PROPOSED RETAIL/RESIDENTIAL DEVELOPMENT OF A CONSOLIDATED SITE AT 160-178 STONEY CREEK ROAD BEVERLY HILLS

TRAFFIC AND PARKING ASSESSMENT

7 February 2017
Ref: 14035

Prepared by

John Coady Consulting Pty Ltd
Townplanning and Traffic Consultants

Suite 3, Level 5, Manly National, 22 Central Avenue, Manly NSW 2095
PO Box 528, Manly NSW 1655
Tel: (02) 9977 4622; Fax (02) 9977 4022
Mobile: 04111 24333
Email: john@johnco.com.au

Table of Contents

LIST OF ILLUSTRATIONS

1. Introduction

This report has been prepared to accompany a development application to Hurstville Council for a retail/residential development on the site at 160-178 Stoney Creek Road, Beverly Hills (Figures 1 and 2).

The proposed development site has a total area of approximately 3780m^2 with frontages of 88m to Stoney Creek Road and 34.53m to Lee Avenue. The site formerly accommodated a service station with vehicular access off both Stoney Creek Road and Lee Avenue. However, that former site development has now been demolished and the site is currently vacant. A survey plan of the proposed development site and the surrounding land is reproduced in the following pages.

The existing landuse surrounding the development site comprises:

- retail/commercial properties on the north-eastern corner of Stoney Creek Road and King Georges Road
- a Council carpark on the south-eastern corner of King Georges Road with Beresford Avenue. This carpark, which contains a total of 29 parking spaces, is subject to a 3 hour free parking limit per day
- predominantly residential development in the remainder of the block bounded by Stoney Creek Road – King Georges Road – Beresford Avenue – Lee Avenue.

The proposed development comprises:

Residential: 44 x residential apartments (including 5 adaptable apartments) comprising 5 x 1-bedroom, 31 x 2-bedroom and 8 x 3-bedroom apartments.

Retail: A small shopping centre containing an Aldi supermarket with a total floorarea of 1514m^2 GLFA (net selling area – 1067m2; back of house – 447m2) and 3 specialty shops with a total floorarea of approximately 606m^2 GLFA.

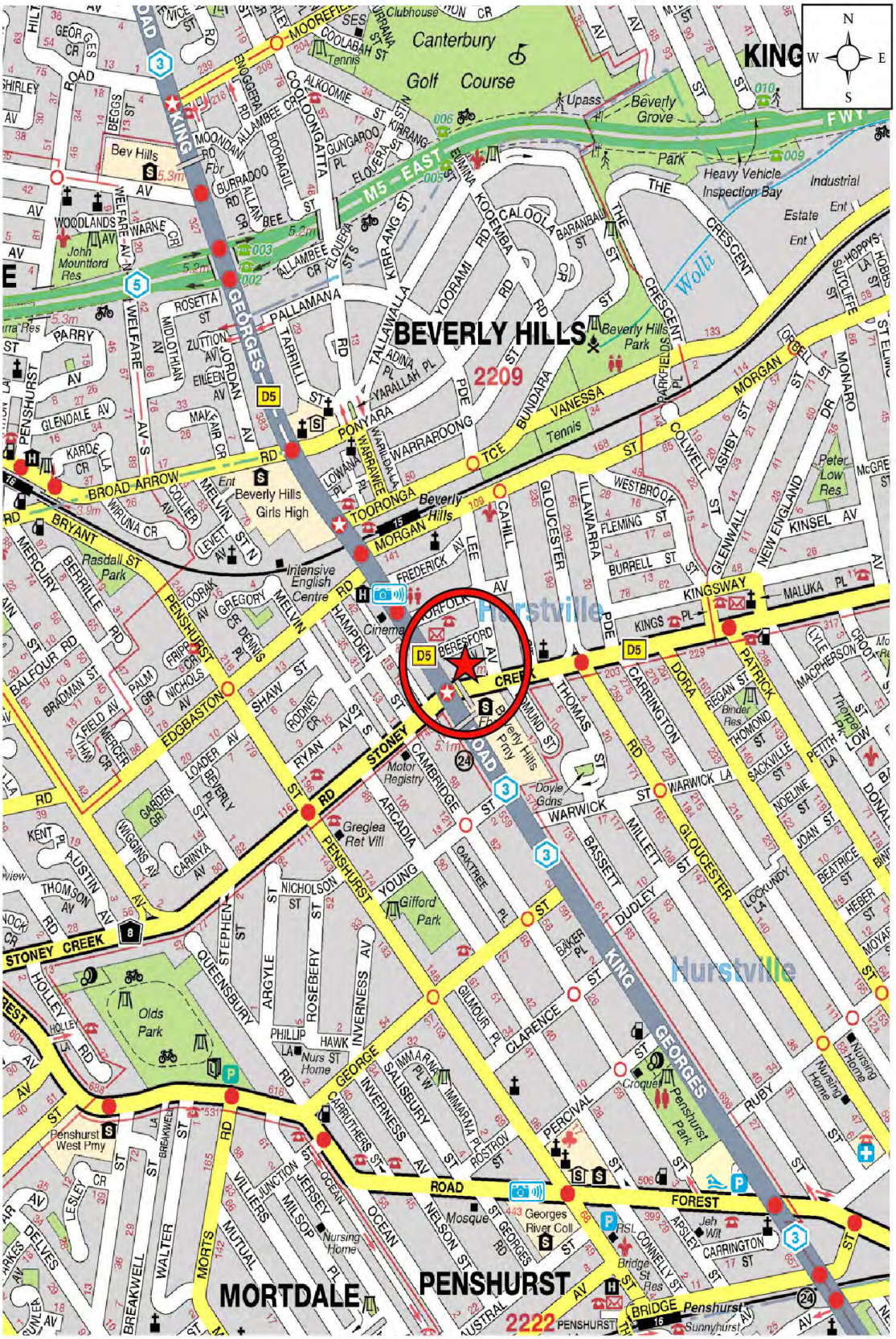
The proposed development is served by a total off-street parking provision of 203 parking space on 3 basement parking levels with 66 parking spaces allocated to the residents of the proposed development and their visitors, and 137 parking spaces allocated to the retail component of the proposed development.

A loading area 20.2m x 4.5m capable of accommodating a 12.5m long heavy rigid vehicle (HRV) is located on Basement Level 1. A turntable is provided on the approach to the loading dock to facilitate truck access to/from it.

Vehicular access for the proposed development is off Lee Avenue via a combined entry/exit driveway splayed to a width of approximately 10m at the property boundary, and a 6.5m wide (plus 300mm kerbs on either side) internal access ramp about 60m long. Pedestrian access is available off the Lee Avenue frontage as well as from the Council carpark in Beresford Street.

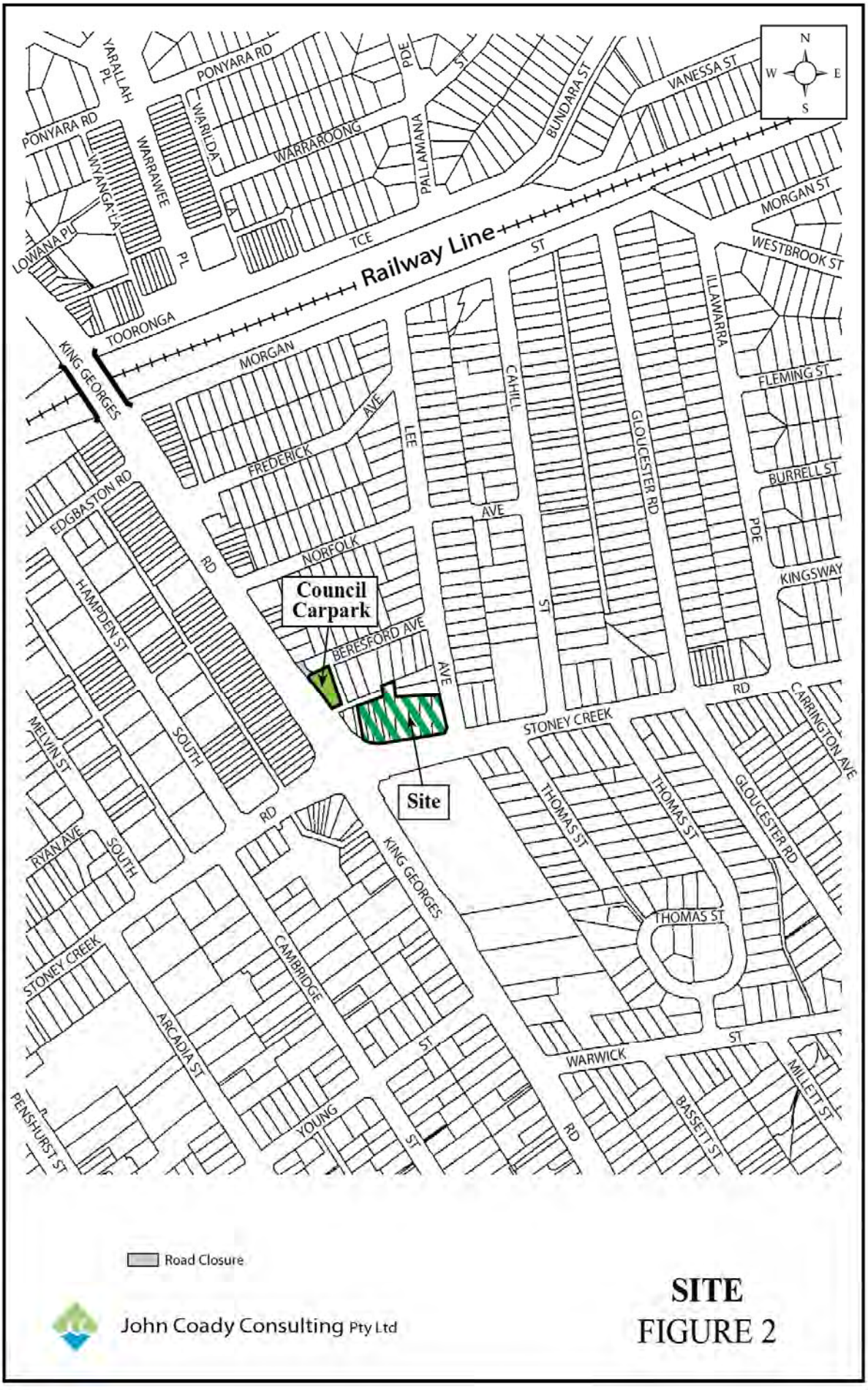
Selected plans of the proposed development prepared by Candalepas Associates are reproduced in the following pages.

