

ATTACHMENT C

Report on Traffic, Access & Parking

Prepared by

Traffic & Transport Planning Associates

**PROPOSED BUNNINGS WAREHOUSE
CNR THE HORSLEY DRIVE AND
O'CONNELL STREET, SMITHFIELD**

***Preliminary
Traffic Impact Assessment***

April 2010

Reference 10061

**TRANSPORT AND TRAFFIC PLANNING ASSOCIATES
Transportation, Traffic and Design Consultants
Suite 502, Level 5
282 Victoria Avenue
CHATSWOOD 2067
Telephone (02) 411 5660
Facsimile (02) 904 6622
Email: ttpa@ttpa.com.au**

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APPENDIX A TRAFFIC SURVEYS

LIST OF ILLUSTRATIONS

FIGURE 1	LOCATION
FIGURE 2	SITE
FIGURE 3	ROAD NETWORK
FIGURE 4	TRAFFIC CONTROLS
FIGURE 5	POST DEVELOPMENT TRAFFIC FLOWS

1. INTRODUCTION

This report has been prepared as part of the documentation for the rezoning process for a site on the corner of The Horsley Drive and O'Connell Street at Smithfield (Figure 1) to permit the development of a new Bunnings warehouse.

The large consolidated site has been the subject of various industrial uses in the past and the envisaged Bunnings development will be a contemporary warehouse comprising:

Warehouse	
Level 1	5,070m ²
Level 2	2,695m ²
Total	7,765m²
Outdoor Nursery	885m ²
Bagged goods	250m ²
Total	8,900m²

A total of 250 parking spaces are to be provided with vehicle accesses on The Horsley Drive and O'Connell Street.

The purpose of this report is to:

- * describe the site and the envisaged development scheme
- * describe the road network serving the site and traffic conditions on that network
- * assess the various vehicle access issues
- * assess the traffic potential implications of the proposed development including the associated traffic management services
- * assess the adequacy of the proposed parking provision.

2. DEVELOPMENT SCHEME

2.1 SITE, CONTEXT AND EXISTING USE

The site (Figure 2) is a consolidation of Lot 1 of DP 541457 occupying a total area of 8,060m² with frontages to the eastern side of O'Connell Street and northern side of The Horsley Drive. The site, which is currently cleared and vacant, has been the subject of various industrial uses including the most recent intense apparent recycling depot activity as shown on the Google image overleaf. There are a number of existing access driveways on both road frontages.

Residential development extends to the south while the nearby uses comprise:

- * the adjoining industrial uses to the east and west
- * the Primary School which extends along the southern side of The Horsley Drive west of O'Connell Street
- * the service station located on the north-western corner of the intersection
- * the retail and mixed commercial uses which extends along Cumberland Highway to the east.

2.2 ENVISAGED DEVELOPMENT

The development scheme would involve demolition of the existing structures on the site with some excavation to provide for basement carparking together with level building and hardstand areas. The new Bunnings warehouse building will occupy the greater part of the site with:



LEGEND



SITE

FIG 2

Level 1	-	5,070m ²
Level 2	-	2,695m ²
Total	-	7,765m²
Outdoor Nursery	-	885m ²
Bagged goods	-	250m ²
Total	-	8,900m²

A total of some 250 parking spaces would be provided in two basement levels with vehicle access comprising:

- * a combined ingress/egress driveway for cars on O'Connell Street which will also provide for delivery vehicle ingress
- * a combined ingress/egress driveway for cars on The Horsley Drive which will also provide for delivery vehicle egress. This access would be restricted to left-turn IN/OUT by a central median island in The Horsley Drive.

Details of the envisaged development are provided on the plans prepared by John R Brogan and Associates which are reproduced in part overleaf.

CUMBERLAND HWY
BEYOND

TO GUILFORD

O'CONNELL STREET

THE HORSLEY DRIVE

TO M4
GREYSTANES EXIT

LIFT & TRAVELATOR & STAIR
UP FROM PARKING LEVELS

CUSTOMER
ENTRY/EXIT
LEVEL BELOW

TO WETHERILL PK

RAMP DOWN FOR DELIVERY
VEHICLES FROM GOODS
RECEIVING

SHARED GOODS PICKUP/
GOODS RECEIVING

GOODS LIFT

CUSTOMER
LIFT

VOID TO L2
ABOVE

WAREHOUSE
LEVEL 1
4820 m²

81108

65737

CUSTOMER & DELIVERIES
ENTRY BELOW

ENTRY/EXIT
FROM PARKING
LEVEL BELOW

RAMP UP FROM
O'CONNELL ST FOR DELIVERY
VEHICLES TO GOODS
RECEIVING

ADJOINING INDUSTRIAL
DEVELOPMENT FRONTING
O'CONNELL AND VICTORIA STREETS

REFER TO DWG K 100 FOR PARKING LEVEL
& K 102 FOR LEVEL 2



AREA ANALYSIS - BUNNINGS SMITHFIELD	
BUNNINGS WAREHOUSE	
Main Store	48200
Warehouse Level 1	48200
Warehouse Level 2	48200
Trailer Sales Area	1000
Trailer Storage Yard	1000
Trailer Area	1000
A. TOTAL Warehouse Level 1 Area	48200 m ²
B. TOTAL Warehouse Level 2 Area	48200 m ²
C. Grand Total Retail Area (Level 1 & 2 = A + B)	96400 m ²
Car Parking	150
Trailer Parking	150
Grand Total Parking (P1 + P2)	300
CAR PARKING RATIO	1:320
Land Size - APPROX. FIGURES TBC (m ²)	96400
TOTAL LAND	96400 m ²

