



PROPOSED MIXED USE DEVELOPMENT

1-9 FLORENCE STREET AND 19-23 QUINN STREET, SOUTH WENTWORTHVILLE

Traffic and Parking Assessment Report

25 November 2013

Ref: 13111

Prepared by

Terraffic Pty Ltd

Traffic and Parking Consultants



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1. INTRODUCTION

This report has been prepared to accompany a Development Application to Holroyd City Council for a mixed use commercial/residential development proposal to be located on a consolidated site at 1-9 Florence Street and 19-23 Quinn Street, South Wentworthville (Figures 1 and 2).

The subject site is located on the northern side of the Western (M4) Motorway and has a site area of 6,126.61m². The site has frontages of 82.31m to Florence Street, 77.31m to Quinn Street and 41.52m to Station Street. The existing site development comprises 8 residential lots with a single level dwelling on each lot. A survey plan prepared by Geographic Solutions Surveyors is reproduced in the following pages and shows the location of the existing access driveways along all street frontages.

The proposed development comprises the construction of 3 multi-level mixed use commercial/residential buildings as follows:

Building A

54 dwellings (6x1 bedroom and 48 x 2 bedroom units)

Building B

35 dwellings (35 x 2 bedroom units)

Building C

536.99m² commercial office (3 suites) and 65 dwellings (15 x 1 bedroom

and 50 x 2 bedroom units)

Total Development

536.99m² commercial office (3 suites) and 154 dwellings (21 x 1

bedroom and 133 x 2 bedroom units)

Off-street car parking is proposed for a total of 210 vehicles on three basement levels comprising the following:

Residential Parking

152 spaces (including 25 disabled spaces)

Residential Visitor Parking

31 spaces

Commercial Parking

27 spaces (including 1 disabled space)

Total

210 spaces (including 26 disabled spaces)

The commercial parking provision includes 2 dedicated courier parking bays located under Building C. These spaces have an area at the rear of the space to facilitate loading from the rear of the van.



Vehicular access to the proposed basement carpark is via a new 6.1m wide combined entry/exit driveway off Florence Street. For drainage reasons, the access ramp rises from the Florence Street boundary up to RL34.06 before dropping down into the basement.

Clause 2.2 in Part N of Holroyd Council's Development Control Plan specifies the following Development Control that impacts on the development site:

C2. A 15 metre connecting laneway between Florence Street and Quinn Street is required in accordance with Figure 14.

A copy of Figure 14 is reproduced below and shows a 15m wide extension of Quinn Street.

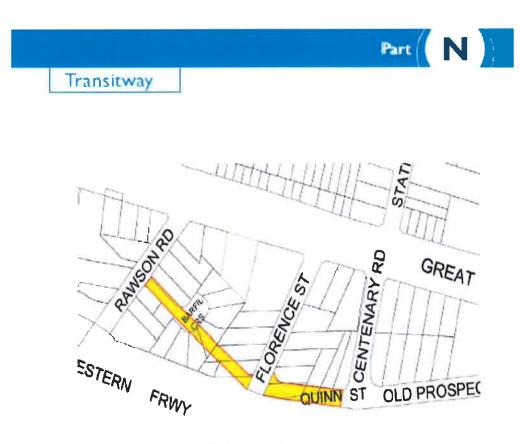


Figure 14- Proposed Laneways

Following discussions with Council's Traffic Engineer Mr Platon, it was determined that the road corridor will comprise the following:

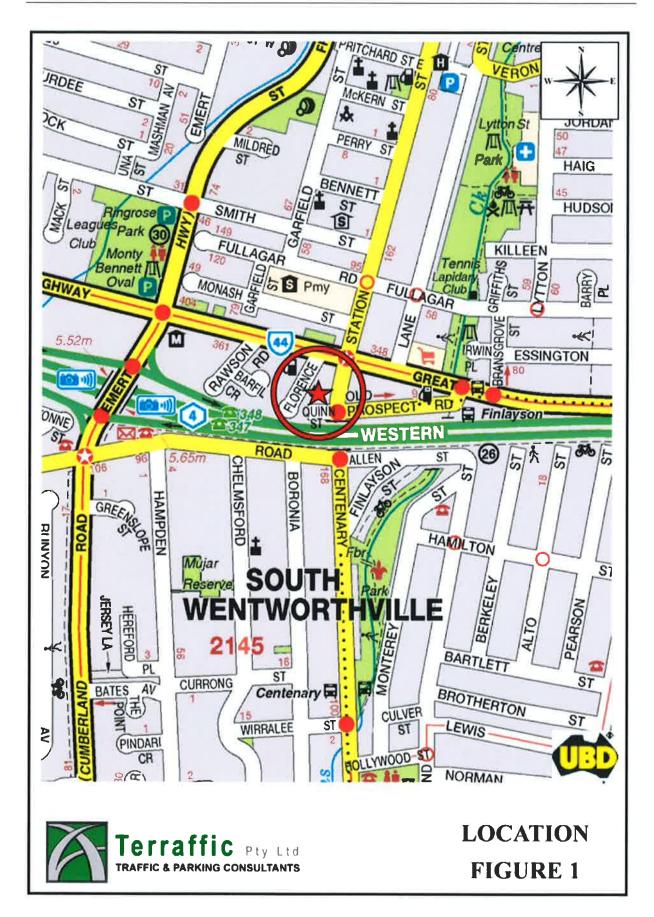


- A formalised cul-de-sac in Quinn Street located approximately 50m from Station St
- a 4m wide one-way <u>eastbound</u> roadway from Florence Street to the new culde-sac in Quinn Street
- a GIVE-WAY restriction on eastbound vehicles entering the cul-de-sac

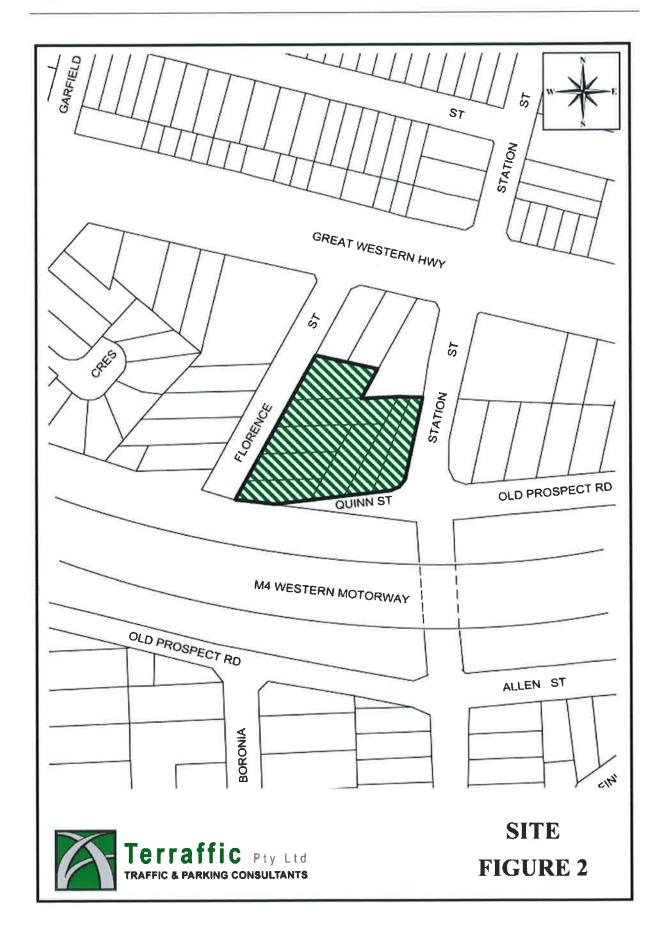
The primary purpose of providing an eastbound only link is to eliminate the potential for a "rat-run" for traffic that would typically turn left at the Great Western Highway. The proposed cul-de-sac also facilitates the existing u-turn movement that is quite prevalent in Quinn Street. These traffic arrangements are discussed and illustrated in Chapter 3 of this report.

The purpose of this report is to assess the traffic and parking implications of the development proposal.















2. PARKING ASSESSMENT

Council Car Parking Requirement

The development site is within Zone B6 under Part 2 of the Holroyd LEP 2013.

Table 3.1 in Part A of the Holroyd Development Control Plan 2013 (effective 5th August 2013) specifies the following car parking requirements that are applicable to the proposed development site:

	Bedroom per	Minimum Spaces	Maximum Spaces
Residential flat buildings,	dwelling:	Required	Required
dwellings in B1, B2 and B6	Studio / 1 bedroom	0.8	1
business zones (including	2 bedroom	1	1.5
shop top housing)	3 bedroom	1.2	2
	4+ bedroom	1.5	2
	Visitor / dwelling	0.2	0.5

Commercial (including	Measure	Minimum Spaces Required	Maximum Spaces Required
retail premises, business premises and office	Ground Floor – Leasable GFA	1 per 20m ²	1 per 10m ²
premises) in all other B1, B2 and B6 zoned areas.	Above Ground Floor – Leasable GFA	1 per 40m²	1 per 15m²

Application of the Council DCP requirements to the proposed development yields a minimum parking requirement of 208 spaces and maximum requirement of 352 spaces calculated as follows:

Minimum parking requirement

BUILDING A

6 x 1 bedroom units @ 0.8 space per dwelling

4.8 spaces

48 x 2 bedroom units @ 1 space per dwelling

48.0 spaces

Total Residential

52.8 spaces (say 53 spaces)



Resident Visitors 54 units @ 0.2 space per dwelling 10.8 spaces (say 11 spaces) **Building A Minimum Total** 63.6 spaces (say 64 spaces) **BUILDING B** 35 x 2 bedroom units @ 1 space per dwelling 35.0 spaces Total Residential 35.0 spaces Resident Visitors 35 units @ 0.2 space per dwelling 7.0 spaces **Building B Minimum Total** 42.0 spaces **BUILDING C** 15 x 1 bedroom units @ 0.8 space per dwelling 12.0 spaces 50 x 2 bedroom units @ 1 space per dwelling 50.0 spaces Total Residential 62.0 spaces Resident Visitors 65 units @ 0.2 space per dwelling 13.0 spaces Commercial 536.99m² @ 1 space per 20m² GFA 26.8 spaces (say 27 spaces) **Building C Minimum Total** 101.8 spaces (say 102 spaces) COMBINED DEVELOPMENT Total Residential 149.8 spaces (say 150 spaces) Total Resident Visitors 30.8 spaces (say 31 spaces) Commercial 26.8 spaces (say 27 spaces) **Total Minimum Parking Requirement** 207.4 spaces (say 208 spaces) Maximum parking requirement **BUILDING A** 6 x 1 bedroom units @ 1 space per dwelling 6.0 spaces 48 x 2 bedroom units @ 1.5 spaces per dwelling 72.0 spaces Total Residential 78.0 spaces Resident Visitors 54 units @ 0.5 space per dwelling 27.0 spaces **Building A Maximum Total 105.0 spaces BUILDING B** 35 x 2 bedroom units @ 1.5 spaces per dwelling 52.5 spaces (say 53 spaces) Total Residential 52.5 spaces Resident Visitors 35 units @ 0.5 space per dwelling 17.5 spaces (say 17 spaces) **Building B Maximum Total** 70.0 spaces **BUILDING C**

15.0 spaces

15 x 1 bedroom units @ 1 space per dwelling



50 x 2 bedroom units @ 1.5 spaces per dwelling 75.0 spaces

Total Residential 90.0 spaces

Resident Visitors 65 units @ 0.5 space per dwelling 32.5 spaces (say 33 spaces) Commercial 536.99m² @ 1 space per 10m² GFA 53.7 spaces (say 54 spaces)

Building C Maximum Total 176.2 spaces (say 177 spaces)

COMBINED DEVELOPMENT

Total Residential 220.5 spaces (say 221 spaces)

Total Resident Visitors 77.0 spaces

Commercial 53.7 spaces (say 54 spaces)

Total Minimum Parking Requirement 351.2 spaces (say 352 spaces)

The proposed development contains 210 off-street car parking spaces comprising 152 resident spaces, 31 resident visitor spaces and 27 commercial spaces. This parking provision clearly satisfies the minimum DCP requirement of 208 spaces.

As noted in the Introduction of this report, it is proposed that 2 of the commercial parking spaces be signposted for courier vehicles. As the floorspace will not be occupied by a retailer, it is unlikely that delivery vehicles larger than a standard courier van (B99 vehicle) will be required to access the site. This approach is consistent with a recently approved development at 29-33 Joyce Street, Pendle Hill (DA 2013/378) in which 2 of the commercial parking spaces were allocated to courier parking.

Car Park Compliance

The proposed car parking areas and access ramps have been designed to generally satisfy the following requirements of the Australian Standard AS/NZS2890.1:2004 – "Off-street car parking":

- Class 1A long-stay parking spaces have a minimum length of 5.5m and width of 2.4m
- An additional 0.3m has been provided for spaces adjacent to a wall or obstruction
- The access/manoeuvring aisles satisfy the minimum requirement of 5.8m
- Pavement cross-falls at parking spaces do not exceed 5% (1 in 20) in any direction
- Columns have been located in accordance with Clause 5.2 of the Standard



- The two way access ramp exceeds the minimum width requirement of 6.1m wall to wall
- Maximum ramp grades do not exceed 25% (1 in 4)
- Ramp transitions do not exceed 12.5% (1 in 8) over a distance of 2.0m for crests
- Ramp transitions do not exceed 15.0% (1 in 6.7) over a distance of 2.0m for sags
- A minimum headroom clearance of 2.2m has been provided throughout the basement carpark
- Pedestrian sight lines in accordance with Figure 3.3 of the Standard have been provided

The disabled parking spaces have been designed in accordance with the Australian Standard AS/NZS2890.6:2009 – "Off-street parking for people with disabilities" as follows:

- A 5.4m long x 2.4m wide dedicated (non-shared) parking space (Clause 2.2)
- An adjacent shared area that is also 5.4m long x 2.4m wide (Clause 2.2)
- A 2.4m long x 2.4m wide shared area that is located within the access aisle (not marked) (Clause 2.2)
- A minimum headroom of 2.5m above the disabled spaces (Clause 2.4)
- Pavement cross-falls in disabled spaces do not exceed 2.5% (1 in 40) in any direction (Clause 2.3)

Council Bicycle Parking Requirement

Table 3.1 in Part A of the Holroyd Development Control Plan 2013 (effective 5th August 2013) specifies the following bicycle parking requirements that are applicable to the proposed development site:

Use/Location	Measure	Minimum Spaces	Maximum Spaces
Ground Floor – business zones	GLFA: Employee	1 per 300m ²	
	GLFA: Visitor	1 per 2500m ²	
Residential Flat Building	Unit:		
	Studio	None	Unlimited
	1 bedroom	0.5	Ommica
	2 bedroom	0.5	
	3+ bedroom	0.5	
	+ Visitors per unit	0.1	



Application of the Council DCP requirements to the proposed development yields a minimum bicycle parking requirement of 95 bicycle spaces calculated as follows:

Minimum bicycle parking requirement

BUILDING A

6 x 1 bedroom units @ 0.5 space per dwelling 3.0 spaces
48 x 2 bedroom units @ 0.5 space per dwelling 24.0 spaces

Total Residential 27.0 spaces

Resident Visitors 54 units @ 0.1 space per dwelling 5.4 spaces (say 5 spaces) **Building A Minimum Total**32.4 spaces (say 32 spaces)

BUILDING B

35 x 2 bedroom units @ 0.5 space per dwelling

Total Residential

Resident Visitors 35 units @ 0.1 space per dwelling

Building B Minimum Total

17.5 spaces (say 17 spaces)

3.5 spaces (say 4 spaces)

21.0 spaces (say 21 spaces)

BUILDING C

15 x 1 bedroom units @ 0.5 space per dwelling 7.5 spaces (say 8 spaces)

50 x 2 bedroom units @ 0.5 space per dwelling 25.0 spaces

Total Residential 32.5 spaces (say 33 spaces)
Resident Visitors 65 units @ 0.1 space per dwelling 6.5 spaces (say 7 spaces)

Commercial 592.32m² @ 1 space per 300m² GFA 2.0 employee spaces

Commercial 592.32m² @ 1 space per 2500m² GFA 0.2 visitor spaces (say 0 spaces)

Building C Minimum Total 41.2 spaces (say 42 spaces)

COMBINED DEVELOPMENT

Total Residential 77.0 spaces

Total Resident Visitors 15.4 spaces (say 16 spaces)

Commercial Tenants 2.0 spaces

Total Minimum Parking Requirement 94.4 spaces (say 95 spaces)

The proposed development contains 100 bicycle parking spaces which clearly satisfies the minimum DCP requirement of 95 bicycle spaces.

In the circumstances, it can be concluded that the proposed development has no unacceptable parking implications.



3. TRAFFIC ASSESSMENT

Road Hierarchy

The classifications assigned to the road network serving the site by the RMS (Figure 3) identify the following classified State and Regional Roads:

State Road

Regional Road

Western Motorway (M4)

Station Street - Centenary Road

Great Western Highway

Cumberland Highway

As can be seen, the Great Western Highway is classified by the RMS as a *State Road* performing an arterial road function through the area. It generally carries three (3) travel lanes in each direction with additional turning lanes at key intersections and traffic signals. The median island on the Great Western Highway to the west of Station Street restricts traffic to left in and left out of side streets, including Florence Street.