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

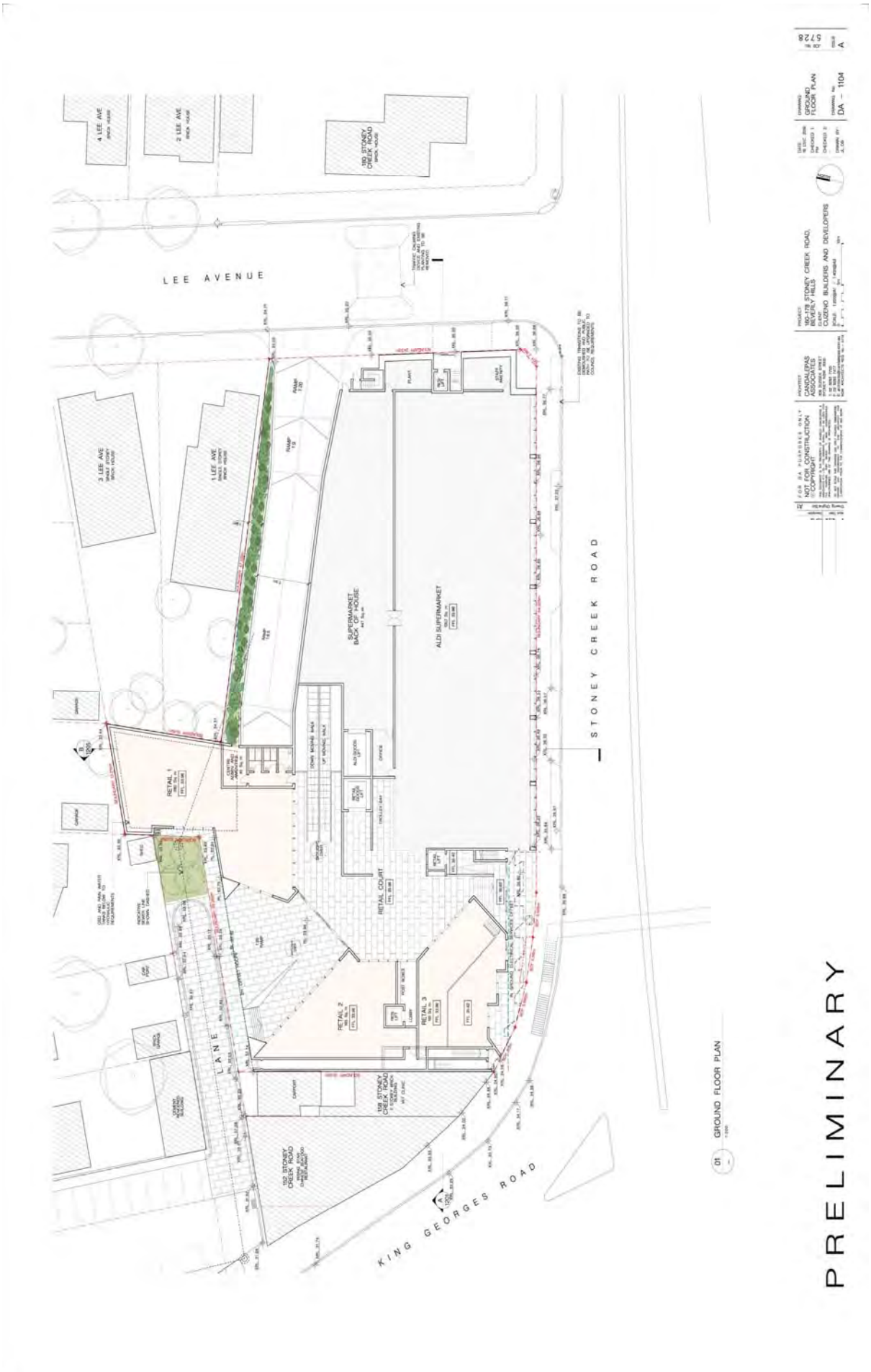


John Coady Consulting Pty Ltd

LOCATION
FIGURE 1

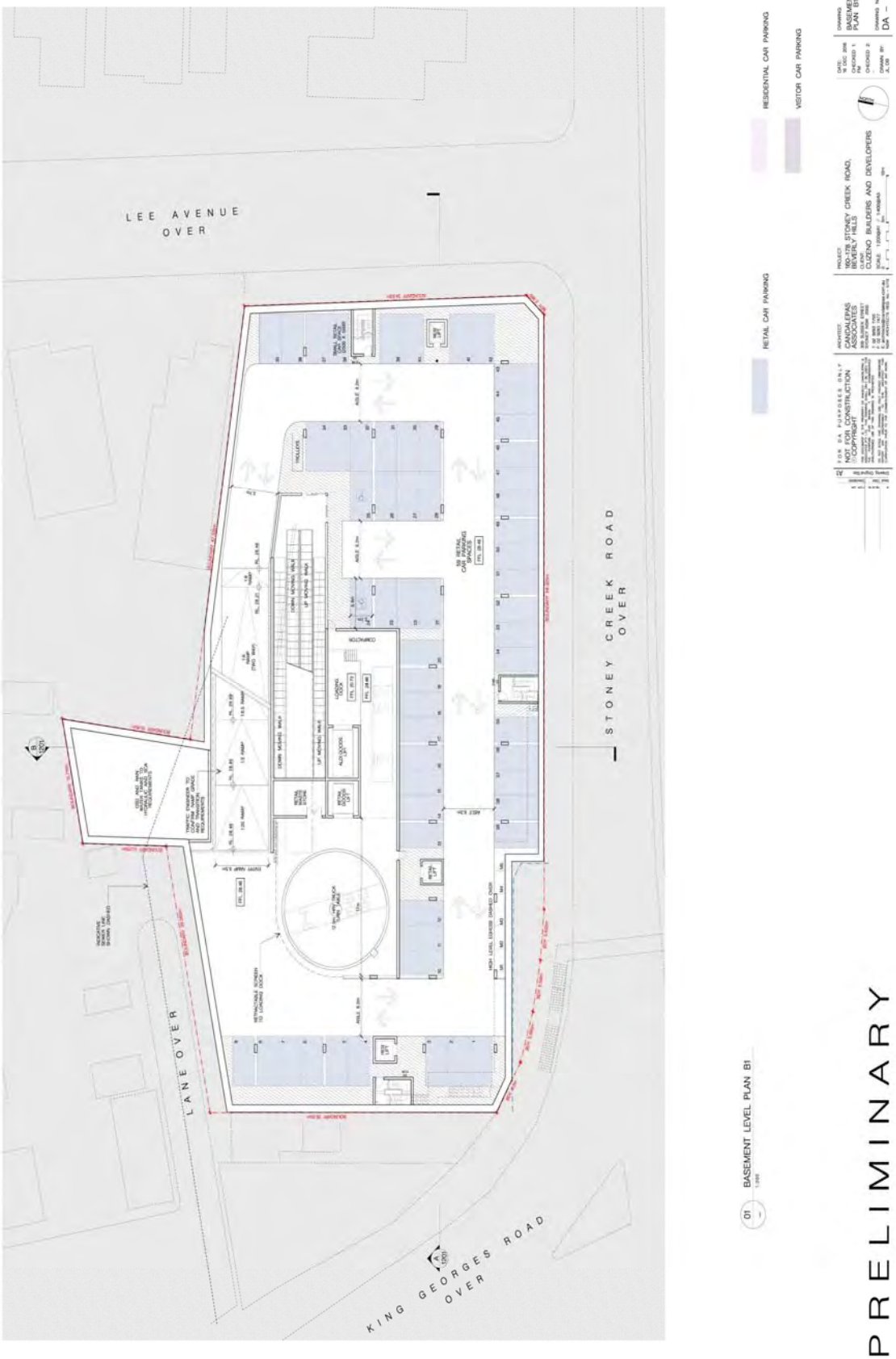

N
W
E
S
Railway Line
Council Carpark
Site
PONYARA RD
YARALLAH PL
WARILDA
WARRAWEE
WYANGA-LA
WARRAROONG
PALLAMANA
BUNDARA ST
VANESSA ST
MORGAN ST
WESTBROOK ST
LOWANA PL
TOORONGA
TCE
PL
ST
KING GEORGES
MORGAN
FREDERICK
AVE
LEE
CAHILL
GLOUCESTER RD
ILLAWARRA
PDE
FLEMING ST
BURRELL ST
KINGSWAY
EDGBASTON RD
NORFOLK
BERESFORD AVE
HAMPDEN ST
SOUTH
RD
MELVIN ST
RYAN AVE
STONEY CREEK
CARRINGTON AVE
THOMAS ST
CAMBRIDGE
ARCADIA ST
PENSHURST ST
YOUNG
WARWICK
BASSETT ST
MILLETT ST
Road Closure
John Coady Consulting Pty Ltd
SITE
FIGURE 2


LEE AVENUE
Site
STONEY CREEK ROAD
BERESFORD AVENUE
LANE
KING GEORGES ROAD
NORFOLK AVENUE
Council Carpark
PLAN SHOWING SITE DETAILS AT
186-178 STONEY CREEK ROAD
BEVERLY HILLS
STUART DE NETT
LAND SURVEYORS


LEE AVENUE
4 LEE AVE
2 LEE AVE
3 LEE AVE
1 LEE AVE
180 STONEY CREEK ROAD
STONEY CREEK ROAD
SUPERMARKET BACK OF HOUSE
ALDI SUPERMARKET
RETAIL 1
RETAIL COURT
RETAIL 2
RETAIL 3
LANE
152 STONEY CREEK ROAD
KING GEORGES ROAD
01 GROUND FLOOR PLAN
PRELIMINARY
NOT FOR CONSTRUCTION
© COPYRIGHT
CANDALEPAS ASSOCIATES
178 STONEY CREEK ROAD, BEVERLY HILLS
CUZENO BUILDERS AND DEVELOPERS
GROUND FLOOR PLAN
DA – 1104


LEE AVENUE
OVER
STONEY CREEK ROAD
OVER
LANE OVER
KING GEORGES ROAD
OVER
RESIDENTIAL CAR PARKING
VISITOR CAR PARKING
RETAIL CAR PARKING
01 BASEMENT LEVEL PLAN B3
PRELIMINARY
FOR DA PURPOSES ONLY
NOT FOR CONSTRUCTION
© COPYRIGHT
CANDALEPAS ASSOCIATES
180-178 STONEY CREEK ROAD,
BEVERLY HILLS
CUZENO BUILDERS AND DEVELOPERS
BASEMENT LEVEL 3 FLOOR PLAN
DA – 1101
A


LEE AVENUE
OVER
STONEY CREEK ROAD
OVER
LANE OVER
KING GEORGES ROAD
OVER
RETAIL + RESIDENTIAL VISITOR CAR PARKING
RESIDENTIAL CAR PARKING
VISITOR CAR PARKING
01 BASEMENT LEVEL PLAN B2
NOT FOR CONSTRUCTION
© COPYRIGHT
CANDALEPAS ASSOCIATES
160-178 STONEY CREEK ROAD, BEVERLY HILLS
CUZZINO BUILDERS AND DEVELOPERS
BASEMENT LEVEL 2 FLOOR PLAN
DA – 1102
PRELIMINARY


LEE AVENUE
OVER
STONEY CREEK ROAD
OVER
LANE OVER
KING GEORGES ROAD
OVER
RESIDENTIAL CAR PARKING
VISITOR CAR PARKING
RETAIL CAR PARKING
01 BASEMENT LEVEL PLAN B1
PRELIMINARY
NOT FOR CONSTRUCTION
© COPYRIGHT
CANDALEPAS ASSOCIATES
180-178 STONEY CREEK ROAD,
BEVERLY HILLS
CLIZENO BUILDERS AND DEVELOPERS
BASEMENT LEVEL PLAN B1
DA – 1103
A

2. Parking

Hurstville DCP No. 1 – Amendment 5 (4 July 2016) is the appropriate DCP for the purposes of calculating Council's parking requirement for the proposed development. Because the site is zoned *B2 – Local Centre,* Table 1 within Part 3.1 of the DCP sets out the relevant parking requirements as follows:

Retail Premises (including Food and Drink Premises, Restaurants and Café)		1 space per 50m^2
Residential Accommodation	(Dwelling 1 – 2 bedrooms)	1 space per dwelling
	(Dwelling 3 bedrooms and over)	2 spaces per dwelling
Visitor Spaces		1 space per 4 dwellings (or part thereof)

Note: Different rates may apply where within 800m of a railways station in accordance with the Apartment Design Guide and the RMS Guide to Traffic Generating Development (2002)

The proposed development is within 800m of the Beverly Hills Railway Station and the parking requirements specified by the RTA Guidelines[1] for high density residential flat buildings in metropolitan sub-regional centres therefore apply as follows:

High Density Residential Flat Buildings	
(Metropolitan Sub-Regional Centres)	0.6 spaces per 1-bedroom unit
	0.9 spaces per 2-bedroom unit
	1.40 spaces per 4-bedroom unit
	1 space per 5 units (visitor parking)

Also, the parking requirement specified by the RTA Guidelines for the retail component of the proposed development is:

Retail

The RTA Guidelines incorporate the following formula for calculating the peak parking demand potential of shopping centres on the basis of the particular retail categories within the centre:

Peak parking demand 24 A(S) + 40 A(F) + 42 A(SM) + 45 A(SS) + 9 A(OM) per 1,000m^2

Where:

A(S): Slow Trade GLFA, includes major department stores such as David Jones and Grace Bros, furniture, electrical and utility goods stores.

A(F): Faster Trade GLFA, includes discount department stores such as K-Mart and Target, together with larger specialist stores such as Fosseys.

A(SM): Supermarket GLFA, includes stores such as Franklins and larger fruit markets.

[1] *RTA "Guide to Traffic Generating Developments. Section 5 – Parking Requirements for Specific Landuses" October 2002*

A(SS): Speciality shops and secondary retail GLFA, includes speciality shops and take-away stores such as McDonalds. These stores are grouped since they tend not to be primary attractors to the centre.

A(OM): Offices, medical GLFA.

The parking requirement for the proposed development calculated in accordance with Council's DCP is set out in the following table. For the purposes of this calculation, the parking requirement calculated in accordance with Council's DCP is that requirement actually specified by the DCP (ie ignoring the potential to adopt the parking requirement specified by the RTA Guidelines for the residential component of the proposed development which is located within 800m of a railway station), while the parking requirement calculated in accordance with the RTA Guidelines adopts the requirement specified by the Guidelines for both the residential and retail components of the proposed development.

	Hurstville DCP 1		**RTA Guidelines**	
	Rate	**No. of Spaces**	**Rate**	**No. of Spaces**
RESIDENTIAL **Resident Parking**				
5 x 1-bedroom	1 space per apartment	5	0.6 space per apartment	3
31 x 2-bedroom	1 space per apartment	31	0.9 spaces per apartment	28
8 x 3-bedroom	2 spaces per apartment	16	1.4 spaces per apartment	12
Sub Total Resident Parking		*52*		43
Visitor Parking	1 space per 4 apartments	11	1 space per 5 apartments	9
Sub Total Residential		***63***		***52***
RETAIL				
Supermarket - 1514m^2	NA	-	4.2 spaces per 100m^2	64
Speciality Shops – 606m^2	NA	-	4.5 spaces per 100m^2	28
Sub Total Retail – 2120m^2	***1 space : 50m^2***	***43***		***92***
TOTAL		**106**		**144**

As can be observed, the total parking requirement for the proposed development calculated in accordance with Council's DCP is 106 parking spaces with 63 of those parking spaces (52 x resident plus 11 x visitor space) required to serve the residential component of the proposed development, and only 43 parking spaces required to serve the retail component. The parking requirement for the proposed development calculated in accordance with the RTA Guidelines is 144 parking spaces comprising 52 parking spaces (43 x resident plus 9 x visitor spaces) to serve the residential component of the proposed development and 92 parking spaces required to serve the retail component.

As noted in the foregoing, the proposed development makes provision for a total of 203 parking spaces comprising 66 spaces allocated to residents of the proposed development and their visitors, plus 129 spaces to serve the retail component of the proposed development. That off-street parking provision exceeds the parking requirement calculated in accordance with both Council's DCP (106 parking spaces) and the parking requirement calculated in

accordance with the RTA Guidelines (144 spaces). While Council's DCP and the RTA Guidelines specify a similar parking requirement for the residential component of the proposed development (63 and 52 parking spaces), the requirement for the retail component calculated in accordance with the RTA Guidelines (92 spaces) is significantly higher than the DCP requirement (43 spaces).

It is considered that the provision of 203 parking spaces is appropriate to serve the proposed development because:

- the provision of 66 spaces to serve residents of the proposed development and their visitors is of a similar order to the requirement of 63 spaces calculated in accordance with Council's DCP. While the role of constraining residential parking located in proximity to a railway station as a means of encouraging greater use of public transport is recognised, that strategy is unlikely to be successful in this case because any excess residential parking demand will simply utilise the parking spaces allocated for the retail component of the proposed development. In other words, there is no practical advantage in constraining the residential parking provision in the particular circumstances of this case

- the parking requirement specified by the RTA Guidelines for the retail component of the proposed development is preferred to that specified by Council's DCP because the parking requirement specified by the RTA Guidelines is based on surveys of retail establishments throughout the Sydney Metropolitan Area, while the basis of the parking requirement specified by Council's DCP is unknown

- also, the parking demand generated by the retail component of the proposed development is likely to be greater than 1 space : 50m^2 because:

  - the retail facilities include a supermarket, a major shopping attraction which generates a higher parking demand than, say, strip retail specialty shops

  - because the specialty shops incorporated in the proposed development form part of a *contained* shopping centre, these retail facilities will also generate a higher parking demand than, say, strip retail shopping

- finally, while the parking provision incorporated in the proposed development exceeds the parking requirement calculated in accordance with Council's DCP for the residential component of the proposed development, and in accordance with the RTA

Guidelines for the retail component, it is preferable to err on the side of excess parking provision rather than inadequate parking provision in this case because the consequences of inadequate parking provision are likely to be:

- the demand for parking spaces in the Council carpark on the south-eastern corner of King Georges Road with Beresford Avenue will increase to the detriment of those who currently utilise that carpark

- the proposed development site is located adjacent to a residential precinct and any excess parking demand that it generates is likely to utilise on-street parking spaces in the vicinity to the detriment of local residents.

3. Traffic

Existing Road Network

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

State Roads	**Regional Roads**
King Georges Road	Tooronga Terrace – Vanessa Street
Stoney Creek Road	Glouster Road
Forest Road	Broad Arrow Road – Bryant Street – Penshurst Street

Although not included in the RMS classification, a number of the streets to the east of King Georges Road and north of Stoney Creek Road provide a local *collector road* function for the strip retail/commercial development along the eastern side of King Georges Road including Lee Avenue, Norfolk Avenue and Frederick Avenue. Morgan Street performs both a *collector road* function for that strip retail/commercial development along King Georges Road and also a *sub-arterial road* function by providing an alternative route for east-west commuter traffic during the weekday peak periods and a bypass route for the King Georges Road/Stoney Creek Road intersection on the arterial road system which serves and passes through the area.

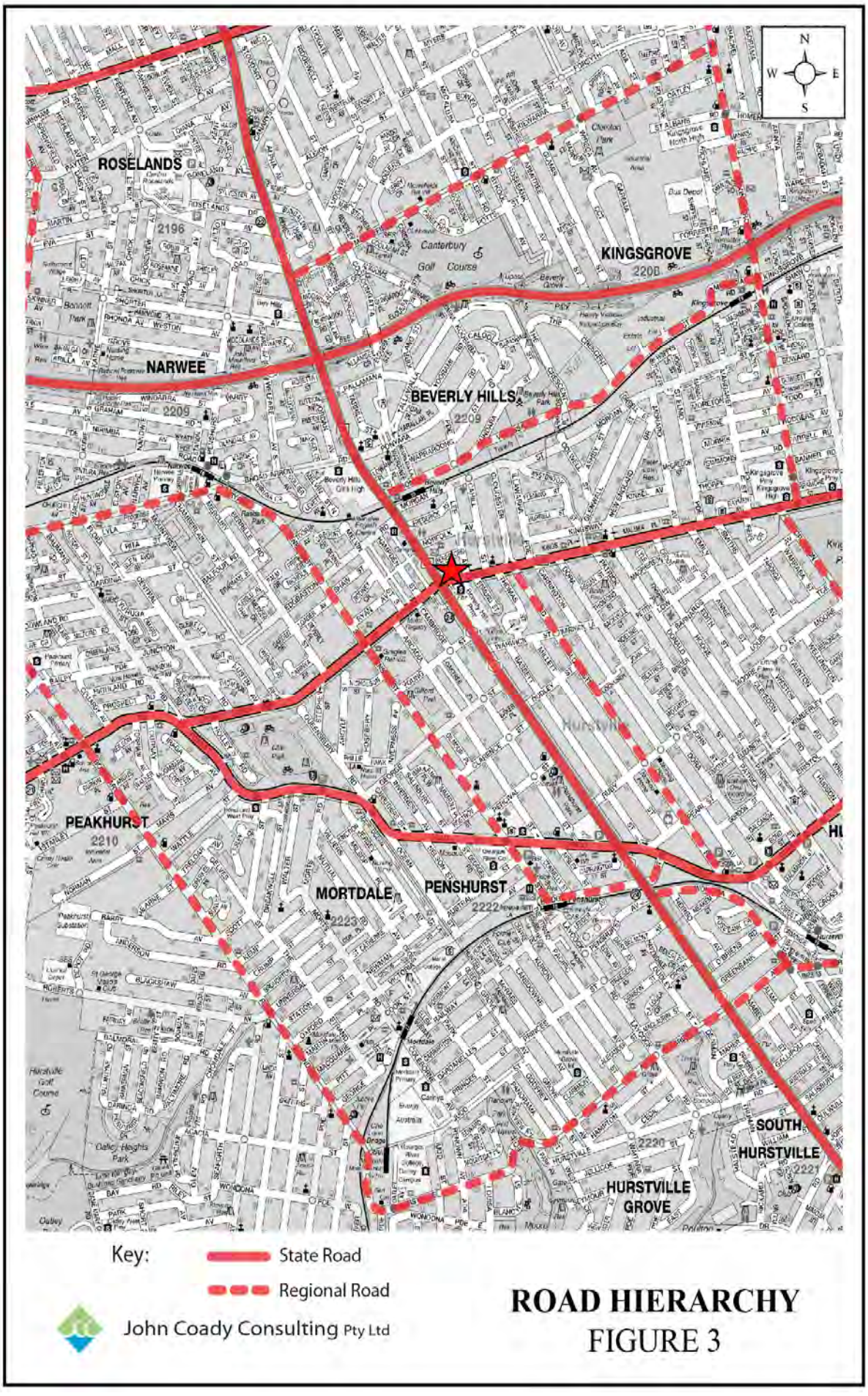
The section of Lee Avenue along the frontage of the proposed development site has a sealed carriageway 12.8m wide between kerbs.

