BETTER TRANSPORT FUTURES
MARK WAUGH

Morisset Contributions Catchment Development Contribution, Traffic and Transport Study

Volume 3: Appendices D through J

June 2012

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Contents

Foreword

The Morisset Contributions Catchment Section 94 Contributions Plan Traffic and Transportation Study have included based traffic analysis of proposals as follows:

1. Consideration of the list of road links and intersections identified in the project brief:
2. Calculation of Existing Performance using Agreed (Austroads) Level of Service (LoS) Criteria
3. Confirmation of Existing Performance (Satisfactory/ Unsatisfactory) against LoS
4. Identification of Upgrades to deliver Satisfactory Existing Performance against LoS
5. Identification of Upgrades to deliver Satisfactory Future Performance against LoS

Agreed Criteria for Assessment of Upgrade Works

The following criteria have been adopted as the basis for assessing acceptable Levels of Service in this study:

1. Intersections – Austroads Level of Service (LoS) Threshold D/E – That is where performance drops to LoS E under forecast peak traffic flows, upgrades will be considered.

2. Roads – The volumes which have been assumed as the point of transition from LoS D to E are included in **Table 1** below.

- *Table 1 Road Capacity Thresholds*

Road Type	Average Travel Speed for Urban LoS D	Typical Mid-Block Capacity for LoS D	Proposed Traffic Capacity for LoS D	Capacity (HCM)
Urban Two-way Two-lane	25 to 35	900	1600	1,700
4 lane undivided – with occasional parked cars		1500 in 2 lanes	1700	3,200
4 lane undivided – with Clearways		1800 in 2 lanes	1800	3,200
4 lane divided		1900 in 2 lanes	2200	3,200

Source: RTA, Austroads, HCM

The Itemised Work Schedule contains a summary of works recommendations to deliver traffic and transport facilities to the nominated performance and minimum service levels. (Refer to **Appendix B**.)

Comments on Recommended Local Road Works

In general, the collector road network was assessed as providing satisfactory levels of performance, for the planned level of growth in the study area. The following exceptions were:

a) **Completion of Awaba Street between Bridge Street and Stockton/Kahibah Streets -** Purpose: 1. Maintains traffic flows on the local Morisset collector road network, particularly Bridge Street, at acceptable environmental capacity levels.

2. Allows alternate access to Freemans Drive & beyond to F3 Freeway & areas south, west & north.

b) **Realignment and connection of Kahibah Street to Doyalson Street, closure of Kahibah Street between Doyalson Street and Newcastle Street -** Purpose: To reinforce collector road network and direct local flows to and through the Morisset Town Centre at junctions with appropriate levels of control.

c) **Wamsley Street Priority Control -** Purpose: As part of intersection upgrade implement reversal at junction priorities to reinforce through movement function of Wamsley Street between Newport Road and Douglas Street as part of the collector road network.

d) **Intersections** - Within each sub-catchment of the study area a number of intersection upgrades were identified. The upgrades include a number of junctions that are under the control and management of the NSW RTA, which are beyond the scope of this contribution plan. Where a pre-existing plan or agreement has been made, this is noted in the work schedule.

Appendix D Criteria for Performance Assessments

D.1 Roads

From the RTA Guide to Traffic Generating Developments (version 2.2, 2002):

Table 4.4
Urban road peak hour flows per direction

Level of Service	One Lane (veh/hr)	Two Lanes (veh/hr)
A	200	900
B	380	1400
C	600	1800
D	900	2200
E	1400	2800

From the RTA Guide to Traffic Generating Developments (version 2.2, 2002):

Table 4.5
peak hour flow on two-lane rural roads (veh/hr)
(Design speed of 100km/hr)

Terrain	Level of Service	Percent of Heavy Vehicles			
		0	5	10	15
Level	B	630	590	560	530
	C	1030	970	920	870
	D	1630	1550	1480	1410
	E	2630	2500	2390	2290
Rolling	B	500	420	360	310
	C	920	760	650	570
	D	1370	1140	970	700
	E	2420	2000	1720	1510
Mountainous	B	340	230	180	150
	C	600	410	320	260
	D	1050	680	500	400
	E	2160	1400	1040	820

D.2 Intersection

From the RTA Guide to Traffic Generating Developments (version 2.2, 2002):

Table 4.2
Level of service criteria for intersections

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

D.3 Environmental Capacity of Local Roads

From the RTA Guide to Traffic Generating Developments (version 2.2, 2002):

Table 4.6
Environmental capacity performance standards on residential streets

Road class	Road type	Maximum Speed (km/hr)	Maximum peak hour volume (veh/hr)
Local	Access way	25	100
	Street	40	200 environmental goal
			300 maximum
Collector	Street	50	300 environmental goal
			500 maximum

Note: Maximum speed relates to the appropriate design maximum speeds in new residential developments. In existing areas maximum speed relates to 85th percentile speed.

Appendix E Appendix C Medium Growth Forecasts-Residential by Locality

Estimated Residential Development Growth (Additional Dwellings) by Dwelling Type by Locality - Medium Growth Scenario

Locality	Dwelling Type by Period																											
	2006 (Existing)		2010						2015						2020						2025						TOTAL		Growth 2006-2025	
	Priv	NP	D	A	S	M	Sub-Total	NP	D	A	S	M	Sub-Total	NP	D	A	S	M	Sub-Total	NP	D	A	S	M	Sub-Total	NP	Priv	Non-Private	Priv	Non-Private
Cooranbong	1,451	504	199	0	51	0	*250*	11	570	100	100	0	*770*	55	398	130	153	0	*681*	60	375	155	72	0	*602*	75	3,754	705	2,303	201
Bonnells Bay	1,571	277	32	0	0	0	*32*	0	0	46	0	0	*46*	12	0	50	0	0	*50*	12	0	15	0	0	*15*	12	1,714	313	143	36
Dora Creek	891	58	12	0	0	0	*12*	0	50	10	0	0	*60*	12	50	15	0	0	*65*	12	100	15	0	0	*115*	12	1,143	94	252	36
Martinsville	154	6	1	0	0	0	*1*	0	0	0	0	0	*0*	5	0	0	0	0	*0*	5	0	0	0	0	*0*	7	155	23	1	17
Mandalong	137	14	9	0	0	0	*9*	0	0	0	0	0	*0*	5	0	0	0	0	*0*	5	0	0	0	0	*0*	7	146	31	9	17
Morisset	427	62	21	7	0	0	*28*	11	222	53	0	38	*313*	60	263	55	0	38	*356*	60	185	80	0	38	*303*	70	1,425	263	999	201
Morisset Peninsula	1,757	102	213	0	0	0	*213*	0	264	30	0	0	*294*	52	168	30	0	0	*198*	67	59	20	30	0	*109*	70	2,571	291	814	189
Morisset South	180	0	0	0	0	0	*0*	0	50	0	0	0	*50*	21	150	15	0	0	*165*	26	205	35	10	0	*250*	26	645	73	465	73
Wyee	850	163	14	0	14	0	*28*	0	175	25	0	0	*200*	25	350	60	0	0	*410*	25	325	85	0	0	*410*	25	1,898	238	1,048	75
Wyee Point	269	20	19	0	0	0	*19*	0	0	0	0	38	*38*	5	50	0	0	38	*88*	5	25	0	0	38	*63*	5	475	35	207	15
Total	7,687	1,206	520	7	65	0	*592*	22	1,331	264	100	75	*1,770*	252	1,429	355	153	75	*2,012*	277	1,274	405	112	75	*1,866*	309	13,927	2,066	6,240	860

Estimated Residential Development Growth (Additional Persons) by Dwelling Type by Locality - Medium Growth Scenario

Locality	Dwelling Type by Period																											
	2006 (Existing)		2010						2015						2020						2025						TOTAL		Growth 2006-2025	
	Priv	NP	D	A	S	M	Sub-Total	NP	D	A	S	M	Sub-Total	NP	D	A	S	M	Sub-Total	NP	D	A	S	M	Sub-Total	NP	Priv	Non-Private	Priv	Non-Private
Cooranbong	3,749	715	579	0	70	0	*649*	17	1,658	191	137	0	*1,985*	86	1,157	248	210	0	*1,615*	94	1,091	296	99	0	*1,485*	117	9,483	1,029	5,734	314
Bonnells Bay	3,662	393	93	0	0	0	*93*	0	0	88	0	0	*88*	19	0	95	0	0	*95*	19	0	29	0	0	*29*	19	3,967	449	305	56
Dora Creek	2,238	82	35	0	0	0	*35*	0	145	19	0	0	*164*	19	145	29	0	0	*174*	19	291	29	0	0	*319*	19	2,930	138	693	56
Martinsville	407	9	3	0	0	0	*3*	0	0	0	0	0	*0*	8	0	0	0	0	*0*	8	0	0	0	0	*0*	11	410	35	3	27
Mandalong	419	20	26	0	0	0	*26*	0	0	0	0	0	*0*	8	0	0	0	0	*0*	8	0	0	0	0	*0*	11	445	46	26	27
Morisset	1,061	88	61	13	0	0	*74*	17	646	101	0	56	*803*	94	765	105	0	56	*926*	94	538	153	0	56	*747*	109	3,611	402	2,550	314
Morisset Peninsula	4,489	145	619	0	0	0	*619*	0	768	57	0	0	*825*	81	489	57	0	0	*546*	105	172	38	41	0	*251*	109	6,730	440	2,241	295
Morisset South	317	0	0	0	0	0	*0*	0	145	0	0	0	*145*	33	436	29	0	0	*465*	41	596	67	14	0	*677*	41	1,604	114	1,287	114
Wyee	2,281	231	41	0	19	0	*60*	0	509	48	0	0	*557*	39	1,018	114	0	0	*1,132*	39	945	162	0	0	*1,107*	39	5,137	348	2,856	117
Wyee Point	795	28	55	0	0	0	*55*	0	0	0	0	56	*56*	8	145	0	0	56	*202*	8	73	0	0	56	*129*	8	1,237	52	442	23
Total	19,419	1,711	1,512	13	89	0	*1,615*	34	3,871	503	137	113	*4,624*	393	4,156	677	210	113	*5,155*	432	3,705	772	153	113	*4,743*	482	35,555	3,053	16,136	1,342

Key: D=Single Dwelling A=Apartments S=Seniors-Self Care M=<amufactired Homes/Caravans-Long Term NP=Non-Private Dwellings/Accommodation

Appendix F Appendix D Medium Growth Forecasts-Non-Residential

Forecast Non-Residential Development 2010-2025 (DFP, 2010)										
Industry Sector	2010		2015		2020		2025		Growth 2010-2025	
	GFA (m^2)	Workers	GFA (m^2)	Workers	GFA (m^2)	Workers	GFA (m^2)	Workers	GFA (m^2)	Workers
Retail	**26,470**	**850**	**30,870**	**970**	**37,950**	**1,200**	**41,450**	**1,340**	**14,980**	**490**
Specialty Shops	15,990	640	17,790	710	21,870	880	25,370	1,020	9,380	380
Supermarkets	10,480	210	13,080	260	16,080	320	16,080	320	5,600	110
Commercial	**6,070**	**530**	**7,350**	**610**	**8,900**	**720**	**10,300**	**810**	**4,240**	**280**
Industrial	**83,500**	**1,270**	**110,730**	**1,510**	**151,570**	**1,870**	**206,020**	**2,350**	**122,520**	**1,080**
Small Factory Units	17,770	380	33,930	550	58,170	800	90,480	1,140	72,710	770
Warehouse/Manufacturing	48,680	720	53,360	760	60,380	820	69,740	900	21,060	180
Bulky Goods	8,500	80	11,690	100	16,490	120	22,880	150	14,380	60
Storage	8,550	90	11,740	110	16,540	130	22,930	160	14,380	70
TOTAL	**116,030**	**2,650**	**148,950**	**3,100**	**198,420**	**3,780**	**257,770**	**4,500**	**141,730**	**1,850**

Note:
Future workers based on *Employment Monitoring of Commercial Centres and Industrial Areas* (DoP, 1991) as follows:
- one worker per 25m^2 GFA of specialty retail.
- one worker per 50m^2 GFA of supermarket retail.
- one worker per 15m^2 GFA of commercial.
- one worker per 95m^2 GFA of small factory unit.
- one worker per 120m^2 GFA of warehouse/manufacturing.
- one worker per 225m^2 GFA of bulky goods.
- one worker per 200m^2 GFA of storage.

Appendix G Appendix E Summary Table of land use traffic generation Rates

From the RTA Guide to Traffic Generating Developments (version 2.2, 2002):

Table 3.7
Summary table of land use traffic generation Rates

Land Use	Traffic generation rates	
	Daily Vehicle Trips	Peak Hour Vehicle Trips
Residential		
Dwelling houses	9.0 / dwelling	0.85 per dwelling
hMedium density residential flat building	*Up to 2 bedrooms*	
	4-5 / dwelling	0.4-0.5 / dwelling
	3 bedrooms or more	
	5-6.5 / dwelling	0.5-0.65 / dwelling
High density residential flat building	*metropolitan regional centres*	
	-	0.24 / unit
	metropolitan sub-regional centre	
	-	0.29 / unit
Housing for aged and disabled persons	1-2 / dwelling	0.1-0.2 / dwelling
Casual accommodation		
Motels	3 / unit	0.4 / unit
Hotels - traditional Hotels - tourist	See section 3.4.2 See Section 3.4.3	-
Office and commercial		
Commercial premises	10 / 100m^2 GFA	2 / 100m^2 GFA
Retail		
Shopping centres	see section 3.6.1	-
Service stations and convenience stores	see section 3.6.2	-
Motor showrooms	-	0.7 / 100m^2 Site Area
Car tyre retail	10 / 100m^2 Site Area	1 /100m^2 Site Area
Road side stalls	-	-
Drive-in liquor	-	-
Markets	18 / stall	4 / stall
Bulky goods retail	see section 3.6.8	-
Video stores	see section 3.6.9	-

Land Use	Traffic generation rates	
	Daily Vehicle Trips	Peak Hour Vehicle Trips
Drive-in take-away food outlets	See section 3.7.1	-
Restaurants	60 / 100m^2 GFA	5 / 100m^2 GFA
Clubs	see section 3.7.3	-
Recreation and Tourist facilities		
Squash courts	-	3 / Court
Tennis courts	4-5 / Court	4 / Court
Bowling greens	-	-
Gymnasiums	*metropolitan regional centre*	
	20 / 100m^2 GFA	3 / 100m^{2}GFA
	metropolitan sub-regional areas	
	45 / 100m^2 GFA	9 / 100m^2 GFA
Caravan parks	-	-
Marinas	see section3 .8.2	-
Road transport facilities		
Road transport terminals	5 / 100m^2 GFA	1 / 100m^2 GFA
Container depots	-	-
Truck stops	-	-
Industry		
Factories	5 / 100m^2 GFA	1 / 100m^2 GFA
Warehouses	4 / 100m^2 GFA	0.5 / 100m^2 GFA
Plant nurseries	See section 3.10.3	-
Business parks	See section 3.10.4	-
Health and community services		
Professional consulting rooms	-	-
Extended hours medical centres	see section 3.11.2	-
Child care centres	see section 3.11.3	
Private hospitals	see section 3.11.4	-
Public car parks		
Public car parks	see section 3.12	-

Appendix H Appendix F Traffic Survey Data

Curtis Traffic Surveys

Turning movement count

Job: 091102bt

Day, date: Thu 26 Nov 09

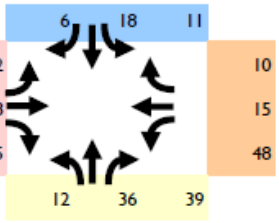
Location: Newcastle St & Doyalson St

Weather: Fine

Client: Better Transport Futures

All motor vehicles

Peak Hour 6 18 11



Time Period	From Doyalson St north			From Newcastle St west			From Doyalson St south			From Newcastle St east			Total vehicle movements	
	left	through	right	left	through	right	left	through	right	left	through	right		
14:30 to 14:45	0	2	1	0	1	0	1	3	5	4	3	0	20	
14:45 to 15:00	0	6	0	0	3	0	1	7	3	4	1	0	25	
15:00 to 15:15	1	4	0	1	6	0	0	3	7	5	2	1	30	
15:15 to 15:30	0	2	0	1	2	3	0	8	1	2	0	4	23	
15:30 to 15:45	1	7	0	2	9	0	5	3	4	3	0	5	39	
15:45 to 16:00	4	3	0	5	6	0	1	10	7	5	0	2	43	
16:00 to 16:15	3	6	1	10	2	0	0	3	4	2	1	3	35	
16:15 to 16:30	2	4	2	3	4	3	1	6	7	4	2	0	38	
16:30 to 16:45	0	2	1	3	2	4	0	5	10	15	9	2	53	Peak
16:45 to 17:00	0	1	2	1	3	2	2	3	2	2	0	0	18	
17:00 to 17:15	0	0	0	0	2	1	0	4	0	0	1	0	8	
17:15 to 17:30	1	2	0	0	6	3	4	3	2	11	2	3	37	
17:30 to 17:45	1	0	0	0	3	2	4	2	7	9	0	0	28	
17:45 to 18:00	0	2	0	0	0	0	0	0	1	6	0	0	9	
Totals	13	41	7	26	49	18	19	60	60	72	21	20		
14:30 to 15:30	1	14	1	2	12	3	2	21	16	15	6	5	98	
14:45 to 15:45	11	34	4	25	34	10	8	45	43	40	15	17	117	
15:00 to 16:00	11	29	6	26	34	12	9	41	42	38	14	17	135	
15:15 to 16:15	10	25	6	25	30	13	9	42	35	33	13	16	140	
15:30 to 16:30	11	25	6	24	34	13	13	37	36	42	15	15	155	
15:45 to 16:45	11	18	6	22	28	15	12	36	39	48	15	10	169	Peak Hour
16:00 to 17:00	7	17	6	17	22	15	11	26	33	49	15	8	144	
16:15 to 17:15	17	52	12	33	69	33	30	83	89	119	35	25	117	
16:30 to 17:30	16	62	11	32	77	33	31	98	98	130	39	30	116	
16:45 to 17:45	27	94	14	54	109	39	39	138	131	155	45	45	91	
17:00 to 18:00	38	122	18	79	140	49	46	176	171	191	59	62	82	

Curtis Traffic Surveys

Turning movement count

Job: 091102bt

Day, date: Thu 19 Nov 09

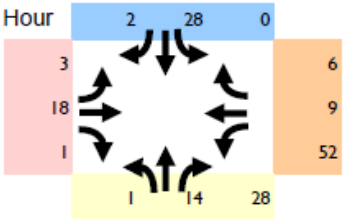
Location: Newcastle St & Doyalson St

Weather: Fine

Client: Better Transport Futures

All motor vehicles

Peak Hour

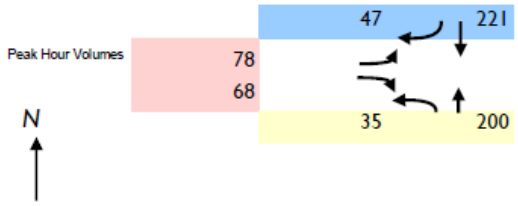


Time Period	From Doyalson St north			From Newcastle St west			From Doyalson St south			From Newcastle St east			Total vehicle movements	
	left	through	right	left	through	right	left	through	right	left	through	right		
07:00 to 07:15	0	5	0	0	0	0	0	3	1	3	0	0	12	
07:15 to 07:30	0	7	1	0	1	0	0	4	2	4	2	0	21	
07:30 to 07:45	0	2	0	1	1	0	0	1	4	3	0	0	12	
07:45 to 08:00	0	4	0	1	0	0	0	3	3	4	0	0	15	
08:00 to 08:15	0	5	0	0	0	0	0	5	4	8	0	1	23	
08:15 to 08:30	0	7	0	1	7	0	0	6	5	12	4	0	42	
08:30 to 08:45	0	8	1	1	8	0	0	2	9	14	3	2	48	
08:45 to 09:00	0	8	1	1	3	1	1	1	10	18	2	3	49	Peak
09:00 to 09:15	0	2	0	1	0	0	0	2	3	6	1	1	16	
09:15 to 09:30	0	13	3	0	1	1	0	5	1	7	0	0	31	
Totals	0	61	6	6	21	2	1	32	42	79	12	7		
07:00 to 08:00	0	18	1	2	2	0	0	11	10	14	2	0	60	
07:15 to 08:15	0	18	1	2	2	0	0	13	13	19	2	1	71	
07:30 to 08:30	0	18	0	3	8	0	0	15	16	27	4	1	92	
07:45 to 08:45	0	24	1	3	15	0	0	16	21	38	7	3	128	
08:00 to 09:00	0	28	2	3	18	1	1	14	28	52	9	6	162	Peak Hour
08:15 to 09:15	0	25	2	4	18	1	1	11	27	50	10	6	155	
08:30 to 09:30	0	31	5	3	12	2	1	10	23	45	6	6	144	

Curtis Traffic Surveys

Turning movement count

Job: 091102bt
Day, date: Tue 8 Dec 09
Location: Wyee Rd & Alliance Av
Weather:
Client: Better Transport Futures

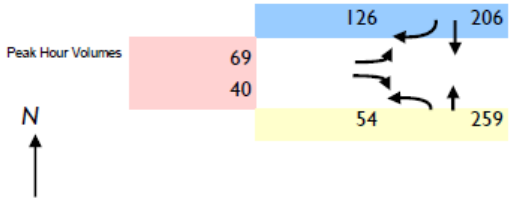


Time Period	From Wyee Rd north Through	Right	From Alliance Av Left	Right	From Wyee Rd south Left	Through	movements
14:30 to 14:45	60	29	23	19	13	65	209
14:45 to 15:00	65	32	18	23	15	63	216
15:00 to 15:15	67	35	22	21	16	67	228 Peak
15:15 to 15:30	59	28	19	18	15	67	206
15:30 to 15:45	68	32	15	18	15	68	216
15:45 to 16:00	67	28	17	19	19	71	221
16:00 to 16:15	68	27	22	15	14	62	208
16:15 to 16:30	59	25	21	21	16	60	202
16:30 to 16:45	59	18	20	20	12	54	183
16:45 to 17:00	55	12	18	17	8	50	160
17:00 to 17:15	57	10	23	15	9	49	163
17:15 to 17:30	50	7	17	16	6	47	143
17:30 to 17:45	48	4	14	17	2	48	133
17:45 to 18:00	44	2	12	13	3	45	119
Hourly Summary	826	289	261	252	163	816	
14:30 to 15:30	251	124	82	81	59	262	859
14:45 to 15:45	259	127	74	80	61	265	866
15:00 to 16:00	261	123	73	76	65	273	871 Peak Hour
15:15 to 16:15	262	115	73	70	63	268	851
15:30 to 16:30	262	112	75	73	64	261	847
15:45 to 16:45	253	98	80	75	61	247	814
16:00 to 17:00	241	82	81	73	50	226	753
16:15 to 17:15	230	65	82	73	45	213	708
16:30 to 17:30	221	47	78	68	35	200	649
16:45 to 17:45	210	33	72	65	25	194	599
17:00 to 18:00	199	23	66	61	20	189	558

Curtis Traffic Surveys

Turning movement count

Job: 091102bt
Day, date: Tue 8 Dec 09
Location: Wyee Rd & Alliance Av
Weather: Fine
Client: Better Transport Futures

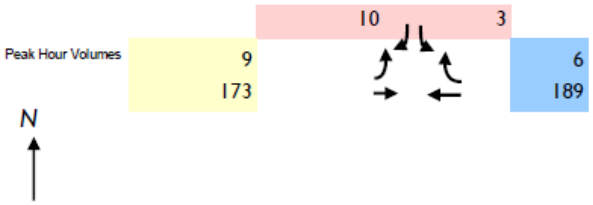


Time Period	From Wyee Rd north Through	Right	From Alliance Av Left	Right	From Wyee Rd south Left	Through	movements
07:00 to 07:15	49	35	16	12	9	60	181
07:15 to 07:30	49	37	14	15	10	60	185
07:30 to 07:45	41	32	9	12	11	57	162
07:45 to 08:00	45	33	13	12	13	66	182
08:00 to 08:15	44	30	12	9	11	64	170
08:15 to 08:30	49	36	17	12	15	72	201 Peak
08:30 to 08:45	53	33	15	12	14	69	196
08:45 to 09:00	46	25	13	11	15	62	172
09:00 to 09:15	58	32	24	5	10	56	185
09:15 to 09:30	60	30	19	9	13	55	186
Hourly Summary	494	323	152	109	121	621	
07:00 to 08:00	184	137	52	51	43	243	710
07:15 to 08:15	179	132	48	48	45	247	699
07:30 to 08:30	179	131	51	45	50	259	715
07:45 to 08:45	191	132	57	45	53	271	749
08:00 to 09:00	192	124	57	44	55	267	739
08:15 to 09:15	206	126	69	40	54	259	754 Peak Hour
08:30 to 09:30	217	120	71	37	52	242	739

Curtis Traffic Surveys

Turning movement count

Job: 091102bt
Day, date: Tue 1 Dec 09
Location: Newport Rd & Cadillac Close
Weather: Fine
Client: Better Transport Futures

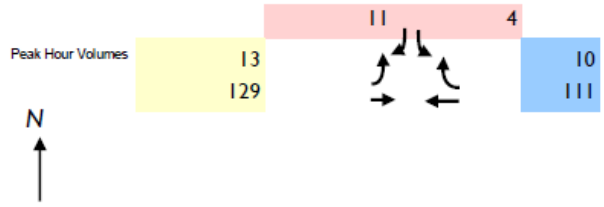


Time Period	From Newport Rd east Through	Right	From Cadillac Cl Left	Right	From Newport Rd west Left	Through	movements	
14:30 to 14:45	55	0	2	7	1	49	114	Peak
14:45 to 15:00	42	2	0	1	2	40	87	
15:00 to 15:15	49	1	1	2	5	46	104	
15:15 to 15:30	43	3	0	0	1	38	85	
15:30 to 15:45	35	1	4	1	7	47	95	
15:45 to 16:00	39	0	1	2	0	43	85	
16:00 to 16:15	37	0	3	3	1	40	84	
16:15 to 16:30	35	2	5	4	2	38	86	
16:30 to 16:45	36	4	4	1	2	30	77	
16:45 to 17:00	32	5	1	2	5	35	80	
17:00 to 17:15	28	1	2	5	4	32	72	
17:15 to 17:30	29	2	3	0	2	27	63	
17:30 to 17:45	30	3	0	2	5	26	66	
17:45 to 18:00	27	3	1	3	1	26	61	
Hourly Summary	517	27	27	33	38	517		
14:30 to 15:30	189	6	3	10	9	173	390	Peak Hour
14:45 to 15:45	169	7	5	4	15	171	371	
15:00 to 16:00	166	5	6	5	13	174	369	
15:15 to 16:15	154	4	8	6	9	168	349	
15:30 to 16:30	146	3	13	10	10	168	350	
15:45 to 16:45	147	6	13	10	5	151	332	
16:00 to 17:00	140	11	13	10	10	143	327	
16:15 to 17:15	131	12	12	12	13	135	315	
16:30 to 17:30	125	12	10	8	13	124	292	
16:45 to 17:45	119	11	6	9	16	120	281	
17:00 to 18:00	114	9	6	10	12	111	262	

Curtis Traffic Surveys

Turning movement count

Job: 091102bt
Day, date: Tue 1 Dec 09
Location: Newport Rd & Cadillac Close
Weather: Fine
Client: Better Transport Futures



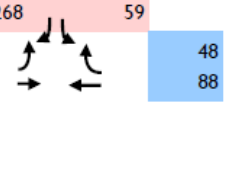
Time Period	From Newport Rd east Through	Right	From Cadillac Cl Left	Right	From Newport Rd west Left	Through	movements	
07:00 to 07:15	7	0	1	0	2	12	22	
07:15 to 07:30	5	1	0	1	0	16	23	
07:30 to 07:45	8	0	0	1	3	29	41	
07:45 to 08:00	9	0	2	0	4	20	35	
08:00 to 08:15	10	1	1	0	1	22	35	
08:15 to 08:30	18	3	3	2	1	34	61	
08:30 to 08:45	22	3	1	4	6	31	67	
08:45 to 09:00	24	4	2	3	2	29	64	
09:00 to 09:15	35	2	1	3	3	36	80	Peak
09:15 to 09:30	30	1	0	1	2	33	67	
Hourly Summary	168	15	11	15	24	262		
07:00 to 08:00	29	1	3	2	9	77	121	
07:15 to 08:15	32	2	3	2	8	87	134	
07:30 to 08:30	45	4	6	3	9	105	172	
07:45 to 08:45	59	7	7	6	12	107	198	
08:00 to 09:00	74	11	7	9	10	116	227	
08:15 to 09:15	99	12	7	12	12	130	272	
08:30 to 09:30	111	10	4	11	13	129	278	Peak Hour

Curtis Traffic Surveys

Turning movement count

Job: 091102bt
Day, date: Thu 10 Dec 09
Location: Fishery Pt Rd & Morisset Pk Rd
Weather: Fine
Client: Better Transport Futures

Peak Hour Volumes: 381, 66



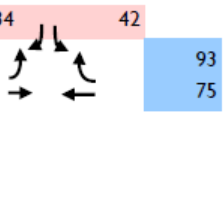
Time Period	From Morisset Pk Rd Through	From Morisset Pk Rd Right	From Fishery Pt Rd north Left	From Fishery Pt Rd north Right	From Fishery Pt Rd west Left	From Fishery Pt Rd west Through	movements	
14:30 to 14:45	12	1	6	64	89	13	185	
14:45 to 15:00	21	12	15	80	74	5	207	
15:00 to 15:15	30	13	11	56	101	14	225	
15:15 to 15:30	25	22	27	68	117	34	293	Peak
15:30 to 15:45	10	8	15	77	54	7	171	
15:45 to 16:00	12	7	0	42	62	5	128	
16:00 to 16:15	11	12	3	59	53	9	147	
16:15 to 16:30	20	23	1	54	58	12	168	
16:30 to 16:45	23	21	5	57	66	47	219	
16:45 to 17:00	27	19	11	64	72	13	206	
17:00 to 17:15	32	23	17	63	68	19	222	
17:15 to 17:30	26	21	15	67	64	15	208	
17:30 to 17:45	38	18	12	69	74	21	232	
17:45 to 18:00	23	17	19	64	71	19	213	
Hourly Summary	310	217	157	884	1023	233		
14:30 to 15:30	88	48	59	268	381	66	910	Peak Hour
14:45 to 15:45	86	55	68	281	346	60	896	
15:00 to 16:00	77	50	53	243	334	60	817	
15:15 to 16:15	58	49	45	246	286	55	739	
15:30 to 16:30	53	50	19	232	227	33	614	
15:45 to 16:45	66	63	9	212	239	73	662	
16:00 to 17:00	81	75	20	234	249	81	740	
16:15 to 17:15	102	86	34	238	264	91	815	
16:30 to 17:30	108	84	48	251	270	94	855	
16:45 to 17:45	123	81	55	263	278	68	868	
17:00 to 18:00	119	79	63	263	277	74	875	

Curtis Traffic Surveys

Turning movement count

Job: 091102bt
Day, date: Thu 10 Dec 09
Location: Fishery Pt Rd & Morisset Pk Rd
Weather: Fine
Client: Better Transport Futures

Peak Hour Volumes: 201, 122



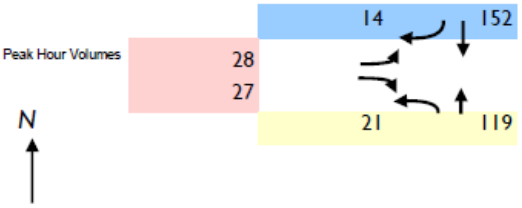
Time Period	From Morisset Pk Rd Through	From Morisset Pk Rd Right	From Fishery Pt Rd north Left	From Fishery Pt Rd north Right	From Fishery Pt Rd west Left	From Fishery Pt Rd west Through	movements	
07:00 to 07:15	10	10	12	96	31	1	160	
07:15 to 07:30	9	7	19	81	35	0	151	
07:30 to 07:45	7	12	16	83	42	6	166	
07:45 to 08:00	10	14	4	103	39	21	191	
08:00 to 08:15	12	7	2	109	36	17	183	
08:15 to 08:30	17	9	4	98	32	19	179	
08:30 to 08:45	15	6	1	110	37	23	192	
08:45 to 09:00	15	13	4	129	54	19	234	
09:00 to 09:15	19	31	13	103	42	34	242	
09:15 to 09:30	26	43	24	92	68	46	299	Peak
Hourly Summary	140	152	99	1004	416	186		
07:00 to 08:00	36	43	51	363	147	28	668	
07:15 to 08:15	38	40	41	376	152	44	691	
07:30 to 08:30	46	42	26	393	149	63	719	
07:45 to 08:45	54	36	11	420	144	80	745	
08:00 to 09:00	59	35	11	446	159	78	788	
08:15 to 09:15	66	59	22	440	165	95	847	
08:30 to 09:30	75	93	42	434	201	122	967	Peak Hour

Curtis Traffic Surveys

Turning movement count

Job: 091102bt
Day, date: Tue 8 Dec 09
Location: Freemans Dr & Gimberts Rd
Weather: Fine
Client: Better Transport Futures

Peak Hour Volumes: 28, 27



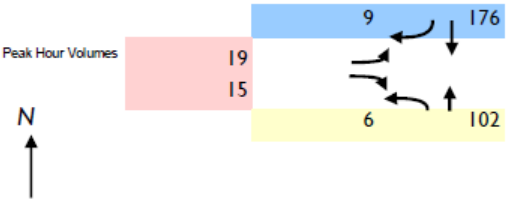
Time Period	From Freemans Dr north Through	Right	From Gimberts Rd Left	Right	From Freemans Dr south Left	Through	movements	
14:30 to 14:45	13	5	4	4	5	20	51	
14:45 to 15:00	25	4	1	0	1	28	59	
15:00 to 15:15	28	5	2	2	3	26	66	
15:15 to 15:30	27	2	5	3	0	34	71	
15:30 to 15:45	26	1	7	3	3	40	80	
15:45 to 16:00	21	2	3	2	6	36	70	
16:00 to 16:15	29	3	2	4	3	28	69	
16:15 to 16:30	32	2	11	7	0	25	77	
16:30 to 16:45	39	1	11	6	0	22	79	
16:45 to 17:00	41	2	10	5	2	23	83	
17:00 to 17:15	39	6	3	8	9	33	98	
17:15 to 17:30	33	5	4	8	10	41	101	Peak
17:30 to 17:45	34	7	2	3	5	24	75	
17:45 to 18:00	30	4	1	0	7	19	61	
Hourly Summary	417	49	66	55	54	399		
14:30 to 15:30	93	16	12	9	9	108	247	
14:45 to 15:45	106	12	15	8	7	128	276	
15:00 to 16:00	102	10	17	10	12	136	287	
15:15 to 16:15	103	8	17	12	12	138	290	
15:30 to 16:30	108	8	23	16	12	129	296	
15:45 to 16:45	121	8	27	19	9	111	295	
16:00 to 17:00	141	8	34	22	5	98	308	
16:15 to 17:15	151	11	35	26	11	103	337	
16:30 to 17:30	152	14	28	27	21	119	361	Peak Hour
16:45 to 17:45	147	20	19	24	26	121	357	
17:00 to 18:00	136	22	10	19	31	117	335	

Curtis Traffic Surveys

Turning movement count

Job: 091102bt
Day, date: Thu 19 Nov 09
Location: Freemans Dr & Gimberts Rd
Weather: Fine
Client: Better Transport Futures

Peak Hour Volumes: 19, 15



Time Period	From Freemans Dr north Through	Right	From Gimberts Rd Left	Right	From Freemans Dr south Left	Through	movements	
07:00 to 07:15	48	0	0	0	0	16	64	
07:15 to 07:30	35	1	0	1	1	18	56	
07:30 to 07:45	44	1	2	3	0	24	74	
07:45 to 08:00	38	1	1	0	2	28	70	
08:00 to 08:15	33	3	2	1	1	30	70	
08:15 to 08:30	40	2	3	1	2	29	77	
08:30 to 08:45	43	1	2	6	3	22	77	
08:45 to 09:00	50	2	6	6	1	26	91	Peak
09:00 to 09:15	45	2	2	1	0	22	72	
09:15 to 09:30	38	4	9	2	2	32	87	
Hourly Summary	414	17	27	21	12	247		
07:00 to 08:00	165	3	3	4	3	86	264	
07:15 to 08:15	150	6	5	5	4	100	270	
07:30 to 08:30	155	7	8	5	5	111	291	
07:45 to 08:45	154	7	8	8	8	109	294	
08:00 to 09:00	166	8	13	14	7	107	315	
08:15 to 09:15	178	7	13	14	6	99	317	
08:30 to 09:30	176	9	19	15	6	102	327	Peak Hour