The Station Street – Centenary Road link is a classified *Regional Road* and provides a key north-south road link through the area. The section of Station Street between the Great Western Highway and Quinn Street contains a narrow median island that restricts all right turn movements to/from Aldi on the eastern side of Station Street and to/from Hungary Jacks on the western side of Station Street.

Florence Street is an unclassified *Local Road* with a primary function of providing access to properties along its 150m length. It carries a single traffic lane in each direction with kerbside parking permitted along both sides of the road. As noted above, all movements to/from the Great Western Highway are restricted to left in/left out only.

Quinn Street is also an unclassified local road that extends for a distance of 60m from Station Street. In addition to providing vehicular access to Nos 21 and 23 Quinn Street, the roadway is continually used by southbound traffic on Station Street to undertake a u-turn and head back towards the Great Western Highway or the Hungary Jacks access driveway. While the



intersection of Station Street and Quinn Street is signalised, traffic turning left from Quinn Street into Station Street can *turn on red*. This feature of the signals facilitates the u-turn movement in Quinn Street.

Old Prospect Road is also an unclassified *local road* that operates on a one-way eastbound basis from Station Street to the Great Western Highway. All eastbound traffic must turn left onto the Great Western Highway.

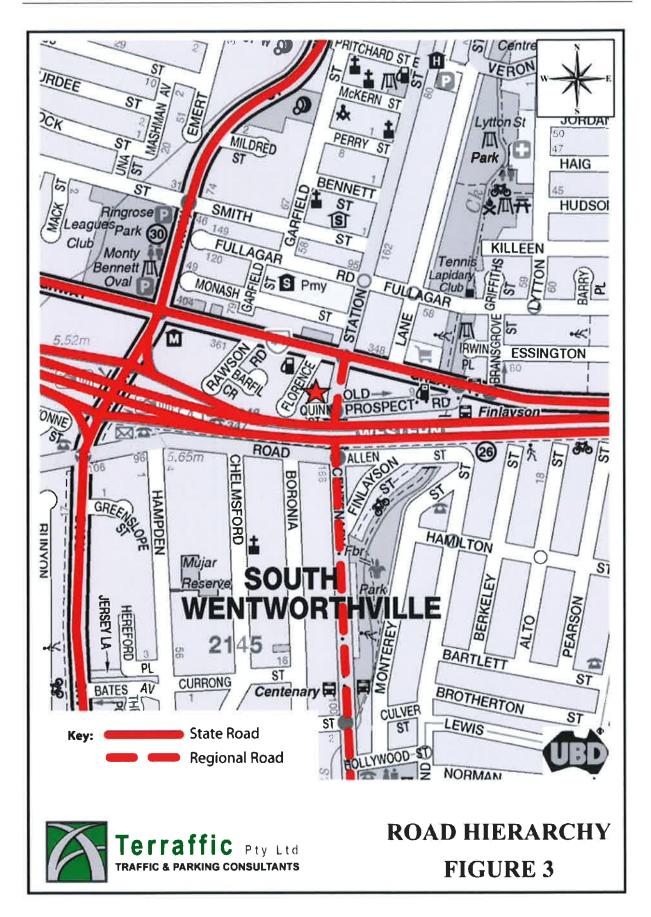
As can be seen in the aerial photograph below, Old Prospect Road incorporates a section of the *Parramatta to Liverpool T-way* (Route T80). During peak periods, buses generally travel on the T-way network every 5-10 minutes in each direction. The closest T-way bus stop to the site is located at the eastern end of Old Prospect Road, a walk of approximately 350m from the site.



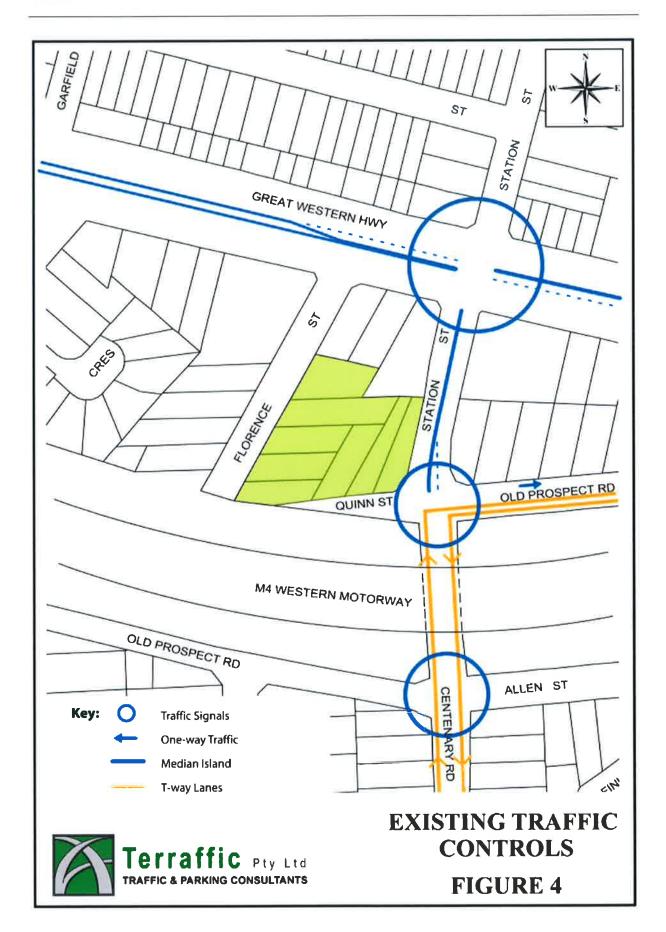
Aerial photograph of the site and surrounding road network

The existing traffic controls which apply to the road network in the vicinity of the site are illustrated on Figure 4.











Existing Traffic Conditions

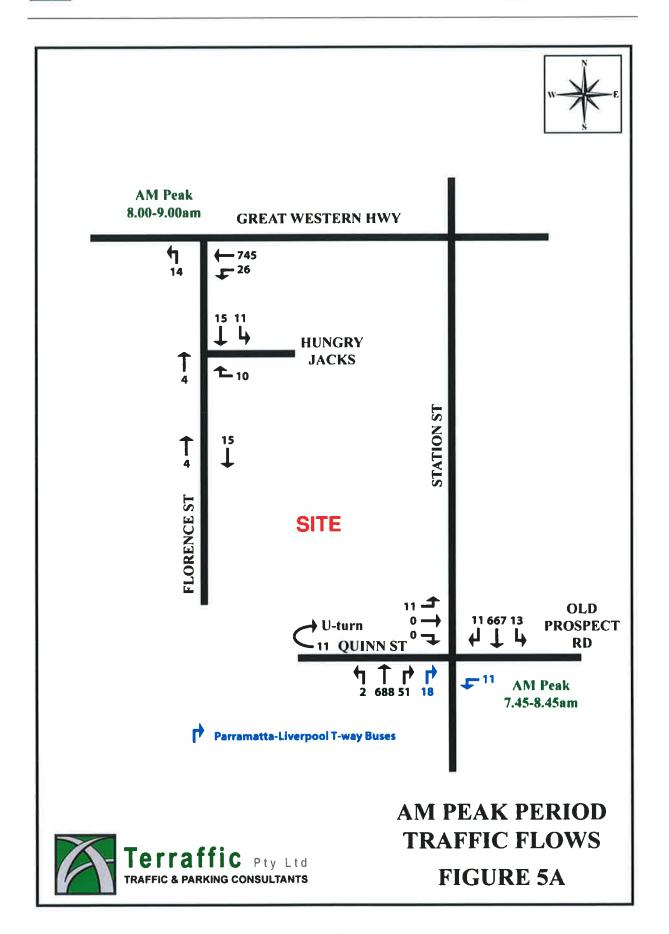
An indication of the existing traffic conditions on the road network in the vicinity of the site is provided by peak period traffic surveys undertaken at the following intersections:

- 1. The Great Western Highway and Florence Street
- 2. Station Street and Quinn Street/Old Prospect Road
- 3. Florence Street and the Hungry Jacks access driveway

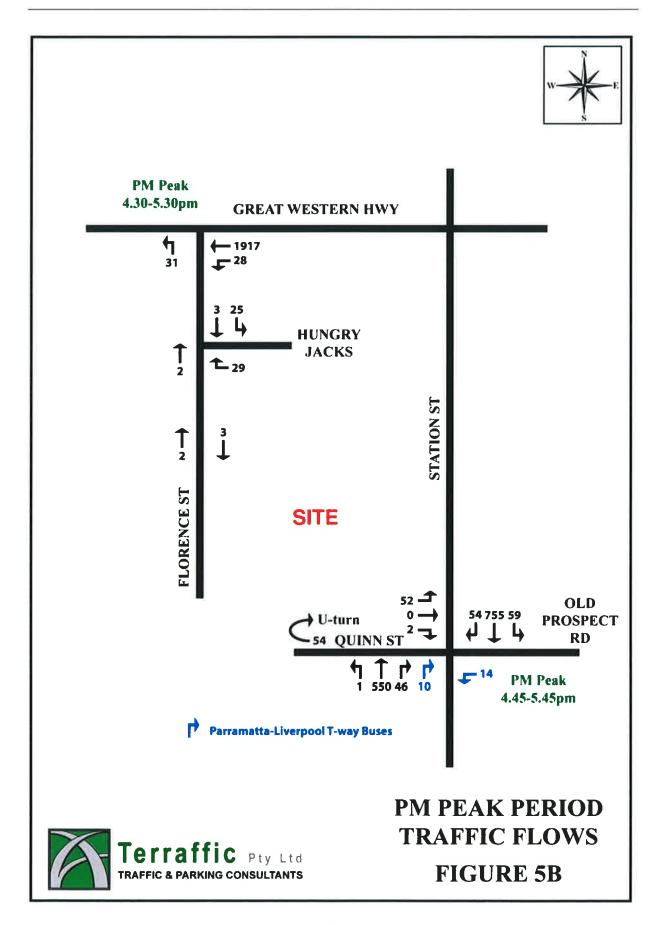
The surveys were carried out as part of this assignment between 7.00-9.00am and 4.00-6.00pm on Wednesday 23rd October 2013. The results of the traffic surveys are reproduced in full in Appendix A and illustrated on Figures 5A and 5B revealing that:

- the morning peak period occurs at the Station Street/Quinn Street intersection between 7.45-8.45am. At that time, 11 vehicles turned right into Quinn Street, performed the u-turn and then turned left back onto Station Street to head north
- the morning peak period occurs at the Great Western Highway/Florence Street intersection between 8.00-9.00am. At that time, there were 40 vehicles per hour (vph) on Florence Street comprising 26vph heading southbound and 14vph heading northbound. Of those 40 vehicles, 21 were generated by Hungry Jacks
- the evening peak period occurs at the Station Street/Quinn Street intersection between 4.45-5.45pm. At that time, 54 vehicles turned right into Quinn Street, performed the u-turn and then turned left back onto Station Street to head north. This equates to almost 1 car per minute making a u-turn in Quinn Street
- the evening peak period occurs at the Great Western Highway/Florence Street intersection between 4.30-5.30pm. At that time, there were 59vph on Florence Street comprising 28vph heading southbound and 31vph heading northbound. Of those 59 vehicles, 54 were generated by Hungry Jacks











Projected Traffic Generation

An indication of the traffic generation potential of the development proposal is provided by reference to the Roads and Traffic Authority's publication *Guide to Traffic Generating Developments, Section 3 - Landuse Traffic Generation (October 2002)*.

The RTA *Guidelines* are based on extensive surveys of a wide range of land uses and nominates the following traffic generation rates which are applicable to the proposed development:

High Density Residential Flat Buildings

Metropolitan Sub-Regional Centres

0.29 peak hour vehicle trips per dwelling

Commercial Office

2.0 peak hour vehicle trips per 100m² GFA

Traffic Generating Potential of Proposed Development

Application of the above traffic generation rates to the components of the proposed development yields a traffic generation potential of approximately 56 vehicle trips per hour (vtph) during the AM and PM peak periods as set out below:

AM Peak Period

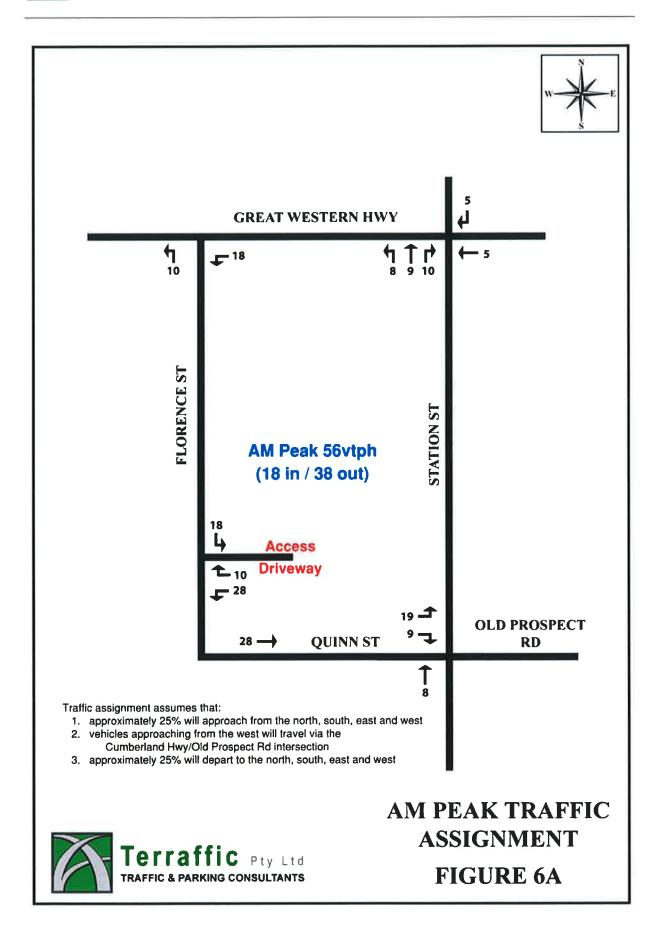
Total	56vtph (18 in/ 38 out)
536.99m ² Commercial Office @ 2vtph per 100m ² GFA	11vtph (9 in / 2 out)
154 apartments @ 0.29vtph per dwelling	45vtph (9 in / 36 out)

PM Peak Period

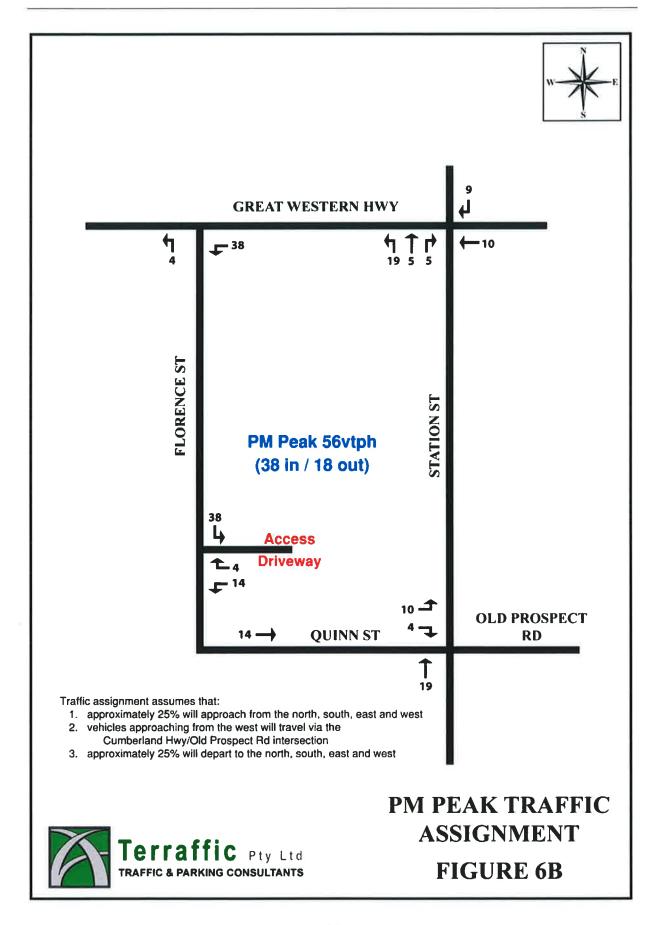
Total	56vtph (38 in/ 18 out)
536.99m ² Commercial Office @ 2vtph per 100m ² GFA	11vtph (2 in / 9 out)
154 apartments @ 0.29vtph per dwelling	45vtph (36 in / 9 out)

It should also be noted that the existing 8 dwellings on the site would have a traffic generating potential in the order of 8vtph. To that end, the additional traffic generated by the proposed development is approximately 48vtph. The assignment of traffic generated by the proposed development is illustrated on Figures 6A and 6B.











Traffic Implications - Road Network Capacity

The main traffic implications of the proposed development in terms of road network capacity concern the effect of the additional traffic demand generated by the proposed development on the operating performance of the Station Street/Quinn Street intersection and Great Western Highway/Florence Street intersection. That effect can be assessed using the SIDRA traffic model and criteria for interpreting the results of SIDRA analysis are set out on the schedule reproduced in the following pages.

The results of the SIDRA analysis of the operating performance of the Station Street/Quinn Street intersection under existing conditions and projected post-development traffic demand is set out in Table 3.1 and on the SIDRA MOVEMENT SUMMARY SHEETS reproduced in Appendix B. The SIDRA analysis reveals that the intersection operates satisfactorily under existing and projected post-development traffic demand.

