

APPENDIX A

TRAFFIC SURVEY RESULTS



R.O.A.R. DATA

Reliable, Original & Authentic Results

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

Client : T.T.P.A.

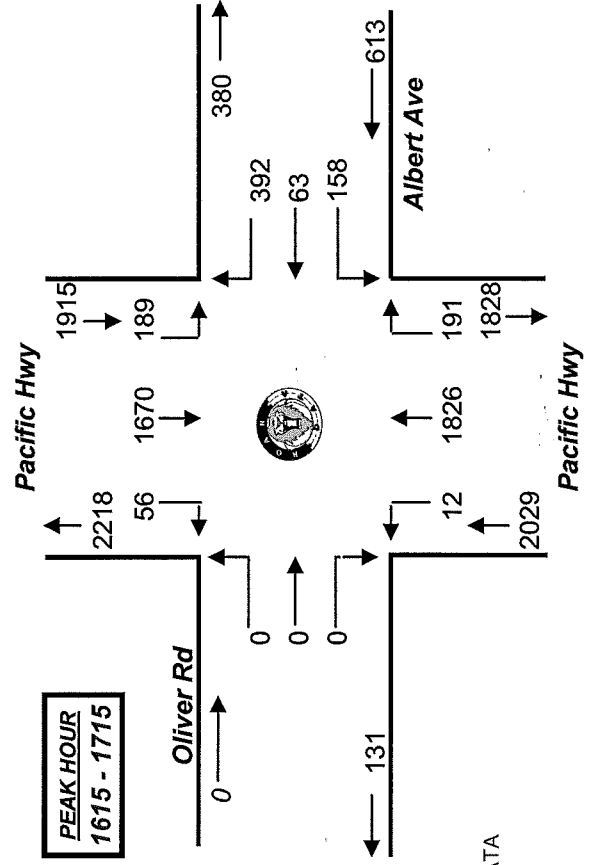
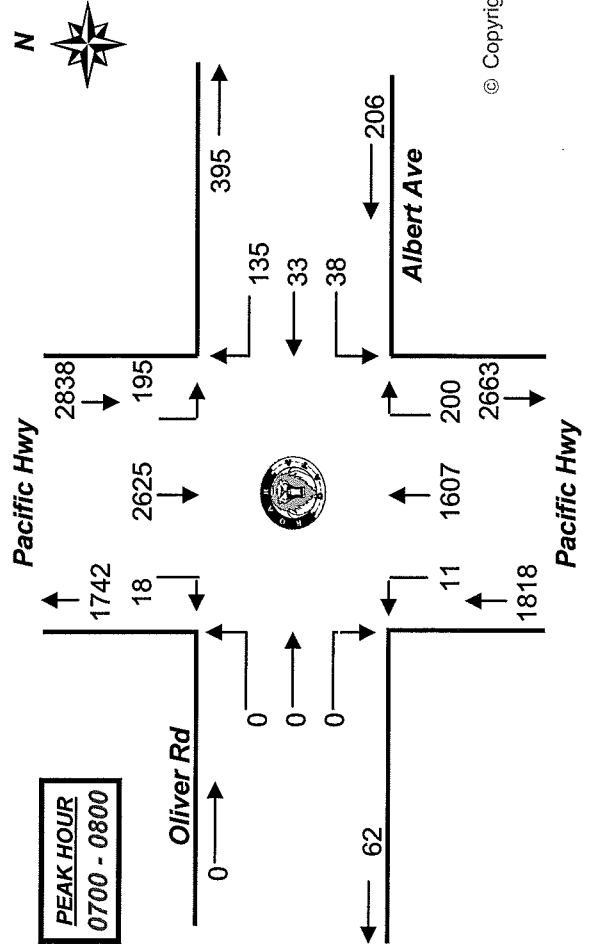
Job No/Name : 2320 Chatswood Albert L

Day/Date : Thursday 26th June 08

All Vehicles	NORTH				WEST				SOUTH				EAST				All Vehicles									
	Pacific Hwy				Oliver Rd				Pacific Hwy				Albert Ave				Pacific Hwy				Albert Ave					
	L	I	R	TOT	L	I	R	TOT	L	I	R	TOT	L	I	R	TOT	L	I	R	TOT						
0700 - 0715	39	681	6	1159					2	371	33	7	1	19	48	391	6	2	434	49	41	16	92	1079		
0715 - 0730	35	798	1	1289					2	384	29	7	7	26	47	410	17	4	392	43	46	21	98	1078		
0730 - 0745	35	568	3	1135					3	404	64	12	11	35	47	480	11	5	386	41	26	10	107	1113		
0745 - 0800	86	578	8	1279					4	448	74	12	14	55	57	385	18	1	536	48	39	16	100	1200		
0800 - 0815	58	519	16	1082					6	359	51	12	14	47	38	395	10	2	512	59	47	16	87	1166		
0815 - 0830	73	479	10	1168					10	440	65	15	15	61	47	367	9	2	445	45	45	20	84	1064		
0830 - 0845	66	512	21	1162					4	392	61	22	31	53	31	417	11	1	390	46	30	15	84	1025		
0845 - 0900	86	456	13	1171					4	417	99	13	32	51	41	434	14	4	535	75	51	10	61	1225		
Period End	478	4591	78	9445	0	0	0	0	35	3215	476	100	125	347	356	3279	96	0	0	0	3630	406	325	124	713	8950

	NORTH				WEST				SOUTH				EAST				
	Pacific Hwy				Oliver Rd				Pacific Hwy				Albert Ave				
	L	I	R	TOT	L	I	R	TOT	L	I	R	TOT	L	I	R	TOT	
0700 - 0800	195	2625	18	4862	0	0	0	0	11	1607	200	38	33	135	63	397	4470
0715 - 0815	214	2463	28	4785	0	0	0	0	15	1595	218	43	46	163	63	392	4557
0730 - 0830	252	2144	37	4664	0	0	0	0	23	1651	254	51	54	198	62	378	4543
0745 - 0845	283	2088	55	4691	0	0	0	0	24	1639	251	61	74	216	67	355	4455
0800 - 0900	283	1966	60	4583	0	0	0	0	24	1608	276	62	92	212	61	316	4480

PEAK HOUR				PEAK HOUR				PEAK HOUR				PEAK HOUR														
195	2625	18	4862	0	0	0	0	11	1607	200	38	33	135	4862	189	1670	56	0	0	12	1826	191	158	63	392	4557



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Client : T.T.P.A.

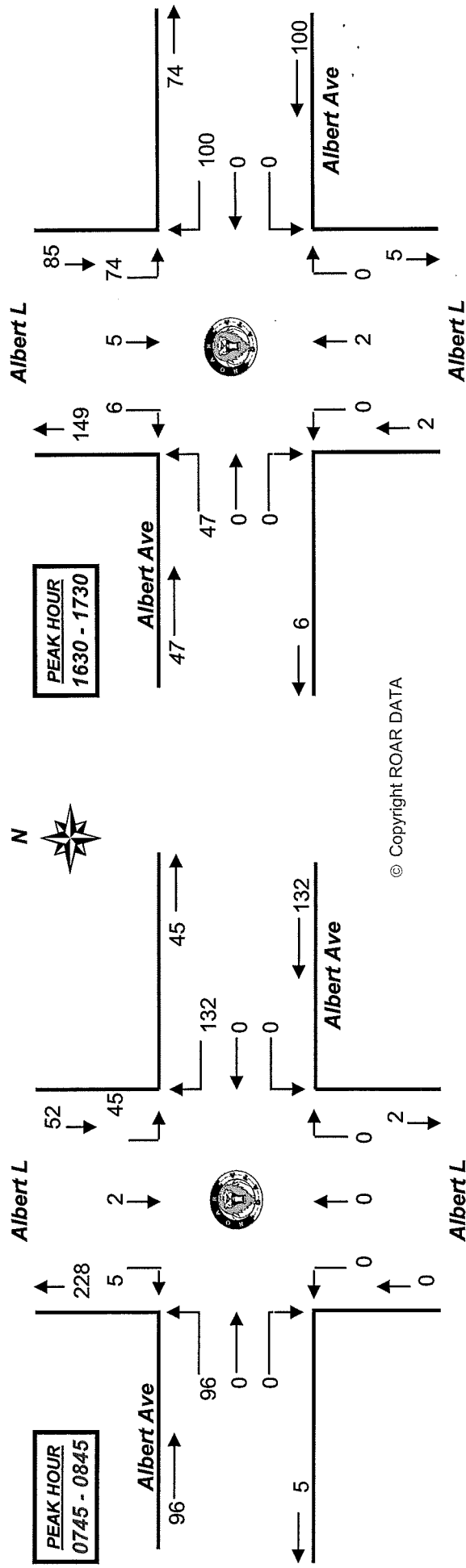
Job No/Name : 2320 Chatswood Albert L

Day/Date : Thursday 26th June 08

All Vehicles		NORTH				WEST				SOUTH				EAST			
		Albert L				Albert Ave				Albert L				Albert Ave			
Time Per	TOT	L	I	R	L	I	R	L	I	R	L	I	R	L	I	R	TOT
0700 - 0715	28	1	1	1	15					1							21
0715 - 0730	32	10	0	0	10					1							26
0730 - 0745	58	9	0	0	28					1							22
0745 - 0800	78	9	2	1	36					0							29
0800 - 0815	75	11	0	0	23					0							24
0815 - 0830	66	15	0	2	20					0							25
0830 - 0845	61	10	0	2	17					0							18
0845 - 0900	76	13	0	1	22					0							25
Period End	474	78	3	7	171	0	0	0	0	3	0	0	0	0	0	0	190

