

**PLANNING PROPOSAL TO PERMIT
MIXED USE REDEVELOPMENT
152 – 206 ROCKY POINT ROAD, KOGARAH**
*Assessment of Traffic and
Parking Implications*

January 2015
(Rev E)

Reference 13091

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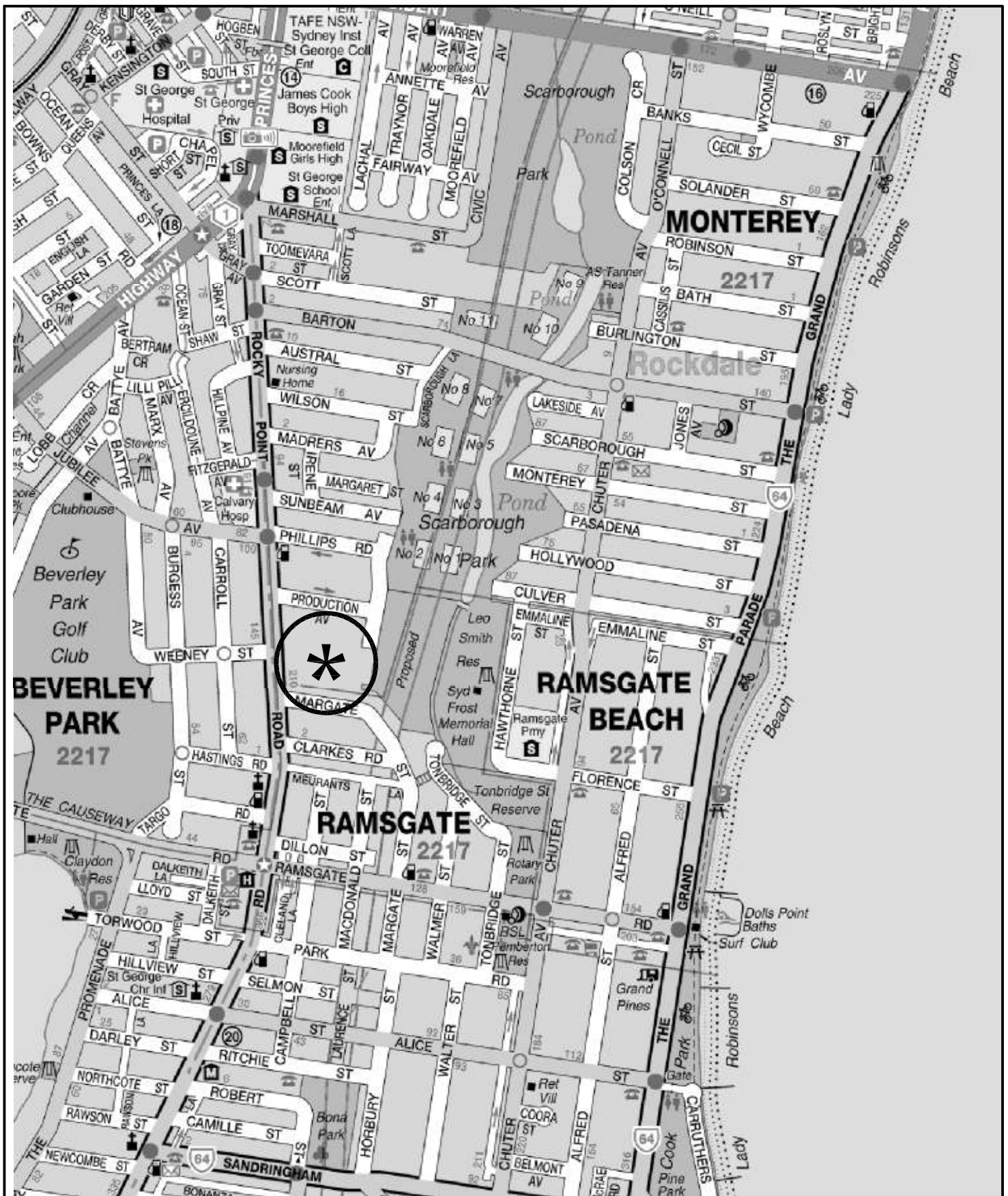
1. INTRODUCTION

This report has been prepared to accompany a Planning Proposal to Rockdale City Council for a rezoning to permit residential apartment, office and showroom/bulky goods development on a large consolidated site at 152 – 206 Rocky Point Road, Kogarah (Figure 1).

Many established suburban areas throughout the Sydney Metropolitan Area, particularly those with convenient access to public transport and employment opportunities, are experiencing ongoing redevelopment as part of the urban consolidation process. Older style industrial sites and redundant uses are generally being consolidated and replaced with residential apartments often associated with contemporary mixed use elements.

The site for the proposed rezoning at Kogarah has convenient access to the arterial road system and public transport links to the City and the expanding airport/port precincts and presents an ideal opportunity for redevelopment. The envisaged development consequential to the proposed rezoning based on the indicative Masterplan prepared by Lippman Partnership would comprise up to:

- 453 apartments with basement carparking
- 20,093m² non residential floorspace
 - 14,286m² office
 - 4,393m² showroom/bulky goods
 - 1,414m² warehouse
- a new access road system



LEGEND



LOCATION

FIG 1

The purpose of this report is to:

- * describe the site, its context and the potential development outcome as a result of the Planning Proposal
- * describe the road network and traffic conditions in the area
- * assess the suitability of the proposed vehicle access and circulation arrangements
- * assess the potential traffic implications and identify and necessary road/traffic managements upgrade works
- * assess the potential, parking, internal circulation and servicing implications

2. PROPOSED REZONING SCHEME

2.1 SITE, CONTEXT AND EXISTING USE

The development site (Figure 2) is a large irregular shaped consolidation of numerous lots occupying a total area of some 33,488m². The site, which extends between Rocky Point Road and Scarborough Park, has an extensive frontage to the eastern side of Rocky Point Road with a slight fall in levels towards the eastern boundary.

The existing buildings on the site comprise:

- * 17,040m² industrial
- * 1,600m² warehouse
- * 1,650m² showroom/bulky goods
- * 1,750m² office
- * 1 residential dwelling

The surrounding uses include:

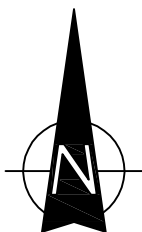
- * industrial buildings adjoining to the north
- * Calvary Hospital just to the north
- * Scarborough Park open space and recreation/sport areas to the east
- * mixed uses extending along Rocky Point Road including a number of new multi-level building

The Kogarah Town Centre and railway station are located some 2 kms to the north while the small Ramsgate Centre is some 500 metres to the south.



SITE

LEGEND



SITE

FIG 2

2.2 PLANNING PROPOSAL

The Planning Proposal for rezoning seeks an FSR of 2:1 which would provide for more than 60,000m² GFA to be achieved. The development concept identifies showroom/bulky goods and commercial office development along the western part (Rocky Point Road frontage) and residential apartment buildings on the central and eastern part.

The existing structures on the site, apart from the Harvey Norman offices and showroom/warehouse of 3,750m² and 63 basement parking spaces, would be demolished. Based on the indicative Masterplan the western part of the site would be developed for non residential uses which is envisaged to comprise approximately:

- 4,393m² showroom/bulky goods
- 14,286m² commercial office
- 1,414m² warehouse

The central and eastern parts of the site would be developed for residential apartment buildings extending along a new access road system. A total of 453 apartments are envisaged with a make up of 1 Bed (128), 2 Bed (250) and 3 Bed (75). All car parking would be contained in single basement levels apart from some indented on-street spaces with a total of some 1,003 spaces.

The principal access road will connect with Rocky Point Road opposite Weeney Street and a shared pedestrian/bicycle path would be provided along the northern side of the new road connecting as an extension to the proposed shared path system through Scarborough Park.

Details of the envisaged development are provided on the diagrams prepared by Lippmann Partnership which accompany the Planning Proposal and are reproduced in part overleaf.



TOTAL SITE AREA:	33 488 m2
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R4 RESIDENTIAL ZONE		
SITE AREA: FLOOR SPACE: FSR	22 325 m2	COUNCIL DCP
	44 650 m2	
UNIT MIX	128 (29.2%)	10-30%
	250 (57.1%)	50-75%
	60 (13.7%)	10-30%
	TOWNHOUSES: 15	
TOTAL DWELLINGS: 453		
RFDC REQUIREMENT		
COMMUNAL OPEN SPACE	7693 35%	5 581 25%
DEEP SOIL ZONE	2874 (37% OF COMM. OPEN SPACE)	1 640 (25% OF COMM. OPEN SPACE)

B6 ENTERPRISE CORRIDOR ZONE		
SITE AREA: FLOOR SPACE: EXISTING PROPOSED TOTAL	11 163 m2	
	3 280	
	16 813	
FSR:	20 093 m2	1.8:1
EMPLOYMENT TABLE		
1. PRE 2010	90	DARRELL LEA
2. CURRENTLY	90	DARRELL LEA
	30	HARVEY NORMAN
TOTAL =	120	
3. PROPOSED	25	EXISTING HARVEY NORMAN
	378	NEW COMMERCIAL
TOTAL =	403	

LEGEND FOR RESIDENTIAL BLOCK NOTATION			
8.5	←	PROPOSED HEIGHT (m)	
(8.5)	←	COUNCIL PROPOSED HEIGHT (m)	
G 3L	←	BLOCK (G) AND NUMBER OF LEVELS (3)	