The results of the SIDRA analysis of the operating performance of the Great Western Highway and Florence Street intersection under existing conditions and projected post-development traffic demand is set out in Table 3.2 and on the SIDRA MOVEMENT SUMMARY SHEETS reproduced in Appendix C. The SIDRA analysis reveals that the intersection will continue to operate at a satisfactory level of service with the injection of the projected post-development traffic demand.

In the circumstances, it can be concluded that the proposed development has no unacceptable traffic implications in terms of road network capacity.

Traffic-Related Environmental Effect

As the development site has direct vehicular access to the higher order road network, there is no need for traffic generated by the proposed development to travel on local residential streets.

In the circumstances, the proposed development will not have any unacceptable traffic implications in terms of traffic-related environmental effect.



TABLE 3.1 - RESULTS OF SIDRA ANALYSIS OF STATION ST AND QUINN ST / OLD PROSPECT RD, SOUTH WENTWORTHVILLE

Key Indicators		Exist Traffic I		Projected Development Traffic Demand			
•		AM	PM	AM	PM		
Level of Service		В	В	В	В		
Degree of Saturation		0.757	0.901	0.767	0.901		
Average Vehicle Delay (secs/vel	h)						
Station Street (south)	L	24.3	21.8	24.8	22.0		
` ,	T	16.1	13.6	16.6	13.8		
	R	18.4	22.0	18.4	22.0		
Old Prospect Rd (east)	L	8.2	8.2	8.2	8.2		
Old I Tospect Rd (cast)	T	n/a	n/a	n/a	n/a		
	R	n/a	n/a	n/a	n/a		
Station Street (north)	L	23.3	40.8	23.3	40.8		
	T	15.1	32.6	15.1	32.6 28.9		
	R	31.9	28.1	32.0	28.9		
Quinn Street (west)	L	14.4	17.4	17.6	14.7		
Quilli Stroot (wost)	T	0.0	0.0	0.0	0.0		
	R	14.4	17.4	17.6	14.7		
TOTAL AVERAGE VEHICLI	E DELAY	15.9	24.8	16.2	24.6		



TABLE 3.2 - RESULTS OF SIDRA ANALYSIS OF GREAT WESTERN HWY AND FLORENCE ST, SOUTH WENTWORTHVILLE

Key Indicators		Exist Traffic D		Projected Development Traffic Demand							
		AM	PM	AM	PM						
Level of Service		A	A	A	A						
Degree of Saturation		0.101	0.254	0.103	0.257						
Average Vehicle Delay (secs/veh)											
Florence Street (south)	L	8.3	9.8	8.3	9.8						
Great Western Hwy (east)	L T	10.9 0.0	10.9 0.0	10.9 0.0	10.9 0.0						
TOTAL AVERAGE VEHICLE I	DELAY	0.5	0.3	0.9	0.5						

Proposed Quinn Street Extension

As noted in the Introduction of this report, Clause 2.2 in Part N of Holroyd Council's Development Control Plan requires a 15 metre connecting laneway between Florence Street and Quinn Street.

Following the site inspections and traffic surveys undertaken as part of this assessment, it was found that Quinn Street functions as a u-turn bay for traffic to head back along Station Street to the Great Western Highway. While the majority of this traffic was observed departing the Aldi carpark on the eastern side of Station Street, other vehicles were observed entering the Hungry Jacks carpark off Station Street.

Following discussions with Council's Traffic Engineer Mr Platon, it was determined that the 15m wide connecting laneway will comprise the following:



- A formalised cul-de-sac in Quinn Street located approximately 50m from Station St
- a 4m wide one-way <u>eastbound</u> roadway from Florence Street to the new culde-sac in Quinn Street
- a GIVE-WAY restriction for eastbound vehicles entering the cul-de-sac

The primary purpose of providing an eastbound only link is to:

- 1. enable residents on Florence Street access Station Street and conveniently head north, east or south. Those heading west can turn left onto the Highway from Florence Street
- 2. eliminate the potential for a "rat-run" for traffic that would typically turn left at the Great Western Highway from Station Street. A two-way roadway would not be in the best interests of residents in Florence Street or those in the developing areas to the west of the site.

It was also determined that ability to perform the u-turn movement should be retained, albeit in a controlled and safe manner. Should the ability to perform a u-turn be removed from Quinn Street, drivers will simply continue southerly towards Centenary Road and perform the manoeuvre on the road network to the south of the M4 Motorway.

A plan of the proposed Quinn Street extension is reproduced in Appendix D and will require the appropriate support of Council's Traffic Committee.

In the circumstances, it can be concluded that the proposed development has no unacceptable traffic implications.



Criteria for Interpreting Results of SIDRA Analysis

1. Level of Service (LOS)

LOS	Traffic Signals and Roundabouts	Give Way and Stop Signs
'A'	Good operation.	Good operation.
'B'	Good with acceptable delays and spare capacity.	Acceptable delays and spare capacity.
'C'	Satisfactory.	Satisfactory but accident study required.
'D'	Operating near capacity.	Near capacity and accident study required.
'E'	At capacity; at signals incidents will cause excessive	At capacity and requires other control mode.
	delays. Roundabouts require other control mode.	
'F'	Unsatisfactory and requires additional capacity.	Unsatisfactory and requires other control mode.

2. Average Vehicle Delay (AVD)

The AVD provides a measure of the operational performance of an intersection as indicated on the table below which relates AVD to LOS. The AVD's listed in the table should be taken as a guide only as longer delays could be tolerated in some locations (ie inner city conditions) and on some roads (ie minor side street intersecting with a major arterial route).

Level of Service	Average Delay per Vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way and Stop Signs
A	less than 14	Good operation.	Good operation.
В	15 to 28	Good with acceptable delays and spare capacity.	Acceptable delays and spare capacity.
С	29 to 42	Satisfactory.	Satisfactory but accident study required.
D	43 to 56	Operating near capacity.	Near capacity and accident study required.
Е	57 to 70	At capacity; at signals incidents will cause excessive delays. Roundabouts require other control mode.	At capacity and requires other control mode.

3. Degree of Saturation (DS)

The DS is another measure of the operational performance of individual intersections.

For intersections controlled by traffic signals¹ both queue length and delay increase rapidly as DS approaches 1, and it is usual to attempt to keep DS to less than 0.9. Values of DS in the order of 0.7 generally represent satisfactory intersection operation. When DS exceeds 0.9 queues can be anticipated.

For intersections controlled by a roundabout or GIVE WAY or STOP signs, satisfactory intersection operation is indicated by a DS of 0.8 or less.

The values of DS for intersections under traffic signal control are only valid for cycle length of 120 secs.



APPENDIX A

TRAFFIC COUNT DATA



R.O.A.R. DATA

Reliable, Original & Authentic Results

Client : Terraffic Pty. Ltd.
Job No/Name : 4854 STH: WENTWORTHMLLE Centenary St

Reliable, Original & Authentic Results Ph.88196847, Fax88196849, Mob. 0418 239019

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	EAST	Old Prospect Rd	-1	٥	0	0	0	0	0	0	0	0		EAST Prospe	Old Prospect Rd	-1	0	0	0	0	0		0		
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		,_	2	o	0	F	က	-	7	5	2	22		٦	2	4	2	_	Ξ	18	l	+
	NORTH	Station St	-1	91	19	113	2	175	18	147	2	1135	NORTH F	Station St	F	478	295	633	299	657	l	199
	z	S	-1	7	2	-	6	6	2	2	4	8		35	-	9	12	6	13	24	1	
	Combined		Time Per	0700 - 0715	0715 - 0730	0730 - 0745	0745 - 0800	0800 - 0815	0815 - 0830	0830 - 0845	0845 - 0900	Period End	Combined		Peak Time	0700 - 0800	0715 - 0815	0730 - 0830	0745 - 0845	0800 - 0800		PEAK HOUR 13



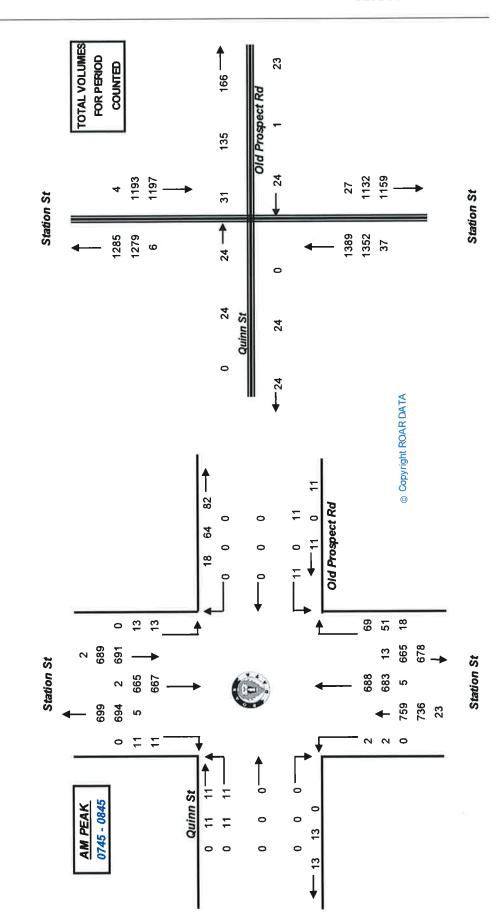
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Job No/Name: 4854 STH, WENTWORTHWILLE Centenary St

Day/Date: Wednesday 23rd October 2013





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Old Prospect Rd

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Old Prospect Rd

: Terraffic Pty. Ltd.

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SOUTH	Station St	UNCLASSIFIED	0	0	0	0	0	0	0	0	0	SOUTH	Station St	UNCLASSIFIED	0	0	0	0	0		0
WEST	Quinn St	UNCLASSIFIED	1	က	,	0	3	2	1	4	15	WEST	Quinn St	UNCLASSIFIED	5	7	9	9	10		9
NORTH	Station St	UNCLASSIFIED	3	0	1		3	2	0	2	12	NORTH	Station St	UNCLASSIFIED	5	5	7	9	7		9
Buses		Time Per	1600 - 1615	1615 - 1630	1630 - 1645	1645 - 1700	1700 - 1715	1715 - 1730	1730 - 1745	1745 - 1800	Period End	Peds		Peak Per	1600 - 1700	1615 - 1715	1630 - 1730	1645 - 1745	1700 - 1800		PEAKHR
		E			4	4	_	<u>ــــ</u>	100	lio.	Q			E	φ	7	F	<u></u>	4	II	67
		ΤŌΤ	381	397	354	374	387	386	396	365	3040			힏	1506	1512	1501	1543	1534	II	1543
Г	t Rd	R	0 381	0 397	0 35	0 37	0	0 38	39	0 36	0 304		et Rd	임	0 150	0 151	0 150	0 154	0 153		0 154
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EAST	Old Prospect Rd	┪	0	0	0	0	0	0	0	0	0	EAST	Old Prospect Rd	Н	0	0	0	0	0		0 0
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F	Station St	-I	0 125 19 3 0 0	126 20 5 0 0	126 15 3 0 0	125 19 2 0 0	157 10 5 0 0	144 16 4 0 0	11 3 0 0	20 4 0 0	130 29 0 0	-	Station St	- - -	73 13 0 0	64 15 0 0	552 60 14 0 0	56 14 0 0	57 16 0 0		56 14 0 0
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WEST SOUTH	Quinn St Station St	LITRLITR	21 0 0 0 125 19 3 0 0	9 0 0 0 126 20 5 0 0	12 0 0 0 126 15 3 0 0	13 0 1 0 125 19 2 0 0	10 0 1 0 157 10 5 0 0	14 0 0 0 144 16 4 0 0	15 0 0 1 124 11 3 0 0	16 16 0 0 0 122 20 4 0 0	112 110 0 2 1 1049 130 29 0 0	WEST SOUTH	Quinn St Station St	LIRLIR	55 0 1 0 502 73 13 0 0	44 0 2 0 534 64 15 0 0	49 0 2 0 552 60 14 0 0	52 0 2 1 550 56 14 0 0	55 0 1 1 547 57 16 0 0		54 52 0 2 1 550 56 14 0 0
HINOS	t Quinn St Station St	LITRLITR	182 21 21 0 0 0 125 19 3 0 0	9 9 0 0 0 126 20 5 0 0	12 12 0 0 0 126 15 3 0 0	15 13 0 1 0 125 19 2 0 0	11 10 0 1 0 157 10 5 0 0	14 14 0 0 0 144 16 4 0 0	14 15 0 0 1 124 11 3 0 0	16 16 0 0 0 122 20 4 0 0	110 0 2 1 1049 130 29 0 0	I SOUTH I	Station St Quinn St Station St	LIRLIR	57 55 0 1 0 502 73 13 0 0	47 44 0 2 0 534 64 15 0 0	52 49 0 2 0 552 60 14 0 0	54 52 0 2 1 550 56 14 0 0	55 55 0 1 1 547 57 16 0 0		52 0 2 1 550 56 14 0 0



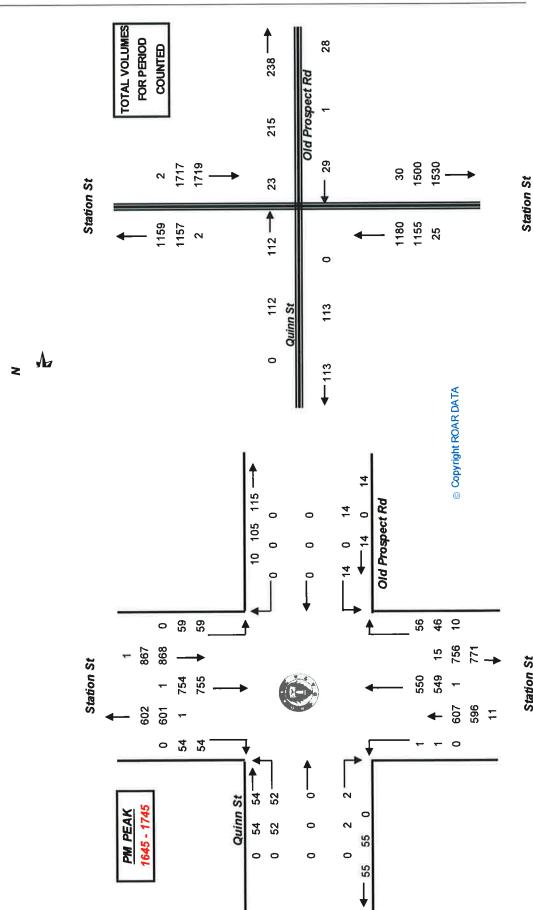
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Ph.88196847, Fax 88196849, Mob. 0418 239019 Reliable, Original & Authentic Results

Client : Terraffic Pty. Ltd.

Job No/Name: 4854 STH. WENTWORTHVILLE Centenary St

Day/Date : Wednesday 23rd October 2013



Station St



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	×	WEST	SOI	SOUTH	EAST	ST	
	Ö	Great	Flore	Florence St	25	Great	
Time Per	H	<u>ح</u> ا	7	RI	Ī	H	TOTAL
0700 - 0715			3		5	134	142
0715 - 0730			0		0	128	128
0730 - 0745			0		2	219	221
0745 - 0800			0		1	191	192
0800 - 0815			4		9	155	162
0815 - 0830			2		æ	198	208
0830 - 0845			4		2	161	172
0845 - 0900			4		8	231	243
Period Fnd	٥	٥	44	0	32	1417	1468

	8 0	Great	Florence St	oce St	Grea	Great	
Peak Per	H	2		21	ļ	-1	TOTAL
0700 - 0800	0	0	3	0	80	672	683
0715 - 0815	0	0	4	0	9	693	703
0730 - 0830	0	0	9	0	14	292	783
0745 - 0845	٥	٥	10	0	19	202	734
0800 - 0900	0	٥	14	٥	26	745	785

												<					
	703	783	734	785	785	Great Western Hwy	†	-745	ç	-29 			PEAK HOUR	0080 - 0080			
	693	763	705	745	745	Great											
,	9	14	19	26	26						Ł		_0	,	28	} →	•
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,	4	9	10	14	14					_	Ł	_	- 4		+	- 4	
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>	0	0	0	0	0	n Hwy	1	0	(-759							
000 - 00 /0	0715 - 0815	0730 - 0830	0745 - 0845	0060 - 0080	PEAK HR	Great Western Hwy	0			ļ							

Terraffic Pty. Ltd. Job No/Name

4854 STH, WENTWORTHVILLE Centenary St

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All Vehicles		WEST	SOL	SOUTH	1	EAST	
	5	Great	Florer	Florence St	ર્જ	Great	
Time Per	μl	2	-1	æ	_	ы	TOTAL
1600 - 1615			10		5	478	493
1615 - 1630			18		9	367	395
1630 - 1645			7		80	462	477
1645 - 1700			2		6	480	491
1700 - 1715			13		5	452	470
1715 - 1730			6		9	523	538
1730 - 1745			12		7	416	435
1745 - 1800			10		9	398	414
Doring End	٩	٩	ž	٥	Z,	2576	2742

	×	WEST	SOUTH	ᄩ	EAST	ST	
	Great) Pe	Florence St	ice St	Gr	Great	
Peak Per	H	œı	-1	21	7	ы	TOTAL
1600 - 1700	0	0	37	0	32	1787	1856
1615 - 1715	0	٥	40	0	32	1761	1833
1630 - 1730	0	0	31	0	28	1917	1976
1645 - 1745	0	0	36	0	27	1871	1934
1700 - 1800	0	0	4	0	24	1789	1857

1976

28 1917

PEAK HR

Great Western Hwy 0	28 1945	PEAK HOUR 1630 - 1730	
	†	_ 0 8	% →
(
Great Western Hwy 0	1948	31_	31 31
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Florence St

Florence St



: 4854 STH. WENTWORTHWILLE Centenary St

Job No/Name Day/Date All Vehicles

: Тептаffic Pty. Ltd.

