Pacific Highway.

There is kerb and gutter along both sides of Victoria Street.

There are traffic signals at the intersection of Victoria Street and the Pacific Highway that enables traffic on the western side of the Pacific Highway to enter the Pacific Highway.

Signposting on Victoria Street restricts traffic movements to one-way operation eastbound from Walter Street to the Pacific Highway.

Victoria Street has a carriageway width of approximately 6.0 metres.

11.0 PEDESTRIAN AMENITY

The streets adjacent to the Lake Macquarie Yacht Club currently provide a reasonable level of pedestrian amenity.

There are two signalised pedestrian crossings on the Pacific Highway at Victoria Street / Gen Street that provide a safe crossing point for areas generally west of the Pacific Highway including the Belmont TAFE parking areas.

There is also a signalised crossing on the Pacific Highway at the traffic signals at Macquarie Street and also at George Street.

There is a paved footpath along the southern side of Victoria Street and the eastern side of Walter Street.

The 50km/h speed zone and the presence of raised thresholds at regular intervals along Walter Street and the existence of driveways and parallel parking ensures that traffic speeds along Walter Street are relatively low.

Traffic entering Ada Street from the Pacific Highway needs to slow significantly when entering Ada Street because right-angle turns are necessary and the Walter Street junction is only approximately 40 metres west of the Pacific Highway.

There are paved footpaths along both sides of the Pacific Highway through the Belmont township.

The Lake Macquarie Yacht Club generates some pedestrian activity on race days when some race participants walk to the Club from nearby areas or are dropped off in adjacent streets prior to the races commencing. The use of the Belmont TAFE car parking areas for overflow parking on race days and major sailing events would generate some pedestrian activity across the Pacific Highway at the traffic signals at Victoria Street.

The existing pedestrian amenities are satisfactory to cater for any potential increase in pedestrian activity associated with the proposed redevelopment of the Lake Macquarie Yacht Club.

12.0 TRAFFIC VOLUMES AT PACIFIC HIGHWAY AND ADA STREET

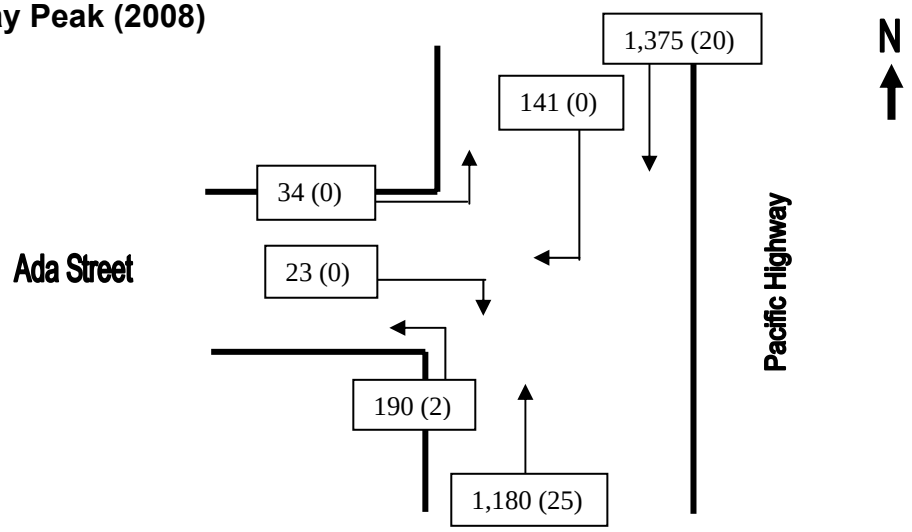
Traffic surveys were undertaken at the junction of Ada Street and Pacific Highway on Saturday 13 December 2008, Monday 15 December 2008 and 16 December 2008. The traffic surveys were undertaken between 10.45am and 1.00pm on Saturday 13 December; between 4.00pm and 6.00pm on Monday 15 December and between 7.30am and 9.30am on Tuesday 16 December.

Peak traffic volumes during the above survey periods were found to be as follows:

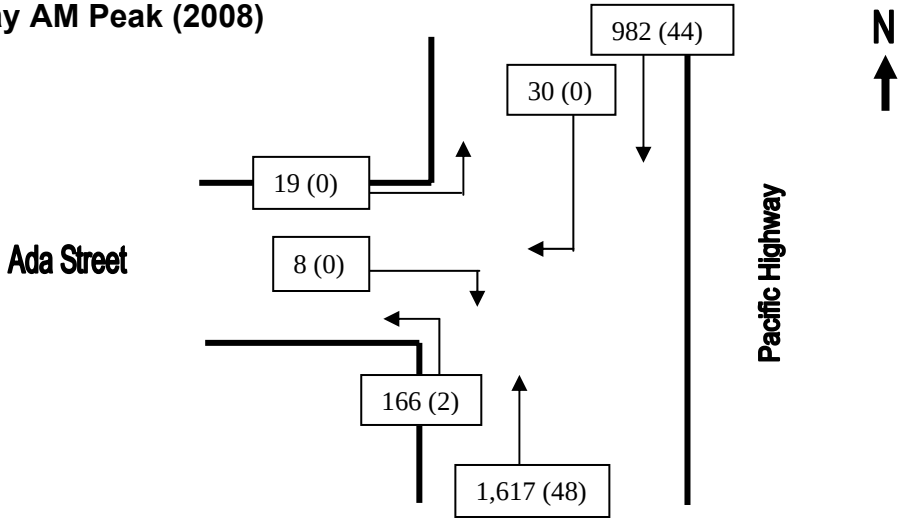
Saturday 13/12/08:	11.15am to 12.15pm
Monday 15/12/08:	4.00pm to 5.00pm
Tuesday 16/12/08:	8.00am and 9.00am

The peak traffic volumes are shown on the following diagrams

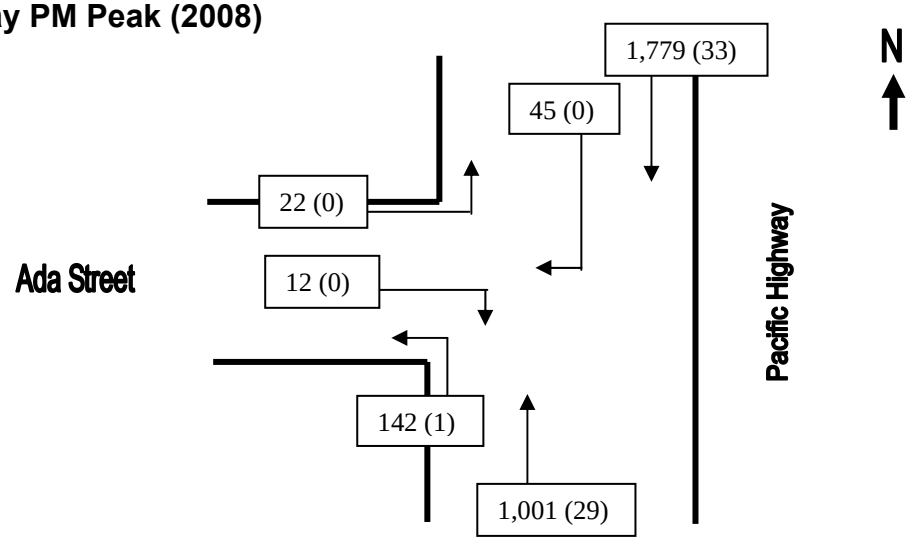
Saturday Peak (2008)



Weekday AM Peak (2008)



Weekday PM Peak (2008)



Note: Numerals in brackets represents separate heavy vehicle volumes

Traffic volumes in 2009 will be essentially the same as the volumes surveyed in December 2008.

13.0 TRAFFIC VOLUMES AT ADA STREET AND WALTER STREET

Traffic surveys were undertaken at the junction of Ada Street and Walter Street on Saturday 13 December 2008, Monday 15 December 2008 and 16 December 2008. The traffic surveys were undertaken between 10.45am and 1.00pm on Saturday 13 December; between 4.00pm and 6.00pm on Monday 15 December and between 7.30am and 9.30am on Tuesday 16 December.

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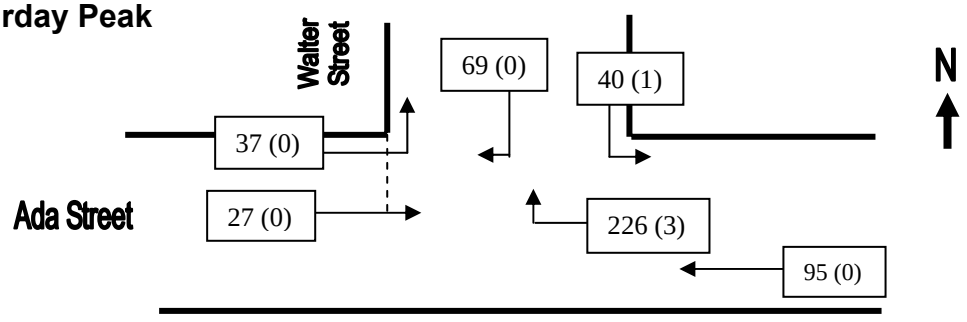
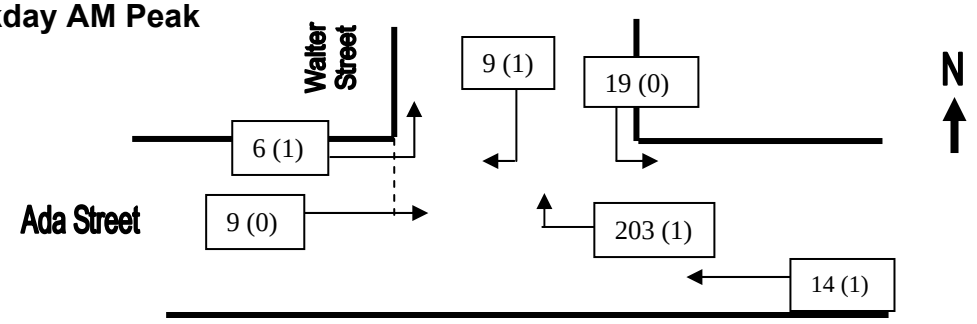
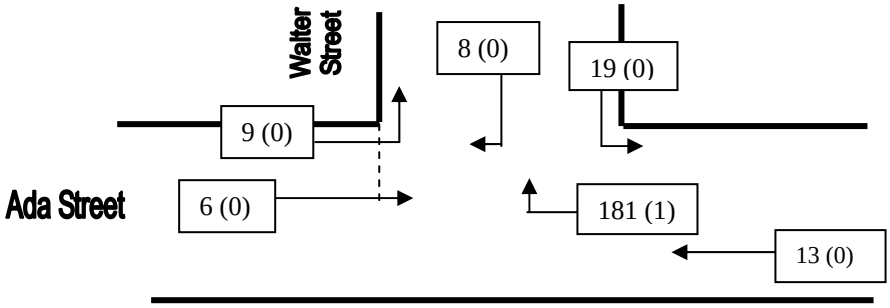
Saturday Peak



Weekday AM Peak



Weekday PM Peak

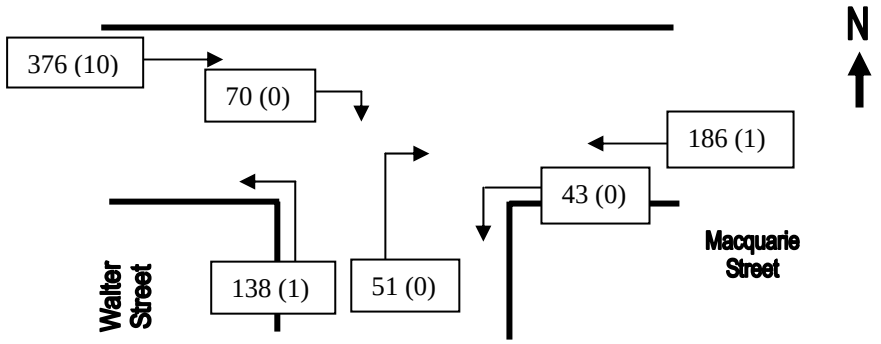


14.0 TRAFFIC VOLUMES AT WALTER STREET AND MACQUARIE STREET

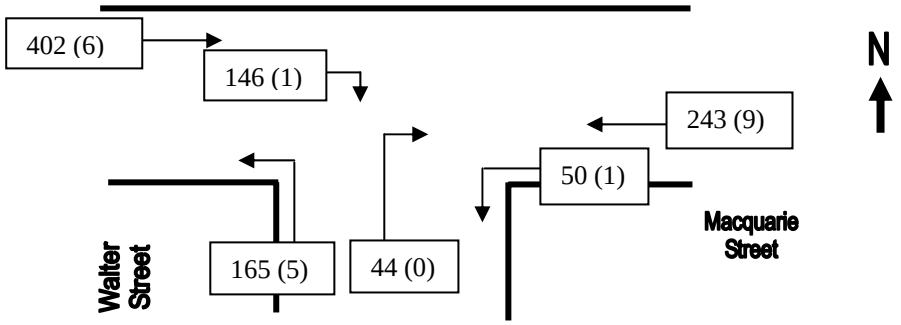
Traffic surveys were undertaken at the junction of Macquarie Street and Walter Street on Thursday 18 December 2008 between 7.30am and 9.30am and also between 3.45pm and 5.45pm.

Peak traffic volumes during the above survey periods were found to be between 8.30am and 9.30am and also between 4.00pm and 5.00pm.

Weekday AM Peak



Weekday PM Peak



15.0 PROJECTED 2019 TRAFFIC VOLUMES

The RTA records daily traffic volumes at counting stations on significant roads.

The AADT data has been recorded on Macquarie Street just west of Thomas Street at counting station 05.653, and on the Pacific Highway at counting stations 05.255 and 05.256 located north of Robert Street and south of Macquarie Street, respectively.

The traffic volumes recorded at those stations is tabulated below.

AADT Year	***AADT***	***Average Annual Traffic Variation Rate from Previous Survey (% per annum)***
Station 05.255		
1986	36,038	
1988	34,800	-1.72
1995	31,459	-1.37
1998	32,303	0.9
2001	32,485	0.18
2004	33,609	1.15
Station 05.256		
1986	34,783	-
Station 05.653		
1995	7,287	
1998	7,385	0.45
2001	8,017	2.8
2004	7,084	-3.88

Note: Traffic volumes at counting station 05.256 have not been published since 1986. However, volumes were slightly lower than the volumes recorded at station 05.255 in 1986. Traffic variations since 1986 would have been similar.

The AADT data on the Pacific Highway at Belmont indicate that traffic growth between 2004 and 2019 may be approximately 1.5% per annum. The majority of traffic that used to travel through Belmont to destinations generally north of Newcastle now utilise the F3 Freeway. The anticipated traffic growth between 2009 traffic volumes and 2019 traffic volumes would be approximately a 16% increase.

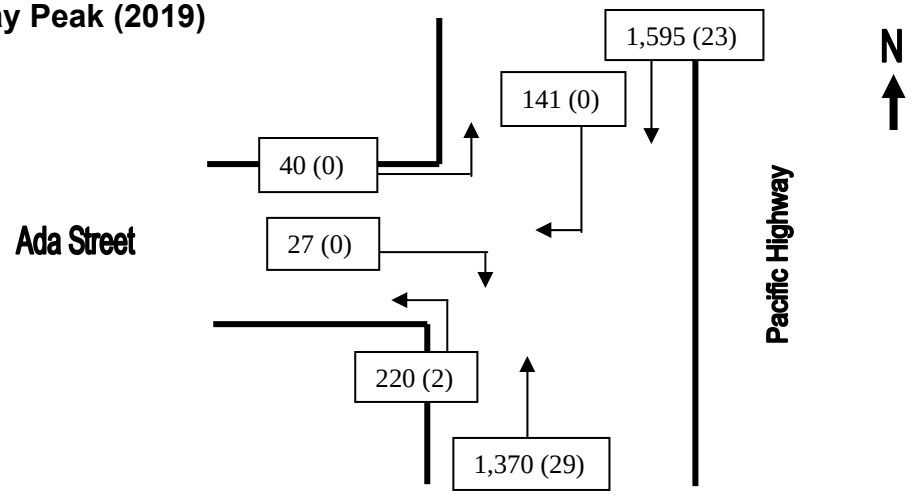
The AADT on Macquarie Street declined between the 2004 surveys and the 2001 surveys by approximately 3.88% per annum. However, recent developments in Belmont including nigh-rise residential apartments and new shopping centres suggest that traffic volumes may increase. Assuming a moderate traffic growth rate of 1.5% per annum as assumed on the Pacific Highway, the traffic growth on Macquarie Street and also Walter Street is also expected to increase by approximately 16% between 2009 and 2019.