Curtis Traffic Surveys

Turning movement count

Job: 091102bt

Day, date: Thu 26 Nov 09

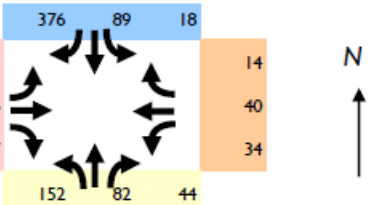
Location: Wamsley St, Dora St & Macquarie St

Weather: Fine

Client: Better Transport Futures

All motor vehicles

Peak Hour: 376 89 18 / 293 14 / 36 40 / 137 34 / 152 82 44



Time Period	From Wamsley St north			From Macquarie St (bridge)			From Wamsley St south			From Dora St			Total vehicle movements	
	left	through	right	left	through	right	left	through	right	left	through	right		
14:30 to 14:45	5	24	22	34	14	26	34	13	7	4	8	2	193	
14:45 to 15:00	4	34	69	66	6	20	27	17	5	5	6	1	260	
15:00 to 15:15	3	32	89	82	6	40	33	22	4	4	5	3	323	
15:15 to 15:30	8	28	79	63	6	24	45	32	6	8	6	1	306	
15:30 to 15:45	9	26	104	78	9	45	44	34	9	9	14	5	386	Peak
15:45 to 16:00	2	19	86	60	6	36	30	11	9	6	6	2	273	
16:00 to 16:15	3	18	79	85	9	30	49	22	9	11	7	1	323	
16:15 to 16:30	4	26	107	70	12	26	29	15	17	8	13	6	333	
16:30 to 16:45	4	28	77	77	6	27	26	20	9	6	7	1	288	
16:45 to 17:00	6	16	66	75	7	32	35	20	9	5	13	2	286	
17:00 to 17:15	3	23	79	91	10	33	41	29	8	10	12	7	346	
17:15 to 17:30	1	17	60	51	7	13	24	15	4	2	3	2	199	
17:30 to 17:45	5	16	63	51	8	17	26	16	5	5	8	3	223	
17:45 to 18:00	2	13	57	49	6	13	19	8	2	3	7	1	180	
Totals	59	320	1037	932	112	382	462	274	103	86	115	37		
14:30 to 15:30	20	118	259	245	32	110	139	84	22	21	25	7	1082	
14:45 to 15:45	24	120	341	289	27	129	149	105	24	26	31	10	1275	
15:00 to 16:00	22	105	358	283	27	145	152	99	28	27	31	11	1288	
15:15 to 16:15	22	91	348	286	30	135	168	99	33	34	33	9	1288	
15:30 to 16:30	18	89	376	293	36	137	152	82	44	34	40	14	1315	Peak Hour
15:45 to 16:45	13	91	349	292	33	119	134	68	44	31	33	10	1217	
16:00 to 17:00	17	88	329	307	34	115	139	77	44	30	40	10	1230	
16:15 to 17:15	17	93	329	313	35	118	131	84	43	29	45	16	1253	
16:30 to 17:30	14	84	282	294	30	105	126	84	30	23	35	12	1119	
16:45 to 17:45	15	72	268	268	32	95	126	80	26	22	36	14	1054	
17:00 to 18:00	11	69	259	242	31	76	110	68	19	20	30	13	948	

Curtis Traffic Surveys

Turning movement count

Job: 091102bt

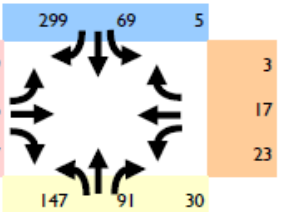
Day, date: Thu 26 Nov 09

Location: Wamsley St, Dora St & Macquarie St

Weather: Fine

Client: Better Transport Futures

All motor vehicles



Time Period	From Wamsley St north			From Macquarie St (bridge)			From Wamsley St south			From Dora St			Total vehicle movements	
	left	through	right	left	through	right	left	through	right	left	through	right		
07:00 to 07:15	1	9	78	56	0	10	9	10	0	1	5	0	179	
07:15 to 07:30	2	10	65	48	2	15	10	9	2	3	3	0	169	
07:30 to 07:45	0	12	76	49	1	29	7	8	3	0	2	3	190	
07:45 to 08:00	1	9	84	62	0	34	21	15	5	1	6	2	240	
08:00 to 08:15	1	13	89	68	1	39	18	21	4	5	3	1	263	
08:15 to 08:30	2	19	61	57	4	58	36	27	13	10	3	1	291	
08:30 to 08:45	1	15	87	54	3	36	58	26	7	5	6	1	299	Peak
08:45 to 09:00	1	22	62	50	8	34	35	17	6	3	5	0	243	
09:00 to 09:15	1	22	55	52	7	29	28	25	9	5	10	2	245	
09:15 to 09:30	3	20	96	44	5	25	20	13	9	3	3	2	243	
Totals	13	151	753	540	31	309	242	171	58	36	46	12		
07:00 to 08:00	4	40	303	215	3	88	47	42	10	5	16	5	778	
07:15 to 08:15	4	44	314	227	4	117	56	53	14	9	14	6	862	
07:30 to 08:30	4	53	310	236	6	160	82	71	25	16	14	7	984	
07:45 to 08:45	5	56	321	241	8	167	133	89	29	21	18	5	1093	
08:00 to 09:00	5	69	299	229	16	167	147	91	30	23	17	3	1096	Peak Hour
08:15 to 09:15	5	78	265	213	22	157	157	95	35	23	24	4	1078	
08:30 to 09:30	6	79	300	200	23	124	141	81	31	16	24	5	1030	

Curtis Traffic Surveys

Turning movement count

Job: 091102bt

Day, date: Thu 26 Nov 09

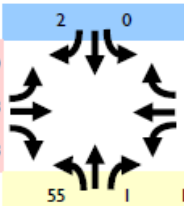
Location: Newport Rd & Gradwells Rd

Weather: Fine

Client: Better Transport Futures

All motor vehicles

Peak Hour: 2 0 0



Time Period	From Gradwells Rd north			From Newport Rd west			From Gradwells Rd south			From Newport Rd east			Total vehicle movements	
	left	through	right	left	through	right	left	through	right	left	through	right		
14:30 to 14:45	0	0	0	0	33	5	6	0	3	1	27	0	75	
14:45 to 15:00	0	0	0	0	50	4	3	0	4	2	26	0	89	
15:00 to 15:15	0	0	0	0	47	6	3	0	1	1	36	0	94	
15:15 to 15:30	0	0	0	0	55	4	11	1	3	2	71	0	147	Peak
15:30 to 15:45	0	0	1	0	45	4	6	0	2	0	64	0	122	
15:45 to 16:00	0	0	0	0	45	7	9	0	4	1	36	0	102	
16:00 to 16:15	0	0	0	0	29	2	9	0	5	2	46	0	93	
16:15 to 16:30	0	0	0	0	44	5	5	0	3	0	45	0	102	
16:30 to 16:45	0	0	1	0	43	5	8	0	1	5	39	0	102	
16:45 to 17:00	0	0	0	0	40	5	4	0	0	5	48	0	102	
17:00 to 17:15	0	0	0	1	49	2	9	0	9	3	43	0	116	
17:15 to 17:30	0	0	0	0	30	1	3	0	4	5	44	0	87	
17:30 to 17:45	0	0	0	0	40	3	6	0	0	3	4	0	56	
17:45 to 18:00	0	0	0	0	38	7	4	0	6	4	41	0	100	
Totals	0	0	2	1	588	60	86	1	45	34	570	0		
14:30 to 15:30	0	0	0	0	185	19	23	1	11	6	160	0	405	
14:45 to 15:45	0	0	2	0	358	37	54	1	23	13	363	0	452	
15:00 to 16:00	0	0	2	0	348	38	55	1	19	16	385	0	465	Peak Hour
15:15 to 16:15	0	0	2	1	350	34	61	1	27	18	392	0	464	
15:30 to 16:30	0	0	2	1	325	31	53	0	28	21	365	0	419	
15:45 to 16:45	0	0	1	1	320	30	53	0	26	24	305	0	399	
16:00 to 17:00	0	0	1	1	313	30	48	0	28	27	310	0	399	
16:15 to 17:15	0	0	3	2	872	88	125	1	68	59	834	0	422	
16:30 to 17:30	0	0	3	2	1013	102	143	2	76	65	949	0	407	
16:45 to 17:45	0	0	4	2	1328	134	189	3	98	73	1273	0	361	
17:00 to 18:00	0	0	6	2	1636	167	240	4	117	84	1610	0	359	

Curtis Traffic Surveys

Turning movement count

Job: 091102bt

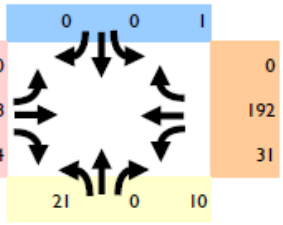
Day, date: Thu 26 Nov 09

Location: Newport Rd & Gradwells Rd

Weather: Fine

Client: Better Transport Futures

All motor vehicles



Time Period	From Gradwells Rd north			From Newport Rd west			From Gradwells Rd south			From Newport Rd east			Total vehicle movements	
	left	through	right	left	through	right	left	through	right	left	through	right		
07:00 to 07:15	0	0	0	0	15	0	2	0	1	3	21	0	42	
07:15 to 07:30	1	0	0	0	16	1	3	0	0	5	25	0	51	
07:30 to 07:45	0	0	0	0	18	2	2	0	2	4	32	0	60	
07:45 to 08:00	0	0	1	0	24	1	4	0	0	7	47	0	84	
08:00 to 08:15	1	0	0	0	19	4	6	0	3	4	44	0	81	
08:15 to 08:30	1	0	0	0	22	6	6	0	2	8	52	0	97	
08:30 to 08:45	0	0	0	0	53	2	5	0	5	11	50	0	126	Peak
08:45 to 09:00	0	0	0	0	41	1	4	0	1	7	51	0	105	
09:00 to 09:15	0	0	0	0	42	5	6	0	2	5	39	0	99	
09:15 to 09:30	0	0	0	0	34	1	8	0	0	2	34	0	79	
Totals	3	0	1	0	284	23	46	0	16	56	395	0		
07:00 to 08:00	1	0	1	0	73	4	11	0	3	19	125	0	237	
07:15 to 08:15	2	0	1	0	77	8	15	0	5	20	148	0	276	
07:30 to 08:30	2	0	1	0	83	13	18	0	7	23	175	0	322	
07:45 to 08:45	2	0	1	0	118	13	21	0	10	30	193	0	388	
08:00 to 09:00	2	0	0	0	135	13	21	0	11	30	197	0	409	
08:15 to 09:15	1	0	0	0	158	14	21	0	10	31	192	0	427	Peak Hour
08:30 to 09:30	0	0	0	0	170	9	23	0	8	25	174	0	409	

Curtis Traffic Surveys

Turning movement count

Job: 091102bt

Day, date: Thu 26 Nov 09

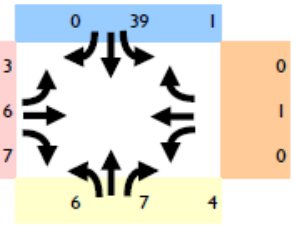
Location: Coorumbung Rd & Gradwells Rd

Weather: Fine

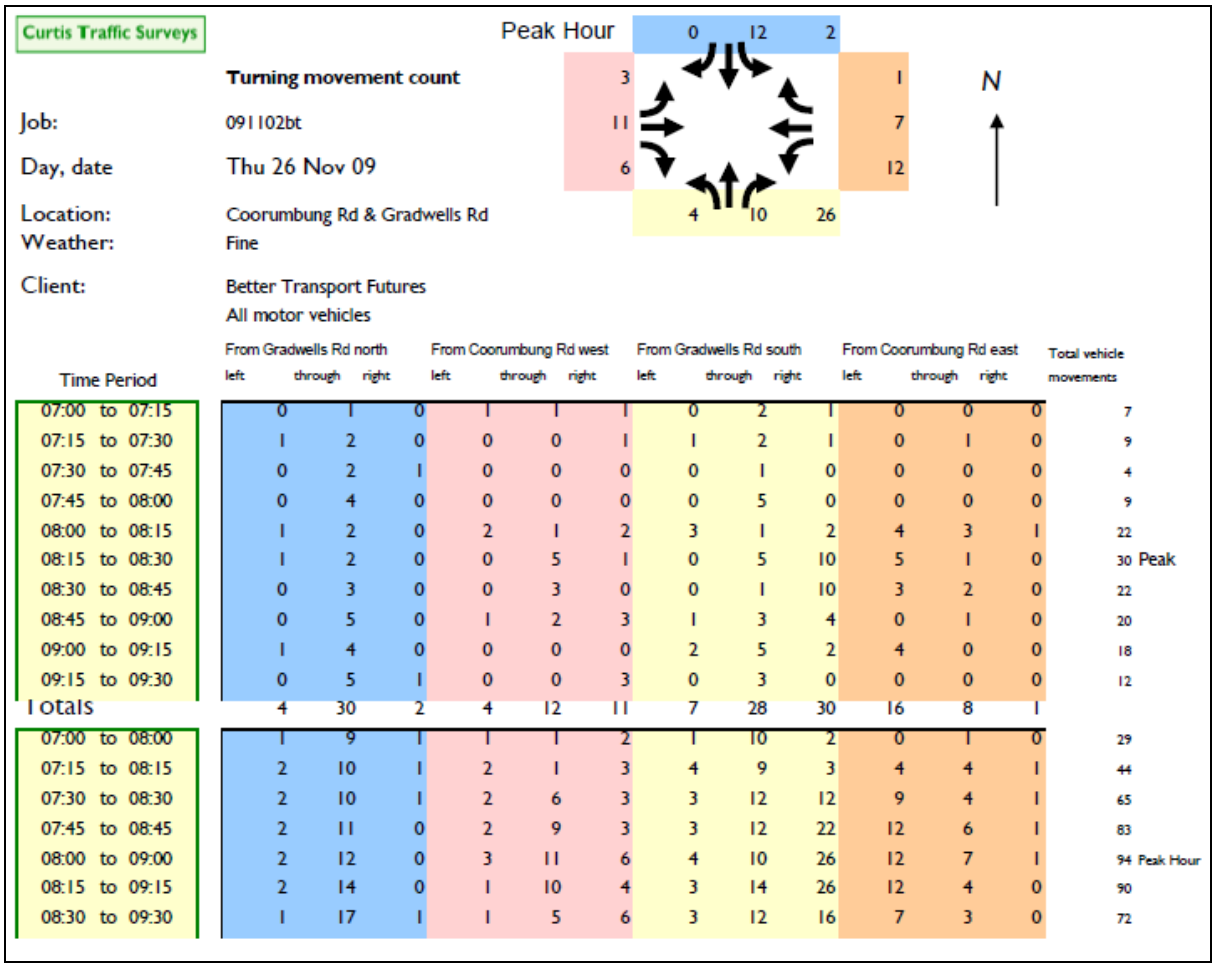
Client: Better Transport Futures

All motor vehicles

Peak Hour



Time Period	From Gradwells Rd north			From Coorumbung Rd west			From Gradwells Rd south			From Coorumbung Rd east			Total vehicle movements	
	left	through	right	left	through	right	left	through	right	left	through	right		
14:30 to 14:45	1	2	0	0	2	2	1	2	6	10	4	1	31	Peak
14:45 to 15:00	0	3	0	0	0	0	1	1	1	2	2	0	10	
15:00 to 15:15	1	4	0	0	1	0	0	6	0	0	1	0	13	
15:15 to 15:30	0	7	0	0	0	1	1	2	0	2	2	0	15	
15:30 to 15:45	0	2	0	0	1	3	1	3	1	0	1	0	12	
15:45 to 16:00	0	6	1	1	1	0	0	5	2	1	0	0	17	
16:00 to 16:15	0	10	0	0	0	0	2	1	0	1	0	0	14	
16:15 to 16:30	1	7	0	1	0	1	2	2	2	0	2	0	18	
16:30 to 16:45	0	3	0	0	0	2	0	3	1	1	0	0	10	
16:45 to 17:00	1	2	0	1	1	2	4	3	1	0	0	0	15	
17:00 to 17:15	1	11	0	2	1	4	2	1	2	0	0	0	24	
17:15 to 17:30	0	9	0	0	2	0	1	1	1	0	0	0	14	
17:30 to 17:45	0	9	0	1	1	2	2	3	1	0	1	0	20	
17:45 to 18:00	0	10	0	0	2	1	1	2	0	0	0	0	16	
Totals	5	85	1	6	12	18	18	35	18	17	13	1		
14:30 to 15:30	2	16	0	0	3	3	3	11	7	14	9	1	69	
14:45 to 15:45	1	16	0	0	2	4	3	12	2	4	6	0	50	
15:00 to 16:00	1	19	1	1	3	4	2	16	3	3	4	0	57	
15:15 to 16:15	0	25	1	1	2	4	4	11	3	4	3	0	58	
15:30 to 16:30	1	25	1	2	2	4	5	11	5	2	3	0	61	
15:45 to 16:45	1	26	1	2	1	3	4	11	5	3	2	0	59	
16:00 to 17:00	2	22	0	2	1	5	8	9	4	2	2	0	57	
16:15 to 17:15	3	23	0	4	2	9	8	9	6	1	2	0	67	
16:30 to 17:30	2	25	0	3	4	8	7	8	5	1	0	0	63	
16:45 to 17:45	2	31	0	4	5	8	9	8	5	0	1	0	73	
17:00 to 18:00	1	39	0	3	6	7	6	7	4	0	1	0	74	Peak Hour



Curtis Traffic Surveys

Turning movement count

Job: 091102bt

Day, date: Thu 26 Nov 09

Location: Coorumbung Rd & Gradwells Rd

Weather: Fine

Client: Better Transport Futures

All motor vehicles

Peak Hour: 0 12 2 / 3 1 / 11 7 / 6 12 / 4 10 26

N

Time Period	From Gradwells Rd north			From Coorumbung Rd west			From Gradwells Rd south			From Coorumbung Rd east			Total vehicle movements	
	left	through	right	left	through	right	left	through	right	left	through	right		
07:00 to 07:15	0	1	0	1	1	1	0	2	1	0	0	0	7	
07:15 to 07:30	1	2	0	0	0	1	1	2	1	0	1	0	9	
07:30 to 07:45	0	2	1	0	0	0	0	1	0	0	0	0	4	
07:45 to 08:00	0	4	0	0	0	0	0	5	0	0	0	0	9	
08:00 to 08:15	1	2	0	2	1	2	3	1	2	4	3	1	22	
08:15 to 08:30	1	2	0	0	5	1	0	5	10	5	1	0	30	Peak
08:30 to 08:45	0	3	0	0	3	0	0	1	10	3	2	0	22	
08:45 to 09:00	0	5	0	1	2	3	1	3	4	0	1	0	20	
09:00 to 09:15	1	4	0	0	0	0	2	5	2	4	0	0	18	
09:15 to 09:30	0	5	1	0	0	3	0	3	0	0	0	0	12	
Totals	4	30	2	4	12	11	7	28	30	16	8	1		
07:00 to 08:00	1	9	1	1	1	2	1	10	2	0	1	0	29	
07:15 to 08:15	2	10	1	2	1	3	4	9	3	4	4	1	44	
07:30 to 08:30	2	10	1	2	6	3	3	12	12	9	4	1	65	
07:45 to 08:45	2	11	0	2	9	3	3	12	22	12	6	1	83	
08:00 to 09:00	2	12	0	3	11	6	4	10	26	12	7	1	94	Peak Hour
08:15 to 09:15	2	14	0	1	10	4	3	14	26	12	4	0	90	
08:30 to 09:30	1	17	1	1	5	6	3	12	16	7	3	0	72	

BETTER TRANSPORT FUTURES

Curtis Traffic Surveys

Turning movement count

Job: 091102bt
Day, date: Tue 1 Dec 09
Location: Newport Rd & Kalang Rd
Weather: Fine
Client: Better Transport Futures

Peak Hour Volumes: 207, 22, 193, 20, 8, 15

N

Time Period	From Newport Rd west Through	Right	From Kalang Rd Left	Right	From Newport Rd east Left	Through	movements	
14:30 to 14:45	53	0	3	5	2	44	107	
14:45 to 15:00	51	2	4	4	5	42	108	
15:00 to 15:15	48	4	1	6	7	40	106	
15:15 to 15:30	45	1	5	5	1	37	94	
15:30 to 15:45	50	0	3	4	11	39	107	
15:45 to 16:00	41	1	1	4	13	33	93	
16:00 to 16:15	38	3	5	2	9	31	88	
16:15 to 16:30	52	2	0	0	11	42	107	
16:30 to 16:45	54	7	0	3	7	41	112	
16:45 to 17:00	45	2	2	6	3	49	107	
17:00 to 17:15	48	8	1	2	6	54	119	
17:15 to 17:30	60	5	5	4	4	49	127	Peak
17:30 to 17:45	55	6	2	7	2	38	110	
17:45 to 18:00	47	2	1	5	1	31	87	
Hourly Summary	687	43	33	57	82	570		
14:30 to 15:30	197	7	13	20	15	163	415	
14:45 to 15:45	194	7	13	19	24	158	415	Peak Hour
15:00 to 16:00	184	6	10	19	32	149	400	
15:15 to 16:15	174	5	14	15	34	140	382	
15:30 to 16:30	181	6	9	10	44	145	395	
15:45 to 16:45	185	13	6	9	40	147	400	
16:00 to 17:00	189	14	7	11	30	163	414	
16:15 to 17:15	199	19	3	11	27	186	445	
16:30 to 17:30	207	22	8	15	20	193	465	Peak Hour
16:45 to 17:45	208	21	10	19	15	190	463	
17:00 to 18:00	210	21	9	18	13	172	443	

Curtis Traffic Surveys

Turning movement count

Job: 091102bt
Day, date: Sat 0 Jan 00
Location: Newport Rd & Kalang Rd
Weather: Fine
Client: Better Transport Futures

Peak Hour Volumes: 117, 3, 175, 23, 11, 10

N

Time Period	From Newport Rd west Through	Right	From Kalang Rd Left	Right	From Newport Rd east Left	Through	movements	
07:00 to 07:15	28	0	2	14	3	31	78	
07:15 to 07:30	27	0	3	3	2	28	63	
07:30 to 07:45	21	1	2	3	2	35	64	
07:45 to 08:00	31	0	2	1	4	33	71	
08:00 to 08:15	19	2	0	4	7	42	74	
08:15 to 08:30	26	0	0	2	9	47	84	
08:30 to 08:45	30	0	5	4	7	41	87	
08:45 to 09:00	30	2	3	1	6	50	92	Peak
09:00 to 09:15	31	1	3	3	1	37	76	
09:15 to 09:30	25	3	1	2	2	34	67	
Hourly Summary	268	9	21	37	43	378		
07:00 to 08:00	107	1	9	21	11	127	276	
07:15 to 08:15	98	3	7	11	15	138	272	
07:30 to 08:30	97	3	4	10	22	157	293	
07:45 to 08:45	106	2	7	11	27	163	316	
08:00 to 09:00	105	4	8	11	29	180	337	
08:15 to 09:15	117	3	11	10	23	175	339	Peak Hour
08:30 to 09:30	116	6	12	10	16	162	322	

Curtis Traffic Surveys

Turning movement count

Job: 091102bt

Day, date: Thu 26 Nov 09

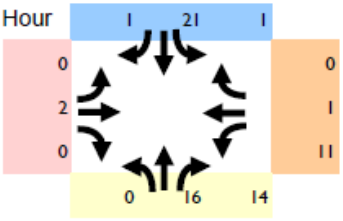
Location: Bridge St & Awaba St

Weather: Fine

Client: Better Transport Futures

All motor vehicles

Peak Hour



Time Period	From Bridge St north			From Awaba St west			From Bridge St south			From Awaba St east			Total vehicle movements	
	left	through	right	left	through	right	left	through	right	left	through	right		
14:30 to 14:45	0	7	0	0	1	0	0	8	0	0	1	0	17	
14:45 to 15:00	1	8	1	0	0	0	0	4	2	1	0	0	17	
15:00 to 15:15	0	3	0	0	1	0	0	0	8	10	0	0	22	Peak
15:15 to 15:30	0	3	0	0	0	0	0	4	4	0	0	0	11	
15:30 to 15:45	0	6	0	0	0	0	1	5	3	0	0	0	15	
15:45 to 16:00	0	6	1	0	0	1	1	7	0	0	0	0	16	
16:00 to 16:15	0	2	0	0	0	0	0	9	0	1	0	0	12	
16:15 to 16:30	0	8	0	0	0	0	0	3	0	0	0	0	11	
16:30 to 16:45	0	4	0	0	0	0	0	7	3	1	0	0	15	
16:45 to 17:00	0	4	0	0	0	0	0	4	0	1	0	0	9	
17:00 to 17:15	0	4	0	0	0	0	3	6	1	0	0	0	14	
17:15 to 17:30	0	4	0	0	0	0	1	10	0	0	0	0	15	
17:30 to 17:45	0	4	0	0	0	0	0	3	2	0	0	0	9	
17:45 to 18:00	0	3	0	0	0	0	0	7	2	0	0	0	12	
Totals	1	66	2	0	2	1	6	77	25	14	1	0		
14:30 to 15:30	1	21	1	0	2	0	0	16	14	11	1	0	67	Peak Hour
14:45 to 15:45	1	20	1	0	1	0	1	13	17	11	0	0	65	
15:00 to 16:00	0	18	1	0	1	1	2	16	15	10	0	0	64	
15:15 to 16:15	0	17	1	0	0	1	2	25	7	1	0	0	54	
15:30 to 16:30	0	22	1	0	0	1	2	24	3	1	0	0	54	
15:45 to 16:45	0	20	1	0	0	1	1	26	3	2	0	0	54	
16:00 to 17:00	0	18	0	0	0	0	0	23	3	3	0	0	47	
16:15 to 17:15	0	20	0	0	0	0	3	20	4	2	0	0	49	
16:30 to 17:30	0	16	0	0	0	0	4	27	4	2	0	0	53	
16:45 to 17:45	0	16	0	0	0	0	4	23	3	1	0	0	47	
17:00 to 18:00	0	15	0	0	0	0	4	26	5	0	0	0	50	

Curtis Traffic Surveys

Turning movement count

Job: 091102bt

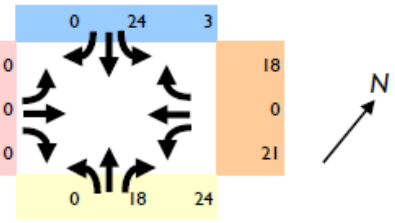
Day, date: Tue 1 Dec 09

Location: Bridge St & Awaba St

Weather: Fine

Client: Better Transport Futures

All motor vehicles



Time Period	From Bridge St north			From Awaba St west			From Bridge St south			From Awaba St east			Total vehicle movements	
	left	through	right	left	through	right	left	through	right	left	through	right		
07:00 to 07:15	2	3	0	0	0	0	0	9	2	6	0	1	23	
07:15 to 07:30	1	8	0	0	0	0	0	7	4	3	0	0	23	
07:30 to 07:45	1	6	0	0	0	0	0	10	3	4	0	2	26	
07:45 to 08:00	1	6	0	0	0	0	0	8	2	7	0	3	27	
08:00 to 08:15	0	7	0	0	0	0	0	4	9	5	0	3	28	Peak
08:15 to 08:30	2	4	0	0	0	0	0	3	6	3	0	8	26	
08:30 to 08:45	0	7	0	0	0	0	0	3	7	6	0	4	27	
08:45 to 09:00	0	6	0	0	0	0	0	3	8	4	0	4	25	
09:00 to 09:15	1	6	0	0	0	0	0	5	1	2	0	1	16	
09:15 to 09:30	0	4	0	0	0	0	0	2	3	4	0	3	16	
Totals	8	57	0	0	0	0	0	54	45	44	0	29		
07:00 to 08:00	5	23	0	0	0	0	0	34	11	20	0	6	99	
07:15 to 08:15	3	27	0	0	0	0	0	29	18	19	0	8	104	
07:30 to 08:30	4	23	0	0	0	0	0	25	20	19	0	16	107	
07:45 to 08:45	3	24	0	0	0	0	0	18	24	21	0	18	108	Peak Hour
08:00 to 09:00	2	24	0	0	0	0	0	13	30	18	0	19	106	
08:15 to 09:15	3	23	0	0	0	0	0	14	22	15	0	17	94	
08:30 to 09:30	1	23	0	0	0	0	0	13	19	16	0	12	84	

Curtis Traffic Surveys

Turning movement count

Job: 091102bt

Day, date: Thu 26 Nov 09

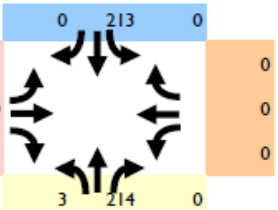
Location: Stockton St, Awaba St & Kahibah St

Weather: Fine

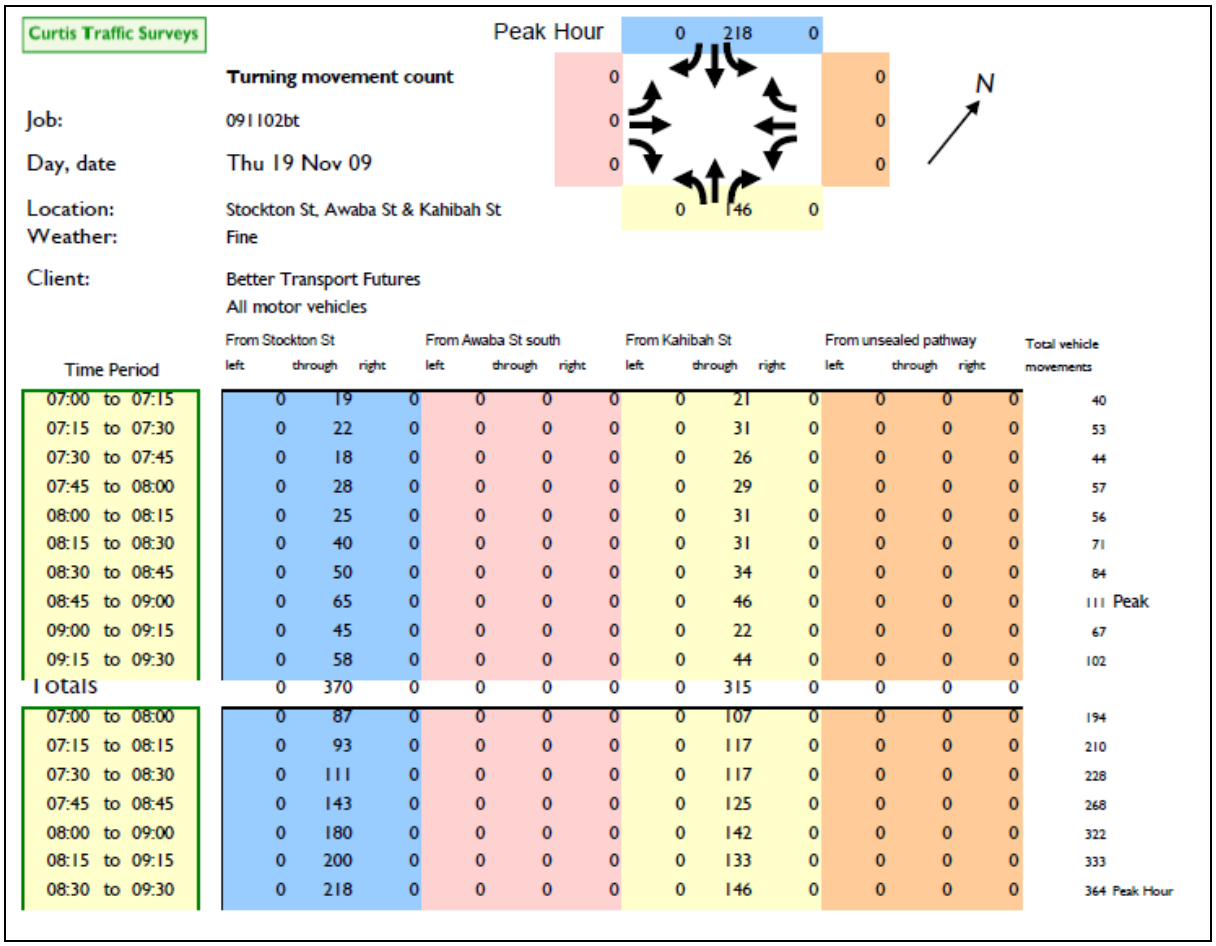
Client: Better Transport Futures

All motor vehicles

Peak Hour



Time Period	From Stockton St			From Awaba St south			From Kahibah St			From unsealed pathway			Total vehicle movements	
	left	through	right	left	through	right	left	through	right	left	through	right		
14:30 to 14:45	0	28	0	1	0	0	1	31	0	0	0	0	61	
14:45 to 15:00	0	44	0	0	0	1	0	58	0	0	0	0	103	
15:00 to 15:15	0	52	0	1	0	1	2	61	0	0	0	0	117	Peak
15:15 to 15:30	0	54	0	0	0	1	0	55	0	0	0	0	110	
15:30 to 15:45	0	51	0	0	0	1	0	49	0	0	0	0	101	
15:45 to 16:00	0	56	0	0	0	0	1	49	0	0	0	0	106	
16:00 to 16:15	1	48	0	0	0	2	0	51	0	0	0	0	102	
16:15 to 16:30	0	52	1	0	0	0	0	55	0	1	0	0	109	
16:30 to 16:45	0	45	0	0	0	0	2	52	0	0	0	0	99	
16:45 to 17:00	0	47	0	0	0	0	0	62	0	0	0	0	109	
17:00 to 17:15	0	40	0	0	0	0	0	50	0	0	0	0	90	
17:15 to 17:30	0	54	0	0	0	0	0	44	0	0	0	0	98	
17:30 to 17:45	0	50	0	0	0	0	0	58	0	0	0	0	108	
17:45 to 18:00	0	51	0	0	0	0	0	48	0	0	0	0	99	
Totals	1	672	1	2	0	6	6	723	0	1	0	0		
14:30 to 15:30	0	178	0	2	0	3	3	205	0	0	0	0	391	
14:45 to 15:45	0	201	0	1	0	4	2	223	0	0	0	0	431	
15:00 to 16:00	0	213	0	1	0	3	3	214	0	0	0	0	434	Peak Hour
15:15 to 16:15	1	209	0	0	0	4	1	204	0	0	0	0	419	
15:30 to 16:30	1	207	1	0	0	3	1	204	0	1	0	0	418	
15:45 to 16:45	1	201	1	0	0	2	3	207	0	1	0	0	416	
16:00 to 17:00	1	192	1	0	0	2	2	220	0	1	0	0	419	
16:15 to 17:15	0	184	1	0	0	0	2	219	0	1	0	0	407	
16:30 to 17:30	0	186	0	0	0	0	2	208	0	0	0	0	396	
16:45 to 17:45	0	191	0	0	0	0	0	214	0	0	0	0	405	
17:00 to 18:00	0	195	0	0	0	0	0	200	0	0	0	0	395	



Curtis Traffic Surveys

Peak Hour 0 218 0

Turning movement count

0 0

0 0

0 0

N

Job: 091102bt

Day, date Thu 19 Nov 09

Location: Stockton St, Awaba St & Kahibah St

Weather: Fine

Client: Better Transport Futures

All motor vehicles

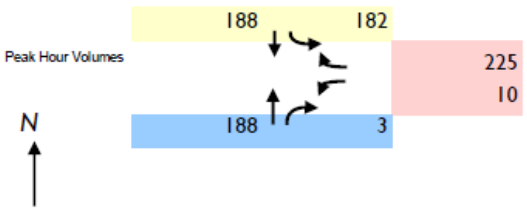
0 146 0

Time Period	From Stockton St			From Awaba St south			From Kahibah St			From unsealed pathway			Total vehicle movements	
	left	through	right	left	through	right	left	through	right	left	through	right		
07:00 to 07:15	0	19	0	0	0	0	0	21	0	0	0	0	40	
07:15 to 07:30	0	22	0	0	0	0	0	31	0	0	0	0	53	
07:30 to 07:45	0	18	0	0	0	0	0	26	0	0	0	0	44	
07:45 to 08:00	0	28	0	0	0	0	0	29	0	0	0	0	57	
08:00 to 08:15	0	25	0	0	0	0	0	31	0	0	0	0	56	
08:15 to 08:30	0	40	0	0	0	0	0	31	0	0	0	0	71	
08:30 to 08:45	0	50	0	0	0	0	0	34	0	0	0	0	84	
08:45 to 09:00	0	65	0	0	0	0	0	46	0	0	0	0	111	Peak
09:00 to 09:15	0	45	0	0	0	0	0	22	0	0	0	0	67	
09:15 to 09:30	0	58	0	0	0	0	0	44	0	0	0	0	102	
Totals	0	370	0	0	0	0	0	315	0	0	0	0		
07:00 to 08:00	0	87	0	0	0	0	0	107	0	0	0	0	194	
07:15 to 08:15	0	93	0	0	0	0	0	117	0	0	0	0	210	
07:30 to 08:30	0	111	0	0	0	0	0	117	0	0	0	0	228	
07:45 to 08:45	0	143	0	0	0	0	0	125	0	0	0	0	268	
08:00 to 09:00	0	180	0	0	0	0	0	142	0	0	0	0	322	
08:15 to 09:15	0	200	0	0	0	0	0	133	0	0	0	0	333	
08:30 to 09:30	0	218	0	0	0	0	0	146	0	0	0	0	364	Peak Hour