:Wednesday 23rd October 2013

TOTAL

Florence St

Hungry EAST

Florence St

NORTH

9

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1630 - 1645

1645 - 1700

1615 - 1630

1700 - 1715

2

Time Per

1600 - 1615

SOUTH

56 17 7 8 5 13 16

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	ON	NORTH	EAST	ST	SOI	SOUTH	
	Flore	Florence St	Hungry	gry	Flore	Florence St	
Time Per	H	7	œ۱	_1	اي	H	TOTAL
0700 - 0715	4	1	3	0	0	0	8
0715 - 0730	0	0	0	0	0	0	0
0730 - 0745	-	-	0	0	0	0	2
0745 - 0800	1	0	0	0	0	0	1
0800 - 0815	-	2	2	0	0	2	7
0815 - 0830	3	5	2	0	0	0	10
0830 - 0845	2	2	3	0	0	-	11
0845 - 0900	9	2	3	0	0	1	12
Period End	21	13	13	۰	٥	4	51

	1						
1		TOTAL	11	10	20	29	40
H	nce St	Н	0	2	2	3	4
SOU	Florence	œ	0	0	0	0	0
EAST	igny	Ī	0	0	0	0	0
A	Hungry	œ۱	3	7	4	2	10
ORTH	orence St	Ļ	2	3	8	6	11
Š	Florer	H	9	3	9	10	15
		Peak Per	0700 - 0800	0715 - 0815	0730 - 0830	0745 - 0845	0060 - 0080

TOTAL

2

œ

Peak Per

1600 - 1700

1615 - 1715

36 38 23 33

30 29 22 7

Florence St

Hungry

Florence St

SOUTH

EAST

NORTH

69 72 5 63

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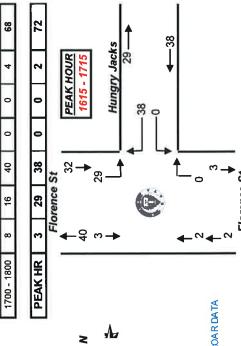
Period End

1730 - 1745

1715 - 1730

1745 - 1800

		incence of	, Sinni	3.7	i iorence or	1000	
eak Per	I	1	2	Ī	æ	Н	TOTAL
0080 - 00	9	2	3	0	0	0	11
715 - 0815	3	3	2	0	0	2	10
730 - 0830	9	8	4	0	0	2	20
745 - 0845	10	6	7	0	0	3	29
0060 - 006	15	11	10	0	0	4	40



PEAK HOUR 0800 - 0900

₹ 58

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10

15

PEAK HR

Florence St 11

Hungry Jacks

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Florence St



APPENDIX B

SIDRA MOVEMENT SUMMARY SHEETS FOR THE STATION STREET/QUINN STREET INTERSECTION

Site: Station St and Quinn St/Old Prospect Rd - Existing AM Peak

Existing AM Peak Period

Signals - Fixed Time Cycle Time = 80 seconds (User-Given Cycle Time)

Mov	OD	Deman	d Flows	Deg.	Average	Level of	95% Back o		Prop.	Effective	Average
ID	Mov	Total veh/h	HV %	Satn v/c	Delay sec	Service	Vehicles veh	Distance m	Queued	Stop Rate per veh	Speed km/h
South:	Station St										
1	L2	2	0.0	0.757	24.3	LOS B	20.6	147.9	0.80	0.74	39.4
2	T1	688	2.9	0.757	16.1	LOS B	20.6	147.9	0.80	0.74	39.4
3	R2	69	26.1	0.132	18.4	LOS B	0.7	5.0	0.70	0.73	39.8
Appro	ach	759	5.0	0.757	16.4	LOS B	20.6	147.9	0.79	0.74	39.4
East: 0	Old Prospect	Rd									
4	L2	11	100.0	0.010	8.2	LOS A	0.0	0.0	0.00	2.30	48.9
Appro	ach	11	100.0	0.010	8.2	NA	0.0	0.0	0.00	2.30	48.9
North:	Station St										
7	L2	13	0.0	0.696	23.3	LOS B	19.6	140.4	0.79	0.72	40.1
8	T1	667	3.0	0.696	15.1	LOS B	19.6	140.4	0.79	0.72	40.1
9	R2	11	0.0	0.045	31.9	LOS C	0.3	2.3	0.77	0.70	29.2
Appro	ach	691	2.9	0.696	15.5	LOS B	19.6	140.4	0.79	0.72	39.9
West:	Quinn St										
10	L2	11	0.0	0.023	14.4	LOS A	0.2	1.3	0.55	0.68	38.3
12	R2	1	0.0	0.023	14.3	LOS A	0.2	1.3	0.55	0.68	38.3
Appro	ach	12	0.0	0.023	14.4	LOS A	0.2	1.3	0.55	0.68	38.3
All Ve	hicles	1473	4.7	0.757	15.9	LOS B	20.6	147.9	0.79	0.74	39.

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Mov		Demand	Average	Level of	Average Back o	f Queue	Prop.	Effective
ID	Description	Flow	Delay	Service	Pedestrian	Distance	Queued	Stop Rate
		ped/h	sec		ped	m		per ped
P3	North Full Crossing	4	34.2	LOS D	0.0	0.0	0.93	0.93
P4	West Full Crossing	20	11.6	LOS B	0.0	0.0	0.54	0.54
All Per	destrians	24	15.3	LOS B			0.60	0.60

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

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Site: Station St and Quinn St/Old Prospect Rd - Existing PM Peak

Existing PM Peak Period

Signals - Fixed Time Cycle Time = 80 seconds (User-Given Cycle Time)

Move	ment Perfo	rmance -	Vehicles								
Mov ID	OD Mov	Deman Total veh/h	d Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back o Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South:	Station St										
1	L2	1	0.0	0.593	21.8	LOS B	14.3	102.6	0.72	0.64	41.5
2	T1	550	2.7	0.593	13.6	LOS A	14.3	102.6	0.72	0.64	41.5
3	R2	56	17.9	0.148	22.0	LOS B	0.9	6.0	0.81	0.73	37.3
Appro	ach	607	4.1	0.593	14.4	LOS A	14.3	102.6	0.72	0.64	41.1
East: 0	Old Prospect	Rd									
4	L2	14	100.0	0.013	8.2	LOS A	0.0	0.0	0.00	2.30	48.9
Appro	ach	14	100.0	0.013	8.2	NA	0.0	0.0	0.00	2.30	48.9
North:	Station St										
7	L2	59	0.0	0.901	40.8	LOS C	36.0	257.1	0.89	1.03	30.1
8	T1	755	2.6	0.901	32.6	LOS C	36.0	257.1	0.89	1.03	30.1
9	R2	54	0.0	0.161	28.1	LOS B	1.5	10.7	0.73	0.76	30.7
Approa	ach	868	2.3	0.901	32.9	LOS C	36.0	257.1	0.88	1.01	30.1
West:	Quinn St										
10	L2	52	0.0	0.095	17.4	LOS B	1.1	7.4	0.61	0.73	36.3
12	R2	2	0.0	0.095	17.4	LOS B	1.1	7.4	0.61	0.73	36.3
Approa	ach	54	0.0	0.095	17.4	LOS B	1.1	7.4	0.61	0.73	36.3
All Vel	nicles	1543	3.8	0.901	24.8	LOS B	36.0	257.1	0.80	0.87	34.0

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Pedestrian ped	of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P3	North Full Crossing	6	34.2	LOS D	0.0	0.0	0.93	0.93
P4	West Full Crossing	6	11.6	LOS B	0.0	0.0	0.54	0.54
All Pe	destrians	12	22.9	LOS C			0.73	0.73

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

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Site: Station St and Quinn St/Old Prospect Rd - Projected AM Peak

Projected AM Peak Period

Signals - Fixed Time Cycle Time = 80 seconds (User-Given Cycle Time)

Mov	OD	Deman	d Flows	Deg.	Average	Level of	95% Back (of Queue	Prop.	Effective	Average
ID	Mov	Total veh/h	HV %	Satn v/c	Delay sec	Service	Vehicles veh	Distance m	Queued	Stop Rate per veh	Speed km/l
South:	Station St										
1	L2	2	0.0	0.767	24.8	LOS B	21.3	152.6	0.81	0.75	39.0
2	T1	697	2.9	0.767	16.6	LOS B	21.3	152.6	0.81	0.75	39.0
3	R2	69	26.1	0.132	18.4	LOS B	0.7	5.0	0.70	0.73	39.8
Approa	ach	768	4.9	0.767	16.8	LOS B	21.3	152.6	0.80	0.75	39.1
East: 0	Old Prospect	Rd									
4	L2	11	100.0	0.010	8.2	LOS A	0.0	0.0	0.00	2.30	48.9
Approa	ach	11	100.0	0.010	8.2	NA	0.0	0.0	0.00	2.30	48.9
North:	Station St										
7	L2	13	0.0	0.696	23.3	LOS B	19.6	140.4	0.79	0.72	40.1
8	T1	667	3.0	0.696	15.1	LOS B	19.6	140.4	0.79	0.72	40.1
9	R2	11	0.0	0.046	32.0	LOS C	0.3	2.3	0.77	0.70	29.1
Approa	ach	691	2.9	0.696	15.5	LOS B	19.6	140.4	0.79	0.72	39.9
West:	Quinn St										
10	L2	30	0.0	0.086	17.6	LOS B	0.8	5.3	0.59	0.70	36.2
12	R2	9	0.0	0.086	17.6	LOS B	0.8	5.3	0.59	0.70	36.2
Approa	ach	39	0.0	0.086	17.6	LOS B	8.0	5.3	0.59	0.70	36.2
Ali Vel	nicles	1509	4.6	0.767	16.2	LOS B	21.3	152.6	0.78	0.75	39.4

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Move	ement Performance - Pedestrians							
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back Pedestrian ped	of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P3	North Full Crossing	4	34.2	LOS D	0.0	0.0	0.93	0.93
P4	West Full Crossing	20	11.6	LOS B	0.0	0.0	0.54	0.54
All Pe	destrians	24	15.3	LOS B			0.60	0.60

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

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Site: Station St and Quinn St/Old Prospect Rd - Projected PM Peak

Projected PM Peak Period

Signals - Fixed Time Cycle Time = 80 seconds (User-Given Cycle Time)

Mov	OD	Domon	Vehicles	Dog	Augraga	Lovelof	OFP/ Book	of Outour	Dron	Effective	Average
ID	Mov	Total veh/h	d Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South:	Station St							= "			
1	L2	1	0.0	0.613	22.0	LOS B	15.0	107.5	0.73	0.65	41.4
2	T1	569	2.6	0.613	13.8	LOS A	15.0	107.5	0.73	0.65	41.4
3	R2	56	17.9	0.148	22.0	LOS B	0.9	6.0	0.81	0.73	37.3
Appro	ach	626	4.0	0.613	14.6	LOS B	15.0	107.5	0.73	0.65	41.0
East: (Old Prospect	Rd									
4	L2	14	100.0	0.013	8.2	LOS A	0.0	0.0	0.00	2.30	48.9
Approa	ach	14	100.0	0.013	8.2	NA	0.0	0,0	0.00	2.30	48.9
North:	Station St										
7	L2	59	0.0	0.901	40.8	LOS C	36.0	257.2	0.89	1.03	30.1
8	T1	755	2.6	0.901	32.6	LOS C	36.0	257.2	0.89	1.03	30.1
9	R2	54	0.0	0.167	28.9	LOS C	1.6	10.9	0.75	0.76	30.4
Approa	ach	868	2.3	0.901	32.9	LOS C	36.0	257.2	0.88	1.01	30.1
West:	Quinn St										
10	L2	62	0.0	0.129	14.7	LOS B	1.1	7.8	0.59	0.73	38.1
12	R2	6	0.0	0.129	14.7	LOS B	1.1	7.8	0.59	0.73	38.1
Approa	ach	68	0.0	0.129	14.7	LOS B	1.1	7.8	0.59	0.73	38.1
All Vel	nicles	1576	3.7	0.901	24.6	LOS B	36.0	257.2	0.80	0.87	34.1

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Move	ment Performance - Pedestrians							
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back Pedestrian ped	of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P3	North Full Crossing	6	34.2	LOS D	0.0	0.0	0.93	0.93
P4	West Full Crossing	6	11.6	LOS B	0.0	0.0	0.54	0.54
All Pe	destrians	12	22.9	LOS C			0.73	0.73

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

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APPENDIX C

SIDRA MOVEMENT SUMMARY SHEETS FOR THE GREAT WESTERN HIGHWAY/FLORENCE STREET INTERSECTION

igvee Site: Great Western Hwy and Florence St - Existing AM Peak

Existing AM Peak

Giveway / Yield (Two-Way)

Mov	OD	Demand	Flows	Deg.	Average	Level of	95% Back	of Queue	Prop.	Effective	Average
ID	Mov	Total veh/h	HV %	Satn v/c	Delay sec	Service	Vehicles veh	Distance m	Queued	Stop Rate per veh	Speed km/h
South:	Florence S	t									
1	L2	14	0.0	0.012	8.3	LOS A	0.0	0.3	0.25	0.59	45.2
Approa	ach	14	0.0	0.012	8.3	LOS A	0.0	0.3	0.25	0.59	45.2
East: 0	Great Weste	rn Hwy									
4	L2	26	0.0	0.101	10.9	LOS A	0.0	0.0	0.00	0.16	76.2
5	T1	745	3.0	0.101	0.0	LOS A	0.0	0.0	0.00	0.04	79.1
Approa	ach	771	2.9	0.101	0.4	NA	0.0	0.0	0.00	0.04	79.0
All Vel	nicles	785	2.8	0.101	0.5	NA	0.0	0.3	0.00	0.05	78.0

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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igwedge Site: Great Western Hwy and Florence St - Existing PM Peak

Existing PM Peak

Giveway / Yield (Two-Way)

Move	ment Perfo	ormance - V	ehicles								
Mov ID	OD Mov	Demand Total veh/h	I Flows HV %	Deg Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South:	Florence St	t									
1	L2	31	0.0	0.036	9.8	LOS A	0.1	1.0	0.45	0.67	44.3
Approa	ach	31	0.0	0.036	9.8	LOS A	0.1	1.0	0.45	0.67	44.3
East: 0	Great Weste	rn Hwy									
4	L2	28	0.0	0.254	10.9	LOS A	0.0	0.0	0.00	0.07	78.3
5	T1	1917	3.0	0.254	0.0	LOS A	0.0	0.0	0.00	0.02	79.5
Approa	ach	1945	3.0	0.254	0.2	NA	0.0	0.0	0.00	0.02	79.5
All Vel	nicles	1976	2.9	0.254	0.3	NA	0.1	1.0	0.01	0.03	78.5

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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∇ Site: Great Western Hwy and Florence St - Projected AM Peak

Projected AM Peak Giveway / Yield (Two-Way)

Mov	OD	Demand	Flows	Deg.	Average	Level of	95% Back	of Queue	Prop.	Effective	Average
ID	Mov	Total veh/h	HV %	Satn v/c	Delay sec	Service	Vehicles veh	Distance m	Queued	Stop Rate per veh	Speed km/t
South:	Florence St	1									
1	L2	24	0.0	0.020	8.3	LOS A	0.1	0.6	0.24	0.60	45.2
Approa	ach	24	0.0	0.020	8.3	LOS A	0.1	0.6	0.24	0.60	45.2
East: 0	Great Weste	rn Hwy									
4	L2	45	0.0	0.103	10.9	LOS A	0.0	0.0	0.00	0.25	73.9
5	T1	745	3.0	0.103	0.0	LOS A	0.0	0.0	0.00	0.05	78.7
Approa	ach	790	2.8	0.103	0.6	NA	0.0	0.0	0.00	0.06	78.4
All Veh	nicles	814	2.7	0.103	0.9	NA	0.1	0.6	0.01	0.08	76.7

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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 $\overline{f V}$ Site: Great Western Hwy and Florence St - Projected PM Peak

Projected PM Peak Giveway / Yield (Two-Way)

Mov	OD	Demand	Flows	Deg	Average	Level of	95% Back	of Queue	Prop.	Effective	Average
ID	Mov	Total veh/h	HV %	Satn v/c	Delay sec	Service	Vehicles veh	Distance m	Queued	Stop Rate per veh	Speed km/r
South:	Florence S	t									
1	L2	41	0.0	0.046	9.8	LOS A	0.2	1.3	0.45	0,68	44.3
Approa	ach	41	0.0	0.046	9.8	LOS A	0.2	1.3	0.45	0.68	44.3
East: 0	Great Weste	rn Hwy									
4	L2	47	0.0	0.257	10.9	LOS A	0.0	0.0	0.00	0.12	77.2
5	T1	1917	3.0	0.257	0.0	LOS A	0.0	0.0	0.00	0.03	79.3
Approa	ach	1964	2.9	0.257	0.3	NA	0.0	0.0	0.00	0.03	79.2
All Veh	nicles	2005	2.9	0.257	0.5	NA	0.2	1.3	0.01	0.04	78.0