COMPANETIVE AREA ANALYSIS

Existing Buildings MASCOT	
Warehouse 1	17500
Warehouse 2	17500
Warehouse 3	17500
Warehouse 4	17500
Warehouse 5	17500
Warehouse 6	17500
Warehouse 7	17500
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Warehouse 9	17500
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Warehouse 93	17500
Warehouse 94	17500
Warehouse 95	17500
Warehouse 96	17500
Warehouse 97	17500
Warehouse 98	17500
Warehouse 99	17500
Warehouse 100	17500

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APPROVED BY: K 101

PROPOSED BUNNINGS WAREHOUSE
CHR THE HORSLEY DR & O'CONNELL ST.
SMITHFIELD NSW 2154
CONCEPT A
WAREHOUSE LEVEL 1



JOHN R. BROGAN & ASSOCIATES
ARCHITECTS, PLANNERS & INTERIORS
177 PITT ST, SYDNEY NSW 2000
Ph: (02) 921 5233 Fax: (02) 921 5234
Email: jrbrogan@jbrogan.com.au



CONCEPT A
WAREHOUSE LEVEL 1

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CUMBERLAND HWY
BEYOND

TO
GUILFORD

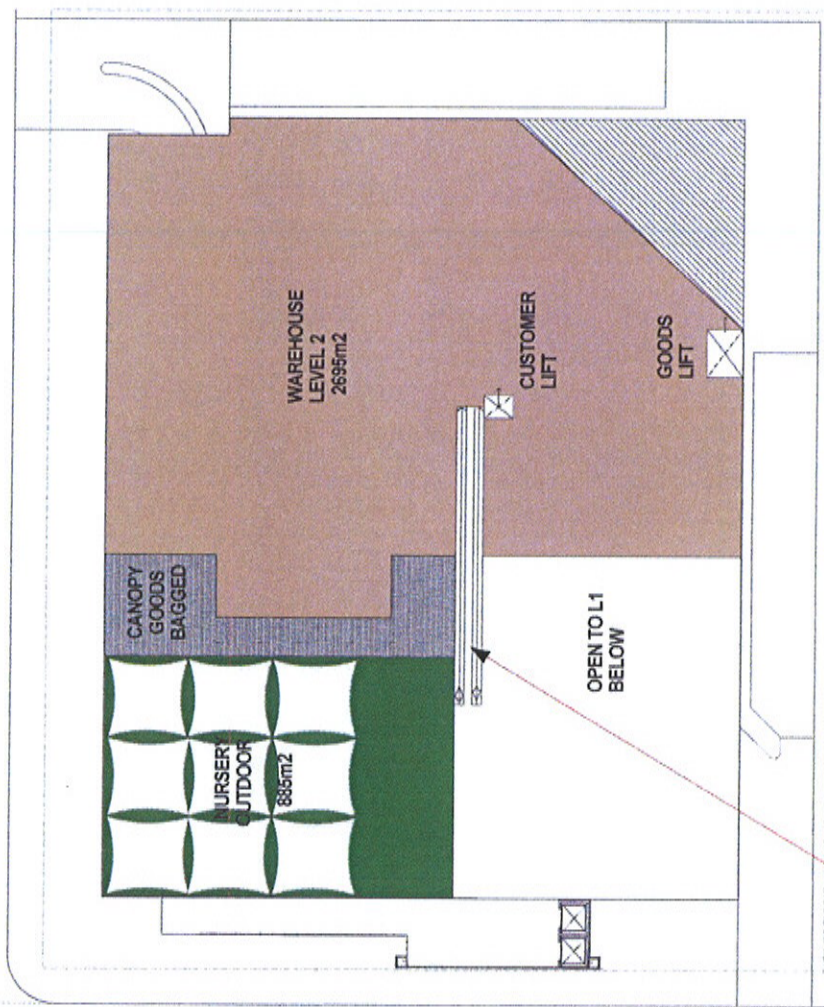
O'CONNELL STREET

THE HORSLEY DRIVE

TO M4
GREYSTANES EXIT

TO
WETHERILL PK

ADJOINING INDUSTRIAL
DEVELOPMENT FRONTING
O'CONNELL AND VICTORIA STREETS



TRAVELLATORS LINKING
WAREHOUSE LEVELS 1 & 2

ADJOINING INDUSTRIAL
DEVELOPMENT FRONTING
HORSELEY DRIVE

REFER TO DWG. A 100 FOR PARKING LEVEL
& K 101 FOR LEVEL 1 & DATA BOX

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JOHN R. BROGAN & ASSOCIATES
ARCHITECTS, PLANNERS & ENVIRONMENTAL DESIGNERS
37 PITT ST, SYDNEY NSW 2000
PH: (02) 9237 2523 FAX: (02) 9237 4041
WWW.JRBROGAN.COM.AU

Bunnings warehouse

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3. ROAD NETWORK AND TRAFFIC CONTROLS