Curtis Traffic Surveys — **Turning movement count**

Job: 091102bt
Day, date: Thu 26 Nov 09
Location: Stockton St & Freemans Dr
Weather: Fine
Client: Better Transport Futures

Peak Hour Volumes



Time Period	From Freemans Dr south Through	Right	From Stockton St Left	Right	From Freemans Dr north Left	Through	movements	
14:30 to 14:45	25	1	0	21	28	28	103	
14:45 to 15:00	35	2	3	61	39	34	174	
15:00 to 15:15	27	1	1	59	49	51	188	
15:15 to 15:30	45	1	2	53	42	48	191	
15:30 to 15:45	40	0	3	41	39	50	173	
15:45 to 16:00	53	0	5	59	50	53	220	Peak
16:00 to 16:15	50	2	0	72	51	37	212	
16:15 to 16:30	41	1	2	50	35	48	177	
16:30 to 16:45	42	1	1	52	33	52	181	
16:45 to 17:00	49	2	1	69	43	34	198	
17:00 to 17:15	51	3	1	70	47	37	209	
17:15 to 17:30	32	2	1	62	42	31	170	
17:30 to 17:45	35	2	0	50	39	35	161	
17:45 to 18:00	32	0	1	50	29	39	151	
Hourly Summary	557	18	21	769	566	577		
14:30 to 15:30	132	5	6	194	158	161	656	
14:45 to 15:45	147	4	9	214	169	183	726	
15:00 to 16:00	165	2	11	212	180	202	772	
15:15 to 16:15	188	3	10	225	182	188	796	Peak Hour
15:30 to 16:30	184	3	10	222	175	188	782	
15:45 to 16:45	186	4	8	233	169	190	790	
16:00 to 17:00	182	6	4	243	162	171	768	
16:15 to 17:15	183	7	5	241	158	171	765	
16:30 to 17:30	174	8	4	253	165	154	758	
16:45 to 17:45	167	9	3	251	171	137	738	
17:00 to 18:00	150	7	3	232	157	142	691	

Curtis Traffic Surveys

Turning movement count

Job: 091102bt

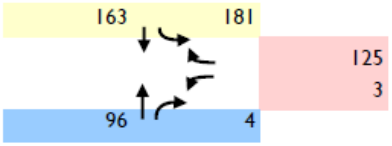
Day, date: Thu 19 Nov 09

Location: Stockton St & Freemans Dr

Weather: Fine

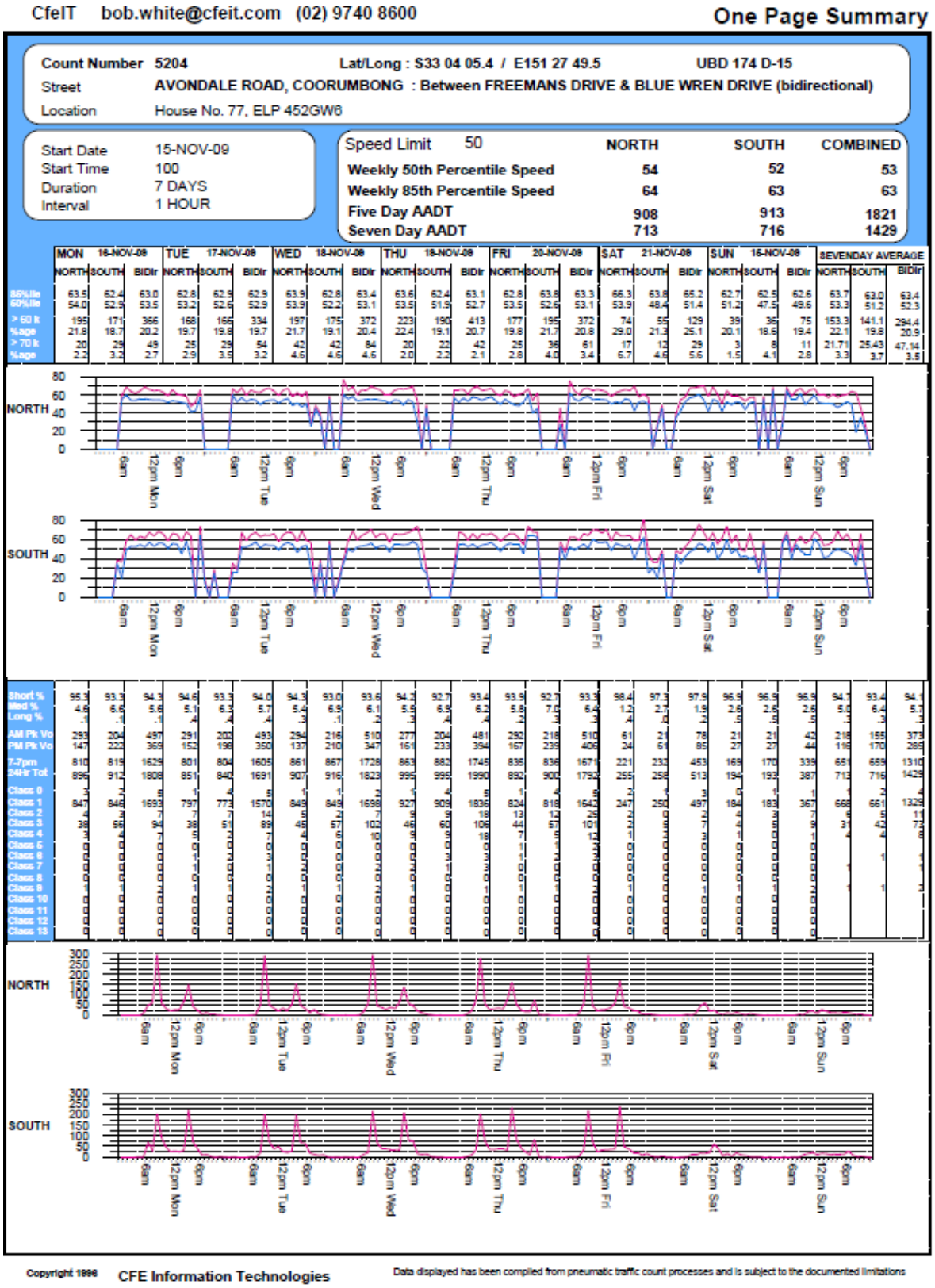
Client: Better Transport Futures

Peak Hour Volumes



Time Period	From Freemans Dr south		From Stockton St		From Freemans Dr north		movements	
	Through	Right	Left	Right	Left	Through		
07:00 to 07:15	15	0	0	13	9	41	78	
07:15 to 07:30	17	1	0	13	20	39	90	
07:30 to 07:45	15	1	2	22	18	36	94	
07:45 to 08:00	25	0	1	23	23	31	103	
08:00 to 08:15	23	0	1	24	22	21	91	
08:15 to 08:30	25	0	1	23	38	34	121	
08:30 to 08:45	19	1	0	30	40	42	132	
08:45 to 09:00	27	1	0	39	58	44	169	Peak
09:00 to 09:15	19	2	1	22	38	43	125	
09:15 to 09:30	31	0	2	34	45	34	146	
Hourly Summary	216	6	8	243	311	365		
07:00 to 08:00	72	2	3	71	70	147	365	
07:15 to 08:15	80	2	4	82	83	127	378	
07:30 to 08:30	88	1	5	92	101	122	409	
07:45 to 08:45	92	1	3	100	123	128	447	
08:00 to 09:00	94	2	2	116	158	141	513	
08:15 to 09:15	90	4	2	114	174	163	547	
08:30 to 09:30	96	4	3	125	181	163	572	Peak Hour

Appendix 1 Appendix G Midblock Counts



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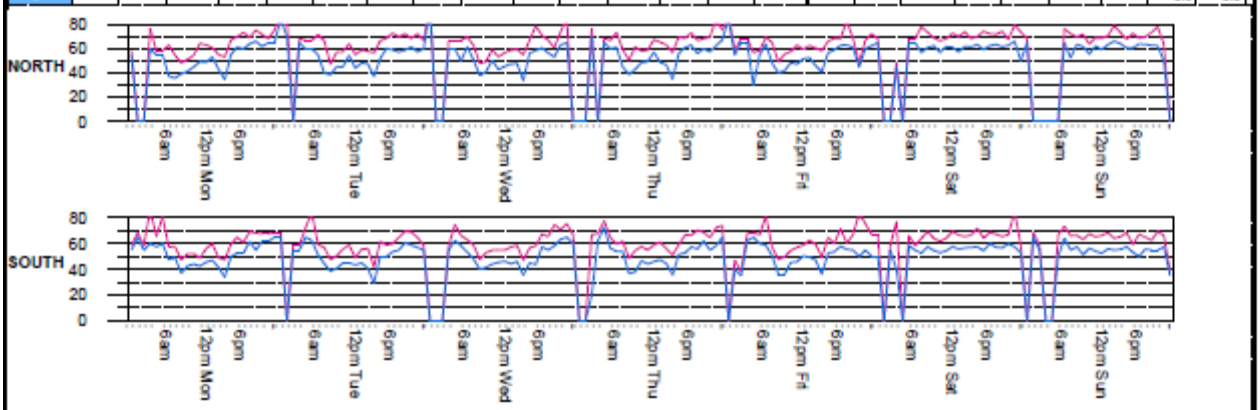
One Page Summary

Count Number	5202
Lat/Long	S33 06 13.4 / E151 29 15.1
UBD	182 M-4
Street	BRIDGE STREET, MORISSET : Between NEWCASTLE STREET & AWABA STREET (bidirectional)
Location	House No.30, ELP 810HW7

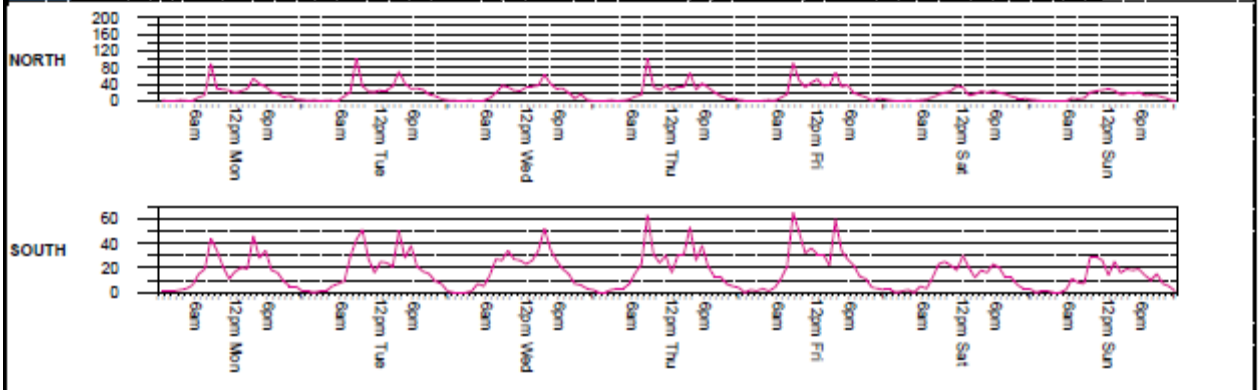
Start Date	18-NOV-09
Start Time	900
Duration	7 DAYS
Interval	1 HOUR

Speed Limit 50	NORTH	SOUTH	COMBINED
Weekly 50th Percentile Speed	52	48	50
Weekly 85th Percentile Speed	66	61	64
Five Day AADT	517	436	953
Seven Day AADT	452	392	844

	MON 23-NOV-09			TUE 24-NOV-09			WED 18-NOV-09			THU 19-NOV-09			FRI 20-NOV-09			SAT 21-NOV-09			SUN 22-NOV-09			SEVENDAY AVERAGE		
	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir
85%ile	64.0	59.0	62.0	63.6	58.4	61.0	63.8	58.8	61.4	65.2	60.0	63.4	63.4	59.0	61.4	70.4	66.8	68.9	70.5	66.3	68.7	65.9	61.2	63.8
50%ile	47.5	45.5	46.5	47.1	44.6	45.9	48.6	45.3	46.8	49.6	47.0	48.3	49.3	46.2	47.8	61.7	56.0	58.6	61.8	55.0	58.2	52.2	48.6	50.3
> 60 k	102	48	150	111	50	161	98	50	148	135	69	204	119	59	178	175	93	268	155	84	239	127.9	64.71	192.6
%age	21.7	12.8	17.7	20.4	11.2	16.3	21.2	12.0	16.8	24.9	15.0	20.4	20.9	12.2	16.9	56.8	32.3	44.9	57.6	30.3	43.7	31.9	18.0	25.3
> 70 k	23	8	31	29	8	37	23	9	32	32	14	46	20	15	35	48	20	68	42	17	59	31	13	44
%age	4.9	2.1	3.7	5.3	1.8	3.7	5.0	2.2	3.6	5.9	3.0	4.6	3.5	3.1	3.3	15.6	6.9	11.4	15.6	6.1	10.8	8.0	3.6	5.9



	MON 23-NOV-09			TUE 24-NOV-09			WED 18-NOV-09			THU 19-NOV-09			FRI 20-NOV-09			SAT 21-NOV-09			SUN 22-NOV-09			SEVENDAY AVERAGE		
	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir
Short %	85.3	94.4	89.3	86.7	93.9	89.8	86.8	92.0	89.3	81.9	89.3	85.3	84.2	90.3	87.0	98.4	99.3	98.8	97.0	97.1	97.1	87.3	93.1	90.0
Med %	14.3	5.3	10.3	13.1	6.1	9.9	12.1	7.5	9.9	17.7	10.2	14.3	14.8	9.5	12.4	1.5	0.7	1.2	3.0	2.9	2.9	12.2	6.6	9.6
Long %	0.4	0.3	0.4	0.2	0.1	0.3	1.1	0.5	0.8	0.4	0.5	0.4	1.1	0.7	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.3	0.4
AM Pk Vo	89	44	133	102	51	145	36	34	67	101	63	164	91	65	156	35	25	53	26	29	53	69	44	110
PM Pk Vo	54	46	100	70	50	120	63	52	115	67	53	120	68	59	127	33	30	63	29	25	50	59	45	99
7-7pm	409	311	720	463	373	836	404	355	759	473	386	859	518	429	947	254	239	493	220	224	444	393	331	723
24Hr Tot	469	376	845	543	446	989	463	415	878	541	469	1000	568	484	1052	306	288	596	269	277	546	452	392	844
Class 0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	1	1
Class 1	393	348	741	458	409	867	395	371	766	433	403	836	472	431	903	301	282	583	256	266	522	380	368	748
Class 2	7	5	12	7	8	15	5	3	8	5	4	9	5	3	8	1	1	2	1	2	3	5	5	10
Class 3	66	17	83	70	26	96	54	26	80	68	18	86	63	21	84	43	7	50	8	8	16	47	17	64
Class 4	1	1	2	1	1	2	1	2	3	2	2	4	2	2	4	1	0	1	0	0	0	1	1	2
Class 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 7	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



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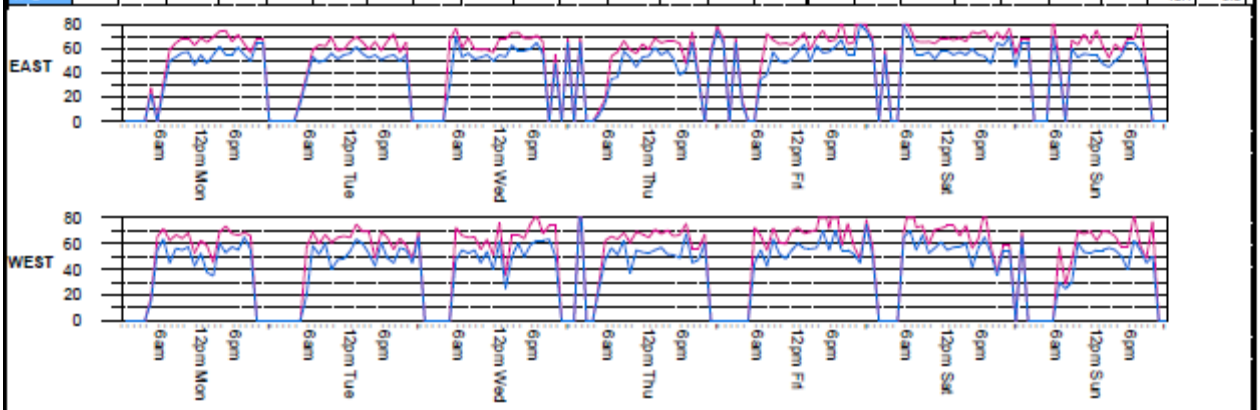
One Page Summary

Count Number	5205
Lat/Long	S33 04 38.3 / E151 29 28.6
UBD	174 P-9
Street	COORUMBUNG ROAD, DORA CREEK : Between NEWPORT ROAD & EDITH STREET (bidirectional)
Location	House No. 92, ELP 653HW4

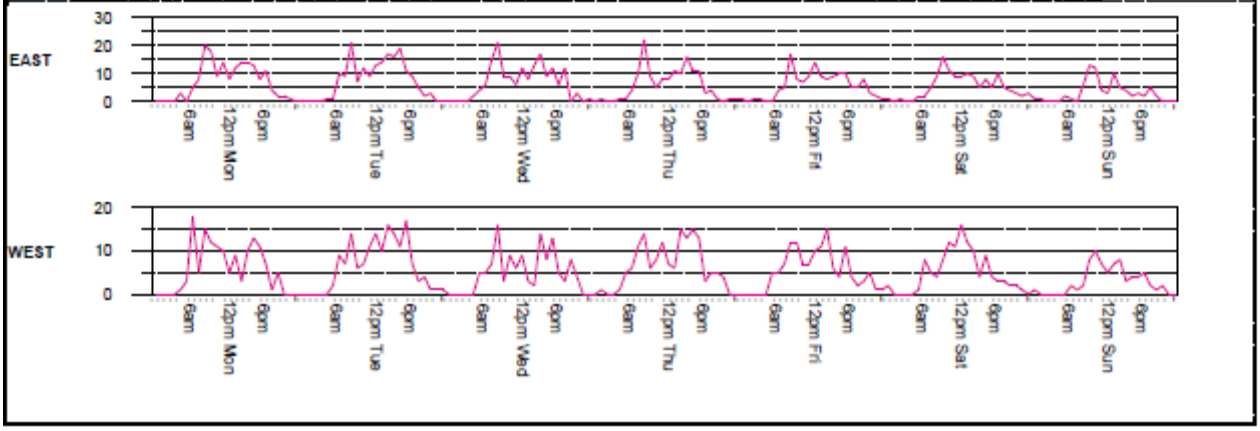
Start Date	15-NOV-09
Start Time	100
Duration	7 DAYS
Interval	1 HOUR

Speed Limit 50	EAST	WEST	COMBINED
Weekly 50th Percentile Speed	55	55	55
Weekly 85th Percentile Speed	67	68	68
Five Day AADT	157	138	295
Seven Day AADT	141	126	267

	MON 16-NOV-09			TUE 17-NOV-09			WED 18-NOV-09			THU 19-NOV-09			FRI 20-NOV-09			SAT 21-NOV-09			SUN 15-NOV-09			SEVENDAY AVERAGE		
	EAST	WEST	BIDir	EAST	WEST	BIDir	EAST	WEST	BIDir	EAST	WEST	BIDir	EAST	WEST	BIDir	EAST	WEST	BIDir	EAST	WEST	BIDir	EAST	WEST	BIDir
85%ile	67.8	67.1	67.5	64.8	67.1	66.0	68.5	67.7	68.1	65.8	67.2	66.5	68.2	69.9	68.9	68.6	71.0	69.4	67.0	67.5	67.2	67.2	68.2	67.7
50%ile	54.4	54.5	54.5	53.7	53.6	53.7	56.0	55.2	55.7	53.4	53.9	53.7	56.5	55.4	55.9	57.1	56.3	56.7	55.0	53.9	54.5	55.2	54.7	54.9
> 60 k	60	47	107	45	55	100	58	45	103	42	50	92	56	45	101	53	43	96	26	22	48	48.57	43.86	92.43
%age	36.1	33.8	35.0	25.1	35.4	29.9	35.1	37.4	36.1	30.4	33.3	31.9	40.8	35.1	38.0	41.0	36.7	38.9	34.1	30.9	32.3	34.7	34.6	34.6
> 70 k	15	10	25	7	10	17	19	10	29	5	12	17	13	19	32	14	19	33	5	7	12	11.14	12.43	23.57
%age	9.0	7.2	8.2	3.9	6.4	5.1	11.5	8.3	10.2	3.6	8.0	5.9	9.5	14.8	12.1	10.8	16.2	13.4	6.6	9.7	8.1	7.8	10.1	9.0



	MON 16-NOV-09			TUE 17-NOV-09			WED 18-NOV-09			THU 19-NOV-09			FRI 20-NOV-09			SAT 21-NOV-09			SUN 15-NOV-09			SEVENDAY AVERAGE		
	EAST	WEST	BIDir	EAST	WEST	BIDir	EAST	WEST	BIDir	EAST	WEST	BIDir	EAST	WEST	BIDir	EAST	WEST	BIDir	EAST	WEST	BIDir	EAST	WEST	BIDir
Short %	77.1	81.3	79.0	78.2	80.8	79.3	84.2	84.2	84.2	76.8	80.7	78.8	80.3	77.3	78.9	93.0	90.8	91.9	90.8	93.1	91.9	82.0	83.1	82.5
Med %	18.7	16.5	17.7	14.0	15.5	14.7	10.3	11.7	10.9	15.2	15.3	15.3	15.3	21.1	18.1	5.4	8.5	6.9	9.2	6.9	8.1	13.0	14.3	13.6
Long %	4.2	2.3	3.3	7.8	3.9	6.0	5.5	4.2	4.9	8.0	4.0	5.9	4.4	1.8	3.0	1.5	.8	1.2	0	.0	.0	4.9	2.6	3.8
AM Pk Vo	20	18	35	21	14	35	21	16	37	22	14	36	17	12	29	16	12	24	13	10	22	19	14	31
PM Pk Vo	14	13	26	19	17	33	17	14	31	16	15	29	14	15	24	10	16	25	10	8	17	14	14	26
7-7pm	149	111	260	157	134	291	137	95	232	124	123	247	111	106	217	106	98	204	64	64	128	121	104	226
24Hr Tot	166	139	305	175	159	334	165	120	285	136	150	288	137	128	265	125	117	246	76	72	148	141	126	267
Class 0	3	0	3	5	0	5	0	0	0	3	0	3	0	0	0	1	3	4	0	0	0	1	1	1
Class 1	123	110	233	138	125	263	137	99	236	102	120	222	109	97	206	119	100	219	66	65	131	113	102	216
Class 2	3	1	4	2	1	3	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2
Class 3	19	16	35	17	17	34	14	13	27	9	15	24	18	4	22	4	6	10	6	2	8	13	13	26
Class 4	11	7	18	7	6	13	3	1	4	10	6	16	3	2	5	1	1	2	1	1	2	5	4	10
Class 5	1	0	1	1	0	1	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1
Class 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 9	1	1	2	1	0	1	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1
Class 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



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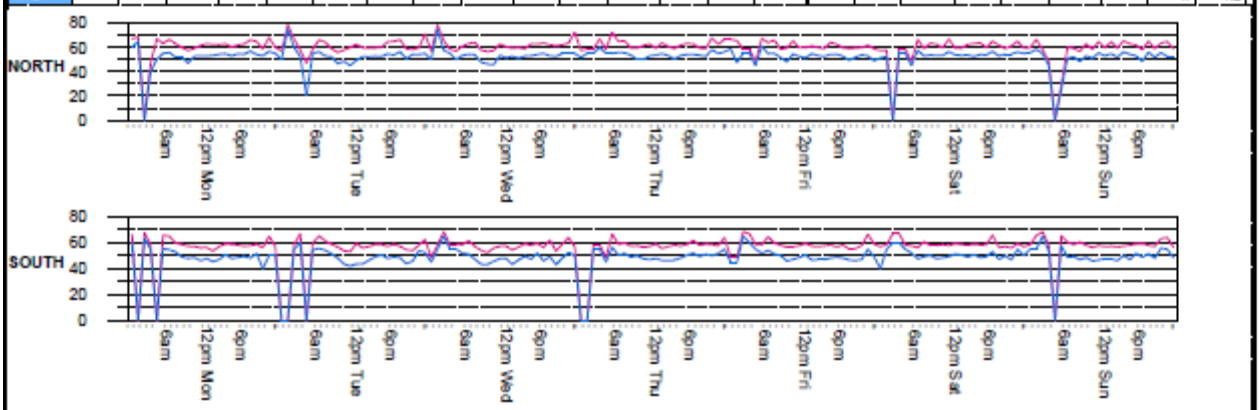
One Page Summary

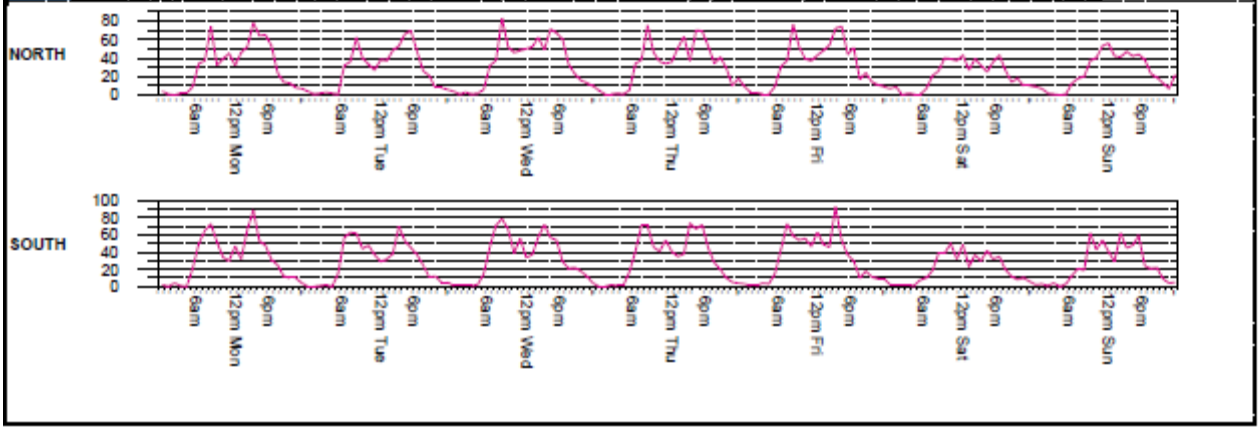
Count Number	5203
Lat/Long	S33 05 16.5 / E151 26 58.2
UBD	173 N-14
Street	DEAVES ROAD, COORUMBONG : Between MANNINGS ROAD & FREEMANS DRIVE (bidirectional)
Location	On 60km sign
Start Date	15-NOV-09
Start Time	100
Duration	7 DAYS
Interval	1 HOUR

Speed Limit 50	NORTH	SOUTH	COMBINED
Weekly 50th Percentile Speed	53	49	51
Weekly 85th Percentile Speed	62	58	60
Five Day AADT	755	764	1519
Seven Day AADT	698	703	1401

	MON 16-NOV-09			TUE 17-NOV-09			WED 18-NOV-09			THU 19-NOV-09			FRI 20-NOV-09			SAT 21-NOV-09			SUN 15-NOV-09			SEVENDAY AVERAGE		
	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir
85%ile	62.2	58.7	59.8	61.2	58.6	59.5	60.3	57.5	59.0	62.1	58.4	59.7	61.2	58.4	59.5	61.9	58.7	59.8	61.5	58.1	59.5	61.5	58.3	59.6
50%ile	53.7	49.5	51.9	52.3	49.3	50.9	52.2	47.0	49.8	53.7	49.1	51.7	53.0	48.7	51.1	54.2	49.9	52.4	53.4	48.5	51.3	53.2	48.9	51.3
> 60 k	138	76	214	112	67	179	127	57	184	146	70	216	127	74	201	93	49	142	104	49	153	121	63.14	184.1
%age	18.8	10.0	14.3	16.7	9.7	13.1	15.5	7.1	11.4	18.5	8.9	13.7	16.7	9.4	13.0	18.1	9.6	13.9	17.5	8.2	12.9	17.4	9.0	13.2
> 70 k	11	7	18	16	4	20	13	6	19	15	4	19	13	2	15	10	7	17	8	1	9	12.29	4.429	16.71
%age	1.5	.9	1.2	2.4	.6	1.5	1.6	.8	1.2	1.9	.5	1.2	1.7	.3	1.0	1.9	1.4	1.7	1.3	.2	.8	1.8	.7	1.2



	MON 16-NOV-09			TUE 17-NOV-09			WED 18-NOV-09			THU 19-NOV-09			FRI 20-NOV-09			SAT 21-NOV-09			SUN 15-NOV-09			SEVENDAY AVERAGE		
	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir
Short %	95.8	94.9	95.3	94.5	94.1	94.3	93.8	92.8	93.3	94.7	94.1	94.2	95.7	94.0	94.8	97.1	95.7	96.4	97.1	96.8	97.0	95.3	94.5	94.9
Med %	3.7	4.6	4.1	4.9	5.4	5.1	5.7	6.1	5.9	5.4	5.5	5.5	4.1	5.1	4.6	2.9	4.3	3.6	2.7	3.5	2.9	4.3	5.0	4.7
Long %	.5	.5	.5	.6	.5	.6	.5	1.0	.7	.4	.4	.4	.3	.9	.6	.0	.0	.0	.1	.1	.1	.4	.5	.5
AM Pk Vo	74	73	147	62	63	124	83	79	162	75	71	146	76	73	136	40	50	89	53	62	107	66	67	130
PM Pk Vo	78	89	167	69	70	123	71	72	126	70	74	141	74	93	165	43	49	92	56	62	103	66	73	131
7-7pm	617	620	1237	556	558	1114	677	653	1330	608	655	1263	627	661	1288	408	427	835	478	507	985	561	583	1150
24Hr Tot	739	759	1494	670	691	1361	821	797	1618	785	784	1573	759	788	1547	514	510	1024	595	594	1189	698	703	1401
Class 0	1	1	2	1	1	2	4	3	7	1	1	2	1	4	5	1	0	1	3	4	7	2	2	4
Class 1	689	706	1395	620	641	1261	752	720	1472	722	725	1447	706	719	1425	484	474	958	563	550	1113	648	648	1297
Class 2	13	12	25	18	20	38	34	18	52	15	12	27	19	18	37	14	14	28	11	21	32	15	15	30
Class 3	35	34	69	28	30	58	40	42	82	38	37	75	29	36	65	11	20	31	19	17	36	29	32	61
Class 4	1	5	6	3	6	9	7	7	14	6	6	12	5	6	11	2	3	5	3	3	6	4	5	9
Class 5	1	3	4	1	2	3	3	4	7	3	3	6	1	3	4	0	1	1	1	1	2	2	3	5
Class 6	0	1	1	0	0	0	1	1	2	1	0	1	0	1	1	0	0	0	0	0	0	0	1	1
Class 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



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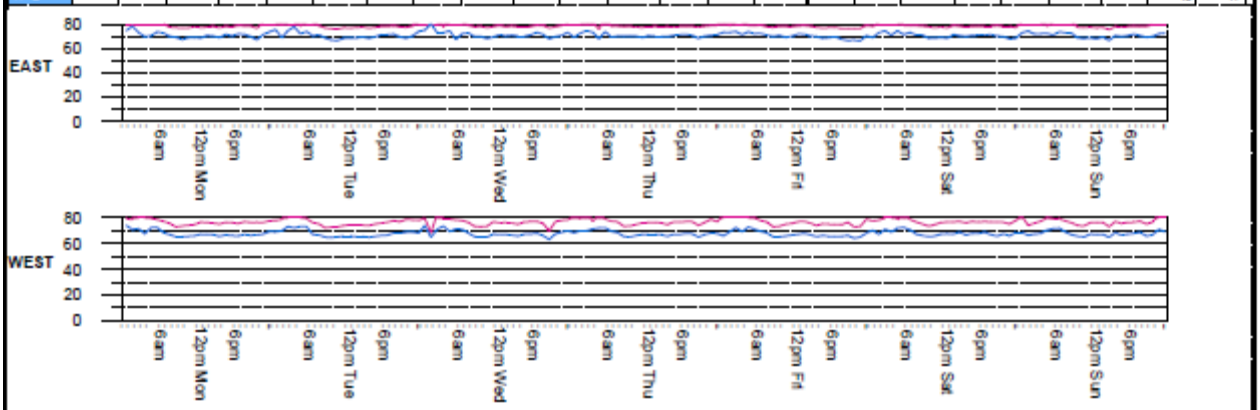
One Page Summary

Count Number	5208
Lat/Long	S33 06 33.2 / E151 30 06.2
UBD	183 B-7
Street	FISHERY POINT ROAD, MORISSET : Between MACQUARIE STREET & STATION STREET (bidirectional
Location	About 50m west of Camiview , ELP 39HW7

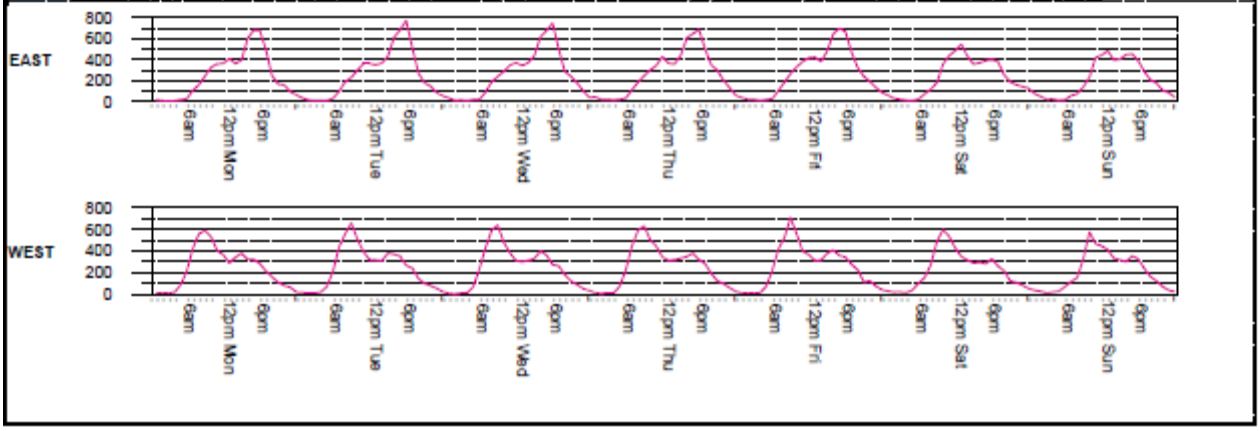
Start Date	15-NOV-09
Start Time	100
Duration	7 DAYS
Interval	1 HOUR

Speed Limit 70	EAST	WEST	COMBINED
Weekly 50th Percentile Speed	70	67	68
Weekly 85th Percentile Speed	78	76	77
Five Day AADT	6251	5979	12230
Seven Day AADT	5980	5753	11733

	MON 16-NOV-09			TUE 17-NOV-09			WED 18-NOV-09			THU 19-NOV-09			FRI 20-NOV-09			SAT 21-NOV-09			SUN 15-NOV-09			SEVENDAY AVERAGE		
	EAST	WEST	BIDir	EAST	WEST	BIDir	EAST	WEST	BIDir	EAST	WEST	BIDir	EAST	WEST	BIDir	EAST	WEST	BIDir	EAST	WEST	BIDir	EAST	WEST	BIDir
85%ile	78.4	76.0	77.4	78.1	75.9	77.1	78.7	76.3	77.7	78.4	76.4	77.5	78.2	75.9	77.3	78.5	75.9	77.7	78.4	76.2	77.5	78.3	76.1	77.5
60%ile	70.5	66.7	68.4	70.0	66.1	67.9	71.1	66.9	68.9	70.8	67.1	68.8	70.0	66.6	68.1	70.4	67.2	68.7	70.0	66.9	68.3	70.4	66.8	68.4
> 80 k	457	193	650	400	191	591	540	201	741	479	214	693	464	220	684	466	214	680	414	182	596	460	202.1	662.1
%age	7.6	3.3	5.5	6.5	3.3	4.9	8.8	3.4	6.1	7.5	3.5	5.5	7.1	3.5	5.3	8.4	4.0	6.2	8.2	3.7	6.0	7.7	3.5	5.7
> 90 k	48	21	69	49	37	86	48	30	78	58	30	88	47	30	77	52	31	89	67	31	98	52.71	30.86	83.57
%age	.8	.4	.6	.8	.6	.7	.8	.5	.6	.9	.5	.7	.7	.5	.6	.9	.7	.8	1.3	.6	1.0	.9	.5	.7