3. ROAD NETWORK AND TRAFFIC CONDITIONS

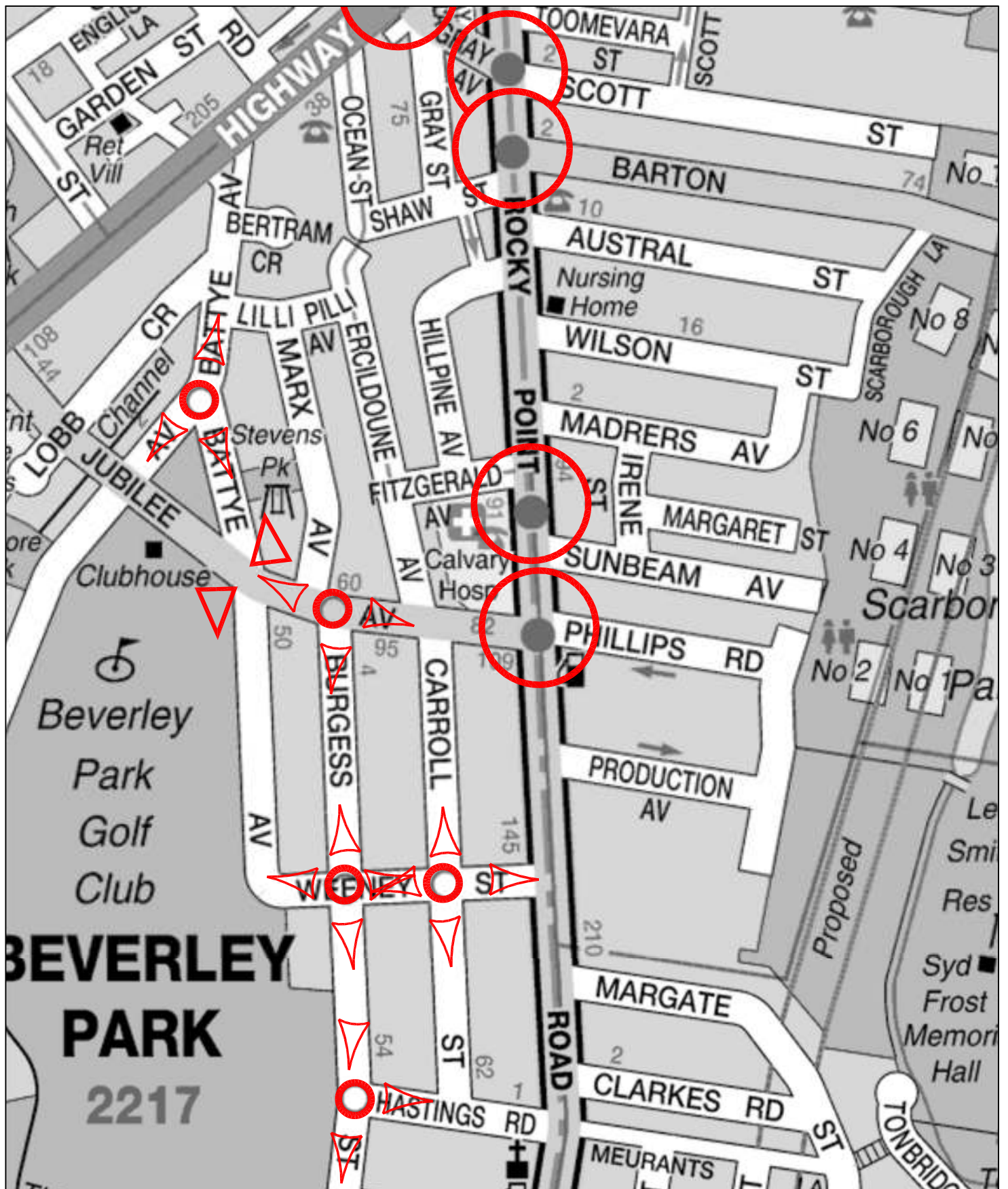
3.1 ROAD NETWORK

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

- * *Princes Highway* – a State Highway and principal north-south arterial route to/from the City
- * *General Holmes Drive/Grand Parade* – a State Road and arterial route linking between Mascot and Sandringham along the western side of Botany Bay
- * *President Avenue* – a State Road and sub-arterial route linking between Princes Highway and Grand Parade
- * *Rocky Point Road* – a State Road and sub-arterial route linking between Princes Highway and Captain Cook Bridge
- * *Ramsgate Road and Jubilee Avenue* – collector roads through the Kogarah/Ramsgate areas connecting to the arterial routes
- * *Production Avenue and Phillips Road* – local access roads
- * *Production Lane* – a narrow service lane

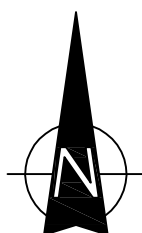
Rocky Point Road in the vicinity of the site is some 13m wide with 2 traffic lanes in each direction with a relatively straight and level carriageway. Production Avenue and Phillips Road have relatively narrow roadways some 9m wide while Production Lane is a narrow informal service road.

LEGEND



LEGEND

-  TRAFFIC SIGNAL CONTROL
-  ROUNDABOUT
-  RESTRICTED TURNING MOVEMENT
-  GIVE WAY



TRAFFIC CONTROLS

FIG 4

3.2 TRAFFIC CONTROLS

The existing traffic controls which have been applied to the road system in the vicinity of the site are shown on Figure 4. The principal features of these controls are:

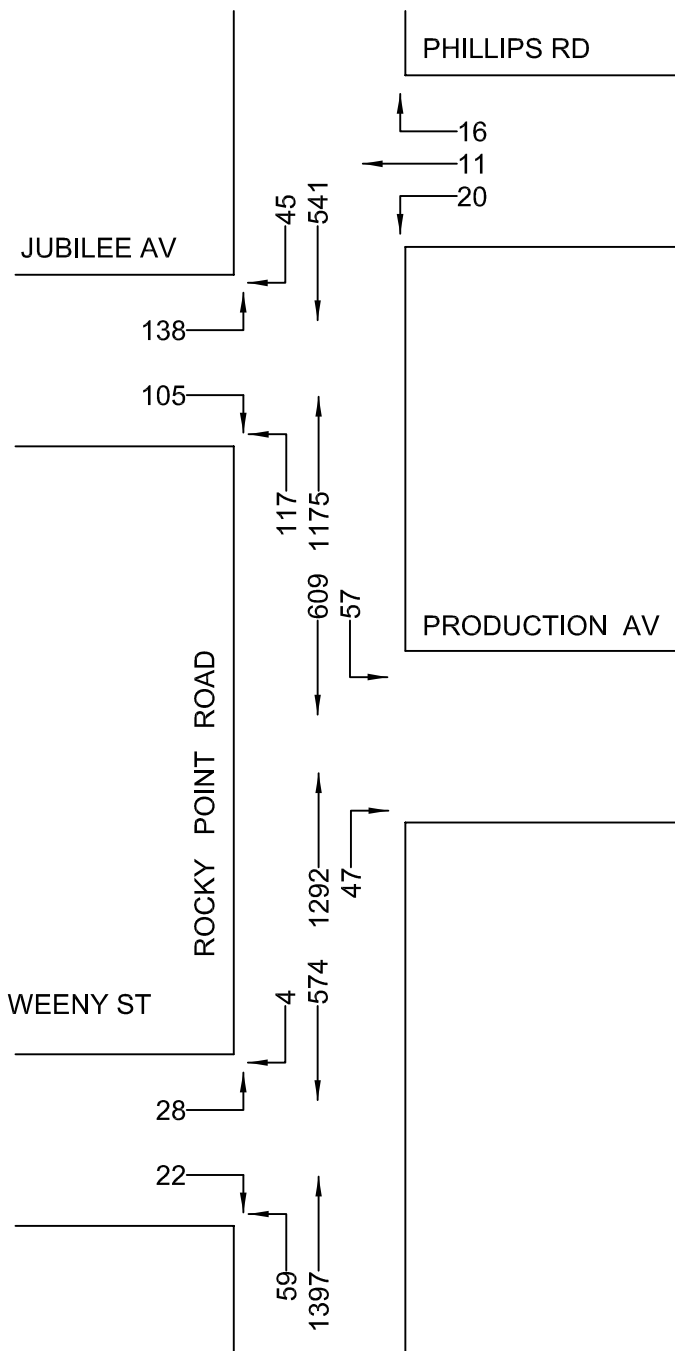
- * the traffic control signals along Rocky Point Road including the Jubilee Avenue/Phillips Road intersection (Appendix A plan) and the pedestrian signals to the north of Sunbeam Avenue
- * the one-way traffic flows along Phillips Road (westbound) and Production Avenue (eastbound)
- * the CLEARWAY restrictions along Rocky Point Road (westside AM peak and eastside PM Peak)
- * the BUS ZONE and sections of NO STOPPING/NO PARKING restrictions along Rocky Point Road
- * the roundabouts on Jubilee Avenue at the Burgess Street intersection and on Weeney Street at the Carrol Street and Burgess Street intersections
- * the pedestrian refuge in Rocky Point Road at the southern part of the site frontage

3.3 TRAFFIC CONDITIONS

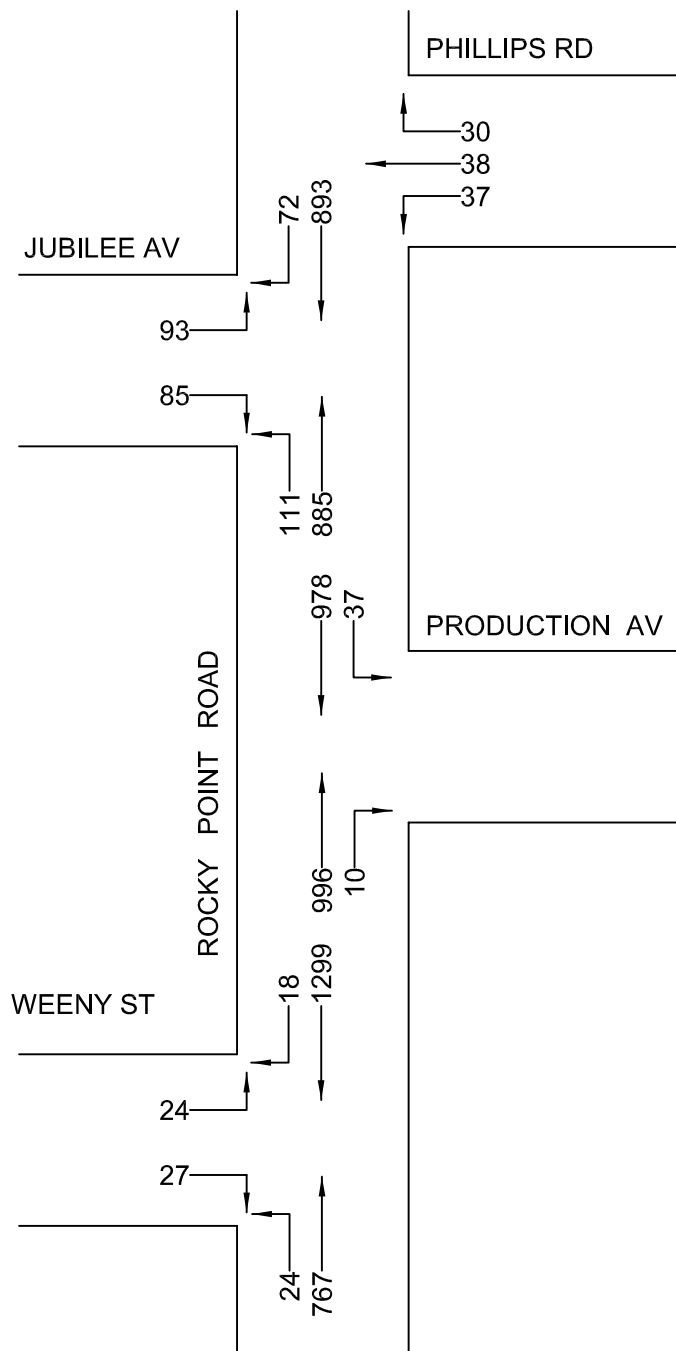
An indication of the existing traffic conditions in the vicinity of the site is provided by data published by RMS¹ and surveys undertaken as part of this study. The RMS data is expressed in terms of Annual Average Daily Traffic (AADT) as follows:

Location	AADT
Rocky Point Road south of Princes Highway	24,039
Ramsgate Road east of Rocky Point Road	13,064

¹ Traffic Volume Data for Sydney Region
Roads and Maritime Services



AM PEAK



PM PEAK

LEGEND



EXISTING PEAK
TRAFFIC MOVEMENTS

FIG 5

Traffic surveys have been undertaken during the morning and afternoon peak periods at the intersections of Jubilee Avenue/Phillips Road/Production Avenue and Weeney Street with Rocky Point Road. The results of those surveys are provided on Figure 5 indicating fairly strong peak directional flows (ie northbound in the morning and southbound in the afternoon) on Rocky Point Road.