All Vehicles		NORTH				WEST				SOUTH				EAST			
		Albert L				Albert Ave				Albert L				Albert Ave			
Time Per	TOT	L	I	R	L	I	R	L	I	R	L	I	R	L	I	R	TOT
0700 - 0800	196	29	3	2	89	0	0	0	0	3							98
0715 - 0815	243	39	2	1	97	0	0	0	0	2							101
0730 - 0830	277	44	2	3	107	0	0	0	0	1							100
0745 - 0845	280	45	2	5	96	0	0	0	0	0							96
0800 - 0900	278	49	0	5	82	0	0	0	0	0							92

All Vehicles		NORTH				WEST				SOUTH				EAST			
		Albert L				Albert Ave				Albert L				Albert Ave			
Time Per	TOT	L	I	R	L	I	R	L	I	R	L	I	R	L	I	R	TOT
0700 - 1700	196	69	6	2	47	0	0	0	0	2							98
1615 - 1715	243	75	5	4	44	0	0	0	0	2							101
1630 - 1730	277	74	5	6	47	0	0	0	0	2							100
1645 - 1745	280	77	6	7	38	0	0	0	0	1							96
1700 - 1800	278	73	7	10	46	0	0	0	0	0							92



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Client : T.T.P.A.
Job No/Name : 2320 Chatswood Albert L
Day/Date : Thursday 26th June 08

All Vehicles

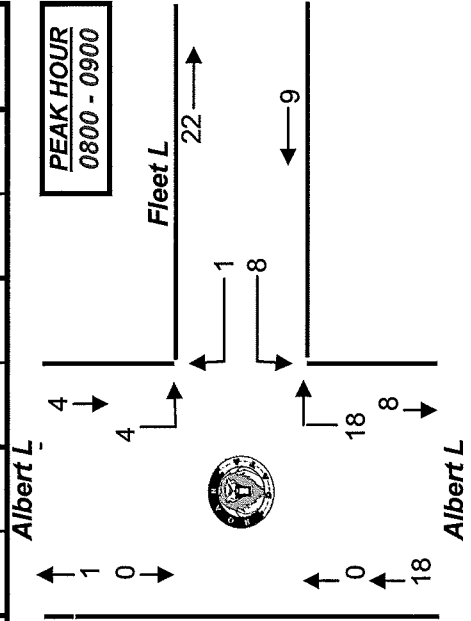
Time Per	NORTH			EAST			SOUTH		
	Albert L	I	L	Fleet L	R	L	Albert L	I	TOTAL
0700 - 0715			0	0	0	1	0	0	1
0715 - 0730			2	1	1	1	2	2	6
0730 - 0745			1	0	0	2	4	4	7
0745 - 0800			2	0	0	1	7	7	10
0800 - 0815			1	0	0	1	5	5	7
0815 - 0830			1	0	0	3	2	2	6
0830 - 0845			1	0	0	2	4	4	7
0845 - 0900			1	1	1	2	7	7	11
Period End		0	9	2	2	13	31	0	55

Time Per	NORTH			EAST			SOUTH		
	Albert L	I	L	Fleet L	R	L	Albert L	I	TOTAL
1600 - 1615			2	3	3	6	6	6	17
1615 - 1630			1	1	1	5	3	3	10
1630 - 1645			1	3	3	4	3	3	11
1645 - 1700			0	3	3	7	1	1	11
1700 - 1715			1	5	5	4	3	3	13
1715 - 1730			1	4	4	6	3	3	14
1730 - 1745			0	2	2	4	1	1	7
1745 - 1800			0	1	1	7	8	8	16
Period End		0	6	22	22	43	28	0	99

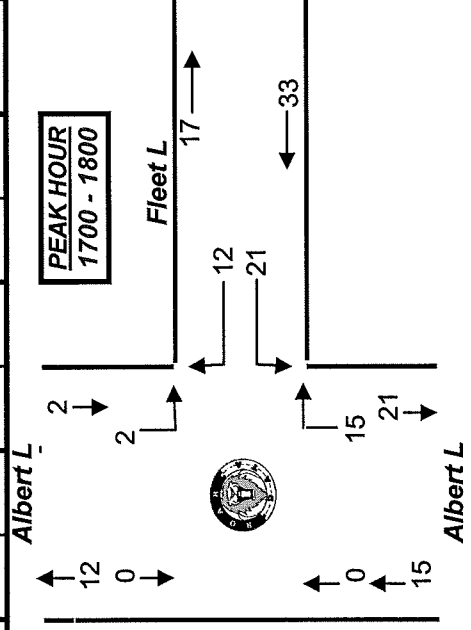
Peak Per	NORTH			EAST			SOUTH		
	Albert L	I	L	Fleet L	R	L	Albert L	I	TOTAL
0700 - 0800		0	5	1	1	5	13	0	24
0715 - 0815		0	6	1	1	5	18	0	30
0730 - 0830		0	5	0	0	7	18	0	30
0745 - 0845		0	5	0	0	7	18	0	30
0800 - 0900		0	4	1	1	8	18	0	31

Peak Per	NORTH			EAST			SOUTH		
	Albert L	I	L	Fleet L	R	L	Albert L	I	TOTAL
1600 - 1700		0	4	10	10	22	13	0	49
1615 - 1715		0	3	12	12	20	10	0	45
1630 - 1730		0	3	15	15	21	10	0	49
1645 - 1745		0	2	14	14	21	8	0	45
1700 - 1800		0	2	12	12	21	15	0	50

PEAK HR	0	4	1	8	18	0	31
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PEAK HR	0	2	12	21	15	0	50
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R.O.A.R. DATA
Reliable, Original & Authentic Results
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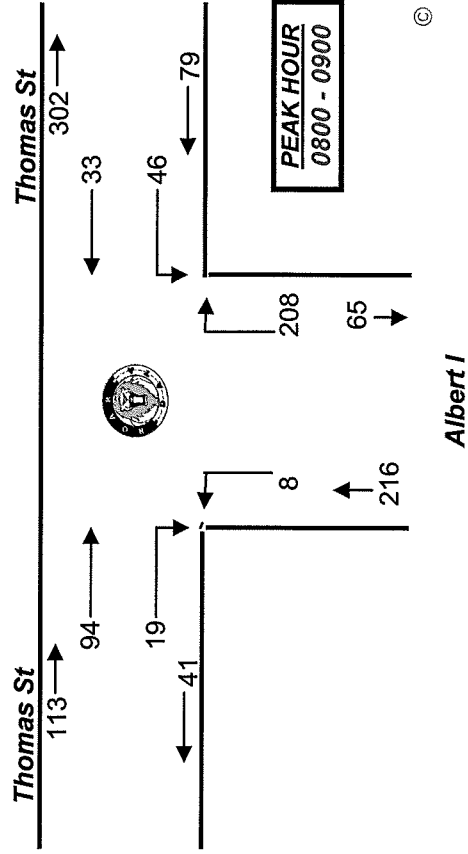
Client : T.T.P.A.
Job No/Name : 2320 Chatswood Albert L
Day/Date : Thursday 26th June 08

All Vehicles

Time Per	WEST		SOUTH		EAST	
	Thomas St	Albert I	Thomas St	Albert I	Thomas St	Albert I
0700 - 0715	11	0	0	20	3	5
0715 - 0730	22	2	3	18	12	4
0730 - 0745	18	2	1	40	5	8
0745 - 0800	19	4	1	53	12	5
0800 - 0815	26	5	0	57	12	12
0815 - 0830	16	4	2	56	14	6
0830 - 0845	28	6	1	46	7	11
0845 - 0900	24	4	5	49	13	4
Period End	164	27	13	339	78	55
TOTAL	113	94	19	8	208	46

Time Per	WEST		SOUTH		EAST	
	Thomas St	Albert I	Thomas St	Albert I	Thomas St	Albert I
0700 - 0800	70	8	5	131	32	22
0715 - 0815	85	13	5	168	41	29
0730 - 0830	79	15	4	206	43	31
0745 - 0845	89	19	4	212	45	34
0800 - 0900	94	19	8	208	46	33
TOTAL	302	67	22	725	166	129