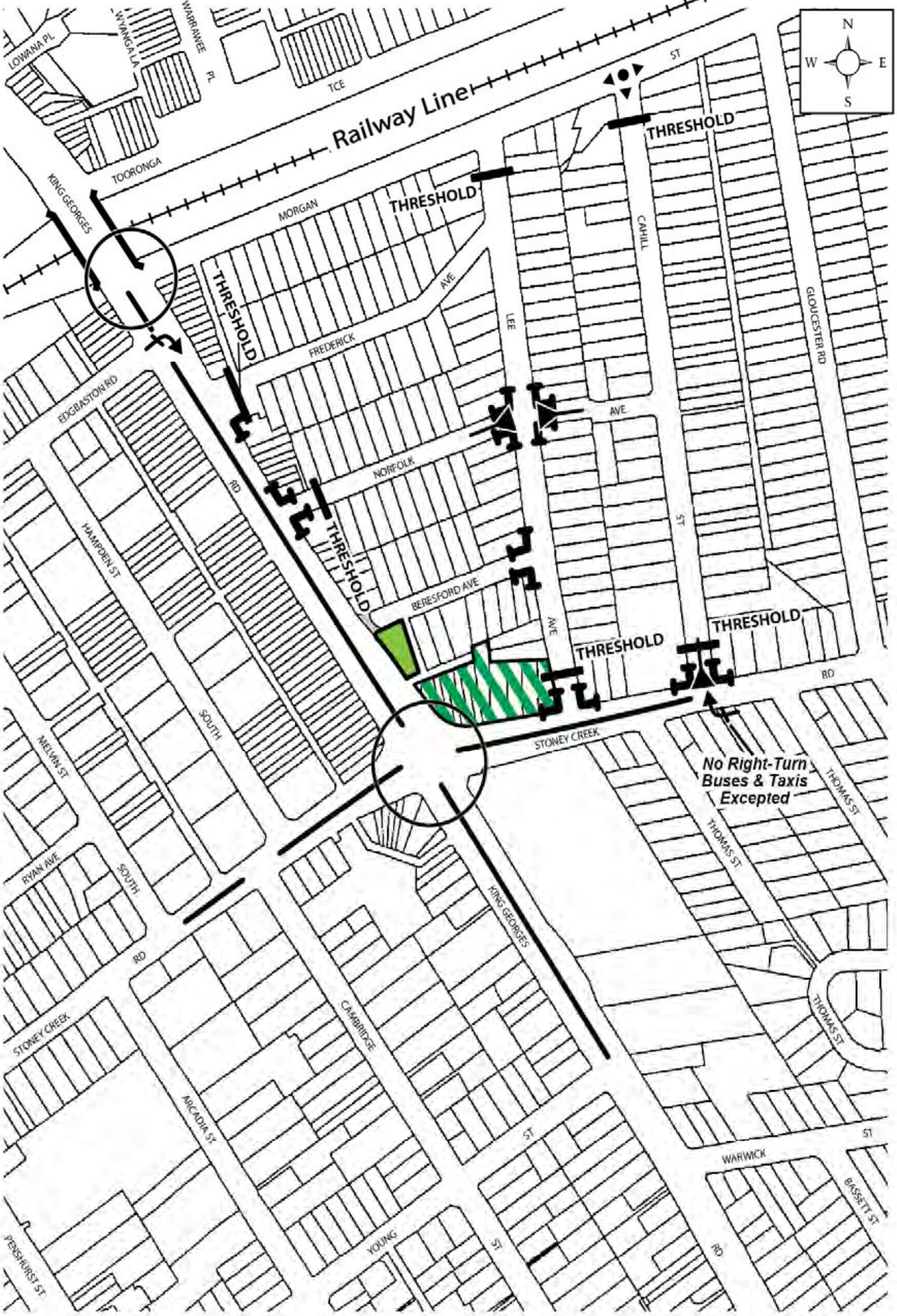
The existing traffic and parking controls on the road network serving the site are shown on Figure 4.

Existing Traffic Conditions

To provide an indication of traffic conditions on the road network serving the site, a count of traffic activity was conducted during the weekday AM and PM peak periods at a number of intersections on the road network serving the site including:

King Georges Road/Stoney Creek Road
King Georges Road/Morgan Street
King Georges Road/Norfolk Avenue
Stoney Creek Road/Lee Avenue
Lee Avenue/Beresford Avenue
Beresford Avenue/Council carpark access
Morgan Street/Lee Avenue
Stoney Creek Road/Cahill Street


N
W
E
S
ROSELANDS
2196
Canterbury
Golf Course
KINGSGROVE
2208
NARWEE
2209
BEVERLY HILLS
2209
PEAKHURST
2210
MORTDALE
2223
PENSHURST
2222
SOUTH
HURSTVILLE
2221
HURSTVILLE
GROVE
Key:
State Road
Regional Road
John Coady Consulting Pty Ltd
ROAD HIERARCHY
FIGURE 3



N
W
E
S
Railway Line
THRESHOLD
THRESHOLD
THRESHOLD
THRESHOLD
THRESHOLD
THRESHOLD
No Right-Turn
Buses & Taxis
Excepted
KING GEORGES
KING GEORGES
RD
TOORONGA
TCE
WARRAWEE
PL
LOWANA PL
W'ANGA LA
MORGAN
FREDERICK
AVE
NORFOLK
AVE
BERESFORD AVE
LEE
AVE
CAHILL
ST
ST
GLOUCESTER RD
STONEY CREEK
RD
THOMAS ST
THOMAS ST
THOMAS ST
EDGBASTON RD
HAMPDEN ST
SOUTH
SOUTH
RD
MELVIN ST
RYAN AVE
STONEY CREEK
CAMBRIDGE
ST
ARCADIA ST
YOUNG
ST
PENSHURST ST
WARWICK
ST
BASSETT ST
RD

John Coady Consulting Pty Ltd

EXISTING TRAFFIC & PARKING CONTROLS
FIGURE 4

The detailed results of those traffic counts are included in Annexure A, while the peak traffic flows through the intersections are summarised on Figure 5 for the AM peak period (8.00 – 9.00am) and PM peak period (4.45 – 5.45pm).

Projected Traffic Generation Potential

An indication of the traffic generation potential of the proposed development is provided by the typical weekday peak period traffic generation rates specified by the RTA Guidelines[2] as follows:

Medium Density Residential Flat Buildings

Smaller units and flats (up to 2 bedrooms)	0.4 – 0.5 vtph
Larger units and townhouses (3 or more bedrooms)	0.5 – 0.65 per dwelling

Shopping Centres

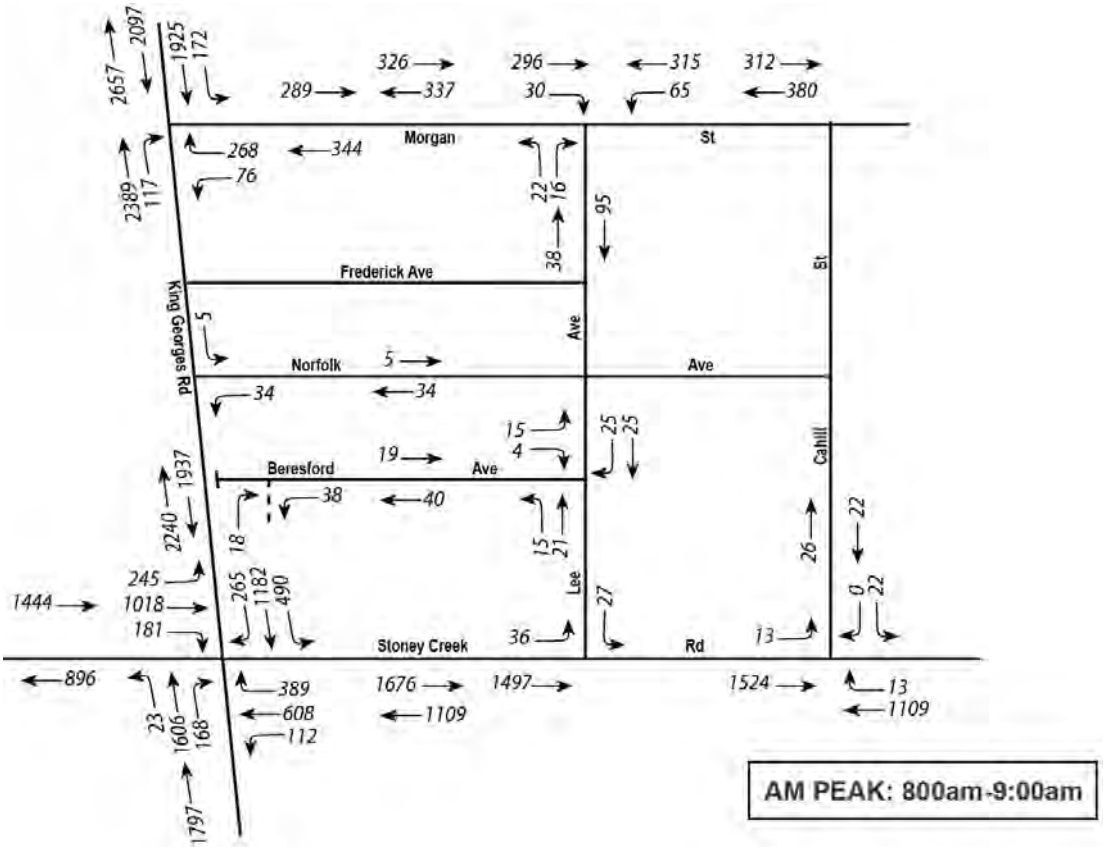
The RTA Guidelines provide models which identify the traffic generation potential of different types of retail shops during the weekday PM peak period. The typical weekday PM peak traffic generation rates included in these models for supermarkets and specialty shops have been adopted for the purposes of this assessment. The traffic generation potential of retail shops during the weekday AM peak period is much lower than the traffic generation rates during the PM peak period. The traffic generation rates adopted for the purposes of this assessment are:

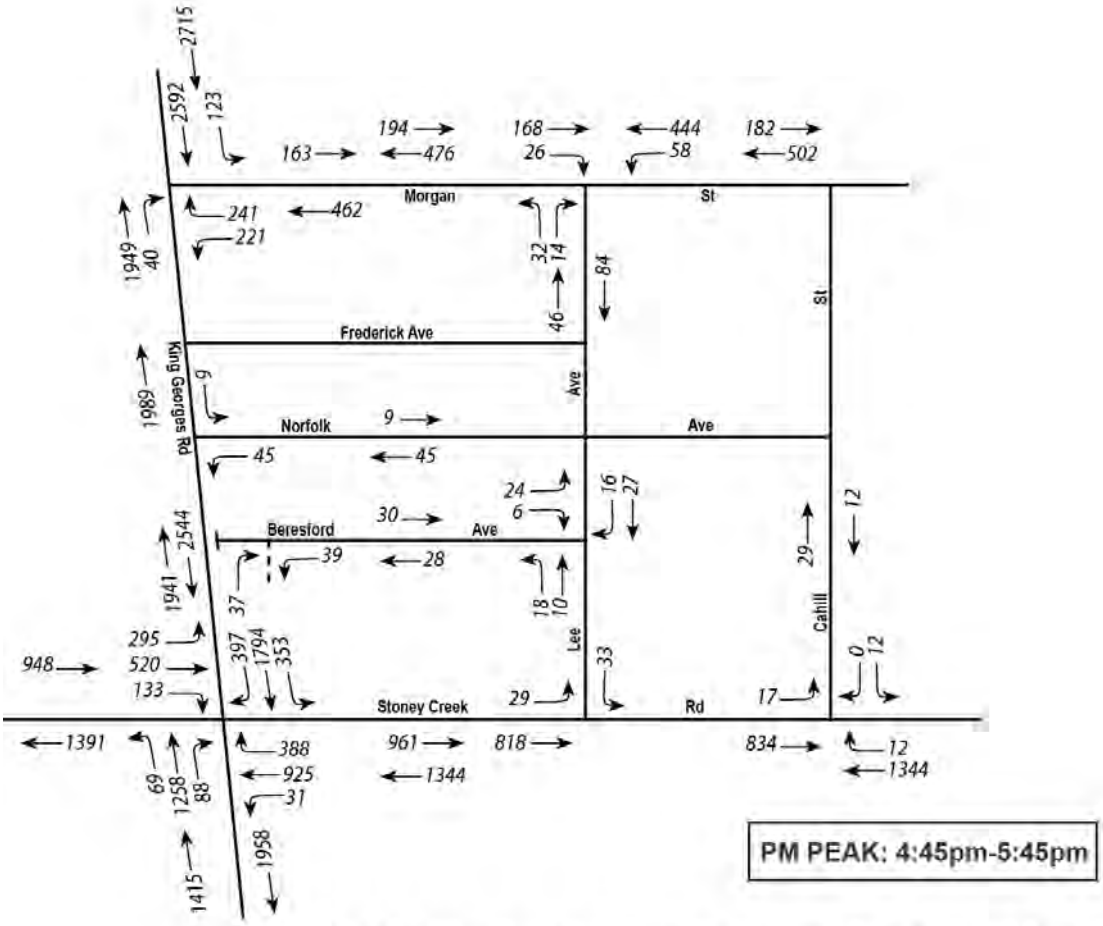
	AM Peak Period	PM Peak Period
Supermarkets	5 vtph/100m^2 GLFA	15 vtph/100m^2 GLFA
Specialty Shops	2 vtph/100m^2 GLFA	5 vtph/100m^2 GLFA

The traffic generation potential of the proposed retail/residential development during the weekday AM and PM peak periods is calculated below:

	AM Peak			PM Peak		
	In	**Out**	**Total**	**In**	**Out**	**Total**
Residential						
36 x 1 and 2-bedroom apartments @ 0.5 vtph	3	15	18	15	3	18
8 x 3-bedroom apartments @ 0.65 vtph	1	4	5	4	1	5
Sub Total Residential	4	19	23	19	4	23
Retail						
Supermarket: 1514m^2 GLFA: AM – 5 vtph/100m^2 PM – 15 vtph/100m^2	38	38	76	115	115	230
Specialty Shops: 606m^2 GLFA: AM – 2 vtph/100m^2 PM – 5 vtph/100m^2	6	6	12	15	15	30
Sub Total Retail	44	44	88	130	130	260
Total	**48**	**63**	**111**	**149**	**134**	**283**

[2] *RTA "Guide to Traffic Generating Developments. Section 3 – Landuse Traffic Generation" October 2002*





EXISTING PEAK HOUR TRAFFIC FLOWS
FIGURE 5

As noted in the foregoing, although the site is currently vacant it formerly accommodated a service station with vehicular access off both Stoney Creek Road and Lee Avenue. That former service station use would have had a weekday peak period traffic generation potential in the order of 100 vtph. Because implementation of the proposed development will preclude recommencement of that former service station use, its traffic generation potential can be discounted by 100 vtph. However in order to maintain a conservative approach to this traffic assessment, no such discount has been applied.