	MON 16-NOV-09			TUE 17-NOV-09			WED 18-NOV-09			THU 19-NOV-09			FRI 20-NOV-09			SAT 21-NOV-09			SUN 15-NOV-09			SEVENDAY AVERAGE		
	EAST	WEST	BIDir	EAST	WEST	BIDir	EAST	WEST	BIDir	EAST	WEST	BIDir	EAST	WEST	BIDir	EAST	WEST	BIDir	EAST	WEST	BIDir	EAST	WEST	BIDir
Short %	95.1	94.9	95.2	96.1	94.4	95.3	95.5	94.2	94.8	95.9	94.1	94.8	95.9	94.9	95.2	97.7	97.8	97.7	97.9	97.4	97.7	96.3	95.2	95.1
Med %	4.9	5.0	4.8	3.7	5.3	4.4	4.3	5.4	4.8	4.1	5.4	4.7	3.8	5.0	4.4	2.1	2.1	2.1	1.9	2.2	2.1	3.5	4.4	3.5
Long %	.3	.1	.3	.3	.3	.3	.3	.5	.4	.4	.5	.5	.3	.4	.4	.2	.1	.2	.1	.4	.3	.1	.4	.3
AM Pk Vo	364	590	859	361	659	889	371	639	879	430	633	880	417	709	976	485	597	975	442	575	890	410	629	907
PM Pk Vo	680	379	1001	772	381	1038	747	398	1040	689	380	1028	696	409	1055	547	348	896	484	412	896	669	387	993
7-7pm	5070	4603	9673	5168	4674	9842	5122	4645	9767	5107	4803	9910	5347	4950	10297	4456	4440	8896	4168	4251	8419	4820	4634	9543
24Hr Tot	5991	5794	11785	6110	5849	11959	6169	5885	12054	6416	6089	12507	6567	6278	12845	5564	5401	10965	5042	4974	10016	5980	5753	11733
Class 0	10	56	66	10	61	71	10	55	65	10	56	66	16	61	77	11	10	21	4	11	15	10	44	54
Class 1	5639	5343	10981	5772	5377	11149	5785	5392	11177	6011	5585	11596	6192	5809	11997	5330	5171	10502	4808	4720	9528	5648	5342	10990
Class 2	88	83	171	88	86	174	95	96	191	109	86	195	88	72	160	98	90	188	125	114	239	98	90	188
Class 3	223	206	429	205	224	430	243	234	477	240	242	482	235	242	477	193	193	386	98	91	187	193	190	383
Class 4	19	76	95	17	81	98	17	79	96	21	84	105	16	70	86	16	21	37	7	13	20	15	61	75
Class 5	5	1	6	1	3	4	1	2	3	2	1	3	0	3	3	0	0	0	2	3	5	2	1	3
Class 6	1	10	11	3	11	14	1	8	9	2	12	14	3	8	11	1	4	5	0	5	5	1	8	9
Class 7	1	8	9	1	9	10	1	10	11	1	12	13	1	14	15	0	4	4	0	11	11	1	10	11
Class 8	0	4	4	1	3	4	1	3	4	1	4	5	1	4	5	0	1	1	0	3	3	0	4	4
Class 9	0	1	1	0	1	1	0	1	1	0	3	3	0	1	1	0	0	0	0	1	1	0	1	1
Class 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



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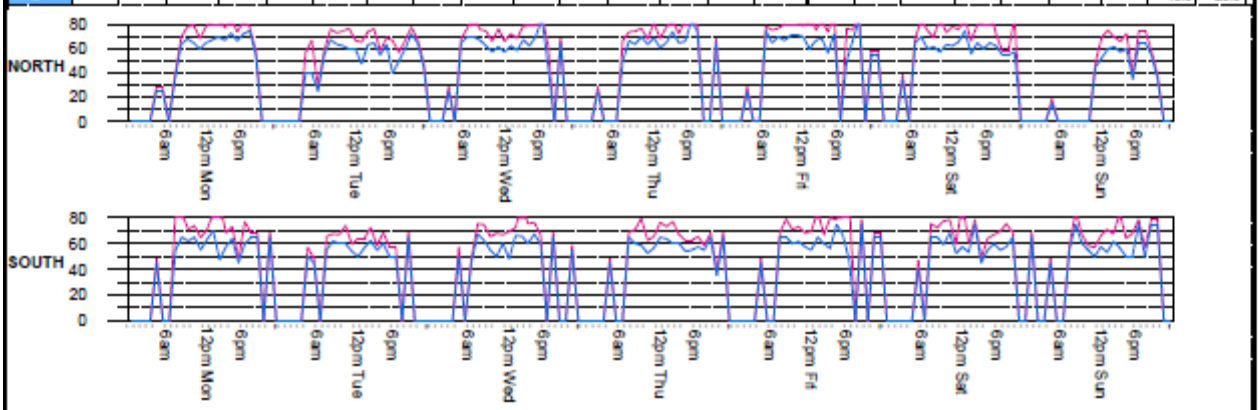
One Page Summary

Count Number	5207
Lat/Long	S33 06 25.7 / E151 28 09.4
UBD	182 H-5
Street	GIMBERTS ROAD, MORISSET : Between MANDALONG ROAD & FREEMANS DRIVE (bidirectional)
Location	House No. 89, ELP 371GW9

Start Date	15-NOV-09
Start Time	100
Duration	7 DAYS
Interval	1 HOUR

Speed Limit 50	NORTH	SOUTH	COMBINED
Weekly 50th Percentile Speed	64	59	62
Weekly 85th Percentile Speed	77	71	75
Five Day AADT	97	74	171
Seven Day AADT	93	72	166

	MON 16-NOV-09			TUE 17-NOV-09			WED 18-NOV-09			THU 19-NOV-09			FRI 20-NOV-09			SAT 21-NOV-09			SUN 15-NOV-09			SEVENDAY AVERAGE		
	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir
85%ile	79.0	71.9	77.1	73.1	66.3	69.7	75.7	72.0	74.1	78.1	69.9	75.7	79.8	74.9	78.4	77.3	74.0	76.1	71.7	69.0	70.3	76.4	71.1	74.5
50%ile	65.6	61.2	63.2	60.4	55.1	58.2	62.6	61.5	62.1	66.1	58.2	63.2	68.3	61.0	64.8	62.1	58.0	60.3	57.5	55.0	55.8	63.2	58.6	61.1
> 60 k	68	44	112	45	23	68	53	36	89	78	32	110	71	43	114	66	32	98	22	18	40	57.57	32.57	90.14
%age	64.0	54.2	59.7	51.0	33.3	43.2	58.7	55.2	57.2	74.1	42.5	60.9	73.0	52.9	63.9	55.8	42.9	50.7	43.8	29.9	36.2	60.1	44.3	53.1
> 70 k	41	14	55	19	3	22	22	12	34	36	11	47	44	18	62	33	16	49	9	8	17	29.14	11.71	40.86
%age	38.6	17.2	29.3	21.5	4.3	14.0	24.4	18.4	21.9	34.2	14.6	26.0	45.2	22.2	34.7	27.9	21.3	25.3	17.9	13.3	15.4	30.0	15.9	23.8



	MON 16-NOV-09			TUE 17-NOV-09			WED 18-NOV-09			THU 19-NOV-09			FRI 20-NOV-09			SAT 21-NOV-09			SUN 15-NOV-09			SEVENDAY AVERAGE		
	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir
Short %	90.6	96.3	93.0	92.0	94.2	93.0	91.1	93.8	92.3	94.3	96.0	95.0	91.8	93.8	92.7	94.1	94.7	94.3	94.0	96.7	95.5	92.9	95.1	93.6
Med %	8.9	3.7	6.4	6.9	5.8	6.4	8.9	6.2	7.7	5.7	4.0	5.0	7.2	6.2	6.7	5.9	5.3	5.7	6.0	3.3	4.5	7.0	4.9	6.1
Long %				1.1									1.0											
AM Pk Vo	11	12	23	9	8	15	9	8	15	12	7	18	13	12	23	17	15	29	7	8	9	10	10	19
PM Pk Vo	17	11	28	11	10	19	10	7	17	13	10	20	10	13	23	12	7	18	10	8	14	12	9	20
7-7pm	101	76	177	74	65	139	80	60	140	103	70	172	88	77	165	104	69	173	43	54	97	85	67	152
24Hr Tot	106	81	187	86	69	157	90	65	155	105	75	180	97	81	178	116	78	193	50	60	110	93	72	166
Class 0																								
Class 1	96	76	172	81	65	146	81	61	142	98	71	169	87	74	161	110	70	180	44	57	101	85	68	153
Class 2																								
Class 3			10															11						
Class 4																								
Class 5																								
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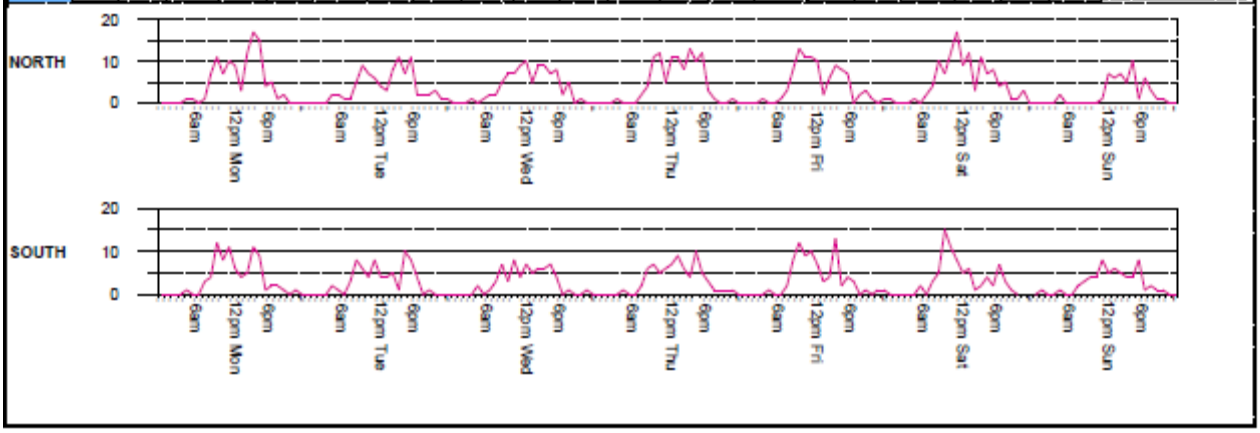
Class 13																								



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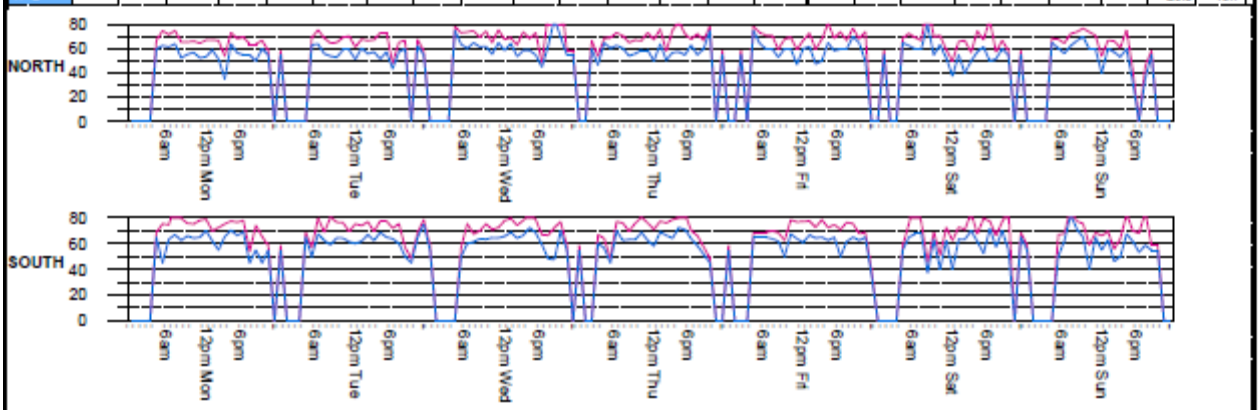
One Page Summary

Count Number	5206
Lat/Long	S33 04 41.7 / E151 29 47.5
UBD	175 A-9
Street	GRADWELLS ROAD, DORA CREEK : Between COORUMBUNG ROAD & GREENWAY STREET (bidirectic
Location	House No. 17, ELP HW40248

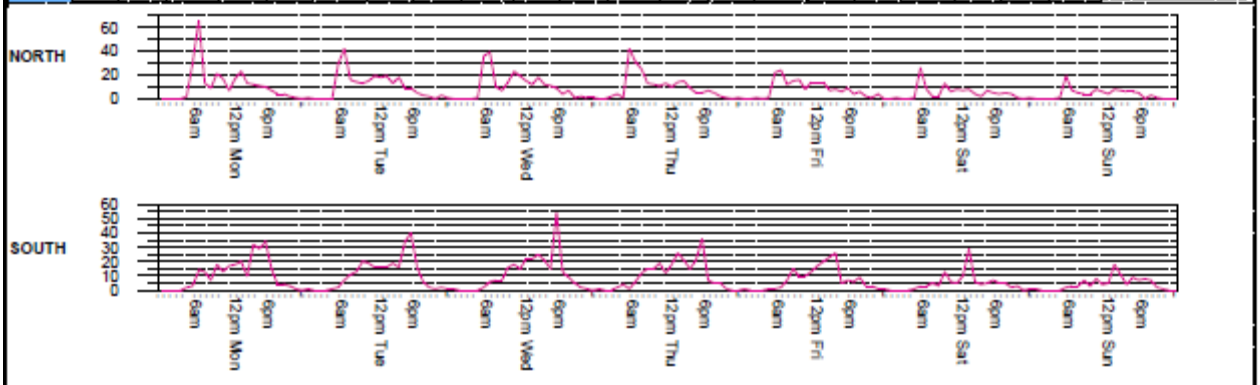
Start Date	15-NOV-09
Start Time	100
Duration	7 DAYS
Interval	1 HOUR

Speed Limit 50	NORTH	SOUTH	COMBINED
Weekly 50th Percentile Speed	59	64	62
Weekly 85th Percentile Speed	70	76	74
Five Day AADT	235	240	475
Seven Day AADT	198	203	401

	MON 16-NOV-09			TUE 17-NOV-09			WED 18-NOV-09			THU 19-NOV-09			FRI 20-NOV-09			SAT 21-NOV-09			SUN 15-NOV-09			SEVENDAY AVERAGE		
	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir
85%ile	69.0	76.5	73.8	69.2	75.7	73.2	71.7	76.6	74.8	69.7	77.3	74.9	69.5	75.0	72.3	69.0	72.6	70.5	68.7	71.6	69.6	69.5	75.0	72.7
60%ile	58.2	65.4	62.0	58.3	64.2	61.6	60.7	65.2	63.2	58.5	65.3	62.0	58.8	62.5	61.0	57.4	61.6	59.5	57.9	58.5	58.4	58.5	63.4	61.1
> 60 k	120	180	300	111	171	282	127	187	314	102	163	265	87	110	197	48	65	113	41	48	89	90.86	132	222.9
%age	44.6	70.0	57.0	44.5	66.0	56.5	52.4	71.6	62.4	44.7	67.3	56.3	46.2	60.7	53.3	41.7	55.9	48.8	43.5	46.5	45.1	45.4	62.6	54.0
> 70 k	31	84	115	31	72	103	42	78	120	32	84	116	25	43	68	14	22	36	10	17	27	26.43	57.14	83.57
%age	11.5	32.7	21.8	12.4	27.8	20.3	17.3	29.9	23.8	14.0	34.7	24.7	13.3	23.7	18.4	12.1	18.9	15.6	10.6	16.5	13.7	13.1	26.3	19.7



	MON 16-NOV-09			TUE 17-NOV-09			WED 18-NOV-09			THU 19-NOV-09			FRI 20-NOV-09			SAT 21-NOV-09			SUN 15-NOV-09			SEVENDAY AVERAGE		
	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir
Short %	85.9	84.0	85.0	83.1	83.4	83.3	89.7	88.9	89.3	83.3	83.5	83.4	79.8	83.4	81.6	85.2	87.1	86.1	92.6	94.2	93.4	85.2	85.6	85.4
Med %	11.2	13.6	12.4	12.9	13.5	13.2	9.5	10.7	10.1	14.5	14.0	14.3	16.0	11.5	13.6	11.3	11.2	11.3	7.4	4.9	6.1	12.1	12.0	12.1
Long %	3.0	2.3	2.7	4.0	3.1	3.5	.8	.4	.6	2.2	2.5	2.3	4.3	5.5	4.9	3.5	1.7	2.6	.0	1.0	.5	2.1	2.4	2.5
AM Pk Vo	66	18	80	42	20	49	39	18	45	43	19	43	24	15	30	26	13	29	19	8	21	31	16	43
PM Pk Vo	23	34	44	19	49	49	18	54	63	19	36	41	14	26	34	8	24	37	8	18	26	19	34	43
7-7pm	160	226	386	168	236	404	154	235	389	139	217	356	127	159	286	68	98	166	63	87	150	129	180	309
24Hr Tot	269	257	526	245	259	508	242	261	503	226	242	470	188	181	369	115	116	231	94	103	197	196	203	401
Class 0	0	0	0	1	0	1	0	0	0	1	1	2	0	1	1	0	1	1	0	0	0	0	1	1
Class 1	239	214	446	204	213	417	216	230	446	190	199	389	148	148	296	95	97	192	85	96	181	168	171	337
Class 2	6	7	13	4	4	8	4	5	9	4	4	8	3	3	6	2	2	4	1	2	3	3	3	6
Class 3	22	21	43	22	24	46	15	19	34	21	21	42	14	18	32	11	10	21	4	5	9	17	18	35
Class 4	7	8	15	9	10	19	6	6	12	11	12	23	7	8	15	4	4	8	3	3	6	6	6	12
Class 5	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2	0	0	0	1	1	2
Class 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 8	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Class 9	6	5	11	5	7	12	5	7	12	3	4	7	3	5	8	3	3	6	1	1	2	4	4	8
Class 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



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One Page Summary

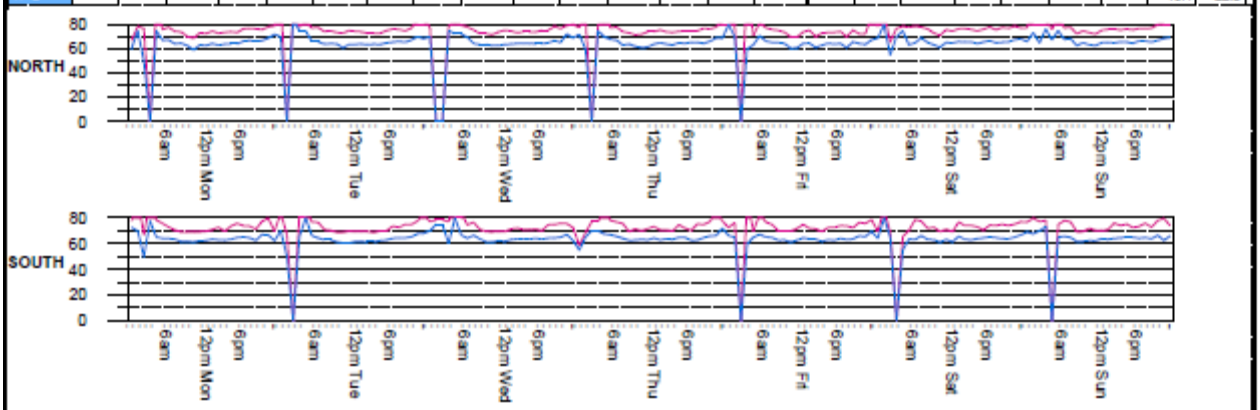
Count Number	5201
Lat/Long	S33 06 11.5 / E151 28 43.5
UBD	182 J-4
Street	STOCKTON STREET, MORISSET : Between AWABA STREET & FREEMANS DRIVE (bidirectional)
Location	Between Freemans Drive and Awaba Street, House No.7, ELP 348W9

Start Date	15-NOV-09
Start Time	100
Duration	7 DAYS
Interval	1 HOUR

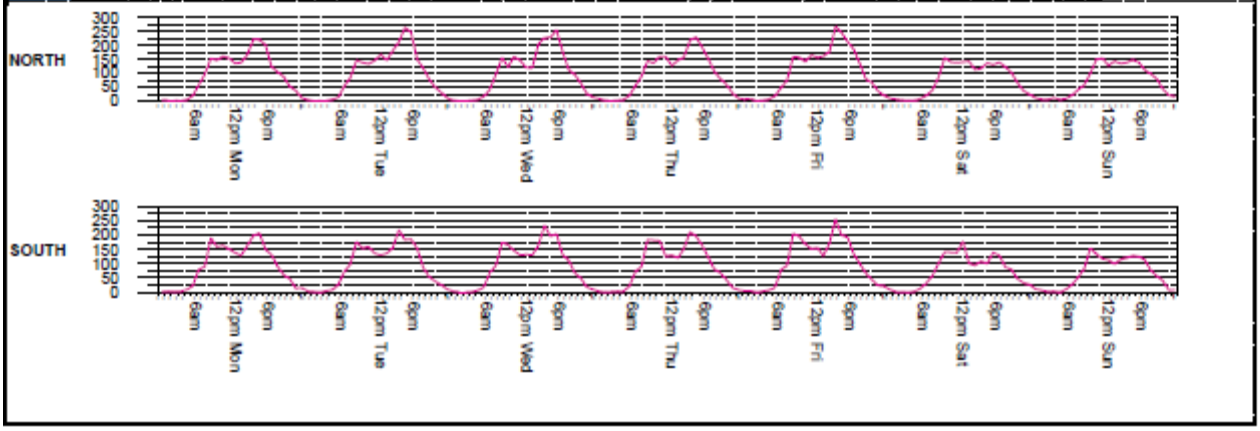
Speed Limit 50

	NORTH	SOUTH	COMBINED
Weekly 50th Percentile Speed	64	63	64
Weekly 85th Percentile Speed	75	72	74
Five Day AADT	2372	2259	4631
Seven Day AADT	2212	2095	4307

	MON 16-NOV-09			TUE 17-NOV-09			WED 18-NOV-09			THU 19-NOV-09			FRI 20-NOV-09			SAT 21-NOV-09			SUN 15-NOV-09			SEVENDAY AVERAGE		
	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir
85%ile	74.4	71.5	73.2	74.8	70.2	73.1	74.9	71.8	73.6	74.8	72.6	73.8	73.8	72.5	73.2	76.2	73.2	75.0	76.2	73.3	75.0	75.0	72.2	73.9
50%ile	64.1	63.1	63.6	64.4	62.5	63.4	64.3	63.5	63.9	64.2	63.7	63.9	63.8	63.2	63.5	65.2	63.6	64.4	65.3	63.8	64.6	64.5	63.3	63.9
> 60 k	1567	1432	2999	1654	1359	3013	1652	1513	3165	1559	1484	3043	1689	1563	3252	1356	1179	2535	1299	1092	2391	1539.	1375.	2914
%age	68.4	64.5	66.5	69.7	61.3	65.6	69.2	67.1	68.2	68.2	68.1	68.1	67.0	64.5	65.8	72.4	66.8	69.7	74.0	68.2	71.2	69.8	65.8	67.9
> 70 k	551	383	934	592	339	931	594	399	993	563	416	979	553	455	1008	545	358	903	504	328	832	557.4	382.6	940
%age	24.0	17.3	20.7	24.9	15.3	20.3	24.9	17.7	21.4	24.6	19.1	21.9	21.9	18.8	20.4	29.1	20.3	24.8	28.7	20.5	24.8	25.5	18.4	22.0



	MON 16-NOV-09			TUE 17-NOV-09			WED 18-NOV-09			THU 19-NOV-09			FRI 20-NOV-09			SAT 21-NOV-09			SUN 15-NOV-09			SEVENDAY AVERAGE		
	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir	NORTH	SOUTH	BIDir
Short %	96.9	96.9	96.7	96.3	95.6	95.9	96.4	95.7	96.0	96.1	95.0	95.5	96.1	96.0	96.1	98.7	97.8	98.3	98.7	98.1	98.4	96.9	96.3	96.6
Med %	2.9	3.1	3.1	3.5	4.4	3.9	3.2	4.3	3.7	3.5	4.8	4.1	3.7	3.6	3.6	1.2	2.2	1.7	1.0	1.9	1.4	2.5	3.6	3.1
Long %																								
AM Pk Vo	161	190	343	146	176	322	159	174	329	161	184	341	165	209	363	155	141	296	154	154	283	151	175	329
PM Pk Vo	221	207	427	264	218	447	255	233	460	230	211	428	268	259	522	143	177	317	147	128	275	218	204	411
7-7pm	1915	1870	3785	2012	1886	3898	2010	1898	3908	1913	1858	3771	2100	2051	4151	1475	1428	2903	1437	1353	2790	1837	1763	3601
24Hr Tot	2292	2219	4511	2374	2218	4592	2386	2255	4641	2286	2181	4467	2520	2422	4943	1873	1764	3637	1755	1602	3357	2212	2096	4307
Class 0	4	6	10	4	6	10	4	3	7	4	5	9	5	3	8	3	4	7	3	4	7	4	4	8
Class 1	2197	2117	4314	2252	2094	4356	2279	2137	4416	2174	2043	4217	2396	2301	4697	1831	1709	3537	1699	1533	3233	2120	1990	4110
Class 2	19	19	38	19	20	39	17	34	51	13	23	36	22	23	45	15	18	33	31	34	65	22	21	43
Class 3	60	71	131	78	94	172	73	90	163	74	102	176	96	89	185	20	38	58	16	30	46	53	73	126
Class 4	5	1	6	4	4	8	3	3	6	3	3	6	3	2	5	2	0	2	1	0	1	3	3	6
Class 5	1	3	4	1	2	3	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1
Class 6	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 7	1	3	4	1	2	3	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1
Class 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 9	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



Data displayed has been compiled from pneumatic traffic count processes and is subject to the documented limitations

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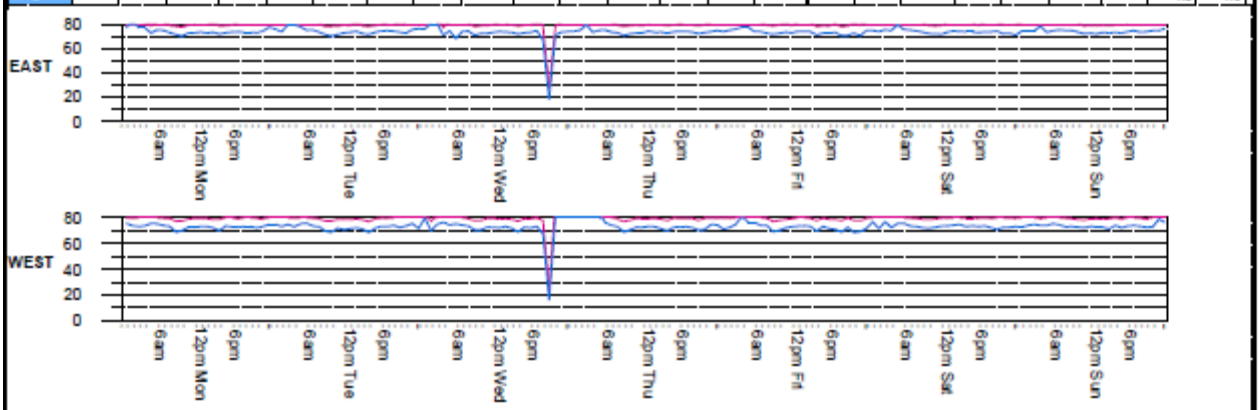
One Page Summary

Count Number	5209
Lat/Long	S33 06 43.8 / E151 30 38.7
UBD	183 E-8
Street	FISHERY POINT ROAD, MORISSET : Between STATION STREET & MORRISSET PARK ROAD (bidirectio
Location	Near House No. 533, ELP 274HXT

Start Date	15-NOV-09
Start Time	100
Duration	7 DAYS
Interval	1 HOUR

Speed Limit 70	EAST	WEST	COMBINED
Weekly 50th Percentile Speed	74	73	73
Weekly 85th Percentile Speed	80	79	79
Five Day AADT	5117	5059	10176
Seven Day AADT	4873	4824	9697

	MON 16-NOV-09			TUE 17-NOV-09			WED 18-NOV-09			THU 19-NOV-09			FRI 20-NOV-09			SAT 21-NOV-09			SUN 15-NOV-09			SEVENDAY AVERAGE		
	EAST	WEST	BIDir	EAST	WEST	BIDir	EAST	WEST	BIDir	EAST	WEST	BIDir	EAST	WEST	BIDir	EAST	WEST	BIDir	EAST	WEST	BIDir	EAST	WEST	BIDir
85%ile	79.8	79.3	79.5	79.8	79.0	79.5	79.8	79.4	79.6	79.8	79.5	79.6	79.7	79.2	79.4	80.6	79.7	79.9	80.4	79.5	79.8	80.0	79.4	79.6
50%ile	73.4	72.6	73.0	73.6	72.0	72.9	73.1	72.5	72.8	73.7	72.6	73.2	73.1	72.3	72.7	73.7	73.3	73.5	73.7	73.1	73.4	73.5	72.6	73.1
> 80 k	689	555	1244	708	509	1217	682	585	1267	726	632	1358	704	585	1289	720	603	1322	618	489	1107	692.4	565.3	1258.
%age	14.0	11.2	12.6	14.1	10.3	12.2	13.7	11.9	12.8	13.6	12.2	12.9	13.1	11.1	12.1	15.9	13.5	14.7	15.5	12.2	13.8	14.3	11.8	13.0
> 90 k	83	58	141	80	57	137	75	76	151	75	106	181	95	60	155	85	68	153	75	69	144	81.14	70.57	151.7
%age	1.7	1.2	1.4	1.6	1.1	1.4	1.5	1.5	1.5	1.4	2.1	1.7	1.8	1.1	1.5	1.9	1.5	1.7	1.9	1.7	1.8	1.7	1.5	1.6



	MON 16-NOV-09			TUE 17-NOV-09			WED 18-NOV-09			THU 19-NOV-09			FRI 20-NOV-09			SAT 21-NOV-09			SUN 15-NOV-09			SEVENDAY AVERAGE		
	EAST	WEST	BIDir	EAST	WEST	BIDir	EAST	WEST	BIDir	EAST	WEST	BIDir	EAST	WEST	BIDir	EAST	WEST	BIDir	EAST	WEST	BIDir	EAST	WEST	BIDir
Short %	95.9	94.6	95.3	96.1	94.4	95.3	95.7	93.5	94.6	95.6	93.3	94.4	95.9	94.9	95.3	98.0	97.6	97.8	98.5	97.5	98.2	96.4	95.0	95.7
Med %	3.8	4.5	4.4	3.5	5.2	4.4	4.0	6.0	5.0	4.0	6.2	5.1	3.8	5.1	4.4	1.9	2.1	2.0	1.4	1.8	1.6	3.3	4.6	3.9
Long %	3	5	4	3	4	4	3	5	4	4	6	5	3	4	4	1	1	1	1	1	1	3	4	3
AM Pk Vo	287	518	728	295	566	758	291	539	746	338	531	747	329	599	814	384	497	779	343	437	709	324	527	754
PM Pk Vo	578	337	838	640	340	874	626	331	871	566	311	844	576	346	904	453	289	742	377	332	709	548	327	826
7-7pm	4149	3928	8077	4222	3962	8184	4214	3940	8154	4236	4088	8324	4356	4159	8515	3623	3646	7269	3276	3396	6672	4011	3874	7885
24Hr Tot	4921	4965	9886	5005	4959	9964	4973	4930	9903	5326	5168	10494	5359	5274	10633	4533	4466	8999	3992	4006	7998	4873	4824	9697
Class 0	5	28	33	7	42	44	15	41	56	5	38	43	7	39	43	7	5	12	7	5	12	7	28	35
Class 1	4643	4601	9243	4724	4559	9283	4658	4492	9150	4996	4711	9707	5061	4884	9945	4345	4279	8624	3817	3810	7627	4609	4476	9083
Class 2	71	70	141	85	80	165	88	78	166	84	71	155	73	68	141	83	78	158	108	106	214	88	78	164
Class 3	173	205	379	164	220	384	173	247	420	195	275	470	187	229	416	73	84	157	57	69	121	146	190	336
Class 4	14	34	48	15	33	48	19	46	65	19	43	62	14	35	49	11	9	20	5	6	11	13	29	42
Class 5	3	3	6	1	3	4	1	1	2	1	1	2	1	1	2	0	0	0	0	0	0	1	1	2
Class 6	8	14	22	6	14	20	8	13	21	12	16	28	9	10	19	6	5	11	3	7	10	5	11	16
Class 7	1	3	4	1	3	4	1	3	4	3	3	6	2	3	5	1	3	4	1	2	3	1	4	5
Class 8	0	1	1	0	1	1	0	1	1	0	1	1	0	1	1	0	1	1	0	1	1	0	1	1
Class 9	6	4	10	3	1	4	5	4	9	4	4	8	3	3	6	3	3	6	1	3	4	4	3	7
Class 10	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
Class 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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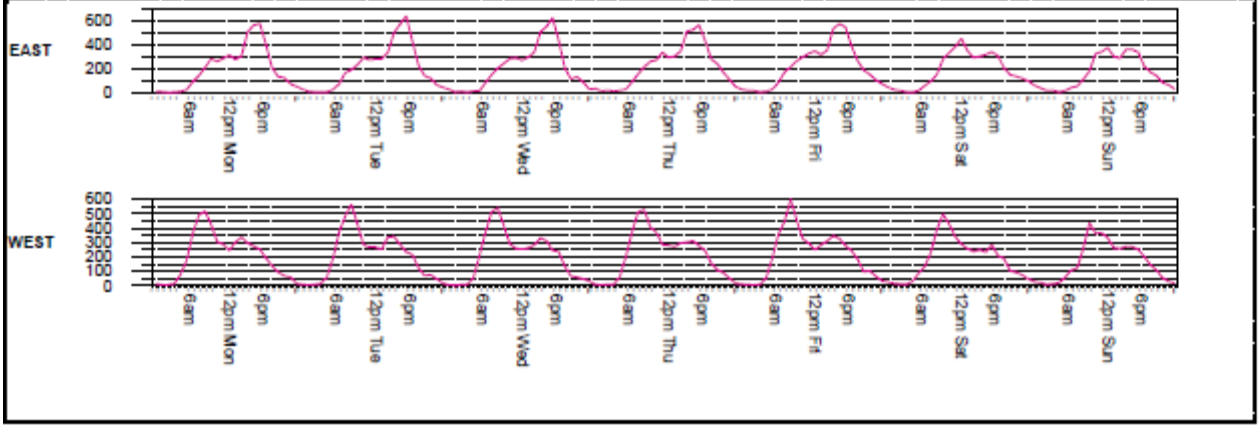

Data displayed has been compiled from pneumatic traffic count processes and is subject to the documented limitations

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One Page Summary

Count Number 5210 Lat/Long : S33 06 43.3 / E151 31 22.2 UBD 183 F-8

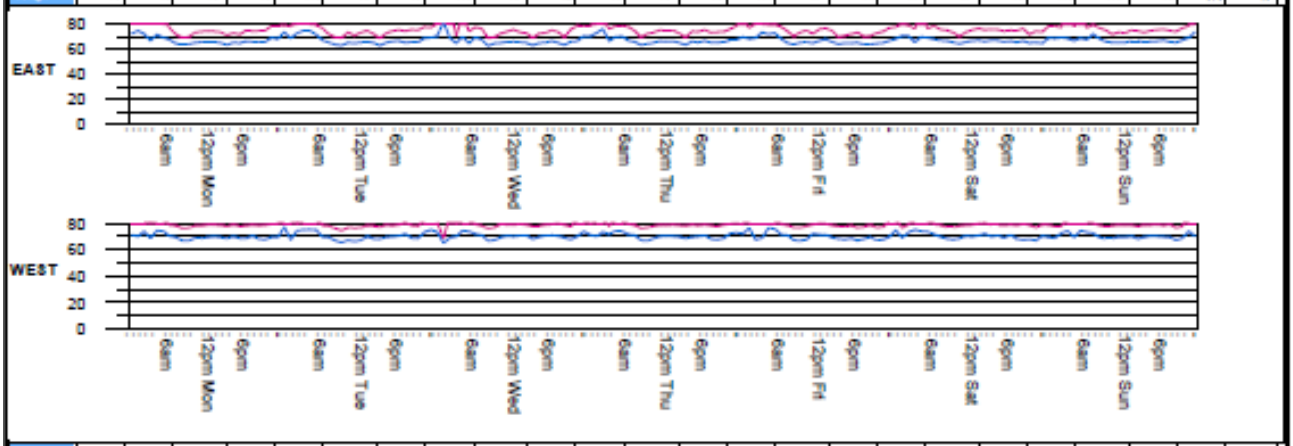
Street FISHERY POINT ROAD, MORISSET : Between HANNELL STREET & BALDWIN BVD (bidirectional)