The operational performance of the Rocky Point Road, Jubilee Avenue and Phillips Road intersection has been assessed using SIDRA. The results of that assessment indicating a satisfactory performance are provided in the following while the criteria for interpreting SIDRA results is reproduced overleaf.

	AM	PM
Level of Service	A	A
Deg. of Sat.	0.562	0.758
Av. Vehicle Delay	10.0	10.8

3.4 TRANSPORT SERVICES

Public transport plays an important role in meeting the travel needs of residents, employees and visitors of the area. The development site is located some 2.0 kms from Kogarah Railway Station on the Illawarra Line and there are a number of bus services operating in the area (STA Routes 476-77 along Rocky Point Road) which provide linkages to the railway station and other centres and the CBD

3.5 FUTURE CIRCUMSTANCES

The only potential significant road network development in the area is the construction of an arterial route along the "F6 Corridor" which runs through Scarborough Park. Although this project is raised in Government from time to time there is no current plan or time frame for this work to be undertaken.

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, Roundabouts	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

4. ACCESS AND CIRCULATION

The large site is currently reliant on accesses located on the Rocky Point Road frontage apart from some connection to the Production Lane which connects to Production Avenue and Phillips Road. At the same time Phillips Road and Production Avenue are very narrow roadways with consequential one way traffic flow restrictions.

It is entirely evident that development of the nature envisaged (subject to approval of the Planning Proposal) will require an appropriate new access road system with suitable traffic management on the connection to Rocky Point Road.

The proposed access road system comprises:

- * a central 2 way access roadway connecting between Rocky Point Road and Production Lane. This 7m wide roadway will have indented parking bays with widening at the Rocky Point Road connection (ie 2 approach lanes)
- * formalisation of the Production Lane
- * minor “secondary” roadway connecting between the Production Lane and the main access road 7m wide

The vehicle access connection on Rocky Point Road for the existing Harvey Norman complex will be retained.

The new central access roadway will connect with Rocky Point Road directly opposite Weeney Street and it is proposed that this 4 way junction will be controlled by traffic signals. Apart from providing for the access movements generated by the envisaged development these traffic signals will provide for:

- * pedestrian crossing movements across Rocky Point Road, particularly to/from the bus stops (ie the distance between the existing Ramgate Road and Jubilee Ave traffic signals on Rocky Point Road is extensive and pedestrians could not be expected to divert to these crossing points) which are currently assisted with a pedestrian refuge island
- * pedestrian and cyclist movements which will travel along the proposed shared pathway along the new central access road with connection to the shared pathway system through Scarborough Park
- * vehicles which access to/from Weeney Street

The proposal to provide traffic signals at the new access road intersection has been discussed with RMS and no objection was raised as long as the need satisfies the RMS “warrants”.

The issue of satisfying the RMS warrants for traffic signals is addressed in Section 5 of this report.

5. TRAFFIC

An indication of the potential traffic generation of the envisaged development elements is provided by RMS development guidelines (as updated) which specify the following:

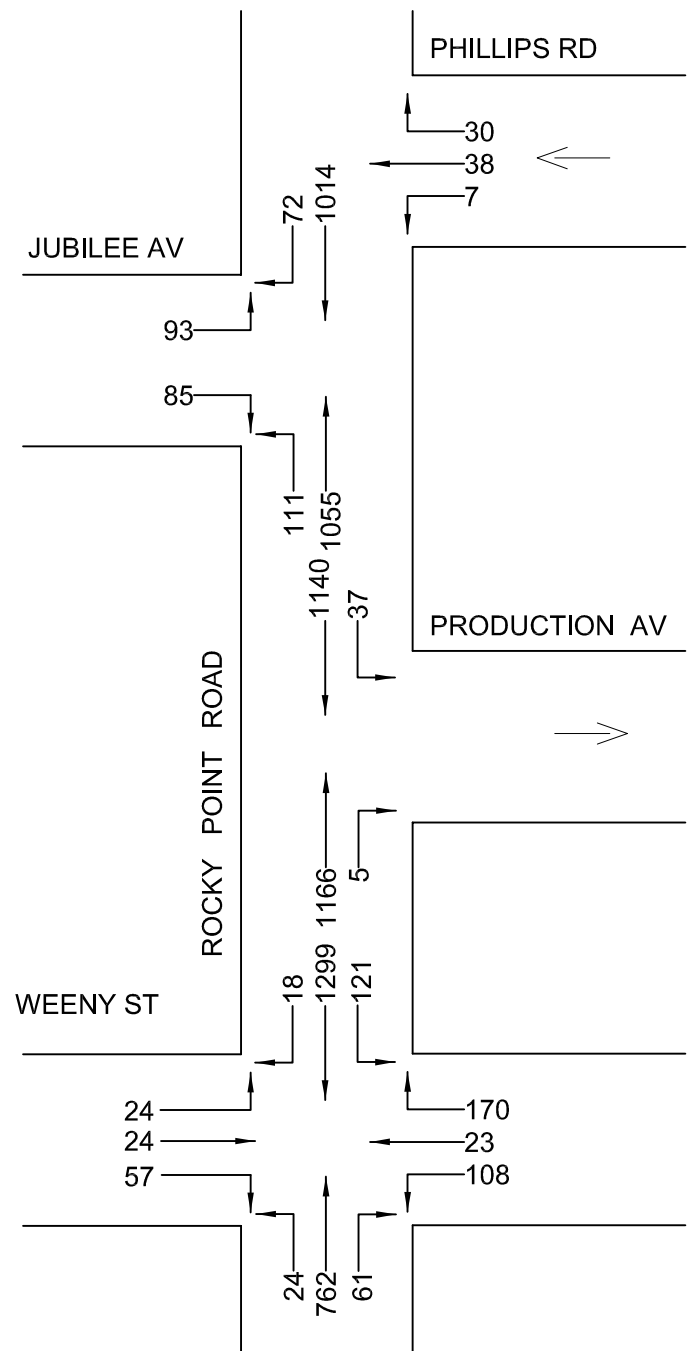
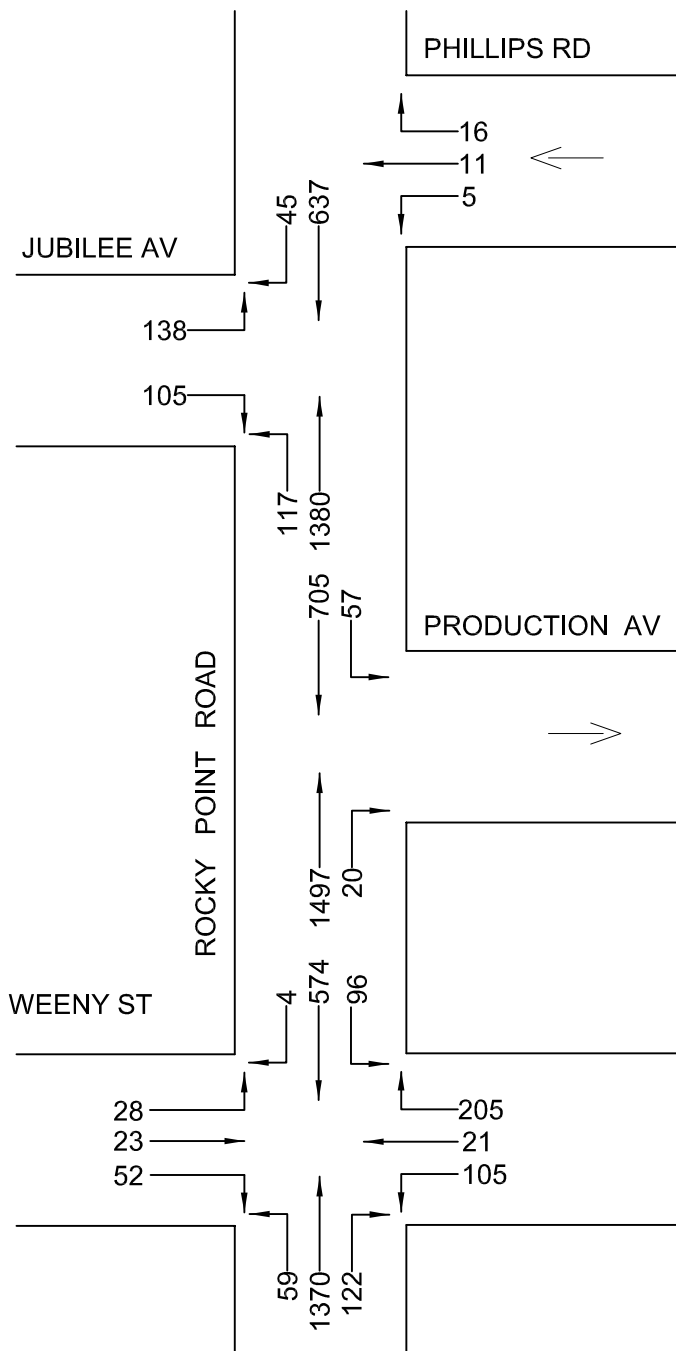
Showroom/bulky good	-	2.7 vtpm per 100m ² GFA *
Office	-	AM 1.6 vtpm per 100m ² PM 1.2 vtpm per 100m ²
Warehouse	-	0.5 vtpm per 100m ²
Residential Apartment	-	0.29 vtpm per dwelling **

* While TDT 04-2013 specifies that the morning site peak does not generally coincide with the network peak there are staff arrivals, servicing and there will potentially be some elements which will generate at this time (eg café, takeaway food)

** While TDT 04-2013 specifies a lower rate this is for buildings 6 levels and more with high transport accessibility (eg railway station). Details of surveys of comparable location/nature are provided in the extracts from the earlier RTA study reproduced in Appendix D.