While existing traffic flows on the road network serving the site can provide an indication of the likely origin/destination characteristics of traffic generated by the proposed development, there is no reliable way that the projected traffic generation potential of the proposed development can be accurately assigned to the road network serving the site. Notwithstanding, the traffic assignment adopted for the purposes of this assessment is:

	AM Peak		PM Peak	
	Approach	**Depart**	**Approach**	**Depart**
King Georges Road - North	20%	40%	40%	20%
King Georges Road – South	40%	20%	20%	40%
Stoney Creek Road – West	20%	20%	20%	20%
Stoney Creek Road – East*	15%	15%	15%	15%
Morgan Street – East	5%	5%	5%	5%

**Traffic approaching from Stoney Creek Road (East) will transfer to Morgan Street (westbound) to access the site*

Assignment of the projected traffic generation potential of the proposed development during the weekday AM and PM peak periods is summarised on Figure 6.

Traffic Implications – Road Network Capacity

The effect of the additional traffic generated by the proposed development on key intersections on the road network serving the site 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 key intersections on the road network serving the site under existing and projected post-development traffic demand during the weekday AM and PM peak periods is summarised on the table reproduced in the following pages revealing that:

> **Existing Traffic Demand**: All intersections perform satisfactorily except for the King Georges Road/Stoney Creek Road intersection which currently operates near capacity during the AM peak hour and at capacity during the PM peak hour.

Post-Development: All intersections operate satisfactorily during the AM and PM peak hour except for the King Georges Road/Stoney Creek Road intersection which operates near capacity during the AM peak hour and at capacity during the PM peak hour. The King Georges Road/Morgan Street intersection operates near capacity during the PM peak hour only.

The results of the SIDRA analysis confirm that the proposed development has no unacceptable traffic implications in terms of road network capacity because:

- the level of service at the intersections during the AM and PM peak hour is generally the same under both existing and projected post-development traffic demand
- the increased average delay at each of the intersections as a consequence of the proposed development is relatively minor
- the additional traffic demand on the most congested intersection on the road network serving the site (King Georges Road/Stoney Creek Road) as a consequence of the proposed development is only minor – an increase of only 60 vtph (or 0.95%) during the AM peak period when the traffic demand on the intersection is in the order of 6287; and an increase of only 150 vtph (or 2.4%) during the PM peak hour when the existing traffic flows through the intersection are in the order of 6251 vtph
- the poor level of service indicated for the King Georges Road/Morgan Street intersection is a consequence of the phase settings under which the intersection currently operates. A better Level of Services (LOS – B) can be achieved by adjusting those phase settings
- the analysis does not take into account the traffic generation potential of the former service station use of the site.

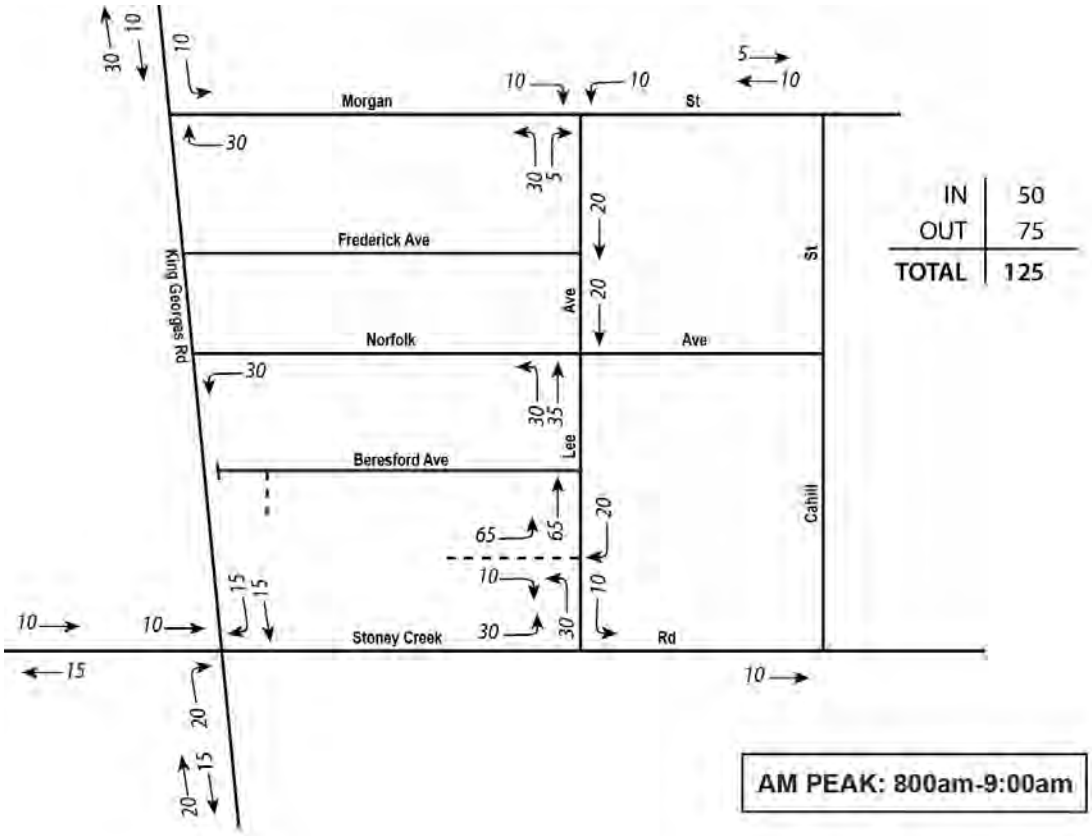
Existing Conditions

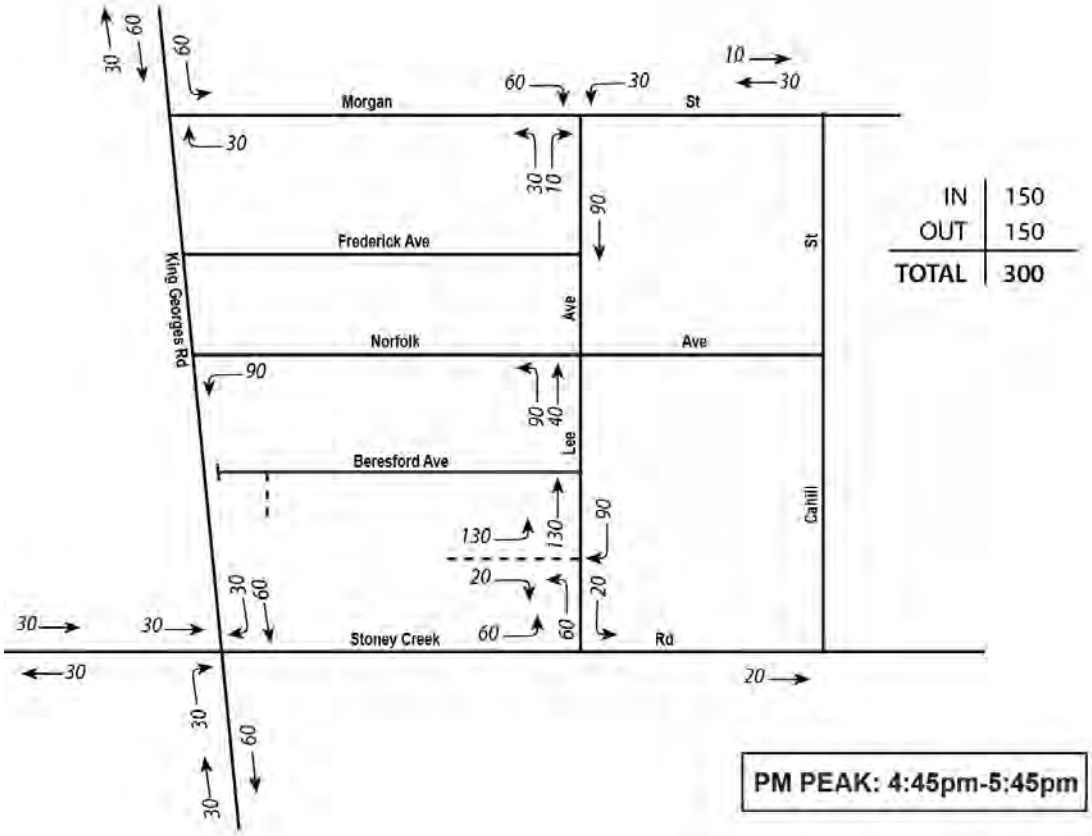
Intersections	Control Type	AM Peak Hour		PM Peak Hour	
		Level of Service	Average Delay (sec)	Level of Service	Average Delay (sec)
King Georges Rd-Morgan St	Signals	C	29	C	33
King Georges Road-Norfolk Ave	Give-way	A	8	A	11
King Georges Rd-Stoney Creek Rd	Signals	D	54	E	57
Stoney Creek Rd-Lee Ave	Give-way	A	9	A	7
Lee Ave-Beresford Ave	Give-way	A	5	A	5
Lee Ave-Morgan St	Give-way	A	10	A	11

Post Development Conditions

Intersections	Control Type	AM Peak Hour		PM Peak Hour	
		Level of Service	Average Delay (sec)	Level of Service	Average Delay (sec)
King Georges Rd-Morgan St	Signals	C	31	D	45
King Georges Road-Norfolk Ave	Give-way	A	8	A	13
King Georges Rd-Stoney Creek Rd	Signals	D	56	E	63
Stoney Creek Rd-Lee Ave	Give-way	A	9	A	6
Lee Ave-Beresford Ave	Give-way	A	5	A	5
Lee Ave-Morgan St	Give-way	A	8	A	12

*Note: * - Worst movement average delays are reported for sign-controlled or roundabout intersections*





TRAFFIC ASSIGNMENT
FIGURE 6

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 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[3] 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.

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

Traffic-Related Environmental Effect

The access routes likely to be used by traffic when approaching/departing the proposed development, and the additional traffic demand on those access routes, are shown on Figure 6. A comparison of existing and projected AM and PM peak period traffic flows on those routes is set out on the table below:

	Existing Traffic Flow		Projected Post-Development Traffic Flow	
	AM Peak	**PM Peak**	**AM Peak**	**PM Peak**
Lee Avenue (at Stoney Creek Road)	63	62	105	142
Lee Avenue (at Morgan Street)	133	130	188	260
Norfolk Avenue (at King Georges Rd)	39	69	69	159
Morgan Street (at King Georges Road)	633	625	673	715
Morgan Street (west of Lee Street)	663	670	703	760
Morgan Street (east of Lee Street)	692	684	707	724

The RTA Guidelines[4] specify the following *environmental capacity* performance standards for residential streets:

	Environmental Goal	Maximum
Local Street	200 vtph	300 vtph
Collector Road	300 vtph	500 vtph

As can be observed:

- the additional traffic demand on the local street system which provides access to the site is restricted to relatively few residential streets, Lee Avenue, Norfolk Avenue and Morgan Street

- the projected post-development traffic demand is less than the *maximum* level of traffic activity recommended by the *environmental capacity* performance standards for *local residential streets* by the RTA Guidelines in Lee Avenue and Norfolk Avenue

- while the level of traffic activity on Morgan Street exceeds the *maximum* level for a *collector road* specified by the *environmental capacity* performance standards adopted by the RTA Guidelines under both existing and projected post-development traffic demand, as noted in the foregoing Morgan Street also serves a *sub-arterial road* function. In these circumstances, the non-compliance with the *environmental capacity* performance standard recommended by the RTA Guidelines for *collector roads* under both existing and projected post-development traffic demand is acceptable.

[4] *RTA "Guide to Traffic Generating Developments. Section 4 – Interpretation of Traffic Impacts" October 2002*

In summary, the additional traffic demand on the local streets system serving the site has no unacceptable traffic-related environmental effect.

4. Loading Area/Delivery Vehicles

As noted in the foregoing, the proposed development makes provision for a loading area 20.2m x 4.5m on the Basement 1 Level of the building. That loading area can accommodate a heavy rigid vehicle (HRV) 12.5m long. Vehicular access for the loading area is via the driveway and access ramp off Lee Avenue with a turntable provided to facilitate truck access t/from the loading dock.

The majority of commercial vehicles using the loading area will be generated by the Aldi Supermarket, with an anticipated average of up to 6-7 deliveries per day concentrated during the morning period. In this respect, Aldi have advised that the largest size vehicle required for deliveries to the supermarket is the 12.5m long HRV, and have provided the following indicative delivery schedule:

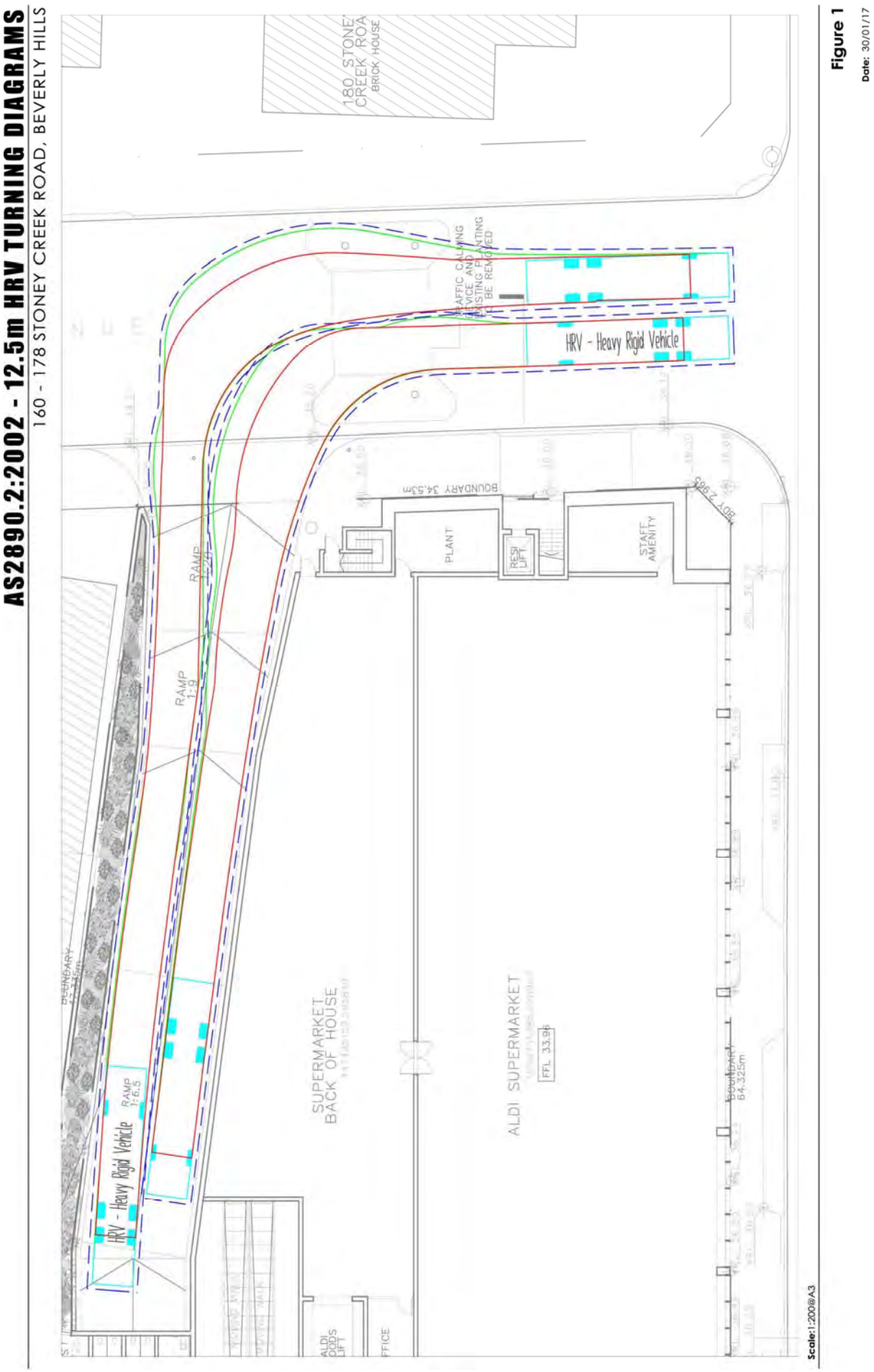
Produce:	1-2 deliveries by HRV generally between 6.00-8.00am
Dry Goods:	2-3 deliveries a week by HRV, generally during the morning
Bread:	1 delivery per day by an MRV (or smaller vehicle), typically between 7.00-8.00am
Miscellaneous Goods:	2-3 deliveries per day by an MRV (or smaller vehicle), spread throughout the day.