Location Mid section, ELP OHX

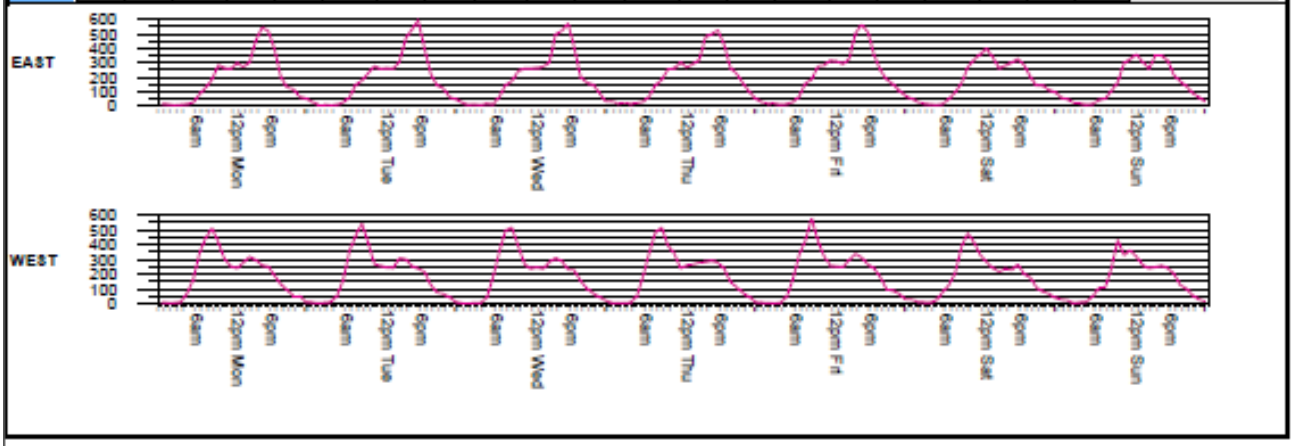
Start Date	15-NOV-09
Start Time	100
Duration	7 DAYS
Interval	1 HOUR

Speed Limit 70	EAST	WEST	COMBINED
Weekly 50th Percentile Speed	66	69	67
Weekly 85th Percentile Speed	74	78	78
Five Day AADT	4791	4833	9624
Seven Day AADT	4572	4616	9188

	MON 16-NOV-09			TUE 17-NOV-09			WED 18-NOV-09			THU 19-NOV-09			FRI 20-NOV-09			SAT 21-NOV-09			SUN 15-NOV-09			SEVENDAY AVERAGE		
	EAST	WEST	BIDir	EAST	WEST	BIDir	EAST	WEST	BIDir	EAST	WEST	BIDir	EAST	WEST	BIDir	EAST	WEST	BIDir	EAST	WEST	BIDir	EAST	WEST	BIDir
85%ile	74.0	78.2	76.7	73.9	77.9	76.4	73.5	78.5	76.9	74.5	78.3	76.9	73.9	78.4	76.7	75.3	78.5	77.2	75.4	78.5	77.3	74.4	78.3	76.9
50%ile	65.4	69.0	67.0	65.5	68.5	66.8	65.4	69.6	67.2	65.7	69.4	67.3	65.4	69.0	67.0	66.3	69.5	67.7	66.4	69.5	67.7	65.7	69.2	67.2
> 80 k	96	389	485	93	356	449	112	426	538	102	418	520	111	453	564	120	391	511	114	352	466	106.9	397.9	504.7
%age	2.1	8.2	5.2	2.0	7.8	4.8	2.4	9.0	5.7	2.1	8.5	5.3	2.2	9.0	5.8	2.8	9.1	6.0	3.0	9.1	6.1	2.4	8.8	5.5
> 90 k	18	43	59	12	47	59	15	61	76	8	39	47	13	55	68	15	46	61	22	56	78	14.43	49.57	64
%age	.3	.9	.6	.3	1.0	.6	.3	1.3	.8	.1	.8	.5	.3	1.1	.7	.4	1.1	.7	.6	1.5	1.0	.3	1.1	.7



	MON 16-NOV-09			TUE 17-NOV-09			WED 18-NOV-09			THU 19-NOV-09			FRI 20-NOV-09			SAT 21-NOV-09			SUN 15-NOV-09			SEVENDAY AVERAGE		
	EAST	WEST	BIDir	EAST	WEST	BIDir	EAST	WEST	BIDir	EAST	WEST	BIDir	EAST	WEST	BIDir	EAST	WEST	BIDir	EAST	WEST	BIDir	EAST	WEST	BIDir
Short %	96.5	93.7	95.1	96.4	93.8	95.1	96.1	93.9	95.0	96.0	93.2	94.6	96.8	93.7	95.2	96.4	95.8	97.0	96.5	96.4	97.5	96.9	94.2	95.5
Med %	3.3	5.9	4.6	3.3	5.9	4.5	3.6	5.7	4.7	3.8	6.1	4.8	3.2	5.9	4.6	3.4	4.0	2.7	3.3	3.2	2.3	2.9	5.3	4.1
Long %	.3	.4	.3	.3	.3	.3	.3	.4	.3	.4	.8	.6	.3	.4	.3	.2	.4	.3	.2	.4	.2	.2	.4	.3
AM Pk Vo	284	510	701	277	544	719	282	517	690	301	518	700	316	579	762	360	479	749	329	432	689	304	511	716
PM Pk Vo	545	319	808	596	311	834	573	311	811	529	292	805	565	340	879	397	283	680	358	319	677	509	311	785
7-7pm	3903	3777	7680	3915	3759	7674	3914	3749	7663	3952	3882	7834	4082	3980	8062	3398	3508	6906	3092	3284	6356	3751	3703	7454
24Hr Tot	4634	4781	9395	4662	4714	9376	4691	4759	9450	4947	4898	9845	5021	5031	10052	4265	4298	8563	3782	3853	7635	4572	4616	9188
Class 0	5	14	19	4	8	12	3	15	18	8	8	16	6	6	14	9	9	18	7	11	18	6	12	18
Class 1	4410	4383	8793	4417	4343	8760	4430	4378	8808	4884	4496	9380	4781	4846	9427	4101	4027	8128	3822	3808	7230	4346	4268	8615
Class 2	55	65	120	73	69	142	76	77	153	77	63	140	64	60	124	65	73	158	98	95	193	75	72	147
Class 3	138	264	402	142	259	401	156	257	413	159	284	443	146	285	431	54	162	216	48	121	169	119	233	354
Class 4	12	14	26	10	19	29	14	15	29	17	14	31	11	13	24	5	9	17	1	5	6	11	12	23
Class 5	2	1	3	1	0	1	0	0	0	1	2	3	1	1	2	0	0	0	0	0	0	1	1	2
Class 6	7	14	21	7	13	20	7	10	17	13	20	33	7	13	20	2	14	16	3	12	15	5	14	20
Class 7	0	0	0	3	1	4	0	1	1	1	2	3	0	1	1	1	0	1	0	1	1	1	1	2
Class 8	1	3	4	1	3	4	1	2	3	1	2	3	1	1	2	0	1	1	0	1	1	1	2	3
Class 9	3	1	4	1	1	2	1	1	2	1	1	2	1	0	1	0	0	0	0	0	0	1	1	2
Class 10	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



Data displayed has been compiled from pneumatic traffic count processes and is subject to the documented limitations

Appendix J SIDRA Intersection Calculations

J.1 Summary of Sidra Assessment

Location		Existing		2015		2025		Comment
		AM	PM	AM	PM	AM	PM	
01	Bridge Street /Newcastle Street	A	A	A	A	A	A	NO upgrade required
02	Freemans Drive/Stockton Street	A	A	A	A	A	A	Cooranbong VPA
03	Stockton Street/Awaba Street/Kahibah Street	A	A	Note 2	Note2	A	A	Assumed post 2015
04	Bridge Street/Awaba Street	A	A	A	A	A	A	
05	Kahibah Street/Wyong Street/Doyalson	A	A	A	A	A	A	
06	Freemans Drive/ Deaves Road	A	A	Note 3	Note 3	C	D	Cooranbong VPA
07	Avondale Road / Freemans Drive	A	A	Note 3	Note 3	C	D	Cooranbong VPA
08	Coorumbung (Kalang) Road / Newport	A	A	Note 4	Note 4	Note 4	Note 4	Development consent
09	Coorumbung Road / Gradwells Road	A	A	Note 4	Note 4	Note 4	Note 4	Development consent
10	Newport Road / Gradwells Road	A	A	Note 4	Note 4	Note 4	Note 4	Development consent
11a	Wamsley Street / Dora Street	A	A	Note 3	Note 3	C	C	Cooranbong VPA
11b	Wamsley Street / Dora Street / Macquarie Street	A	A	Note 5	Note 5	Note 5	Note 5	
12	Gimberts Road / Freemans Drive	A	A	A	A	A	A	NO upgrade required
13	Fishery Point Road / Morisset Park Road	A	A	Note 6	Note 6	Note 6	Note 6	Trinity Point VPA
14	Fishery Point Road / Station Street	A	A	Note 7	Note 7	Note 7	Note 7	Development consent
15	Cadillac Close / Newport Road	A	A	Note 8	Note 8	A	A	Assumes upgrade post 2015
16	New Access – Freemans Drive north of Newport Road	-	-	A	A	A	A	New access for residential land

	Location	Existing		2015		2025		Comment
		AM	PM	AM	PM	AM	PM	
17	Wyee Road / Alliance Avenue	A	A	A	A	A	A	
18	New Access – North Cooranbong	-	-	Note 9	Note 9	C	C	Cooranbong VPA
19	Newcastle Street / Doyalson Street	A	A	A	A	A	A	Assumes upgrade past 2015
20	Freemans Drive / Alton Rd / Central Rd	A	A	Note 9	Note 9	B	B	Cooranbong VPA
21	Mandalong Road / Gimberts Road	A	A					Non-residential development Direct developer funded (refer DCP)
22	Dora St / Bridge St	F	F					RTA issue
23	Freemans Drive / Awaba St	A	A	A	A	A	A	Note 2
24	Mandalong Road / Dora Street	-	-	Note 10	Note 10	Note 10	Note 10	Cooranbong VPA

Notes:

1. When delays / congestion are minimal, Sidra indicates level of service of as N/A, indicating effective level of service of A.
2. Roundabout upgrade required as part of the extension of Awaba Street post 2015.
3. Works covered under the Cooranbong VPA. Works expected post 2015 so analysis for 2025 only.
4. Works covered under Development Consent conditions for residential development off Gradwells Road.
5. Covered under upgrade at intersection of Warmsley Street and Dora Street i.e. upgrade allows for 4-way intersection.
6. Covered under Trinity Point VPA.
7. Covered under condition of consent for residential land, corner of Fishery Point Road and Station Street.
8. No upgrade / impact by 2015. Development occurs post 2015.
9. Intersection to be built post 2015.
10. Intersection upgrade covered under Cooranbong VPA.

J.2 M01 Bridge Street-Newcastle Street

INTERSECTION SUMMARY

Site: M01 AM Existing Bridge St- Newcastle St

M01 Bridge St-Newcastle St Existing layout
AM peak existing 2009 volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	561	veh/h	673	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.155			
Practical Spare Capacity	415.7	%		
Effective Intersection Capacity	3617	veh/h		
Control Delay (Total)	0.93	veh-h/h	1.12	pers-h/h
Control Delay (Average)	6.0	sec	6.0	sec
Control Delay (Worst Lane)	11.1	sec		
Control Delay (Worst Movement)	11.6	sec	11.6	sec
Geometric Delay (Average)	P	sec		
Stop-Line Delay (Average)	P	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	1.0	veh		
95% Back of Queue - Distance (Worst Lane)	6.8	m		
Total Effective Stops	228	veh/h	274	pers/h
Effective Stop Rate	0.41	per veh	0.41	per pers
Proportion Queued	0.33		0.33	
Performance Index	8.7		8.7	
Travel Distance (Total)	339.5	veh-km/h	407.4	pers-km/h
Travel Distance (Average)	605	m	605	m
Travel Time (Total)	6.8	veh-h/h	8.2	pers-h/h
Travel Time (Average)	43.7	sec	43.7	sec
Travel Speed	49.8	km/h	49.8	km/h
Cost (Total)	217.79	$/h	217.79	$/h
Fuel Consumption (Total)	34.3	L/h		
Carbon Dioxide (Total)	85.7	kg/h		
Hydrocarbons (Total)	0.142	kg/h		
Carbon Monoxide (Total)	6.13	kg/h		
NOx (Total)	0.197	kg/h		

P: You need to Process this Site (F9) for this variable to be computed.

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M01 AM Existing Bridge St- Newcastle St

M01 Bridge St-Newcastle St Existing layout
AM peak existing 2009 volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Bridge St South											
1	L	131	0.0	0.155	8.5	LOS A	1.0	6.8	0.26	0.61	48.5
2	T	155	0.0	0.155	0.3	LOS A	1.0	6.8	0.26	0.00	54.3
3	R	7	0.0	0.155	8.5	LOS A	1.0	6.8	0.26	0.72	48.5
Approach		293	0.0	0.155	4.2	NA	1.0	6.8	0.26	0.29	51.4
North East: Newcastle St East											
4	L	5	0.0	0.046	11.6	LOS A	0.2	1.2	0.36	0.58	45.6
5	T	13	0.0	0.046	10.4	LOS A	0.2	1.2	0.36	0.66	46.5
6	R	9	0.0	0.046	11.6	LOS A	0.2	1.2	0.36	0.73	45.6
Approach		27	0.0	0.046	11.1	LOS A	0.2	1.2	0.36	0.67	46.0
North West: Bridge St north											
7	L	7	0.0	0.096	9.5	LOS A	0.5	3.6	0.40	0.49	48.2
8	T	67	0.0	0.096	1.3	LOS A	0.5	3.6	0.40	0.00	51.8
9	R	62	0.0	0.096	9.5	LOS A	0.5	3.6	0.40	0.77	48.2
Approach		137	0.0	0.096	5.5	NA	0.5	3.6	0.40	0.37	49.9
South West: Newcastle St west											
10	L	68	0.0	0.140	10.5	LOS A	0.5	3.8	0.41	0.68	46.6
11	T	7	0.0	0.140	9.2	LOS A	0.5	3.8	0.41	0.68	47.5
12	R	28	0.0	0.140	10.5	LOS A	0.5	3.8	0.41	0.76	46.6
Approach		104	0.0	0.140	10.4	LOS A	0.5	3.8	0.41	0.70	46.6
All Vehicles		561	0.0	0.155	6.0	NA	1.0	6.8	0.33	0.41	49.8

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.

INTERSECTION SUMMARY

Site: M01 PM Existing Bridge St- Newcastle St

Bridge St-Newcastle St Existing layout
PM peak existing 2009 volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	432	veh/h	518	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.102			
Practical Spare Capacity	686.3	%		
Effective Intersection Capacity	4242	veh/h		
Control Delay (Total)	0.77	veh-h/h	0.92	pers-h/h
Control Delay (Average)	6.4	sec	6.4	sec
Control Delay (Worst Lane)	9.9	sec		
Control Delay (Worst Movement)	10.6	sec	10.6	sec
Geometric Delay (Average)	P	sec		
Stop-Line Delay (Average)	P	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	0.6	veh		
95% Back of Queue - Distance (Worst Lane)	4.2	m		
Total Effective Stops	184	veh/h	221	pers/h
Effective Stop Rate	0.43	per veh	0.43	per pers
Proportion Queued	0.31		0.31	
Performance Index	6.8		6.8	
Travel Distance (Total)	261.0	veh-km/h	313.3	pers-km/h
Travel Distance (Average)	605	m	605	m
Travel Time (Total)	5.3	veh-h/h	6.3	pers-h/h
Travel Time (Average)	44.1	sec	44.1	sec
Travel Speed	49.4	km/h	49.4	km/h
Cost (Total)	169.63	$/h	169.63	$/h
Fuel Consumption (Total)	27.0	L/h		
Carbon Dioxide (Total)	67.4	kg/h		
Hydrocarbons (Total)	0.113	kg/h		
Carbon Monoxide (Total)	5.00	kg/h		
NOx (Total)	0.157	kg/h		

P: You need to Process this Site (F9) for this variable to be computed.

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M01 PM Existing Bridge St- Newcastle St

Bridge St-Newcastle St Existing layout
PM peak existing 2009 volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Bridge St South											
1	L	122	0.0	0.102	8.5	LOS A	0.6	4.2	0.31	0.52	48.1
2	T	58	0.0	0.102	0.3	LOS A	0.6	4.2	0.31	0.00	53.1
3	R	8	0.0	0.102	8.6	LOS A	0.6	4.2	0.31	0.66	48.0
Approach		188	0.0	0.102	6.0	NA	0.6	4.2	0.31	0.37	49.5
North East: Newcastle St East											
4	L	5	0.0	0.040	10.6	LOS A	0.2	1.1	0.34	0.59	46.6
5	T	16	0.0	0.040	9.3	LOS A	0.2	1.1	0.34	0.63	47.6
6	R	6	0.0	0.040	10.6	LOS A	0.2	1.1	0.34	0.70	46.6
Approach		27	0.0	0.040	9.9	LOS A	0.2	1.1	0.34	0.64	47.1
North West: Bridge St north											
7	L	6	0.0	0.094	8.9	LOS A	0.5	3.5	0.31	0.57	48.4
8	T	75	0.0	0.094	0.8	LOS A	0.5	3.5	0.31	0.00	53.5
9	R	63	0.0	0.094	8.9	LOS A	0.5	3.5	0.31	0.75	48.4
Approach		144	0.0	0.094	4.7	NA	0.5	3.5	0.31	0.35	50.9
South West: Newcastle St west											
10	L	37	0.0	0.090	9.9	LOS A	0.3	2.4	0.31	0.63	47.2
11	T	14	0.0	0.090	8.6	LOS A	0.3	2.4	0.31	0.62	48.2
12	R	21	0.0	0.090	9.9	LOS A	0.3	2.4	0.31	0.71	47.2
Approach		72	0.0	0.090	9.6	LOS A	0.3	2.4	0.31	0.65	47.4
All Vehicles		432	0.0	0.102	6.4	NA	0.6	4.2	0.31	0.43	49.4

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.

INTERSECTION SUMMARY

Site: M01 AM 2015 Bridge St-Newcastle St

M01 Bridge St-Newcastle St
AM peak 2015 volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	978	veh/h	1173	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.256			
Practical Spare Capacity	212.0	%		
Effective Intersection Capacity	3814	veh/h		
Control Delay (Total)	1.60	veh-h/h	1.93	pers-h/h
Control Delay (Average)	5.9	sec	5.9	sec
Control Delay (Worst Lane)	19.0	sec		
Control Delay (Worst Movement)	19.5	sec	19.5	sec
Geometric Delay (Average)	2.8	sec		
Stop-Line Delay (Average)	3.1	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	2.2	veh		
95% Back of Queue - Distance (Worst Lane)	15.4	m		
Total Effective Stops	215	veh/h	257	pers/h
Effective Stop Rate	0.22	per veh	0.22	per pers
Proportion Queued	0.62		0.62	
Performance Index	14.8		14.8	
Travel Distance (Total)	592.3	veh-km/h	710.8	pers-km/h
Travel Distance (Average)	606	m	606	m
Travel Time (Total)	12.4	veh-h/h	14.9	pers-h/h
Travel Time (Average)	45.6	sec	45.6	sec
Travel Speed	47.8	km/h	47.8	km/h
Cost (Total)	390.13	$/h	390.13	$/h
Fuel Consumption (Total)	61.2	L/h		
Carbon Dioxide (Total)	153.1	kg/h		
Hydrocarbons (Total)	0.252	kg/h		
Carbon Monoxide (Total)	10.99	kg/h		
NOx (Total)	0.355	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M01 AM 2015 Bridge St-Newcastle St

M01 Bridge St-Newcastle St
AM peak 2015 volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Bridge St South											
1	L	131	0.0	0.220	10.4	LOS A	1.9	13.5	0.65	0.31	48.3
2	T	277	0.0	0.220	2.2	LOS A	1.9	13.5	0.65	0.00	48.2
3	R	7	0.0	0.220	10.4	LOS A	1.9	13.5	0.65	0.85	48.3
Approach		415	0.0	0.220	4.9	NA	1.9	13.5	0.65	0.11	48.2
North East: Newcastle St East											
4	L	5	0.0	0.095	19.5	LOS B	0.3	2.3	0.71	0.77	39.2
5	T	13	0.0	0.095	18.3	LOS B	0.3	2.3	0.71	0.87	39.6
6	R	9	0.0	0.095	19.5	LOS B	0.3	2.3	0.71	0.91	39.2
Approach		27	0.0	0.095	19.0	LOS B	0.3	2.3	0.71	0.87	39.4
North West: Bridge St north											
7	L	7	0.0	0.256	10.8	LOS A	2.2	15.4	0.59	0.40	48.4
8	T	362	0.0	0.256	2.7	LOS A	2.2	15.4	0.59	0.00	49.5
9	R	62	0.0	0.256	10.8	LOS A	2.2	15.4	0.59	0.92	48.4
Approach		432	0.0	0.256	4.0	NA	2.2	15.4	0.59	0.14	49.4
South West: Newcastle St west											
10	L	68	0.0	0.225	14.5	LOS B	0.8	5.8	0.58	0.78	42.9
11	T	7	0.0	0.225	13.3	LOS A	0.8	5.8	0.58	0.81	43.5
12	R	28	0.0	0.225	14.5	LOS B	0.8	5.8	0.58	0.86	42.9
Approach		104	0.0	0.225	14.5	LOS A	0.8	5.8	0.58	0.80	42.9
All Vehicles		978	0.0	0.256	5.9	NA	2.2	15.4	0.62	0.22	47.8

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.

INTERSECTION SUMMARY

Site: M01 AM 2025 Bridge St-Newcastle St + Awaba Ext

Bridge St-Newcastle St
2025 AM volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	1020	veh/h	1224	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.278			
Practical Spare Capacity	187.8	%		
Effective Intersection Capacity	3669	veh/h		
Control Delay (Total)	1.72	veh-h/h	2.06	pers-h/h
Control Delay (Average)	6.1	sec	6.1	sec
Control Delay (Worst Lane)	20.2	sec		
Control Delay (Worst Movement)	20.8	sec	20.8	sec
Geometric Delay (Average)	2.7	sec		
Stop-Line Delay (Average)	3.4	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	2.5	veh		
95% Back of Queue - Distance (Worst Lane)	17.3	m		
Total Effective Stops	212	veh/h	254	pers/h
Effective Stop Rate	0.21	per veh	0.21	per pers
Proportion Queued	0.64		0.64	
Performance Index	15.5		15.5	
Travel Distance (Total)	617.8	veh-km/h	741.4	pers-km/h
Travel Distance (Average)	606	m	606	m
Travel Time (Total)	13.0	veh-h/h	15.6	pers-h/h
Travel Time (Average)	45.9	sec	45.9	sec
Travel Speed	47.5	km/h	47.5	km/h
Cost (Total)	408.84	$/h	408.84	$/h
Fuel Consumption (Total)	64.2	L/h		
Carbon Dioxide (Total)	160.6	kg/h		
Hydrocarbons (Total)	0.265	kg/h		
Carbon Monoxide (Total)	11.59	kg/h		
NOx (Total)	0.373	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M01 AM 2025 Bridge St-Newcastle St + Awaba Ext

Bridge St-Newcastle St
2025 AM volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Bridge St South											
1	L	131	0.0	0.220	10.7	LOS A	2.0	14.1	0.69	0.28	48.2
2	T	277	0.0	0.220	2.5	LOS A	2.0	14.1	0.69	0.00	47.6
3	R	7	0.0	0.220	10.7	LOS A	2.0	14.1	0.69	0.88	48.2
Approach		415	0.0	0.220	5.3	NA	2.0	14.1	0.69	0.10	47.8
North East: Newcastle St East											
4	L	5	0.0	0.104	20.8	LOS B	0.4	2.5	0.73	0.81	38.3
5	T	13	0.0	0.104	19.6	LOS B	0.4	2.5	0.73	0.89	38.7
6	R	9	0.0	0.104	20.8	LOS B	0.4	2.5	0.73	0.92	38.3
Approach		27	0.0	0.104	20.2	LOS B	0.4	2.5	0.73	0.88	38.5
North West: Bridge St north											
7	L	7	0.0	0.278	10.9	LOS A	2.5	17.3	0.61	0.39	48.4
8	T	404	0.0	0.278	2.7	LOS A	2.5	17.3	0.61	0.00	49.3
9	R	62	0.0	0.278	10.9	LOS A	2.5	17.3	0.61	0.93	48.4
Approach		474	0.0	0.278	3.9	NA	2.5	17.3	0.61	0.13	49.2
South West: Newcastle St west											
10	L	68	0.0	0.237	15.2	LOS B	0.9	6.2	0.59	0.79	42.3
11	T	7	0.0	0.237	13.9	LOS A	0.9	6.2	0.59	0.82	43.0
12	R	28	0.0	0.237	15.2	LOS B	0.9	6.2	0.59	0.87	42.3
Approach		104	0.0	0.237	15.1	LOS B	0.9	6.2	0.59	0.81	42.4
All Vehicles		1020	0.0	0.278	6.1	NA	2.5	17.3	0.64	0.21	47.5

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.

INTERSECTION SUMMARY

Site: M01 2025 PM Existing
Bridge St- Newcastle St

Bridge St-Newcastle St Existing layout
2025 PM volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	867	veh/h	1041	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.266			
Practical Spare Capacity	201.2	%		
Effective Intersection Capacity	3266	veh/h		
Control Delay (Total)	1.62	veh-h/h	1.94	pers-h/h
Control Delay (Average)	6.7	sec	6.7	sec
Control Delay (Worst Lane)	17.9	sec		
Control Delay (Worst Movement)	18.2	sec	18.2	sec
Geometric Delay (Average)	3.9	sec		
Stop-Line Delay (Average)	2.8	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	1.8	veh		
95% Back of Queue - Distance (Worst Lane)	12.3	m		
Total Effective Stops	279	veh/h	335	pers/h
Effective Stop Rate	0.32	per veh	0.32	per pers
Proportion Queued	0.54		0.54	
Performance Index	13.8		13.8	
Travel Distance (Total)	525.0	veh-km/h	630.0	pers-km/h
Travel Distance (Average)	605	m	605	m
Travel Time (Total)	11.0	veh-h/h	13.2	pers-h/h
Travel Time (Average)	45.7	sec	45.7	sec
Travel Speed	47.7	km/h	47.7	km/h
Cost (Total)	348.00	$/h	348.00	$/h
Fuel Consumption (Total)	54.4	L/h		
Carbon Dioxide (Total)	136.0	kg/h		
Hydrocarbons (Total)	0.226	kg/h		
Carbon Monoxide (Total)	9.82	kg/h		
NOx (Total)	0.315	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M01 2025 PM Existing
Bridge St- Newcastle St

Bridge St-Newcastle St Existing layout
2025 PM volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Bridge St South											
1	L	122	0.0	0.157	9.8	LOS A	1.2	8.4	0.59	0.34	48.0
2	T	163	0.0	0.157	1.6	LOS A	1.2	8.4	0.59	0.00	48.7
3	R	8	0.0	0.157	9.8	LOS A	1.2	8.4	0.59	0.79	48.0
Approach		294	0.0	0.157	5.2	NA	1.2	8.4	0.59	0.17	48.4
North East: Newcastle St East											
4	L	5	0.0	0.266	18.1	LOS B	1.1	7.7	0.68	0.81	40.0
5	T	16	0.0	0.266	16.9	LOS B	1.1	7.7	0.68	0.88	40.6
6	R	73	0.0	0.266	18.2	LOS B	1.1	7.7	0.68	0.92	40.0
Approach		94	0.0	0.266	17.9	LOS B	1.1	7.7	0.68	0.91	40.1
North West: Bridge St north											
7	L	27	0.0	0.240	9.8	LOS A	1.8	12.3	0.49	0.47	48.6
8	T	285	0.0	0.240	1.6	LOS A	1.8	12.3	0.49	0.00	50.8
9	R	85	0.0	0.240	9.8	LOS A	1.8	12.3	0.49	0.84	48.6
Approach		398	0.0	0.240	3.9	NA	1.8	12.3	0.49	0.21	50.2
South West: Newcastle St west											
10	L	47	0.0	0.149	12.7	LOS A	0.6	3.9	0.48	0.69	44.5
11	T	14	0.0	0.149	11.5	LOS A	0.6	3.9	0.48	0.77	45.3
12	R	21	0.0	0.149	12.7	LOS A	0.6	3.9	0.48	0.83	44.5
Approach		82	0.0	0.149	12.5	LOS A	0.6	3.9	0.48	0.74	44.6
All Vehicles		867	0.0	0.266	6.7	NA	1.8	12.3	0.54	0.32	47.7

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

J.3 M02 Freemans Drive - Stockton Road

INTERSECTION SUMMARY

Site: M02 AM 2009 Existing Freemans Dr- Stockton Rd

M02 Freemans Rd - Stockton Rd Existing layout AM peak existing 2009 volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	607	veh/h	729	pers/h
Percent Heavy Vehicles	1.5	%		
Degree of Saturation	0.266			
Practical Spare Capacity	200.3	%		
Effective Intersection Capacity	2280	veh/h		
Control Delay (Total)	1.00	veh-h/h	1.20	pers-h/h
Control Delay (Average)	5.9	sec	5.9	sec
Control Delay (Worst Lane)	13.6	sec		
Control Delay (Worst Movement)	13.6	sec	13.6	sec
Geometric Delay (Average)	P	sec		
Stop-Line Delay (Average)	P	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	1.2	veh		
95% Back of Queue - Distance (Worst Lane)	8.1	m		
Total Effective Stops	275	veh/h	330	pers/h
Effective Stop Rate	0.45	per veh	0.45	per pers
Proportion Queued	0.21		0.21	
Performance Index	9.3		9.3	
Travel Distance (Total)	367.3	veh-km/h	440.7	pers-km/h
Travel Distance (Average)	605	m	605	m
Travel Time (Total)	7.2	veh-h/h	8.7	pers-h/h
Travel Time (Average)	42.9	sec	42.9	sec
Travel Speed	50.7	km/h	50.7	km/h
Cost (Total)	233.03	$/h	233.03	$/h
Fuel Consumption (Total)	36.9	L/h		
Carbon Dioxide (Total)	92.2	kg/h		
Hydrocarbons (Total)	0.147	kg/h		
Carbon Monoxide (Total)	6.10	kg/h		
NOx (Total)	0.203	kg/h		

P: You need to Process this Site (F9) for this variable to be computed.

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M02 AM 2009 Existing Freemans Dr- Stockton Rd

M02 Freemans Rd - Stockton Rd Existing layout
AM peak existing 2009 volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Freemans Rd South											
2	T	101	4.0	0.057	1.7	LOS A	0.4	3.0	0.47	0.00	51.7
3	R	4	0.0	0.057	10.1	LOS A	0.4	3.0	0.47	0.94	49.2
Approach		105	3.8	0.057	2.1	NA	0.4	3.0	0.47	0.04	51.6
North East: Stockton St East											
4	L	3	0.0	0.266	13.4	LOS A	1.2	8.1	0.57	0.74	43.6
6	R	132	0.0	0.266	13.6	LOS A	1.2	8.1	0.57	0.86	43.6
Approach		135	0.0	0.266	13.6	LOS A	1.2	8.1	0.57	0.86	43.6
North West: Freemans Rd north											
7	L	191	0.0	0.195	8.2	LOS A	0.0	0.0	0.00	0.82	49.0
8	T	177	3.0	0.195	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		367	1.4	0.195	4.2	NA	0.0	0.0	0.00	0.42	53.7
All Vehicles		607	1.5	0.266	5.9	NA	1.2	8.1	0.21	0.45	50.7

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

INTERSECTION SUMMARY

Site: M02 PM 2009 Existing
Freemans Dr- Stockton Rd

Freemans Rd - Stockton Rd Existing layout
PM peak existing 2009 volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	943	veh/h	1132	pers/h
Percent Heavy Vehicles	1.3	%		
Degree of Saturation	0.727			
Practical Spare Capacity	10.0	%		
Effective Intersection Capacity	1297	veh/h		
Control Delay (Total)	2.63	veh-h/h	3.16	pers-h/h
Control Delay (Average)	10.0	sec	10.0	sec
Control Delay (Worst Lane)	29.6	sec		
Control Delay (Worst Movement)	29.6	sec	29.6	sec
Geometric Delay (Average)	P	sec		
Stop-Line Delay (Average)	P	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	5.7	veh		
95% Back of Queue - Distance (Worst Lane)	39.9	m		
Total Effective Stops	482	veh/h	578	pers/h
Effective Stop Rate	0.51	per veh	0.51	per pers
Proportion Queued	0.35		0.35	
Performance Index	17.5		17.5	
Travel Distance (Total)	570.4	veh-km/h	684.5	pers-km/h
Travel Distance (Average)	605	m	605	m
Travel Time (Total)	12.4	veh-h/h	14.9	pers-h/h
Travel Time (Average)	47.2	sec	47.2	sec
Travel Speed	46.1	km/h	46.1	km/h
Cost (Total)	389.94	$/h	389.94	$/h
Fuel Consumption (Total)	58.5	L/h		
Carbon Dioxide (Total)	146.2	kg/h		
Hydrocarbons (Total)	0.236	kg/h		
Carbon Monoxide (Total)	9.48	kg/h		
NOx (Total)	0.317	kg/h		

P: You need to Process this Site (F9) for this variable to be computed.

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M02 PM 2009 Existing Freemans Dr- Stockton Rd

Freemans Rd - Stockton Rd Existing layout
PM peak existing 2009 volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Freemans Rd South											
2	T	198	2.1	0.107	2.8	LOS A	1.0	6.8	0.59	0.00	50.1
3	R	3	0.0	0.107	11.2	LOS A	1.0	6.8	0.59	0.99	48.6
Approach		201	2.1	0.107	3.0	NA	1.0	6.8	0.59	0.02	50.1
North East: Stockton St East											
4	L	11	0.0	0.727	29.4	LOS C	5.7	39.9	0.86	1.33	33.0
6	R	237	0.0	0.727	29.6	LOS C	5.7	39.9	0.86	1.26	33.0
Approach		247	0.0	0.727	29.6	LOS C	5.7	39.9	0.86	1.26	33.0
North West: Freemans Rd north											
7	L	192	0.0	0.261	8.2	LOS A	0.0	0.0	0.00	0.87	49.0
8	T	303	2.6	0.261	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		495	1.6	0.261	3.2	NA	0.0	0.0	0.00	0.34	55.2
All Vehicles		943	1.3	0.727	10.0	NA	5.7	39.9	0.35	0.51	46.1

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.

INTERSECTION SUMMARY

Site: M02 AM 2015 No Ext of Awaba Freemans Dr-Stockton Rd

AM Freemans Rd - Stockton Rd 2015 AM peak with NO extension of Awaba Road Roundabout

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	1249	veh/h	1499	pers/h
Percent Heavy Vehicles	1.6	%		
Degree of Saturation	0.520			
Practical Spare Capacity	63.5	%		
Effective Intersection Capacity	2403	veh/h		
Control Delay (Total)	2.07	veh-h/h	2.49	pers-h/h
Control Delay (Average)	6.0	sec	6.0	sec
Control Delay (Worst Lane)	13.3	sec		
Control Delay (Worst Movement)	13.4	sec	13.4	sec
Geometric Delay (Average)	P	sec		
Stop-Line Delay (Average)	P	sec		
Intersection Level of Service (LOS)	LOS A			
95% Back of Queue - Vehicles (Worst Lane)	5.1	veh		
95% Back of Queue - Distance (Worst Lane)	36.0	m		
Total Effective Stops	569	veh/h	683	pers/h
Effective Stop Rate	0.46	per veh	0.46	per pers
Proportion Queued	0.16		0.16	
Performance Index	20.7		20.7	
Travel Distance (Total)	770.0	veh-km/h	923.9	pers-km/h
Travel Distance (Average)	616	m	616	m
Travel Time (Total)	15.1	veh-h/h	18.1	pers-h/h
Travel Time (Average)	43.5	sec	43.5	sec
Travel Speed	51.1	km/h	51.1	km/h
Cost (Total)	491.46	$/h	491.46	$/h
Fuel Consumption (Total)	79.1	L/h		
Carbon Dioxide (Total)	197.9	kg/h		
Hydrocarbons (Total)	0.311	kg/h		
Carbon Monoxide (Total)	13.78	kg/h		
NOx (Total)	0.454	kg/h		

P: You need to Process this Site (F9) for this variable to be computed.