Application of this criterion to the envisaged development would indicate the following:

14,286m² office			453 apartments	
AM	1.6 vtpm per 100m ²	229 vtpm	at 0.29 vtpm per apartment	131 vtpm
PM	1.2 vtpm per 100m ²	171 vtpm		
4,393m² showroom/bulky goods			1,414m² warehouse	
AM	1.7 vtpm per 100m ²	75 vtpm	AM	7 vtpm
PM	2.7 vtpm per 100m ²	119 vtpm	PM	7 vtpm



LEGEND



**PROJECTED PEAK
TRAFFIC MOVEMENTS**

FIG 6

Additional to this traffic at the intersection will be:

- * traffic generated by uses in Production Avenue which is egressing to the south
- * the existing Weeney Street movements
- * traffic ingressing from the south to the uses in Phillips Road which choose to turn right into the new Access road rather than travel via Production Avenue (in fact RMS may choose to prohibit the right turn into Production Avenue if a signal controlled turn is available at the new access road)
- * traffic in the precinct around Weeney Street which will choose to access through the new signals

The projected distribution of the movements generated by the envisaged development is as follows:

	AM		PM	
	IN	OUT	IN	OUT
Office	210	19	19	152
Showroom/BG's	68	7	54	71
Warehouse	5	2	2	5
Residential	26	105	105	26
Total:	309	133	180	254

The projected directional distribution is as follows:

North	65%
South	30%
West	5%

The resultant volumes at the Rocky Point Road access intersection including the additional movements attracted by the traffic signal provision are shown on Figure 6 and summarised in the following:

		AM	PM
Rocky Point Road	NB	1,370	762
	RT	122	61
	LT	59	24
	SB	574	1,299
	LT	96	121
New Road	WB	21	23
	RT	205	170
	LT	105	108
Weeney Street	EB	23	24
	RT	52	57
	LT	28	24
Rocky Point Road		2,099	2,206
Total conflicting flow with Rocky Point Road flow		556	455

The person trip generation rates per apartment as established in the recent RMS survey was 0.80 ptph in the morning and 0.60 ptph in the afternoon with a mode share to car of 40 to 50%. Thus the proposed 453 apartments could generate some 175 to 200 pedestrian movements in the morning peak and some 130 to 158 pedestrian movements in the afternoon.

Similar analysis of the data for showroom/bulky goods uses and office uses with office rates of some 2.16 ptph per 100m² in the morning peak and 1.73 in the afternoon with a non-car mode of some 30%. The result and pedestrian generation is some 200 to 230 ptph.

Thus the total pedestrian generation rate for the envisaged development is some 300 to 400 pph in the peak periods and in the morning peak many will cross Rocky Point Road to catch the City/Kogarah/Rockdale bound buses. It is also noted that the recent large nearby mixed use developments have also generated heightened pedestrian crossing activity in the vicinity.

The operational performance of the proposed access intersection and the Rocky Point Road/Jubilee Ave/Phillips Road intersection with the projected additional traffic volumes has been assessed using SIDRA. The results of that assessment, including signalised and non-signalised options for the access intersection, are summarised in the following:

Access Intersection	Signalised	Non-signalised
AM Peak		
LOS	A	F
DS	0.763	4.596
AVD	11.8	449.4
PM Peak		
LOS	A	F
DS	0.801	4.477
AVD	10.2	385.8
Jubilee/Phillips Intersection		
AM Peak		
LOS	A	
DS	0.651	
AVD	9.8	
PM Peak		
LOS	B	
DS	0.888	
AVD	14.1	

The results indicated that:

- * the access intersection will be entirely unsatisfactorily without the provision of traffic signals
- * the signalised intersections will operate quite satisfactorily

In relation to the issue of RMS warrants for traffic signals these are outlined in the extract reproduced in Appendix E. It is noted that these long established warrants are somewhat simplistic and do not have regard for:

- right turning volumes
- combined minor road and pedestrian crossing volumes

However, reference to the vehicle arrival/departure and person trip movements for the various landuses indicate that the peak volumes occur for at least 2 hours in both the morning and afternoon periods (ie the warrant for 4 hours per day is met). It is also clear that the vehicle volume warrant is met and this would be supported by the pedestrian crossing need.

6. PARKING AND SERVICING

PARKING

Parking would be provided commensurate with Council's DCP requirements with some 498 spaces for residents, some 91 for resident visitors and appropriate bicycle and motor bike spaces. Some 414 spaces would be provided for the showroom/bulky goods and office elements with appropriate bicycle and motor bike provisions.

Some indented bays would be provided along the new access road system which would contribute to the visitor parking requirements.

SERVICING

Refuse would be removed from the street by Council's collection service and the access road system is designed facilitate the movements of these vehicles. Service personnel will be able to use the visitor spaces while other service/delivery vehicles will:

- use the dock areas provided in the commercial buildings
- use the on-street bays

7. TRANSPORT SERVICES, BICYCLES AND PEDESTRIANS

TRANSPORT SERVICES

The existing bus stops on Rocky Point Road at the site frontage will provide for the transport needs of residents, workers and visitors generated by the proposed development.

The bus services connect to Kogarah and Rockdale Railway Stations where linkages are available to the Metropolitan transport network.

The bus services which operate along The Grand Parade are within easy walking distance and provide connection to/from the City.

BICYCLES AND PEDESTRIANS

The new access road network will incorporate appropriate provision for bicycles and pedestrians. In particular it is proposed to provide a shared pathway along the principal access road which will link to the proposed shared path to be provided through Scarborough Park. The movements of pedestrians and cyclists across Rocky Point Road will be facilitated by the proposed traffic signals on Rocky Point Road.

8. CONCLUSION

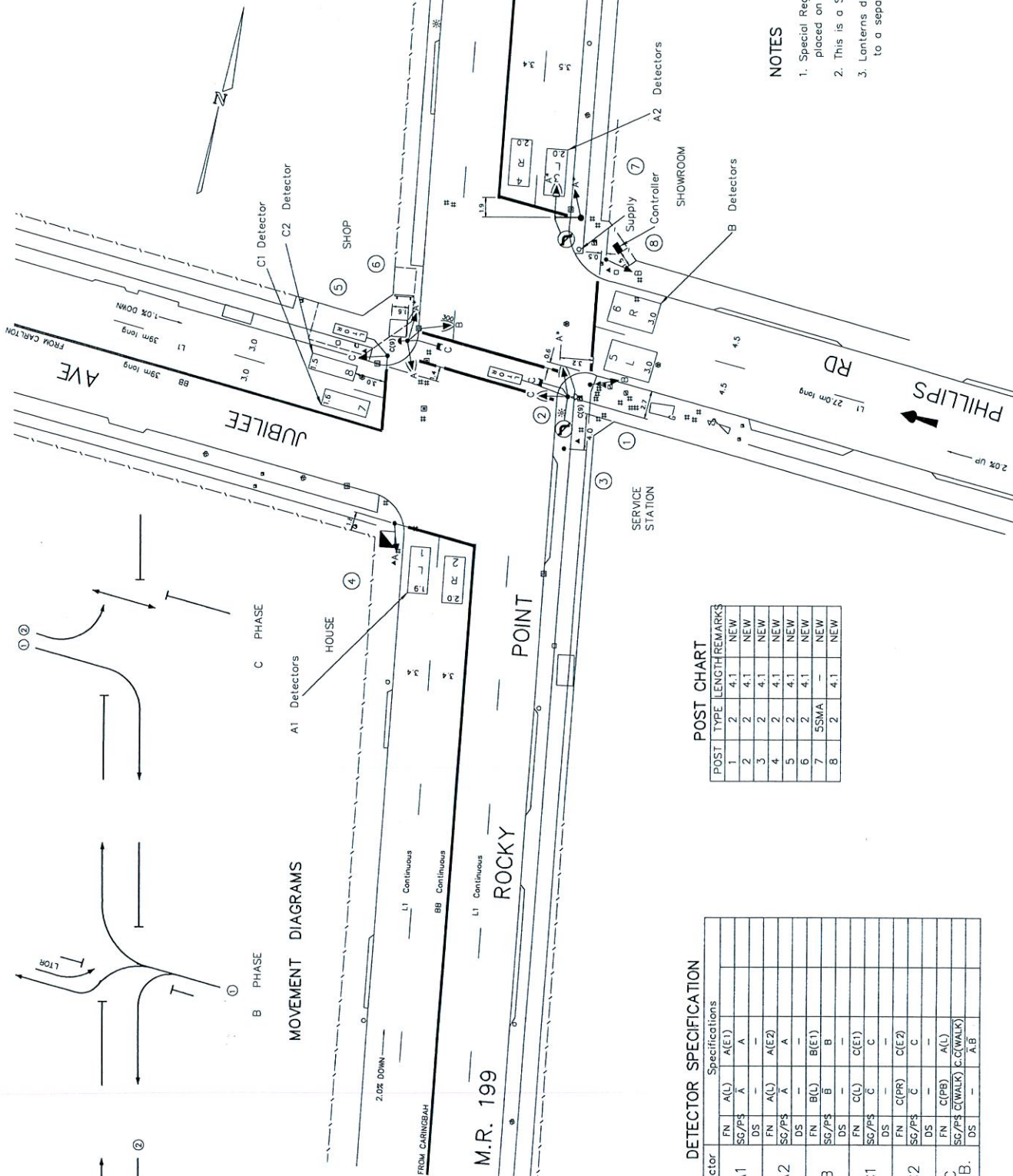
The proposed rezoning of the consolidated Industrial zoned site at Kogarah to enable a mix of residential and non residential development will represent an appropriate outcome consistent with the surrounding area. Adequate parking will also be provided to accommodate the proposed development while the minor servicing activity will be accommodated on-site as is appropriate to the nature of these activities.

There will not be any adverse or unsatisfactory traffic or parking implications resulting from the redevelopment scheme.

APPENDIX A

INTERSECTION PLAN

LOCALITY SKETCH
NOT TO SCALE
I.S.G. MAP CO-ORDINATES
(312 500 E),(1 238 950 N)



Detector	Specifications				
	FN	A(L)	A(E)		
A1	SG/P/S	A	A		
A2	DS	—	—		
	FN	A(L)	A(E)		
	SG/P/S	A	A		
B	DS	—	—		
	FN	B(L)	B(E)		
	SG/P/S	B	B		
C1	DS	—	—		
	FN	C(L)	C(E)		
	SG/P/S	C	C		
C2	DS	—	—		
	FN	C(PR)	C(E)		
	SG/P/S	C	C		
C P.B.	DS	—	—		
	FN	C(PB)	A(L)		
	SG/P/S	C(WALK)	C(WALK)		
	DS	—	A		

POST	TYPE	LENGTH	REMARKS
1	2	4.1	NEW
2	2	4.1	NEW
3	2	4.1	NEW
4	2	4.1	NEW
5	2	4.1	NEW
6	2	4.1	NEW
7	5SMA	-	NEW
8	2	4.1	NEW

NOTES

1. Special Regulatory stop signs to be placed on posts 1, 5 and 8.
2. This is a SCATS site.
3. Lanterns denoted by an asterisk are wired to a separate signal group.