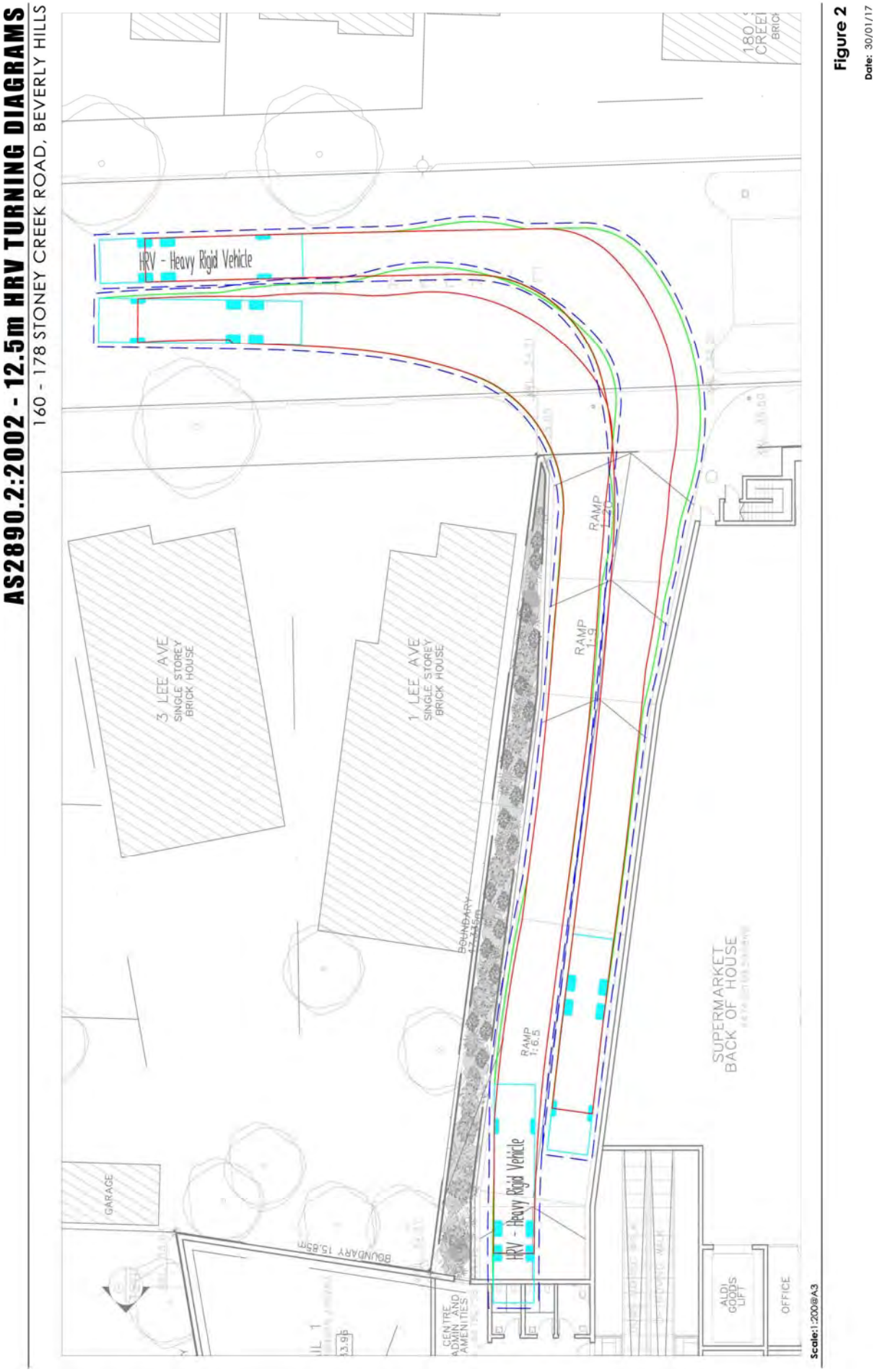
It is difficult to identify the delivery vehicle generation potential of the 3 small retail tenancies incorporated in the proposed development without knowing the type of retailing those shops will accommodate. However, in general; it can be assumed that deliveries to/from the smaller retail tenancies in the proposed development are expected to be made using a MRV or smaller vehicle. It can also be anticipated that these retail tenancies:

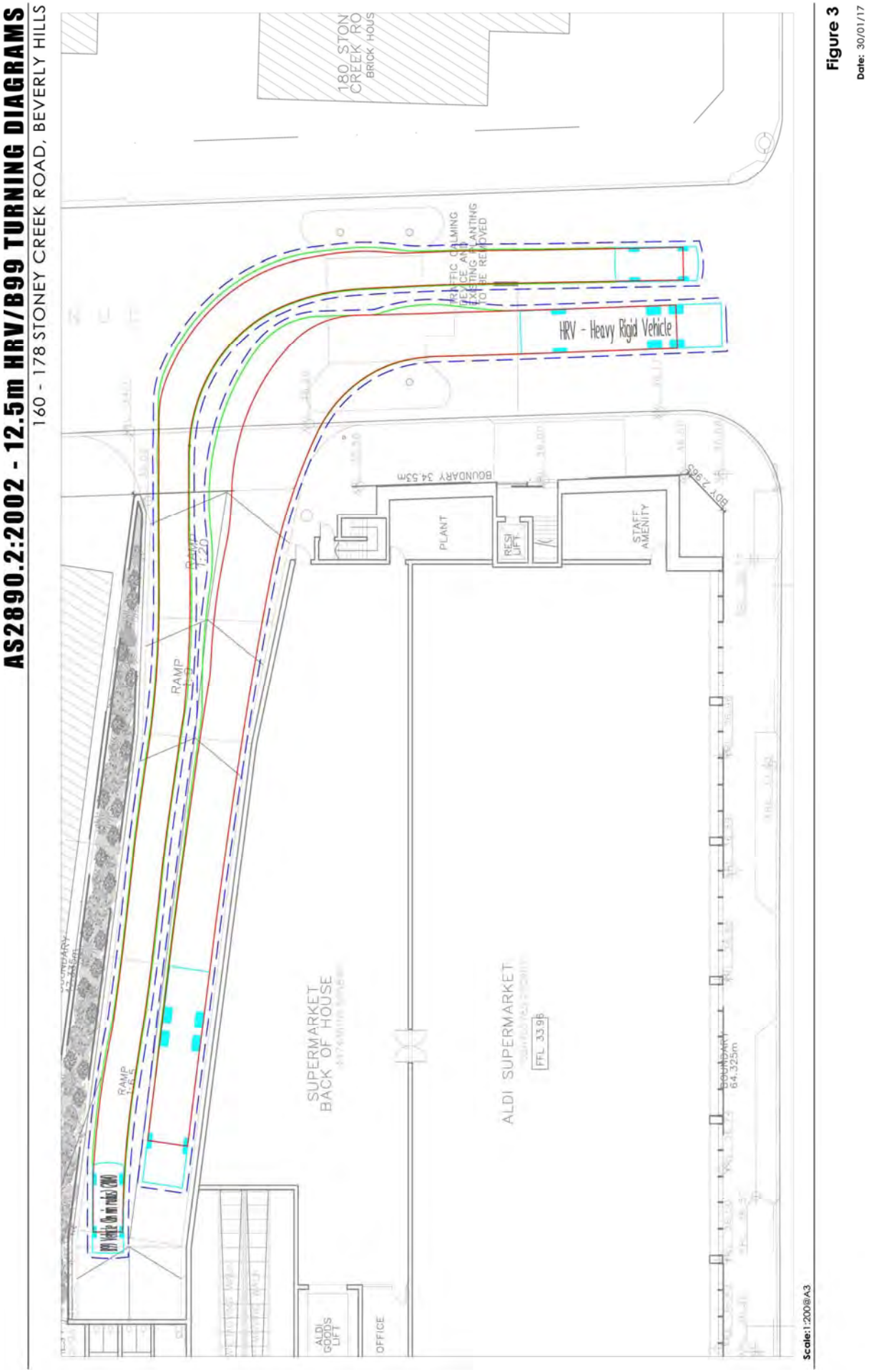
- will each typically generate 1 delivery per week by MRV (ie 3 x MRV deliveries per week)
- will collectively generate another 6 deliveries per week in smaller vehicles (small vans, utes etc) with some of these smaller vehicles choosing to park in the carpark while making deliveries.

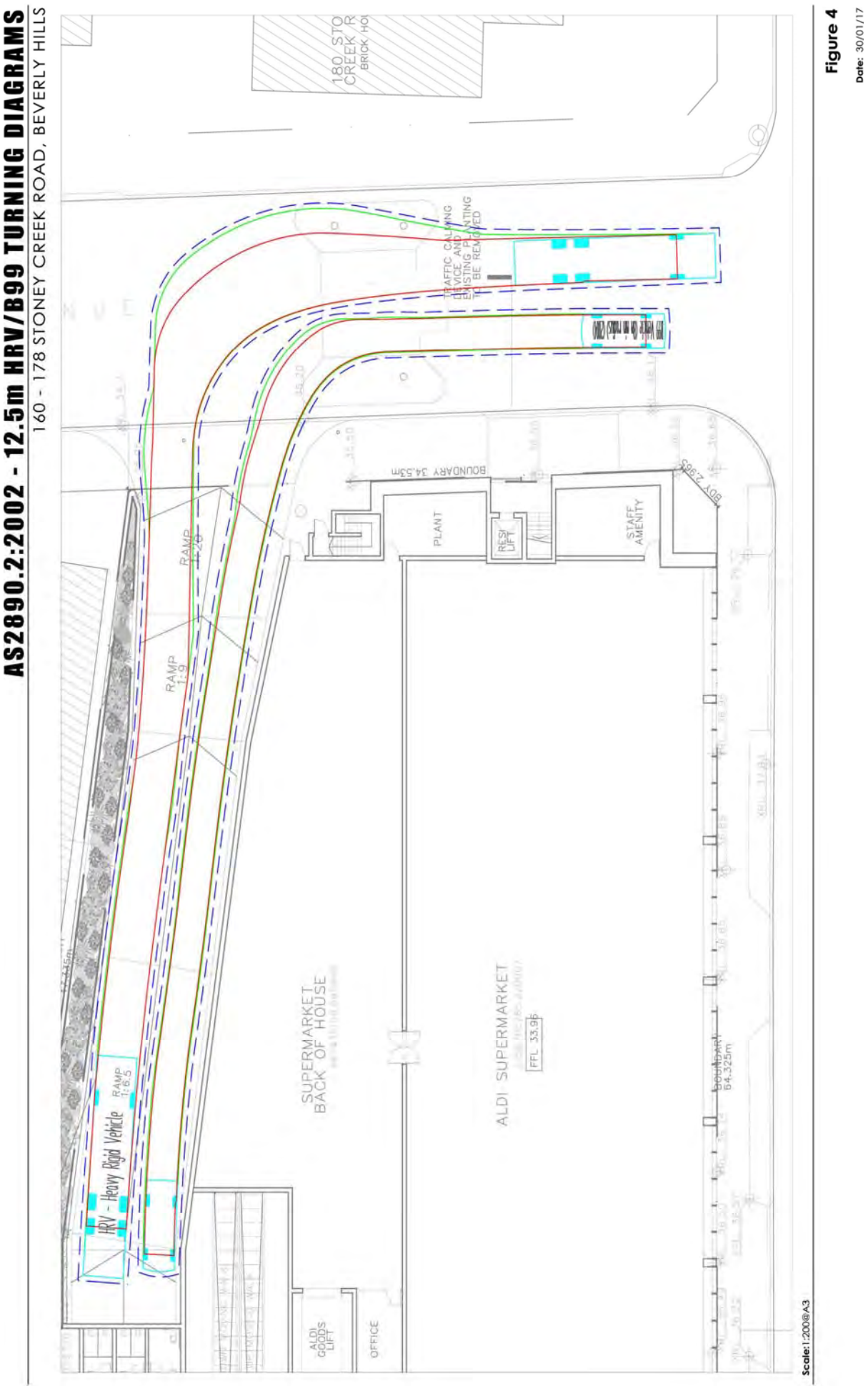
Turning path diagrams showing the HRV entering/departing the site via the Lee Avenue driveway, and entering/departing the driveway with a B85 car entering/departing the driveway concurrently, and the HRV manoeuvring into and out of the loading area are reproduced in the following pages.

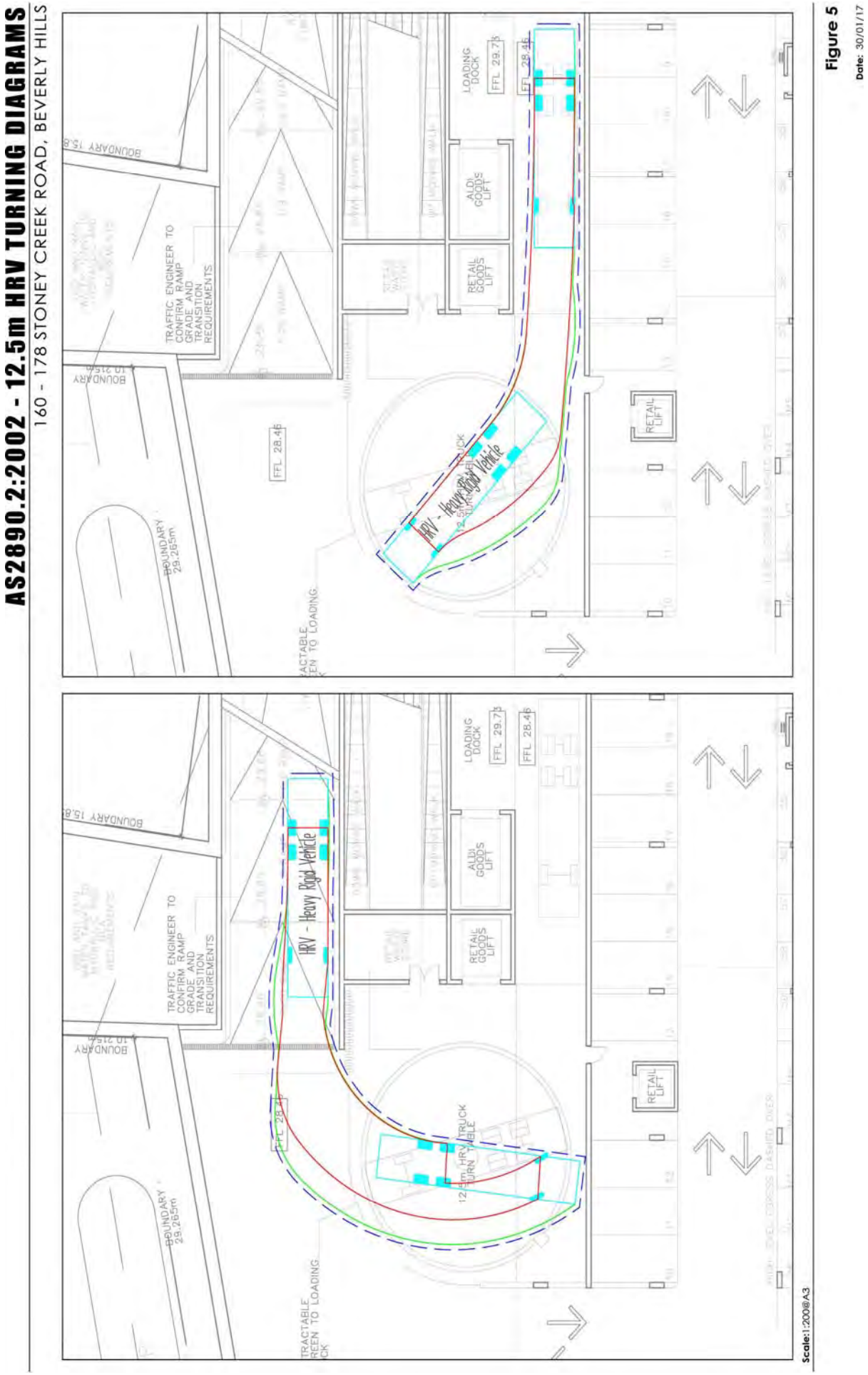
In the circumstances, it can be concluded that the loading area/delivery vehicle arrangements adopted for the proposed development are satisfactory.