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

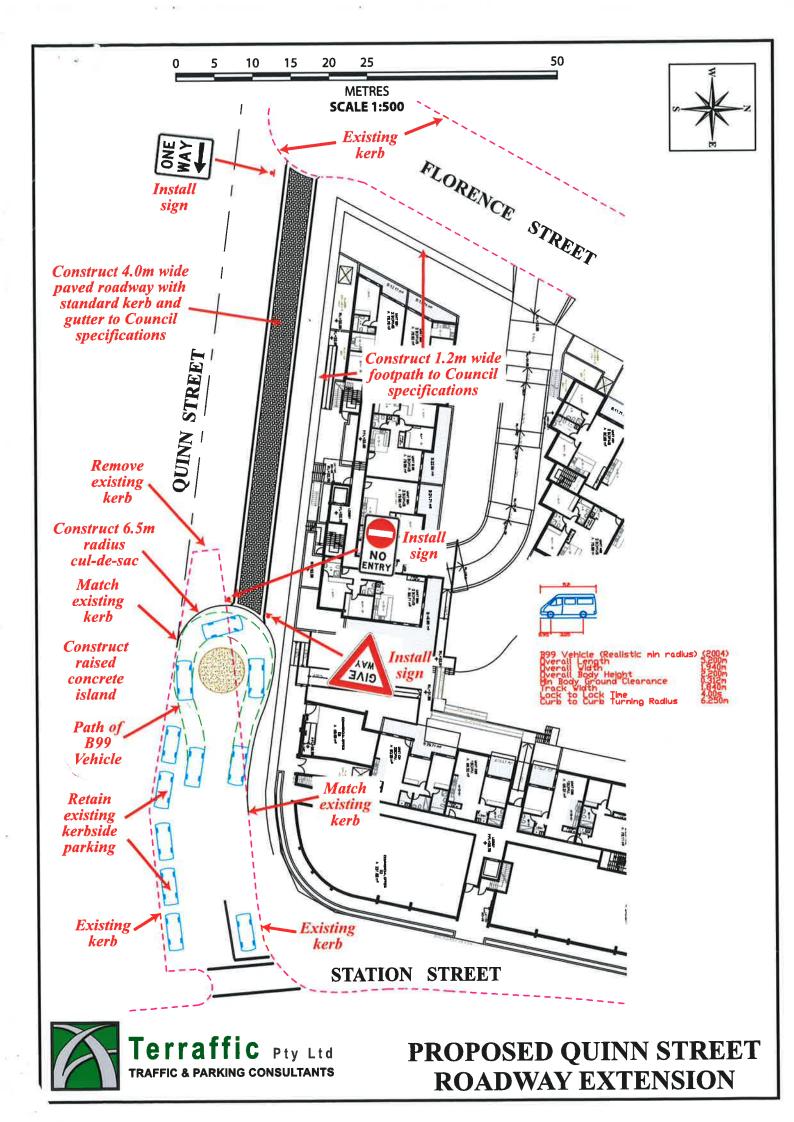
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APPENDIX D

PROPOSED QUINN STREET ROADWAY EXTENSION





PROPOSED MIXED USE DEVELOPMENT

1-9 FLORENCE STREET AND 19-23 QUINN STREET, SOUTH WENTWORTHVILLE

Supplementary Traffic Assessment

25 May 2014

Ref: 13111

Prepared by

Terraffic Pty Ltd
Traffic and Parking Consultants



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FIGURE 6B	PM PEAK TRAFFIC ASSIGNMENT
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FIGURE 7B	PM PEAK TRAFFIC ASSIGNMENT – ALL AREAS



1. INTRODUCTION

This report has been prepared to accompany a Development Application to Holroyd City Council for a mixed use commercial/residential development proposal to be located on a consolidated site at 1-9 Florence Street and 19-23 Quinn Street, South Wentworthville (Figures 1 and 2).

The subject site is located on the northern side of the Western (M4) Motorway and has a site area of 6,126.61m². The site has frontages of 82.31m to Florence Street, 77.31m to Quinn Street and 41.52m to Station Street. The existing site development comprises 8 residential lots with a single level dwelling on each lot.

The proposed development comprises the construction of 3 multi-level mixed use commercial/residential buildings as follows:

Building A 54 dwelling

54 dwellings (6x1 bedroom and 48 x 2 bedroom units)

Building B

35 dwellings (35 x 2 bedroom units)

Building C

536.99m² commercial office (3 suites) and 65 dwellings (15 x 1 bedroom

and 50 x 2 bedroom units)

Total Development

536.99m² commercial office (3 suites) and 154 dwellings (21 x 1

bedroom and 133 x 2 bedroom units)

Vehicular access to the proposed development is via a new 6.1m wide combined entry/exit driveway off Florence Street.

Clause 2.2 in Part N of Holroyd Council's Development Control Plan specifies the following Development Control that impacts on the development site:

C2. A 15 metre connecting laneway between Florence Street and Quinn Street is required in accordance with Figure 14.

A copy of Figure 14 is reproduced below and shows a 15m wide extension of Quinn Street through to Rawson Street.

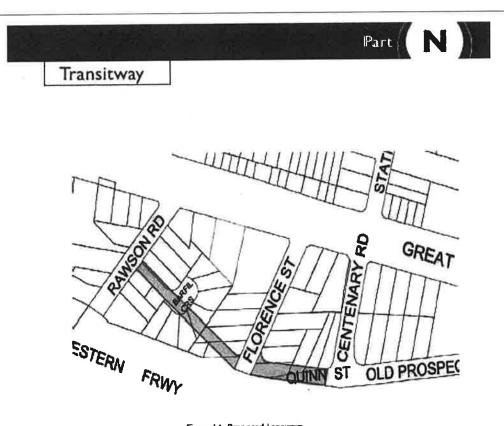


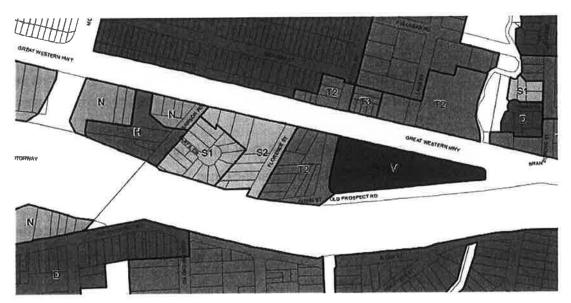
Figure 14- Proposed Laneways

Figure 14 of Council's DCP showing the Quinn Street extension through to Rawson Street

The extension of Quinn Street is to enhance accessibility to future developments in the B6 Zoning to the west of the subject site. An extract of the Council LEP "Floor Space Ratio Map" for this area is reproduced below revealing the following:

- Zone T2 incorporating the proposed development site (6,126m²) and the Hungry Jacks site and joining the subject site to the north (approximately 3,008m²). This area has a floor space ratio of 2:1
- Zone S1 to the east of Rawson Road with an area of approximately 10,600m². This area has a floor space ratio of 1.5:1 which equates to 75% less than Zone T2
- Zone S2 to the west of Florence Street with an area of approximately 10,200m². This area has a floor space ratio of 1.8:1 which equates to 90% less than Zone T2





Extract from Council's LEP Zoning Maps

The Quinn Street extension from Centenary Road to Florence Street was reviewed by Council's Local Traffic Committee at its meeting help on the 5th February 2014 (Item HT010-14). At this meeting, the Holroyd Traffic Committee recommended that:

- i) The proposed eastbound roadway between the southern end of Florence Street and western end of Quinn Street be supported in principle, subject to the following being issues being addressed:
 - a. The proposed roadway shall be constructed as a road (i.e. kerb, gutter, and asphalt pavement no contrasting pavement).
 - b. Angle on-street parking shall be provided on the southern side of the proposed roadway and Quinn Street.
 - c. Quinn Street shall be converted to one-way eastbound from the proposed roadway to Centenary Road. The signalised intersection of Quinn Street with Centenary Road shall be modified accordingly.
 - d. Additional modelling shall be undertaken to determine the ultimate layout of the intersection of Quinn Street with Centenary Road following full development of the Finlayson Transitway Precinct in accordance with Council's DCP and LEP. This includes the additional laneway between Rawson Road and Florence Street. The



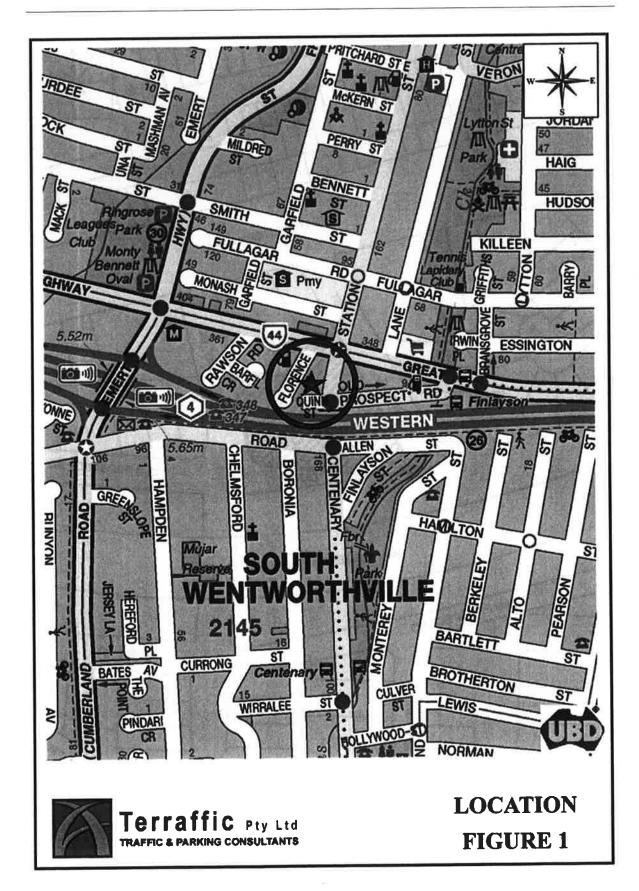
traffic modelling, interim layout and ultimate layout of the intersection of Quinn Street with Centenary Road shall be reported to the Holroyd Traffic Committee.

e. Traffic signal design plans of the intersection of Quinn Street and Centenary Road and Traffic Management Plan for the proposed conversion of Quinn Street to one-way traffic flow shall be submitted to the Roads and Maritime Services for approval.

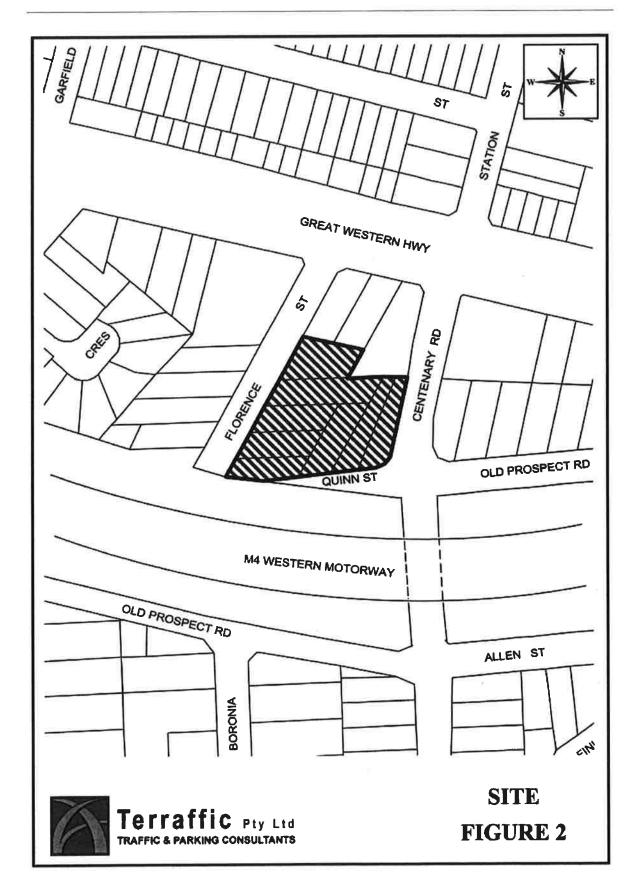
The primary purpose of providing an eastbound only link is to eliminate the potential for a "rat-run" for traffic that would typically turn left at the Great Western Highway.

The purpose of this report is to address issue "d" above and provide additional modelling of the Centenary Road/Quinn Street intersection with the inclusion of traffic generated by developments to the west of the subject site.











2. TRAFFIC ASSESSMENT

Road Hierarchy

The classifications assigned to the road network serving the site by the RMS (Figure 3) identify the following classified State and Regional Roads:

State Road

Regional Road

Western Motorway (M4)

Station Street - Centenary Road

Great Western Highway

Cumberland Highway

As can be seen, the Great Western Highway is classified by the RMS as a *State Road* performing an arterial road function through the area. It generally carries three (3) travel lanes in each direction with additional turning lanes at key intersections and traffic signals. The median island on the Great Western Highway to the west of Station Street restricts traffic to left in and left out of side streets, including Florence Street.

The Station Street – Centenary Road link is a classified *Regional Road* and provides a key north-south road link through the area. The section of Centenary Road between the Great Western Highway and Quinn Street contains a narrow median island that restricts all right turn movements to/from Aldi on the eastern side of Station Street and to/from Hungary Jacks on the western side of Station Street.

Florence Street is an unclassified *Local Road* with a primary function of providing access to properties along its 150m length. It carries a single traffic lane in each direction with kerbside parking permitted along both sides of the road. As noted above, all movements to/from the Great Western Highway are restricted to left in/left out only.

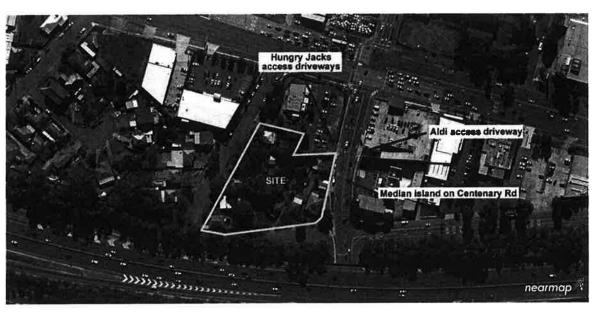
Quinn Street is also an unclassified local road that extends for a distance of 60m from the Centenary Road traffic signals. In addition to providing vehicular access to Nos 21 and 23 Quinn Street, the roadway is continually used by southbound traffic on Station Street to undertake a u-turn and head back towards the Great Western Highway or the Hungary Jacks



access driveway. To facilitate the u-turn movement in Quinn Street and minimise delays for traffic on Centenary Road, traffic turning left from Quinn Street into Centenary Road can turn on red.

Old Prospect Road is also an unclassified *local road* that operates on a one-way eastbound basis from Centenary Road to the Great Western Highway. All eastbound traffic must turn left onto the Great Western Highway.

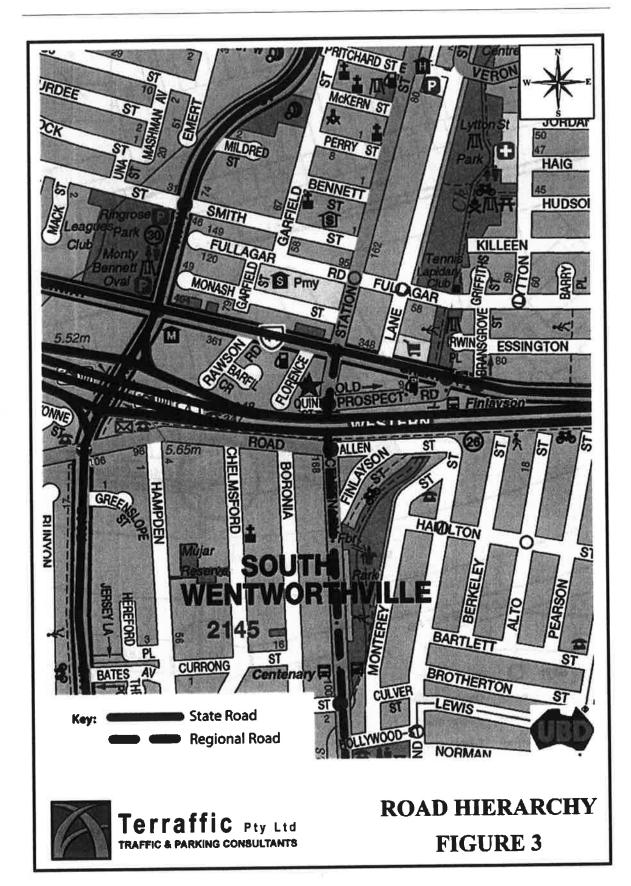
As can be seen in the aerial photograph below, Old Prospect Road incorporates a section of the *Parramatta to Liverpool T-way* (Route T80). During peak periods, buses generally travel on the T-way network every 5-10 minutes in each direction. The closest T-way bus stop to the site is located at the eastern end of Old Prospect Road, a walk of approximately 350m from the site.