3.1 ROAD NETWORK

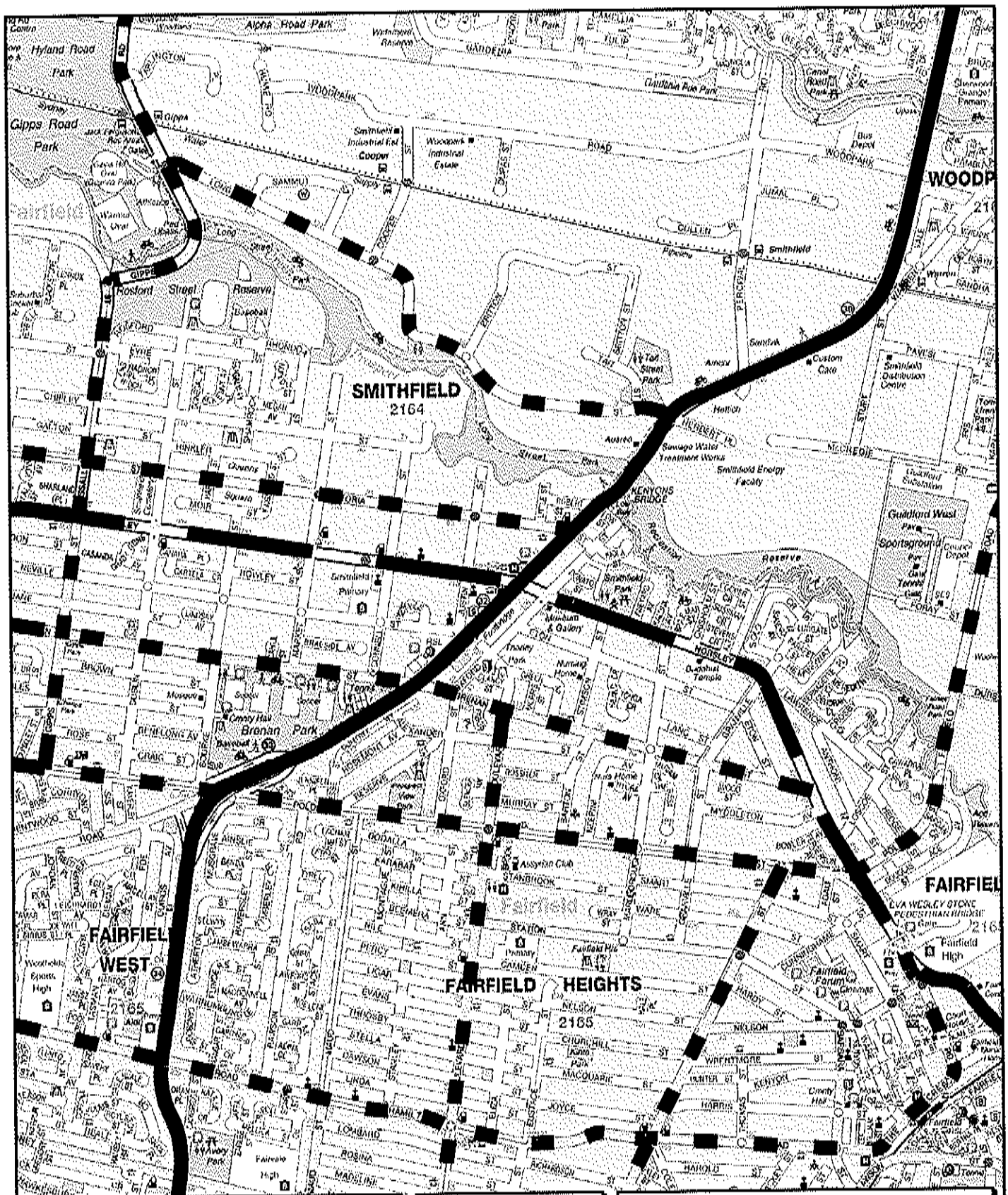
The road network serving the site (Figure 3) comprises:

- * *Cumberland Highway (Smithfield Road)* – a State Road and arterial route which provides a principal north-south route across the western part of the metropolitan area
- * *The Horsley Drive* – a State Road and sub-arterial route providing a link between Villawood and Horsley Park
- * *Hassall Street* – a State Road and sub-arterial route connecting between The Horsley Drive and Great Western Highway
- * *Victoria Street* – a Regional Road and collector road route running parallel and to the north of The Horsley Drive
- * *O'Connell Street* – local access road running between Brennan Street and Chifley Street.

3.2 TRAFFIC CONTROLS

The existing traffic controls which have been applied to the road system in the area (Figure 4) comprise:

- * the pedestrian crossing traffic signals on The Horsley Drive just to the west of O'Connell Street. Details of this facility are provided on the design plan provided overleaf