2019 traffic volumes into and out of the western leg of Ada Street will essentially be the same as the 2009 surveyed volumes.

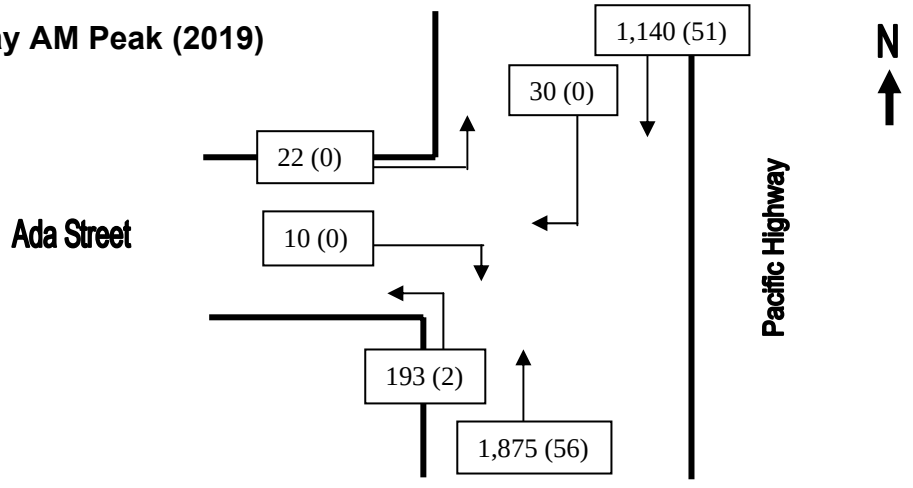
The projected 2019 traffic volumes are illustrated in the following diagrams.

Pacific Highway and Ada Street

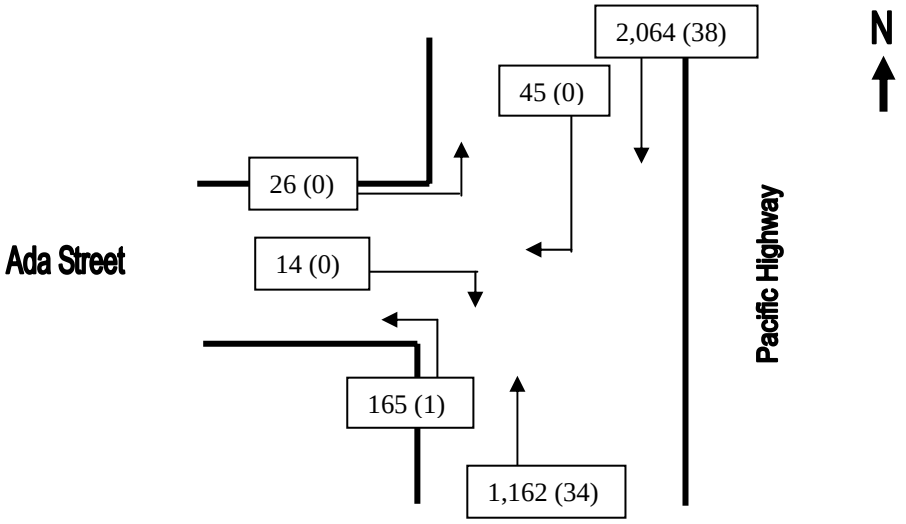
Saturday Peak (2019)



Weekday AM Peak (2019)



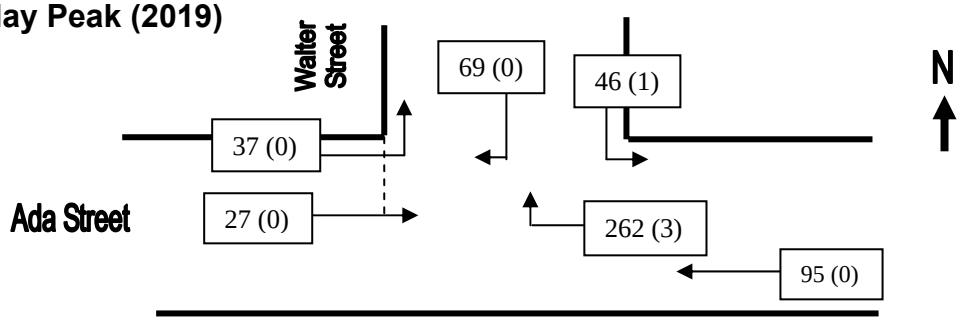
Weekday PM Peak (2019)



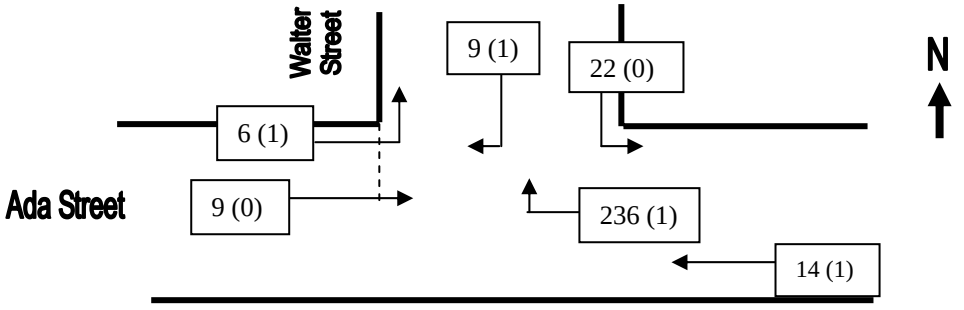
Note: Numerals in brackets represents separate heavy vehicle volumes

Ada Street and Walter Street

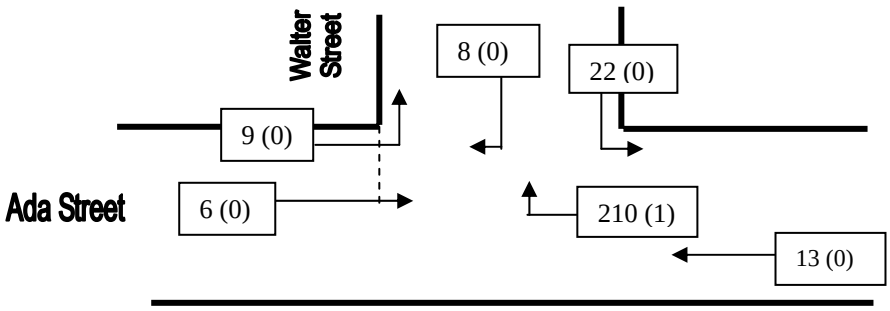
Saturday Peak (2019)



Weekday AM Peak (2019)

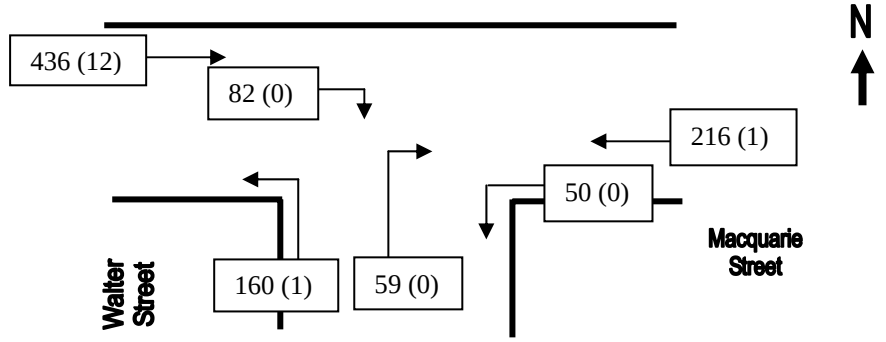


Weekday PM Peak (2019)

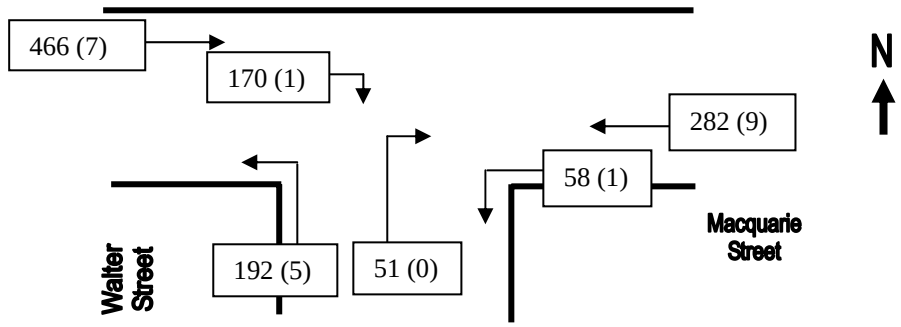


Macquarie Street and Ada Street

Weekday AM Peak (2019)



Weekday PM Peak (2019)



16.0 PROJECTED TRAFFIC GENERATION

RTA Guidelines for Traffic Generating Developments recommend the following traffic generation rates for marinas and clubs:

Marinas

Daily vehicle trips = 2.7 per fixed berth + 1.4 per swing mooring

Traffic generation rates are not indicated for dry berths, but it is suggested in the RTA Guide to Traffic Generating Developments that swing moorings and dry berths are less likely to be used regularly than wet berths. The parking requirement for dry berths is also lower than that for swing berths.

The daily traffic generation for dry berths is therefore assumed to be approximately 1.0 trip per dry berth, and the peak hour generation rate is therefore approximately 0.1 trips per dry berth.

The RTA Guide to Traffic Generating Developments also indicates that typical summer weekend / public holidays found an average utilisation of 30% over all berths, and a later survey at one club where racing was undertaken indicated an average utilisation of 65% on summer racing days.

Peak hour vehicle trips are generally approximately 10% of daily traffic volumes.

Peak hour vehicle trips would therefore be approximately:

Peak hour vehicle trips = 0.27 per fixed berth + 0.14 per swing mooring + 0.1 trips per dry berth. The projected increase in traffic generation would therefore be:

56 additional wet berths @ 0.27 trips per berth	= 15 trips
0 additional dry berths @ 0.1 trips per berth	= 0 trips
4 fewer swing berths @ 0.14 trips per berth	= - 0.56 trips

That is, the proposed alterations to the marina component of the development of the Lake Macquarie Yacht Club would generate approximately an additional 15 trips in the evening peak period. The generation in the morning peak is therefore estimated to be an additional 2 trips.

Clubs

> *The 1978 surveys of clubs found an evening peak period traffic generation of 10 veh/hr/100 m^2 licensed floor area, and a total vehicle generation over the 4.00 pm to 1.00 am period of 90 veh/100 m^2 licensed floor area.*

The RTA Guide to Traffic Generating Developments traffic generation rate for Clubs is calculated on licensed floor area, not gross floor area.

The licensed area of the proposed Club is not known, but is expected to be approximately 75% of the gross floor area.

That is, the final licensed floor area of the proposed Lake Macquarie Yacht Club redevelopment is estimated to be approximately

➔ 0.75 x 1,722.1 m^2 = 1,291.6 m^2

The increase in licensed floor area of the proposed Lake Macquarie Yacht Club redevelopment is estimated to be approximately

➔ 0.75 x 984.1 m^2 = 738.1 m^2

The RTA Guide to Traffic Generating Developments indicates traffic generation rates for the evening peak for the Club and daily traffic generation rates for marinas.

The licensed functions of the Lake Macquarie Yacht Club are not open for business during the morning peak. However, some boat owners may arrive in the morning peak to undertake boat maintenance or to use their boats and some administrative staff may arrive in the morning peak, and cleaners and other deliveries may also attend the Club during the morning peak period. The morning peak for the proposed Lake Macquarie Yacht Club is assumed to be approximately 10% of the evening peak.

Traffic surveys include the existing traffic generated by the Lake Macquarie Yacht Club. The increase in evening peak hour traffic generation from the proposed development would therefore be as follows:

<u>Weekdays:</u>

Morning peak hour traffic generation from the proposed development would therefore be as follows:

Club	738.1 m^2 @ 1 trips per 100 m^2	7.4 trips
Say	**8 trips**	

<u>Weekdays:</u>

Evening peak hour traffic generation from the proposed development would therefore be as follows:

Club	738.1 m^2 @ 10 trips per 100 m^2	73.8 trips
Say	**74 trips**	

The estimated traffic generation for mid-day Saturdays is expected to be similar to be approximately the same as weekday peak period to reflect the racing aspect of the club and marina, even though bar and auditorium activities whilst the races are in progress would probably be lower than the weekday peak period.

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The estimated additional traffic generation for the proposed development of the Lake Macquarie Yacht Club is therefore as tabulated below.

Period Of Traffic Generation	Development Component (Additional Peak Hour Trips)		Total Additional Trips
	Club	Marina	
Weekday - AM	8	2	10
Weekday – PM	74	15	89
Saturday – Mid-day	74	15	89

17.0 PARKING SURVEYS

In order to assess the potential for overflow parking during peak demand in racing season at the Lake Macquarie Yacht Club, several random spot surveys have been undertaken on the club's parking area and also adjacent street parking.

The areas surveyed were:

- Lake Macquarie Yacht Club car parking area
- Gravel area near foreshore adjacent to Lake Macquarie Yacht Club
- Both sides of Ada Street
- Both sides of Walter Street between Ada Street and Victoria Street.

Survey Date	Time of Survey	Lake Macquarie Yacht Club Parking Area – No. of Cars Parked (Capacity = 94 cars)	No. of Vacant Spaces	Ada Street – Northern Side – No. of Cars Parked (Capacity = 9 cars)	No. of Vacant Spaces	Ada Street – Southern Side – No. of Cars Parked (Capacity = 25 cars)	No. of Vacant Spaces
Saturday 13/12/08	10.45am	57	37	0	9	0	25
Saturday 13/12/08	1.00pm	97	0	13	0	27	0
Monday 15/12/08	3.45pm	19	75	0	9	0	25
Monday 15/12/08	6.00pm	34	60	0	9	0	25
Tuesday 16/12/08	7.25am	6	88	0	9	0	25
Tuesday 16/12/08	9.30am	19	75	0	9	0	25
Wednesday 17/12/08	9.15pm	33	61	3	6	4	21
Saturday 20/12/08	4.25pm	83	11	6	3	18	7

Survey Date	Time of Survey	Informal Gravel Parking Area – No. of Cars Parked (Capacity ≈ 50 cars) #	No. of Vacant Spaces	Walter Street – Western Side – No. of Cars Parked (Capacity = 17 cars)	No. of Vacant Spaces	Walter Street – Eastern Side – No. of Cars Parked (Capacity = 21 cars)	No. of Vacant Spaces
Saturday 13/12/08	10.45am	1	49	5	12	7	14
Saturday 13/12/08	1.00pm	58	0	20	0	27	0
Monday 15/12/08	3.45pm	0	50	6	14	5	16
Monday 15/12/08	6.00pm	0	50	4	13	7	14
Tuesday 16/12/08	7.25am	0	50	3	14	2	19
Tuesday 16/12/08	9.30am	3	47	5	12	3	18
Wednesday 17/12/08	9.15pm	3	47	10	7	13	8
Saturday 20/12/08	4.25pm	51	0	16	1	16	5

Note: The surveys were undertaken just prior to Christmas 2008 and the Lake Macquarie Yacht Club had races on the two Saturday surveys. Also, the nearby Gunyah Hotel on the north-eastern corner of Ada Street and Walter Street were very busy at lunch-time and also at dinner times with overflow parking on Ada Street and Walter Street. Some drivers parked closer to building lines and driveways than what is acceptable and hence the number of cars parked sometimes exceeded the theoretical capacity of on-street parking.

Note # : The gravel area on the foreshore is informal and not linemarked. Cars were frequently parked in very tight proximity on race days and not in accordance with accepted standards for formal parking areas.