Level of Service (LOS) Method: Delay (RTA NSW).
Intersection LOS value for Vehicles is based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M02 AM 2015 No Ext of Awaba Freemans Dr-Stockton Rd

AM Freemans Rd - Stockton Rd
2015 AM peak with NO extension of Awaba Road
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Freemans Rd South											
2	T	154	4.0	0.119	5.1	LOS A	0.7	5.2	0.36	0.44	50.7
3	R	4	0.0	0.119	11.9	LOS A	0.7	5.2	0.36	0.83	46.7
Approach		158	3.9	0.119	5.3	LOS A	0.7	5.2	0.36	0.45	50.6
North East: Stockton St East											
4	L	3	0.0	0.141	7.5	LOS A	0.8	5.4	0.54	0.59	47.8
6	R	153	0.0	0.141	13.4	LOS A	0.8	5.4	0.54	0.72	44.4
Approach		156	0.0	0.141	13.3	LOS A	0.8	5.4	0.54	0.72	44.5
North West: Freemans Rd north											
7	L	454	0.0	0.520	5.3	LOS A	5.1	36.0	0.06	0.47	52.0
8	T	482	3.0	0.520	4.5	LOS A	5.1	36.0	0.06	0.36	53.1
Approach		936	1.5	0.520	4.9	LOS A	5.1	36.0	0.06	0.41	52.5
All Vehicles		1249	1.6	0.520	6.0	LOS A	5.1	36.0	0.16	0.46	51.1

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.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

INTERSECTION SUMMARY

Site: M02 AM 2015 Freemans Dr- Stockton Rd + Extention Awaba

Freemans Rd - Stockton Rd 2015 AM peak with extension to Awaba Roundabout

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	1344	veh/h	1613	pers/h
Percent Heavy Vehicles	1.5	%		
Degree of Saturation	0.537			
Practical Spare Capacity	58.2	%		
Effective Intersection Capacity	2502	veh/h		
Control Delay (Total)	2.38	veh-h/h	2.85	pers-h/h
Control Delay (Average)	6.4	sec	6.4	sec
Control Delay (Worst Lane)	13.4	sec		
Control Delay (Worst Movement)	13.5	sec	13.5	sec
Geometric Delay (Average)	P	sec		
Stop-Line Delay (Average)	P	sec		
Intersection Level of Service (LOS)	LOS A			
95% Back of Queue - Vehicles (Worst Lane)	5.5	veh		
95% Back of Queue - Distance (Worst Lane)	39.1	m		
Total Effective Stops	637	veh/h	764	pers/h
Effective Stop Rate	0.47	per veh	0.47	per pers
Proportion Queued	0.19		0.19	
Performance Index	22.7		22.7	
Travel Distance (Total)	830.7	veh-km/h	996.9	pers-km/h
Travel Distance (Average)	618	m	618	m
Travel Time (Total)	16.4	veh-h/h	19.7	pers-h/h
Travel Time (Average)	44.0	sec	44.0	sec
Travel Speed	50.6	km/h	50.6	km/h
Cost (Total)	534.28	$/h	534.28	$/h
Fuel Consumption (Total)	85.7	L/h		
Carbon Dioxide (Total)	214.5	kg/h		
Hydrocarbons (Total)	0.339	kg/h		
Carbon Monoxide (Total)	15.08	kg/h		
NOx (Total)	0.494	kg/h		

P: You need to Process this Site (F9) for this variable to be computed.

Level of Service (LOS) Method: Delay (RTA NSW).
Intersection LOS value for Vehicles is based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M02 AM 2015 Freemans Dr- Stockton Rd + Extention Awaba

Freemans Rd - Stockton Rd 2015 AM peak with extension to Awaba Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Freemans Rd South											
2	T	154	4.0	0.126	5.4	LOS A	0.8	5.5	0.43	0.47	50.2
3	R	4	0.0	0.126	12.2	LOS A	0.8	5.5	0.43	0.82	46.7
Approach		158	3.9	0.126	5.6	LOS A	0.8	5.5	0.43	0.48	50.1
North East: Stockton St East											
4	L	3	0.0	0.199	7.6	LOS A	1.1	7.9	0.56	0.61	47.7
6	R	216	0.0	0.199	13.5	LOS A	1.1	7.9	0.56	0.74	44.4
Approach		219	0.0	0.199	13.4	LOS A	1.1	7.9	0.56	0.73	44.4
North West: Freemans Rd north											
7	L	485	0.0	0.537	5.3	LOS A	5.5	39.1	0.07	0.46	51.9
8	T	482	3.0	0.537	4.5	LOS A	5.5	39.1	0.07	0.36	53.0
Approach		967	1.5	0.537	4.9	LOS A	5.5	39.1	0.07	0.41	52.5
All Vehicles		1344	1.5	0.537	6.4	LOS A	5.5	39.1	0.19	0.47	50.6

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.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

INTERSECTION SUMMARY

Site: M02 PM 2015 Freemans Dr- Stockton Rd No Ext Awaba

Freemans Rd - Stockton Rd
2015 PM volumes
Roundabout

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	1543	veh/h	1852	pers/h
Percent Heavy Vehicles	1.3	%		
Degree of Saturation	0.433			
Practical Spare Capacity	96.3	%		
Effective Intersection Capacity	3564	veh/h		
Control Delay (Total)	3.31	veh-h/h	3.97	pers-h/h
Control Delay (Average)	7.7	sec	7.7	sec
Control Delay (Worst Lane)	13.1	sec		
Control Delay (Worst Movement)	13.8	sec	13.8	sec
Geometric Delay (Average)	6.4	sec		
Stop-Line Delay (Average)	1.3	sec		
Intersection Level of Service (LOS)	LOS A			
95% Back of Queue - Vehicles (Worst Lane)	3.3	veh		
95% Back of Queue - Distance (Worst Lane)	23.8	m		
Total Effective Stops	873	veh/h	1047	pers/h
Effective Stop Rate	0.57	per veh	0.57	per pers
Proportion Queued	0.38		0.38	
Performance Index	27.7		27.7	
Travel Distance (Total)	962.2	veh-km/h	1154.6	pers-km/h
Travel Distance (Average)	623	m	623	m
Travel Time (Total)	19.7	veh-h/h	23.7	pers-h/h
Travel Time (Average)	46.0	sec	46.0	sec
Travel Speed	48.8	km/h	48.8	km/h
Cost (Total)	640.34	$/h	640.34	$/h
Fuel Consumption (Total)	102.3	L/h		
Carbon Dioxide (Total)	255.9	kg/h		
Hydrocarbons (Total)	0.414	kg/h		
Carbon Monoxide (Total)	18.74	kg/h		
NOx (Total)	0.596	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
Intersection LOS value for Vehicles is based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M02 PM 2015 Freemans Dr- Stockton Rd No Ext Awaba

Freemans Rd - Stockton Rd
2015 PM volumes
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Freemans Rd South											
2	T	461	2.1	0.433	7.0	LOS A	3.3	23.8	0.71	0.63	48.2
3	R	3	0.0	0.433	13.8	LOS A	3.3	23.8	0.71	0.85	45.9
Approach		464	2.1	0.433	7.0	LOS A	3.3	23.8	0.71	0.64	48.1
North East: Stockton St East											
4	L	11	0.0	0.352	7.3	LOS A	2.2	15.4	0.56	0.61	47.7
6	R	405	0.0	0.352	13.2	LOS A	2.2	15.4	0.56	0.73	44.4
Approach		416	0.0	0.352	13.1	LOS A	2.2	15.4	0.56	0.73	44.5
North West: Freemans Rd north											
7	L	286	0.0	0.368	5.3	LOS A	3.2	22.7	0.05	0.47	52.1
8	T	377	2.6	0.368	4.4	LOS A	3.2	22.7	0.05	0.37	53.2
Approach		663	1.5	0.368	4.8	LOS A	3.2	22.7	0.05	0.41	52.7
All Vehicles		1543	1.3	0.433	7.7	LOS A	3.3	23.8	0.38	0.57	48.8

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.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

INTERSECTION SUMMARY

Site: M02 PM 2015 Freemans Dr- Stockton Rd + Ext Awaba

Freemans Rd - Stockton Rd
2015 PM volumes
Roundabout

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	1648	veh/h	1978	pers/h
Percent Heavy Vehicles	1.2	%		
Degree of Saturation	0.454			
Practical Spare Capacity	87.2	%		
Effective Intersection Capacity	3630	veh/h		
Control Delay (Total)	3.64	veh-h/h	4.37	pers-h/h
Control Delay (Average)	8.0	sec	8.0	sec
Control Delay (Worst Lane)	13.2	sec		
Control Delay (Worst Movement)	14.2	sec	14.2	sec
Geometric Delay (Average)	6.5	sec		
Stop-Line Delay (Average)	1.5	sec		
Intersection Level of Service (LOS)	LOS A			
95% Back of Queue - Vehicles (Worst Lane)	3.6	veh		
95% Back of Queue - Distance (Worst Lane)	25.8	m		
Total Effective Stops	955	veh/h	1146	pers/h
Effective Stop Rate	0.58	per veh	0.58	per pers
Proportion Queued	0.40		0.40	
Performance Index	30.0		30.0	
Travel Distance (Total)	1028.8	veh-km/h	1234.6	pers-km/h
Travel Distance (Average)	624	m	624	m
Travel Time (Total)	21.2	veh-h/h	25.4	pers-h/h
Travel Time (Average)	46.3	sec	46.3	sec
Travel Speed	48.6	km/h	48.6	km/h
Cost (Total)	686.98	$/h	686.98	$/h
Fuel Consumption (Total)	109.6	L/h		
Carbon Dioxide (Total)	274.1	kg/h		
Hydrocarbons (Total)	0.445	kg/h		
Carbon Monoxide (Total)	20.17	kg/h		
NOx (Total)	0.640	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
Intersection LOS value for Vehicles is based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M02 PM 2015 Freemans Dr- Stockton Rd + Ext Awaba

Freemans Rd - Stockton Rd
2015 PM volumes
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Freemans Rd South											
2	T	461	2.1	0.454	7.4	LOS A	3.6	25.4	0.75	0.67	47.8
3	R	3	0.0	0.454	14.2	LOS A	3.6	25.4	0.75	0.87	45.6
Approach		464	2.1	0.454	7.4	LOS A	3.6	25.4	0.75	0.67	47.8
North East: Stockton St East											
4	L	11	0.0	0.396	7.4	LOS A	2.6	18.0	0.58	0.62	47.5
6	R	458	0.0	0.396	13.3	LOS A	2.6	18.0	0.58	0.74	44.3
Approach		468	0.0	0.396	13.2	LOS A	2.6	18.0	0.58	0.74	44.4
North West: Freemans Rd north											
7	L	339	0.0	0.397	5.3	LOS A	3.6	25.8	0.05	0.47	52.0
8	T	377	2.6	0.397	4.4	LOS A	3.6	25.8	0.05	0.37	53.2
Approach		716	1.4	0.397	4.8	LOS A	3.6	25.8	0.05	0.42	52.6
All Vehicles		1648	1.2	0.454	8.0	LOS A	3.6	25.8	0.40	0.58	48.6

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.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

INTERSECTION SUMMARY

Site: M02 AM 2025 No Ext of Awaba Freemans Dr-Stockton Rd

Freemans Rd - Stockton Rd
2025 AM volumes
Roundabout

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	1449	veh/h	1739	pers/h
Percent Heavy Vehicles	1.6	%		
Degree of Saturation	0.555			
Practical Spare Capacity	53.2	%		
Effective Intersection Capacity	2613	veh/h		
Control Delay (Total)	2.59	veh-h/h	3.11	pers-h/h
Control Delay (Average)	6.4	sec	6.4	sec
Control Delay (Worst Lane)	13.5	sec		
Control Delay (Worst Movement)	13.6	sec	13.6	sec
Geometric Delay (Average)	5.9	sec		
Stop-Line Delay (Average)	0.6	sec		
Intersection Level of Service (LOS)	LOS A			
95% Back of Queue - Vehicles (Worst Lane)	5.9	veh		
95% Back of Queue - Distance (Worst Lane)	42.1	m		
Total Effective Stops	697	veh/h	836	pers/h
Effective Stop Rate	0.48	per veh	0.48	per pers
Proportion Queued	0.21		0.21	
Performance Index	24.7		24.7	
Travel Distance (Total)	896.1	veh-km/h	1075.3	pers-km/h
Travel Distance (Average)	618	m	618	m
Travel Time (Total)	17.8	veh-h/h	21.3	pers-h/h
Travel Time (Average)	44.1	sec	44.1	sec
Travel Speed	50.4	km/h	50.4	km/h
Cost (Total)	578.51	$/h	578.51	$/h
Fuel Consumption (Total)	93.0	L/h		
Carbon Dioxide (Total)	232.6	kg/h		
Hydrocarbons (Total)	0.368	kg/h		
Carbon Monoxide (Total)	16.42	kg/h		
NOx (Total)	0.536	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
Intersection LOS value for Vehicles is based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M02 AM 2025 No Ext of Awaba Freemans Dr-Stockton Rd

Freemans Rd - Stockton Rd
2025 AM volumes
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Freemans Rd South											
2	T	206	4.0	0.171	5.6	LOS A	1.1	7.8	0.46	0.50	49.9
3	R	4	0.0	0.171	12.4	LOS A	1.1	7.8	0.46	0.82	46.7
Approach		211	3.9	0.171	5.7	LOS A	1.1	7.8	0.46	0.50	49.8
North East: Stockton St East											
4	L	3	0.0	0.219	7.7	LOS A	1.3	8.9	0.58	0.63	47.5
6	R	237	0.0	0.219	13.6	LOS A	1.3	8.9	0.58	0.74	44.3
Approach		240	0.0	0.219	13.5	LOS A	1.3	8.9	0.58	0.74	44.3
North West: Freemans Rd north											
7	L	506	0.0	0.555	5.3	LOS A	5.9	42.1	0.07	0.46	51.9
8	T	493	3.0	0.555	4.5	LOS A	5.9	42.1	0.07	0.36	53.0
Approach		999	1.5	0.555	4.9	LOS A	5.9	42.1	0.07	0.41	52.4
All Vehicles		1449	1.6	0.555	6.4	LOS A	5.9	42.1	0.21	0.48	50.4

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

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INTERSECTION SUMMARY

Site: M02 AM 2025 Freemans Dr- Stockton Rd + Extension Awaba

Freemans Rd - Stockton Rd
2025 Am volumes
Roundabout

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	1618	veh/h	1941	pers/h
Percent Heavy Vehicles	1.5	%		
Degree of Saturation	0.485			
Practical Spare Capacity	75.2	%		
Effective Intersection Capacity	3335	veh/h		
Control Delay (Total)	3.10	veh-h/h	3.72	pers-h/h
Control Delay (Average)	6.9	sec	6.9	sec
Control Delay (Worst Lane)	12.5	sec		
Control Delay (Worst Movement)	13.1	sec	13.1	sec
Geometric Delay (Average)	6.1	sec		
Stop-Line Delay (Average)	0.8	sec		
Intersection Level of Service (LOS)	LOS A			
95% Back of Queue - Vehicles (Worst Lane)	4.8	veh		
95% Back of Queue - Distance (Worst Lane)	34.0	m		
Total Effective Stops	836	veh/h	1003	pers/h
Effective Stop Rate	0.52	per veh	0.52	per pers
Proportion Queued	0.28		0.28	
Performance Index	28.0		28.0	
Travel Distance (Total)	1002.7	veh-km/h	1203.2	pers-km/h
Travel Distance (Average)	620	m	620	m
Travel Time (Total)	20.2	veh-h/h	24.2	pers-h/h
Travel Time (Average)	44.9	sec	44.9	sec
Travel Speed	49.6	km/h	49.6	km/h
Cost (Total)	658.80	$/h	658.80	$/h
Fuel Consumption (Total)	106.2	L/h		
Carbon Dioxide (Total)	265.7	kg/h		
Hydrocarbons (Total)	0.425	kg/h		
Carbon Monoxide (Total)	19.24	kg/h		
NOx (Total)	0.619	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
Intersection LOS value for Vehicles is based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M02 AM 2025 Freemans Dr- Stockton Rd + Extension Awaba

Freemans Rd - Stockton Rd
2025 Am volumes
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Freemans Rd South											
2	T	417	4.0	0.362	6.4	LOS A	2.6	18.9	0.60	0.57	48.9
3	R	4	0.0	0.362	13.1	LOS A	2.6	18.9	0.60	0.84	46.3
Approach		421	4.0	0.362	6.4	LOS A	2.6	18.9	0.60	0.57	48.9
North East: Stockton St East											
4	L	3	0.0	0.259	6.7	LOS A	1.5	10.4	0.45	0.54	48.5
6	R	321	0.0	0.259	12.6	LOS A	1.5	10.4	0.45	0.69	44.8
Approach		324	0.0	0.259	12.5	LOS A	1.5	10.4	0.45	0.69	44.8
North West: Freemans Rd north											
7	L	591	0.0	0.485	5.3	LOS A	4.8	34.0	0.07	0.46	51.9
8	T	282	3.0	0.485	4.5	LOS A	4.8	34.0	0.07	0.36	53.0
Approach		873	1.0	0.485	5.0	LOS A	4.8	34.0	0.07	0.43	52.3
All Vehicles		1618	1.5	0.485	6.9	LOS A	4.8	34.0	0.28	0.52	49.6

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.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

Project: M:\MW Pty Ltd\Active Projects\P0568 DF Morisset Contribution Plan\Calculations\Sidra files\2025 AM_PM Future Sidras.sip
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INTERSECTION SUMMARY

Site: M02 PM 2025 Freemans Dr- Stockton Rd No Ext Awaba

PM Freemans Rd - Stockton Rd Existing layout 2009 volumes Roundabout

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	1785	veh/h	2142	pers/h
Percent Heavy Vehicles	1.2	%		
Degree of Saturation	0.548			
Practical Spare Capacity	55.2	%		
Effective Intersection Capacity	3260	veh/h		
Control Delay (Total)	4.28	veh-h/h	5.13	pers-h/h
Control Delay (Average)	8.6	sec	8.6	sec
Control Delay (Worst Lane)	13.6	sec		
Control Delay (Worst Movement)	15.8	sec	15.8	sec
Geometric Delay (Average)	P	sec		
Stop-Line Delay (Average)	P	sec		
Intersection Level of Service (LOS)	LOS A			
95% Back of Queue - Vehicles (Worst Lane)	6.2	veh		
95% Back of Queue - Distance (Worst Lane)	44.1	m		
Total Effective Stops	1137	veh/h	1364	pers/h
Effective Stop Rate	0.64	per veh	0.64	per pers
Proportion Queued	0.45		0.45	
Performance Index	34.1		34.1	
Travel Distance (Total)	1115.0	veh-km/h	1338.0	pers-km/h
Travel Distance (Average)	625	m	625	m
Travel Time (Total)	23.1	veh-h/h	27.8	pers-h/h
Travel Time (Average)	46.6	sec	46.6	sec
Travel Speed	48.2	km/h	48.2	km/h
Cost (Total)	750.54	$/h	750.54	$/h
Fuel Consumption (Total)	119.9	L/h		
Carbon Dioxide (Total)	299.8	kg/h		
Hydrocarbons (Total)	0.488	kg/h		
Carbon Monoxide (Total)	22.25	kg/h		
NOx (Total)	0.702	kg/h		

P: You need to Process this Site (F9) for this variable to be computed.

Level of Service (LOS) Method: Delay (RTA NSW).
Intersection LOS value for Vehicles is based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M02 PM 2025 Freemans Dr- Stockton Rd No Ext Awaba

PM Freemans Rd - Stockton Rd Existing layout 2009 volumes Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Freemans Rd South											
2	T	514	2.1	0.548	9.0	LOS A	6.2	44.1	0.84	0.83	47.2
3	R	3	0.0	0.526	15.8	LOS B	6.2	44.1	0.84	0.93	44.4
Approach		517	2.1	0.548	9.1	LOS A	6.2	44.1	0.84	0.83	47.2
North East: Stockton St East											
4	L	11	0.0	0.458	7.9	LOS A	3.9	27.0	0.63	0.66	47.1
6	R	511	0.0	0.460	13.8	LOS A	3.9	27.0	0.63	0.77	44.1
Approach		521	0.0	0.460	13.6	LOS A	3.9	27.0	0.63	0.76	44.1
North West: Freemans Rd north											
7	L	339	0.0	0.417	5.3	LOS A	4.9	34.8	0.05	0.47	52.0
8	T	408	2.6	0.418	4.4	LOS A	4.9	34.8	0.05	0.37	53.1
Approach		747	1.4	0.418	4.8	LOS A	4.9	34.8	0.05	0.41	52.6
All Vehicles		1785	1.2	0.548	8.6	LOS A	6.2	44.1	0.45	0.64	48.2

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.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

INTERSECTION SUMMARY

Site: M02 PM 2025 Freemans Dr- Stockton Rd + Ext Awaba

PM Freemans Rd - Stockton Rd Existing layout 2009 volumes Roundabout

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	1954	veh/h	2344	pers/h
Percent Heavy Vehicles	1.1	%		
Degree of Saturation	0.632			
Practical Spare Capacity	34.6	%		
Effective Intersection Capacity	3093	veh/h		
Control Delay (Total)	5.08	veh-h/h	6.10	pers-h/h
Control Delay (Average)	9.4	sec	9.4	sec
Control Delay (Worst Lane)	14.1	sec		
Control Delay (Worst Movement)	17.8	sec	17.8	sec
Geometric Delay (Average)	P	sec		
Stop-Line Delay (Average)	P	sec		
Intersection Level of Service (LOS)	LOS A			
95% Back of Queue - Vehicles (Worst Lane)	7.6	veh		
95% Back of Queue - Distance (Worst Lane)	53.9	m		
Total Effective Stops	1310	veh/h	1572	pers/h
Effective Stop Rate	0.67	per veh	0.67	per pers
Proportion Queued	0.48		0.48	
Performance Index	38.9		38.9	
Travel Distance (Total)	1221.6	veh-km/h	1466.0	pers-km/h
Travel Distance (Average)	625	m	625	m
Travel Time (Total)	25.6	veh-h/h	30.7	pers-h/h
Travel Time (Average)	47.1	sec	47.1	sec
Travel Speed	47.8	km/h	47.8	km/h
Cost (Total)	828.73	$/h	828.73	$/h
Fuel Consumption (Total)	132.0	L/h		
Carbon Dioxide (Total)	330.0	kg/h		
Hydrocarbons (Total)	0.540	kg/h		
Carbon Monoxide (Total)	24.67	kg/h		
NOx (Total)	0.774	kg/h		

P: You need to Process this Site (F9) for this variable to be computed.

Level of Service (LOS) Method: Delay (RTA NSW).
Intersection LOS value for Vehicles is based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M02 PM 2025 Freemans Dr- Stockton Rd + Ext Awaba

PM Freemans Rd - Stockton Rd Existing layout 2009 volumes Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Freemans Rd South											
2	T	514	2.1	0.599	11.0	LOS A	7.6	53.9	0.92	0.95	46.2
3	R	3	0.0	0.632	17.8	LOS B	7.6	53.9	0.92	0.99	42.9
Approach		517	2.1	0.599	11.1	LOS A	7.6	53.9	0.92	0.95	46.1
North East: Stockton St East											
4	L	11	0.0	0.526	8.3	LOS A	5.0	34.7	0.67	0.70	46.8
6	R	595	0.0	0.532	14.2	LOS A	5.0	34.7	0.67	0.79	43.9
Approach		605	0.0	0.532	14.1	LOS A	5.0	34.7	0.67	0.79	44.0
North West: Freemans Rd north											
7	L	423	0.0	0.464	5.3	LOS A	5.9	41.8	0.06	0.47	52.0
8	T	408	2.6	0.465	4.4	LOS A	5.9	41.8	0.06	0.36	53.1
Approach		832	1.3	0.464	4.9	LOS A	5.9	41.8	0.06	0.42	52.5
All Vehicles		1954	1.1	0.632	9.4	LOS A	7.6	53.9	0.48	0.67	47.8

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.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

J.4 M03 Stockton Street /Awaba Street/Kahibah Street

INTERSECTION SUMMARY

Site: M03 AM Existing Stockton Rd- Awaba St - Kahibah

Existing layout
AM peak 2009 existing volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	387	veh/h	465	pers/h
Percent Heavy Vehicles	2.6	%		
Degree of Saturation	0.119			
Practical Spare Capacity	570.1	%		
Effective Intersection Capacity	3244	veh/h		
Control Delay (Total)	0.01	veh-h/h	0.01	pers-h/h
Control Delay (Average)	0.1	sec	0.1	sec
Control Delay (Worst Lane)	9.4	sec		
Control Delay (Worst Movement)	9.5	sec	9.5	sec
Geometric Delay (Average)	P	sec		
Stop-Line Delay (Average)	P	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	0.0	veh		
95% Back of Queue - Distance (Worst Lane)	0.1	m		
Total Effective Stops	3	veh/h	3	pers/h
Effective Stop Rate	0.01	per veh	0.01	per pers
Proportion Queued	0.00		0.00	
Performance Index	3.9		3.9	
Travel Distance (Total)	234.9	veh-km/h	281.9	pers-km/h
Travel Distance (Average)	606	m	606	m
Travel Time (Total)	3.9	veh-h/h	4.7	pers-h/h
Travel Time (Average)	36.5	sec	36.5	sec
Travel Speed	59.8	km/h	59.8	km/h
Cost (Total)	123.27	$/h	123.27	$/h
Fuel Consumption (Total)	17.9	L/h		
Carbon Dioxide (Total)	44.9	kg/h		
Hydrocarbons (Total)	0.059	kg/h		
Carbon Monoxide (Total)	1.26	kg/h		
NOx (Total)	0.077	kg/h		

P: You need to Process this Site (F9) for this variable to be computed.

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M03 AM Existing Stockton Rd- Awaba St - Kahibah

M03 Stockton/Awaba/Kahibah St Existing layout
AM peak 2009 existing volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Stockton St South											
1	L	1	0.0	0.001	8.2	LOS A	0.0	0.0	0.00	0.67	49.0
2	T	154	3.3	0.081	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		155	3.3	0.081	0.1	NA	0.0	0.0	0.00	0.00	59.9
North West: Stockton St north											
8	T	229	2.2	0.119	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
9	R	1	0.0	0.001	8.7	LOS A	0.0	0.0	0.25	0.58	47.8
Approach		231	2.2	0.119	0.0	NA	0.0	0.0	0.00	0.00	59.9
South West: Awaba St west											
10	L	1	0.0	0.002	9.4	LOS A	0.0	0.1	0.30	0.58	47.6
12	R	1	0.0	0.002	9.5	LOS A	0.0	0.1	0.30	0.64	47.6
Approach		2	0.0	0.002	9.4	LOS A	0.0	0.1	0.30	0.61	47.6
All Vehicles		387	2.6	0.119	0.1	NA	0.0	0.1	0.00	0.01	59.8

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.

INTERSECTION SUMMARY

Site: M03 PM Stockton Rd-Awaba St - Kahibah

Stockton/Awaba/Kahibah St Existing layout
PM peak 2009 existing volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	896	veh/h	1075	pers/h
Percent Heavy Vehicles	1.2	%		
Degree of Saturation	0.236			
Practical Spare Capacity	239.0	%		
Effective Intersection Capacity	3796	veh/h		
Control Delay (Total)	0.05	veh-h/h	0.06	pers-h/h
Control Delay (Average)	0.2	sec	0.2	sec
Control Delay (Worst Lane)	21.8	sec		
Control Delay (Worst Movement)	21.8	sec	21.8	sec
Geometric Delay (Average)	P	sec		
Stop-Line Delay (Average)	P	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	0.1	veh		
95% Back of Queue - Distance (Worst Lane)	0.6	m		
Total Effective Stops	10	veh/h	12	pers/h
Effective Stop Rate	0.01	per veh	0.01	per pers
Proportion Queued	0.01		0.01	
Performance Index	9.2		9.2	
Travel Distance (Total)	543.2	veh-km/h	651.9	pers-km/h
Travel Distance (Average)	606	m	606	m
Travel Time (Total)	9.1	veh-h/h	10.9	pers-h/h
Travel Time (Average)	36.6	sec	36.6	sec
Travel Speed	59.6	km/h	59.6	km/h
Cost (Total)	282.58	$/h	282.58	$/h
Fuel Consumption (Total)	40.1	L/h		
Carbon Dioxide (Total)	100.3	kg/h		
Hydrocarbons (Total)	0.136	kg/h		
Carbon Monoxide (Total)	2.94	kg/h		
NOx (Total)	0.178	kg/h		

P: You need to Process this Site (F9) for this variable to be computed.

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M03 PM Stockton Rd-Awaba St - Kahibah

Stockton/Awaba/Kahibah St Existing layout
PM peak 2009 existing volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Stockton St South											
1	L	5	0.0	0.003	8.2	LOS A	0.0	0.0	0.00	0.67	49.0
2	T	457	1.1	0.236	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		462	1.1	0.236	0.1	NA	0.0	0.0	0.00	0.01	59.8
North West: Stockton St north											
8	T	426	1.2	0.220	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
9	R	1	0.0	0.001	10.2	LOS A	0.0	0.0	0.45	0.61	46.8
Approach		427	1.2	0.220	0.0	NA	0.0	0.0	0.00	0.00	60.0
South West: Kahibah St west											
10	L	1	0.0	0.027	21.8	LOS B	0.1	0.6	0.74	0.73	37.5
12	R	5	0.0	0.027	21.8	LOS B	0.1	0.6	0.74	0.91	37.4
Approach		6	0.0	0.027	21.8	LOS B	0.1	0.6	0.74	0.88	37.4
All Vehicles		896	1.2	0.236	0.2	NA	0.1	0.6	0.01	0.01	59.6

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.

INTERSECTION SUMMARY

Site: M03 AM 2025 Stockton Rd- Awaba St - Kahibah

Stockton/Awaba/Kahibah St roundabout
2025 AM volumes
Roundabout

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	1093	veh/h	1311	pers/h
Percent Heavy Vehicles	0.9	%		
Degree of Saturation	0.383			
Practical Spare Capacity	122.2	%		
Effective Intersection Capacity	2856	veh/h		
Control Delay (Total)	2.02	veh-h/h	2.43	pers-h/h
Control Delay (Average)	6.7	sec	6.7	sec
Control Delay (Worst Lane)	11.5	sec		
Control Delay (Worst Movement)	12.6	sec	12.6	sec
Geometric Delay (Average)	6.1	sec		
Stop-Line Delay (Average)	0.6	sec		
Intersection Level of Service (LOS)	LOS A			
95% Back of Queue - Vehicles (Worst Lane)	2.6	veh		
95% Back of Queue - Distance (Worst Lane)	18.3	m		
Total Effective Stops	547	veh/h	657	pers/h
Effective Stop Rate	0.50	per veh	0.50	per pers
Proportion Queued	0.29		0.29	
Performance Index	17.9		17.9	
Travel Distance (Total)	652.2	veh-km/h	782.7	pers-km/h
Travel Distance (Average)	597	m	597	m
Travel Time (Total)	13.2	veh-h/h	15.9	pers-h/h
Travel Time (Average)	43.6	sec	43.6	sec
Travel Speed	49.3	km/h	49.3	km/h
Cost (Total)	428.53	$/h	428.53	$/h
Fuel Consumption (Total)	68.4	L/h		
Carbon Dioxide (Total)	171.0	kg/h		
Hydrocarbons (Total)	0.277	kg/h		
Carbon Monoxide (Total)	12.50	kg/h		
NOx (Total)	0.399	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
Intersection LOS value for Vehicles is based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M03 AM 2025 Stockton Rd- Awaba St - Kahibah

Stockton/Awaba/Kahibah St roundabout
2025 AM volumes
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Stockton St South											
1	L	1	0.0	0.001	7.0	LOS A	0.0	0.0	0.41	0.46	49.3
2	T	154	3.3	0.121	5.3	LOS A	0.6	4.7	0.40	0.48	50.4
3	R	1	0.0	0.121	12.1	LOS A	0.6	4.7	0.40	0.84	46.8
Approach		156	3.3	0.121	5.4	LOS A	0.6	4.7	0.40	0.48	50.4
North East: Awaba St											
24	L	21	0.0	0.244	6.7	LOS A	1.3	9.4	0.45	0.55	48.8
25	T	53	0.0	0.244	3.7	LOS A	1.3	9.4	0.45	0.42	31.8
26	R	189	0.0	0.244	12.6	LOS A	1.3	9.4	0.45	0.73	45.4
Approach		263	0.0	0.244	10.4	LOS A	1.3	9.4	0.45	0.65	44.6
North West: Stockton St north											
7	L	400	0.0	0.383	5.7	LOS A	2.6	18.3	0.19	0.47	50.9
8	T	229	2.2	0.383	4.6	LOS A	2.6	18.3	0.19	0.37	51.9
9	R	1	0.0	0.002	11.5	LOS A	0.0	0.0	0.16	0.62	46.0
Approach		631	0.8	0.383	5.3	LOS A	2.6	18.3	0.19	0.44	51.2
South West: Awaba St west											
10	L	1	0.0	0.040	6.4	LOS A	0.2	1.1	0.36	0.52	49.7
11	T	21	0.0	0.040	5.4	LOS A	0.2	1.1	0.36	0.46	50.2
12	R	21	0.0	0.040	12.3	LOS A	0.2	1.1	0.36	0.76	46.0
Approach		43	0.0	0.040	8.8	LOS A	0.2	1.1	0.36	0.61	48.0
All Vehicles		1093	0.9	0.383	6.7	LOS A	2.6	18.3	0.29	0.50	49.3

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.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

INTERSECTION SUMMARY

Site: M03 PM 2025 Stockton Rd- Awaba St - Kahibah

Stockton/Awaba/Kahibah St roundabout
PM peak 2025
Roundabout

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	1414	veh/h	1696	pers/h
Percent Heavy Vehicles	0.8	%		
Degree of Saturation	0.383			
Practical Spare Capacity	122.1	%		
Effective Intersection Capacity	3694	veh/h		
Control Delay (Total)	3.55	veh-h/h	4.26	pers-h/h
Control Delay (Average)	9.0	sec	9.0	sec
Control Delay (Worst Lane)	12.7	sec		
Control Delay (Worst Movement)	14.7	sec	14.7	sec
Geometric Delay (Average)	7.5	sec		
Stop-Line Delay (Average)	1.5	sec		
Intersection Level of Service (LOS)	LOS A			
95% Back of Queue - Vehicles (Worst Lane)	2.6	veh		
95% Back of Queue - Distance (Worst Lane)	18.5	m		
Total Effective Stops	898	veh/h	1078	pers/h
Effective Stop Rate	0.64	per veh	0.64	per pers
Proportion Queued	0.53		0.53	
Performance Index	26.3		26.3	
Travel Distance (Total)	867.2	veh-km/h	1040.6	pers-km/h
Travel Distance (Average)	613	m	613	m
Travel Time (Total)	18.5	veh-h/h	22.2	pers-h/h
Travel Time (Average)	47.2	sec	47.2	sec
Travel Speed	46.8	km/h	46.8	km/h
Cost (Total)	599.15	$/h	599.15	$/h
Fuel Consumption (Total)	95.0	L/h		
Carbon Dioxide (Total)	237.5	kg/h		
Hydrocarbons (Total)	0.394	kg/h		
Carbon Monoxide (Total)	18.20	kg/h		
NOx (Total)	0.560	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
Intersection LOS value for Vehicles is based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M03 PM 2025 Stockton Rd- Awaba St - Kahibah

Stockton/Awaba/Kahibah St roundabout
PM peak 2025
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Stockton St South											
1	L	1	0.0	0.001	8.1	LOS A	0.0	0.0	0.53	0.50	48.5
2	T	221	3.3	0.383	6.6	LOS A	2.6	18.5	0.63	0.59	47.9
3	R	211	0.0	0.383	13.4	LOS A	2.6	18.5	0.63	0.81	45.5
Approach		433	1.7	0.383	9.9	LOS A	2.6	18.5	0.63	0.70	46.6
North East: Awaba St											
24	L	21	0.0	0.376	6.4	LOS A	2.5	17.8	0.46	0.52	48.6
25	T	53	0.0	0.376	3.4	LOS A	2.5	17.8	0.46	0.40	31.4
26	R	368	0.0	0.376	12.3	LOS A	2.5	17.8	0.46	0.69	45.1
Approach		442	0.0	0.376	11.0	LOS A	2.5	17.8	0.46	0.65	44.7
North West: Stockton St north											
7	L	337	0.0	0.381	6.7	LOS A	2.6	18.2	0.50	0.59	48.9
8	T	158	2.2	0.381	5.6	LOS A	2.6	18.2	0.50	0.50	49.2
9	R	1	0.0	0.002	12.7	LOS A	0.0	0.0	0.42	0.59	44.9
Approach		496	0.7	0.381	6.4	LOS A	2.6	18.2	0.50	0.56	49.0
South West: Awaba St west											
10	L	1	0.0	0.057	8.9	LOS A	0.3	2.0	0.64	0.67	47.8
11	T	21	0.0	0.057	7.9	LOS A	0.3	2.0	0.64	0.64	47.8
12	R	21	0.0	0.057	14.7	LOS B	0.3	2.0	0.64	0.81	44.3
Approach		43	0.0	0.057	11.3	LOS A	0.3	2.0	0.64	0.72	46.0
All Vehicles		1414	0.8	0.383	9.0	LOS A	2.6	18.5	0.53	0.64	46.8

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.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

J.5 M04 Bridge Street-Awaba Street

INTERSECTION SUMMARY

Site: M04 AM Existing Bridge St- Awaba St

M04 Bridge St-Awaba St Existing layout
AM peak existing 2009 volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	120	veh/h	144	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.043			
Practical Spare Capacity	1742.4	%		
Effective Intersection Capacity	2764	veh/h		
Control Delay (Total)	0.18	veh-h/h	0.22	pers-h/h
Control Delay (Average)	5.4	sec	5.4	sec
Control Delay (Worst Lane)	8.6	sec		
Control Delay (Worst Movement)	8.9	sec	8.9	sec
Geometric Delay (Average)	P	sec		
Stop-Line Delay (Average)	P	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	0.2	veh		
95% Back of Queue - Distance (Worst Lane)	1.1	m		
Total Effective Stops	53	veh/h	63	pers/h
Effective Stop Rate	0.44	per veh	0.44	per pers
Proportion Queued	0.10		0.10	
Performance Index	1.8		1.8	
Travel Distance (Total)	72.5	veh-km/h	87.0	pers-km/h
Travel Distance (Average)	604	m	604	m
Travel Time (Total)	1.4	veh-h/h	1.7	pers-h/h
Travel Time (Average)	42.1	sec	42.1	sec
Travel Speed	51.6	km/h	51.6	km/h
Cost (Total)	45.10	$/h	45.10	$/h
Fuel Consumption (Total)	7.1	L/h		
Carbon Dioxide (Total)	17.8	kg/h		
Hydrocarbons (Total)	0.029	kg/h		
Carbon Monoxide (Total)	1.24	kg/h		
NOx (Total)	0.040	kg/h		

P: You need to Process this Site (F9) for this variable to be computed.