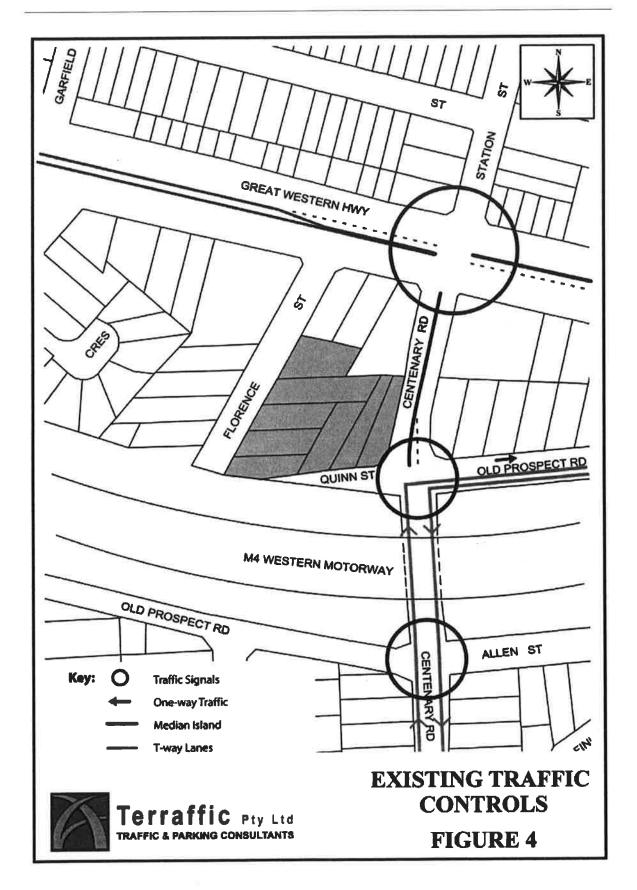


Aerial photograph of the site and surrounding road network

The existing traffic controls which apply to the road network in the vicinity of the site are illustrated on Figure 4.







Existing Traffic Conditions

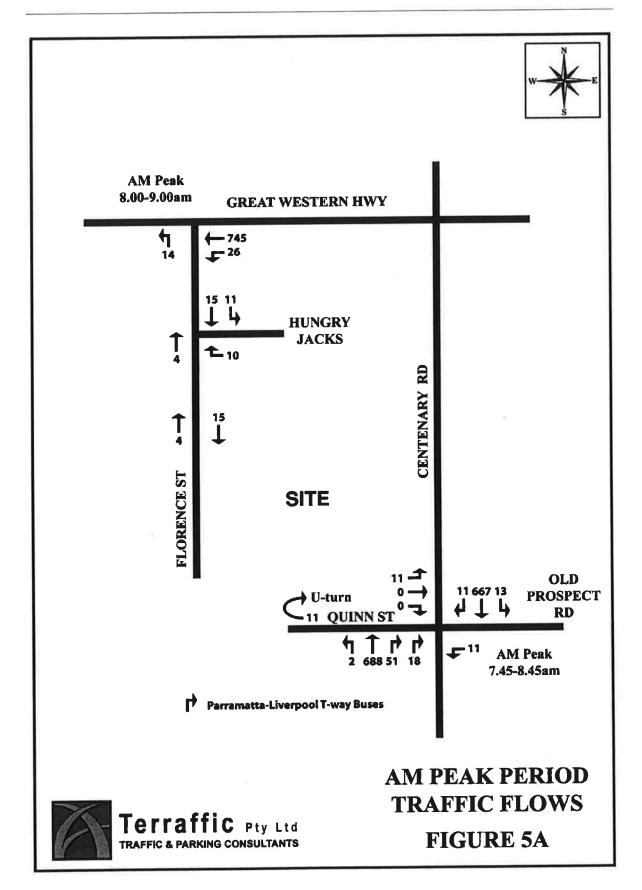
An indication of the existing traffic conditions on the road network in the vicinity of the site is provided by peak period traffic surveys undertaken at the following intersections:

- 1. The Great Western Highway and Florence Street
- 2. Centenary Road and Quinn Street/Old Prospect Road
- 3. Florence Street and the Hungry Jacks access driveway

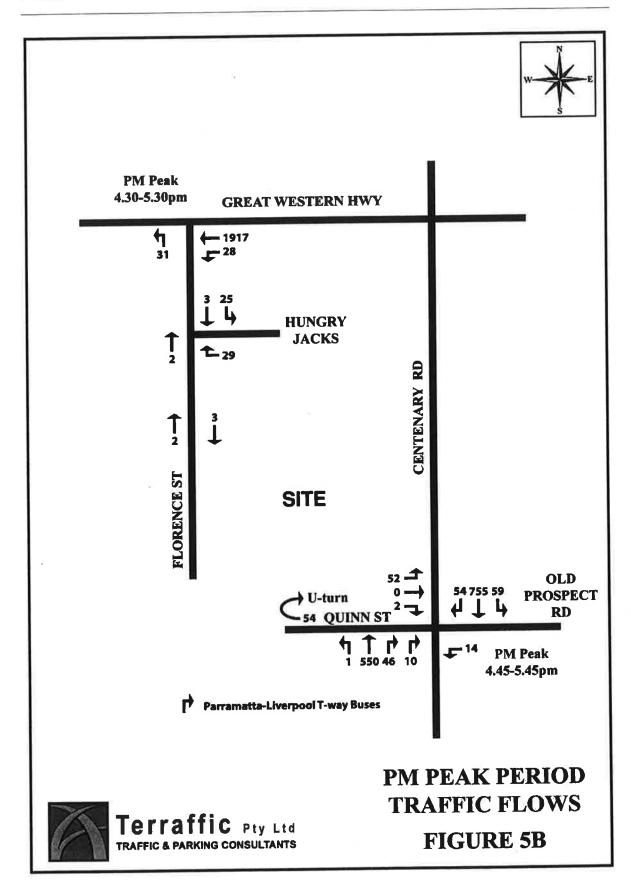
The surveys were carried out as part of this assignment between 7.00-9.00am and 4.00-6.00pm on Wednesday 23rd October 2013. The results of the traffic surveys are reproduced in full in Appendix A and illustrated on Figures 5A and 5B revealing that:

- the morning peak period occurs at the Centenary Road/Quinn Street intersection between 7.45-8.45am. At that time, 11 vehicles turned right into Quinn Street, performed the u-turn and then turned left back onto Centenary Road to head north
- the morning peak period occurs at the Great Western Highway/Florence Street intersection between 8.00-9.00am. At that time, there were 40 vehicles per hour (vph) on Florence Street comprising 26vph heading southbound and 14vph heading northbound. Of those 40 vehicles, 21 were generated by Hungry Jacks
- the evening peak period occurs at the Centenary Road /Quinn Street intersection between 4.45-5.45pm. At that time, 54 vehicles turned right into Quinn Street, performed the u-turn and then turned left back onto Centenary Road to head north. This equates to almost 1 car per minute making a u-turn in Quinn Street
- the evening peak period occurs at the Great Western Highway/Florence Street intersection between 4.30-5.30pm. At that time, there were 59vph on Florence Street comprising 28vph heading southbound and 31vph heading northbound. Of those 59 vehicles, 54 were generated by Hungry Jacks











Projected Traffic Generation of Proposed Development

The Traffic and Parking Assessment Report that was prepared for the proposed development by Terraffic Pty Ltd in November 2013 established that the development proposal has traffic generation potential of approximately 56 vehicle trips per hour (vtph) during the AM and PM peak periods as follows:

AM Peak Period

56vtph (18 in/38 out)

PM Peak Period

56vtph (38 in/18 out)

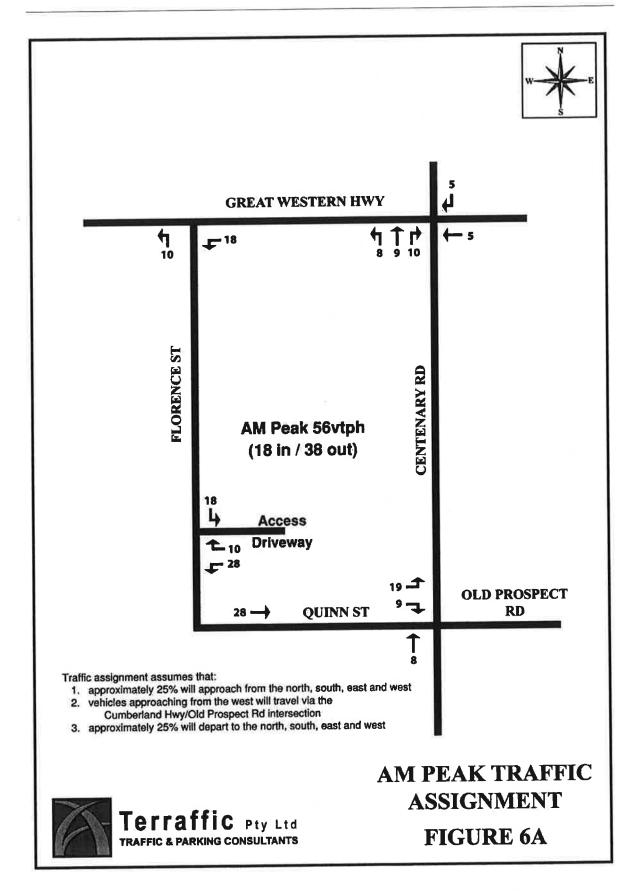
The assignment of traffic generated by the proposed development is illustrated on Figures 6A and 6B.

Projected Traffic Generation of Development to the West of Florence Street

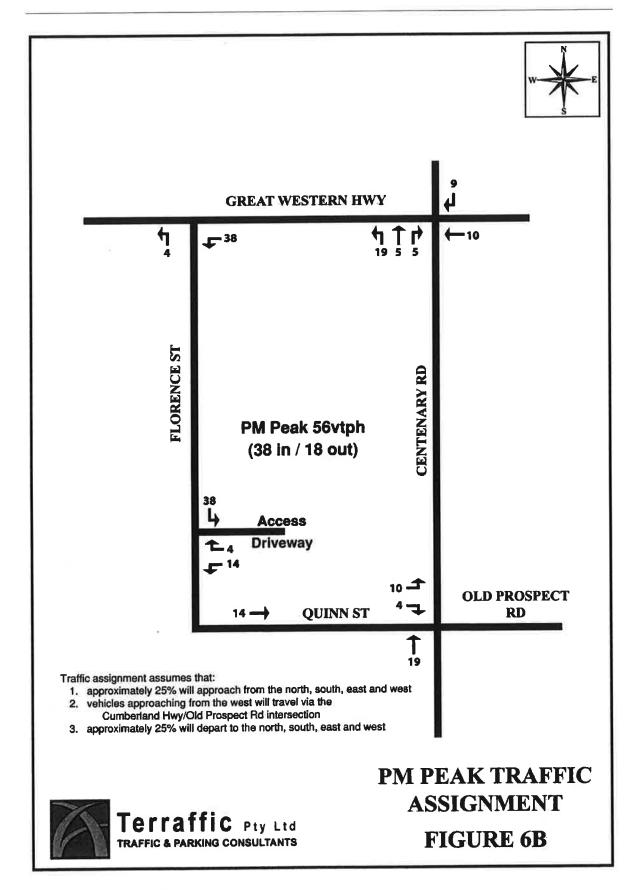
It is understood that Council have not received any development applications for the area to the west of Florence Street. Furthermore, it is understood Council have not carried out a traffic study for this area in which this assessment can review and adopt traffic flow projections. To that end, this assessment will make the following assumptions to derive an applicable traffic generating rate for the area to the west of Florence Street:

- 1. Calculate a traffic generation rate for the proposed development site based on the site area. It should be noted that the subject site in Zone T2 has a floor space ratio of 2:1 whereas the sites to the west have lower ratios of 1.8:1 and 1.5:1
- 2. Apply this traffic generation rate to the Areas S1 and S2 with the reduction to take into account the lower floor space ratio. As noted in the Introduction of this report, Zone S1 has a floor space ratio that is 75% that of Zone T2 while Zone S2 is 90% of Zone T2.
- 3. Assign an appropriate amount of traffic generated by Areas S1 and S2 to Quinn Street and disperse this traffic at the Centenary Road traffic signals as per the assignments shown on Figures 6A and 6B.









As noted above, the development site has a site area of 6,126m² and generates in the order of 56vtph. To that end, the subject site generates 1vtph per 110m² calculated as follows:

Subject Site Traffic Generation Rate
$$6,126\text{m}^2 / 56\text{vtph} = 1\text{vtph per } 109.4\text{m}^2 \text{ (say } 110\text{m}^2\text{)}$$

Based on this traffic generation rate and the reductions due to the floor space ratios, the overall area would generate in the order of 238vtph calculated as follows:

Total		238vtph
Zone S2	10,200m ² @ 1vpth per 110m ² x 90%	83vtph
Zone S1	$10,600 \text{m}^2$ @ 1vpth per $110 \text{m}^2 \times 75\%$	72vtph
Zone T2 (Hungry Jacks site)	3,008m ² @ 1vpth per 110m ²	27vtph
Zone T2 (Development site)	6,126m ² @ 1vpth per 110m ²	56vtph

Assuming a 70/30 split for arrivals and departures, these development areas would have the following morning and evening peak period traffic generations:

Total	238vtph	AM Peak 73 in / 165 out; PM peak 165 in / 73 out
Zone S2		AM Peak 25 in / 58 out; PM peak 58 in / 25 out
Zone S1	72vtph	AM Peak 22 in / 50 out; PM peak 50 in / 22 out
Zone T2 (Hungry Jacks site)	27vtph	AM Peak 8 in / 19 out; PM peak 19 in / 8 out
Zone T2 (Development site)	56vtph	AM Peak 18 in / 38 out; PM peak 38 in / 18 out

The assignment of traffic generated by ALL AREAS (ie the proposed development site and neighbouring sites) is illustrated on Figures 7A and 7B.

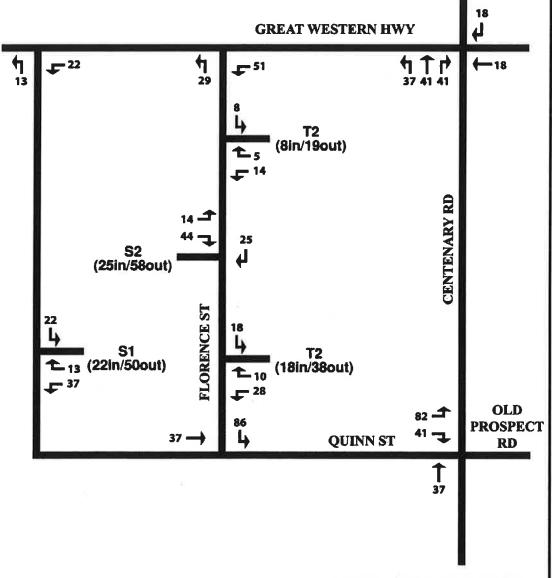
Traffic Implications - Road Network Capacity

The main traffic implications of the proposed development <u>plus neighbouring sites</u> in terms of road network capacity concern the effect of the additional traffic demand generated by these developments on the operating performance of the modified Centenary Road/Quinn Street traffic signals. That effect can be assessed using the SIDRA traffic model and criteria for interpreting the results of SIDRA analysis are set out on the schedule reproduced in the following pages.



- Traffic assignment assumes that:
 1. approximately 25% will approach from the north, south, east and west
- 2. vehicles approaching from the west will travel via the Cumberland Hwy/Old Prospect Rd intersection
 3. approximately 25% will depart to the north, south, east and west
- 4. no discount for traffic generated by existing site developments







AM PEAK TRAFFIC ASSIGNMENT-ALL AREAS FIGURE 7A

Traffic assignment assumes that: approximately 25% will approach from the north, south, east and west
 vehicles approaching from the west will travel via the Cumberland Hwy/Old Prospect Rd intersection
3. approximately 25% will depart to the north, south, east and west
4. no discount for traffic generated by existing site developments **GREAT WESTERN HWY** 竹 **十** 户 83 18 18 **T2** (19in/8out) 58 (58in/25out) FLORENCE ST S1 (50ln/22out) T2 (38in/18out) **OLD** 36 **-PROSPECT QUINN ST** RD 1 83 PM PEAK TRAFFIC **ASSIGNMENT -ALL AREAS** erraffic Pty Ltd TRAFFIC & PARKING CONSULTANTS FIGURE 7B



The results of the SIDRA analysis of the operating performance of the Centenary Road/Quinn Street intersection under existing conditions and projected post-development traffic demand is set out in Table 3.1 and on the SIDRA MOVEMENT SUMMARY SHEETS reproduced in Appendix B. The SIDRA analysis reveals that the intersection operates satisfactorily under existing and projected post-development traffic demand.

While Council's Traffic Committee hasn't necessarily requested this analysis, the results of the SIDRA analysis of the operating performance of the Great Western Highway and Florence Street intersection under existing conditions and projected post-development traffic demand is set out in Table 3.2 and on the SIDRA MOVEMENT SUMMARY SHEETS reproduced in Appendix C. The SIDRA analysis reveals that the intersection will continue to operate at a satisfactory level of service with the injection of the projected post-development traffic demand.

In the circumstances, it can be concluded that the proposed development has no unacceptable traffic implications in terms of road network capacity.

Traffic-Related Environmental Effect

As the development site has direct vehicular access to the higher order road network, there is no need for traffic generated by the proposed development to travel on local residential streets. In the circumstances, the proposed development will not have any unacceptable traffic implications in terms of traffic-related environmental effect.

Proposed Quinn Street Extension and Modified Layout of Traffic Signals

A plan showing the layout of the Centenary Road/Quinn Street traffic signals prepared by the SIDRA software is reproduced in the following pages.

Should Council's Traffic Committee support the results of this assessment, a civil engineering plan of the Quinn Street roadway can be prepared as part of the development conditions. This plan can include the civil works at the traffic signals for RMS concurrence.