SUMMARY OF PARKING SURVEY DATA

Survey Date	Time of Survey	Number of Cars Parked in Lake Macquarie Yacht Club Parking Area	Number of Vacant Spaces in Lake Macquarie Yacht Club Parking Area	Number of Cars Parked on Adjacent Street and Gravel Parking Area (Total Capacity = 122 Cars)	Number of Vacant Spaces on Adjacent Street and Gravel Parking Area	Total Number of Vacant Car Spaces
Saturday 13/12/08	10.45am	57	37	13	109	166
Saturday 13/12/08	1.00pm	97	0	153	0	0
Monday 15/12/08	3.45pm	19	75	11	111	186
Monday 15/12/08	6.00pm	34	60	11	111	171
Tuesday 16/12/08	7.25am	6	88	5	117	205
Tuesday 16/12/08	9.30am	19	75	11	111	186
Wednesday 17/12/08	9.15pm	33	61	33	89	150
Saturday 20/12/08	4.25pm	83	11	107	15	26

The maximum number of car parked within the Lake Macquarie Yacht Club parking area and also on adjacent streets within close proximity was 242 cars during the survey on Saturday 13 December 2008. That number included overflow parking associated lunch-time at the adjacent Gunyah Hotel during the high demand period just prior to Christmas 2008.

The maximum parking capacity at present is approximately 216 spaces, although more than the theoretical number of cars sometimes park in the existing gravel parking area on race days.

Following the development at the Lake Macquarie Yacht Club, the gravel car parking area will be formalised and landscaped which will increase the theoretical total parking capacity from 216 to a formal 223 spaces.

The maximum parking demand associated with Saturday racing at the Lake Macquarie Yacht Club is essentially between approximately 12 noon and 5.00pm Saturdays, or approximately 5% of the Club's opening hours. The shortfall in car parking for that short period of racing on Saturdays can be overcome by the use of the additional Belmont TAFE car parking area that has been leased from the TAFE by the Lake Macquarie Yacht Club.

The survey on 20 December 2008 at 4.25pm showed that the Club's own parking area had some 11 spaces despite racing taking place on that Saturday.

The existing car parking area is satisfactory for the Club's purposes for approximately 95% of the Club's opening hours.

The proposed enlargement of the car parking area associated with the redevelopment will increase the formal parking within the lease area from 94 spaces to 127 spaces. An additional 24 spaces will also be available in the existing gravel area near the Lake foreshore that will be landscaped and provided with formalised parking spaces, taking the total number of spaces that can be utilised by the general pubic and also patrons of the Lake Macquarie Yacht Club to 151 spaces.

It is normal practice to design infrastructure such as car parking areas to cater for approximately the 85th percentile of demand. Large shopping centres for example can never accommodate the maximum parking demand for periods such as Christmas.

Based on existing parking demand, the increased car parking demand will be catered for within the enlarged car parking area and also the landscaped area on-shore. Overflow parking for the relatively short period on Saturday afternoons during the racing season can be accommodated within the TAFE car parking area.

18.0 MODAL TRIP DISTRIBUTION

The location of the Lake Macquarie Yacht Club is generally south of the major population areas in Newcastle and Lake Macquarie.

The majority of trips will therefore be towards and from areas generally north of the Lake Macquarie Yacht Club.

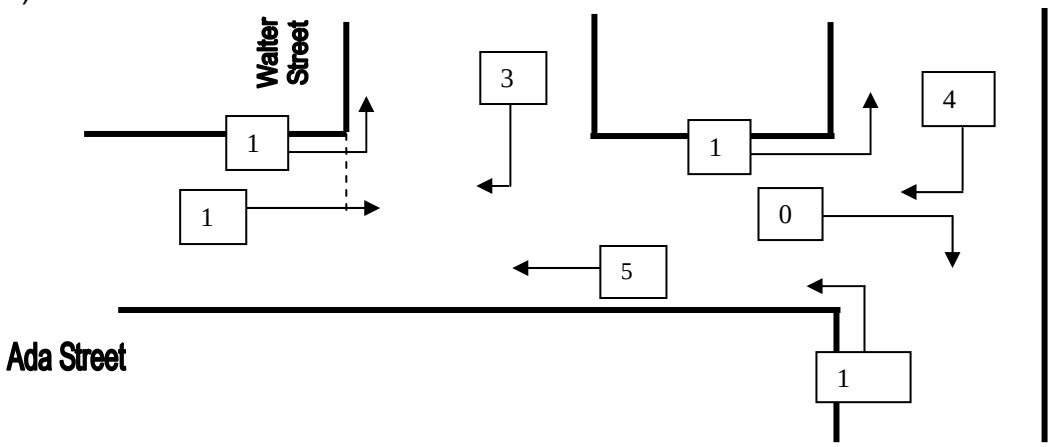
It is considered that approximately 90% of trips associated with the development of the Lake Macquarie Yacht Club would be to and from areas generally north of the Lake Macquarie Yacht Club.

It is also assumed that trips would be 80 % inward in the weekday morning peak periods and 20% outward, approximately 70% inward and 30% outward on Saturdays when races are scheduled, and approximately 50% inward and 50% outward on weekday evening peak periods when boat-related trips are outward and club movements are generally inward.

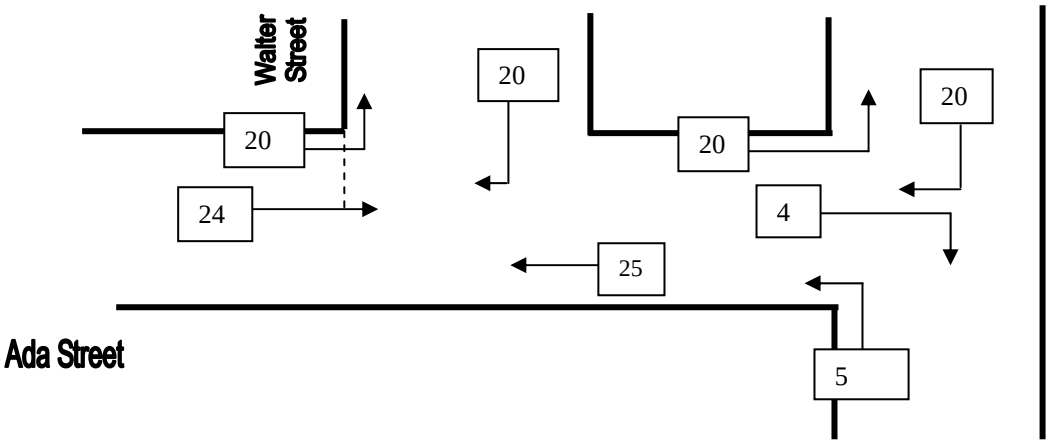
Trips towards and from the north are also likely to be split relatively evenly between using Walter Street and the Pacific Highway. Trips to the south would tend to be via Ada Street when traffic flows on the Highway are lighter and Victoria Street to access the traffic signals when traffic flows on the Pacific Highway are higher.

The assumed trip distributions are shown on the following diagrams.

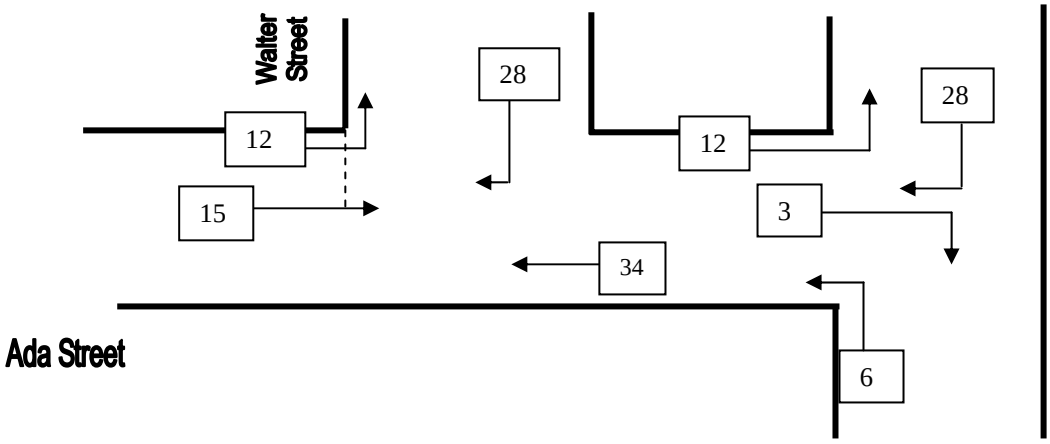
Weekday AM Peak
(10 trips)



Weekday PM Peak
(89 trips)



Saturday Mid-day Peak
(89 trips)



19.0 SIDRA SIMULATIONS

The SIDRA program was developed in conjunction with ARRB Transport Research Ltd to analyse the operation of intersections controlled by traffic signals, Give Way signs, Stop signs, conventional roundabouts and signal controlled roundabouts. It is widely used by consulting traffic engineers and is recognised and used by the Roads and Traffic Authority of NSW. SIDRA is now owned and developed by Akcelik & Associates Pty Ltd.

The parameters used in the SIDRA program are measured against the following performance standards developed by the Roads and Traffic Authority of NSW and the American Transportation Research Board.

Table 19.1 Level of Service for Unsignalised Intersections Controlled by Stop or Give Way Signs.

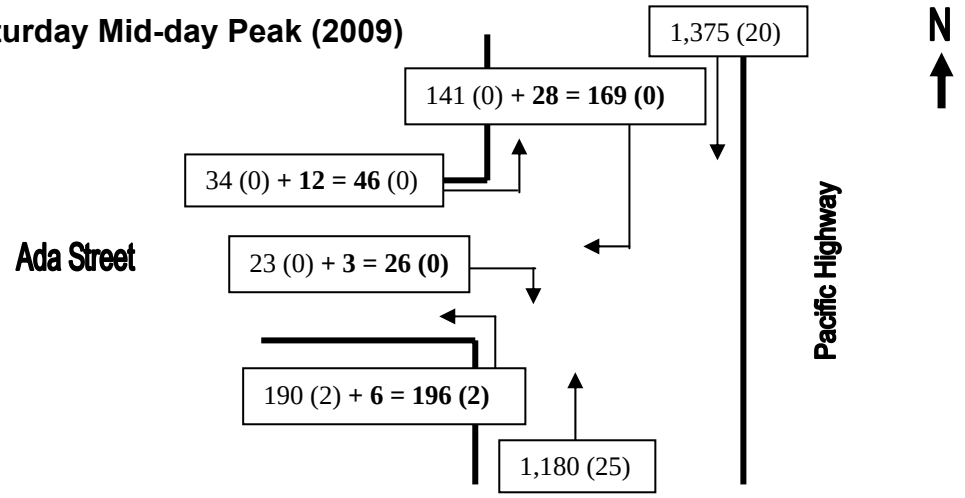
Average Delay per vehicle (secs)	Level of Service	Operational Conditions
0 to 14	A	Good
15 to 28	B	Acceptable delays and spare capacity
29 to 42	C	Satisfactory but accident study required
43 to 56	D	Near capacity and accident study required
57 to 70	E	At capacity and requires other control mode
> 70	F	Unsatisfactory and requires other control mode

SIDRA simulations have been undertaken at the junction of Ada Street and Pacific Highway, at Ada Street and Walter Street and also at Walter Street and Macquarie Street, Belmont.

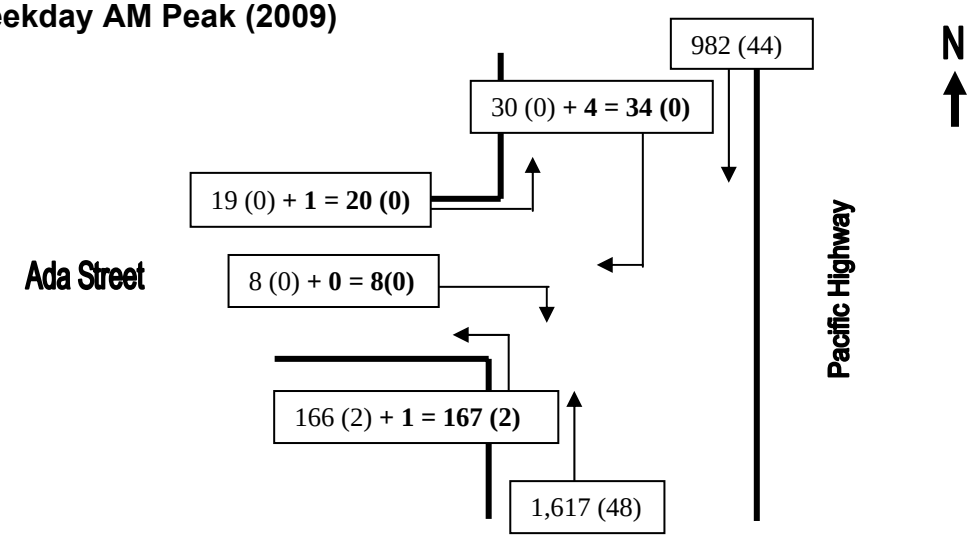
The simulations have been undertaken for existing traffic volumes which include traffic generated by the existing Lake Macquarie Yacht Club and also with the estimated additional traffic generated by the proposed redevelopment of the Lake Macquarie Yacht Club superimposed.

Traffic volumes used in the simulations are shown on the following diagrams.

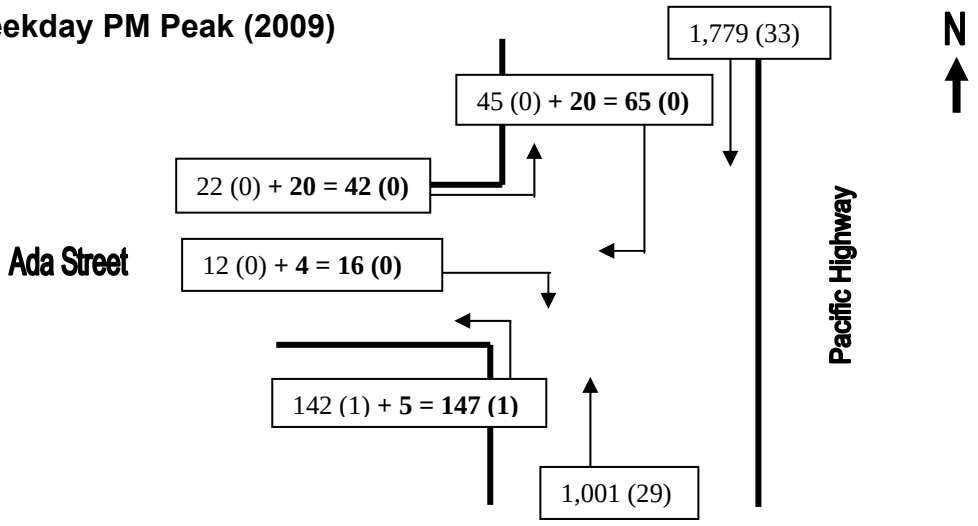
Saturday Mid-day Peak (2009)



Weekday AM Peak (2009)

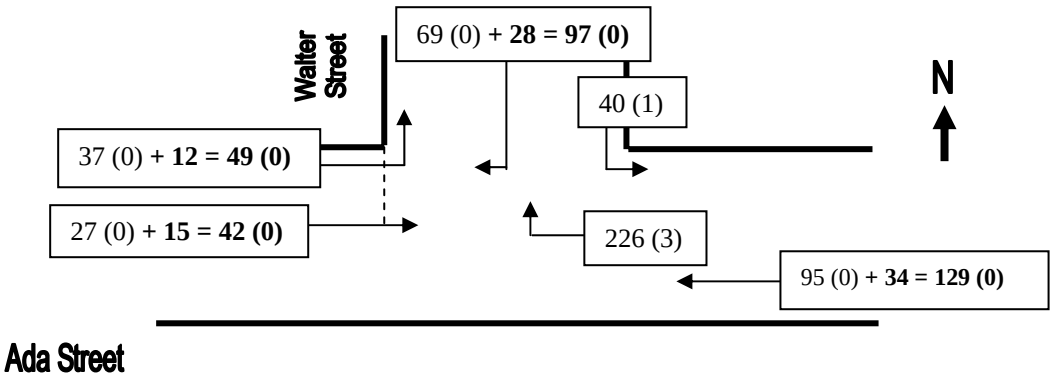


Weekday PM Peak (2009)