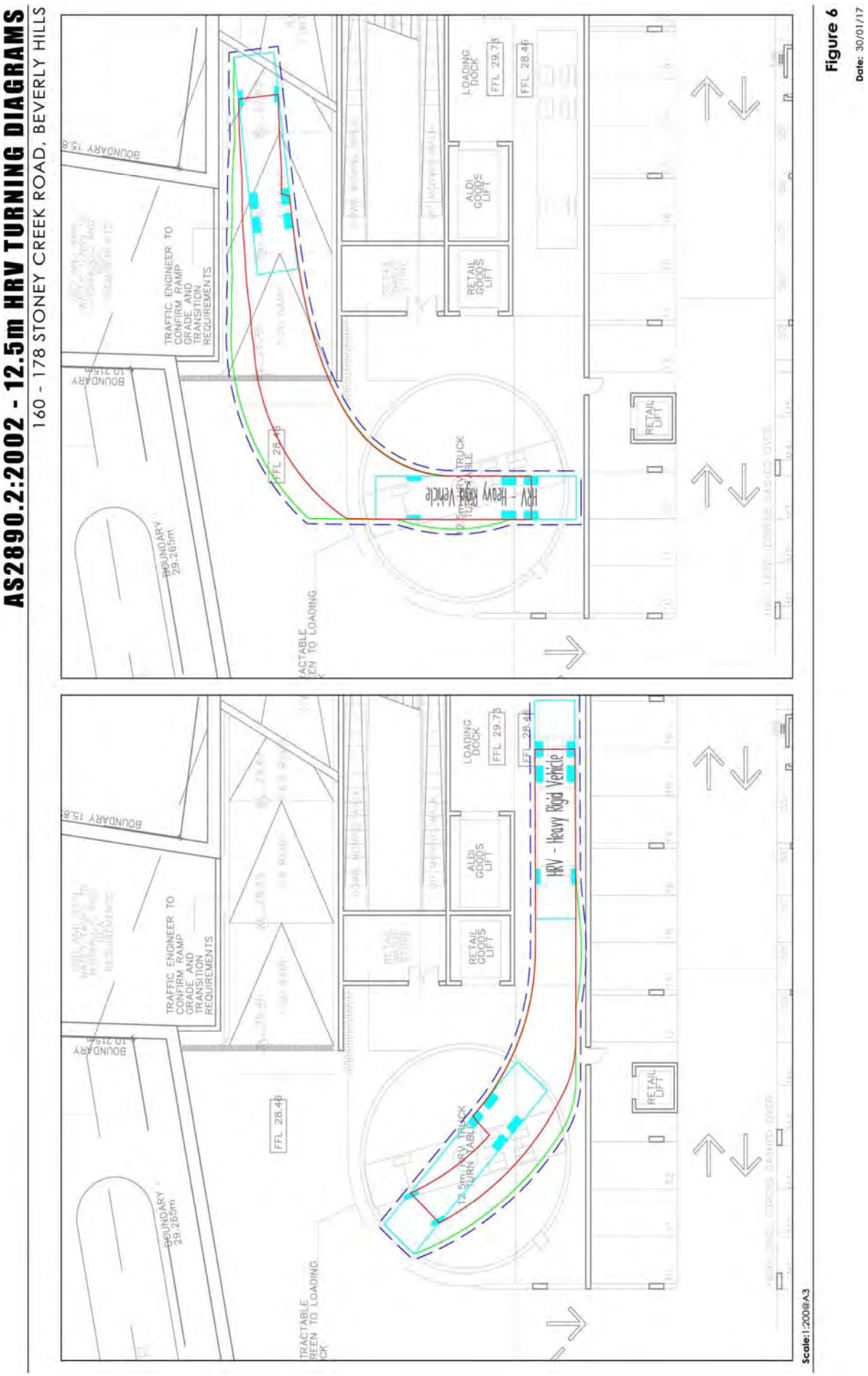

AS2890.2:2002 - 12.5m HRV TURNING DIAGRAMS
160 - 178 STONEY CREEK ROAD, BEVERLY HILLS
180 STONEY CREEK ROAD
BRICK HOUSE
TRAFFIC CALMING DEVICE AND EXISTING PLANTING TO BE REMOVED
HRV - Heavy Rigid Vehicle
BOUNDARY 34.53m
RAMP 1:9
PLANT
RESI LIFT
STAFF AMENITY
SUPERMARKET BACK OF HOUSE
ALDI SUPERMARKET
FFL 33.96
BOUNDARY 84.323m
RAMP 1:6.5
HRV - Heavy Rigid Vehicle
ALDI GOODS LIFT
OFFICE
Figure 1
Date: 30/01/17
Scale: 1:200@A3


AS2890.2:2002 - 12.5m HRV TURNING DIAGRAMS
160 - 178 STONEY CREEK ROAD, BEVERLY HILLS
HRV - Heavy Rigid Vehicle
3 LEE AVE
SINGLE STOREY
BRICK HOUSE
1 LEE AVE
SINGLE STOREY
BRICK HOUSE
RAMP
1:9
RAMP
1:9
RAMP
1:6.5
SUPERMARKET
BACK OF HOUSE
HRV - Heavy Rigid Vehicle
GARAGE
BOUNDARY 15.83m
CENTRE
ADMIN AND
AMENITIES
ALDI
GOODS
LIFT
OFFICE
Scale:1:200@A3
Figure 2
Date: 30/01/17


AS2890.2:2002 - 12.5m HRV/B99 TURNING DIAGRAMS
160 - 178 STONEY CREEK ROAD, BEVERLY HILLS
180 STONEY CREEK RD
BRICK HOUSE
TRAFFIC CALMING DEVICE AND EXISTING PLANTING TO BE REMOVED
HRV - Heavy Rigid Vehicle
BOUNDARY 34.53m
B99 7.985
PLANT
RESI LIFT
STAFF AMENITY
RAMP 1:20
RAMP 1:20
RAMP 1:6.5
SUPERMARKET BACK OF HOUSE
ALDI SUPERMARKET
FFL 33.96
Boundary 64.325m
ALDI GOODS LIFT
OFFICE
Scale:1:200@A3
Figure 3
Date: 30/01/17


AS2890.2:2002 - 12.5m HRV/B99 TURNING DIAGRAMS
160 - 178 STONEY CREEK ROAD, BEVERLY HILLS
Figure 4
Date: 30/01/17
HRV - Heavy Rigid Vehicle
RAMP 1:8.5
RAMP 1:9
RAMP 1:20
SUPERMARKET BACK OF HOUSE
ALDI SUPERMARKET
FFL 33.96
PLANT
RESI LIFT
STAFF AMENITY
BOUNDARY 34.53m
BOUNDARY 64.325m
ALDI GOODS LIFT
OFFICE
TRAFFIC CALMING DEVICE AND EXISTING PLANTING TO BE REMOVED
Scale:1:200@A3


AS2890.2:2002 - 12.5m HRV TURNING DIAGRAMS
160 - 178 STONEY CREEK ROAD, BEVERLY HILLS
HRV - Heavy Rigid Vehicle
12.5m HRV TRUCK TURN TABLE
TRAFFIC ENGINEER TO CONFIRM RAMP GRADE AND TRANSITION REQUIREMENTS
BOUNDARY 29.265m
LOADING DOCK
FFL 29.7
FFL 28.4
ALDI GOODS LIFT
RETAIL GOODS LIFT
RETAIL LIFT
TRACTABLE
Scale:1:200@A3
Figure 5
Date: 30/01/17


AS2890.2:2002 - 12.5m HRV TURNING DIAGRAMS
160 - 178 STONEY CREEK ROAD, BEVERLY HILLS
TRAFFIC ENGINEER TO CONFIRM RAMP GRADE AND TRANSITION REQUIREMENTS
BOUNDARY 29.265m
BOUNDARY 15.8
LOADING DOCK
FFL 29.75
FFL 28.46
ALDI GOODS LIFT
RETAIL GOODS LIFT
RETAIL LIFT
FFL 28.46
HRV - Heavy Rigid Vehicle
12.5m HRV TRUCK TURN PATH
TRACTABLE
Scale:1:200@A3
Figure 6
Date: 30/01/17

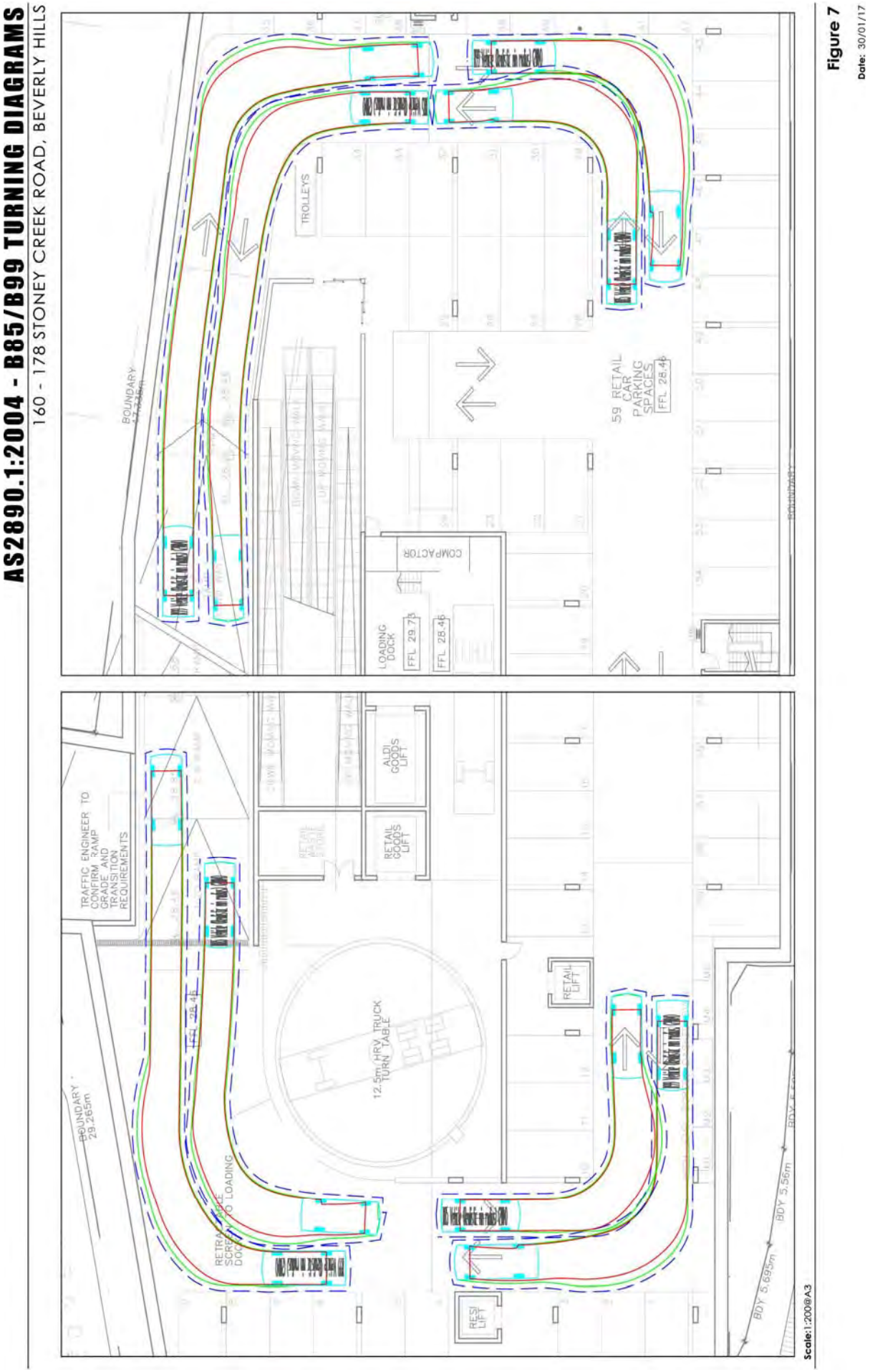


Figure 7

Date: 30/01/17

Appendix A
Traffic Count Data

R.O.A.R. DATA

Reliable, Original & Authentic Results

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

Client : John Coady Consulting
Job No/Name : 5316 BEVERLY HILLS 166 - 178 Stoney Creek Rd
Day/Date : Thursday / 11th September 2014

All Vehicles	NORTH			WEST			SOUTH			EAST			
	King Georges Rd			*Stoney Creek Rd*			*King Georges Rd*			*Stoney Creek Rd*			
Time Per	L	T	R	L	T	R	L	T	R	L	T	R	TOT
0700 - 0715	95	277	68	50	302	6	3	503	21	7	66	123	**1521**
0715 - 0730	114	228	41	57	261	5	4	505	43	8	83	96	**1445**
0730 - 0745	98	234	41	60	285	11	4	476	28	13	106	111	**1467**
0745 - 0800	142	264	57	35	250	14	5	528	42	14	157	74	**1582**
0800 - 0815	100	266	59	68	279	18	4	428	35	18	150	91	**1516**
0815 - 0830	175	337	88	59	302	42	1	451	40	18	142	83	**1738**
0830 - 0845	138	281	68	71	196	35	6	361	52	24	137	91	**1460**
0845 - 0900	77	298	50	47	241	86	12	366	41	52	179	124	**1573**
Period End	**939**	**2185**	**472**	**447**	**2116**	**217**	**39**	**3618**	**302**	**154**	**1020**	**793**	**12302**