DESIGN LAYOUT

ORIGINAL ISSUE

U.S.D. REF.	MAP 99 A 6
I.S.G. E	372500
CO-ORDS	N 130950
K. BRUCE	
DESIGNED	
<i>G. Kelly</i>	
P. J. 5380	
<i>K. Bruce</i>	

APPROVED
A.G. Dandy
D.J. WESLEY
DESIGN ENGINEER
5/12/90

MUNICIPALITY OF KOGARAH
ROCKY POINT ROAD
AND
JUBILEE AVENUE

DOGS DRAWING FILE : /7cz/kogran/rockpoint_1bules/vw1758_1b
 ARCHIVE LOCATION :
SW CENTRAL REGION
 SCALE  5 10
 FILE **237 TS 103** SUPPERSIDES SHEET —
 REGION:
 SHEET 1
 ISSUE

APPENDIX B

SURVEY RESULTS



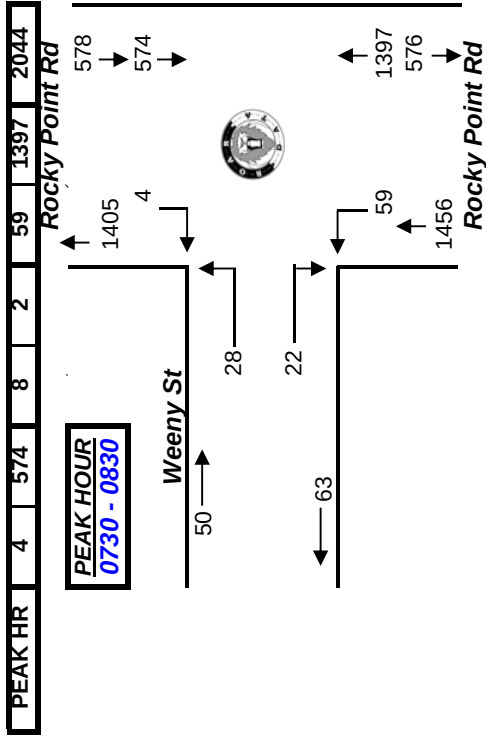
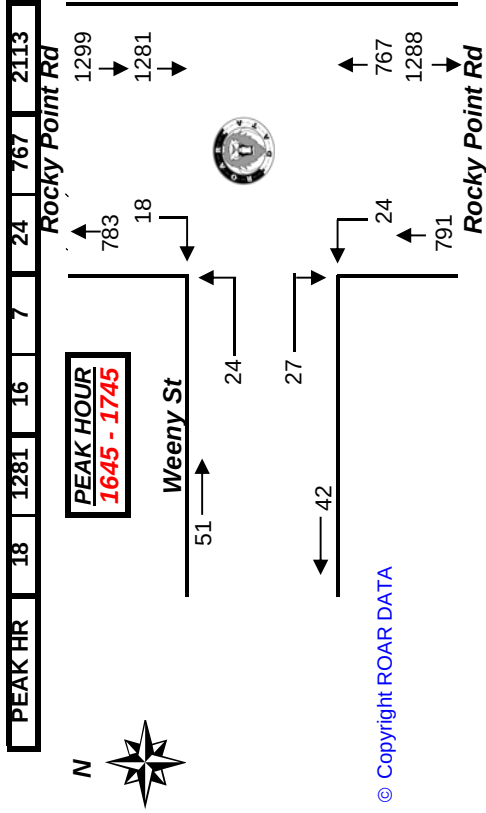
Pedestrians

	NORTH			WEST			SOUTH		
	Rocky Point			Weeny St			Rocky Point		
	R	I	TOTAL	L	R		L	I	TOTAL
Time Per									
1530 - 1545	5	288		16	5		3	199	516
1545 - 1600	3	289		6	6		9	185	498
1600 - 1615	3	257		8	6		6	181	461
1615 - 1630	4	279		7	8		2	154	454
1630 - 1645	6	302		9	8		7	196	528
1645 - 1700	6	348		8	5		5	178	550
1700 - 1715	2	320		6	6		8	189	531
1715 - 1730	4	302		4	6		4	173	493
1730 - 1745	6	311		6	10		7	227	567
1745 - 1800	5	293		5	5		10	185	503
Period End	44	2989		75	65		61	1867	5101

	NORTH			WEST			SOUTH		
	Rocky Point			Weeny St			Rocky Point		
	R	I	TOTAL	L	R		L	I	TOTAL
Time Per									
0630 - 0645	0	72		9	5		1	212	299
0645 - 0700	1	89		7	8		1	236	342
0700 - 0715	5	111		10	5		10	308	449
0715 - 0730	2	133		9	5		7	348	504
0730 - 0745	0	122		6	5		10	350	493
0745 - 0800	1	152		7	5		15	350	530
0800 - 0815	2	146		5	6		18	352	529
0815 - 0830	1	154		10	6		16	345	532
0830 - 0845	3	155		9	7		9	276	459
0845 - 0900	2	150		10	7		5	275	449
Period End	17	1284		82	59		92	3052	4586

	NORTH			WEST			SOUTH		
	Rocky Point			Weeny St			Rocky Point		
	R	I	TOTAL	L	R		L	I	TOTAL
1530 - 1630	15	1113		37	25		20	719	1929
1545 - 1645	16	1127		30	28		24	716	1941
1600 - 1700	19	1186		32	27		20	709	1993
1615 - 1715	18	1249		30	27		22	717	2063
1630 - 1730	18	1272		27	25		24	736	2102
1645 - 1745	18	1281		24	27		24	767	2141
1700 - 1800	17	1226		21	27		29	774	2094

	NORTH			WEST			SOUTH		
	Rocky Point			Weeny St			Rocky Point		
	R	I	TOTAL	L	R		L	I	TOTAL
0630 - 0730	8	405		35	23		19	1104	1594
0645 - 0745	8	455		32	23		28	1242	1788
0700 - 0800	8	518		32	20		42	1356	1976
0715 - 0815	5	553		27	21		50	1400	2056
0730 - 0830	4	574		28	22		59	1397	2084
0745 - 0845	7	607		31	24		58	1323	2050
0800 - 0900	8	605		34	26		48	1248	1969



APPENDIX C

SIDRA RESULTS

MOVEMENT SUMMARY

Site: Rocky Pt Rd & Jubilee Ave
AM EX

Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow Veh/h	HV %	Deg Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Rocky Pt Rd											
1	L	117	2.0	0.562	15.6	LOS B	11.3	80.3	0.39	0.95	43.1
2	T	1175	2.0	0.562	7.4	LOS A	11.4	81.0	0.39	0.35	48.2
Approach		1292	2.0	0.562	8.1	LOS A	11.4	81.0	0.39	0.41	47.7
East: Phillips Rd											
4	L	20	2.0	0.277	60.0	LOS E	1.5	11.0	0.99	0.72	23.0
5	T	11	2.0	0.277	51.7	LOS D	1.5	11.0	0.99	0.71	23.1
6	R	16	2.0	0.146	59.4	LOS E	0.8	5.6	0.98	0.69	22.7
Approach		47	2.0	0.277	57.8	LOS E	1.5	11.0	0.98	0.71	22.9
North: Rocky Pt Rd											
8	T	541	2.0	0.412	2.8	LOS A	1.9	13.4	0.17	0.15	54.8
9	R	45	2.0	0.412	10.0	LOS A	0.5	3.3	0.09	0.86	47.3
Approach		586	2.0	0.412	3.4	LOS A	1.9	13.4	0.17	0.21	54.2
West: Jubilee Ave											
10	L	138	2.0	0.257	8.8	LOS A	0.5	3.3	0.19	0.69	48.1
12	R	105	2.0	0.358	49.7	LOS D	4.7	33.4	0.93	0.78	25.3
Approach		243	2.0	0.358	26.5	LOS B	4.7	33.4	0.51	0.73	34.6
All Vehicles		2168	2.0	0.562	10.0	LOS A	11.4	81.0	0.36	0.40	46.1

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 used.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P5	Across N approach	53	44.2	LOS E	0.1	0.1	0.94	0.94
All Pedestrians		53	44.2	LOS E			0.94	0.94

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.

Processed: Monday, 19 August 2013 9:00:23 AM

SIDRA INTERSECTION 5.1.13.2093

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MOVEMENT SUMMARY

Site: Rocky Pt Rd & Jubilee Ave
PM EX

Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Rocky Pt Rd											
1	L	111	2.0	0.180	13.5	LOS A	1.3	9.0	0.23	0.72	43.9
2	T	885	2.0	0.758	9.0	LOS A	21.5	153.1	0.55	0.50	46.2
Approach		996	2.0	0.758	9.5	LOS A	21.5	153.1	0.51	0.53	45.9
East: Phillips Rd											
4	L	37	2.0	0.666	62.6	LOS E	3.9	27.9	1.00	0.81	22.5
5	T	38	2.0	0.666	54.4	LOS D	3.9	27.9	1.00	0.81	22.6
6	R	30	2.0	0.273	60.2	LOS E	1.5	10.7	0.99	0.72	22.5
Approach		105	2.0	0.666	58.9	LOS E	3.9	27.9	1.00	0.79	22.5
North: Rocky Pt Rd											
8	T	893	2.0	0.619	2.7	LOS A	4.2	29.8	0.18	0.16	54.8
9	R	72	2.0	0.619	15.2	LOS B	4.2	29.7	0.36	0.90	43.3
Approach		965	2.0	0.619	3.7	LOS A	4.2	29.8	0.19	0.21	53.7
West: Jubilee Ave											
10	L	93	2.0	0.191	8.8	LOS A	0.4	2.6	0.14	0.68	48.3
12	R	85	2.0	0.290	49.2	LOS D	3.7	26.7	0.92	0.77	25.4
Approach		178	2.0	0.290	28.1	LOS B	3.7	26.7	0.51	0.73	33.8
All Vehicles		2244	2.0	0.758	10.8	LOS A	21.5	153.1	0.40	0.42	45.3

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 used.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P5	Across N approach	53	44.2	LOS E	0.1	0.1	0.94	0.94
All Pedestrians		53	44.2	LOS E			0.94	0.94

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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MOVEMENT SUMMARY

Site: Rocky Pt Rd & Jubilee Ave
AM FUT

Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Rocky Pt Rd											
1	L	117	2.0	0.651	16.3	LOS B	15.0	106.9	0.45	0.95	42.8
2	T	1380	2.0	0.651	8.0	LOS A	15.1	107.8	0.45	0.41	47.3
Approach		1497	2.0	0.651	8.7	LOS A	15.1	107.8	0.45	0.45	46.9
East: Phillips Rd											
4	L	5	2.0	0.141	59.0	LOS E	0.8	5.6	0.98	0.70	23.5
5	T	11	2.0	0.141	50.8	LOS D	0.8	5.6	0.98	0.68	23.7
6	R	16	2.0	0.146	59.4	LOS E	0.8	5.6	0.98	0.69	22.7
Approach		32	2.0	0.146	56.4	LOS D	0.8	5.6	0.98	0.69	23.2
North: Rocky Pt Rd											
8	T	637	2.0	0.503	3.8	LOS A	2.7	19.1	0.25	0.22	53.2
9	R	45	2.0	0.503	10.7	LOS A	0.6	4.3	0.12	0.85	46.7
Approach		682	2.0	0.503	4.2	LOS A	2.7	19.1	0.24	0.27	52.7
West: Jubilee Ave											
10	L	138	2.0	0.257	8.8	LOS A	0.5	3.3	0.19	0.69	48.1
12	R	105	2.0	0.358	49.7	LOS D	4.7	33.4	0.93	0.78	25.3
Approach		243	2.0	0.358	26.5	LOS B	4.7	33.4	0.51	0.73	34.6
All Vehicles		2454	2.0	0.651	9.8	LOS A	15.1	107.8	0.41	0.43	46.1

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 used.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P5	Across N approach	53	44.2	LOS E	0.1	0.1	0.94	0.94
All Pedestrians		53	44.2	LOS E			0.94	0.94

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.