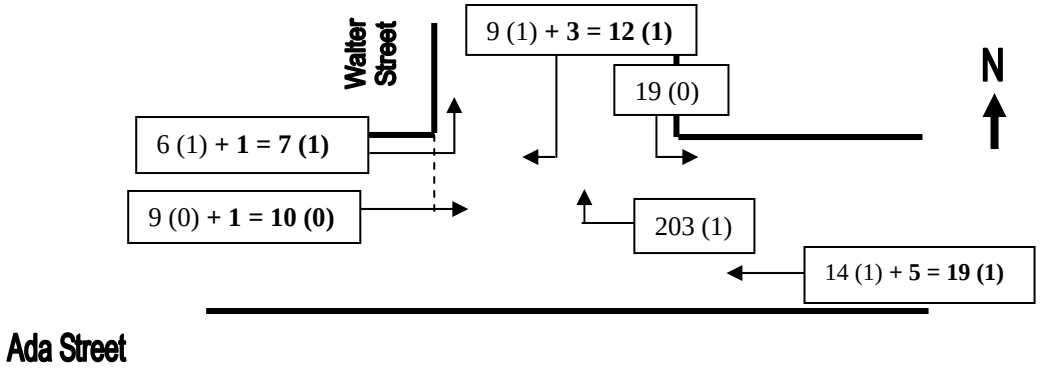


Note:	Numerals in bold font represent additional traffic generated by the redevelopment of the Lake Macquarie Yacht Club

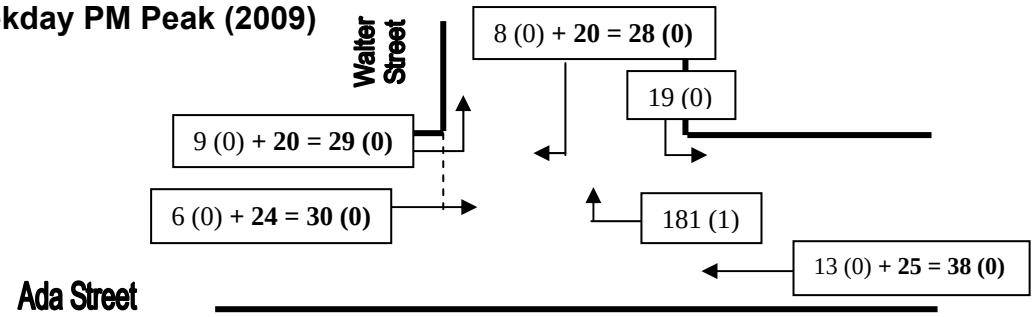
Saturday Mid-day Peak (2009)



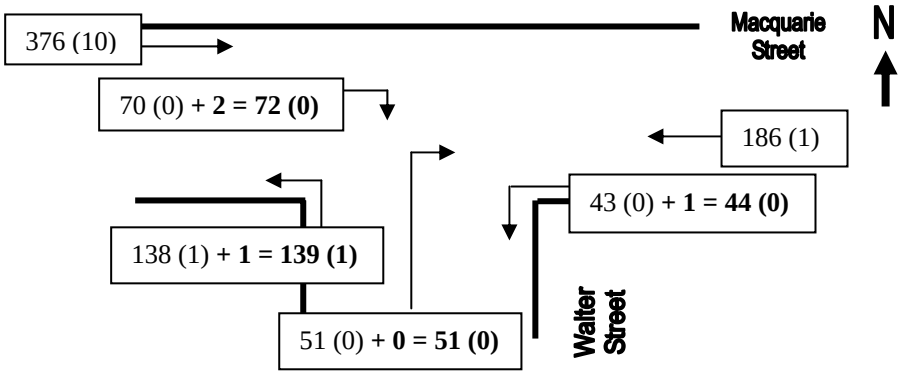
Weekday AM Peak (2009)



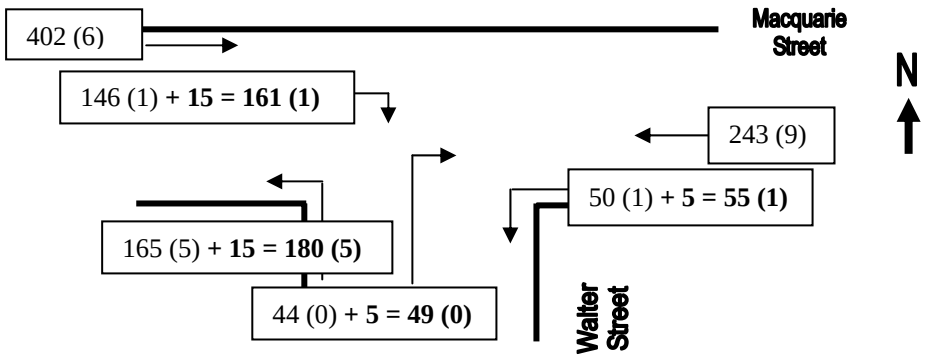
Weekday PM Peak (2009)



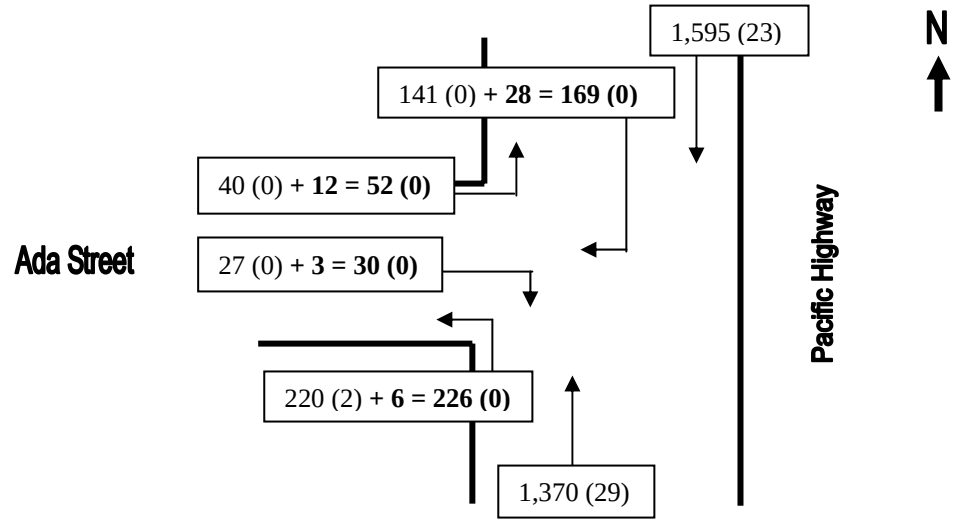
Weekday AM Peak (2009)



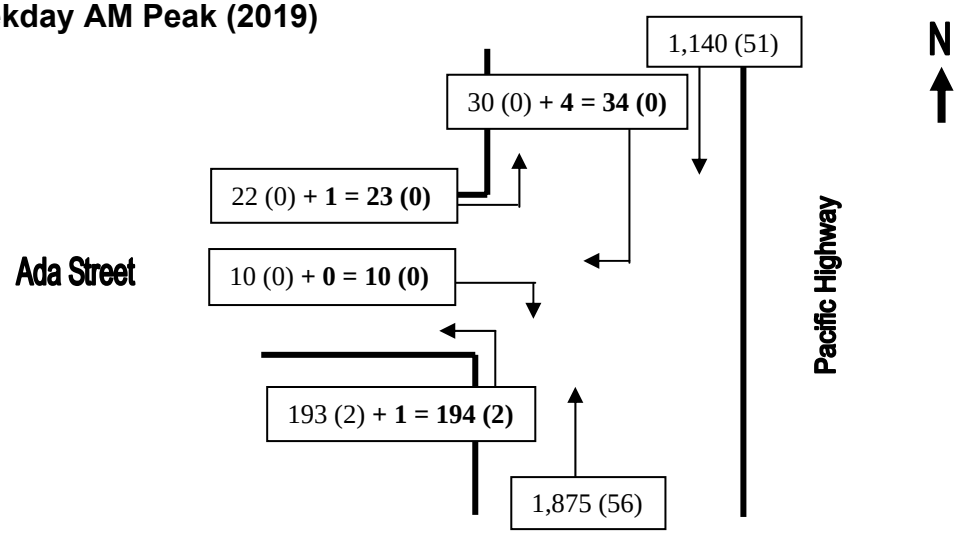
Weekday PM Peak (2009)



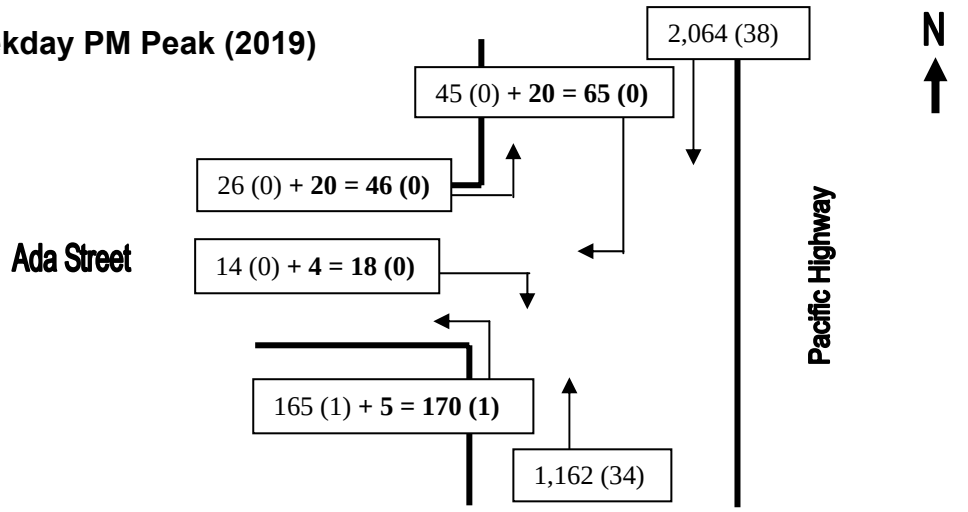
Saturday Mid-day Peak (2019)



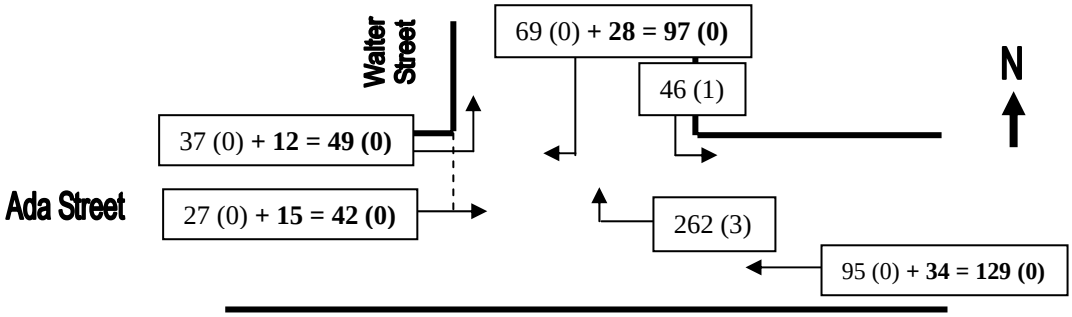
Weekday AM Peak (2019)



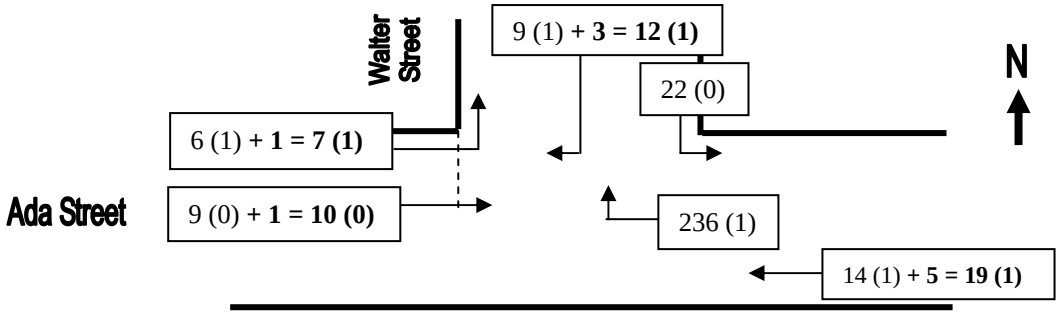
Weekday PM Peak (2019)



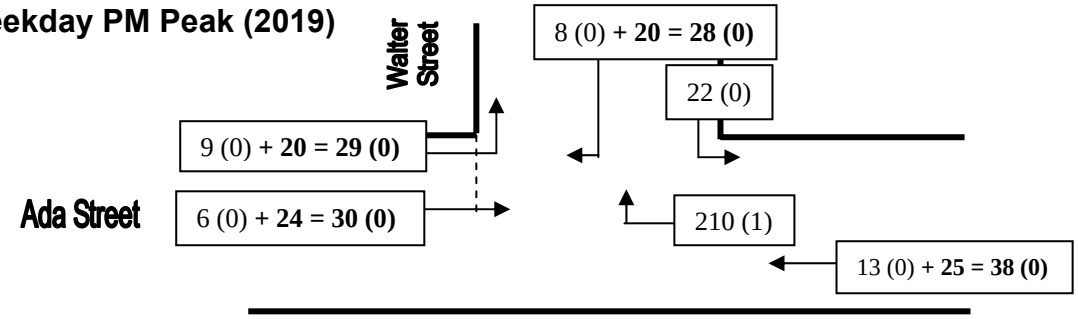
Saturday Mid-day Peak (2019)



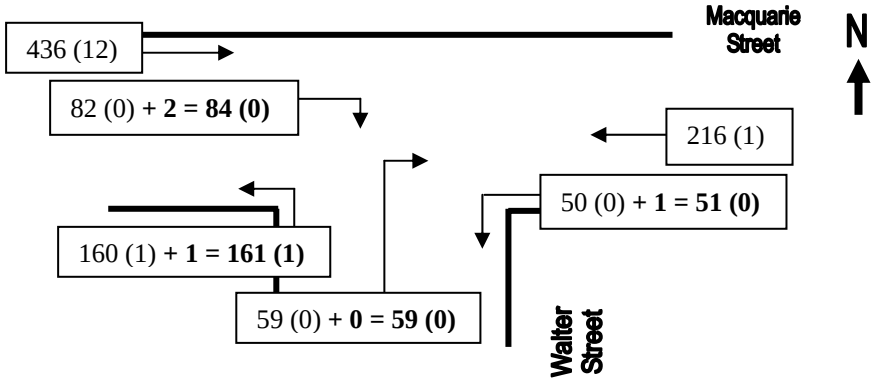
Weekday AM Peak (2019)



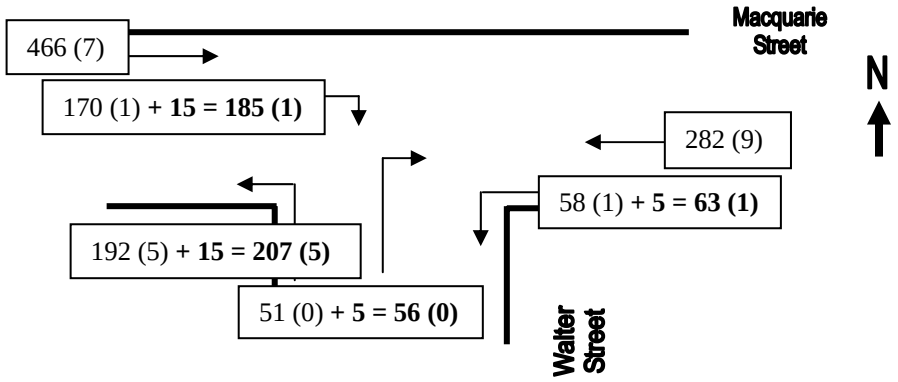
Weekday PM Peak (2019)



Weekday AM Peak (2019)



Weekday PM Peak (2019)



NOTE:	Numerals in bold font represent the additional traffic generated by the redeveloped Lake Macquarie Yacht Club.