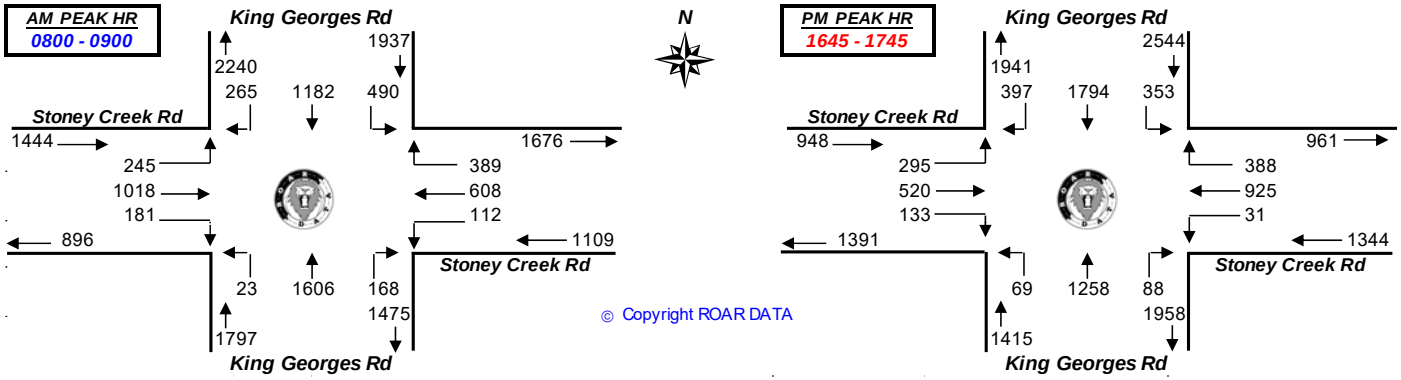
All Vehicles	NORTH			WEST			SOUTH			EAST			
	King Georges Rd			*Stoney Creek Rd*			*King Georges Rd*			*Stoney Creek Rd*			
Time Per	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1530 - 1545	78	399	78	77	141	39	7	321	13	10	234	104	**1501**
1545 - 1600	72	381	85	75	140	32	22	375	19	8	242	86	**1537**
1600 - 1615	88	408	89	91	139	32	12	287	19	11	205	78	**1459**
1615 - 1630	90	417	115	68	115	35	18	247	18	7	244	94	**1468**
1630 - 1645	98	399	90	71	130	44	21	328	22	7	230	84	**1524**
1645 - 1700	80	422	107	65	105	49	21	285	20	4	231	109	**1498**
1700 - 1715	105	543	82	78	167	29	13	278	18	9	273	104	**1699**
1715 - 1730	64	398	110	77	132	30	19	377	21	9	188	105	**1530**
1730 - 1745	104	431	98	75	116	25	16	318	29	9	233	70	**1524**
1745 - 1800	115	427	73	65	158	38	12	247	24	8	205	91	**1463**
1800 - 1815	126	403	116	50	150	18	14	288	28	7	223	112	**1535**
1815 - 1830	113	445	78	73	161	35	20	315	31	16	241	127	**1655**
Period End	**1133**	**5073**	**1121**	**865**	**1654**	**406**	**195**	**3666**	**262**	**105**	**2749**	**1164**	**18393**

All Vehicles	NORTH			WEST			SOUTH			EAST			
	King Georges Rd			*Stoney Creek Rd*			*King Georges Rd*			*Stoney Creek Rd*			
Peak Time	L	T	R	L	T	R	L	T	R	L	T	R	TOT
0700 - 0800	449	1003	207	202	1098	36	16	2012	134	42	412	404	**6015**
0715 - 0815	454	992	198	220	1075	48	17	1937	148	53	496	372	**6010**
0730 - 0830	515	1101	245	222	1116	85	14	1883	145	63	555	359	**6303**
0745 - 0845	555	1148	272	233	1027	109	16	1768	169	74	586	339	**6296**
0800 - 0900	490	1182	265	245	1018	181	23	1606	168	112	608	389	**6287**

All Vehicles	NORTH			WEST			SOUTH			EAST			
	King Georges Rd			*Stoney Creek Rd*			*King Georges Rd*			*Stoney Creek Rd*			
Peak Time	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1530 - 1630	328	1605	367	311	535	138	59	1230	69	36	925	362	**5965**
1545 - 1645	348	1605	379	305	524	143	73	1237	78	33	921	342	**5988**
1600 - 1700	356	1646	401	295	489	160	72	1147	79	29	910	365	**5949**
1615 - 1715	373	1781	394	282	517	157	73	1138	78	27	978	391	**6189**
1630 - 1730	347	1762	389	291	534	152	74	1268	81	29	922	402	**6251**
1645 - 1745	353	1794	397	295	520	133	69	1258	88	31	925	388	**6251**
1700 - 1800	388	1799	363	295	573	122	60	1220	92	35	899	370	**6216**
1715 - 1815	409	1659	397	267	556	111	61	1230	102	33	849	378	**6052**
1730 - 1830	458	1706	365	263	585	116	62	1168	112	40	902	400	**6177**

PEAK HOUR	**490**	**1182**	**265**	**245**	**1018**	**181**	**23**	**1606**	**168**	**112**	**608**	**389**	**6287**

PEAK HOUR	**353**	**1794**	**397**	**295**	**520**	**133**	**69**	**1258**	**88**	**31**	**925**	**388**	**6251**



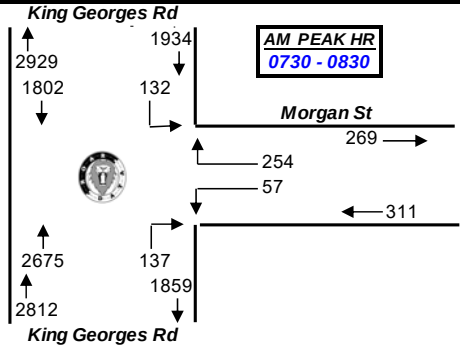
R.O.A.R. DATA
Reliable, Original & Authentic Results
Ph.88196847, Fax 88196849, Mob.0418-239019

Client : John Coady Consulting
Job No/Name : 5316 BEVERLY HILLS 166 - 178 Stoney Creek Rd
Day/Date : Thursday / 11th September 2014

All Vehicles	NORTH		EAST		SOUTH		
	King		*Morgan St*		*King*		
Time Per	**T**	**L**	**R**	**L**	**R**	**T**	**TOTAL**
0700 - 0715	436	22	42	7	31	734	**1272**
0715 - 0730	397	20	49	8	30	779	**1283**
0730 - 0745	356	26	77	13	39	675	**1186**
0745 - 0800	437	24	37	12	33	749	**1292**
0800 - 0815	440	32	71	10	33	632	**1218**
0815 - 0830	569	50	69	22	32	619	**1361**
0830 - 0845	450	48	53	14	20	556	**1141**
0845 - 0900	466	42	75	30	32	582	**1227**
Period End	**3551**	**264**	**473**	**116**	**250**	**5326**	**9980**

All Vehicles	NORTH		EAST		SOUTH		
	King		*Morgan St*		*King*		
Peak Per	**T**	**L**	**R**	**L**	**R**	**T**	**TOTAL**
0700 - 0800	1626	92	205	40	133	2937	**5033**
0715 - 0815	1630	102	234	43	135	2835	**4979**
0730 - 0830	1802	132	254	57	137	2675	**5057**
0745 - 0845	1896	154	230	58	118	2556	**5012**
0800 - 0900	1925	172	268	76	117	2389	**4947**

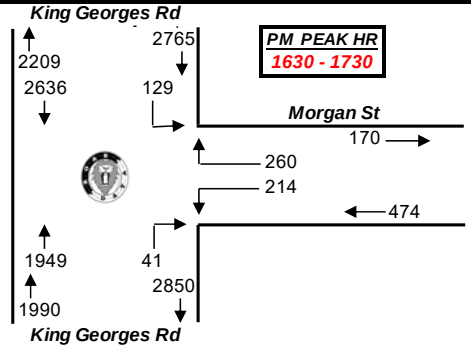
PEAK HR	1802	132	254	57	137	2675	5057



All Vehicles	NORTH		EAST		SOUTH		
	King		*Morgan St*		*King*		
Time Per	**T**	**L**	**R**	**L**	**R**	**T**	**TOTAL**
1530 - 1545	573	46	68	45	8	548	**1288**
1545 - 1600	611	36	84	38	8	503	**1280**
1600 - 1615	648	45	65	48	15	500	**1321**
1615 - 1630	594	42	90	38	18	445	**1227**
1630 - 1645	681	37	83	45	9	491	**1346**
1645 - 1700	682	26	59	59	7	455	**1288**
1700 - 1715	670	32	51	57	10	495	**1315**
1715 - 1730	603	34	67	53	15	508	**1280**
1730 - 1745	637	31	64	52	8	491	**1283**
1745 - 1800	666	32	59	29	4	468	**1258**
1800 - 1815	631	44	58	34	11	484	**1262**
1815 - 1830	622	45	44	52	13	475	**1251**
Period End	**7618**	**450**	**792**	**550**	**126**	**5863**	**15399**

All Vehicles	NORTH		EAST		SOUTH		
	King		*Morgan St*		*King*		
Peak Per	**T**	**L**	**R**	**L**	**R**	**T**	**TOTAL**
1530 - 1630	2426	169	307	169	49	1996	**5116**
1545 - 1645	2534	160	322	169	50	1939	**5174**
1600 - 1700	2605	150	297	190	49	1891	**5182**
1615 - 1715	2627	137	283	199	44	1886	**5176**
1630 - 1730	2636	129	260	214	41	1949	**5229**
1645 - 1745	2592	123	241	221	40	1949	**5166**
1700 - 1800	2576	129	241	191	37	1962	**5136**
1715 - 1815	2537	141	248	168	38	1951	**5083**
1730 - 1830	2556	152	225	167	36	1918	**5054**

PEAK HR	2636	129	260	214	41	1949	5229



R.O.A.R. DATA

Reliable, Original & Authentic Results

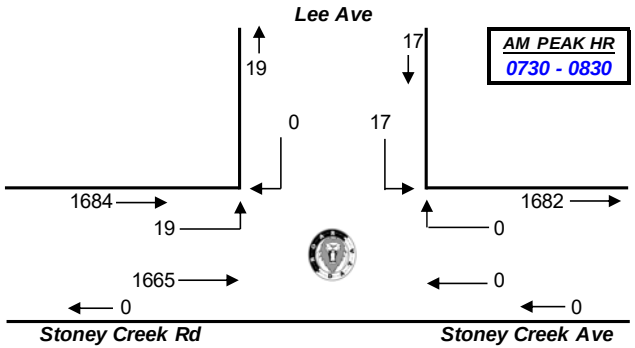
Ph.88196847, Fax 88196849, Mob.0418-239019

Client : John Coady Consulting
Job No/Name : 5316 BEVERLY HILLS 166 - 178 Stoney Creek Rd
Day/Date : Thursday / 11th September 2014

All Vehicles	WEST		NORTH		EAST		
	Stoney		*Lee Ave*		*Stoney*		
Time Per	L	T	R	L	T	R	TOTAL
0700 - 0715	1	475	0	1	0	0	**477**
0715 - 0730	2	375	0	4	0	0	**381**
0730 - 0745	6	438	0	3	0	0	**447**
0745 - 0800	4	368	0	4	0	0	**376**
0800 - 0815	6	391	0	6	0	0	**403**
0815 - 0830	3	468	0	4	0	0	**475**
0830 - 0845	15	404	0	8	0	0	**427**
0845 - 0900	12	234	0	9	0	0	**255**
Period End	**49**	**3153**	**0**	**39**	**0**	**0**	**3241**

	WEST		NORTH		EAST		
	Stoney		*Lee Ave*		*Stoney*		
Peak Per	L	T	R	L	T	R	TOTAL
0700 - 0800	13	1656	0	12	0	0	**1681**
0715 - 0815	18	1572	0	17	0	0	**1607**
0730 - 0830	19	1665	0	17	0	0	**1701**
0745 - 0845	28	1631	0	22	0	0	**1681**
0800 - 0900	36	1497	0	27	0	0	**1560**

PEAK HR	19	1665	0	17	0	0	1701

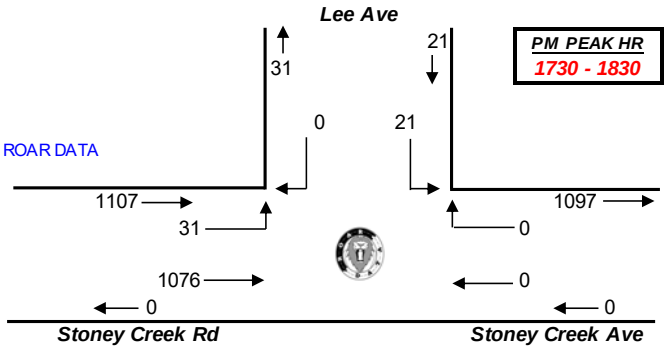


AM PEAK HR
0730 - 0830

All Vehicles	WEST		NORTH		EAST		
	Stoney		*Lee Ave*		*Stoney*		
Time Per	L	T	R	L	T	R	TOTAL
1530 - 1545	11	240	0	13	0	0	**264**
1545 - 1600	13	187	0	7	0	0	**207**
1600 - 1615	5	196	0	3	0	0	**204**
1615 - 1630	8	183	0	9	0	0	**200**
1630 - 1645	9	248	0	6	0	0	**263**
1645 - 1700	7	189	0	9	0	0	**205**
1700 - 1715	9	216	0	10	0	0	**235**
1715 - 1730	4	193	0	8	0	0	**205**
1730 - 1745	9	220	0	6	0	0	**235**
1745 - 1800	3	301	0	7	0	0	**311**
1800 - 1815	7	290	0	4	0	0	**301**
1815 - 1830	12	265	0	4	0	0	**281**
Period End	**97**	**2728**	**0**	**86**	**0**	**0**	**2911**

	WEST		NORTH		EAST		
	Stoney		*Lee Ave*		*Stoney*		
Peak Per	L	T	R	L	T	R	TOTAL
1530 - 1630	37	806	0	32	0	0	**875**
1545 - 1645	35	814	0	25	0	0	**874**
1600 - 1700	29	816	0	27	0	0	**872**
1615 - 1715	33	836	0	34	0	0	**903**
1630 - 1730	29	846	0	33	0	0	**908**
1645 - 1745	29	818	0	33	0	0	**880**
1700 - 1800	25	930	0	31	0	0	**986**
1715 - 1815	23	1004	0	25	0	0	**1052**
1730 - 1830	31	1076	0	21	0	0	**1128**

PEAK HR	31	1076	0	21	0	0	1128



PM PEAK HR
1730 - 1830

N

R.O.A.R. DATA

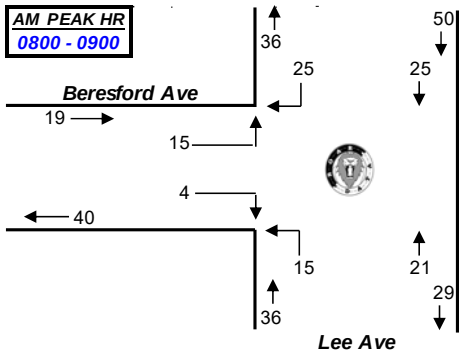
Reliable, Original & Authentic Results

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

Client : John Coady Consulting
Job No/Name : 5316 BEVERLY HILLS 166 - 178 Stoney Creek Rd
Day/Date : Thursday / 11th September 2014

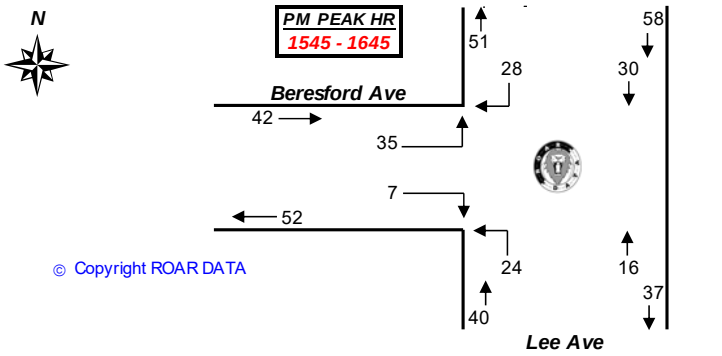
All Vehicles	NORTH Lee Ave		WEST Beresford		SOUTH Lee Ave		
Time Per	R	T	L	R	L	T	TOTAL
0700 - 0715	1	0	1	0	2	1	**5**
0715 - 0730	2	3	2	1	0	3	**11**
0730 - 0745	1	5	1	0	0	3	**10**
0745 - 0800	2	2	1	2	2	2	**11**
0800 - 0815	1	6	1	0	1	4	**13**
0815 - 0830	3	5	4	0	1	2	**15**
0830 - 0845	9	5	5	1	8	4	**32**
0845 - 0900	12	9	5	3	5	11	**45**
Period End	**31**	**35**	**20**	**7**	**19**	**30**	**142**