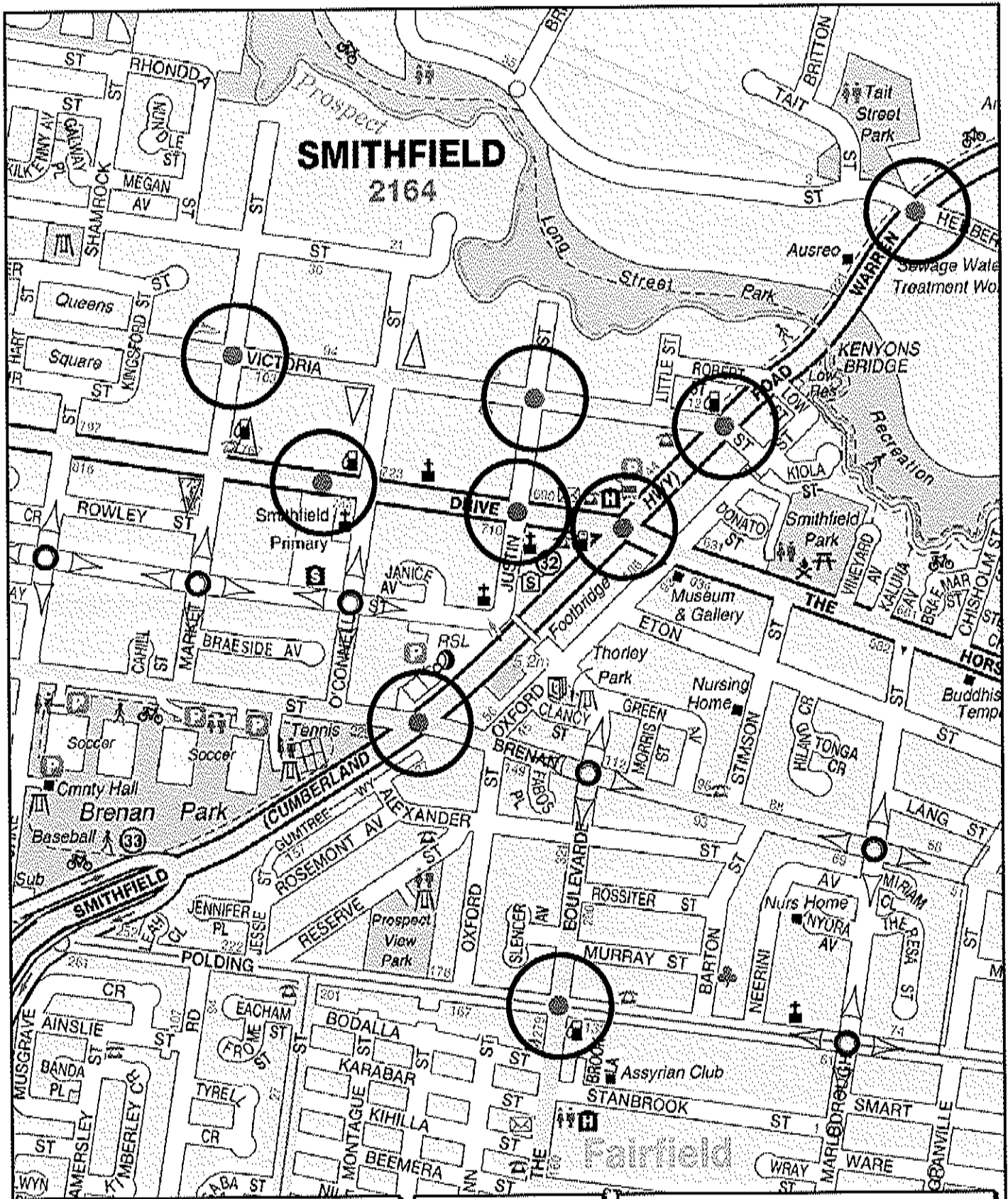
LEGEND

- ARTERIAL
- SUB-ARTERIAL
- COLLECTOR



ROAD NETWORK

FIG 3



LEGEND

- TRAFFIC SIGNAL CONTROL
- ⦿ ROUNDABOUT
- ↔ RESTRICTED TURNING MOVEMENT



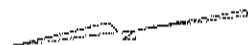
**TRAFFIC
CONTROLS**

FIG 4

0609.156.VV.2158

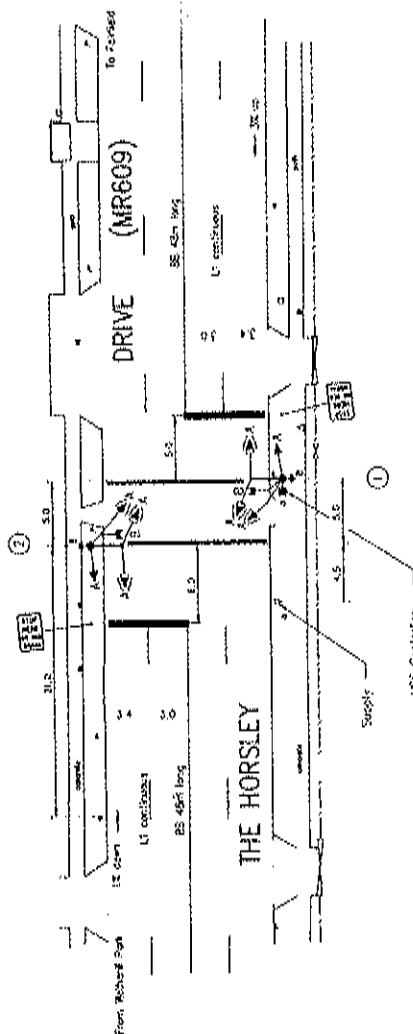
NOTES

1. This site is SCATS linked.
2. All push buttons are audio tactile.
3. Kerb ramps to be constructed at pedestrian crossing in accordance with the Fig. 8 of AS/NZS 1158:1993. Ground lines to be excluded from the ramps.