Table 19.2 Average Delays for Movements at Pacific Highway and Ada Street – Saturday Mid-day Peak (2009 Traffic)

Movement	Average Delay for Movement – (sec / veh) – 2009 Traffic	Level of Service	Average Delay for Movement – (sec / veh) – 2009 Traffic + Development	Level of Service
Northbound on Pacific Highway left into Ada Street	7.5	A	7.5	A
Northbound through on Pacific Highway	0	A	0	A
Southbound through on Pacific Highway	0	A	0	A
Southbound on Pacific Highway right into Ada Street	25.8	B	28.8	C
Ada Street left onto Pacific Highway	21.6	B	22.4	B
Ada Street right onto Pacific Highway	846.1	F	332.6	F
Overall Average Delays	8.5		10.0	

Delays at the intersection of Pacific Highway and Ada Street are generally acceptable with the exception of the right-turn movement out of Ada Street onto the Pacific Highway for existing traffic volumes at the junction, regardless of the proposed redevelopment of the Lake Macquarie Yacht Club.

However, the SIDRA simulations do not replicate the large gaps in the southbound platoons that are created by the traffic signals at Macquarie Street, George Street and also Victoria Street. Drivers do experience difficulty turning right out of Ada Street during the mid-day Saturday period, and average delays would be

unacceptable but lower than those shown in the simulation. Drivers tend to use the short-cut from Macquarie Street via Walter Street and Ada Street to alleviate certain delays at the traffic signals at Pacific Highway and Macquarie Street and also Pacific Highway and George Street and Pacific Highway and Victoria Street.

When peak traffic flows exist on the Pacific Highway, drivers have the choice of accessing the Pacific Highway at the traffic signals at Macquarie Street and also at Victoria Street.

Table 19.3 Average Delays for Movements at Pacific Highway and Ada Street – Weekday AM Peak (2009 Traffic)

Movement	Average Delay for Movement – (sec / veh) – 2009 Traffic	Level of Service	Average Delay for Movement – (sec / veh) – 2009 Traffic + Development	Level of Service
Northbound on Pacific Highway left into Ada Street	7.5	A	7.5	A
Northbound through on Pacific Highway	0	A	0	A
Southbound through on Pacific Highway	0	A	0	A
Southbound on Pacific Highway right into Ada Street	34.5	C	35.4	C
Ada Street left onto Pacific Highway	39.5	C	39.8	C
Ada Street right onto Pacific Highway	637.2	F	651.5	F
Overall Average Delays	2.8			

The SIDRA simulations indicate that during the weekday morning peak, drivers experience relatively high average delays turning left out of Ada Street and right into Ada Street with Level of Service C.

However, the volume traffic performing these turns is relatively low and alternative routes are available for both manoeuvres.

Drivers turning right out of Ada Street onto the Pacific Highway experience undesirably high average delays regardless of the proposed redevelopment of the Lake Macquarie Yacht Club. However, as mentioned previously, the SIDRA simulations do not replicate the large gaps in the southbound platoons that are created by the traffic signals at Macquarie Street, George Street and also Victoria Street. Drivers do experience difficulty turning right out of Ada Street during the mid-day Saturday period, and average delays would be unacceptable but lower than those shown in the simulation. Drivers tend to use the short-cut from Macquarie Street via Walter Street and Ada Street to alleviate certain delays at the

traffic signals at Pacific Highway and Macquarie Street and also Pacific Highway and George Street and Pacific Highway and Victoria Street.

When peak traffic flows exist on the Pacific Highway, drivers have the choice of accessing the Pacific Highway at the traffic signals at Macquarie Street and also at Victoria Street.

Table 19.4 Average Delays for Movements at Pacific Highway and Ada Street – Weekday PM Peak (2009 Traffic)

Movement	Average Delay for Movement – (sec / veh) – 2009 Traffic	Level of Service	Average Delay for Movement – (sec / veh) – 2009 Traffic + Development	Level of Service
Northbound on Pacific Highway left into Ada Street	7.5	A	7.5	A
Northbound through on Pacific Highway	0	A	0	A
Southbound through on Pacific Highway	0	A	0	A
Southbound on Pacific Highway right into Ada Street	16.0	B	16.3	B
Ada Street left onto Pacific Highway	17.0	B	17.4	B
Ada Street right onto Pacific Highway	1120.4	F	1132.9	F
Overall Average Delays	5.1			

The SIDRA simulations indicate that during the weekday evening peak, drivers experience acceptable average delays turning left out of Ada Street and right into Ada Street with Level of Service B.

However, the volume traffic performing these turns is relatively low and alternative routes are available for both manoeuvres.

Drivers turning right out of Ada Street onto the Pacific Highway experience undesirably high average delays. However, as mentioned previously, the SIDRA simulations do not replicate the large gaps in the southbound platoons that are created by the traffic signals at Macquarie Street, George Street and also Victoria Street. Drivers do experience difficulty turning right out of Ada Street during the mid-day Saturday period, and average delays would be unacceptable but lower than those shown in the simulation. Drivers tend to use the short-cut from Macquarie Street via Walter Street and Ada Street to alleviate certain delays at the traffic signals at Pacific Highway and Macquarie Street and also Pacific Highway and George Street and Pacific Highway and Victoria Street.

When peak traffic flows exist on the Pacific Highway, drivers have the choice of accessing the Pacific Highway at the traffic signals at Macquarie Street and also at Victoria Street.

Table 19.5 Average Delays for Movements at Walter Street and Ada Street – Saturday Mid-day Peak (2009 Traffic)

Movement	Average Delay for Movement – (sec / veh) – 2009 Traffic	Level of Service	Average Delay for Movement – (sec / veh) – 2009 Traffic + Development	Level of Service
Westbound on through Ada Street	0	A	0	A
Westbound on Ada Street right into Walter Street	6.5	A	6.5	A
Southbound on Walter Street left into Ada Street	7.5	A	7.6	A
Southbound on Walter Street right into Ada Street	7.8	A	7.9	A
Eastbound on Ada Street left into Walter Street	8.5	A	8.8	A
Eastbound through on Ada Street	7.2	A	7.5	A
Overall Average Delays	5.7		5.6	

The SIDRA simulations indicate that drivers experience low average delays for all manoeuvres at the junction of Ada Street and Walter Street during the 2009 weekday Saturday mid-day peak with Level of Service A.

Table 19.6 Average Delays for Movements at Walter Street and Ada Street – Weekday AM Peak (2009 Traffic)

Movement	Average Delay for Movement – (sec / veh) – 2009 Traffic	Level of Service	Average Delay for Movement – (sec / veh) – 2009 Traffic + Development	Level of Service
Westbound on through Ada Street	0	A	0	A
Westbound on Ada Street right into Walter Street	6.5	A	6.5	A
Southbound on Walter Street left into Ada Street	7.3	A	7.2	A
Southbound on Walter Street right into Ada Street	7.9	A	7.8	A
Eastbound on Ada Street left into Walter Street	8.3	A	8.2	A
Eastbound through on Ada Street	6.7	A	6.7	A
Overall Average Delays	6.3		6.2	

The SIDRA simulations indicate that drivers experience low average delays for all manoeuvres at the junction of Ada Street and Walter Street during the weekday morning peak with Level of Service A.

Table 19.7 Average Delays for Movements at Walter Street and Ada Street – Weekday PM Peak (2009 Traffic)

Movement	Average Delay for Movement – (sec / veh) – 2009 Traffic	Level of Service	Average Delay for Movement – (sec / veh) – 2009 Traffic + Development	Level of Service
Westbound on through Ada Street	0	A	0	A
Westbound on Ada Street right into Walter Street	6.5	A	6.5	A
Southbound on Walter Street left into Ada Street	7.1	A	7.2	A
Southbound on Walter Street right into Ada Street	7.4	A	7.5	A
Eastbound on Ada Street left into Walter Street	7.6	A	7.9	A
Eastbound through on Ada Street	6.3	A	6.6	A
Overall Average Delays	6.2		6.0	

The SIDRA simulations indicate that drivers experience low average delays for all manoeuvres at the junction of Ada Street and Walter Street during the weekday evening peak with Level of Service A.

Table 19.8 Average Delays for Movements at Walter Street and Macquarie Street – Weekday AM Peak (2009 Traffic)

Movement	Average Delay for Movement – (sec / veh) – 2009 Traffic	Level of Service	Average Delay for Movement – (sec / veh) – 2009 Traffic + Development	Level of Service
Northbound on Walter Street left into Macquarie Street	6.4	A	6.4	A
Northbound on Walter Street right into Macquarie Street	9.0	A	9.0	A
Westbound on Macquarie Street left into Walter Street	5.3	A	5.3	A
Westbound through on Macquarie Street	0	A	0	A
Eastbound through on Macquarie Street	0.7	A	0.7	A
Eastbound on Macquarie Street right into Walter Street	9.1	A	9.1	A
Overall Average Delays	2.9		2.9	

The SIDRA simulations indicate that drivers experience low average delays for all manoeuvres at the junction of Macquarie Street and Walter Street during the 2009 weekday morning peak with Level of Service A even with the additional traffic generated by the proposed redevelopment of the Lake Macquarie Yacht Club.

Table 19.9 Average Delays for Movements at Walter Street and Macquarie Street – Weekday PM Peak (2009 Traffic)

Movement	Average Delay for Movement – (sec / veh) – 2009 Traffic	Level of Service	Average Delay for Movement – (sec / veh) – 2009 Traffic + Development	Level of Service
Northbound on Walter Street left into Macquarie Street	6.8	A	6.9	A
Northbound on Walter Street right into Macquarie Street	10.3	A	10.4	A
Westbound on Macquarie Street left into Walter Street	5.3	A	5.3	A
Westbound through on Macquarie Street	0	A	0	A
Eastbound through on Macquarie Street	0	A	0	A
Eastbound on Macquarie Street right into Walter Street	11.0	A	11.7	A
Overall Average Delays	3.3		3.6	

The SIDRA simulations indicate that drivers experience low average delays for all manoeuvres at the junction of Macquarie Street and Walter Street during the 2009 weekday evening peak with Level of Service A even with the additional traffic generated by the proposed redevelopment of the Lake Macquarie Yacht Club.

Table 19.10 Average Delays for Movements at Pacific Highway and Ada Street – Saturday Mid-day Peak (2019 Traffic)

Movement	Average Delay for Movement – (sec / veh) – 2019 Traffic	Level of Service	Average Delay for Movement – (sec / veh) – 2019 Traffic + Development	Level of Service
Northbound on Pacific Highway left into Ada Street	7.5	A	7.5	A
Northbound through on Pacific Highway	0	A	0	A
Southbound through on Pacific Highway	0	A	0	A
Southbound on Pacific Highway right into Ada Street	42.6	D	60.1	E
Ada Street left onto Pacific Highway	29.9	C	31.8	C
Ada Street right onto Pacific Highway	1990.2	F	2130.4	F
Overall Average Delays	18.2		22.2	

Drivers will experience unacceptably high average delays at the junction of Pacific Highway and Ada Street for projected 2019 traffic volumes for right-turns into Ada Street and the right-turn movement out of Ada Street onto the Pacific Highway. Average delays will increase with the additional traffic with the average delay for the right-turn into Ada Street likely to increase from 42.6 seconds per vehicle to 60.1 seconds per vehicle and Level of Service changing from D to E. However, some treatment will be required at this junction for the Saturday mid-day peak traffic volumes even if the Lake Macquarie Yacht Club redevelopment did not proceed.

However, as mentioned previously it is important to realise that the SIDRA simulations do not replicate the large gaps in the southbound platoons that are created by the traffic signals at Macquarie Street, George Street and also Victoria Street. Drivers do experience difficulty turning right out of Ada Street during the mid-day Saturday period, and average delays would be unacceptable but lower than those shown in the simulation. Drivers tend to use the short-cut from Macquarie Street via Walter Street and Ada Street to alleviate certain delays at the traffic signals at Pacific Highway and Macquarie Street and also Pacific Highway and George Street and Pacific Highway and Victoria Street.

When peak traffic flows exist on the Pacific Highway, drivers have the choice of accessing the Pacific Highway at the traffic signals at Macquarie Street and also at Victoria Street.

It may be desirable to consider altering the geometry of the junction slightly be physically banning the right-turn from Ada Street onto the Pacific Highway and retaining all other movements. The SIDRA simulations indicate that the existing southbound right-turn bay on the Pacific Highway will be adequate even for 2019 traffic volumes as the 95% back of queue length will increase from 29 metres to 46

metres with the additional traffic generated by the Lake Macquarie Yacht Club redevelopment in 2019.

Table 19.11 Average Delays for Movements at Pacific Highway and Ada Street – Weekday AM Peak (2019 Traffic)

Movement	Average Delay for Movement – (sec / veh) – 2019 Traffic	Level of Service	Average Delay for Movement – (sec / veh) – 2019 Traffic + Development	Level of Service
Northbound on Pacific Highway left into Ada Street	7.5	A	7.5	A
Northbound through on Pacific Highway	0	A	0	A
Southbound through on Pacific Highway	0	A	0	A
Southbound on Pacific Highway right into Ada Street	59.8	E	62.6	E
Ada Street left onto Pacific Highway	71.9	F	73.0	F
Ada Street right onto Pacific Highway	2050.4	F	2071.1	F
Overall Average Delays	7.5		7.7	

Drivers will experience unacceptably high average delays at the junction of Pacific Highway and Ada Street for projected 2019 traffic volumes for right-turns into Ada Street and the right and left turn movements out of Ada Street onto the Pacific Highway during the 2019 weekday morning peak, regardless of the proposed redevelopment of the Lake Macquarie Yacht Club.

Average delays will increase with the additional traffic with the average delay for the right-turn into Ada Street likely to increase marginally from 59.8 seconds per vehicle to 62.6 seconds per vehicle and Level of Service remaining as E.

Some treatment will be required at this junction for the weekday morning peak traffic volumes even if the Lake Macquarie Yacht Club redevelopment did not proceed.

Alternative routes are available for all movements via traffic signals at Victoria Street and Macquarie Street.

Table 19.12 Average Delays for Movements at Pacific Highway and Ada Street – Weekday PM Peak (2019 Traffic)

Movement	Average Delay for Movement – (sec / veh) – 2019 Traffic	Level of Service	Average Delay for Movement – (sec / veh) – 2019 Traffic + Development	Level of Service
Northbound on Pacific Highway left into Ada Street	7.5	A	7.5	A
Northbound through on Pacific Highway	0	A	0	A
Southbound through on Pacific Highway	0	A	0	A
Southbound on Pacific Highway right into Ada Street	19.2	B	20.2	B
Ada Street left onto Pacific Highway	20.9	B	21.7	B
Ada Street right onto Pacific Highway	3048.8	F	3186.6	F
Overall Average Delays	12.8		16.9	

Drivers will experience acceptable average delays at the junction of Pacific Highway and Ada Street for projected 2019 traffic volumes for right-turns into Ada Street and the left turn movement out of Ada Street onto the Pacific Highway during the 2019 weekday evening peak.

Drivers will experience unacceptable average delays for the right-turn out of Ada Street onto the Pacific Highway in the 2019 evening peak regardless of the redevelopment of the Lake Macquarie Yacht Club.

As mentioned previously in this report, the right-turn from Ada Street onto the Pacific Highway may need to be physically banned to prevent accidents from impatient drivers.

Alternative routes are available for all movements via traffic signals at Victoria Street and Macquarie Street.

Table 19.13 Average Delays for Movements at Walter Street and Ada Street – Saturday Mid-day Peak (2019 Traffic)

Movement	Average Delay for Movement – (sec / veh) – 2019 Traffic	Level of Service	Average Delay for Movement – (sec / veh) – 2019 Traffic + Development	Level of Service
Westbound on through Ada Street	0	A	0	A
Westbound on Ada Street right into Walter Street	6.5	A	6.5	A
Southbound on Walter Street left into Ada Street	7.7	A	7.8	A
Southbound on Walter Street right into Ada Street	8.0	A	8.1	A
Eastbound on Ada Street left into Walter Street	8.9	A	9.3	A
Eastbound through on Ada Street	7.6	A	8.0	A
Overall Average Delays	5.9		5.8	

The SIDRA simulations indicate that drivers experience low average delays for all manoeuvres at the junction of Ada Street and Walter Street during the 2019 Saturday mid-day peak with Level of Service A even with the additional traffic generated by the proposed redevelopment of the Lake Macquarie Yacht Club.