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M04 AM Existing Bridge St- Awaba St

M04 Bridge St-Awaba St Existing layout
AM peak existing 2009 volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Bridge St South											
1	L	1	0.0	0.028	8.3	LOS A	0.1	0.9	0.10	0.70	48.7
2	T	19	0.0	0.028	0.1	LOS A	0.1	0.9	0.10	0.00	57.7
3	R	25	0.0	0.028	8.5	LOS A	0.1	0.9	0.10	0.77	48.5
Approach		45	0.0	0.028	4.9	NA	0.1	0.9	0.10	0.44	52.0
North East: Awaba St East											
4	L	22	0.0	0.043	8.5	LOS A	0.2	1.1	0.12	0.61	48.4
5	T	1	0.0	0.043	7.3	LOS A	0.2	1.1	0.12	0.53	49.6
6	R	19	0.0	0.043	8.7	LOS A	0.2	1.1	0.12	0.67	48.3
Approach		42	0.0	0.043	8.6	LOS A	0.2	1.1	0.12	0.64	48.4
North West: Bridge St north											
7	L	3	0.0	0.015	8.2	LOS A	0.1	0.6	0.09	0.90	48.9
8	T	25	0.0	0.015	0.1	LOS A	0.1	0.6	0.09	0.00	58.2
9	R	1	0.0	0.015	8.5	LOS A	0.1	0.6	0.09	1.02	48.7
Approach		29	0.0	0.015	1.2	NA	0.1	0.6	0.09	0.13	56.7
South West: Awaba St west											
10	L	1	0.0	0.003	8.6	LOS A	0.0	0.1	0.11	0.62	48.5
11	T	1	0.0	0.003	7.4	LOS A	0.0	0.1	0.11	0.53	49.6
12	R	1	0.0	0.003	8.9	LOS A	0.0	0.1	0.11	0.69	48.2
Approach		3	0.0	0.003	8.3	LOS A	0.0	0.1	0.11	0.61	48.8
All Vehicles		120	0.0	0.043	5.4	NA	0.2	1.1	0.10	0.44	51.6

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.

INTERSECTION SUMMARY

Site: M04 PM Existing Bridge St- Awaba St

Bridge St-Awaba St Existing layout
PM peak existing 2009 volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	75	veh/h	90	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.020			
Practical Spare Capacity	3970.0	%		
Effective Intersection Capacity	3802	veh/h		
Control Delay (Total)	0.08	veh-h/h	0.10	pers-h/h
Control Delay (Average)	4.0	sec	4.0	sec
Control Delay (Worst Lane)	8.2	sec		
Control Delay (Worst Movement)	8.8	sec	8.8	sec
Geometric Delay (Average)	P	sec		
Stop-Line Delay (Average)	P	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	0.1	veh		
95% Back of Queue - Distance (Worst Lane)	0.6	m		
Total Effective Stops	26	veh/h	31	pers/h
Effective Stop Rate	0.35	per veh	0.35	per pers
Proportion Queued	0.09		0.09	
Performance Index	1.1		1.1	
Travel Distance (Total)	45.2	veh-km/h	54.2	pers-km/h
Travel Distance (Average)	605	m	605	m
Travel Time (Total)	0.8	veh-h/h	1.0	pers-h/h
Travel Time (Average)	40.9	sec	40.9	sec
Travel Speed	53.2	km/h	53.2	km/h
Cost (Total)	27.00	$/h	27.00	$/h
Fuel Consumption (Total)	4.2	L/h		
Carbon Dioxide (Total)	10.4	kg/h		
Hydrocarbons (Total)	0.017	kg/h		
Carbon Monoxide (Total)	0.65	kg/h		
NOx (Total)	0.023	kg/h		

P: You need to Process this Site (F9) for this variable to be computed.

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M04 PM Existing Bridge St- Awaba St

Bridge St-Awaba St Existing layout
PM peak existing 2009 volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Bridge St South											
1	L	1	0.0	0.020	8.3	LOS A	0.1	0.6	0.09	0.74	48.8
2	T	17	0.0	0.020	0.1	LOS A	0.1	0.6	0.09	0.00	58.0
3	R	15	0.0	0.020	8.4	LOS A	0.1	0.6	0.09	0.81	48.6
Approach		33	0.0	0.020	4.1	NA	0.1	0.6	0.09	0.39	53.1
North East: Awaba St East											
4	L	12	0.0	0.012	8.3	LOS A	0.0	0.3	0.09	0.63	48.6
5	T	1	0.0	0.012	7.1	LOS A	0.0	0.3	0.09	0.54	49.8
6	R	1	0.0	0.012	8.5	LOS A	0.0	0.3	0.09	0.68	48.4
Approach		14	0.0	0.012	8.2	LOS A	0.0	0.3	0.09	0.63	48.7
North West: Bridge St north											
7	L	1	0.0	0.013	8.2	LOS A	0.1	0.5	0.08	0.94	49.0
8	T	22	0.0	0.013	0.1	LOS A	0.1	0.5	0.08	0.00	58.4
9	R	1	0.0	0.013	8.5	LOS A	0.1	0.5	0.08	1.06	48.7
Approach		24	0.0	0.013	0.8	NA	0.1	0.5	0.08	0.09	57.4
South West: Awaba St west											
10	L	1	0.0	0.004	8.5	LOS A	0.0	0.1	0.12	0.63	48.5
11	T	2	0.0	0.004	7.3	LOS A	0.0	0.1	0.12	0.53	49.6
12	R	1	0.0	0.004	8.8	LOS A	0.0	0.1	0.12	0.70	48.3
Approach		4	0.0	0.004	8.0	LOS A	0.0	0.1	0.12	0.60	49.0
All Vehicles		75	0.0	0.020	4.0	NA	0.1	0.6	0.09	0.35	53.2

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.

INTERSECTION SUMMARY

Site: M04 AM 2015 No Ext
Bridge St- Awaba St

Bridge St-Awaba St
2015 AM peak no Awaba Street extension
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	307	veh/h	369	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.219			
Practical Spare Capacity	265.2	%		
Effective Intersection Capacity	1403	veh/h		
Control Delay (Total)	0.67	veh-h/h	0.81	pers-h/h
Control Delay (Average)	7.9	sec	7.9	sec
Control Delay (Worst Lane)	9.6	sec		
Control Delay (Worst Movement)	9.6	sec	9.6	sec
Geometric Delay (Average)	7.2	sec		
Stop-Line Delay (Average)	0.7	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	1.0	veh		
95% Back of Queue - Distance (Worst Lane)	6.9	m		
Total Effective Stops	176	veh/h	211	pers/h
Effective Stop Rate	0.57	per veh	0.57	per pers
Proportion Queued	0.22		0.22	
Performance Index	5.3		5.3	
Travel Distance (Total)	185.1	veh-km/h	222.1	pers-km/h
Travel Distance (Average)	602	m	602	m
Travel Time (Total)	3.8	veh-h/h	4.5	pers-h/h
Travel Time (Average)	44.3	sec	44.3	sec
Travel Speed	49.0	km/h	49.0	km/h
Cost (Total)	122.93	$/h	122.93	$/h
Fuel Consumption (Total)	19.9	L/h		
Carbon Dioxide (Total)	49.8	kg/h		
Hydrocarbons (Total)	0.085	kg/h		
Carbon Monoxide (Total)	3.95	kg/h		
NOx (Total)	0.119	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M04 AM 2015 No Ext
Bridge St- Awaba St

Bridge St-Awaba St
2015 AM peak no Awaba Street extension
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Bridge St South											
1	L	21	0.0	0.039	8.3	LOS A	0.2	1.3	0.11	0.66	48.6
2	T	19	0.0	0.039	0.1	LOS A	0.2	1.3	0.11	0.00	57.2
3	R	25	0.0	0.039	8.5	LOS A	0.2	1.3	0.11	0.72	48.4
Approach		65	0.0	0.039	6.0	NA	0.2	1.3	0.11	0.49	50.8
North East: Awaba St East											
4	L	22	0.0	0.043	8.6	LOS A	0.2	1.1	0.12	0.61	48.4
5	T	1	0.0	0.043	7.3	LOS A	0.2	1.1	0.12	0.54	49.6
6	R	19	0.0	0.043	8.7	LOS A	0.2	1.1	0.12	0.67	48.3
Approach		42	0.0	0.043	8.6	LOS A	0.2	1.1	0.12	0.64	48.4
North West: Bridge St north											
7	L	3	0.0	0.015	8.3	LOS A	0.1	0.6	0.13	0.86	48.9
8	T	25	0.0	0.015	0.1	LOS A	0.1	0.6	0.13	0.00	57.3
9	R	1	0.0	0.015	8.6	LOS A	0.1	0.6	0.13	0.99	48.7
Approach		29	0.0	0.015	1.3	NA	0.1	0.6	0.13	0.13	55.9
South West: Awaba St west											
10	L	1	0.0	0.219	9.3	LOS A	1.0	6.9	0.30	0.55	47.5
11	T	1	0.0	0.219	8.1	LOS A	1.0	6.9	0.30	0.53	48.4
12	R	168	0.0	0.219	9.6	LOS A	1.0	6.9	0.30	0.67	47.4
Approach		171	0.0	0.219	9.6	LOS A	1.0	6.9	0.30	0.67	47.4
All Vehicles		307	0.0	0.219	7.9	NA	1.0	6.9	0.22	0.57	49.0

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

INTERSECTION SUMMARY

Site: M04 AM 2015 Bridge St-Awaba St +Extension

Bridge St-Awaba St with Awaba Street extension
2015 AM peak
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	726	veh/h	872	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.585			
Practical Spare Capacity	36.8	%		
Effective Intersection Capacity	1242	veh/h		
Control Delay (Total)	2.24	veh-h/h	2.69	pers-h/h
Control Delay (Average)	11.1	sec	11.1	sec
Control Delay (Worst Lane)	14.5	sec		
Control Delay (Worst Movement)	14.9	sec	14.9	sec
Geometric Delay (Average)	7.4	sec		
Stop-Line Delay (Average)	3.7	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	5.6	veh		
95% Back of Queue - Distance (Worst Lane)	39.1	m		
Total Effective Stops	523	veh/h	628	pers/h
Effective Stop Rate	0.72	per veh	0.72	per pers
Proportion Queued	0.37		0.37	
Performance Index	15.3		15.3	
Travel Distance (Total)	437.7	veh-km/h	525.2	pers-km/h
Travel Distance (Average)	603	m	603	m
Travel Time (Total)	9.6	veh-h/h	11.5	pers-h/h
Travel Time (Average)	47.5	sec	47.5	sec
Travel Speed	45.7	km/h	45.7	km/h
Cost (Total)	311.05	$/h	311.05	$/h
Fuel Consumption (Total)	49.2	L/h		
Carbon Dioxide (Total)	123.0	kg/h		
Hydrocarbons (Total)	0.214	kg/h		
Carbon Monoxide (Total)	9.93	kg/h		
NOx (Total)	0.293	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M04 AM 2015 Bridge St-Awaba St +Extension

Bridge St-Awaba St with Awaba Street extension
2015 AM peak
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Bridge St South											
1	L	74	0.0	0.067	8.3	LOS A	0.3	2.4	0.15	0.60	48.4
2	T	19	0.0	0.067	0.1	LOS A	0.3	2.4	0.15	0.00	56.3
3	R	25	0.0	0.067	8.5	LOS A	0.3	2.4	0.15	0.68	48.3
Approach		118	0.0	0.067	7.0	NA	0.3	2.4	0.15	0.52	49.5
North East: Awaba St East											
4	L	75	0.0	0.216	9.2	LOS A	1.0	6.9	0.16	0.63	47.9
5	T	105	0.0	0.216	7.9	LOS A	1.0	6.9	0.16	0.58	49.1
6	R	19	0.0	0.216	9.4	LOS A	1.0	6.9	0.16	0.74	47.7
Approach		199	0.0	0.216	8.6	LOS A	1.0	6.9	0.16	0.61	48.5
North West: Bridge St north											
7	L	3	0.0	0.015	8.5	LOS A	0.1	0.6	0.22	0.77	48.9
8	T	25	0.0	0.015	0.3	LOS A	0.1	0.6	0.22	0.00	55.7
9	R	1	0.0	0.015	8.8	LOS A	0.1	0.6	0.22	0.94	48.8
Approach		29	0.0	0.015	1.5	NA	0.1	0.6	0.22	0.12	54.6
South West: Awaba St west											
10	L	1	0.0	0.585	14.7	LOS B	5.6	39.1	0.56	0.66	42.7
11	T	105	0.0	0.585	13.4	LOS A	5.6	39.1	0.56	0.71	43.3
12	R	274	0.0	0.585	14.9	LOS B	5.6	39.1	0.56	0.95	42.6
Approach		380	0.0	0.585	14.5	LOS B	5.6	39.1	0.56	0.88	42.8
All Vehicles		726	0.0	0.585	11.1	NA	5.6	39.1	0.37	0.72	45.7

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

INTERSECTION SUMMARY

Site: M04 PM 2015 Bridge St-Awaba St No Ext of Awaba

Bridge St-Awaba St no extension for Awaba
2015 PM peak volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	262	veh/h	315	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.110			
Practical Spare Capacity	628.7	%		
Effective Intersection Capacity	2388	veh/h		
Control Delay (Total)	0.53	veh-h/h	0.63	pers-h/h
Control Delay (Average)	7.2	sec	7.2	sec
Control Delay (Worst Lane)	9.6	sec		
Control Delay (Worst Movement)	9.7	sec	9.7	sec
Geometric Delay (Average)	7.0	sec		
Stop-Line Delay (Average)	0.3	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	0.6	veh		
95% Back of Queue - Distance (Worst Lane)	4.2	m		
Total Effective Stops	128	veh/h	154	pers/h
Effective Stop Rate	0.49	per veh	0.49	per pers
Proportion Queued	0.21		0.21	
Performance Index	4.2		4.2	
Travel Distance (Total)	158.4	veh-km/h	190.0	pers-km/h
Travel Distance (Average)	604	m	604	m
Travel Time (Total)	3.2	veh-h/h	3.9	pers-h/h
Travel Time (Average)	44.4	sec	44.4	sec
Travel Speed	49.0	km/h	49.0	km/h
Cost (Total)	104.92	$/h	104.92	$/h
Fuel Consumption (Total)	17.0	L/h		
Carbon Dioxide (Total)	42.4	kg/h		
Hydrocarbons (Total)	0.072	kg/h		
Carbon Monoxide (Total)	3.34	kg/h		
NOx (Total)	0.101	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M04 PM 2015 Bridge St-Awaba St No Ext of Awaba

Bridge St-Awaba St no extension for Awaba
2015 PM peak volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Bridge St South											
1	L	168	0.0	0.110	8.3	LOS A	0.6	4.2	0.20	0.55	48.2
2	T	17	0.0	0.110	0.1	LOS A	0.6	4.2	0.20	0.00	55.2
3	R	15	0.0	0.110	8.4	LOS A	0.6	4.2	0.20	0.64	48.1
Approach		200	0.0	0.110	7.6	NA	0.6	4.2	0.20	0.51	48.7
North East: Awaba St East											
4	L	12	0.0	0.013	8.4	LOS A	0.0	0.3	0.08	0.63	48.6
5	T	1	0.0	0.013	7.2	LOS A	0.0	0.3	0.08	0.56	49.9
6	R	1	0.0	0.013	8.6	LOS A	0.0	0.3	0.08	0.69	48.4
Approach		14	0.0	0.013	8.4	LOS A	0.0	0.3	0.08	0.63	48.7
North West: Bridge St north											
7	L	1	0.0	0.013	8.9	LOS A	0.1	0.5	0.32	0.70	49.0
8	T	22	0.0	0.013	0.7	LOS A	0.1	0.5	0.32	0.00	54.0
9	R	1	0.0	0.013	9.1	LOS A	0.1	0.5	0.32	0.92	49.0
Approach		24	0.0	0.013	1.4	NA	0.1	0.5	0.32	0.07	53.6
South West: Awaba St west											
10	L	1	0.0	0.033	9.5	LOS A	0.1	0.9	0.31	0.58	47.5
11	T	2	0.0	0.033	8.2	LOS A	0.1	0.9	0.31	0.53	48.3
12	R	21	0.0	0.033	9.7	LOS A	0.1	0.9	0.31	0.66	47.3
Approach		24	0.0	0.033	9.6	LOS A	0.1	0.9	0.31	0.65	47.4
All Vehicles		262	0.0	0.110	7.2	NA	0.6	4.2	0.21	0.49	49.0

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

INTERSECTION SUMMARY

Site: M04 PM 2015 Bridge St-Awaba St + Ext of Awaba

Bridge St-Awaba St with extension to Awaba Street
2015 PM volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	680	veh/h	816	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.276			
Practical Spare Capacity	190.3	%		
Effective Intersection Capacity	2467	veh/h		
Control Delay (Total)	1.68	veh-h/h	2.01	pers-h/h
Control Delay (Average)	8.9	sec	8.9	sec
Control Delay (Worst Lane)	10.7	sec		
Control Delay (Worst Movement)	11.6	sec	11.6	sec
Geometric Delay (Average)	7.4	sec		
Stop-Line Delay (Average)	1.5	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	1.3	veh		
95% Back of Queue - Distance (Worst Lane)	8.8	m		
Total Effective Stops	388	veh/h	466	pers/h
Effective Stop Rate	0.57	per veh	0.57	per pers
Proportion Queued	0.28		0.28	
Performance Index	12.0		12.0	
Travel Distance (Total)	410.5	veh-km/h	492.6	pers-km/h
Travel Distance (Average)	604	m	604	m
Travel Time (Total)	8.6	veh-h/h	10.4	pers-h/h
Travel Time (Average)	45.7	sec	45.7	sec
Travel Speed	47.6	km/h	47.6	km/h
Cost (Total)	279.80	$/h	279.80	$/h
Fuel Consumption (Total)	45.1	L/h		
Carbon Dioxide (Total)	112.8	kg/h		
Hydrocarbons (Total)	0.194	kg/h		
Carbon Monoxide (Total)	9.08	kg/h		
NOx (Total)	0.271	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M04 PM 2015 Bridge St-Awaba St + Ext of Awaba

Bridge St-Awaba St with extension to Awaba Street
2015 PM volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Bridge St South											
1	L	274	0.0	0.166	8.3	LOS A	1.0	6.9	0.25	0.51	47.9
2	T	17	0.0	0.166	0.1	LOS A	1.0	6.9	0.25	0.00	54.0
3	R	15	0.0	0.166	8.5	LOS A	1.0	6.9	0.25	0.61	47.9
Approach		305	0.0	0.166	7.8	NA	1.0	6.9	0.25	0.49	48.2
North East: Awaba St East											
4	L	64	0.0	0.221	10.5	LOS A	1.0	6.8	0.14	0.64	46.6
5	T	105	0.0	0.221	9.3	LOS A	1.0	6.8	0.14	0.62	47.7
6	R	1	0.0	0.221	10.7	LOS A	1.0	6.8	0.14	0.74	46.4
Approach		171	0.0	0.221	9.7	LOS A	1.0	6.8	0.14	0.63	47.3
North West: Bridge St north											
7	L	1	0.0	0.013	9.4	LOS A	0.1	0.6	0.41	0.60	49.0
8	T	22	0.0	0.013	1.2	LOS A	0.1	0.6	0.41	0.00	52.5
9	R	1	0.0	0.013	9.6	LOS A	0.1	0.6	0.41	0.90	49.1
Approach		24	0.0	0.013	1.9	NA	0.1	0.6	0.41	0.07	52.2
South West: Awaba St west											
10	L	1	0.0	0.276	11.4	LOS A	1.3	8.8	0.47	0.66	45.8
11	T	105	0.0	0.276	10.1	LOS A	1.3	8.8	0.47	0.64	46.7
12	R	74	0.0	0.276	11.6	LOS A	1.3	8.8	0.47	0.84	45.7
Approach		180	0.0	0.276	10.7	LOS A	1.3	8.8	0.47	0.72	46.2
All Vehicles		680	0.0	0.276	8.9	NA	1.3	8.8	0.28	0.57	47.6

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.

INTERSECTION SUMMARY

Site: M04 AM 2025 No Ext
Bridge St- Awaba St

Bridge St-Awaba St Existing layout no extension to Awaba
AM 2025 volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	349	veh/h	419	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.273			
Practical Spare Capacity	192.7	%		
Effective Intersection Capacity	1279	veh/h		
Control Delay (Total)	0.79	veh-h/h	0.95	pers-h/h
Control Delay (Average)	8.1	sec	8.1	sec
Control Delay (Worst Lane)	9.7	sec		
Control Delay (Worst Movement)	9.7	sec	9.7	sec
Geometric Delay (Average)	7.3	sec		
Stop-Line Delay (Average)	0.8	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	1.3	veh		
95% Back of Queue - Distance (Worst Lane)	9.1	m		
Total Effective Stops	205	veh/h	245	pers/h
Effective Stop Rate	0.59	per veh	0.59	per pers
Proportion Queued	0.24		0.24	
Performance Index	6.1		6.1	
Travel Distance (Total)	210.4	veh-km/h	252.5	pers-km/h
Travel Distance (Average)	602	m	602	m
Travel Time (Total)	4.3	veh-h/h	5.2	pers-h/h
Travel Time (Average)	44.5	sec	44.5	sec
Travel Speed	48.7	km/h	48.7	km/h
Cost (Total)	140.54	$/h	140.54	$/h
Fuel Consumption (Total)	22.8	L/h		
Carbon Dioxide (Total)	57.1	kg/h		
Hydrocarbons (Total)	0.098	kg/h		
Carbon Monoxide (Total)	4.56	kg/h		
NOx (Total)	0.136	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M04 AM 2025 No Ext
Bridge St- Awaba St

Bridge St-Awaba St Existing layout no extension to Awaba
AM 2025 volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Bridge St South											
1	L	21	0.0	0.039	8.3	LOS A	0.2	1.3	0.11	0.66	48.6
2	T	19	0.0	0.039	0.1	LOS A	0.2	1.3	0.11	0.00	57.2
3	R	25	0.0	0.039	8.5	LOS A	0.2	1.3	0.11	0.72	48.4
Approach		65	0.0	0.039	6.0	NA	0.2	1.3	0.11	0.49	50.8
North East: Awaba St East											
4	L	22	0.0	0.043	8.6	LOS A	0.2	1.1	0.12	0.61	48.4
5	T	1	0.0	0.043	7.3	LOS A	0.2	1.1	0.12	0.54	49.6
6	R	19	0.0	0.043	8.7	LOS A	0.2	1.1	0.12	0.67	48.3
Approach		42	0.0	0.043	8.6	LOS A	0.2	1.1	0.12	0.64	48.4
North West: Bridge St north											
7	L	3	0.0	0.015	8.3	LOS A	0.1	0.6	0.13	0.86	48.9
8	T	25	0.0	0.015	0.1	LOS A	0.1	0.6	0.13	0.00	57.3
9	R	1	0.0	0.015	8.6	LOS A	0.1	0.6	0.13	0.99	48.7
Approach		29	0.0	0.015	1.3	NA	0.1	0.6	0.13	0.13	55.9
South West: Awaba St west											
10	L	1	0.0	0.273	9.4	LOS A	1.3	9.1	0.31	0.54	47.4
11	T	1	0.0	0.273	8.2	LOS A	1.3	9.1	0.31	0.53	48.2
12	R	211	0.0	0.273	9.7	LOS A	1.3	9.1	0.31	0.67	47.3
Approach		213	0.0	0.273	9.7	LOS A	1.3	9.1	0.31	0.67	47.3
All Vehicles		349	0.0	0.273	8.1	NA	1.3	9.1	0.24	0.59	48.7

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

INTERSECTION SUMMARY

Site: M04 AM 2025 Bridge St-Awaba St +Extension

Bridge St-Awaba St + extension to Awaba
AM 2025 volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	768	veh/h	922	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.656			
Practical Spare Capacity	21.9	%		
Effective Intersection Capacity	1171	veh/h		
Control Delay (Total)	2.60	veh-h/h	3.12	pers-h/h
Control Delay (Average)	12.2	sec	12.2	sec
Control Delay (Worst Lane)	16.1	sec		
Control Delay (Worst Movement)	16.5	sec	16.5	sec
Geometric Delay (Average)	7.5	sec		
Stop-Line Delay (Average)	4.7	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	7.5	veh		
95% Back of Queue - Distance (Worst Lane)	52.2	m		
Total Effective Stops	591	veh/h	709	pers/h
Effective Stop Rate	0.77	per veh	0.77	per pers
Proportion Queued	0.41		0.41	
Performance Index	17.2		17.2	
Travel Distance (Total)	463.0	veh-km/h	555.6	pers-km/h
Travel Distance (Average)	603	m	603	m
Travel Time (Total)	10.4	veh-h/h	12.4	pers-h/h
Travel Time (Average)	48.5	sec	48.5	sec
Travel Speed	44.7	km/h	44.7	km/h
Cost (Total)	336.16	$/h	336.16	$/h
Fuel Consumption (Total)	52.7	L/h		
Carbon Dioxide (Total)	131.7	kg/h		
Hydrocarbons (Total)	0.230	kg/h		
Carbon Monoxide (Total)	10.67	kg/h		
NOx (Total)	0.314	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M04 AM 2025 Bridge St-Awaba St +Extension

Bridge St-Awaba St + extension to Awaba
AM 2025 volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Bridge St South											
1	L	74	0.0	0.067	8.3	LOS A	0.3	2.4	0.15	0.60	48.4
2	T	19	0.0	0.067	0.1	LOS A	0.3	2.4	0.15	0.00	56.3
3	R	25	0.0	0.067	8.5	LOS A	0.3	2.4	0.15	0.68	48.3
Approach		118	0.0	0.067	7.0	NA	0.3	2.4	0.15	0.52	49.5
North East: Awaba St East											
4	L	75	0.0	0.216	9.2	LOS A	1.0	6.9	0.16	0.63	47.9
5	T	105	0.0	0.216	7.9	LOS A	1.0	6.9	0.16	0.58	49.1
6	R	19	0.0	0.216	9.4	LOS A	1.0	6.9	0.16	0.74	47.7
Approach		199	0.0	0.216	8.6	LOS A	1.0	6.9	0.16	0.61	48.5
North West: Bridge St north											
7	L	3	0.0	0.015	8.5	LOS A	0.1	0.6	0.22	0.77	48.9
8	T	25	0.0	0.015	0.3	LOS A	0.1	0.6	0.22	0.00	55.7
9	R	1	0.0	0.015	8.8	LOS A	0.1	0.6	0.22	0.94	48.8
Approach		29	0.0	0.015	1.5	NA	0.1	0.6	0.22	0.12	54.6
South West: Awaba St west											
10	L	1	0.0	0.656	16.2	LOS B	7.5	52.2	0.62	0.69	41.4
11	T	105	0.0	0.656	14.9	LOS B	7.5	52.2	0.62	0.76	42.0
12	R	316	0.0	0.656	16.5	LOS B	7.5	52.2	0.62	1.02	41.3
Approach		422	0.0	0.656	16.1	LOS B	7.5	52.2	0.62	0.96	41.5
All Vehicles		768	0.0	0.656	12.2	NA	7.5	52.2	0.41	0.77	44.7

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

INTERSECTION SUMMARY

Site: M04 PM 2025 Bridge St-Awaba St No Ext of Awaba

Bridge St-Awaba St no extension to Awaba
PM 2025 volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	304	veh/h	365	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.132			
Practical Spare Capacity	504.0	%		
Effective Intersection Capacity	2297	veh/h		
Control Delay (Total)	0.63	veh-h/h	0.75	pers-h/h
Control Delay (Average)	7.4	sec	7.4	sec
Control Delay (Worst Lane)	9.8	sec		
Control Delay (Worst Movement)	9.9	sec	9.9	sec
Geometric Delay (Average)	7.2	sec		
Stop-Line Delay (Average)	0.3	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	0.8	veh		
95% Back of Queue - Distance (Worst Lane)	5.3	m		
Total Effective Stops	148	veh/h	178	pers/h
Effective Stop Rate	0.49	per veh	0.49	per pers
Proportion Queued	0.23		0.23	
Performance Index	4.9		4.9	
Travel Distance (Total)	183.8	veh-km/h	220.6	pers-km/h
Travel Distance (Average)	604	m	604	m
Travel Time (Total)	3.8	veh-h/h	4.5	pers-h/h
Travel Time (Average)	44.7	sec	44.7	sec
Travel Speed	48.7	km/h	48.7	km/h
Cost (Total)	122.53	$/h	122.53	$/h
Fuel Consumption (Total)	19.9	L/h		
Carbon Dioxide (Total)	49.6	kg/h		
Hydrocarbons (Total)	0.085	kg/h		
Carbon Monoxide (Total)	3.94	kg/h		
NOx (Total)	0.119	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M04 PM 2025 Bridge St-Awaba St No Ext of Awaba

Bridge St-Awaba St no extension to Awaba
PM 2025 volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Bridge St South											
1	L	211	0.0	0.132	8.3	LOS A	0.8	5.3	0.22	0.54	48.1
2	T	17	0.0	0.132	0.1	LOS A	0.8	5.3	0.22	0.00	54.7
3	R	15	0.0	0.132	8.4	LOS A	0.8	5.3	0.22	0.62	48.0
Approach		242	0.0	0.132	7.7	NA	0.8	5.3	0.22	0.50	48.5
North East: Awaba St East											
4	L	12	0.0	0.013	8.5	LOS A	0.0	0.3	0.08	0.64	48.6
5	T	1	0.0	0.013	7.2	LOS A	0.0	0.3	0.08	0.56	49.9
6	R	1	0.0	0.013	8.7	LOS A	0.0	0.3	0.08	0.69	48.4
Approach		14	0.0	0.013	8.4	LOS A	0.0	0.3	0.08	0.63	48.7
North West: Bridge St north											
7	L	1	0.0	0.013	9.0	LOS A	0.1	0.6	0.36	0.66	49.0
8	T	22	0.0	0.013	0.9	LOS A	0.1	0.6	0.36	0.00	53.4
9	R	1	0.0	0.013	9.3	LOS A	0.1	0.6	0.36	0.91	49.0
Approach		24	0.0	0.013	1.6	NA	0.1	0.6	0.36	0.07	53.0
South West: Awaba St west											
10	L	1	0.0	0.034	9.7	LOS A	0.1	0.9	0.33	0.59	47.2
11	T	2	0.0	0.034	8.4	LOS A	0.1	0.9	0.33	0.54	48.2
12	R	21	0.0	0.034	9.9	LOS A	0.1	0.9	0.33	0.67	47.1
Approach		24	0.0	0.034	9.8	LOS A	0.1	0.9	0.33	0.65	47.2
All Vehicles		304	0.0	0.132	7.4	NA	0.8	5.3	0.23	0.49	48.7

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

INTERSECTION SUMMARY

Site: M04 PM 2025 Bridge St-Awaba St + Ext of Awaba

Bridge St-Awaba St with extension to Awaba
2025 PM volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	722	veh/h	867	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.285			
Practical Spare Capacity	181.0	%		
Effective Intersection Capacity	2536	veh/h		
Control Delay (Total)	1.81	veh-h/h	2.17	pers-h/h
Control Delay (Average)	9.0	sec	9.0	sec
Control Delay (Worst Lane)	11.0	sec		
Control Delay (Worst Movement)	11.9	sec	11.9	sec
Geometric Delay (Average)	7.4	sec		
Stop-Line Delay (Average)	1.6	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	1.3	veh		
95% Back of Queue - Distance (Worst Lane)	9.1	m		
Total Effective Stops	409	veh/h	491	pers/h
Effective Stop Rate	0.57	per veh	0.57	per pers
Proportion Queued	0.30		0.30	
Performance Index	12.8		12.8	
Travel Distance (Total)	435.9	veh-km/h	523.1	pers-km/h
Travel Distance (Average)	604	m	604	m
Travel Time (Total)	9.2	veh-h/h	11.0	pers-h/h
Travel Time (Average)	45.9	sec	45.9	sec
Travel Speed	47.4	km/h	47.4	km/h
Cost (Total)	298.38	$/h	298.38	$/h
Fuel Consumption (Total)	48.1	L/h		
Carbon Dioxide (Total)	120.2	kg/h		
Hydrocarbons (Total)	0.207	kg/h		
Carbon Monoxide (Total)	9.69	kg/h		
NOx (Total)	0.288	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M04 PM 2025 Bridge St-Awaba St + Ext of Awaba

Bridge St-Awaba St with extension to Awaba
2025 PM volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Bridge St South											
1	L	316	0.0	0.189	8.3	LOS A	1.1	8.0	0.27	0.50	47.8
2	T	17	0.0	0.189	0.1	LOS A	1.1	8.0	0.27	0.00	53.6
3	R	15	0.0	0.189	8.5	LOS A	1.1	8.0	0.27	0.60	47.8
Approach		347	0.0	0.189	7.9	NA	1.1	8.0	0.27	0.48	48.1
North East: Awaba St East											
4	L	64	0.0	0.232	10.9	LOS A	1.0	7.1	0.14	0.64	46.2
5	T	105	0.0	0.232	9.6	LOS A	1.0	7.1	0.14	0.62	47.3
6	R	1	0.0	0.232	11.1	LOS A	1.0	7.1	0.14	0.74	46.0
Approach		171	0.0	0.232	10.1	LOS A	1.0	7.1	0.14	0.63	46.9
North West: Bridge St north											
7	L	1	0.0	0.013	9.6	LOS A	0.1	0.6	0.44	0.57	49.1
8	T	22	0.0	0.013	1.4	LOS A	0.1	0.6	0.44	0.00	52.0
9	R	1	0.0	0.013	9.8	LOS A	0.1	0.6	0.44	0.90	49.1
Approach		24	0.0	0.013	2.1	NA	0.1	0.6	0.44	0.06	51.8
South West: Awaba St west											
10	L	1	0.0	0.285	11.7	LOS A	1.3	9.1	0.50	0.68	45.5
11	T	105	0.0	0.285	10.4	LOS A	1.3	9.1	0.50	0.66	46.3
12	R	74	0.0	0.285	11.9	LOS A	1.3	9.1	0.50	0.86	45.4
Approach		180	0.0	0.285	11.0	LOS A	1.3	9.1	0.50	0.74	45.9
All Vehicles		722	0.0	0.285	9.0	NA	1.3	9.1	0.30	0.57	47.4

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.