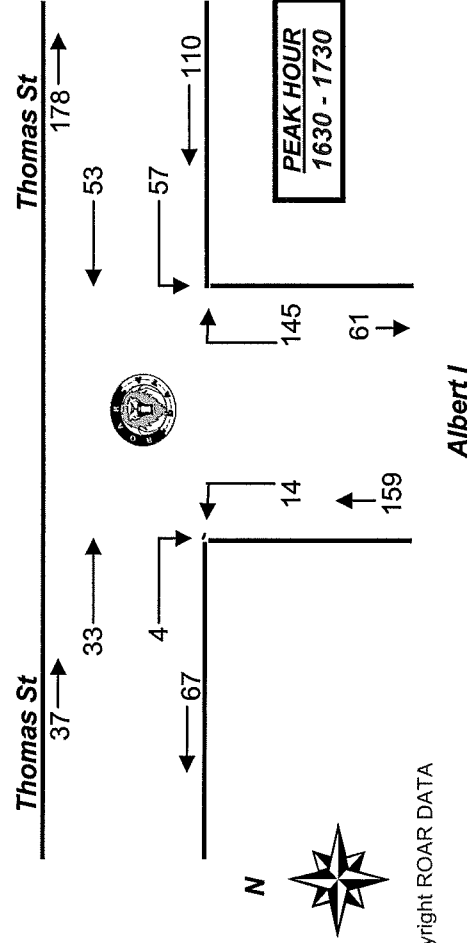
PEAK HR	94	19	8	208	46	33	408
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Time Per	WEST		SOUTH		EAST	
	Thomas St	Albert I	Thomas St	Albert I	Thomas St	Albert I
1600 - 1615	3	3	2	35	14	34
1615 - 1630	2	1	2	25	16	18
1630 - 1645	7	0	3	36	10	13
1645 - 1700	9	2	2	44	14	10
1700 - 1715	9	2	5	31	18	17
1715 - 1730	8	0	4	34	15	13
1730 - 1745	7	2	1	31	11	15
1745 - 1800	10	1	3	33	12	21
Period End	55	11	22	269	110	141
TOTAL	55	11	22	269	110	141

Time Per	WEST		SOUTH		EAST	
	Thomas St	Albert I	Thomas St	Albert I	Thomas St	Albert I
1600 - 1700	21	6	9	140	54	75
1615 - 1715	27	5	12	136	58	58
1630 - 1730	33	4	14	145	57	53
1645 - 1745	33	6	12	140	58	55
1700 - 1800	34	5	13	129	56	66
TOTAL	148	26	50	690	275	307

PEAK HR	33	4	14	145	57	53	306
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APPENDIX B

ROAD NETWORK OPTIONS



16 February 2009

To	James Brocklebank, Matthew Wilson		
Copy to	Steven Head, David Sung		
From	Benjamin Taylor	Tel	(03) 8687 8526
Subject	Chatswood Traffic Study- Proposed Options Treatments	Job no.	21/17241

James, Matthew

As discussed please find the following proposed options treatments to be tested as part of the Chatswood Traffic Study.

The options are described in sections 1 and 2.

Diagrams of the location of the treatments are available in section 3. These diagrams do not include detailed plans showing the actual modifications.

The additional treatments to Malvern Ave, Pacific Hwy parking ban and the re-opening of Malvern Ave are included in the treatments.

Each of these treatments include the known changes that will occur in the modelled area before 2013. These known changes are:

- ▶ Rebuilt Chatswood Interchange, including retention of One Way eastbound on Endeavour St;
- ▶ Help St widening to 6 lanes between Orchard & Railway;
- ▶ Albert Ave widening to 4 lanes under rail line;
- ▶ TCS on Albert Ave at Thomas Lane, inc pedestrian phase to Frank Channon Walk;
- ▶ Thomas Lane re-opened for 1 way southbound;
- ▶ Archer St, widening along frontage of 63A Archer to provide for extended right turn bay on southbound approach to Albert Ave;
- ▶ Ban right turn out of Chatswood Chase carpark at Victoria/Neridah and right turn phase for eastbound out of Neridah;
- ▶ Right turn phase into Malvern (eastbound) from Archer (northbound);
- ▶ PM peak right turn ban northbound on Archer at Ashley – has been introduced;
- ▶ Albert Ave widening west of Crispe Lane for extra lane;
- ▶ Fleet lane closed through Thomas st carpark site; and
- ▶ Reintroduction of NB flow in Albert Lane in place of current 2 way



1 2013 Design Year

The following options will be tested with 2013 Design Year Traffic Volumes

1.1 2013-A

- Pacific Hwy/Mowbray Road- provision of dual right turning lanes from Pacific Hwy to Mowbray Road (South to East);
- Pacific Hwy/Boundary St- provision of dual right turning lanes from Pacific Hwy to Boundary St (South to East) and widening of Boundary St approach to Pacific Hwy; and
- Ban Parking on Pacific Hwy SB between Boundary St and Help St during all modelled time periods (unless already banned)

1.2 2013-B

- All treatments in 2013-A;
- Northern Bypass of Chatswood CBD via Help St and Wattle Lane- widening of Wattle Lane to provide 1 lane in each direction;
- Victoria Ave Bus Only- provision of bus lanes on Victoria Ave and Anderson St between Endeavour St and Archer St. Left turn at Anderson/Victoria (North to East) for buses only. No access to Victoria Ave West from Archer St/Victoria Ave intersection;
- Closure of Spring St @ Victoria Ave;
- Albert Ave/Archer St- provision of right turn lane from Albert Ave to Archer St (East to North) ; and
- Re-opening of Malvern Ave between Archer St and Havilah St (*if required*).

1.3 2013- C

- All treatments in 2013-B
- Signalise pedestrian crossing at Victoria Ave/Railway St (current Zebra crossing outside Chatswood Railway Station)

This option will be tested but will not have full reporting.



2 2018 Design Year

The following options will be tested with 2018 Design Year Traffic Volumes

2.1 2018- A

- Pacific Hwy/Mowbray Road- provision of dual right turning lanes from Pacific Hwy to Mowbray Road (South to East);
- Pacific Hwy/Boundary St- provision of dual right turning lanes from Pacific Hwy to Boundary St (South to East) and widening of Boundary St approach to Pacific Hwy; and
- Ban Parking on Pacific Hwy SB between Boundary St and Help St during all modelled time periods (unless already banned)

This option involves the same infrastructure as 2013-A but will be tested with 2018 predicted volumes.

2.2 2018-B

- All treatments in 2018-A;
- Northern Bypass of Chatswood CBD via Help St and Wattle Lane- widening of Wattle Lane to provide 1 lane in each direction;
- Victoria Ave Bus Only- provision of bus lanes on Victoria Ave and Anderson St between Endeavour St and Archer St. Left turn at Anderson/Victoria (North to East) for buses only. No access to Victoria Ave West from Archer St/Victoria Ave intersection; and
- Closure of Spring St @ Victoria Ave.
- Albert Ave/Archer St- provision of right turn lane from Albert Ave to Archer St (East to North) ; and
- Re-opening of Malvern Ave between Archer St and Havilah St (*if required*).

This option involves the same infrastructure as 2013-A but will be tested with 2018 predicted volumes.

2.3 2018-C

- All treatments in 2013-B
- Pacific Hwy/Albert Ave/Centennial Ave- closure of Centennial Ave to remove TCS site 892 (Pacific Hwy/Centennial Ave signals). Widening of Oliver Road to allow 2-way traffic. Re-configuration of Pacific Hwy/Albert Ave signal operations.
- Archer St/Boundary St- extension of Bus Lane on Archer St approach to Boundary St by widening on western side of Archer St and banning of parking on eastern side.

2.4 2018-D

- All treatments in 2013-C
- Signalise pedestrian crossing at Victoria Ave/Railway St (current Zebra crossing outside Chatswood Railway Station)

This option will be tested but will not have full reporting.