Table 19.14 Average Delays for Movements at Walter Street and Ada Street – Weekday AM Peak (2019 Traffic)

Movement	Average Delay for Movement – (sec / veh) – 2019 Traffic	Level of Service	Average Delay for Movement – (sec / veh) – 2019 Traffic + Development	Level of Service
Westbound on through Ada Street	0	A	0	A
Westbound on Ada Street right into Walter Street	6.5	A	6.5	A
Southbound on Walter Street left into Ada Street	7.4	A	7.4	A
Southbound on Walter Street right into Ada Street	8.1	A	8.0	A
Eastbound on Ada Street left into Walter Street	8.6	A	8.6	A
Eastbound through on Ada Street	7.0	A	7.0	A
Overall Average Delays	6.3		6.3	

The SIDRA simulations indicate that drivers experience low average delays for all manoeuvres at the junction of Ada Street and Walter Street during the 2019 weekday morning peak with Level of Service A even with the additional traffic generated by the proposed redevelopment of the Lake Macquarie Yacht Club.

Table 19.15 Average Delays for Movements at Walter Street and Ada Street – Weekday PM Peak (2019 Traffic)

Movement	Average Delay for Movement – (sec / veh) – 2019 Traffic	Level of Service	Average Delay for Movement – (sec / veh) – 2019 Traffic + Development	Level of Service
Westbound on through Ada Street	0	A	0	A
Westbound on Ada Street right into Walter Street	6.5	A	6.5	A
Southbound on Walter Street left into Ada Street	7.2	A	7.3	A
Southbound on Walter Street right into Ada Street	7.6	A	7.6	A
Eastbound on Ada Street left into Walter Street	7.8	A	8.1	A
Eastbound through on Ada Street	6.5	A	6.8	A
Overall Average Delays	6.3		6.1	

The SIDRA simulations indicate that drivers experience low average delays for all manoeuvres at the junction of Ada Street and Walter Street during the 2019 weekday evening peak with Level of Service A even with the additional traffic generated by the proposed redevelopment of the Lake Macquarie Yacht Club.

Table 19.16 Average Delays for Movements at Walter Street and Macquarie Street – AM Peak (2019 Traffic)

Movement	Average Delay for Movement – (sec / veh) – 2019 Traffic	Level of Service	Average Delay for Movement – (sec / veh) – 2019 Traffic + Development	Level of Service
Northbound on Walter Street left into Macquarie Street	6.6	A	6.6	A
Northbound on Walter Street right into Macquarie Street	9.8	A	9.9	A
Westbound on Macquarie Street left into Walter Street	5.3	A	5.3	A
Westbound through on Macquarie Street	0	A	0	A
Eastbound through on Macquarie Street	0.8	A	0.8	A
Eastbound on Macquarie Street right into Walter Street	10.0	A	10.1	A
Overall Average Delays	3.0		3.0	

The SIDRA simulations indicate that drivers experience low average delays for all manoeuvres at the junction of Macquarie Street and Walter Street during the 2019 weekday morning peak with Level of Service A even with the additional traffic generated by the proposed redevelopment of the Lake Macquarie Yacht Club.

Table 19.17 Average Delays for Movements at Walter Street and Macquarie Street – AM Peak (2019 Traffic)

Movement	Average Delay for Movement – (sec / veh) – 2009 Traffic	Level of Service	Average Delay for Movement – (sec / veh) – 2009 Traffic + Development	Level of Service
Northbound on Walter Street left into Macquarie Street	7.1	A	7.1	A
Northbound on Walter Street right into Macquarie Street	11.5	A	11.7	A
Westbound on Macquarie Street left into Walter Street	5.3	A	5.3	A
Westbound through on Macquarie Street	0	A	0	A
Eastbound through on Macquarie Street	0	A	0	A
Eastbound on Macquarie Street right into Walter Street	13.3	A	14.1	A
Overall Average Delays	3.7		4.0	

The SIDRA simulations indicate that drivers experience low average delays for all manoeuvres at the junction of Macquarie Street and Walter Street during the 2019 weekday evening peak with Level of Service A even with the additional traffic generated by the proposed redevelopment of the Lake Macquarie Yacht Club.

20.0 SUMMARY

- The proposed redevelopment of the Lake Macquarie Yacht Club will increase the gross floor area from 738 m^2 to 1,297.5 m^2.

- Wet berths will increase from 84 to 140, dry berths will not alter and the number of swing moorings will reduce from 12 to 8.

- The parking requirement associated with the Lake Macquarie Yacht Club will change from 94 spaces to 151 spaces. The existing car parking onsite at the Lake Macquarie Yacht Club will change from a deficiency of 6 spaces to a theoretical deficiency of 31 spaces based on Council's DCP No. 1.

- The estimated night-time parking demand is 124 spaces.

- Lake Macquarie Yacht Club has arranged a lease agreement with Belmont TAFE to utilise its car parking area on the eastern side of the Pacific Highway for short-term maximum parking events such as during the Saturday afternoon race days during the summer period.

- Maximum parking demand at the Lake Macquarie Yacht Club generally occurs when yacht races are in progress. Car parking surveys during the busy December 2008 period indicated that the Club's parking is satisfactory for the existing demand except for short periods on race days when nearby street parking is utilised for overflow parking.

- Adjacent streets have a parking capacity of 72 cars excluding the gravel parking area near the Lake shore and the only competition for kerbside parking is local residential development and Gunyah Hotel.

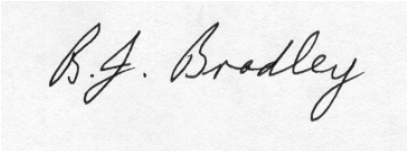
- SIDRA simulations indicate that the additional traffic generation from the proposed development of the Lake Macquarie Yacht Club will have no significant impacts on the operation of adjacent intersections, even for projected 2019 traffic volumes.

- The SIDRA simulations indicate that average delays for the right-turn movement out of Ada Street onto the Pacific Highway are unacceptable during the 2009 Saturday mid-day peak and also the 2009 morning and evening peaks regardless of the redevelopment of the Lake Macquarie Yacht Club. It may be necessary to consider physically banning the right-turn from Ada Street onto the Pacific Highway as alternative routes are available to compensate for that manoeuvre.

- The SIDRA simulations indicate that the existing southbound right-turn storage bay on the Pacific Highway will be adequate to cater for the increased right-turn movements into Ada Street that are likely to result from the proposed redevelopment of the Lake Macquarie Yacht Club.

21.0 RECOMMENDATION

I recommend that the proposed redevelopment of the Lake Macquarie Yacht Club as traffic impacts will be minimal and the proposed increase in parking will satisfactorily cater for the majority of the Club's parking demand.



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APPENDICES

APPENDIX A – SITE PHOTOGRAPHS

Photo No.1: Looking generally west along Ada Street from near the Pacific Highway showing the existing traffic environment and kerbside parking on a race day.

Photo No.2: Looking generally west along Ada Street from near Walter Street showing the existing traffic environment and kerbside parking on a race day.

Photo No. 3: Looking generally south from Ada Street showing the existing gravel parking area near the Lake which will be landscaped and parking formalised.

Photo No. 4: Looking generally east along Macquarie Street from Brooks Parade showing the existing traffic environment and the junction with Walter Street on the right.

Photo No. 5: Looking generally north along Walter Street from Ada Street showing the existing traffic environment and kerbside parking on a race day.

APPENDIX B – SIDRA DATA

Movement Summary

Pacific Highway and Ada Street, Belmont

2009 Traffic - Saturday Mid-day Peak

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Pacific Highway S leg										
1	L	192	1.0	0.104	7.5	LOS A	0	0.00	0.65	48.6
2	T	1205	2.1	0.313	0.0	LOS A	0	0.00	0.00	60.0
Approach		**1397**	**1.9**	**0.313**	**1.0**	**LOS A**		**0.00**	**0.09**	**58.2**
Pacific Highway N leg										
8	T	1395	1.4	0.361	0.0	LOS A	0	0.00	0.00	60.0
9	R	143	0.0	0.500	25.8	LOS B	19	0.89	1.06	34.0
Approach		**1538**	**1.3**	**0.500**	**2.4**	**LOS A**	**19**	**0.08**	**0.10**	**56.2**
Ada Street W leg										
10	L	34	0.0	0.144	21.6	LOS B	4	0.83	0.94	34.0
12	R	23	0.0	1.000*	846.1	LOS F	42	1.00	1.44	2.5
Approach		**57**	**0.0**	**1.000**	**354.3**	**LOS F**	**42**	**0.90**	**1.14**	**5.5**
All Vehicles		**2992**	**1.6**	**1.000**	**8.5**	**Not Applicable**	**42**	**0.06**	**0.11**	**48.4**

Movement Summary

Pacific Highway and Ada Street, Belmont

2009 Traffic - Weekday AM Peak

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Pacific Highway S leg										
1	L	168	1.2	0.091	7.5	LOS A	0	0.00	0.65	48.6
2	T	1665	2.9	0.435	0.0	LOS A	0	0.00	0.00	60.0
Approach		**1833**	**2.7**	**0.435**	**0.7**	**LOS A**		**0.00**	**0.06**	**58.8**
Pacific Highway N leg										
8	T	1026	4.3	0.270	0.0	LOS A	0	0.00	0.00	60.0
9	R	31	0.0	0.214	34.5	LOS C	6	0.92	0.98	29.8
Approach		**1057**	**4.2**	**0.270**	**1.0**	**LOS A**	**6**	**0.03**	**0.03**	**58.3**
Ada Street W leg										
10	L	19	0.0	0.171	39.5	LOS C	4	0.92	0.98	26.5
12	R	8	0.0	0.727	637.2	LOS F	17	1.00	1.05	3.2
Approach		**27**	**0.0**	**0.752**	**216.6**	**LOS F**	**17**	**0.94**	**1.00**	**8.4**
All Vehicles		**2917**	**3.2**	**0.727**	**2.8**	**Not Applicable**	**17**	**0.02**	**0.06**	**55.6**

Movement Summary

Pacific Highway and Ada Street, Belmont

2009 Traffic - Weekday PM Peak

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Pacific Highway S leg										
1	L	143	0.7	0.077	7.5	LOS A	0	0.00	0.65	48.6
2	T	1030	2.8	0.269	0.0	LOS A	0	0.00	0.00	60.0
Approach		**1173**	**2.6**	**0.269**	**0.9**	**LOS A**		**0.00**	**0.08**	**58.4**
Pacific Highway N leg										
8	T	1812	1.8	0.470	0.0	LOS A	0	0.00	0.00	60.0
9	R	46	0.0	0.118	16.0	LOS B	4	0.75	0.91	40.5
Approach		**1858**	**1.8**	**0.470**	**0.4**	**LOS A**	**4**	**0.02**	**0.02**	**59.3**
Ada Street W leg										
10	L	22	0.0	0.080	17.0	LOS B	2	0.75	0.91	36.6
12	R	12	0.0	1.000*	1120.4	LOS F	32	1.00	1.23	1.9
Approach		**34**	**0.0**	**1.000**	**406.5**	**LOS F**	**32**	**0.84**	**1.02**	**4.9**
All Vehicles		**3065**	**2.1**	**1.000**	**5.1**	**Not Applicable**	**32**	**0.02**	**0.06**	**52.5**

Movement Summary

Pacific Highway and Ada Street, Belmont

2009 Traffic - Saturday Mid-day Peak + Development

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Pacific Highway S leg										
1	L	198	1.0	0.107	7.5	LOS A	0	0.00	0.65	48.6
2	T	1205	2.1	0.313	0.0	LOS A	0	0.00	0.00	60.0
Approach		**1403**	**1.9**	**0.313**	**1.1**	**LOS A**		**0.00**	**0.09**	**58.2**
Pacific Highway N leg										
8	T	1395	1.4	0.361	0.0	LOS A	0	0.00	0.00	60.0
9	R	171	0.0	0.602	28.8	LOS C	26	0.91	1.12	32.4
Approach		**1566**	**1.3**	**0.603**	**3.1**	**LOS A**	**26**	**0.10**	**0.12**	**55.1**
Ada Street W leg										
10	L	46	0.0	0.196	22.4	LOS B	6	0.84	0.95	33.5
12	R	26	0.0	1.000*	881.5	LOS F	47	1.00	1.53	2.4
Approach		**72**	**0.0**	**1.000**	**332.6**	**LOS F**	**47**	**0.90**	**1.16**	**5.8**
All Vehicles		**3041**	**1.5**	**1.000**	**10.0**	**Not Applicable**	**47**	**0.07**	**0.13**	**46.8**

Movement Summary

Pacific Highway and Ada Street, Belmont

2009 Traffic - Weekday AM Peak + Development

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Pacific Highway S leg										
1	L	169	1.2	0.092	7.5	LOS A	0	0.00	0.65	48.6
2	T	1665	2.9	0.435	0.0	LOS A	0	0.00	0.00	60.0
Approach		**1834**	**2.7**	**0.435**	**0.7**	**LOS A**		**0.00**	**0.06**	**58.8**
Pacific Highway N leg										
8	T	1026	4.3	0.270	0.0	LOS A	0	0.00	0.00	60.0
9	R	35	0.0	0.243	35.4	LOS C	7	0.92	0.99	29.4
Approach		**1061**	**4.1**	**0.270**	**1.2**	**LOS A**	**7**	**0.03**	**0.03**	**58.1**
Ada Street W leg										
10	L	20	0.0	0.180	39.8	LOS C	5	0.92	0.98	26.4
12	R	8	0.0	0.727	651.5	LOS F	17	1.00	1.05	3.1
Approach		**28**	**0.0**	**0.761**	**214.6**	**LOS F**	**17**	**0.94**	**1.00**	**8.5**
All Vehicles		**2923**	**3.2**	**0.727**	**2.9**	**Not Applicable**	**17**	**0.02**	**0.06**	**55.4**

Movement Summary

Pacific Highway and Ada Street, Belmont

2009 Traffic - Weekday PM Peak + Development

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Pacific Highway S leg										
1	L	148	0.7	0.080	7.5	LOS A	0	0.00	0.65	48.6
2	T	1030	2.8	0.269	0.0	LOS A	0	0.00	0.00	60.0
Approach		**1178**	**2.5**	**0.269**	**0.9**	**LOS A**		**0.00**	**0.08**	**58.4**
Pacific Highway N leg										
8	T	1812	1.8	0.470	0.0	LOS A	0	0.00	0.00	60.0
9	R	66	0.0	0.170	16.3	LOS B	5	0.77	0.92	40.3
Approach		**1878**	**1.8**	**0.470**	**0.6**	**LOS A**	**5**	**0.03**	**0.03**	**59.0**
Ada Street W leg										
10	L	42	0.0	0.153	17.4	LOS B	4	0.76	0.91	36.3
12	R	16	0.0	1.000*	1132.9	LOS F	37	1.00	1.34	1.9
Approach		**58**	**0.0**	**1.000**	**325.1**	**LOS F**	**37**	**0.83**	**1.03**	**5.9**
All Vehicles		**3114**	**2.0**	**1.000**	**6.8**	**Not Applicable**	**37**	**0.03**	**0.07**	**50.4**

Movement Summary

Pacific Highway and Ada Street, Belmont

2019 Traffic - Saturday Mid-day Peak

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Pacific Highway S leg										
1	L	222	0.9	0.120	7.5	LOS A	0	0.00	0.65	48.6
2	T	1399	2.1	0.364	0.0	LOS A	0	0.00	0.00	60.0
Approach		**1621**	**1.9**	**0.364**	**1.0**	**LOS A**		**0.00**	**0.09**	**58.2**
Pacific Highway N leg										
8	T	1618	1.4	0.419	0.0	LOS A	0	0.00	0.00	60.0
9	R	143	0.0	0.701	42.6	LOS D	29	0.95	1.17	26.7
Approach		**1761**	**1.3**	**0.701**	**3.5**	**LOS A**	**29**	**0.08**	**0.10**	**54.7**
Ada Street W leg										
10	L	40	0.0	0.237	29.9	LOS C	7	0.89	0.98	30.1
12	R	27	0.0	1.000*	1990.2	LOS F	64	1.00	1.99	1.1
Approach		**67**	**0.0**	**1.000**	**819.9**	**LOS F**	**64**	**0.93**	**1.39**	**2.5**
All Vehicles		**3449**	**1.6**	**1.000**	**18.2**	**Not Applicable**	**64**	**0.06**	**0.12**	**39.8**