TABLE 3.1 - RESULTS OF SIDRA ANALYSIS OF CENTENARY RD AND QUINN ST./ OLD PROSPECT RD, SOUTH WENTWORTHVILLE

Key Indicators Level of Service		Existing Traffic Demand		Projected Development Traffic Demand	
		AM	PM	AM	PM
		В	В	A	В
Degree of Saturation		0.772	0.904	0.758	0.806
Average Vehicle Delay (secs/ve	eh)				
Centenary Rd (south)	L	22.4	19.2	n/a	n/a
Contonary 1td (50 mill)	Т	16.8	13.6	14.0	12.3
	R	15.6	19.2	14.1	18.7
Old Prospect Rd (east)	L	6.0	6.0	6.0	6.0
Old Flospect Rd (east)	T	n/a	n/a	n/a	n/a
	R	n/a	n/a	n/a	n/a
7 1/ 11)	т	20.6	38.9	18.4	23.0
Centenary Rd (north)	L T	15.1	33.4	12.9	17.4
	R	29.0	25.2	n/a	n/a
					10.5
Quinn Street (west)	L	11.4	8.8	19.5	18.7
	T	0.0	0.0	0.0	0.0
	R	11.4	8.8	19.5	18.7
TOTAL AVERAGE VEHICI	LE DELAY	16.0	24.6	13.9	15.6



TABLE 3.2 - RESULTS OF SIDRA ANALYSIS OF GREAT WESTERN HWY AND FLORENCE ST, SOUTH WENTWORTHVILLE

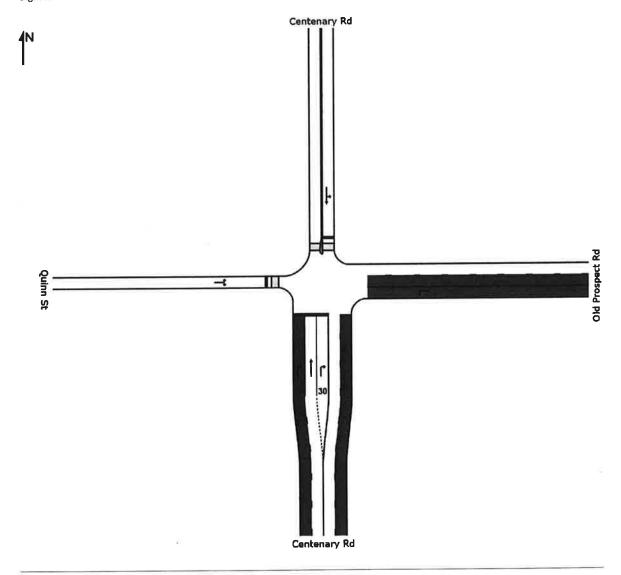
Key Indicators		Existing Traffic Demand		Projected Development Traffic Demand	
		AM	PM	AM	PM
Level of Service		A	A	A	A
Degree of Saturation		0.101	0.254	0.108	0.270
Average Vehicle Delay (secs/veh)					
Florence Street (south)	L	5.2	6.7	5.0	6.2
Great Western Hwy (east)	L T	7.0 0.0	7.0 0.0	7.0 0.0	7.0 0.0
TOTAL AVERAGE VEHICLE DELAY		0.3	0.2	0.9	0.6



SITE LAYOUT

Site: Centenary Rd and Quinn St/Old Prospect Rd - Proposed PM Peak 2

Proposed PM Peak Period
One way eastbound only and traffic generated by proposed development PLUS neighbouring sites
Signals - Fixed Time



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Criteria for Interpreting Results of SIDRA Analysis

1. Level of Service (LOS)

LOS	Traffic Signals and Roundabouts	Give Way and Stop Signs
'A'	Good operation.	Good operation.
'B'	Good with acceptable delays and spare capacity.	Acceptable delays and spare capacity.
'C'	Satisfactory.	Satisfactory but accident study required.
'D'	Operating near capacity.	Near capacity and accident study required.
'E'	At capacity; at signals incidents will cause excessive	At capacity and requires other control mode.
	delays. Roundabouts require other control mode.	
'F'	Unsatisfactory and requires additional capacity.	Unsatisfactory and requires other control mode.

2. Average Vehicle Delay (AVD)

The AVD provides a measure of the operational performance of an intersection as indicated on the table below which relates AVD to LOS. The AVD's listed in the table should be taken as a guide only as longer delays could be tolerated in some locations (ie inner city conditions) and on some roads (ie minor side street intersecting with a major arterial route).

Level of Service	Average Delay per Vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way and Stop Signs
A	less than 14	Good operation.	Good operation.
В	15 to 28	Good with acceptable delays and spare capacity.	Acceptable delays and spare capacity.
С	29 to 42	Satisfactory.	Satisfactory but accident study required.
D	43 to 56	Operating near capacity.	Near capacity and accident study required.
E	57 to 70	At capacity; at signals incidents will cause excessive delays. Roundabouts require other control mode.	At capacity and requires other control mode.

3. Degree of Saturation (DS)

The DS is another measure of the operational performance of individual intersections.

For intersections controlled by traffic signals¹ both queue length and delay increase rapidly as DS approaches 1, and it is usual to attempt to keep DS to less than 0.9. Values of DS in the order of 0.7 generally represent satisfactory intersection operation. When DS exceeds 0.9 queues can be anticipated.

For intersections controlled by a roundabout or GIVE WAY or STOP signs, satisfactory intersection operation is indicated by a DS of 0.8 or less.

The values of DS for intersections under traffic signal control are only valid for cycle length of 120 secs.



APPENDIX A

TRAFFIC COUNT DATA

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0 1436		Old Prospect Rd	TOT	0 256	0 269	0 287	0 398	0 338	0 377	0 359	0 350	0 2634		Old Prospect Rd	TOT	0 1210	0 1292	0 1400	0	0 1424	11 0 0 1472
0 0 1436	EAST		TOT	0 0 256	0 269	0 0 287	0 0 398	0 338	0 0 377	0 0 329	0 0 320	126 24 0 0 2634	EAST	Г	TOT	0 0 1210	0 0 1292	0 0 1400	0	0 0 1424	69 11 0 0 1472
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NORTH Station St

Combined

L T 16 478

Peak Time

562 13 667

Time Per

Station St

0060 - 0080

PEAK HOUR 13 | 667 | 11



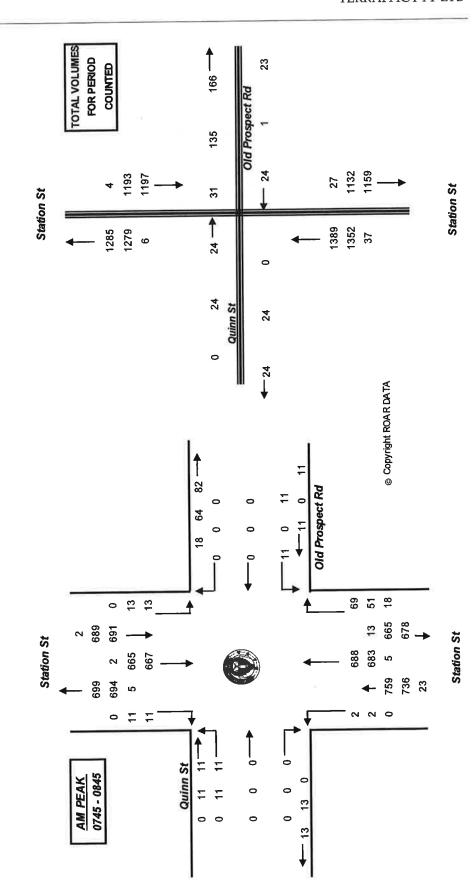
R.O.A.R DATA

Reliable, Original & Authentic Results Ph.88196847, Fax 88196849, Mob. 0418 239019

Client : Terraffic Pty. Ltd.

Job No/Name: 4854 STH, WENTWORTHVILLE Centenary St

Day/Date : Wednesday 23rd October 2013



12 15

Peak Per 1600 - 1700

Period End Combined Peak Time

14 173 16

211

175

19

10

182

1615 - 1630 1630 - 1645 1645 - 1700 1700 - 1715 1715 - 1730 1730 - 1745 1745 - 1800

WEST Quinn St

NORTH Station St

1700 - 1800 PEAKHR

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Id Prospect Rd

EAST

: Terraffic Pty. Ltd.

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R.O.A.R. DATA Reliable, Original & Authentic Results

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1700 - 1800

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716 754

1630 - 1730

32

22 757 47

47

1600 - 1700

Peak Time

48 55

<u>T</u>

Quinn St WEST

Station St NORTH

Combined

216

12

133 187

182

9 5

Time Per 1600 - 1615



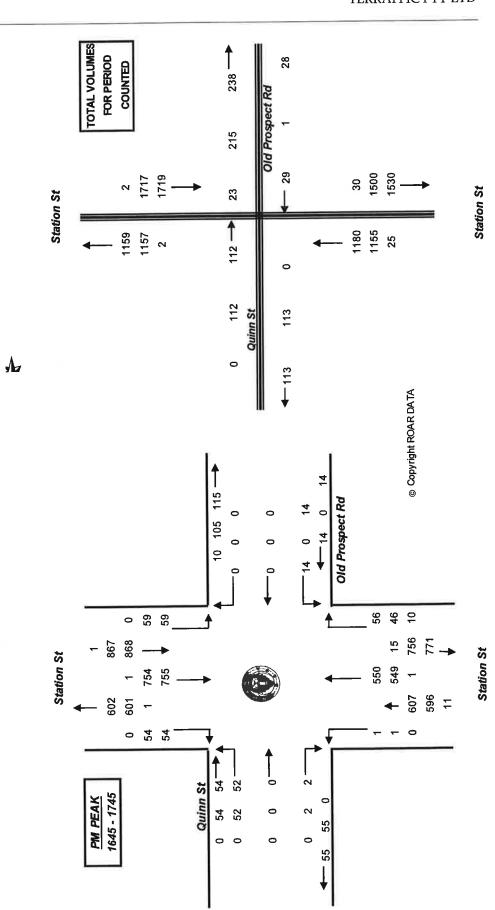
R.O.A.R DATA

Ph.88196847, Fax 88196849, Mob. 0418 239019 Reliable, Original & Authentic Results

Job No/Name: 4854 STH. WENTWORTHVILLE Centenary St

Client : Terraffic Pty. Ltd.

Day/Date : Wednesday 23rd October 2013





R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849, Mob.0418-239019

EAST

SOUTH

WEST

All Vehicles

Great

Florence St

Great

Time Per

~|

TOTAL

Client	Joh Nio/Momo

Job No/Name

Day/Date

:4854 STH, WENTWORTHVILLE Centenary St : Wednesday 23rd October 2013 Terraffic Pty. Ltd.

All Vehicles

	MEST	ST	SOUTH	ЛТН	EAST	ST	
	Gr	Great	Florence St	ice St	Great	eat	
Time Per	I	ا ک	ī	œ	Ļ	H	TOTAL
1600 - 1615			10		5	478	493
1615 - 1630			18		10	367	396
1630 - 1645			2		8	462	477
1645 - 1700			2		6	480	491
1700 - 1715			13		5	452	470
1715 - 1730			6		9	523	638
1730 - 1745			12		2	416	435

	¥	VESI		H 5	EAS	2	
	Ğ	Great	Flore	Florence St	5	Great	
Peak Per	H	œI	-1	اع	_1	H	TOTAL
1600 - 1700	0	0	37	0	32	1787	1866
1615 - 1715	0	٥	40	0	32	1761	1833
1630 - 1730	0	٥	31	0	28	1917	1976
1645 - 1745	0	0	36	0	27	1871	1934
1700 - 1800	0	٥	4	0	24	1789	1867

TOTAL

73 483

693

705

2

763

4 19 8

683

672

0

3713

3676 398

98

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Period End 1745 - 1800

1468

1417

35

0

11

0

Period End

0845 - 0900

0830 - 0845

EAST

SOUTH

WEST

Great

Florence St

Great

Peak Per 0700 - 0800 0715 - 0815 0730 - 0830 0745 - 0845

231

162 208 172 243

> 198 161

221 192

219

0730 - 0745

191 155

128

128

134

28 1917 1976

31

0

PEAK HR

26 745 785

0

14

0

PEAK HR 0

Great Western Hwy

Great Western Hwy 0 → 1917	28 1945	0 PEAK HOUR 1630 - 1730	-
Great Western Hwy	1948		31 SOARDATA
<u>۸</u>	_1	ह्य	© Copyright ROAR DATA

PEAK HOUR 0800 - 0900 Great Western Hwy 745 - 2₈ ₹ % 0 4 759

Florence St

Florence St



Ph.88196847, Fax 88196849, Mob.0418-239019 R.O.A.R. DATA Reliable, Original & Authentic Results

All Vehicles

	2	VORTH	EAST	ST	SOUTH	ЛТН	
	Florer	Iorence St	Hungry	gry	Florence St	ce St	
Time Per	H	-1	ĸ	7	œ	Ţ	TOTAL
0700 - 0715	4	1	8	0	0	0	8
0715 - 0730	0	0	0	0	0	0	0
0730 - 0745	1	1	0	0	0	0	2
0745 - 0800	1	0	0	0	0	0	-
0800 - 0815	1	2	2	0	0	2	7
0815 - 0830	က	2	2	0	0	0	10
0830 - 0845	2	2	3	0	0	1	11
0845 - 0900	9	2	3	0	0	1	12
Period End	2	13	13	0	0	4	51

	NO.	RTH	EAS.	ST	SOI	ᄠ	
	Florence S	ce St	Hung	gry	Florer	rence St	
Peak Per	ы	-1	œI	L	αI	Ţ	TOTA
0700 - 0800	9	2	3	0	0	0	4
0715 - 0815	3	3	2	0	0	2	10
0730 - 0830	9	80	4	0	0	2	20
0745 - 0845	10	6	7	0	0	3	29
0800-0800	15	Ξ	9	0	0	4	40

4 40 PEAK HOUR 0800 - 0900 Jacks	
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0 4 PEAK H 0800 - Hungry Jacks	0
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PEAK HR	

: Тетгаffic Pty. Ltd.

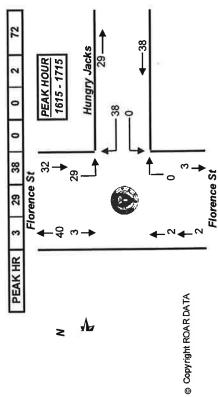
: 4854 STH. WENTWORTHVILLE Centenary St Job No/Name

: Wednesday 23rd October 2013

Day/Date

	NORTH	HE	EAST	ST	SOUTH	НТ	
	Florence St	ce St	Hungry	gry	Florence St	ce St	
Time Per	H	اد	œI	7	æı	H	TOTAL
1600 - 1615	-	4	10	0	0	0	16
1615 - 1630	0	8	17	0	0	,	56
1630 - 1645	0	10	7	0	0	0	41
1645 - 1700	-	8	2	0	0	0	11
1700 - 1715	2	က	12	0	0	1	18
1715 - 1730	2	4	8	0	0	1	16
1730 - 1745	1	9	11	0	0	1	19
1745 - 1800	က	3	6	0	0	1	16
Period End	10	46	92	0	0	2	137

	<u> </u>	ORTH	EAST	ST	SOUT	H	
	Florence S	ice St	Hungry	gry	Florence St	ice St	
Peak Per	-	7	œI	7	αl	H	TOTAL
1600 - 1700	2	30	36	0	0	1	69
1615 - 1715	က	59	38	0	0	2	72
1630 - 1730	2	25	59	0	0	2	61
1645 - 1745	g	21	33	0	0	3	63
1700 - 1800	∞	16	40	0	0	4	89





APPENDIX B

SIDRA MOVEMENT SUMMARY SHEETS FOR THE CENTENARY ROAD/QUINN STREET INTERSECTION



Site: Centenary Rd and Quinn St/Old Prospect Rd - Existing AM Peak

Move	ment Perf	ormance - '	Vehicles							- said with	
Liev	OD		d Flores	Deg	Avarage	Level of	95 % Bo 1		Prop	Effective	Average
ID	Her	Total	117	Satn	Detay	Service	Vedacles:	Embarec	Ouegod	Stop Rate per veh	Speed kin/h
Company of		wh h		V/6	\$60		Voh	m		1921, 1931	
September 1971	Centenary	-	SOURCE SALES	0.770	00.4	LOSB	21.1	151.1	0.80	0.75	46.0
1	L2	2	0.0	0.772	22.4						
2	T1	688	2.9	0.772	16.8	LOSB	21.1	151.1	0.80	0.75	47.0
3	R2	69	26.1	0.132	15.6	LOSB	0.7	5.0	0.70	0.71	46.5
Approx	ech	759	5.0	0.772	16.8	LOSB	21.1	151.1	0.79	0.75	46.9
East (Old Prospec	tRd		WAR STAN		A STREET		PPA 87	建设	(PANALA)	SIGNEY
4	L2	11	100.0	0.010	6.0	LOSA	0.0	0.0	0.00	0.58	53.2
Appro	ach	11	100.0	0.010	6.0	NA	0.0	0,0	0.00	0.58	53.2
North	Centenary I	Rd			227			TO THE	4000000	SWIFT OF	POPULSES:
7	L2	13	0.0	0.698	20.6	LOSB	19.6	140.4	0.79	0.72	47.0
8	T1	667	3.0	0.698	15.1	LOSB	19.6	140.4	0.79	0.72	48.0
9	R2	11	0.0	0.045	29.0	LOSC	0.3	2.3	0.77	0.68	37.1
Аррго	ach	691	2.9	0.698	15.4	LOSB	19.6	140.4	0.79	0.72	47.8
West	Quinn St	W 105-348	描述中的	OF THE REAL PROPERTY.	12/2/2017	St. 100	OF RESIDENCE	16202 CON	3631 <u>-</u> 318	NOT THE	5 10 50
10	L2	11	0.0	0.020	11.4	LOS A	0.2	1.2	0.56	0.63	45.6
12	R2	1	0.0	0.020	11.4	LOSA	0.2	1.2	0.56	0.63	45.6
Approx	ach	12	0.0	0:020	11.4	LOSA	0.2	1.2	0.56	0.63	45.6
All Vel	nickan	1473	4.7	0.772	16.0	LOSB	21.1	151.1	0.79	0.73	47.3