3 Treatment Diagrams

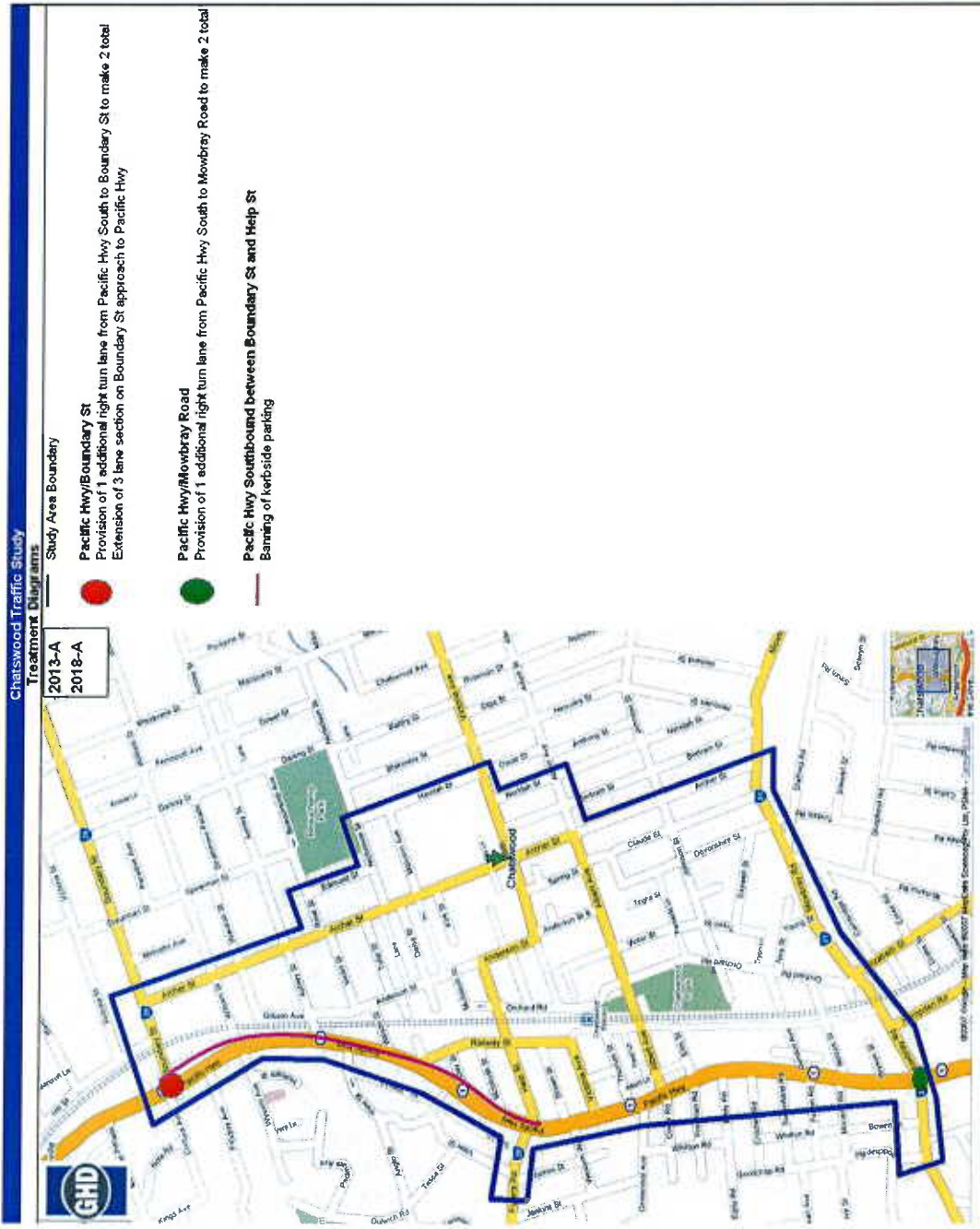


Figure 3.1 2013-A and 2018-A Treatments

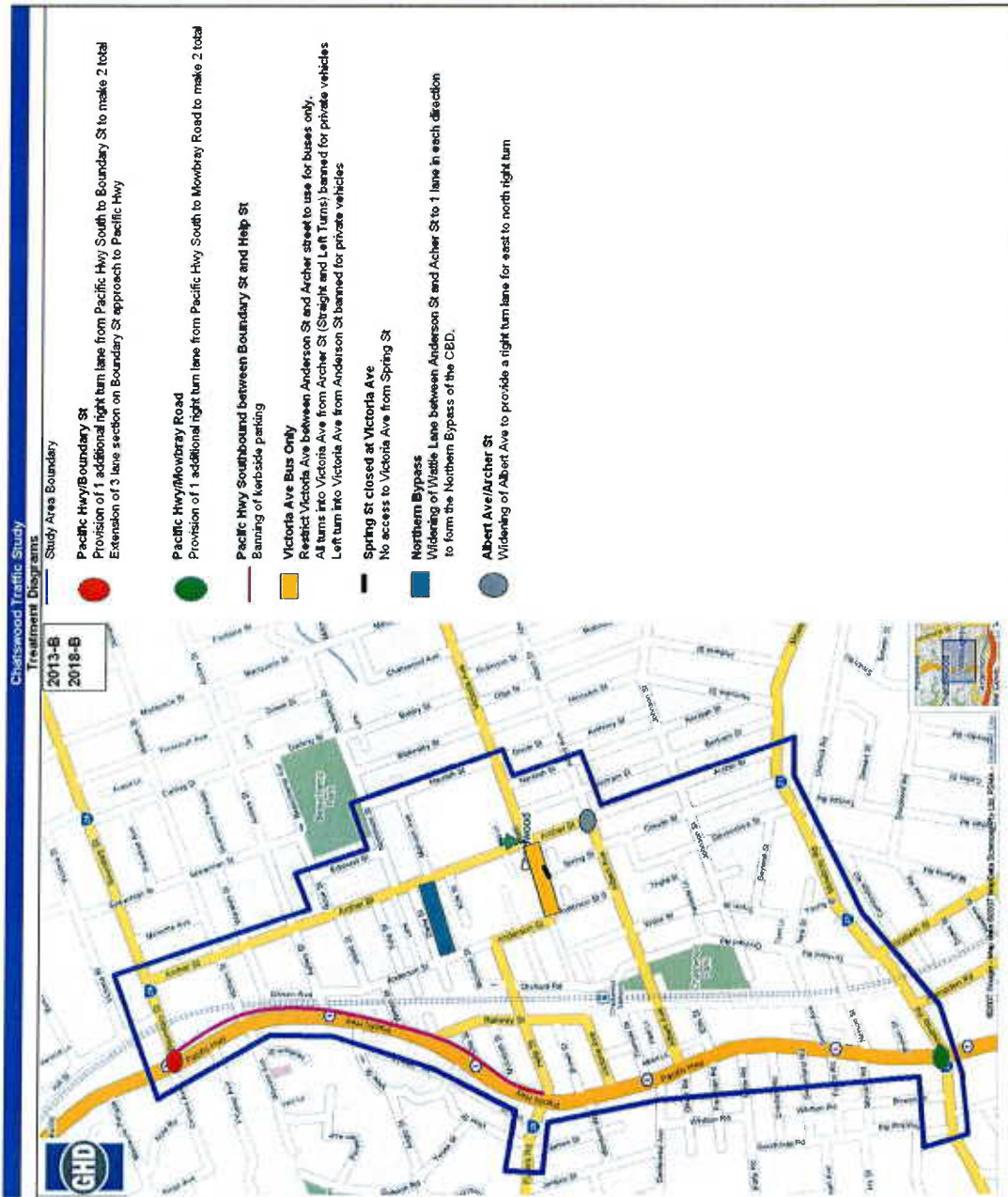


Figure 3.2 2013-B and 2018-B Treatments

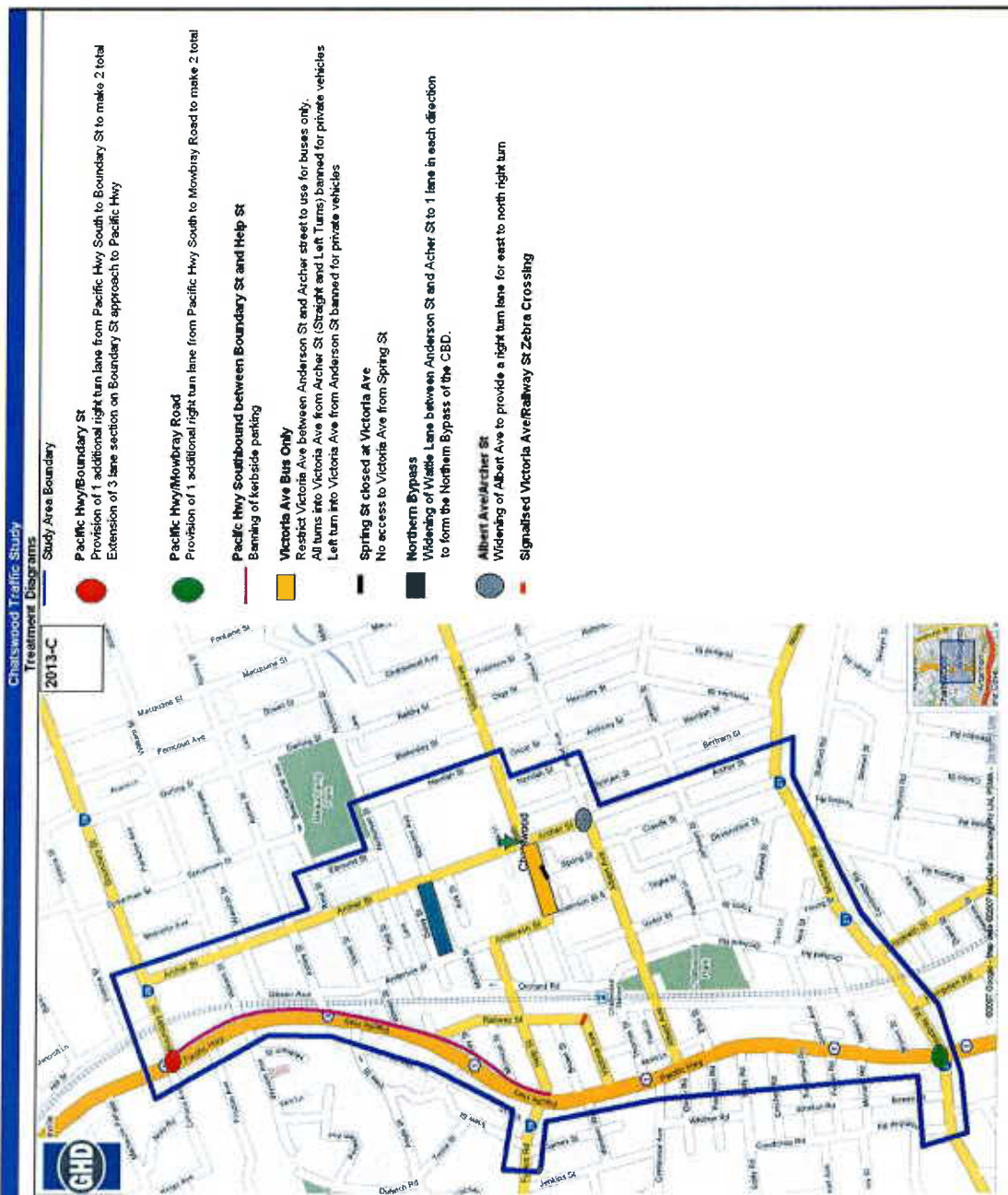


Figure 3.3 2013-C Treatments

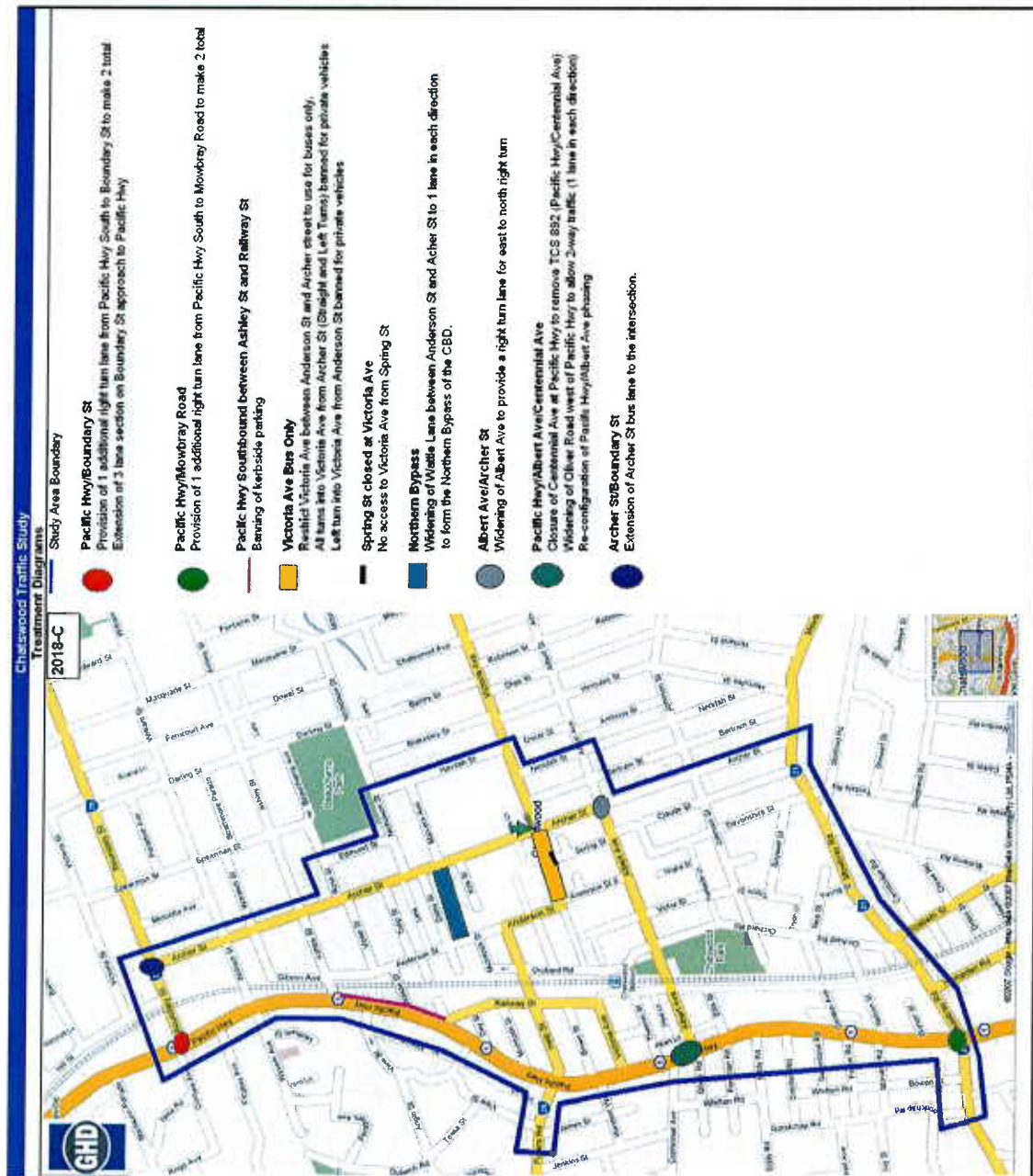


Figure 3.4 2018-C Treatments

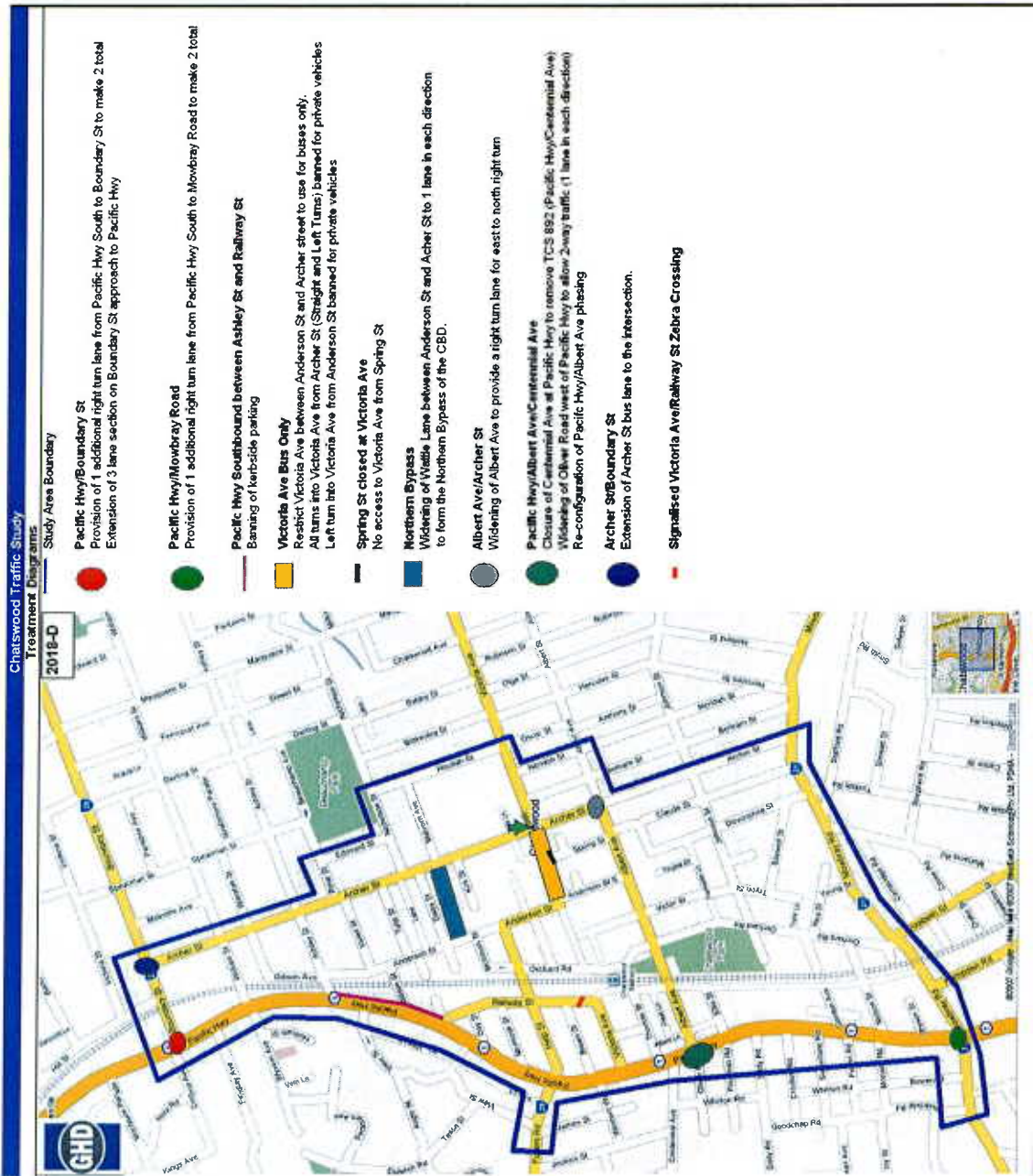


Figure 3.5 2018-D Treatments

APPENDIX C

COMMERCIAL BUILDING SURVEYS

SYDNEY CBD OFFICE USE PARKING SPACE TRAFFIC GENERATION

There is no current published data in relation to the traffic generation rates of contemporary office buildings in the CBD where the 'generation' is essentially a factor of the 'constrained' number of parking spaces provided (rather than floorspace). In order to establish this characteristic surveys were undertaken from commercial office buildings in the CBD as follows:

AMP Building, 33 Alfred Street	-	100 spaces
Hambros House, 165 Macquarie Street	-	104 spaces
229 Elizabeth Street	-	86 spaces
Westpac HQ, 58 Martin Place	-	95 spaces

Surveys were undertaken of ingressing and egressing vehicles at 5 minute timeframes for the periods 7.00 - 9.30am, 12 noon - 2.00pm and 4.00 - 6.30pm on normal weekdays. These surveys also included service vehicles movements and the results of these surveys are summarised in the following:

	AM		MD		PM	
	IN	OUT	IN	OUT	IN	OUT
AMP Building	23	2	4	4	1	6
Hambros House	26	2	11	4	10	19
229 Elizabeth St	19	2	4	4	0	17
Westpac	26	1	4	4	5	17

The morning peak in all cases represented the most concentrated directional movements and the average of recorded movements can be evaluated to provide a traffic generation (ie vtp/h) per parking spaces as follows:

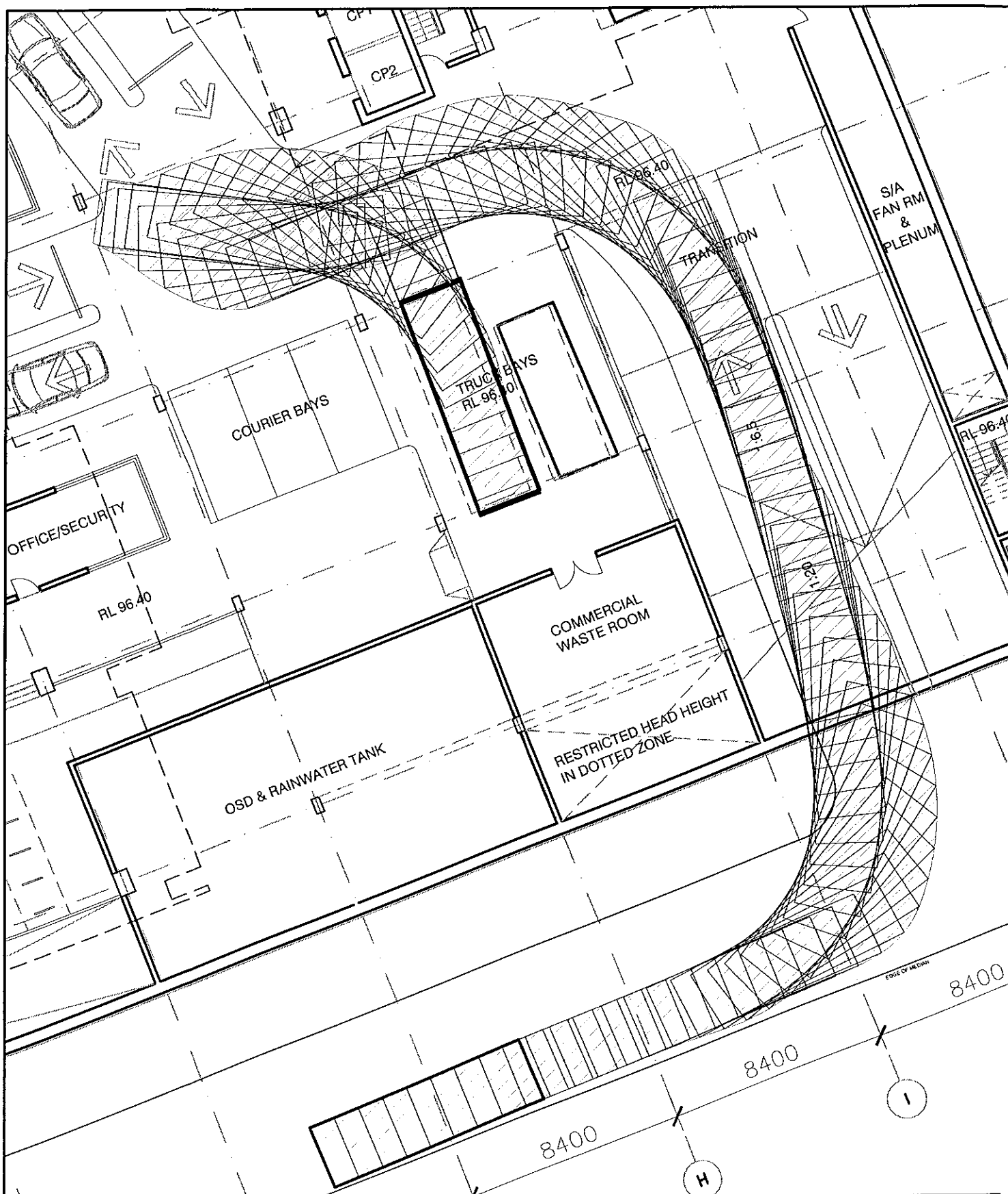
TRANSPORT AND TRAFFIC PLANNING ASSOCIATES

	AM		MD		PM	
	IN	OUT	IN	OUT	IN	OUT
Total for 385 spaces	94	7	23	16	16	59
Traffic generation per space	0.26 vtp		0.10 vtp		0.26 vtp	

APPENDIX D

6

TURNING PATH ASSESSMENT



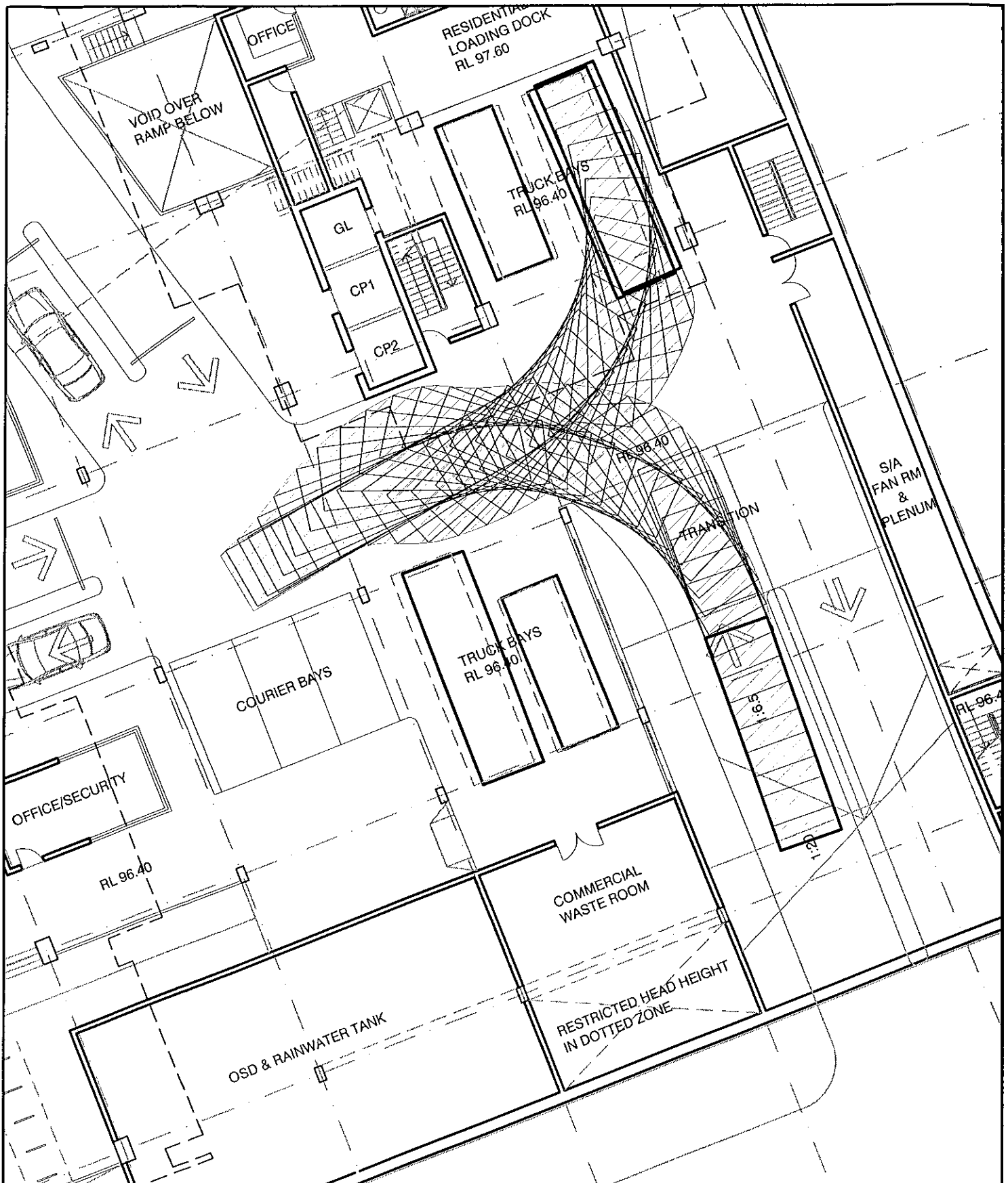
LEGEND

This drawing has been prepared using vehicle modelling computer software AutoTrack V5.00a in conjunction with AutoCAD 2000. The vehicle used is based upon vehicle data provided by Austroads and incorporates a reasonable degree of tolerance. However, it is not possible to account for all vehicle types/characteristics and/or driver ability.