MOVEMENTS

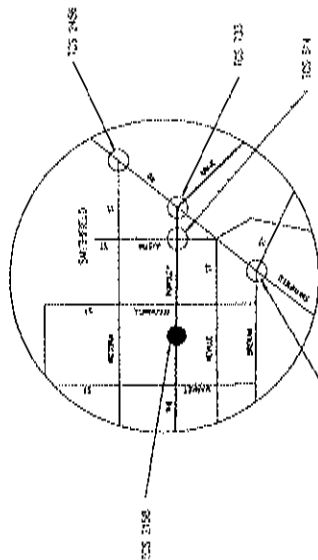
WAREHOUSES



POSTS

POST	TYPE	REMARKS
1	SS	NEW
2	SS	NEW

SMITHFIELD PUBLIC SCHOOL



LOCALITY

DESIGN OFFICE: PARLAWITH - STREET TECHNICAL SERVICES LAST PROJECT FILE: WY156.1C App SCALE: 1:500 FILE: 156.156.VV.2158 REVISION: 1 DATE: 0609.156.VV.2158		DESIGN: 156.156.VV.2158 DATE: 0609.156.VV.2158 SCALE: 1:500 FILE: 156.156.VV.2158 REVISION: 1 DATE: 0609.156.VV.2158
Roads and Traffic Authority N.S.W. CITY OF FAIRFIELD THE HORSLEY DR (MR609) WEST OF O'CONNELL ST SMITHFIELD		DESIGN: 156.156.VV.2158 DATE: 0609.156.VV.2158 SCALE: 1:500 FILE: 156.156.VV.2158 REVISION: 1 DATE: 0609.156.VV.2158

- * the traffic signals along Cumberland Highway including the Brennan Street, The Horsley Drive and Victoria Street intersections
- * the traffic signals along The Horsley Drive including the Justin Street intersection
- * the 60 kmph speed restrictions on The Horsley Drive and 50 kmph restriction on O'Connell Street with 40 kmph school restrictions adjacent to the Primary School
- * the GIVE WAY sign control on O'Connell Street at the Victoria Street intersection
- * the roundabout at the O'Connell Street/Neville Street intersection
- * the approved B Double routes along The Horsley Drive and Victoria Street (but not along O'Connell Street).

3.3 TRAFFIC CONDITIONS

An indication of traffic conditions on the road network in the vicinity of the development site is provided by data published by the RTA and traffic surveys undertaken for this study. The data published by the RTA is expressed in terms of Annual Average Daily Traffic (AADT) and the most recent published data is provided in the following:

	AADT		
	1999	2002	2005
The Horsley Drive east of O'Connell Street	22,336	18,240	19,645

The results of surveys undertaken at and near The Horsley Drive and O'Connell Street intersections during the weekday afternoon and Saturday midday peak periods are provided in Appendix A and summarised in the following:

		AM	PM	Sat MD
The Horsley Drive	Eastbound	677	450	530
	Right-turn	28	31	17
	Left-turn	30	34	19
	Westbound	483	646	502
	Right-turn	47	46	31
	Left-turn	33	32	13
O'Connell Street	Northbound	8	10	5
	Right-turn	15	16	13
	Left-turn	69	63	26
	Southbound	4	26	12
	Right-turn	3	11	13
	Left-turn	16	26	23
Pedestrians Crossing at Signals		38	45	1

The operational performance of the road system in the area is relatively satisfactory with the traffic signal controls providing access onto and across the major road routes.

4. ACCESS

The existing industrial development on the site has vehicle accesses on the O'Connell Street and The Horsley Drive frontages.

The proposed vehicle access arrangements would comprise:

- * a combined ingress/egress driveway on O'Connell Street at the northern boundary well removed from The Horsley Drive intersection. This driveway would be used for carpark access and for delivery vehicle ingress
- * a combined ingress/egress driveway on The Horsley Drive at the eastern boundary. This driveway would be used for carpark access and for delivery vehicle egress with all vehicle movements restricted to left-turn IN/OUT by a central median island in The Horsley Drive.

The roadways are straight and level in the vicinity of the proposed accesses with good sight distance available and it is intended that the existing superfluous access driveways be removed and the footway/kerb and gutter reinstated.

In order to provide suitable operating conditions and relieve the existing road safety circumstances it is proposed to relocate the existing pedestrian signals on The Horsley Drive and incorporate them into traffic signal control at the O'Connell Street intersection and this proposal has been the subject of discussion with the RTA.

5. TRAFFIC

The previous recycling depot use on the site would have generated some 40 to 50 vph during the morning and afternoon peak periods.

TTPA have undertaken surveys and assessed data provided by Bunnings for existing comparable stores in NSW and Vic. The outcomes of that assessment are provided in the following:

		Traffic Generation vph per 100m ² GFA		
		AM	PM	WE Midday
Artarmon	5160m ²	NA	6.9	9.40
Altona (Vic)	9199m ²	0.71	3.77	6.00
North Parramatta	9800m ²	0.73	2.38	6.16
Hyder 6 sites Sydney Metro Area (av 10,000m ²)		NA	2.39	NA
Thomastown (Vic)	10625m ²	NA	2.56	5.11
Minchinbury	11932m ²	0.63	2.20	4.40
Penrith	13500m ²	NA	1.80	4.37
Box Hill (Vic)	13762m ²	0.48	1.68	3.59

It is apparent that the peak traffic generation rates for Bunnings per 100m² GFA decrease as the floorspace increases. It is also relevant (and quite inevitable) that these traffic generation rates will decrease as:

- * additional Bunnings stores open as part of the current expansion program
- * additional new bulky goods hardware stores are opened by Bunnings competitors (ie Woolworths and Mitre 10/Metcash).