All Vehicles	NORTH Lee Ave		WEST Beresford		SOUTH Lee Ave		
Peak Per	R	T	L	R	L	T	TOTAL
0700 - 0800	6	10	5	3	4	9	**37**
0715 - 0815	6	16	5	3	3	12	**45**
0730 - 0830	7	18	7	2	4	11	**49**
0745 - 0845	15	18	11	3	12	12	**71**
0800 - 0900	25	25	15	4	15	21	**105**
PEAK HR	**25**	**25**	**15**	**4**	**15**	**21**	**105**



All Vehicles	NORTH Lee Ave		WEST Beresford		SOUTH Lee Ave		
Time Per	R	T	L	R	L	T	TOTAL
1530 - 1545	2	10	2	1	8	4	**27**
1545 - 1600	5	6	11	3	5	4	**34**
1600 - 1615	8	10	8	1	7	2	**36**
1615 - 1630	7	9	5	2	5	6	**34**
1630 - 1645	8	5	11	1	7	4	**36**
1645 - 1700	4	7	5	3	7	0	**26**
1700 - 1715	6	7	8	1	3	4	**29**
1715 - 1730	4	8	7	1	2	3	**25**
1730 - 1745	2	5	4	1	6	3	**21**
1745 - 1800	4	6	9	1	3	0	**23**
1800 - 1815	2	2	5	2	2	1	**14**
1815 - 1830	1	3	6	1	9	3	**23**
Period End	**53**	**78**	**81**	**18**	**64**	**34**	**328**

All Vehicles	NORTH Lee Ave		WEST Beresford		SOUTH Lee Ave		
Peak Per	R	T	L	R	L	T	TOTAL
1530 - 1630	22	35	26	7	25	16	**131**
1545 - 1645	28	30	35	7	24	16	**140**
1600 - 1700	27	31	29	7	26	12	**132**
1615 - 1715	25	28	29	7	22	14	**125**
1630 - 1730	22	27	31	6	19	11	**116**
1645 - 1745	16	27	24	6	18	10	**101**
1700 - 1800	16	26	28	4	14	10	**98**
1715 - 1815	12	21	25	5	13	7	**83**
1730 - 1830	9	16	24	5	20	7	**81**
PEAK HR	**28**	**30**	**35**	**7**	**24**	**16**	**140**



R.O.A.R. DATA

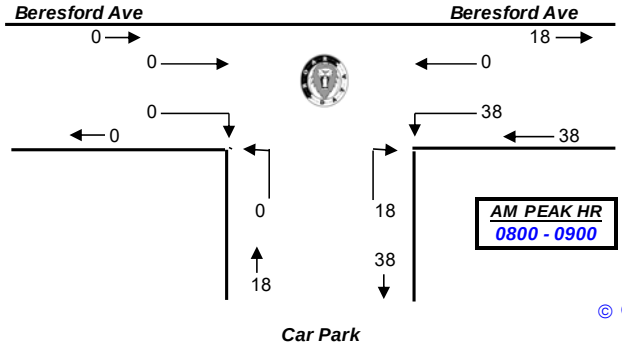
Reliable, Original & Authentic Results

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

Client : John Coady Consulting
Job No/Name : 5316 BEVERLY HILLS 166 - 178 Stoney Creek Rd
Day/Date : Thursday / 11th September 2014

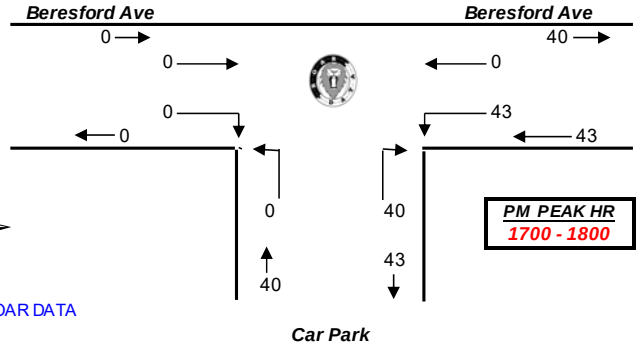
All Vehicles	WEST Beresford Ave		SOUTH Car Park		EAST Beresford Ave		
Time Per	R	T	L	R	T	L	TOTAL
0700 - 0715	0	0	0	1	0	1	2
0715 - 0730	0	0	0	1	0	1	2
0730 - 0745	0	0	0	2	0	3	5
0745 - 0800	0	0	0	2	0	2	4
0800 - 0815	0	0	0	0	0	1	1
0815 - 0830	0	0	0	2	0	3	5
0830 - 0845	0	0	0	3	0	8	11
0845 - 0900	0	0	0	13	0	26	39
Period End	**0**	**0**	**0**	**24**	**0**	**45**	**69**

All Vehicles	WEST Beresford Ave		SOUTH Car Park		EAST Beresford Ave		
Peak Per	R	T	L	R	T	L	TOTAL
0700 - 0800	0	0	0	6	0	7	13
0715 - 0815	0	0	0	5	0	7	12
0730 - 0830	0	0	0	6	0	9	15
0745 - 0845	0	0	0	7	0	14	21
0800 - 0900	0	0	0	18	0	38	56
PEAK HR	**0**	**0**	**0**	**18**	**0**	**38**	**56**



All Vehicles	WEST Beresford Ave		SOUTH Car Park		EAST Beresford Ave		
Time Per	R	T	L	R	T	L	TOTAL
1530 - 1545	0	0	0	4	0	6	10
1545 - 1600	0	0	0	9	0	12	21
1600 - 1615	0	0	0	9	0	10	19
1615 - 1630	0	0	0	6	0	11	17
1630 - 1645	0	0	0	9	0	15	24
1645 - 1700	0	0	0	8	0	9	17
1700 - 1715	0	0	0	12	0	11	23
1715 - 1730	0	0	0	9	0	10	19
1730 - 1745	0	0	0	8	0	9	17
1745 - 1800	0	0	0	11	0	13	24
1800 - 1815	0	0	0	12	0	6	18
1815 - 1830	0	0	0	6	0	9	15
Period End	**0**	**0**	**0**	**103**	**0**	**121**	**224**

All Vehicles	WEST Beresford Ave		SOUTH Car Park		EAST Beresford Ave		
Peak Per	R	T	L	R	T	L	TOTAL
1530 - 1630	0	0	0	28	0	39	67
1545 - 1645	0	0	0	33	0	48	81
1600 - 1700	0	0	0	32	0	45	77
1615 - 1715	0	0	0	35	0	46	81
1630 - 1730	0	0	0	38	0	45	83
1645 - 1745	0	0	0	37	0	39	76
1700 - 1800	0	0	0	40	0	43	83
1715 - 1815	0	0	0	40	0	38	78
1730 - 1830	0	0	0	37	0	37	74
PEAK HR	**0**	**0**	**0**	**40**	**0**	**43**	**83**



R.O.A.R. DATA

Reliable, Original & Authentic Results

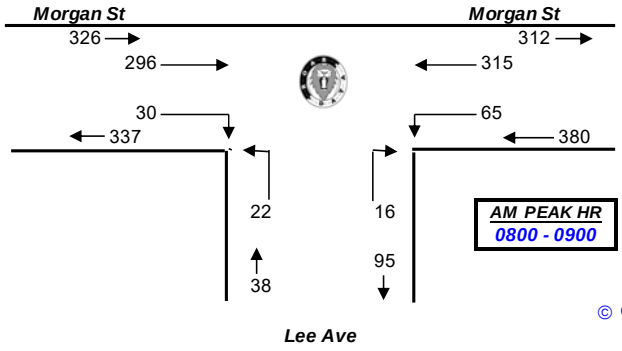
Ph.88196847, Fax 88196849, Mob.0418-239019

Client : John Coady Consulting
Job No/Name : 5316 BEVERLY HILLS 166 - 178 Stoney Creek Rd
Day/Date : Thursday / 11th September 2014

All Vehicles	WEST		SOUTH		EAST		
	Morgan St		*Lee Ave*		*Morgan St*		
Time Per	R	T	L	R	T	L	TOTAL
0700 - 0715	2	51	4	4	47	8	**116**
0715 - 0730	4	44	4	3	62	7	**124**
0730 - 0745	5	63	1	6	83	1	**159**
0745 - 0800	4	61	6	4	77	8	**160**
0800 - 0815	4	71	5	4	87	10	**181**
0815 - 0830	8	79	4	5	73	13	**182**
0830 - 0845	3	76	5	5	83	13	**185**
0845 - 0900	15	70	8	2	72	29	**196**
Period End	**45**	**515**	**37**	**33**	**584**	**89**	**1303**

All Vehicles	WEST		SOUTH		EAST		
	Morgan St		*Lee Ave*		*Morgan St*		
Peak Per	R	T	L	R	T	L	TOTAL
0700 - 0800	15	219	15	17	269	24	**559**
0715 - 0815	17	239	16	17	309	26	**624**
0730 - 0830	21	274	16	19	320	32	**682**
0745 - 0845	19	287	20	18	320	44	**708**
0800 - 0900	30	296	22	16	315	65	**744**

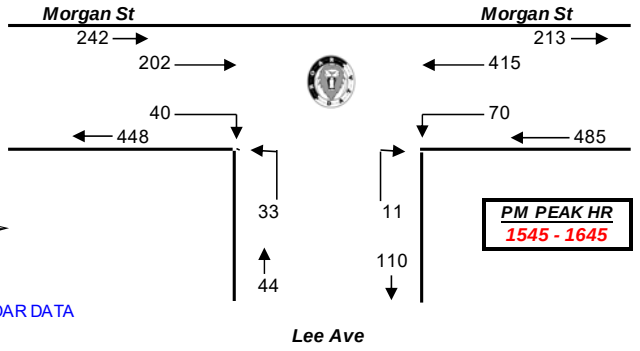
PEAK HR	30	296	22	16	315	65	744



All Vehicles	WEST		SOUTH		EAST		
	Morgan St		*Lee Ave*		*Morgan St*		
Time Per	R	T	L	R	T	L	TOTAL
1530 - 1545	9	43	2	3	95	15	**167**
1545 - 1600	8	41	11	2	106	13	**181**
1600 - 1615	11	60	9	3	103	7	**193**
1615 - 1630	10	59	8	2	92	31	**202**
1630 - 1645	11	42	5	4	114	19	**195**
1645 - 1700	8	32	8	4	112	12	**176**
1700 - 1715	2	41	11	5	115	17	**191**
1715 - 1730	8	49	7	3	103	16	**186**
1730 - 1745	8	46	6	2	114	13	**189**
1745 - 1800	4	28	6	3	87	17	**145**
1800 - 1815	3	52	10	2	74	6	**147**
1815 - 1830	5	57	7	7	78	11	**165**
Period End	**87**	**550**	**90**	**40**	**1193**	**177**	**2137**

All Vehicles	WEST		SOUTH		EAST		
	Morgan St		*Lee Ave*		*Morgan St*		
Peak Per	R	T	L	R	T	L	TOTAL
1530 - 1630	38	203	30	10	396	66	**743**
1545 - 1645	40	202	33	11	415	70	**771**
1600 - 1700	40	193	30	13	421	69	**766**
1615 - 1715	31	174	32	15	433	79	**764**
1630 - 1730	29	164	31	16	444	64	**748**
1645 - 1745	26	168	32	14	444	58	**742**
1700 - 1800	22	164	30	13	419	63	**711**
1715 - 1815	23	175	29	10	378	52	**667**
1730 - 1830	20	183	29	14	353	47	**646**

PEAK HR	40	202	33	11	415	70	771



N

R.O.A.R. DATA

Reliable, Original & Authentic Results

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

Client : John Coady Consulting

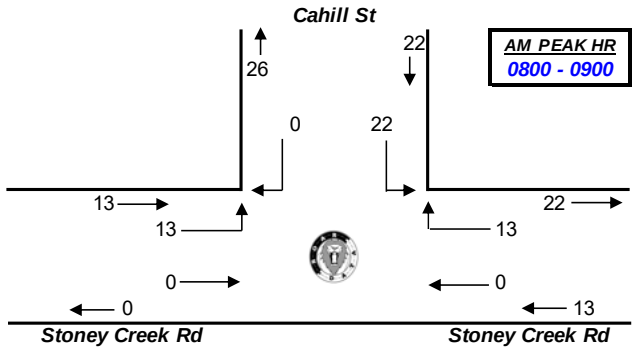
Job No/Name : 5316 BEVERLY HILLS 166 - 178 Stoney Creek Rd

Day/Date : Thursday / 11th September 2014

All Vehicles	WEST		NORTH		EAST		
	Stoney		*Cahill St*		*Stoney*		
Time Per	**L**	**T**	**R**	**L**	**T**	**R**	**TOTAL**
0700 - 0715	2	0	0	3	0	4	**9**
0715 - 0730	3	0	0	2	0	3	**8**
0730 - 0745	0	0	0	2	0	5	**7**
0745 - 0800	3	0	0	4	0	4	**11**
0800 - 0815	2	0	0	8	0	2	**12**
0815 - 0830	4	0	0	4	0	2	**10**
0830 - 0845	3	0	0	6	0	5	**14**
0845 - 0900	4	0	0	4	0	4	**12**
Period End	**21**	**0**	**0**	**33**	**0**	**29**	**83**

	WEST		NORTH		EAST		
	Stoney		*Cahill St*		*Stoney*		
Peak Per	**L**	**T**	**R**	**L**	**T**	**R**	**TOTAL**
0700 - 0800	8	0	0	11	0	16	**35**
0715 - 0815	8	0	0	16	0	14	**38**
0730 - 0830	9	0	0	18	0	13	**40**
0745 - 0845	12	0	0	22	0	13	**47**
0800 - 0900	13	0	0	22	0	13	**48**

PEAK HR	**13**	**0**	**0**	**22**	**0**	**13**	**48**



All Vehicles	WEST		NORTH		EAST		
	Stoney		*Cahill St*		*Stoney*		
Time Per	**L**	**T**	**R**	**L**	**T**	**R**	**TOTAL**
1530 - 1545	3	0	0	2	0	2	**7**
1545 - 1600	5	0	0	3	0	1	**9**
1600 - 1615	2	0	0	3	0	2	**7**
1615 - 1630	4	0	0	5	0	2	**11**
1630 - 1645	2	0	0	7	0	4	**13**
1645 - 1700	4	0	0	3	0	1	**8**
1700 - 1715	6	0	0	5	0	3	**14**
1715 - 1730	4	0	0	2	0	5	**11**
1730 - 1745	3	0	0	2	0	3	**8**
1745 - 1800	5	0	0	4	0	3	**12**
1800 - 1815	8	0	0	3	0	4	**15**
1815 - 1830	7	0	0	3	0	6	**16**
Period End	**53**	**0**	**0**	**42**	**0**	**36**	**131**

	WEST		NORTH		EAST		
	Stoney		*Cahill St*		*Stoney*		
Peak Per	**L**	**T**	**R**	**L**	**T**	**R**	**TOTAL**
1530 - 1630	14	0	0	13	0	7	**34**
1545 - 1645	13	0	0	18	0	9	**40**
1600 - 1700	12	0	0	18	0	9	**39**
1615 - 1715	16	0	0	20	0	10	**46**
1630 - 1730	16	0	0	17	0	13	**46**
1645 - 1745	17	0	0	12	0	12	**41**
1700 - 1800	18	0	0	13	0	14	**45**
1715 - 1815	20	0	0	11	0	15	**46**
1730 - 1830	23	0	0	12	0	16	**51**

PEAK HR	**23**	**0**	**0**	**12**	**0**	**16**	**51**