Processed: Monday, 19 August 2013 9:06:47 AM

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MOVEMENT SUMMARY

Site: Rocky Pt Rd & Jubilee Ave
PM FUT

Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Rocky Pt Rd											
1	L	111	2.0	0.211	13.5	LOS A	1.5	10.7	0.24	0.75	43.9
2	T	1055	2.0	0.888	16.9	LOS B	39.9	284.1	0.74	0.75	39.1
Approach		1166	2.0	0.888	16.6	LOS B	39.9	284.1	0.69	0.75	39.5
East: Phillips Rd											
4	L	7	2.0	0.393	60.5	LOS E	2.3	16.1	1.00	0.74	23.4
5	T	38	2.0	0.393	52.2	LOS D	2.3	16.1	1.00	0.73	23.5
6	R	30	2.0	0.273	60.2	LOS E	1.5	10.7	0.99	0.72	22.5
Approach		75	2.0	0.393	56.2	LOS D	2.3	16.1	0.99	0.73	23.1
North: Rocky Pt Rd											
8	T	1014	2.0	0.796	4.3	LOS A	9.1	65.0	0.28	0.26	52.1
9	R	72	2.0	0.796	34.8	LOS C	7.2	51.3	0.86	0.89	31.5
Approach		1086	2.0	0.796	6.3	LOS A	9.1	65.0	0.32	0.30	50.0
West: Jubilee Ave											
10	L	93	2.0	0.191	8.8	LOS A	0.4	2.6	0.14	0.68	48.3
12	R	85	2.0	0.290	49.2	LOS D	3.7	26.7	0.92	0.77	25.4
Approach		178	2.0	0.290	28.1	LOS B	3.7	26.7	0.51	0.73	33.8
All Vehicles		2505	2.0	0.888	14.1	LOS A	39.9	284.1	0.53	0.55	41.9

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

Vehicle movement LOS values are based on average delay per movement

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

SIDRA Standard Delay Model used.

Movement Performance - Pedestrians							
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued
P5	Across N approach	53	44.2	LOS E	0.1	0.1	0.94
All Pedestrians		53	44.2	LOS E			0.94

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.

Processed: Monday, 19 August 2013 9:06:47 AM

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MOVEMENT SUMMARY

Site: Rocky Pt Rd & Weeny St AM
FUT Give Way

Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Rocky Pt Rd											
1	L	59	2.0	0.459	8.3	LOS A	0.0	0.0	0.00	1.05	49.0
2	T	1370	2.0	0.459	3.2	LOS A	7.6	54.4	0.38	0.00	52.8
3	R	122	2.0	0.459	16.3	LOS B	7.6	54.4	0.95	1.14	44.4
Approach		1551	2.0	0.459	4.4	NA	7.6	54.4	0.41	0.13	51.9
East: Access											
4	L	105	2.0	4.596	3309.1	LOS F	173.4	1234.8	1.00	6.24	0.7
5	T	21	2.0	4.596	3307.8	LOS F	173.4	1234.8	1.00	4.47	0.6
6	R	205	2.0	4.596	3309.2	LOS F	173.4	1234.8	1.00	4.39	0.6
Approach		331	2.0	4.596	3309.1	LOS F	173.4	1234.8	1.00	4.98	0.6
North: Rocky Pt Rd											
7	L	96	2.0	0.068	8.3	LOS A	0.0	0.0	0.00	0.73	49.0
8	T	574	2.0	0.301	25.4	LOS B	10.6	75.4	0.95	0.00	33.5
9	R	4	2.0	0.301	35.2	LOS C	10.6	75.4	1.00	1.09	32.5
Approach		674	2.0	0.301	23.1	NA	10.6	75.4	0.81	0.11	35.0
West: Weeny St											
10	L	28	2.0	1.717	751.7	LOS F	32.9	234.6	1.00	2.47	2.8
11	T	23	2.0	1.717	750.5	LOS F	32.9	234.6	1.00	2.31	2.8
12	R	52	2.0	1.717	751.8	LOS F	32.9	234.6	1.00	2.27	2.8
Approach		103	2.0	1.717	751.5	LOS F	32.9	234.6	1.00	2.33	2.8
All Vehicles		2659	2.0	4.596	449.4	NA	173.4	1234.8	0.61	0.81	4.5

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 used.

Processed: Monday, 19 August 2013 9:26:30 AM

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MOVEMENT SUMMARY

Site: Rocky Pt Rd & Weeny St PM
FUT Give Way

Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Rocky Pt Rd											
1	L	24	2.0	0.128	8.3	LOS A	0.0	0.0	0.00	1.03	49.0
2	T	762	2.0	0.564	30.2	LOS C	12.5	89.2	0.71	0.00	31.4
3	R	61	2.0	0.564	50.9	LOS D	12.5	89.2	1.00	1.21	26.2
Approach		847	2.0	0.564	31.1	NA	12.5	89.2	0.71	0.12	31.3
East: Access											
4	L	108	2.0	4.477	3199.0	LOS F	157.1	1118.6	1.00	4.73	0.7
5	T	23	2.0	4.477	3197.7	LOS F	157.1	1118.6	1.00	4.26	0.7
6	R	170	2.0	4.477	3199.1	LOS F	157.1	1118.6	1.00	4.18	0.7
Approach		301	2.0	4.477	3199.0	LOS F	157.1	1118.6	1.00	4.38	0.7
North: Rocky Pt Rd											
7	L	121	2.0	0.385	8.3	LOS A	0.0	0.0	0.00	0.99	49.0
8	T	1299	2.0	0.385	4.6	LOS A	7.9	56.1	0.50	0.00	51.0
9	R	18	2.0	0.385	17.1	LOS B	7.9	56.1	0.95	1.12	44.3
Approach		1438	2.0	0.385	5.1	NA	7.9	56.1	0.46	0.10	50.7
West: Weeny St											
10	L	24	2.0	1.250	403.5	LOS F	16.2	115.0	1.00	1.86	5.0
11	T	24	2.0	1.250	402.2	LOS F	16.2	115.0	1.00	1.61	4.9
12	R	27	2.0	1.250	403.6	LOS F	16.2	115.0	1.00	1.60	4.9
Approach		75	2.0	1.250	403.1	LOS F	16.2	115.0	1.00	1.68	4.9
All Vehicles		2661	2.0	4.477	385.8	NA	157.1	1118.6	0.62	0.63	5.1

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 used.

Processed: Monday, 19 August 2013 9:25:25 AM

SIDRA INTERSECTION 5.1.13.2093

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INTERSECTION

MOVEMENT SUMMARY

Site: Rocky Pt Rd & Weeny St AM
FUT Signals

Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Rocky Pt Rd											
1	L	59	2.0	0.763	10.1	LOS A	8.5	60.3	0.20	1.03	47.9
2	T	1370	2.0	0.763	2.0	LOS A	8.5	60.3	0.21	0.19	55.5
3	R	122	2.0	0.763	10.5	LOS A	4.7	33.4	0.24	0.95	47.4
Approach		1551	2.0	0.763	2.9	LOS A	8.5	60.3	0.21	0.28	54.5
East: Access											
4	L	105	2.0	0.310	43.9	LOS D	5.2	37.1	0.88	0.79	27.4
5	T	21	2.0	0.310	35.6	LOS C	5.2	37.1	0.88	0.71	27.8
6	R	205	2.0	0.725	49.4	LOS D	9.6	68.3	1.00	0.85	25.4
Approach		331	2.0	0.725	46.8	LOS D	9.6	68.3	0.95	0.82	26.1
North: Rocky Pt Rd											
7	L	96	2.0	0.181	12.8	LOS A	0.9	6.2	0.17	0.72	44.5
8	T	574	2.0	0.761	6.6	LOS A	11.2	80.1	0.43	0.39	49.0
9	R	4	2.0	0.761	14.8	LOS B	11.2	80.1	0.44	1.01	44.2
Approach		674	2.0	0.761	7.5	LOS A	11.2	80.1	0.39	0.44	48.3
West: Weeny St											
10	L	28	2.0	0.255	59.9	LOS E	1.4	9.9	0.99	0.72	22.6
11	T	23	2.0	0.688	54.8	LOS D	4.0	28.1	1.00	0.82	22.3
12	R	52	2.0	0.688	63.2	LOS E	4.0	28.1	1.00	0.82	22.1
Approach		103	2.0	0.688	60.4	LOS E	4.0	28.1	1.00	0.79	22.3
All Vehicles		2659	2.0	0.763	11.8	LOS A	11.2	80.1	0.38	0.41	44.6

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 used.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	53	38.7	LOS D	0.1	0.1	0.88	0.88
P3	Across E approach	53	20.5	LOS C	0.1	0.1	0.64	0.64
P5	Across N approach	53	38.7	LOS D	0.1	0.1	0.88	0.88
P7	Across W approach	53	20.5	LOS C	0.1	0.1	0.64	0.64
All Pedestrians		212	29.6	LOS C			0.76	0.76

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.