The adopted traffic generation rates for the envisaged development are:

AM	PM	WE MD
0.64 vtpm	2.35 vtpm	6.0 vtpm

On this basis the projected peak traffic generation for the envisaged store will be as follows:

	AM	PM	Sat MD
7,765m ²	50	183	462

The ingress/egress distribution of these trips will reflect existing store patterns of:

AM		PM		Sat MD	
IN	OUT	IN	OUT	IN	OUT
60%	40%	44%	56%	50%	50%

Other issues which will impact on the 'nett' traffic circumstance resultant to the proposed development are the normal 'passing trade' factor traffic. The traffic generation of retail type uses, have an element of 'passing trade/diverted trips' (ie vehicles which are already on the road system serving the site) and research undertaken in relation to 'diverted' trips indicates representative factors for normal retail trade of 25% weekday and 30% weekend. However, the adopted trip factors for the envisaged bulky goods development with its limited 'main road' exposure are as follows:

	PM	Sat
Bunnings	20%	25%

Thus the traffic generation for the development will comprise:

	PM		Sat MD	
	IN	OUT	IN	OUT
Projected Total	80	103	231	231

	PM		Sat MD	
	IN	OUT	IN	OUT
Projected Passing Trade	16	20	58	58

These volumes have been distributed onto the road system with regard to:

- * market catchment and store competition
- * traffic management constraints
- * passing trade trips into and out of the site.

The projected distribution is as follows:

The Horsley Drive west	25%
The Horsley Drive east	35%
Victoria Street west	15%
Victoria Street east	15%
O'Connell Street south	10%

The potential implications of this traffic outcome for the traffic signal controlled access intersection have been assessed in terms of the operational performance and the results of that assessment undertaken with SIDRA which are summarised in the following:

	PM			Sat MD		
	LOS	DS	AVD	LOS	DS	AVD
The Horsley Dr and O'Connell St	A	0.76	9.1	A	0.78	9.8

The criteria for interpreting SIDRA output are reproduced overleaf and the results of this operational performance assessment indicate that the proposed development will have a satisfactory traffic outcome (subject to the proposed provision of traffic signals at the intersection).

Criteria for Interpreting Results of SIDRA Analysis

1. Level of Service (LOS)

LOS	Traffic Signals and Roundabouts	Give Way and Stop Signs
'A'	Good	Good
'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 delays. Roundabouts require other control mode	At capacity and requires 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
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	29 to 42	Satisfactory	Satisfactory but accident study required
D	43 to 56	Operating near capacity	Near capacity and accident study required
E	57 to 70	At capacity; at signals incidents will cause excessive delays 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 signals**¹ 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.

¹ the values of DS for intersections under traffic signal control are only valid for cycle length of 120 secs

6. PARKING

Survey and research of 9 existing Bunnings warehouse stores provides a comprehensive indication of the intrinsic parking demands for Bunnings. The peak demands occur on weekends and it is apparent (as with traffic generation) that the parking demand per 100m² generally decreases as the floorspace increases. The established peak parking demand characteristics are summarised in the following:

North Parramatta	9,800m ²	2.7 spaces per 100m ²
Thomastown	10,625m ²	1.37 spaces per 100m ²
Minchinbury	11,932m ²	2.0 spaces per 100m ²
Penrith	13,500m ²	1.17 spaces per 100m ²
Hoopers Crossing	11,169m ²	1.74 spaces per 100m ²
Scoresby	11,882m ²	2.51 spaces per 100m ²
Mornington	10,599m ²	2.39 spaces per 100m ²
Box Hill	13,762m ²	1.41 spaces per 100m ²
Nunawading*	13,793m ²	2.84 spaces per 100m ²

* Bunnings top trading store

The envisaged Smithfield store of 7,765m² would have some 250 parking spaces which equates to a rate of 3.22 spaces per 100m² (or 1 space per 31m²). It is apparent that this provision will be quite adequate even for peak seasonal demands as it will be:

- * more than the average peak demand of the 9 stores
- * more than that of the peak demand at Bunnings top trading store.

7. CONCLUSION

The proposed Bunnings warehouse development at Smithfield will utilise the relatively large site which has convenient access to the arterial road system. This assessment has concluded that:

- * the development will not result in any adverse traffic impacts on the road system serving the site
- * the proposed signals at the O'Connell Street/The Horsley Drive intersection will provide a good level of intersection operation, including the Saturday peak trading period
- * on-site parking will be more than adequate to satisfy peak demands.