Movement Summary

Pacific Highway and Ada Street, Belmont

2019 Traffic - Weekday AM Peak

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Pacific Highway S leg										
1	L	195	1.0	0.106	7.5	LOS A	0	0.00	0.65	48.6
2	T	1931	2.9	0.504	0.0	LOS A	0	0.00	0.00	60.0
Approach		**2126**	**2.7**	**0.504**	**0.7**	**LOS A**		**0.00**	**0.06**	**58.8**
Pacific Highway N leg										
8	T	1191	4.3	0.314	0.0	LOS A	0	0.00	0.00	60.0
9	R	31	0.0	0.360	59.8	LOS E	10	0.96	1.02	21.9
Approach		**1222**	**4.2**	**0.360**	**1.5**	**LOS A**	**10**	**0.02**	**0.03**	**57.6**
Ada Street W leg										
10	L	22	0.0	0.338	71.9	LOS F	9	0.96	1.02	19.0
12	R	10	0.0	1.000*	2050.4	LOS F	33	1.00	1.28	1.0
Approach		**32**	**0.0**	**1.000**	**690.2**	**LOS F**	**33**	**0.97**	**1.10**	**3.0**
All Vehicles		**3380**	**3.2**	**1.000**	**7.5**	**Not Applicable**	**33**	**0.02**	**0.06**	**49.6**

Movement Summary

Pacific Highway and Ada Street, Belmont

2019 Traffic - Weekday PM Peak

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Pacific Highway S leg										
1	L	166	0.6	0.090	7.5	LOS A	0	0.00	0.65	48.6
2	T	1196	2.8	0.312	0.0	LOS A	0	0.00	0.00	60.0
Approach		**1362**	**2.6**	**0.312**	**0.9**	**LOS A**		**0.00**	**0.08**	**58.4**
Pacific Highway N leg										
8	T	2102	1.8	0.545	0.0	LOS A	0	0.00	0.00	60.0
9	R	46	0.0	0.153	19.2	LOS B	5	0.82	0.93	38.1
Approach		**2148**	**1.8**	**0.545**	**0.4**	**LOS A**	**5**	**0.02**	**0.02**	**59.3**
Ada Street W leg										
10	L	26	0.0	0.107	20.9	LOS B	3	0.81	0.93	34.3
12	R	14	0.0	1.000*	3048.8	LOS F	45	1.00	1.56	0.7
Approach		**40**	**0.0**	**1.000**	**1080.7**	**LOS F**	**45**	**0.88**	**1.15**	**1.9**
All Vehicles		**3550**	**2.1**	**1.000**	**12.8**	**Not Applicable**	**45**	**0.02**	**0.06**	**44.3**

Movement Summary

Pacific Highway and Ada Street, Belmont

2009 Traffic - Saturday Mid-day Peak + Development

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Pacific Highway S leg										
1	L	228	0.9	0.124	7.5	LOS A	0	0.00	0.65	48.6
2	T	1399	2.1	0.364	0.0	LOS A	0	0.00	0.00	60.0
Approach		**1627**	**1.9**	**0.364**	**1.0**	**LOS A**		**0.00**	**0.09**	**58.2**
Pacific Highway N leg										
8	T	1618	1.4	0.419	0.0	LOS A	0	0.00	0.00	60.0
9	R	171	0.0	0.847	60.1	LOS E	46	0.98	1.38	21.8
Approach		**1789**	**1.3**	**0.846**	**5.7**	**LOS A**	**46**	**0.09**	**0.13**	**51.7**
Ada Street W leg										
10	L	52	0.0	0.310	31.8	LOS C	9	0.90	1.00	29.3
12	R	30	0.0	1.000*	2130.4	LOS F	72	1.00	2.18	1.0
Approach		**82**	**0.0**	**1.000**	**799.6**	**LOS F**	**72**	**0.94**	**1.43**	**2.6**
All Vehicles		**3498**	**1.5**	**1.000**	**22.2**	**Not Applicable**	**72**	**0.07**	**0.14**	**37.1**

Movement Summary

Pacific Highway and Ada Street, Belmont

2019 Traffic - Weekday AM Peak + Development

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Pacific Highway S leg										
1	L	196	1.0	0.106	7.5	LOS A	0	0.00	0.65	48.6
2	T	1931	2.9	0.504	0.0	LOS A	0	0.00	0.00	60.0
Approach		**2127**	**2.7**	**0.504**	**0.7**	**LOS A**		**0.00**	**0.06**	**58.8**
Pacific Highway N leg										
8	T	1191	4.3	0.314	0.0	LOS A	0	0.00	0.00	60.0
9	R	35	0.0	0.407	62.6	LOS E	11	0.96	1.02	21.2
Approach		**1226**	**4.2**	**0.408**	**1.8**	**LOS A**	**11**	**0.03**	**0.03**	**57.2**
Ada Street W leg										
10	L	23	0.0	0.354	73.0	LOS F	9	0.96	1.02	18.8
12	R	10	0.0	1.000*	2071.1	LOS F	33	1.00	1.28	1.0
Approach		**33**	**0.0**	**1.000**	**678.4**	**LOS F**	**33**	**0.98**	**1.10**	**3.0**
All Vehicles		**3386**	**3.2**	**1.000**	**7.7**	**Not Applicable**	**33**	**0.02**	**0.06**	**49.4**

Movement Summary

Pacific Highway and Ada Street, Belmont

2019 Traffic - Weekday PM Peak + Development

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Pacific Highway S leg										
1	L	171	0.6	0.092	7.5	LOS A	0	0.00	0.65	48.6
2	T	1196	2.8	0.312	0.0	LOS A	0	0.00	0.00	60.0
Approach		**1367**	**2.6**	**0.312**	**0.9**	**LOS A**		**0.00**	**0.08**	**58.4**
Pacific Highway N leg										
8	T	2102	1.8	0.545	0.0	LOS A	0	0.00	0.00	60.0
9	R	66	0.0	0.221	20.2	LOS B	7	0.83	0.96	37.4
Approach		**2168**	**1.8**	**0.545**	**0.6**	**LOS A**	**7**	**0.03**	**0.03**	**59.0**
Ada Street W leg										
10	L	46	0.0	0.189	21.7	LOS B	6	0.83	0.95	33.9
12	R	18	0.0	1.000*	3186.6	LOS F	55	1.00	1.79	0.7
Approach		**64**	**0.0**	**1.000**	**911.8**	**LOS F**	**55**	**0.88**	**1.19**	**2.3**
All Vehicles		**3599**	**2.0**	**1.000**	**16.9**	**Not Applicable**	**55**	**0.03**	**0.07**	**40.8**

Movement Summary

Ada Street and Walter Street, Belmont

2009 Traffic - Saturday Mid-day Peak

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Ada Street E leg										
5	T	95	0.0	0.173	0.0	LOS A	0	0.00	0.00	50.0
6	R	229	1.3	0.173	6.5	LOS A	0	0.00	0.62	43.3
Approach		**324**	**0.9**	**0.173**	**4.6**	**LOS A**		**0.00**	**0.44**	**45.0**
Walter Street N leg										
7	L	41	2.4	0.083	7.5	LOS A	4	0.34	0.40	42.1
9	R	69	0.0	0.083	7.8	LOS A	4	0.34	0.64	41.9
Approach		**110**	**0.9**	**0.083**	**7.7**	**LOS A**	**4**	**0.34**	**0.55**	**41.9**
Ada Street W leg										
10	L	37	0.0	0.082	8.5	LOS A	3	0.40	0.63	41.5
11	T	27	0.0	0.082	7.2	LOS A	3	0.40	0.63	42.6
Approach		**64**	**0.0**	**0.082**	**7.9**	**LOS A**	**3**	**0.40**	**0.63**	**41.9**
All Vehicles		**498**	**0.8**	**0.173**	**5.7**	**Not Applicable**	**4**	**0.13**	**0.49**	**43.9**

Movement Summary

Ada Street and Walter Street, Belmont

2009 Traffic - Weekday AM Peak

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Ada Street E leg										
5	T	15	6.7	0.118	0.0	LOS A	0	0.00	0.00	50.0
6	R	204	0.5	0.118	6.5	LOS A	0	0.00	0.62	43.3
Approach		**219**	**0.9**	**0.118**	**6.0**	**LOS A**		**0.00**	**0.57**	**43.7**
Walter Street N leg										
7	L	19	0.0	0.019	7.3	LOS A	1	0.32	0.42	42.2
9	R	10	10.0	0.019	7.9	LOS A	1	0.32	0.61	42.0
Approach		**29**	**3.4**	**0.019**	**7.5**	**LOS A**	**1**	**0.32**	**0.48**	**42.1**
Ada Street W leg										
10	L	7	14.3	0.020	8.3	LOS A	1	0.36	0.60	41.9
11	T	9	0.0	0.020	6.7	LOS A	1	0.36	0.55	42.9
Approach		**16**	**6.2**	**0.020**	**7.4**	**LOS A**	**1**	**0.36**	**0.57**	**42.5**
All Vehicles		**264**	**1.5**	**0.118**	**6.3**	**Not Applicable**	**1**	**0.06**	**0.56**	**43.4**

Ada Street and Walter Street, Belmont

2009 Traffic - Weekday PM Peak

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Ada Street E leg										
5	T	13	0.0	0.105	0.0	LOS A	0	0.00	0.00	50.0
6	R	182	0.5	0.105	6.5	LOS A	0	0.00	0.62	43.3
Approach		**195**	**0.5**	**0.105**	**6.0**	**LOS A**		**0.00**	**0.58**	**43.7**
Walter Street N leg										
7	L	19	0.0	0.017	7.1	LOS A	1	0.29	0.43	42.3
9	R	8	0.0	0.017	7.4	LOS A	1	0.29	0.60	42.0
Approach		**27**	**0.0**	**0.017**	**7.2**	**LOS A**	**1**	**0.29**	**0.48**	**42.2**
Ada Street W leg										
10	L	9	0.0	0.017	7.6	LOS A	1	0.32	0.58	42.2
11	T	6	0.0	0.017	6.3	LOS A	1	0.32	0.53	43.1
Approach		**15**	**0.0**	**0.017**	**7.1**	**LOS A**	**1**	**0.32**	**0.56**	**42.5**
All Vehicles		**237**	**0.4**	**0.105**	**6.2**	**Not Applicable**	**1**	**0.05**	**0.56**	**43.4**

Movement Summary

Ada Street and Walter Street, Belmont

2009 Traffic - Saturday Mid-day Peak + Development

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Ada Street E leg										
5	T	129	0.0	0.191	0.0	LOS A	0	0.00	0.00	50.0
6	R	229	1.3	0.191	6.5	LOS A	0	0.00	0.62	43.3
Approach		**358**	**0.8**	**0.191**	**4.2**	**LOS A**		**0.00**	**0.39**	**45.5**
Walter Street N leg										
7	L	41	2.4	0.108	7.6	LOS A	5	0.36	0.39	42.0
9	R	97	0.0	0.108	7.9	LOS A	5	0.36	0.65	41.8
Approach		**138**	**0.7**	**0.108**	**7.8**	**LOS A**	**5**	**0.36**	**0.58**	**41.9**
Ada Street W leg										
10	L	49	0.0	0.122	8.8	LOS A	4	0.43	0.64	41.2
11	T	42	0.0	0.122	7.5	LOS A	4	0.43	0.66	42.3
Approach		**91**	**0.0**	**0.122**	**8.2**	**LOS A**	**4**	**0.43**	**0.65**	**41.7**
All Vehicles		**587**	**0.7**	**0.191**	**5.6**	**Not Applicable**	**5**	**0.15**	**0.48**	**44.0**

Movement Summary

Ada Street and Walter Street, Belmont

2009 Traffic - Weekday AM Peak + Development

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Ada Street E leg										
5	T	20	5.0	0.120	0.0	LOS A	0	0.00	0.00	50.0
6	R	204	0.5	0.121	6.5	LOS A	0	0.00	0.62	43.3
Approach		**224**	**0.9**	**0.121**	**5.9**	**LOS A**		**0.00**	**0.56**	**43.8**
Walter Street N leg										
7	L	19	0.0	0.022	7.2	LOS A	1	0.31	0.42	42.2
9	R	13	7.7	0.022	7.8	LOS A	1	0.31	0.61	42.0
Approach		**32**	**3.1**	**0.022**	**7.5**	**LOS A**	**1**	**0.31**	**0.50**	**42.1**
Ada Street W leg										
10	L	8	12.5	0.023	8.2	LOS A	1	0.36	0.60	41.9
11	T	10	0.0	0.023	6.7	LOS A	1	0.36	0.55	42.9
Approach		**18**	**5.6**	**0.023**	**7.4**	**LOS A**	**1**	**0.36**	**0.57**	**42.5**
All Vehicles		**274**	**1.5**	**0.121**	**6.2**	**Not Applicable**	**1**	**0.06**	**0.55**	**43.5**

Movement Summary

Ada Street and Walter Street, Belmont

2009 Traffic - Weekday PM Peak + Development

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Ada Street E leg										
5	T	38	0.0	0.118	0.0	LOS A	0	0.00	0.00	50.0
6	R	182	0.5	0.118	6.5	LOS A	0	0.00	0.62	43.3
Approach		**220**	**0.5**	**0.118**	**5.4**	**LOS A**		**0.00**	**0.51**	**44.3**
Walter Street N leg										
7	L	19	0.0	0.034	7.2	LOS A	1	0.29	0.43	42.3
9	R	28	0.0	0.034	7.5	LOS A	1	0.29	0.62	42.0
Approach		**47**	**0.0**	**0.034**	**7.4**	**LOS A**	**1**	**0.29**	**0.54**	**42.1**
Ada Street W leg										
10	L	29	0.0	0.070	7.9	LOS A	2	0.35	0.60	42.0
11	T	30	0.0	0.069	6.6	LOS A	2	0.35	0.57	42.9
Approach		**59**	**0.0**	**0.070**	**7.2**	**LOS A**	**2**	**0.35**	**0.59**	**42.5**
All Vehicles		**326**	**0.3**	**0.118**	**6.0**	**Not Applicable**	**2**	**0.11**	**0.53**	**43.6**

Movement Summary

Ada Street and Walter Street, Belmont

2019 Traffic - Saturday Mid-day Peak

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Ada Street E leg										
5	T	95	0.0	0.193	0.0	LOS A	0	0.00	0.00	50.0
6	R	265	1.1	0.193	6.5	LOS A	0	0.00	0.62	43.3
Approach		**360**	**0.8**	**0.193**	**4.8**	**LOS A**		**0.00**	**0.45**	**44.9**
Walter Street N leg										
7	L	47	2.1	0.089	7.7	LOS A	4	0.37	0.38	42.0
9	R	69	0.0	0.089	8.0	LOS A	4	0.37	0.66	41.8
Approach		**116**	**0.9**	**0.089**	**7.9**	**LOS A**	**4**	**0.37**	**0.55**	**41.9**
Ada Street W leg										
10	L	37	0.0	0.087	8.9	LOS A	3	0.44	0.65	41.2
11	T	27	0.0	0.087	7.6	LOS A	3	0.44	0.65	42.3
Approach		**64**	**0.0**	**0.087**	**8.3**	**LOS A**	**3**	**0.44**	**0.65**	**41.6**
All Vehicles		**540**	**0.7**	**0.193**	**5.9**	**Not Applicable**	**4**	**0.13**	**0.50**	**43.8**