SWEPT PATH ANALYSIS OF AN 8.8m RIGID VEHICLE ENTERING THE SITE

SP 1



LEGEND

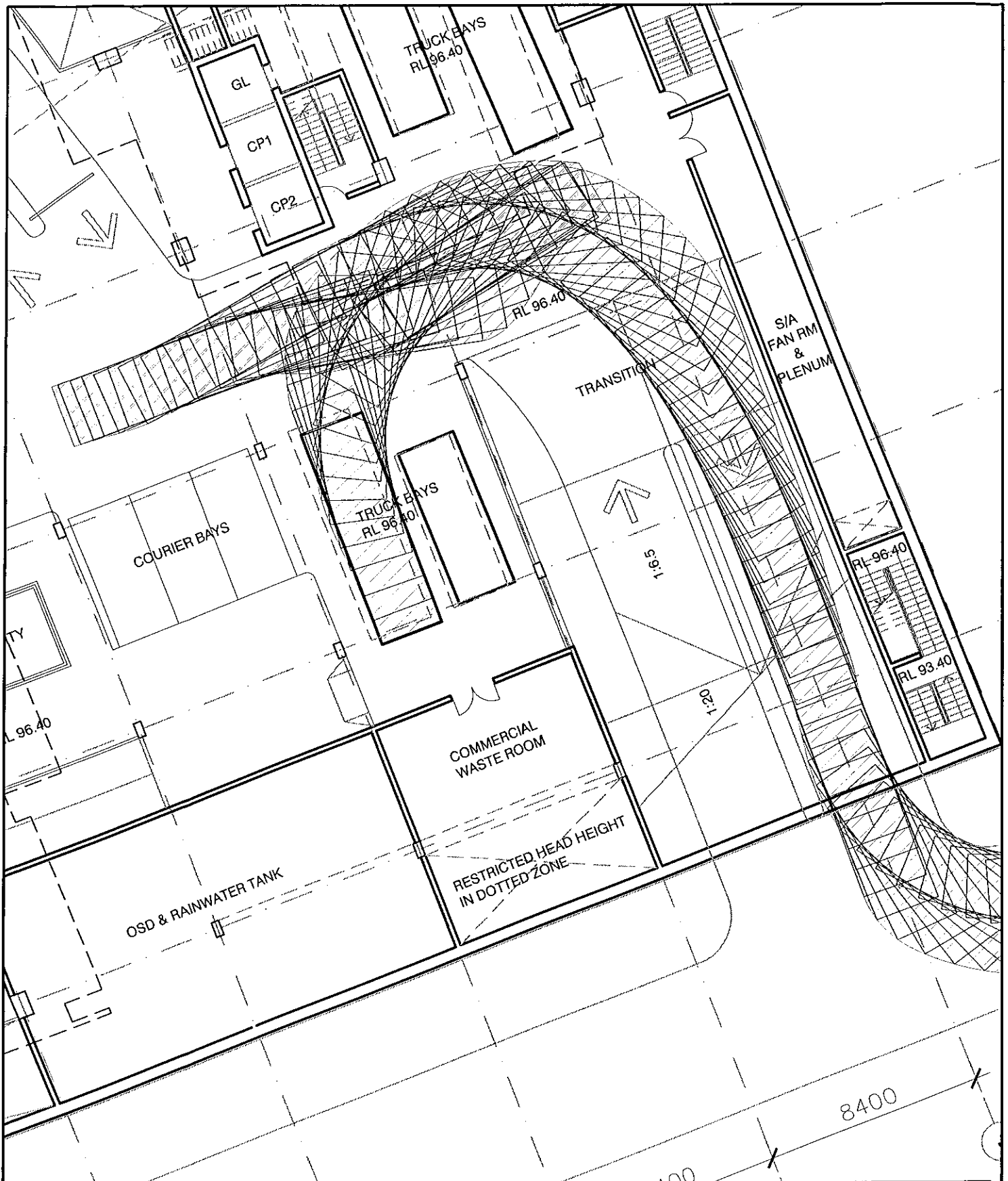
This drawing has been prepared using vehicle modelling computer software AutoTrack V5.00a in conjunction with AutoCAD 2000. The vehicle used is based upon vehicle data provided by Austroads and incorporates a reasonable degree of tolerance. However, it is not possible to account for all vehicle types/characteristics and/or driver ability.



SWEPT PATH ANALYSIS OF AN 8.8m RIGID VEHICLE ENTERING THE SITE

SP 2

SP 3



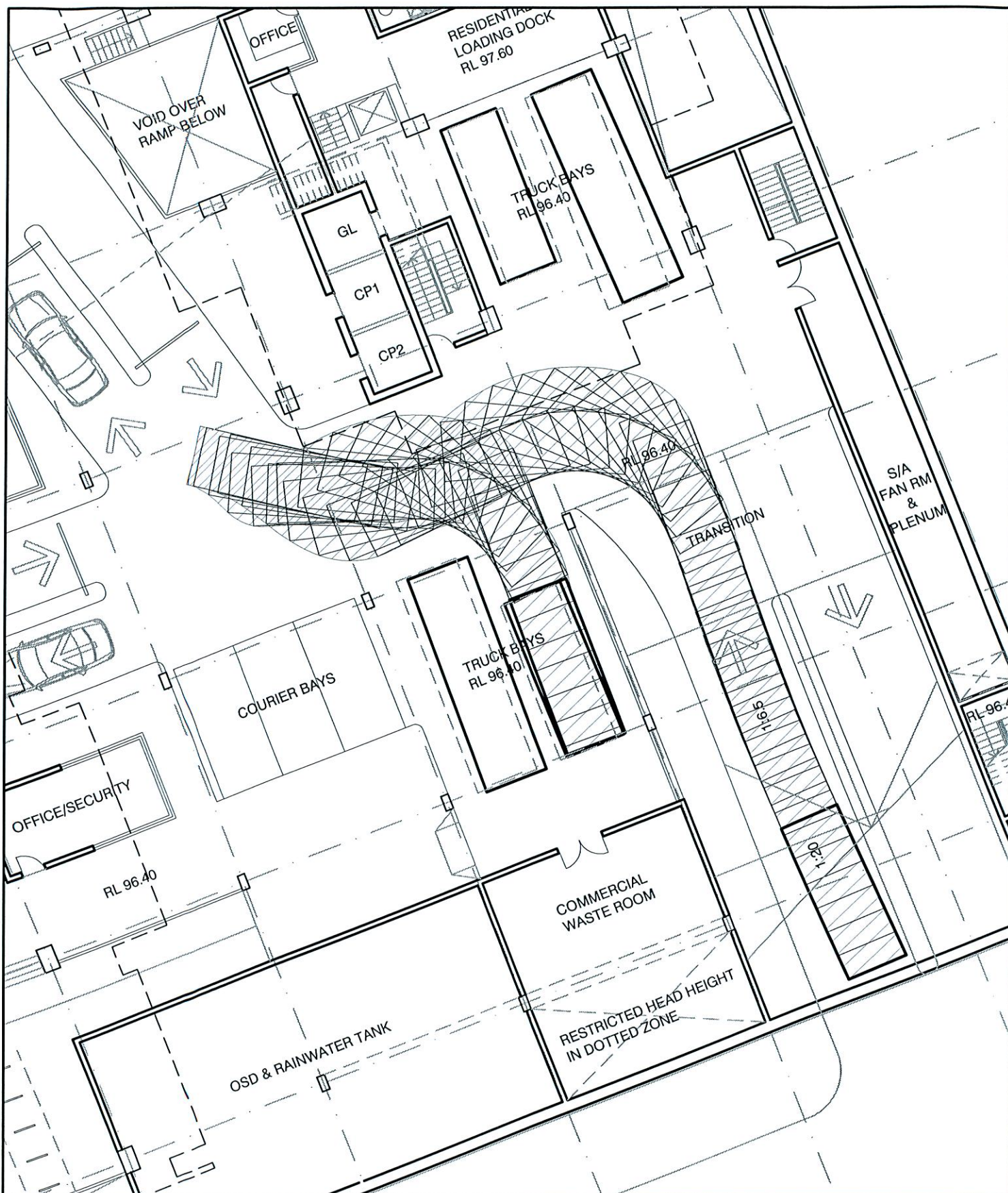
LEGEND

This drawing has been prepared using vehicle modelling computer software AutoTrack V5.00a in conjunction with AutoCAD 2000. The vehicle used is based upon vehicle data provided by Austroads and incorporates a reasonable degree of tolerance. However, it is not possible to account for all vehicle types/characteristics and/or driver ability.