Appendix A

TRAFFIC SURVEYS



NO.A.R. DATA
Reliable, Original & Authentic Results
Ph.88198847, Fax 88198849, Mob.0418-239019

Client : I.I.P.A.
Job No/Name : SMITHFIELD Oconnell St
Day/Date : Friday 19th March 2010

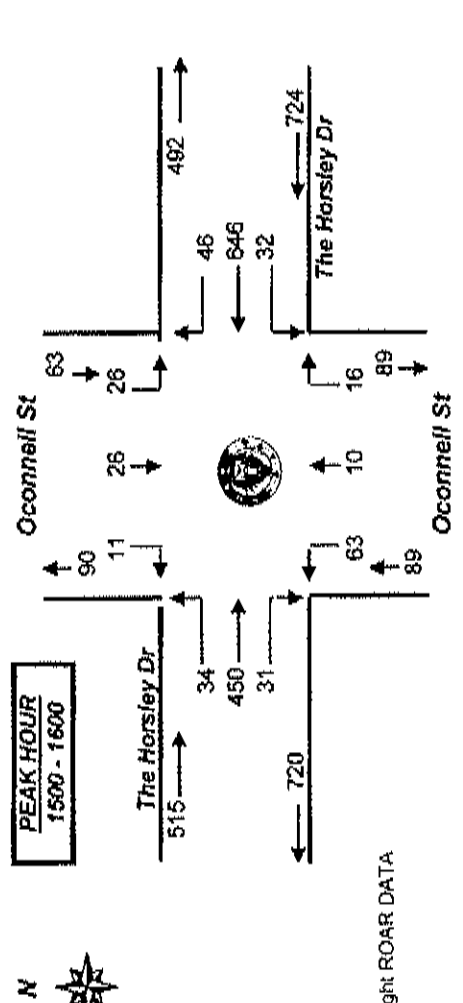
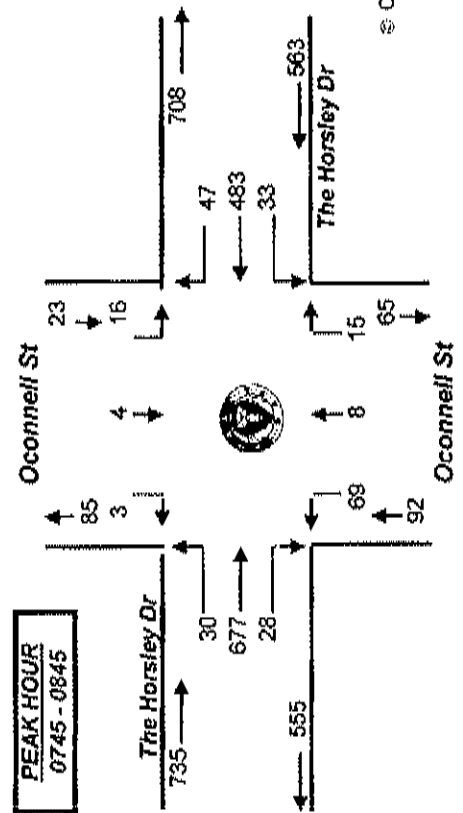
All Vehicles	NORTH			WEST			SOUTH			EAST		
	Oconnell St	The Horsley Dr	Oconnell St	The Horsley Dr	Oconnell St	The Horsley Dr	Oconnell St	The Horsley Dr	Oconnell St	The Horsley Dr	Oconnell St	The Horsley Dr
Time Per	L	I	R	L	I	R	L	I	R	L	I	R
0700 - 0715	2	0	2	3	187	1	1	2	1	0	95	14
0715 - 0730	2	0	2	6	192	1	5	5	3	0	104	13
0730 - 0745	4	2	0	6	168	1	3	5	1	1	115	11
0745 - 0800	2	1	0	5	161	1	8	2	2	3	140	19
0800 - 0815	7	1	1	6	170	6	16	3	4	3	123	6
0815 - 0830	3	1	2	10	164	9	25	1	2	8	95	10
0830 - 0845	4	1	0	9	182	12	20	2	7	19	125	12
0845 - 0900	4	2	2	8	128	12	19	4	6	17	128	5
Period End	28	8	9	51	1352	43	97	24	28	51	925	90

All Vehicles	NORTH			WEST			SOUTH			EAST		
	Oconnell St	The Horsley Dr	Oconnell St	The Horsley Dr	Oconnell St	The Horsley Dr	Oconnell St	The Horsley Dr	Oconnell St	The Horsley Dr	Oconnell St	The Horsley Dr
Time Per	L	I	R	L	I	R	L	I	R	L	I	R
1500 - 1515	4	5	4	11	113	9	28	3	6	10	131	18
1515 - 1530	11	4	3	10	112	6	16	3	7	11	161	9
1530 - 1545	5	5	1	8	129	9	12	3	2	5	161	11
1545 - 1600	6	12	3	5	95	7	7	1	1	5	173	8
1600 - 1615	2	3	6	8	118	6	5	4	0	2	166	8
1615 - 1630	2	3	3	10	118	11	6	1	2	0	175	9
1630 - 1645	4	10	4	6	122	5	9	1	0	3	174	11
1645 - 1700	6	2	7	4	111	6	3	2	3	6	140	9
1700 - 1715	9	4	5	6	96	5	3	2	2	5	137	14
1715 - 1730	2	3	8	3	125	5	5	2	0	1	184	9
1730 - 1745	3	8	5	3	110	1	3	3	0	4	177	12
1745 - 1800	4	5	4	7	139	4	3	2	1	1	185	9
Period End	58	64	63	81	1389	74	100	27	24	54	1984	127