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV:(%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Move	ment Performance - Pedestrians	Dumind	Alemos	Level of	Average Back	of Oueue	Prop.	Effective
ID	Description	Flow ped/h	Doks se	Service	Pedestran ped	Distance ni	Queued	Stop Rate per pec
P3	North Full Crossing	4	34.2	LOSD	0.0	0.0	0.93	0.93
P4	West Full Crossing	20	11.6	LOSB	0.0	0.0	0.54	0.54
All Pe	destrians	24	15.3	LOSB			0.60	0.60

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

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Site: Centenary Rd and Quinn St/Old Prospect Rd - Existing PM Peak

Existing PM Peak Period Signals - Fixed Time Cycle Time = 80 seconds (User-Given Cycle Time)

	ment Perfo								Transition of the last of the	FRENCH	Average
Moz ID	OD Mra	Deman Total vehih	d Flows HV	Deg Saln v/c	Average Dalay sec	Level of Service	95% Back o Vehicles veh	Distance m	Prop. Oueued	Ellective Stop Rate per veh	Avetage Speed km/h
South	Centenary I		MINISH	11/4 5 1/4/1	E-55% (0)	MS ST			V (127)		0.00
1	L2	1	0.0	0.621	19.2	LOSB	14.4	103.6	0.72	0.64	47.9
2	T1	550	3.6	0.621	13.6	LOS A	14.4	103.6	0.72	0.64	49.0
3	R2	56	17.9	0.148	19.2	LOSB	0.9	6.0	0.81	0.72	44.5
Appro	ech	607	4.9	0.621	14.2	LOS A	14.4	103.6	0.73	0.64	48.5
East	Old Prospec	t Rd		-	Subset		- VIVI	10000	District Street	CAN USUA	GGL SE
4	L2	14	100.0	0.013	6.0	LOSA	0.0	0.0	0.00	0.58	53.2
Appro	ach	14	100.0	0.013	6.0	NA	0.0	0.0	0.00	0.58	53.2
North	Centenary F	Rd	relación medi		Low G		CONTRACTOR OF STREET	(a. 40)(a)	CO NOW		5,9165
7	L2	59	0.0	0.904	38.9	LOS C	36.4	260.1	0.89	1.03	37.9
8	T1	755	2.6	0.904	33.4	LOSC	36.4	260.1	0.89	1.03	38.6
9	R2	54	0.0	0.162	25.2	LOSB	1.5	10.7	0.73	0.73	38.6
Appro	ech	868	2.3	0.904	33.2	LOSC	36.4	260.1	0.88	1.01	38.5
West	Quinn St		STATE OF THE PARTY.	ASSESSED OF	55 A- 965	DESCRIPTION OF	TV DESERVE	SHOUSE	SS (500)	HE WALLES	SHG III
10	L2	52	0.0	0.077	8.8	LOSA	0.6	4.2	0.45	0.64	47.1
12	R2	2	0.0	0.077	8.8	LOS A	0.6	4.2	0.45	0.64	47.1
Appro	ach	54	0.0	0.077	8.8	LOSA	0.6	4.2	0.45	0.64	4.7.1
All Ve	hicles	1543	4.1	0.904	24.6	LOSB	36.4	260.1	0.80	0.85	423

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

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

Move Mov M	ment Performance - Pedestrians Description	Demand Flow	A era je Delay	Le el al Service	Average Back Pedestrian	of Onene Distance	Prop. Queuect	Ellective Stop Rate
		pad/h	Sca		pod	m		perped
P3	North Full Crossing	4	34.2	LOSD	0.0	0.0	0.93	0.93
P4	West Full Crossing	20	11.6	LOSB	0.0	0.0	0.54	0.54
All Pe	destrians	24	15.3	LOSB			0.60	0.60

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

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Site: Centenary Rd and Quinn St/Old Prospect Rd - Proposed AM Peak 2

Proposed AM Peak Period
One way eastbound only and traffic generated by proposed development PLUS neighbouring sites
Signals - Fixed Time Cycle Time = 80 seconds (User-Given Cycle Time)

Move	ment Perfo	rmance -	Vehicles								
Hov ID	Mov Mov	Demon Lidal Vibili	dflos Ir/	Dyn Saln	Average Delay sec	Level of Service	(m% Back Vehicles Veh	of Quous Distance III	Prop. Oueuerl	Effective Stop Rate purveh	Average Spend kuch
South	Centenary I			Typhia tagin		2000		ARIS STATE	in the same	OF STREET	SECHOLIS
2	T1	725	2.8	0.758	14.0	LOSA	20.4	146.1	0.76	0.70	48.8
3	R2	69	26.1	0.122	14.1	LOSA	0.7	4.8	0.65	0.70	47.4
Approx	ach	794	4.8	0.758	14.0	LOSA	20.4	146.1	0.75	0.70	48.7
East: (Old Prospect	Rd	BIME'S	300	W. Complete	SCHOOL SECTION		and the	PERMIT		
4	L2	11	100.0	0.010	6.0	LOSA	0.0	0.0	0.00	0.58	53.2
Approx	ech	11	100.0	0.010	6.0	NA	0.0	0.0	0.00	0.58	53.2
North:	Centerary I	₹d	5 / May 10	SOUTH TO SE	D RESIDEN	Participal Option	医毒色 医心		S CHAIR	Spirote o	
7	L2	13	0.0	0.642	18.4	LOSB	18.4	132.3	0.74	0.67	48.3
8	T1	678	2.9	0.642	12.9	LOS A	18.4	132.3	0.74	0.67	49,4
Approx	ach	691	2,9	0.642	13:0	LOS A	18.4	132,3	0.74	0.67	49.4
West	Quinn St	N EST PO	ERANGERO		EXTERNISHED IN	MALEN STATE	SAME IN	TO A NEW YORK	at successive	THE PARTY OF THE P	
10	L2	82	0.0	0.359	19.5	LOSB	2.2	15.6	0.89	0.77	41.4
12	R2	41	0.0	0.359	19.5	LOSB	2.2	15.6	0.89	0.77	41.3
Approx		123	0.0	0.359	19.5	LOSB	2.2	15.6	0.89	0.77	41.4
All Vel	nicles	1619	4.3	0.758	13.9	LOSA	20.4	146.1	0.75	0.69	48.4

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

	ment Performance - Pedestrians	Domand	Avenge	1.000164	Average Back	of Ouene	Prop	Effective
Moz ID	Description	Flow ped/h	Dolay	Served	Peskistrian ped	Distance m	Quaded	Step Rate per per
P3	North Full Crossing	4	34.2	LOSD	0.0	0.0	0.93	0.93
P4	West Full Crossing	20	8.6	LOSA	0.0	0,0	0.46	0.46
All Pa	destrians	24	12.8	LOSB			0.54	0.54

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

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Site: Centenary Rd and Quinn St/Old Prospect Rd - Proposed PM Peak 2

Proposed PM Peak Period
One way eastbound only and traffic generated by proposed development PLUS neighbouring sites
Signals - Fixed Time Cycle Time = 80 seconds (User-Given Cycle Time)

Move	ment Perf	ormance -	Vehicles								
Elo/ ID	OD filov	Lemen Total velch	d Flows HV %	Dep Saln	Average Dohy sec	Level of Sorvice	95", Barki 70h: lus en	d Onene Destacro m	Prop Queued	Effective Stop Rate per veh	Average Speed knith
South	Cantanary		C 114 040	HOES MAN	NEWS I	1.00			CV/A-IPHT	r // color	
2	T1	633	3.2	0.663	12.3	LOSA	16.1	115.9	0.70	0.63	49.9
3	R2	56	17.9	0.145	18.7	LOS B	0.9	6.2	0.78	0,72	44.8
Аррго	ach	689	4.4	0.663	12.8	LOS A	16.1	115.9	0.71	0.64	49.4
East	Old Prospec	tRd	0.0467010	and the latest at	El Manager	2	AND DESIGNATION OF THE PARTY OF	solution.	D. CALL	AND SHAPE	MEN ST
4	L2	14	100.0	0.013	6.0	LOSA	0.0	0.0	0.00	0.58	53,2
Appro	ach	14	100.0	0.013	6.0	NA	0.0	0.0	0.00	0.58	53.2
North	Centenary	Rd	1000 100	STATE OF	A CONTRACTOR	1 PA-30	HERMAN COST	47.7.3000	10711115	ELOPE E	26-200
7	L2	59	0.0	0.806	23.0	LOS B	28.9	206.6	0.87	0.83	45.4
8	T1	809	2.5	0.806	17.4	LOSB	28.9	206.6	0.87	0.83	46.4
Appro	ach	868	2.3	0.806	17.8	LOSB	28.9	206.6	0.87	0.83	46.3
West	Quinn St	Constitution of the	SAME WA	100000		-912000	0.8161100	246 315	of to Hills	STATE SHAPE	M 4408
10	L2	36	0.0	0.157	18.7	LOS B	1.0	7.3	0.82	0.72	41.8
12	R2	18	0.0	0.157	18.7	LOSB	1.0	7.3	0.82	0.72	41.7
Appro	ech	54	0.0	0.157	18.7	LOS B	1.0	7.3	0.82	0.72	41.7
All Ve	hicles	1625	3.9	0.806	15.6	LOSB	28.9	206.6	0.79	0.74	47.5

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Mos ID	Description	Domand Flow podfh	Average Doby sec	Level of Service	Average Back Pockstrian ped	of Queue Distance III	Prop Quoued	Ellective Stop Rate por poc
P3	North Full Crossing	4	34.2	LOSD	0.0	0.0	0.93	0.93
P4	West Full Crossing	20	8.6	LOS A	0.0	0.0	0.46	0.46
960053	destrians	24	12.8	LOSB	S COMMO	US STREET	0.54	0.54

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

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APPENDIX C

SIDRA MOVEMENT SUMMARY SHEETS FOR THE GREAT WESTERN HIGHWAY/FLORENCE STREET INTERSECTION



Site: Great Western Hwy and Florence St - Existing AM Peak

Existing AM Peak Giveway / Yield (Two-Way)

ment Perf	ormance - V	ehicles				100				
OD DO	Demand Total vehih	HFI048 HV "a	Deg Satn	Average Delay sec	Level of Service	95% Back Vehicles Veh	ol Quete Distance m	Prop. Queued	Effective Stop Rate perveb	Average Speed km/l
Florence S	to allow a	2 MILES	A STORY	SVB TW		化有值原理	W.			34 10
L2	14	0.0	0.012	5.2	LOSA	0.0	0.3	0.25	0.50	53.4
Approach		0.0	0.012	5.2	LOSA	0.0	0.3	0.25	0.50	53.4
Great Weste	m Hwy	Tall'S	ALCOHOLD .	F. 12 600	NOS PANTS	1000	5 4 6 5 6	100		(A) (A)
L2	26	0.0	0.101	7.0	LOSA	0.0	0.0	0.00	0.09	73.2
T1	745	3.0	0.101	0.0	LOSA	0.0	0.0	0.00	0.02	79.6
ech	771	2.9	0:101	0.2	NA	0.0	0.0	0,00	0.02	79.4
hicles	785	2.8	0.101	0.3	NA	0.0	0.3	0.00	0.03	78,7
֡	Florence S L2 each Great Wester L2 T1	OD Demand Total vehith Florence St L2	Flownce St L2 14 0.0 ach 14 0.0 Seat Western Hvy L2 26 0.0 T1 745 3.0 ach 771 2.9	OD Demand Flows Degretary	Dept. Dept. Dept. Dept. Average Dept. De	CD Demand Flows Deg Average Level of Service	OD Demand Flows Deg Average Level of Service Service	OD Demand Floors Deg Average Level of 25% Back of Queue Vehicles Distance Vehicles Description Vehicles Descripti	OD Demand Floors Deg Average Level of 25% Back of Queue Prop.	OD Demand Flows Deg Average Level of Service Service Service Prop. Effective Stop Rate Prop. Effective Stop Rate Prop. Effective Effective Prop. Effective Effective Effective Prop. Effective Effective

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity. SIDRA Standard (Akçelik M3D). HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Site: Great Western Hwy and Florence St - Existing PM Peak

Existing PM Peak Giveway / Yield (Two-Way)

Move	ment Perf	ormance - V								281 W	
Moz OD		Demand Flows		Dirit.	Average	Level of	99% Back of Outcom		Prop	Effective	Average
ID.	filov	Total veluh	HV	Satn v/c	Delay	Savion	Vehicles veh	Distance ru	Quoued	Stop Rate per veh	Speed km/l
South	Florence S	S Comments	SUMPY	1	HINGHAM ST	Ved	THE REAL PROPERTY.	STATE OF THE			
1	L2	31	0.0	0.036	6.7	LOSA	0.1	1.0	0.45	0.60	525
Approach		31	0.0	0.036	6.7	LOSA	0:1	1.0	0.45	0.60	52.5
East:	Great Wester	m Hwy	THE SUIS	NAME OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER,	DAY DESCRIPTION	ARL THE ST	Carl Physics	3272		CHEDICA	Service Control
4	L2	28	0.0	0.254	7.0	LOS A	0.0	0.0	0,00	0.04	73.9
5	T1	1917	3.0	0.254	0.0	LOSA	0.0	0.0	0.00	0,01	79.7
Approach		1945	3.0	0.254	0.1	NA	0.0	0.0	0.00	0.01	79.6
All Ve	hicles	1976	2.9	0.254	0.2	NA	0.1	1,0	0.01	0.02	79.0

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average dealy per involvements.

No. Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Cap-Acceptance Capacity: SIDRA Standard (Algolik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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V Site: Great Western Hwy and Florence St - Projected AM Peak

Projected AM Peak - Includes traffic generated by proposed development PLUS neighbouring sites Giveway / Yield (Two-Way)

Nov CD		Demand Flows		Dag	Average	Level of	95% Back of Obsess		Prop.	Effective	Arenay.
113	flow	lotal ebit	HV ".	Satn	Delay sec	Service	Vehicles Veh	Distance ni	Oneued	Stop Rate per veh	Speed km/l
South	Florence S			100210	31 2 12	THE PERMIT		TOTAL STATE	IF STATE		1 1 301
1	L2	43	0.0	0.036	5.0	LOSA	0.2	1.1	0.22	0.50	53.5
Approach		43	0.0	0.036	5.0	LOS A	0.2	1.1	0.22	0.50	53.5
East:	Small Weste	im Hwy	200 515	LEW PROPERTY	Wilderson's	andthe	SECTION.	VINDOUS SE	STORES AN	DUDY WATE	100
4	L2	77	0.0	0.108	7.0	LOS A	0.0	0.0	0.00	0.25	70.8
5	T1	745	3.0	0.108	0.0	LOS A	0.0	0,0	0,00	0.04	79.2
Approach		822	2.7	0;108	0.7	NA	0.0	0,0	0.00	0.06	78.3
All Vel	nicles	865	2.6	0.108	0.9	NA	0.2	1.1	0.01	0,08	76.5
		The second second	THE REAL PROPERTY.			QUALITY OF					THE PARTY OF

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign centrol since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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V Site: Great Western Hwy and Florence St - Projected PM Peak

Projected PM Peak - Includes traffic generated by proposed development PLUS neighbouring sites Giveway / Yield (Two-Way)

Mov. CD		Demand Flores		Dag	Average	Level of	95% Back of Ourus		Prop	Effective	Average
ID	Mov	Total John	H /	Saln	Ex-thy sec	Service	Valieles väh	Distance 01	Queued	Stop Rata perveh	Speed km/h
South	Florence S		37 36		BOOT PILES	700	STATE OF THE	VI (1 15 15 15 15 15 15 15 15 15 15 15 15 15	AND SHIPSON	PERSONAL PROPERTY.	MS DISTRICT
1	L2	44	0.0	0.046	6.2	LOSA	0.2	1.3	0.41	0.58	529
Approach		44	0.0	0.046	6.2	LOSA	0.2	1.3	0.41	0.58	52.9
East	Great Weste	m Hwy	BERRY	100,000		SERIO S		THE PARTY	JA 19:00	AV SOLSTAND	OH SA
4	L2	143	0.0	0.270	7.0	LOS A	0.0	0.0	0.00	0.18	71.7
5	T1	1917	3.0	0.270	0.0	LOSA	0.0	0.0	0.00	0.04	79.2
Approach		2060	2.8	0.270	0.5	NA	0.0	0.0	0.00	0.05	78.7
AUVa	hicles	2104	2.7	0.270	0.6	NA	0.2	1.3	0.01	0.08	77.9

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity. SIDRA Standard (Alicelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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