**SWEPT PATH ANALYSIS
OF AN 8.8m RIGID
VEHICLE EXITING THE SITE**

SP 4



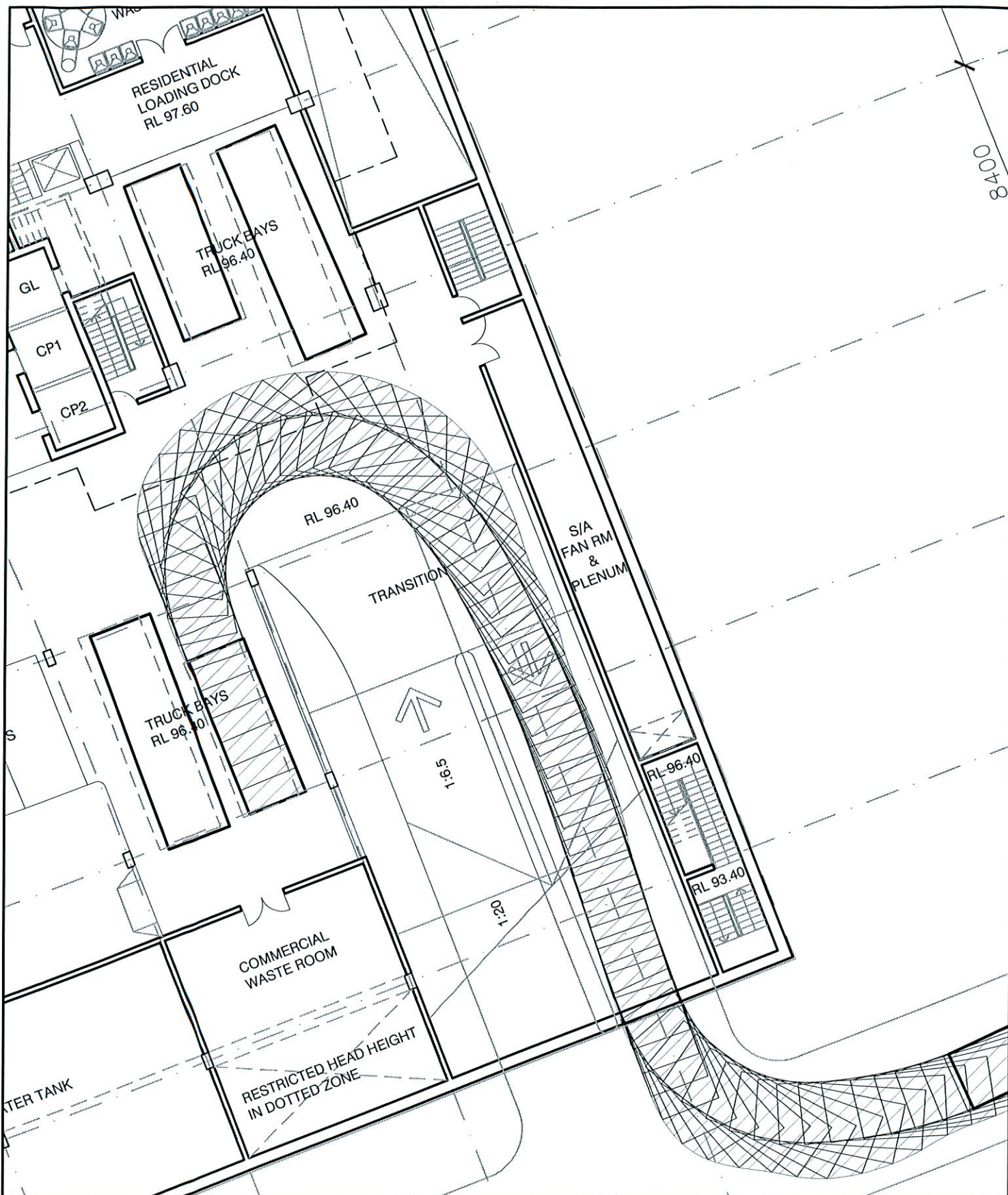
LEGEND

This drawing has been prepared using vehicle modelling computer software AutoTrack V5.00a in conjunction with AutoCAD 2000. The vehicle used is based upon vehicle data provided by Austroads and incorporates a reasonable degree of tolerance. However, it is not possible to account for all vehicle types/characteristics and/or driver ability.



**SWEPT PATH ANALYSIS
OF A 6.4m RIGID
VEHICLE ENTERING THE SITE**

SP 5



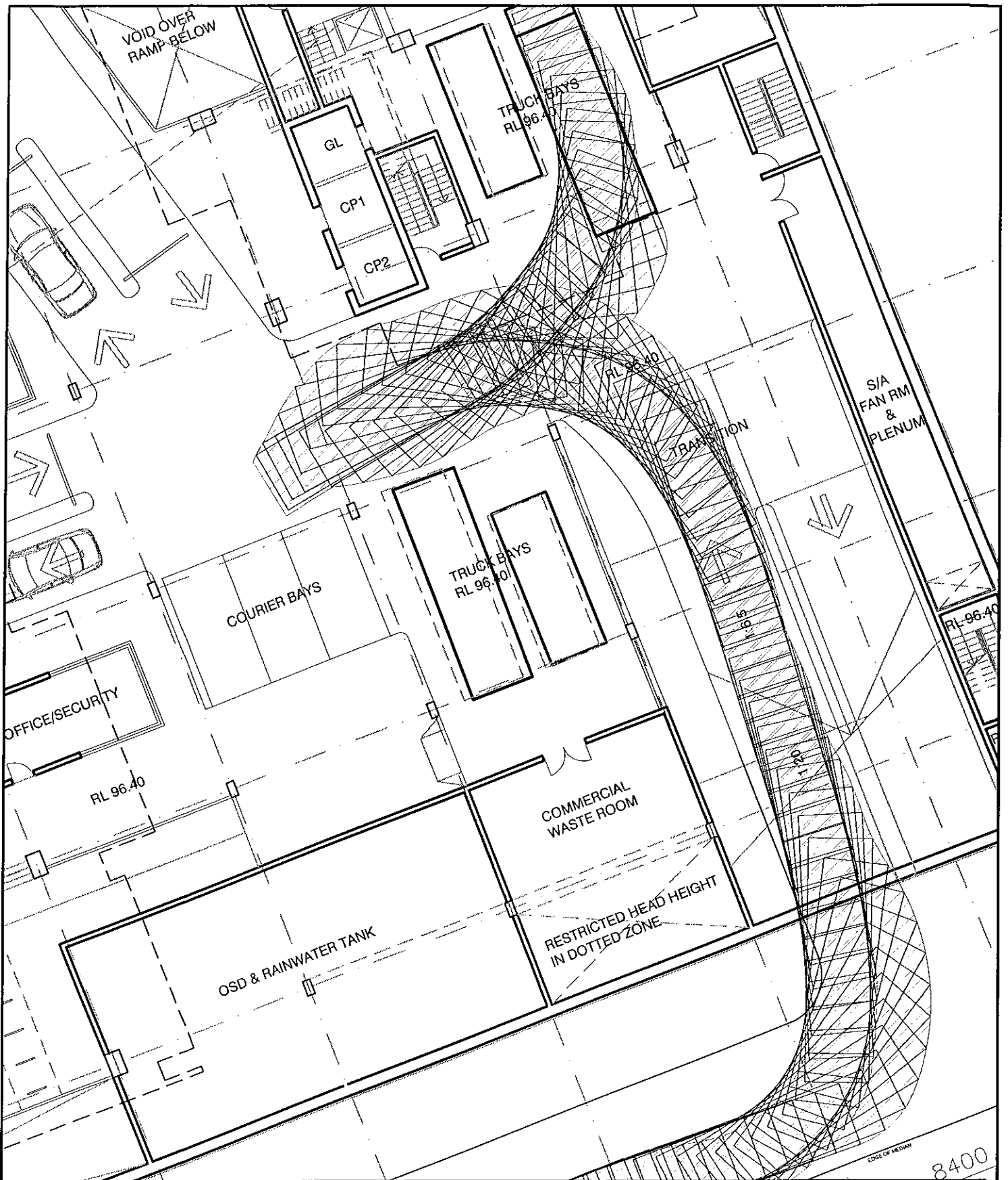
LEGEND

This drawing has been prepared using vehicle modelling computer software AutoTrack V5.00a in conjunction with AutoCAD 2000. The vehicle used is based upon vehicle data provided by Austroads and incorporates a reasonable degree of tolerance. However, it is not possible to account for all vehicle types/characteristics and/or driver ability.



**SWEPT PATH ANALYSIS
OF A 6.4m RIGID
VEHICLE EXITING THE SITE**

SP 6



LEGEND

This drawing has been prepared using vehicle modelling computer software AutoTrack V5.00a in conjunction with AutoCAD 2000. The vehicle used is based upon vehicle data provided by Austroads and incorporates a reasonable degree of tolerance. However, it is not possible to account for all vehicle types/characteristics and/or driver ability.



SWEPT PATH ANALYSIS OF A 9.6m REFUSE VEHICLE ENTERING THE SITE

SP 7