Processed: Monday, 19 August 2013 9:29:20 AM

SIDRA INTERSECTION 5.1.13.2093

Project: F:\WORK\13\13091 - 152-206 ROCKY POINT ROAD, KOGARAH\MODELLING\ROCKY POINT RD

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MOVEMENT SUMMARY

Site: Rocky Pt Rd & Weeny St PM
FUT Signals

Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Rocky Pt Rd											
1	L	24	2.0	0.180	9.4	LOS A	0.6	4.1	0.08	1.00	48.0
2	T	762	2.0	0.760	1.3	LOS A	4.0	28.4	0.15	0.12	56.7
3	R	61	2.0	0.760	9.6	LOS A	4.0	28.4	0.17	1.01	48.1
Approach		847	2.0	0.760	2.2	LOS A	4.0	28.4	0.15	0.21	55.7
East: Access											
4	L	108	2.0	0.394	48.1	LOS D	5.8	41.1	0.93	0.80	26.0
5	T	23	2.0	0.394	39.8	LOS C	5.8	41.1	0.93	0.75	26.3
6	R	170	2.0	0.801	58.1	LOS E	8.4	60.1	1.00	0.97	23.0
Approach		301	2.0	0.801	53.1	LOS D	8.4	60.1	0.97	0.89	24.3
North: Rocky Pt Rd											
7	L	121	2.0	0.797	10.9	LOS A	7.7	54.9	0.22	0.97	47.1
8	T	1299	2.0	0.797	2.7	LOS A	7.7	54.9	0.22	0.21	54.7
9	R	18	2.0	0.797	11.0	LOS A	7.3	51.7	0.22	1.05	47.1
Approach		1438	2.0	0.797	3.5	LOS A	7.7	54.9	0.22	0.28	53.8
West: Weeny St											
10	L	24	2.0	0.218	59.7	LOS E	1.2	8.5	0.98	0.71	22.7
11	T	24	2.0	0.484	53.0	LOS D	2.6	18.5	1.00	0.74	22.9
12	R	27	2.0	0.484	61.3	LOS E	2.6	18.5	1.00	0.74	22.7
Approach		75	2.0	0.484	58.1	LOS E	2.6	18.5	0.99	0.73	22.8
All Vehicles		2661	2.0	0.801	10.2	LOS A	8.4	60.1	0.30	0.34	46.2

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

Vehicle movement LOS values are based on average delay per movement

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

SIDRA Standard Delay Model used.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	53	42.3	LOS E	0.1	0.1	0.92	0.92
P3	Across E approach	53	16.8	LOS B	0.1	0.1	0.58	0.58
P5	Across N approach	53	42.3	LOS E	0.1	0.1	0.92	0.92
P7	Across W approach	53	16.8	LOS B	0.1	0.1	0.58	0.58
All Pedestrians		212	29.6	LOS C			0.75	0.75

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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SIDRA INTERSECTION 5.1.13.2093

Project: F:\WORK\13\13091 - 152-206 ROCKY POINT ROAD, KOGARAH\MODELLING\ROCKY POINT RD

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APPENDIX D

EXTRACTS FROM RTA H.D. RESIDENTIAL STUDY

4.2 SUB-REGIONAL CENTRES - BRIGHTON-LE-SANDS

4.2.4 'Mornington'

General Site Description

The 'Mornington' apartment building is located in Princes Street between Grand Parade and Moate Avenue immediately to the north of the small Brighton-Le-Sands shopping centre. The building is situated approximately 200 metres from the waterfront of Botany Bay and the bus services running along Grand Parade (to the city) and Bay Street (to Rockdale Railway Station). The surrounding landuse is comprised of high and medium density residential developments and the large 'Brighton Resort' hotel and commercial centre. Vehicle access to the residents (secure) and visitors parking areas is provided on Princes Street. On-street parking in Princes Street is limited, particularly at night, due to the activity associated with the 'Brighton Resort' and nearby restaurants however public parking is available within the 'Brighton Resort' complex.

<u>Number of Levels</u>	:	7
<u>Number of Units</u>	:	27
<u>Number of Bedrooms</u>	:	14 x 2 bed, 13 x 3 bed
<u>Parking on-site</u>	:	35
Resident -		27
Visitor -		8
<u>Other Uses</u> -		Nil
<u>Type of Resident</u>	:	20 owner occupied, 7 leased
<u>Public Transport</u>	:	Good access to bus services

AVENUE

GORDON

STREET

GRAND

PARADE

RESIDENTIAL

RESIDENTIAL

"MORNINGTON"

HIGH RISE
RESIDENTIAL

RESIDENTIAL

PRINCESS

STREET

MOATE

RESIDENTIAL

BRIGHTON
RESORT
HOTEL



NTS

'MORNINGTON'

13-19 PRINCESS STREET
BRIGHTON - LE-SANDS

HIGH RISE RESIDENTIAL

'MORNINGTON'

VEHICLE TRIP GENERATION

TIME	WEEKDAY			SATURDAY			TOTAL	
	RESIDENT	VISITOR/ SERVICE	PU/SD TAXI	RESIDENT	VISITOR/ SERVICE	PU/SD TAXI	WEEKDAY	SATURDAY
07.00 - 08.00	1	0	0	-	-	-	1	-
08.00 - 09.00	5	0	0	2	0	0	5	2
09.00 - 10.00	7	0	0	2	0	0	7	2
10.00 - 11.00	-	-	-	7	0	0	-	7
11.00 - 12.00	-	-	-	2	2	2	-	6
12.00 - 13.00	-	-	-	2	0	0	-	2
16.00 - 17.00	0	0	0	-	-	-	0	-
17.00 - 18.00	4	0	0	-	-	-	4	-
18.00 - 19.00	6	0	0	-	-	-	6	-

PEAK HOUR (BY 15 MINS)

							IN	OUT	TOT	IN	OUT	TOT
AM 08.45 - 09.45	7	0	0	-	-	-	2	5	7	-	-	-
PM 18.00 - 19.00	6	0	0	-	-	-	4	2	6	-	-	-
SATURDAY 10.00 - 11.00	-	-	-	7	0	0	-	-	-	2	5	7

PERSON TRIP GENERATION

TIME	WEEKDAY			SATURDAY		
	IN	OUT	TOTAL	IN	OUT	TOTAL
07.00 - 08.00	0	8	8	-	-	-
08.00 - 09.00	1	11	12	3	6	9
09.00 - 10.00	9	10	19	1	6	7
10.00 - 11.00	-	-	-	7	6	13
11.00 - 12.00	-	-	-	5	8	13
12.00 - 13.00	-	-	-	7	5	12
16.00 - 17.00	8	1	9	-	-	-
17.00 - 18.00	0	4	4	-	-	-
18.00 - 19.00	3	10	13	-	-	-

PEAK HOUR (BY 15 MINS)

AM 09.00 - 10.00	9	10	19	-	-	-
PM 18.00 - 19.00	3	10	13	-	-	-
SATURDAY 10.30 - 11.30	-	-	-	9	6	15

HIGH RISE RESIDENTIAL								
'MORNINGTON'								
RESIDENT CARPARK ACCUMULATION								
Time			Weekday			Saturday		
			In	Out	Accum	In	Out	Accum
07.00	-	07.15	0	1	(24*) 23	-	-	-
07.15	-	07.30	0	0	23	-	-	-
07.30	-	07.45	0	0	23	-	-	-
07.45	-	08.00	0	0	23	-	-	-
08.00	-	08.15	0	1	22	0	1	(18*) 17
08.15	-	08.30	0	2	20	0	0	17
08.30	-	08.45	0	1	19	0	1	16
08.45	-	09.00	0	1	18	0	0	16
09.00	-	09.15	1	2	17	0	0	16
09.15	-	09.30	0	1	16	0	0	16
09.30	-	09.45	1	2	15	0	0	16
09.45	-	10.00	0	0	15	0	0	16
10.00	-	10.15	-	-	-	0	1	15
10.15	-	10.30	-	-	-	0	1	14
10.30	-	10.45	-	-	-	0	0	14
10.45	-	11.00	-	-	-	0	2	12
11.00	-	11.15	-	-	-	0	1	11
11.15	-	11.30	-	-	-	0	0	11
11.30	-	11.45	-	-	-	0	0	11
11.45	-	12.00	-	-	-	0	1	10
12.00	-	12.15	-	-	-	0	0	10
12.15	-	12.30	-	-	-	0	0	10
12.30	-	12.45	-	-	-	0	0	10
12.45	-	13.00	-	-	-	0	0	10
16.00	-	16.15	0	0	(16*) 16	-	-	-
16.15	-	16.30	0	0	16	-	-	-
16.30	-	16.45	0	0	16	-	-	-
16.45	-	17.00	0	0	16	-	-	-
17.00	-	17.15	1	0	17	-	-	-
17.15	-	17.30	1	0	18	-	-	-
17.30	-	17.45	1	0	19	-	-	-
17.45	-	18.00	0	1	18	-	-	-
18.00	-	18.15	0	1	17	-	-	-
18.15	-	18.30	2	1	18	-	-	-
18.30	-	18.45	1	0	19	-	-	-
18.45	-	19.00	1	0	20	-	-	-
Maximum Resident Parking by Census Data					Maximum Visitor Parking by Survey			
32					9 - Sunday 16.00			

* Number of vehicles at commencement of survey

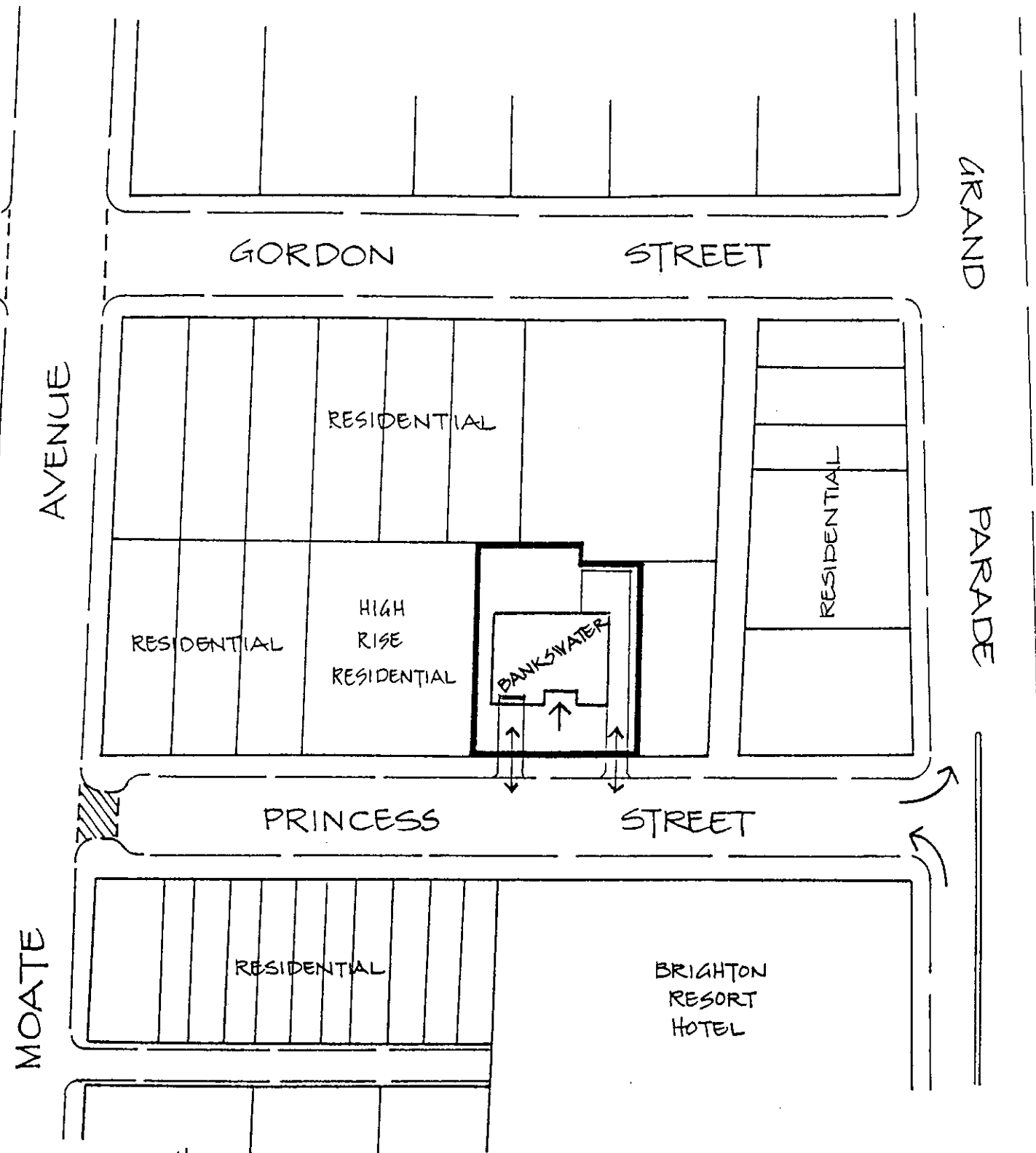
4.2 SUB-REGIONAL CENTRES - BRIGHTON-LE-SANDS