Movement Summary

Ada Street and Walter Street, Belmont

2019 Traffic - Weekday AM Peak

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Ada Street E leg										
5	T	15	6.7	0.136	0.0	LOS A	0	0.00	0.00	50.0
6	R	237	0.4	0.136	6.5	LOS A	0	0.00	0.62	43.3
Approach		**252**	**0.8**	**0.136**	**6.1**	**LOS A**		**0.00**	**0.58**	**43.6**
Walter Street N leg										
7	L	22	0.0	0.021	7.4	LOS A	1	0.34	0.40	42.1
9	R	10	10.0	0.021	8.1	LOS A	1	0.34	0.62	41.9
Approach		**32**	**3.1**	**0.021**	**7.6**	**LOS A**	**1**	**0.34**	**0.47**	**42.0**
Ada Street W leg										
10	L	7	14.3	0.021	8.6	LOS A	1	0.39	0.61	41.7
11	T	9	0.0	0.021	7.0	LOS A	1	0.39	0.56	42.8
Approach		**16**	**6.2**	**0.021**	**7.7**	**LOS A**	**1**	**0.39**	**0.58**	**42.3**
All Vehicles		**300**	**1.3**	**0.136**	**6.3**	**Not Applicable**	**1**	**0.06**	**0.57**	**43.4**

Movement Summary

Ada Street and Walter Street, Belmont

2019 Traffic - Weekday PM Peak

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Ada Street E leg										
5	T	13	0.0	0.120	0.0	LOS A	0	0.00	0.00	50.0
6	R	211	0.5	0.121	6.5	LOS A	0	0.00	0.62	43.3
Approach		**224**	**0.4**	**0.121**	**6.1**	**LOS A**		**0.00**	**0.58**	**43.6**
Walter Street N leg										
7	L	22	0.0	0.019	7.2	LOS A	1	0.32	0.42	42.2
9	R	8	0.0	0.019	7.6	LOS A	1	0.32	0.61	42.0
Approach		**30**	**0.0**	**0.019**	**7.3**	**LOS A**	**1**	**0.32**	**0.47**	**42.1**
Ada Street W leg										
10	L	9	0.0	0.018	7.8	LOS A	1	0.35	0.59	42.1
11	T	6	0.0	0.018	6.5	LOS A	1	0.35	0.54	42.9
Approach		**15**	**0.0**	**0.018**	**7.3**	**LOS A**	**1**	**0.35**	**0.57**	**42.4**
All Vehicles		**269**	**0.4**	**0.121**	**6.3**	**Not Applicable**	**1**	**0.05**	**0.57**	**43.4**

Movement Summary

Ada Street and Walter Street, Belmont

2019 Traffic - Saturday Mid-day Peak + Development

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Ada Street E leg										
5	T	129	0.0	0.210	0.0	LOS A	0	0.00	0.00	50.0
6	R	265	1.1	0.210	6.5	LOS A	0	0.00	0.62	43.3
Approach		**394**	**0.8**	**0.210**	**4.4**	**LOS A**		**0.00**	**0.41**	**45.3**
Walter Street N leg										
7	L	47	2.1	0.115	7.8	LOS A	5	0.38	0.38	41.9
9	R	97	0.0	0.115	8.1	LOS A	5	0.38	0.67	41.8
Approach		**144**	**0.7**	**0.115**	**8.0**	**LOS A**	**5**	**0.38**	**0.57**	**41.8**
Ada Street W leg										
10	L	49	0.0	0.129	9.3	LOS A	5	0.46	0.67	40.9
11	T	42	0.0	0.129	8.0	LOS A	5	0.46	0.69	41.9
Approach		**91**	**0.0**	**0.129**	**8.7**	**LOS A**	**5**	**0.46**	**0.68**	**41.4**
All Vehicles		**629**	**0.6**	**0.210**	**5.8**	**Not Applicable**	**5**	**0.15**	**0.49**	**43.8**

Movement Summary

Ada Street and Walter Street, Belmont

2019 Traffic - Weekday AM Peak + Development

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Ada Street E leg										
5	T	20	5.0	0.139	0.0	LOS A	0	0.00	0.00	50.0
6	R	237	0.4	0.139	6.5	LOS A	0	0.00	0.62	43.3
Approach		**257**	**0.8**	**0.139**	**6.0**	**LOS A**		**0.00**	**0.57**	**43.7**
Walter Street N leg										
7	L	22	0.0	0.024	7.4	LOS A	1	0.34	0.41	42.1
9	R	13	7.7	0.024	8.0	LOS A	1	0.34	0.62	41.9
Approach		**35**	**2.9**	**0.024**	**7.6**	**LOS A**	**1**	**0.34**	**0.49**	**42.0**
Ada Street W leg										
10	L	8	12.5	0.024	8.6	LOS A	1	0.39	0.61	41.7
11	T	10	0.0	0.024	7.0	LOS A	1	0.39	0.57	42.8
Approach		**18**	**5.6**	**0.024**	**7.7**	**LOS A**	**1**	**0.39**	**0.59**	**42.3**
All Vehicles		**310**	**1.3**	**0.139**	**6.3**	**Not Applicable**	**1**	**0.06**	**0.56**	**43.4**

Movement Summary

Ada Street and Walter Street, Belmont

2019 Traffic - Weekday PM Peak + Development

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Ada Street E leg										
5	T	38	0.0	0.133	0.0	LOS A	0	0.00	0.00	50.0
6	R	211	0.5	0.133	6.5	LOS A	0	0.00	0.62	43.3
Approach		**249**	**0.4**	**0.133**	**5.5**	**LOS A**		**0.00**	**0.52**	**44.2**
Walter Street N leg										
7	L	22	0.0	0.036	7.3	LOS A	2	0.32	0.42	42.2
9	R	28	0.0	0.036	7.6	LOS A	2	0.32	0.62	42.0
Approach		**50**	**0.0**	**0.036**	**7.5**	**LOS A**	**2**	**0.32**	**0.53**	**42.1**
Ada Street W leg										
10	L	29	0.0	0.072	8.1	LOS A	3	0.38	0.62	41.8
11	T	30	0.0	0.072	6.8	LOS A	3	0.38	0.59	42.8
Approach		**59**	**0.0**	**0.072**	**7.5**	**LOS A**	**3**	**0.38**	**0.60**	**42.3**
All Vehicles		**358**	**0.3**	**0.133**	**6.1**	**Not Applicable**	**3**	**0.11**	**0.54**	**43.5**

Movement Summary

Macquarie Street and Walter Street, Belmont

2009 Traffic - Weekday AM Peak

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Walter Street S leg										
1	L	139	0.7	0.158	6.4	LOS A	4	0.30	0.58	42.0
3	R	51	0.0	0.068	9.0	LOS A	2	0.54	0.74	40.2
Approach		**190**	**0.5**	**0.158**	**7.1**	**LOS A**	**4**	**0.37**	**0.62**	**41.5**
Macquarie Street E leg										
4	L	43	0.0	0.045	5.3	LOS A	0	0.00	0.56	37.0
5	T	187	0.5	0.075	0.0	LOS A	0	0.00	0.00	40.0
Approach		**230**	**0.4**	**0.075**	**1.0**	**LOS A**		**0.00**	**0.11**	**39.4**
Macquarie Street W leg										
11	T	386	2.6	0.161	0.7	LOS A	10	0.10	0.00	39.4
12	R	70	0.0	0.161	9.1	LOS A	10	0.52	0.71	34.7
Approach		**456**	**2.2**	**0.161**	**2.0**	**LOS A**	**10**	**0.17**	**0.11**	**38.6**
All Vehicles		**876**	**1.4**	**0.161**	**2.9**	**Not Applicable**	**10**	**0.17**	**0.22**	**39.4**

Movement Summary

Macquarie Street and Walter Street, Belmont

2009 Traffic - Weekday PM Peak

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Walter Street S leg										
1	L	170	2.9	0.200	6.8	LOS A	6	0.37	0.61	41.8
3	R	44	0.0	0.071	10.3	LOS A	2	0.59	0.80	39.2
Approach		**214**	**2.3**	**0.200**	**7.5**	**LOS A**	**6**	**0.41**	**0.65**	**41.3**
Macquarie Street E leg										
4	L	51	2.0	0.060	5.3	LOS A	0	0.00	0.56	37.0
5	T	252	3.6	0.100	0.0	LOS A	0	0.00	0.00	40.0
Approach		**303**	**3.3**	**0.100**	**0.9**	**LOS A**		**0.00**	**0.10**	**39.4**
Macquarie Street W leg										
11	T	408	1.5	0.211	0.0	LOS A	0	0.00	0.00	40.0
12	R	147	0.7	0.293	11.0	LOS A	12	0.58	0.84	33.6
Approach		**555**	**1.3**	**0.294**	**2.9**	**LOS A**	**12**	**0.15**	**0.22**	**38.0**
All Vehicles		**1072**	**2.1**	**0.293**	**3.3**	**Not Applicable**	**12**	**0.16**	**0.27**	**39.0**

Movement Summary

Macquarie Street and Walter Street, Belmont

2009 Traffic - Weekday AM Peak + Development

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Walter Street S leg										
1	L	140	0.7	0.159	6.4	LOS A	4	0.30	0.58	42.0
3	R	51	0.0	0.068	9.0	LOS A	2	0.54	0.74	40.2
Approach		**191**	**0.5**	**0.159**	**7.1**	**LOS A**	**4**	**0.37**	**0.62**	**41.5**
Macquarie Street E leg										
4	L	44	0.0	0.045	5.3	LOS A	0	0.00	0.56	37.0
5	T	187	0.5	0.075	0.0	LOS A	0	0.00	0.00	40.0
Approach		**231**	**0.4**	**0.075**	**1.0**	**LOS A**		**0.00**	**0.11**	**39.4**
Macquarie Street W leg										
11	T	386	2.6	0.163	0.7	LOS A	10	0.10	0.00	39.4
12	R	72	0.0	0.163	9.1	LOS A	10	0.52	0.71	34.6
Approach		**458**	**2.2**	**0.163**	**2.0**	**LOS A**	**10**	**0.16**	**0.11**	**38.6**
All Vehicles		**880**	**1.4**	**0.163**	**2.9**	**Not Applicable**	**10**	**0.16**	**0.22**	**39.4**

Movement Summary

Macquarie Street and Walter Street, Belmont

2009 Traffic - Weekday PM Peak + Development

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Walter Street S leg										
1	L	185	2.7	0.217	6.9	LOS A	6	0.37	0.62	41.8
3	R	49	0.0	0.080	10.4	LOS A	3	0.60	0.81	39.1
Approach		**234**	**2.1**	**0.217**	**7.6**	**LOS A**	**6**	**0.42**	**0.66**	**41.2**
Macquarie Street E leg										
4	L	56	1.8	0.061	5.3	LOS A	0	0.00	0.56	37.0
5	T	252	3.6	0.102	0.0	LOS A	0	0.00	0.00	40.0
Approach		**308**	**3.2**	**0.102**	**1.0**	**LOS A**		**0.00**	**0.10**	**39.4**
Macquarie Street W leg										
11	T	408	1.5	0.211	0.0	LOS A	0	0.00	0.00	40.0
12	R	162	0.6	0.330	11.7	LOS A	14	0.60	0.88	33.2
Approach		**570**	**1.2**	**0.330**	**3.3**	**LOS A**	**14**	**0.17**	**0.25**	**37.7**
All Vehicles		**1112**	**2.0**	**0.330**	**3.6**	**Not Applicable**	**14**	**0.18**	**0.30**	**38.9**

Movement Summary

Macquarie Street and Walter Street, Belmont

2019 Traffic - Weekday AM Peak

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Walter Street S leg										
1	L	161	0.6	0.185	6.6	LOS A	5	0.33	0.60	41.9
3	R	59	0.0	0.088	9.8	LOS A	3	0.58	0.79	39.6
Approach		**220**	**0.5**	**0.185**	**7.5**	**LOS A**	**5**	**0.40**	**0.65**	**41.3**
Macquarie Street E leg										
4	L	50	0.0	0.052	5.3	LOS A	0	0.00	0.56	37.0
5	T	217	0.5	0.087	0.0	LOS A	0	0.00	0.00	40.0
Approach		**267**	**0.4**	**0.087**	**1.0**	**LOS A**		**0.00**	**0.11**	**39.4**
Macquarie Street W leg										
11	T	448	2.7	0.194	0.8	LOS A	12	0.10	0.00	39.4
12	R	82	0.0	0.193	10.0	LOS A	12	0.56	0.76	34.1
Approach		**530**	**2.3**	**0.193**	**2.2**	**LOS A**	**12**	**0.17**	**0.12**	**38.4**
All Vehicles		**1017**	**1.4**	**0.194**	**3.0**	**Not Applicable**	**12**	**0.17**	**0.23**	**39.2**

Movement Summary

Macquarie Street and Walter Street, Belmont

2019 Traffic - Weekday PM Peak

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Walter Street S leg										
1	L	197	2.5	0.234	7.1	LOS A	7	0.40	0.64	41.7
3	R	51	0.0	0.096	11.5	LOS A	3	0.65	0.86	38.3
Approach		**248**	**2.0**	**0.234**	**8.0**	**LOS A**	**7**	**0.46**	**0.68**	**40.9**
Macquarie Street E leg										
4	L	59	1.7	0.069	5.3	LOS A	0	0.00	0.56	37.0
5	T	291	3.1	0.115	0.0	LOS A	0	0.00	0.00	40.0
Approach		**350**	**2.9**	**0.115**	**0.9**	**LOS A**		**0.00**	**0.10**	**39.4**
Macquarie Street W leg										
11	T	473	1.5	0.245	0.0	LOS A	0	0.00	0.00	40.0
12	R	171	0.6	0.377	13.3	LOS A	17	0.64	0.93	32.4
Approach		**644**	**1.2**	**0.377**	**3.5**	**LOS A**	**17**	**0.17**	**0.25**	**37.6**
All Vehicles		**1242**	**1.9**	**0.377**	**3.7**	**Not Applicable**	**17**	**0.18**	**0.29**	**38.7**

Movement Summary

Macquarie Street and Walter Street, Belmont

2019 Traffic - Weekday AM Peak + Development

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Walter Street S leg										
1	L	162	0.6	0.186	6.6	LOS A	5	0.33	0.60	41.9
3	R	59	0.0	0.089	9.9	LOS A	3	0.58	0.80	39.5
Approach		**221**	**0.5**	**0.186**	**7.5**	**LOS A**	**5**	**0.40**	**0.65**	**41.3**
Macquarie Street E leg										
4	L	51	0.0	0.052	5.3	LOS A	0	0.00	0.56	37.0
5	T	217	0.5	0.087	0.0	LOS A	0	0.00	0.00	40.0
Approach		**268**	**0.4**	**0.087**	**1.0**	**LOS A**		**0.00**	**0.11**	**39.4**
Macquarie Street W leg										
11	T	448	2.7	0.196	0.8	LOS A	12	0.09	0.00	39.4
12	R	84	0.0	0.195	10.1	LOS A	12	0.56	0.76	34.1
Approach		**532**	**2.3**	**0.196**	**2.2**	**LOS A**	**12**	**0.16**	**0.12**	**38.4**
All Vehicles		**1021**	**1.4**	**0.196**	**3.0**	**Not Applicable**	**12**	**0.17**	**0.23**	**39.2**

Movement Summary

Macquarie Street and Walter Street, Belmont

2019 Traffic - Weekday PM Peak + Development

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Walter Street S leg										
1	L	212	2.4	0.252	7.1	LOS A	8	0.41	0.64	41.7
3	R	56	0.0	0.107	11.7	LOS A	4	0.66	0.87	38.1
Approach		**268**	**1.9**	**0.252**	**8.1**	**LOS A**	**8**	**0.46**	**0.69**	**40.9**
Macquarie Street E leg										
4	L	64	1.6	0.070	5.3	LOS A	0	0.00	0.56	37.0
5	T	291	3.1	0.117	0.0	LOS A	0	0.00	0.00	40.0
Approach		**355**	**2.8**	**0.117**	**1.0**	**LOS A**		**0.00**	**0.10**	**39.4**
Macquarie Street W leg										
11	T	473	1.5	0.245	0.0	LOS A	0	0.00	0.00	40.0
12	R	186	0.5	0.419	14.1	LOS A	21	0.66	0.97	32.0
Approach		**659**	**1.2**	**0.419**	**4.0**	**LOS A**	**21**	**0.19**	**0.27**	**37.3**
All Vehicles		**1282**	**1.8**	**0.419**	**4.0**	**Not Applicable**	**21**	**0.19**	**0.31**	**38.6**