Peak Time	NORTH			WEST			SOUTH			EAST		
	Oconnell St	The Horsley Dr	Oconnell St	The Horsley Dr	Oconnell St	The Horsley Dr	Oconnell St	The Horsley Dr	Oconnell St	The Horsley Dr	Oconnell St	The Horsley Dr
0700 - 0800	10	3	4	20	708	4	17	14	7	4	454	57
0715 - 0815	15	4	3	23	591	9	32	15	10	7	482	49
0730 - 0830	16	5	3	27	563	17	52	11	9	15	473	46
0800 - 0900	18	5	5	31	544	39	50	10	19	47	471	33

Peak Time	NORTH			WEST			SOUTH			EAST		
	Oconnell St	The Horsley Dr	Oconnell St	The Horsley Dr	Oconnell St	The Horsley Dr	Oconnell St	The Horsley Dr	Oconnell St	The Horsley Dr	Oconnell St	The Horsley Dr
1515 - 1615	26	26	11	34	450	31	63	10	16	32	646	46
1530 - 1630	15	23	13	31	455	28	40	11	10	24	681	36
1545 - 1645	14	28	16	29	454	29	27	7	3	10	688	36
1600 - 1700	14	18	20	28	469	28	23	8	5	11	655	37
1615 - 1715	21	19	19	26	447	27	21	6	7	14	626	43
1630 - 1730	21	19	24	19	454	21	20	7	5	15	635	43
1645 - 1745	20	17	25	16	442	17	14	9	5	16	638	44
1700 - 1800	18	20	22	19	470	15	14	9	3	11	683	44

PEAK HOUR	16	4	3	30	677	28	69	8	15	33	483	47	1413
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K.U.A.K. DATA

Reliable, Original & Authentic Results

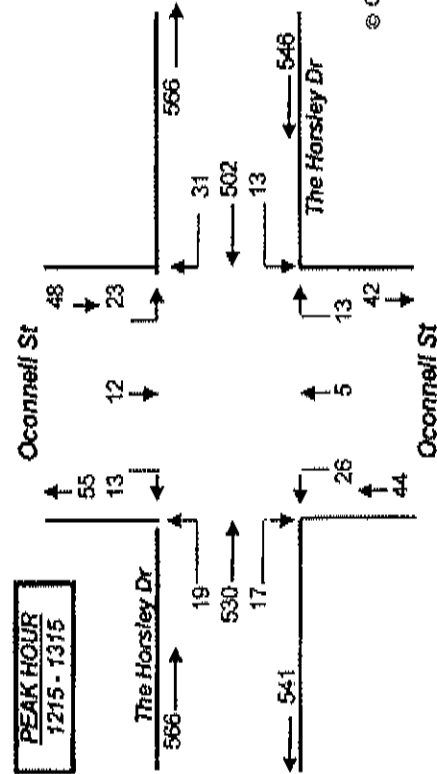
Ph.83196947, Fax 88196849, Mob.0418-239019

Client : T.I.P.A.
Job No/Name : SMITHFIELD Oconnell St
Day/Date : Saturday 20th March 2010

All Vehicles Time Per	NORTH				WEST				SOUTH				EAST			
	Oconnell St		The Horsley Dr		The Horsley Dr		Oconnell St		Oconnell St		The Horsley Dr		The Horsley Dr		Oconnell St	
	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R
1200 - 1215	1	4	2	7	125	6	2	1	2	4	117	5	276			
1215 - 1230	7	6	4	5	138	5	3	1	3	2	118	13	305			
1230 - 1245	6	1	5	5	127	0	2	1	5	4	113	5	274			
1245 - 1300	2	1	1	6	131	6	13	2	3	3	126	9	303			
1300 - 1315	8	4	3	3	134	6	8	1	2	4	145	4	322			
1315 - 1330	2	2	2	7	102	3	5	0	0	1	124	6	256			
1330 - 1345	2	4	9	5	108	7	1	1	1	1	120	3	261			
1345 - 1400	2	8	2	7	91	0	5	2	5	3	89	3	217			
1400 - 1415	1	2	3	14	96	2	7	0	0	0	149	10	284			
1415 - 1430	4	5	7	9	100	5	6	2	0	1	109	15	263			
1430 - 1445	0	2	2	5	93	4	4	1	0	3	110	3	227			
1445 - 1500	1	3	3	8	94	3	1	2	2	1	116	5	239			
Period End	36	42	43	81	1339	47	57	14	23	26	1436	83	3227			

Peak time	NORTH				WEST				SOUTH				EAST			
	Oconnell St		The Horsley Dr		The Horsley Dr		Oconnell St		Oconnell St		The Horsley Dr		The Horsley Dr		Oconnell St	
	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R
1200 - 1300	16	12	12	23	521	17	20	5	13	13	474	32	1158			
1300 - 1330	23	12	13	19	530	17	26	5	13	13	502	31	1204			
1330 - 1345	18	8	11	21	494	15	28	4	10	12	508	26	1155			
1345 - 1400	14	11	15	21	475	22	27	4	6	8	515	24	1142			
1400 - 1415	14	18	16	22	435	16	19	4	8	8	478	18	1056			
1415 - 1430	7	16	16	33	397	12	18	3	6	4	482	24	1018			
1430 - 1445	9	19	21	35	395	14	19	5	6	4	467	31	1025			
1445 - 1500	7	17	14	35	380	11	22	5	5	7	457	31	991			
Period End	6	12	15	36	383	14	18	5	2	5	484	33	1013			

PEAK HOUR	23	12	13	19	530	17	26	5	13	13	502	31	1204
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