4.2.5 'Bankswater'

General Site Description

The 'Bankswater' apartment building is located in Princes Street between Grand Parade and Moate Avenue immediately to the north of the small Brighton-Le-Sands shopping centre. The building is situated approximately 200 metres from the waterfront of Botany Bay and the bus services running along Grand Parade (to the city) and Bay Street (to Rockdale Railway Station). The surrounding landuse is comprised of high and medium density residential developments and the large 'Brighton Resort' hotel and commercial centre. Vehicle access to the residents (secure) and visitors parking areas is provided on Princes Street. On-street parking in Princes Street is limited, particularly at night, due to the activity associated with the 'Brighton Resort' and nearby restaurants however public parking is available within the 'Brighton Resort' complex.

<u>Number of Levels</u>	:	8
<u>Number of Units</u>	:	40
<u>Number of Bedrooms</u>	:	24 x 2 bed, 16 x 3 bed
<u>Parking on-site</u>	:	52
Resident -		42
Visitor -		10
<u>Other Uses</u>	-	Nil
<u>Type of Resident</u>	:	N/A
<u>Public Transport</u>	:	Good access to bus services



NTS

'BANKSWATER'

3-11 PRINCESS STREET
BRIGHTON-LE-SANDS

HIGH RISE RESIDENTIAL

'BANKSWATER'

VEHICLE TRIP GENERATION

TIME	WEEKDAY			SATURDAY			TOTAL	
	RESIDENT	VISITOR/ SERVICE	PU/SD TAXI	RESIDENT	VISITOR/ SERVICE	PU/SD TAXI	WEEKDAY	SATURDAY
07.00 - 08.00	9	0	0	-	-	-	9	-
08.00 - 09.00	6	1	6	6	0	4	13	10
09.00 - 10.00	4	0	0	6	1	2	-	9
10.00 - 11.00	-	-	-	3	0	0	-	3
11.00 - 12.00	-	-	-	3	2	2	-	7
12.00 - 13.00	-	-	-	1	5	2	-	8
16.00 - 17.00	3	1	0	-	-	-	4	-
17.00 - 18.00	7	4	2	-	-	-	13	-
18.00 - 19.00	6	3	0	-	-	-	9	-

PEAK HOUR (BY 15 MINS)							IN	OUT	TOT	IN	OUT	TOT
AM 07.30 - 08.30	9	0	6	-	-	-	5	10	15	-	-	-
PM 18.00 - 19.00	6	4	6	-	-	-	12	4	16	-	-	-
SATURDAY 08.30 - 09.30	-	-	-	8	0	0	-	-	-	7	1	8

PERSON TRIP GENERATION

TIME	WEEKDAY			SATURDAY		
	IN	OUT	TOTAL	IN	OUT	TOTAL
07.00 - 08.00	2	7	9	-	-	-
08.00 - 09.00	3	7	10	8	10	18
09.00 - 10.00	3	3	6	5	13	18
10.00 - 11.00	-	-	-	8	14	22
11.00 - 12.00	-	-	-	8	6	14
12.00 - 13.00	-	-	-	10	7	17
16.00 - 17.00	11	3	14	-	-	-
17.00 - 18.00	10	5	15	-	-	-
18.00 - 19.00	9	14	23	-	-	-

PEAK HOUR (BY 15 MINS)

AM 07.45 - 08.45	5	12	17	-	-	-
PM 18.00 - 19.00	9	14	23	-	-	-
SATURDAY 10.15 - 11.15	-	-	-	13	16	29

HIGH RISE RESIDENTIAL								
'BANKSWATER'								
RESIDENT CARPARK ACCUMULATION								
Time			Weekday			Saturday		
			In	Out	Accum	In	Out	Accum
07.00	-	07.15	0	1	(28*) 27	-	-	-
07.15	-	07.30	0	0	27	-	-	-
07.30	-	07.45	2	2	27	-	-	-
07.45	-	08.00	0	3	24	-	-	-
08.00	-	08.15	0	0	24	0	0	(27*) 27
08.15	-	08.30	0	2	22	0	0	27
08.30	-	08.45	0	3	19	0	3	24
08.45	-	09.00	0	0	19	0	0	24
09.00	-	09.15	0	0	19	0	3	21
09.15	-	09.30	0	1	18	0	1	20
09.30	-	09.45	0	1	17	0	0	20
09.45	-	10.00	0	0	17	1	0	21
10.00	-	10.15	-	-	-	0	0	21
10.15	-	10.30	-	-	-	0	0	21
10.30	-	10.45	-	-	-	0	0	21
10.45	-	11.00	-	-	-	0	1	20
11.00	-	11.15	-	-	-	0	1	19
11.15	-	11.30	-	-	-	0	1	18
11.30	-	11.45	-	-	-	0	0	18
11.45	-	12.00	-	-	-	0	0	18
12.00	-	12.15	-	-	-	0	0	18
12.15	-	12.30	-	-	-	0	0	18
12.30	-	12.45	-	-	-	0	0	18
12.45	-	13.00	-	-	-	0	0	18
16.00	-	16.15	1	0	(16*) 17	-	-	-
16.15	-	16.30	1	1	17	-	-	-
16.30	-	16.45	0	0	17	-	-	-
16.45	-	17.00	0	0	17	-	-	-
17.00	-	17.15	1	0	18	-	-	-
17.15	-	17.30	1	1	18	-	-	-
17.30	-	17.45	0	1	17	-	-	-
17.45	-	18.00	3	0	20	-	-	-
18.00	-	18.15	3	0	23	-	-	-
18.15	-	18.30	2	0	25	-	-	-
18.30	-	18.45	0	1	24	-	-	-
18.45	-	19.00	0	0	24	-	-	-
Maximum Resident Parking by Census Data					Maximum Visitor Parking by Survey			
46					6 - Sunday 15.00			

* Number of vehicles at commencement of survey

APPENDIX E

RMS WARRANTS



2.1 INTRODUCTION

This section describes the general warrants for the installation of traffic signals. It must be emphasised that these are only a guide. If a site satisfies the warrants, it does not necessarily mean that traffic signals are the best solution. All traffic data should be analysed and alternative treatments considered to determine the optimum solution (see Section 4 of the *Road Design Guide*). Traffic signals are sometimes installed due to public pressure or an administrative directive irrespective of the general warrants.

2.2 FACTORS INFLUENCING THE PROVISION OF TRAFFIC SIGNALS

Traffic signals are usually installed at an intersection:

- to provide traffic control at a site with a traffic capacity or road safety problem
- to control conflicting movements with high traffic flows
- to facilitate access to and from local areas in a major/minor road system, including pedestrian movements
- as part of an area wide system of traffic management

A side effect of signalisation is that the traffic flow on a major road is broken up into platoons. This assists nearby pedestrians to cross the major road and vehicles in nearby side streets to cross or enter the major road.

Factors influencing the provision of traffic signals include:

- traffic flows
- traffic conflicts
- traffic accident statistics
- pedestrian requirements
- access to major roads
- cost of installation
- availability of funds
- maintenance costs
- practicality
- feasibility
- the signposted speed limit is not more than 80km/h

General warrants are given in the following sub-sections. The figures stated should only be used as a guide and each intersection should be considered in more detail before being accepted for signal design.

2.3 SIGNALISED INTERSECTIONS

As a guide, a signalised intersection may be considered if one of the following warrants is met.

(a) Traffic demand:

For each of four one-hour periods of an average day:

- (i) the major road flow exceeds 600 vehicles/hour in each direction; and
- (ii) the minor road flow exceeds 200 vehicles/hour in one direction.

OR

(b) Continuous traffic:

For each of four one-hour periods of an average day:

- (i) the major road flow exceeds 900 vehicles/hour in each direction; and
- (ii) the minor road flow exceeds 100 vehicles/hour in one direction; and
- (iii) the speed of traffic on the major road or limited sight distance from the minor road causes undue delay or hazard to the minor road vehicles; and
- (iv) there is no other nearby traffic signal site easily accessible to the minor road vehicles.

OR

(c) Pedestrian safety:

For each of four one-hour periods of an average day:

- (i) the pedestrian flow crossing the major road exceeds 150 persons/hour; and
- (ii) the major road flow exceeds 600 vehicles/hour in each direction or, where there is a central median of at least 1.2 m wide, 1000 vehicles/hour in each direction.

OR

(d) Pedestrian safety – high speed road:

For each of four one-hour periods of an average day:

- (i) the pedestrian flow crossing the major road exceeds 150 persons/hour; and
- (ii) the major road flow exceeds 450 vehicles/hour in each direction or, where there is a central median of at least 1.2 m wide, 750 vehicles/hour in each direction; and
- (iii) the 85th percentile speed on the major road exceeds 75 km/h.

OR

(e) Crashes:

- (i) The intersection has been the site of an average of three or more reported tow-away or casualty traffic accidents per year over a three year period, where the traffic accidents could have been prevented by traffic signals; and
- (ii) the traffic flows are at least 80% of the appropriate flow warrants.

2.4 SIGNALISED MARKED FOOT CROSSINGS AT INTERSECTIONS

A signalised marked foot crossing must be provided on each leg of a signalised intersection (including T junctions), in a built-up area, except in the following circumstances:

- (a) There are significant road safety implications:
 - (i) there is insufficient sight distance (see Section 4 of the *Road Design Guide*); or
 - (ii) there is adverse road geometry (see Section 4 of the *Road Design Guide*).
- (b) There are significant adverse transport efficiency implications
 - (i) there is an unacceptable increase in delay and degree of saturation which must be substantiated by intersection modelling; or