J.6 M05 Kahibah Street – Wyong Street- Doyalson Street

INTERSECTION SUMMARY

Site: M05 AM Existing
Kahibah - Wyong - Doyalson

M05 Kahibah -Wyong- Doyalson Existing layout
AM peak existing 2009 volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	320	veh/h	384	pers/h
Percent Heavy Vehicles	2.6	%		
Degree of Saturation	0.104			
Practical Spare Capacity	667.6	%		
Effective Intersection Capacity	3070	veh/h		
Control Delay (Total)	0.17	veh-h/h	0.20	pers-h/h
Control Delay (Average)	1.9	sec	1.9	sec
Control Delay (Worst Lane)	8.9	sec		
Control Delay (Worst Movement)	9.0	sec	9.0	sec
Geometric Delay (Average)	P	sec		
Stop-Line Delay (Average)	P	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	0.6	veh		
95% Back of Queue - Distance (Worst Lane)	4.2	m		
Total Effective Stops	48	veh/h	58	pers/h
Effective Stop Rate	0.15	per veh	0.15	per pers
Proportion Queued	0.16		0.16	
Performance Index	3.9		3.9	
Travel Distance (Total)	193.8	veh-km/h	232.6	pers-km/h
Travel Distance (Average)	606	m	606	m
Travel Time (Total)	3.5	veh-h/h	4.2	pers-h/h
Travel Time (Average)	39.4	sec	39.4	sec
Travel Speed	55.3	km/h	55.3	km/h
Cost (Total)	111.82	$/h	111.82	$/h
Fuel Consumption (Total)	17.3	L/h		
Carbon Dioxide (Total)	43.2	kg/h		
Hydrocarbons (Total)	0.062	kg/h		
Carbon Monoxide (Total)	2.09	kg/h		
NOx (Total)	0.086	kg/h		

P: You need to Process this Site (F9) for this variable to be computed.

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M05 AM Existing
Kahibah - Wyong - Doyalson

M05 Kahibah -Wyong- Doyalson Existing layout
AM peak existing 2009 volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Kahibah Rd South											
1	L	2	0.0	0.064	8.2	LOS A	0.0	0.0	0.00	1.08	49.0
2	T	121	2.6	0.064	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		123	2.6	0.064	0.1	NA	0.0	0.0	0.00	0.02	59.8
North West: Kahibah Rd north											
8	T	139	3.8	0.104	0.5	LOS A	0.6	4.2	0.26	0.00	54.9
9	R	40	0.0	0.104	8.8	LOS A	0.6	4.2	0.26	0.86	48.7
Approach		179	2.9	0.104	2.4	NA	0.6	4.2	0.26	0.19	53.4
South West: Wyong Rd west											
10	L	17	0.0	0.018	8.9	LOS A	0.1	0.4	0.23	0.61	47.9
12	R	1	0.0	0.018	9.0	LOS A	0.1	0.4	0.23	0.70	47.9
Approach		18	0.0	0.018	8.9	LOS A	0.1	0.4	0.23	0.62	47.9
All Vehicles		320	2.6	0.104	1.9	NA	0.6	4.2	0.16	0.15	55.3

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.

INTERSECTION SUMMARY

Site: M05 PM Existing
Kahibah - Wyong - Doyalson

Kahibah -Wyong- Doyalson Existing layout
PM peak existing 2009 volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	507	veh/h	609	pers/h
Percent Heavy Vehicles	1.7	%		
Degree of Saturation	0.144			
Practical Spare Capacity	456.4	%		
Effective Intersection Capacity	3529	veh/h		
Control Delay (Total)	0.28	veh-h/h	0.34	pers-h/h
Control Delay (Average)	2.0	sec	2.0	sec
Control Delay (Worst Lane)	9.8	sec		
Control Delay (Worst Movement)	10.0	sec	10.0	sec
Geometric Delay (Average)	P	sec		
Stop-Line Delay (Average)	P	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	0.9	veh		
95% Back of Queue - Distance (Worst Lane)	6.6	m		
Total Effective Stops	66	veh/h	79	pers/h
Effective Stop Rate	0.13	per veh	0.13	per pers
Proportion Queued	0.21		0.21	
Performance Index	6.2		6.2	
Travel Distance (Total)	307.4	veh-km/h	368.9	pers-km/h
Travel Distance (Average)	606	m	606	m
Travel Time (Total)	5.6	veh-h/h	6.7	pers-h/h
Travel Time (Average)	39.9	sec	39.9	sec
Travel Speed	54.7	km/h	54.7	km/h
Cost (Total)	177.69	$/h	177.69	$/h
Fuel Consumption (Total)	27.1	L/h		
Carbon Dioxide (Total)	67.9	kg/h		
Hydrocarbons (Total)	0.100	kg/h		
Carbon Monoxide (Total)	3.43	kg/h		
NOx (Total)	0.138	kg/h		

P: You need to Process this Site (F9) for this variable to be computed.

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M05 PM Existing
Kahibah - Wyong - Doyalson

Kahibah -Wyong- Doyalson Existing layout
PM peak existing 2009 volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Kahibah Rd South											
1	L	3	0.0	0.110	8.2	LOS A	0.0	0.0	0.00	1.08	49.0
2	T	209	1.5	0.110	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		213	1.5	0.110	0.1	NA	0.0	0.0	0.00	0.02	59.8
North West: Kahibah Rd north											
8	T	214	2.5	0.144	1.0	LOS A	0.9	6.6	0.37	0.00	53.1
9	R	38	0.0	0.144	9.3	LOS A	0.9	6.6	0.37	0.89	48.9
Approach		252	2.1	0.144	2.2	NA	0.9	6.6	0.37	0.13	52.4
South West: Wyong Rd west											
10	L	38	0.0	0.052	9.8	LOS A	0.2	1.3	0.34	0.65	47.2
12	R	5	0.0	0.052	10.0	LOS A	0.2	1.3	0.34	0.77	47.1
Approach		43	0.0	0.052	9.8	LOS A	0.2	1.3	0.34	0.66	47.2
All Vehicles		507	1.7	0.144	2.0	NA	0.9	6.6	0.21	0.13	54.7

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

INTERSECTION SUMMARY

Site: M05 AM 2015 Kahibah - Wyong - Doyalson No Ext

Kahibah -Wyong- Doyalson
2015 AM peak volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	604	veh/h	725	pers/h
Percent Heavy Vehicles	3.1	%		
Degree of Saturation	0.243			
Practical Spare Capacity	229.0	%		
Effective Intersection Capacity	2485	veh/h		
Control Delay (Total)	0.23	veh-h/h	0.28	pers-h/h
Control Delay (Average)	1.4	sec	1.4	sec
Control Delay (Worst Lane)	9.3	sec		
Control Delay (Worst Movement)	9.4	sec	9.4	sec
Geometric Delay (Average)	0.8	sec		
Stop-Line Delay (Average)	0.6	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	1.7	veh		
95% Back of Queue - Distance (Worst Lane)	12.3	m		
Total Effective Stops	50	veh/h	60	pers/h
Effective Stop Rate	0.08	per veh	0.08	per pers
Proportion Queued	0.25		0.25	
Performance Index	7.3		7.3	
Travel Distance (Total)	366.2	veh-km/h	439.4	pers-km/h
Travel Distance (Average)	606	m	606	m
Travel Time (Total)	6.7	veh-h/h	8.1	pers-h/h
Travel Time (Average)	40.0	sec	40.0	sec
Travel Speed	54.6	km/h	54.6	km/h
Cost (Total)	214.42	$/h	214.42	$/h
Fuel Consumption (Total)	33.6	L/h		
Carbon Dioxide (Total)	84.1	kg/h		
Hydrocarbons (Total)	0.120	kg/h		
Carbon Monoxide (Total)	4.20	kg/h		
NOx (Total)	0.169	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M05 AM 2015 Kahibah - Wyong - Doyalson No Ext

Kahibah -Wyong- Doyalson
2015 AM peak volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Kahibah Rd South											
1	L	2	0.0	0.075	8.2	LOS A	0.0	0.0	0.00	1.08	49.0
2	T	142	2.6	0.075	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		144	2.6	0.075	0.1	NA	0.0	0.0	0.00	0.02	59.8
North West: Kahibah Rd north											
8	T	402	3.8	0.243	0.7	LOS A	1.7	12.3	0.33	0.00	53.8
9	R	40	0.0	0.243	9.1	LOS A	1.7	12.3	0.33	0.91	49.0
Approach		442	3.4	0.243	1.5	NA	1.7	12.3	0.33	0.08	53.4
South West: Wyong Rd west											
10	L	17	0.0	0.019	9.3	LOS A	0.1	0.5	0.26	0.62	47.8
12	R	1	0.0	0.019	9.4	LOS A	0.1	0.5	0.26	0.75	47.6
Approach		18	0.0	0.019	9.3	LOS A	0.1	0.5	0.26	0.62	47.8
All Vehicles		604	3.1	0.243	1.4	NA	1.7	12.3	0.25	0.08	54.6

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.

INTERSECTION SUMMARY

Site: M05 AM 2015 Kahibah - Wyong - Doyalson +Ext Awaba

Kahibah -Wyong- Doyalson with extension to Awaba
2015 AM peak volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	699	veh/h	839	pers/h
Percent Heavy Vehicles	3.1	%		
Degree of Saturation	0.262			
Practical Spare Capacity	205.4	%		
Effective Intersection Capacity	2668	veh/h		
Control Delay (Total)	0.30	veh-h/h	0.36	pers-h/h
Control Delay (Average)	1.5	sec	1.5	sec
Control Delay (Worst Lane)	9.7	sec		
Control Delay (Worst Movement)	9.9	sec	9.9	sec
Geometric Delay (Average)	0.7	sec		
Stop-Line Delay (Average)	0.8	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	2.0	veh		
95% Back of Queue - Distance (Worst Lane)	14.3	m		
Total Effective Stops	50	veh/h	60	pers/h
Effective Stop Rate	0.07	per veh	0.07	per pers
Proportion Queued	0.29		0.29	
Performance Index	8.5		8.5	
Travel Distance (Total)	423.7	veh-km/h	508.4	pers-km/h
Travel Distance (Average)	606	m	606	m
Travel Time (Total)	7.8	veh-h/h	9.4	pers-h/h
Travel Time (Average)	40.4	sec	40.4	sec
Travel Speed	54.1	km/h	54.1	km/h
Cost (Total)	250.37	$/h	250.37	$/h
Fuel Consumption (Total)	39.4	L/h		
Carbon Dioxide (Total)	98.7	kg/h		
Hydrocarbons (Total)	0.142	kg/h		
Carbon Monoxide (Total)	5.08	kg/h		
NOx (Total)	0.201	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M05 AM 2015 Kahibah - Wyong - Doyalson +Ext Awaba

Kahibah -Wyong- Doyalson with extension to Awaba
2015 AM peak volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Kahibah Rd South											
1	L	2	0.0	0.108	8.2	LOS A	0.0	0.0	0.00	1.08	49.0
2	T	205	2.6	0.108	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		207	2.6	0.108	0.1	NA	0.0	0.0	0.00	0.01	59.9
North West: Kahibah Rd north											
8	T	434	3.8	0.262	1.1	LOS A	2.0	14.3	0.42	0.00	52.5
9	R	40	0.0	0.262	9.5	LOS A	2.0	14.3	0.42	0.91	49.1
Approach		474	3.5	0.262	1.8	NA	2.0	14.3	0.42	0.08	52.1
South West: Wyong Rd west											
10	L	17	0.0	0.021	9.7	LOS A	0.1	0.5	0.33	0.63	47.3
12	R	1	0.0	0.021	9.9	LOS A	0.1	0.5	0.33	0.78	47.2
Approach		18	0.0	0.021	9.7	LOS A	0.1	0.5	0.33	0.64	47.3
All Vehicles		699	3.1	0.262	1.5	NA	2.0	14.3	0.29	0.07	54.1

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.

INTERSECTION SUMMARY

Site: M05 PM 2015 Kahibah - Wyong - Doyalson No Ext Awaba

Kahibah -Wyong- Doyalson no extension to Awaba
PM 2025 volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	767	veh/h	921	pers/h
Percent Heavy Vehicles	1.7	%		
Degree of Saturation	0.219			
Practical Spare Capacity	265.0	%		
Effective Intersection Capacity	3501	veh/h		
Control Delay (Total)	0.45	veh-h/h	0.54	pers-h/h
Control Delay (Average)	2.1	sec	2.1	sec
Control Delay (Worst Lane)	12.0	sec		
Control Delay (Worst Movement)	12.1	sec	12.1	sec
Geometric Delay (Average)	0.9	sec		
Stop-Line Delay (Average)	1.2	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	1.4	veh		
95% Back of Queue - Distance (Worst Lane)	10.2	m		
Total Effective Stops	72	veh/h	87	pers/h
Effective Stop Rate	0.09	per veh	0.09	per pers
Proportion Queued	0.25		0.25	
Performance Index	9.3		9.3	
Travel Distance (Total)	465.1	veh-km/h	558.1	pers-km/h
Travel Distance (Average)	606	m	606	m
Travel Time (Total)	8.5	veh-h/h	10.2	pers-h/h
Travel Time (Average)	39.9	sec	39.9	sec
Travel Speed	54.6	km/h	54.6	km/h
Cost (Total)	268.33	$/h	268.33	$/h
Fuel Consumption (Total)	40.8	L/h		
Carbon Dioxide (Total)	102.1	kg/h		
Hydrocarbons (Total)	0.149	kg/h		
Carbon Monoxide (Total)	5.05	kg/h		
NOx (Total)	0.207	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M05 PM 2015 Kahibah - Wyong - Doyalson No Ext Awaba

Kahibah -Wyong- Doyalson no extension to Awaba
PM 2025 volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Kahibah Rd South											
1	L	3	0.0	0.219	8.2	LOS A	0.0	0.0	0.00	1.09	49.0
2	T	420	1.5	0.219	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		423	1.5	0.219	0.1	NA	0.0	0.0	0.00	0.01	59.9
North West: Kahibah Rd north											
8	T	263	2.5	0.179	2.5	LOS A	1.4	10.2	0.55	0.00	50.2
9	R	38	0.0	0.179	10.8	LOS A	1.4	10.2	0.55	0.95	48.5
Approach		301	2.2	0.179	3.5	NA	1.4	10.2	0.55	0.12	50.0
South West: Wyong Rd west											
10	L	38	0.0	0.072	12.0	LOS A	0.2	1.7	0.51	0.75	45.1
12	R	5	0.0	0.072	12.1	LOS A	0.2	1.7	0.51	0.86	45.0
Approach		43	0.0	0.072	12.0	LOS A	0.2	1.7	0.51	0.76	45.1
All Vehicles		767	1.7	0.219	2.1	NA	1.4	10.2	0.25	0.09	54.6

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.

INTERSECTION SUMMARY

Site: M05 PM 2015 Kahibah - Wyong - Doyalson + Ext Awaba

Kahibah -Wyong- Doyalson plus extension to Awaba
PM 2015 volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	873	veh/h	1047	pers/h
Percent Heavy Vehicles	1.7	%		
Degree of Saturation	0.246			
Practical Spare Capacity	224.6	%		
Effective Intersection Capacity	3541	veh/h		
Control Delay (Total)	0.55	veh-h/h	0.66	pers-h/h
Control Delay (Average)	2.3	sec	2.3	sec
Control Delay (Worst Lane)	12.9	sec		
Control Delay (Worst Movement)	13.1	sec	13.1	sec
Geometric Delay (Average)	0.8	sec		
Stop-Line Delay (Average)	1.5	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	1.8	veh		
95% Back of Queue - Distance (Worst Lane)	13.1	m		
Total Effective Stops	75	veh/h	90	pers/h
Effective Stop Rate	0.09	per veh	0.09	per pers
Proportion Queued	0.27		0.27	
Performance Index	10.6		10.6	
Travel Distance (Total)	528.9	veh-km/h	634.7	pers-km/h
Travel Distance (Average)	606	m	606	m
Travel Time (Total)	9.8	veh-h/h	11.7	pers-h/h
Travel Time (Average)	40.2	sec	40.2	sec
Travel Speed	54.2	km/h	54.2	km/h
Cost (Total)	307.40	$/h	307.40	$/h
Fuel Consumption (Total)	47.0	L/h		
Carbon Dioxide (Total)	117.5	kg/h		
Hydrocarbons (Total)	0.172	kg/h		
Carbon Monoxide (Total)	5.93	kg/h		
NOx (Total)	0.240	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M05 PM 2015 Kahibah - Wyong - Doyalson + Ext Awaba

Kahibah -Wyong- Doyalson plus extension to Awaba
PM 2015 volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Kahibah Rd South											
1	L	3	0.0	0.246	8.2	LOS A	0.0	0.0	0.00	1.09	49.0
2	T	473	1.5	0.246	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		476	1.5	0.246	0.1	NA	0.0	0.0	0.00	0.01	59.9
North West: Kahibah Rd north											
8	T	316	2.5	0.209	3.1	LOS A	1.8	13.1	0.61	0.00	49.5
9	R	38	0.0	0.209	11.4	LOS A	1.8	13.1	0.61	0.98	48.1
Approach		354	2.2	0.209	4.0	NA	1.8	13.1	0.61	0.10	49.3
South West: Wyong Rd west											
10	L	38	0.0	0.082	12.9	LOS A	0.3	1.9	0.55	0.78	44.2
12	R	5	0.0	0.082	13.1	LOS A	0.3	1.9	0.55	0.87	44.2
Approach		43	0.0	0.082	12.9	LOS A	0.3	1.9	0.55	0.79	44.2
All Vehicles		873	1.7	0.246	2.3	NA	1.8	13.1	0.27	0.09	54.2

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.

INTERSECTION SUMMARY

Site: M05 AM 2025 Kahibah - Wyong - Doyalson No Ext Awaba

Kahibah -Wyong- Doyalson Existing layout no extension to Awaba
AM 2025 volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	741	veh/h	889	pers/h
Percent Heavy Vehicles	3.1	%		
Degree of Saturation	0.274			
Practical Spare Capacity	192.2	%		
Effective Intersection Capacity	2707	veh/h		
Control Delay (Total)	0.33	veh-h/h	0.39	pers-h/h
Control Delay (Average)	1.6	sec	1.6	sec
Control Delay (Worst Lane)	9.9	sec		
Control Delay (Worst Movement)	10.1	sec	10.1	sec
Geometric Delay (Average)	0.7	sec		
Stop-Line Delay (Average)	0.9	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	2.1	veh		
95% Back of Queue - Distance (Worst Lane)	15.4	m		
Total Effective Stops	50	veh/h	60	pers/h
Effective Stop Rate	0.07	per veh	0.07	per pers
Proportion Queued	0.31		0.31	
Performance Index	9.0		9.0	
Travel Distance (Total)	449.2	veh-km/h	539.0	pers-km/h
Travel Distance (Average)	606	m	606	m
Travel Time (Total)	8.3	veh-h/h	10.0	pers-h/h
Travel Time (Average)	40.5	sec	40.5	sec
Travel Speed	53.9	km/h	53.9	km/h
Cost (Total)	266.48	$/h	266.48	$/h
Fuel Consumption (Total)	42.1	L/h		
Carbon Dioxide (Total)	105.3	kg/h		
Hydrocarbons (Total)	0.152	kg/h		
Carbon Monoxide (Total)	5.49	kg/h		
NOx (Total)	0.216	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M05 AM 2025 Kahibah - Wyong - Doyalson No Ext Awaba

Kahibah -Wyong- Doyalson Existing layout no extension to Awaba
AM 2025 volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Kahibah Rd South											
1	L	2	0.0	0.119	8.2	LOS A	0.0	0.0	0.00	1.09	49.0
2	T	226	2.6	0.119	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		228	2.6	0.119	0.1	NA	0.0	0.0	0.00	0.01	59.9
North West: Kahibah Rd north											
8	T	455	3.8	0.274	1.3	LOS A	2.1	15.4	0.45	0.00	52.0
9	R	40	0.0	0.274	9.6	LOS A	2.1	15.4	0.45	0.91	49.1
Approach		495	3.5	0.274	2.0	NA	2.1	15.4	0.45	0.07	51.8
South West: Wyong Rd west											
10	L	17	0.0	0.022	9.9	LOS A	0.1	0.5	0.35	0.64	47.1
12	R	1	0.0	0.022	10.1	LOS A	0.1	0.5	0.35	0.79	47.0
Approach		18	0.0	0.022	9.9	LOS A	0.1	0.5	0.35	0.64	47.1
All Vehicles		741	3.1	0.274	1.6	NA	2.1	15.4	0.31	0.07	53.9

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

INTERSECTION SUMMARY

Site: M05 AM 2025 Kahibah - Wyong - Doyalson + Awaba EXT

Kahibah -Wyong- Doyalson Existing layout plus extension to Awaba
AM 2025 volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	909	veh/h	1091	pers/h
Percent Heavy Vehicles	3.1	%		
Degree of Saturation	0.321			
Practical Spare Capacity	148.8	%		
Effective Intersection Capacity	2829	veh/h		
Control Delay (Total)	0.48	veh-h/h	0.58	pers-h/h
Control Delay (Average)	1.9	sec	1.9	sec
Control Delay (Worst Lane)	10.8	sec		
Control Delay (Worst Movement)	11.0	sec	11.0	sec
Geometric Delay (Average)	0.5	sec		
Stop-Line Delay (Average)	1.4	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	2.9	veh		
95% Back of Queue - Distance (Worst Lane)	20.7	m		
Total Effective Stops	52	veh/h	62	pers/h
Effective Stop Rate	0.06	per veh	0.06	per pers
Proportion Queued	0.37		0.37	
Performance Index	11.1		11.1	
Travel Distance (Total)	551.3	veh-km/h	661.6	pers-km/h
Travel Distance (Average)	606	m	606	m
Travel Time (Total)	10.4	veh-h/h	12.5	pers-h/h
Travel Time (Average)	41.1	sec	41.1	sec
Travel Speed	53.1	km/h	53.1	km/h
Cost (Total)	332.32	$/h	332.32	$/h
Fuel Consumption (Total)	53.0	L/h		
Carbon Dioxide (Total)	132.6	kg/h		
Hydrocarbons (Total)	0.193	kg/h		
Carbon Monoxide (Total)	7.26	kg/h		
NOx (Total)	0.277	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M05 AM 2025 Kahibah - Wyong - Doyalson + Awaba EXT

Kahibah -Wyong- Doyalson Existing layout plus extension to Awaba
AM 2025 volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Kahibah Rd South											
1	L	2	0.0	0.163	8.2	LOS A	0.0	0.0	0.00	1.09	49.0
2	T	311	2.6	0.163	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		313	2.6	0.163	0.1	NA	0.0	0.0	0.00	0.01	59.9
North West: Kahibah Rd north											
8	T	539	3.8	0.321	2.1	LOS A	2.9	20.7	0.56	0.00	50.3
9	R	40	0.0	0.321	10.4	LOS A	2.9	20.7	0.56	0.93	49.1
Approach		579	3.5	0.321	2.6	NA	2.9	20.7	0.56	0.06	50.2
South West: Wyong Rd west											
10	L	17	0.0	0.026	10.8	LOS A	0.1	0.6	0.43	0.67	46.2
12	R	1	0.0	0.026	11.0	LOS A	0.1	0.6	0.43	0.83	46.1
Approach		18	0.0	0.026	10.8	LOS A	0.1	0.6	0.43	0.68	46.2
All Vehicles		909	3.1	0.321	1.9	NA	2.9	20.7	0.37	0.06	53.1

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.

INTERSECTION SUMMARY

Site: M05 PM 2025 Kahibah - Wyong - Doyalson No Awaba Ext

Kahibah -Wyong- Doyalson no extension to Awaba
AM 2015 volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	925	veh/h	1110	pers/h
Percent Heavy Vehicles	1.7	%		
Degree of Saturation	0.274			
Practical Spare Capacity	192.3	%		
Effective Intersection Capacity	3381	veh/h		
Control Delay (Total)	0.62	veh-h/h	0.74	pers-h/h
Control Delay (Average)	2.4	sec	2.4	sec
Control Delay (Worst Lane)	13.7	sec		
Control Delay (Worst Movement)	13.9	sec	13.9	sec
Geometric Delay (Average)	0.8	sec		
Stop-Line Delay (Average)	1.7	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	2.0	veh		
95% Back of Queue - Distance (Worst Lane)	14.0	m		
Total Effective Stops	77	veh/h	92	pers/h
Effective Stop Rate	0.08	per veh	0.08	per pers
Proportion Queued	0.27		0.27	
Performance Index	11.3		11.3	
Travel Distance (Total)	560.8	veh-km/h	673.0	pers-km/h
Travel Distance (Average)	606	m	606	m
Travel Time (Total)	10.3	veh-h/h	12.4	pers-h/h
Travel Time (Average)	40.2	sec	40.2	sec
Travel Speed	54.3	km/h	54.3	km/h
Cost (Total)	325.54	$/h	325.54	$/h
Fuel Consumption (Total)	49.6	L/h		
Carbon Dioxide (Total)	124.2	kg/h		
Hydrocarbons (Total)	0.182	kg/h		
Carbon Monoxide (Total)	6.22	kg/h		
NOx (Total)	0.253	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M05 PM 2025 Kahibah - Wyong - Doyalson No Awaba Ext

Kahibah -Wyong- Doyalson no extension to Awaba
AM 2015 volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Kahibah Rd South											
1	L	3	0.0	0.274	8.2	LOS A	0.0	0.0	0.00	1.09	49.0
2	T	525	1.5	0.274	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		528	1.5	0.274	0.0	NA	0.0	0.0	0.00	0.01	59.9
North West: Kahibah Rd north											
8	T	316	2.5	0.212	3.6	LOS A	2.0	14.0	0.64	0.00	49.0
9	R	38	0.0	0.212	12.0	LOS A	2.0	14.0	0.64	1.00	47.7
Approach		354	2.2	0.212	4.5	NA	2.0	14.0	0.64	0.11	48.9
South West: Wyong Rd west											
10	L	38	0.0	0.090	13.7	LOS A	0.3	2.1	0.57	0.82	43.5
12	R	5	0.0	0.090	13.9	LOS A	0.3	2.1	0.57	0.87	43.5
Approach		43	0.0	0.090	13.7	LOS A	0.3	2.1	0.57	0.82	43.5
All Vehicles		925	1.7	0.274	2.4	NA	2.0	14.0	0.27	0.08	54.3

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.

INTERSECTION SUMMARY

Site: M05 PM 2025 Kahibah - Wyong - Doyalson + Awaba Ext

Kahibah -Wyong- Doyalson with Awaba extesnion
PM 2025 volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	1095	veh/h	1314	pers/h
Percent Heavy Vehicles	1.7	%		
Degree of Saturation	0.318			
Practical Spare Capacity	151.7	%		
Effective Intersection Capacity	3444	veh/h		
Control Delay (Total)	0.91	veh-h/h	1.09	pers-h/h
Control Delay (Average)	3.0	sec	3.0	sec
Control Delay (Worst Lane)	16.0	sec		
Control Delay (Worst Movement)	16.1	sec	16.1	sec
Geometric Delay (Average)	0.6	sec		
Stop-Line Delay (Average)	2.4	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	3.0	veh		
95% Back of Queue - Distance (Worst Lane)	21.6	m		
Total Effective Stops	81	veh/h	97	pers/h
Effective Stop Rate	0.07	per veh	0.07	per pers
Proportion Queued	0.32		0.32	
Performance Index	13.8		13.8	
Travel Distance (Total)	663.6	veh-km/h	796.3	pers-km/h
Travel Distance (Average)	606	m	606	m
Travel Time (Total)	12.4	veh-h/h	14.9	pers-h/h
Travel Time (Average)	40.8	sec	40.8	sec
Travel Speed	53.6	km/h	53.6	km/h
Cost (Total)	390.52	$/h	390.52	$/h
Fuel Consumption (Total)	60.0	L/h		
Carbon Dioxide (Total)	150.0	kg/h		
Hydrocarbons (Total)	0.221	kg/h		
Carbon Monoxide (Total)	7.82	kg/h		
NOx (Total)	0.310	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M05 PM 2025 Kahibah - Wyong - Doyalson + Awaba Ext

Kahibah -Wyong- Doyalson with Awaba extesnion
PM 2025 volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Kahibah Rd South											
1	L	3	0.0	0.318	8.2	LOS A	0.0	0.0	0.00	1.09	49.0
2	T	611	1.5	0.318	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		614	1.5	0.318	0.0	NA	0.0	0.0	0.00	0.01	59.9
North West: Kahibah Rd north											
8	T	400	2.5	0.263	5.1	LOS A	3.0	21.6	0.73	0.00	47.9
9	R	38	0.0	0.263	13.5	LOS A	3.0	21.6	0.73	1.04	46.6
Approach		438	2.2	0.263	5.9	NA	3.0	21.6	0.73	0.09	47.8
South West: Wyong Rd west											
10	L	38	0.0	0.113	16.0	LOS B	0.4	2.6	0.66	0.89	41.6
12	R	5	0.0	0.113	16.1	LOS B	0.4	2.6	0.66	0.90	41.6
Approach		43	0.0	0.113	16.0	LOS B	0.4	2.6	0.66	0.89	41.6
All Vehicles		1095	1.7	0.318	3.0	NA	3.0	21.6	0.32	0.07	53.6

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.

J.7 M06 Freemans Drive and Deaves Road

INTERSECTION SUMMARY

Site: M06 AM Freemans_Deaves_Existing

M06 Freemans Drive and Deaves Road Existing Layout
AM Peak existing 2009 flows
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	967	veh/h	1451	pers/h
Percent Heavy Vehicles	8.3	%		
Degree of Saturation	0.227			
Practical Spare Capacity	252.4	%		
Effective Intersection Capacity	4260	veh/h		
Control Delay (Total)	0.92	veh-h/h	1.38	pers-h/h
Control Delay (Average)	3.4	sec	3.4	sec
Control Delay (Worst Lane)	26.4	sec		
Control Delay (Worst Movement)	26.4	sec	26.4	sec
Geometric Delay (Average)	P	sec		
Stop-Line Delay (Average)	P	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	0.5	veh		
95% Back of Queue - Distance (Worst Lane)	3.4	m		
Total Effective Stops	220	veh/h	330	pers/h
Effective Stop Rate	0.23	per veh	0.23	per pers
Proportion Queued	0.09		0.09	
Performance Index	11.1		11.1	
Travel Distance (Total)	585.9	veh-km/h	878.8	pers-km/h
Travel Distance (Average)	606	m	606	m
Travel Time (Total)	9.6	veh-h/h	14.4	pers-h/h
Travel Time (Average)	35.7	sec	35.7	sec
Travel Speed	61.1	km/h	61.1	km/h
Cost (Total)	344.17	$/h	344.17	$/h
Fuel Consumption (Total)	55.1	L/h		
Carbon Dioxide (Total)	138.3	kg/h		
Hydrocarbons (Total)	0.180	kg/h		
Carbon Monoxide (Total)	5.53	kg/h		
NOx (Total)	0.264	kg/h		

P: You need to Process this Site (F9) for this variable to be computed.

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M06 AM
Freemans_Deaves_Existing

M06 Freemans Drive and Deaves Road Existing Layout
AM Peak existing 2009 flows
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Freemans Drive (SE)											
21	L	12	8.3	0.007	9.4	LOS A	0.0	0.0	0.00	0.69	53.3
22	T	420	8.3	0.227	1.2	LOS A	0.0	0.0	0.00	0.09	66.1
Approach		432	8.3	0.227	1.4	NA	0.0	0.0	0.00	0.11	65.7
North West: Freemans Drive (NW)											
28	T	355	8.3	0.192	1.2	LOS A	0.0	0.0	0.00	0.09	66.1
29	R	77	8.3	0.088	11.7	LOS A	0.3	2.6	0.48	0.75	50.4
Approach		432	8.3	0.192	3.0	NA	0.3	2.6	0.08	0.21	62.6
South West: Deaves Road											
30	L	88	8.3	0.125	11.4	LOS A	0.5	3.4	0.48	0.77	46.0
32	R	15	8.3	0.080	26.4	LOS B	0.3	2.0	0.80	0.93	34.9
Approach		103	8.3	0.125	13.6	LOS A	0.5	3.4	0.53	0.79	43.9
All Vehicles		967	8.3	0.227	3.4	NA	0.5	3.4	0.09	0.23	61.1

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.

INTERSECTION SUMMARY

Site: M06 PM Existing Freemans_Deaves

Freemans Drive and Deaves Road Existing layout
PM Peak Hour existing 2009 flows
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	1084	veh/h	1626	pers/h
Percent Heavy Vehicles	6.7	%		
Degree of Saturation	0.264			
Practical Spare Capacity	202.6	%		
Effective Intersection Capacity	4100	veh/h		
Control Delay (Total)	0.87	veh-h/h	1.31	pers-h/h
Control Delay (Average)	2.9	sec	2.9	sec
Control Delay (Worst Lane)	30.6	sec		
Control Delay (Worst Movement)	30.6	sec	30.6	sec
Geometric Delay (Average)	P	sec		
Stop-Line Delay (Average)	P	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	0.4	veh		
95% Back of Queue - Distance (Worst Lane)	3.0	m		
Total Effective Stops	215	veh/h	323	pers/h
Effective Stop Rate	0.20	per veh	0.20	per pers
Proportion Queued	0.07		0.07	
Performance Index	11.9		11.9	
Travel Distance (Total)	656.9	veh-km/h	985.4	pers-km/h
Travel Distance (Average)	606	m	606	m
Travel Time (Total)	10.6	veh-h/h	15.9	pers-h/h
Travel Time (Average)	35.1	sec	35.1	sec
Travel Speed	62.2	km/h	62.2	km/h
Cost (Total)	374.10	$/h	374.10	$/h
Fuel Consumption (Total)	58.2	L/h		
Carbon Dioxide (Total)	145.9	kg/h		
Hydrocarbons (Total)	0.191	kg/h		
Carbon Monoxide (Total)	5.37	kg/h		
NOx (Total)	0.276	kg/h		

P: You need to Process this Site (F9) for this variable to be computed.

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M06 PM Existing Freemans_Deaves

Freemans Drive and Deaves Road Existing layout
PM Peak Hour existing 2009 flows
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Freemans Drive (SE)											
21	L	15	6.7	0.009	9.3	LOS A	0.0	0.0	0.00	0.69	53.3
22	T	419	6.7	0.224	1.2	LOS A	0.0	0.0	0.00	0.09	66.1
Approach		434	6.7	0.224	1.4	NA	0.0	0.0	0.00	0.12	65.5
North West: Freemans Drive (NW)											
28	T	494	6.7	0.264	1.2	LOS A	0.0	0.0	0.00	0.09	66.1
29	R	64	6.7	0.071	11.5	LOS A	0.3	2.0	0.47	0.74	50.6
Approach		558	6.7	0.264	2.3	NA	0.3	2.0	0.05	0.17	63.9
South West: Deaves Road											
30	L	82	6.7	0.113	11.1	LOS A	0.4	3.0	0.47	0.76	46.1
32	R	10	6.7	0.065	30.6	LOS C	0.2	1.5	0.83	0.94	32.7
Approach		92	6.7	0.113	13.2	LOS A	0.4	3.0	0.51	0.78	44.2
All Vehicles		1084	6.7	0.264	2.9	NA	0.4	3.0	0.07	0.20	62.2

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.

INTERSECTION SUMMARY

Site: M06 AM 2025 Freemans_Deaves with signals

Freemans Drive and Deaves Road
AM 2025 volumes with signals
Signals - Fixed Time Cycle Time = 60 seconds (Practical Cycle Time)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	1692	veh/h	2538	pers/h
Percent Heavy Vehicles	8.3	%		
Degree of Saturation	0.738			
Practical Spare Capacity	22.0	%		
Effective Intersection Capacity	2294	veh/h		
Control Delay (Total)	6.01	veh-h/h	9.01	pers-h/h
Control Delay (Average)	12.8	sec	12.8	sec
Control Delay (Worst Lane)	39.1	sec		
Control Delay (Worst Movement)	39.1	sec	39.1	sec
Geometric Delay (Average)	2.0	sec		
Stop-Line Delay (Average)	10.7	sec		
Intersection Level of Service (LOS)	LOS A			
95% Back of Queue - Vehicles (Worst Lane)	17.1	veh		
95% Back of Queue - Distance (Worst Lane)	128.2	m		
Total Effective Stops	1151	veh/h	1727	pers/h
Effective Stop Rate	0.68	per veh	0.68	per pers
Proportion Queued	0.72		0.72	
Performance Index	48.2		48.2	
Travel Distance (Total)	1025.5	veh-km/h	1538.3	pers-km/h
Travel Distance (Average)	606	m	606	m
Travel Time (Total)	21.7	veh-h/h	32.5	pers-h/h
Travel Time (Average)	46.1	sec	46.1	sec
Travel Speed	47.4	km/h	47.4	km/h
Cost (Total)	786.14	$/h	786.14	$/h
Fuel Consumption (Total)	132.6	L/h		
Carbon Dioxide (Total)	332.6	kg/h		
Hydrocarbons (Total)	0.502	kg/h		
Carbon Monoxide (Total)	23.71	kg/h		
NOx (Total)	0.799	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
Intersection LOS value for Vehicles is based on average delay for all vehicle movements.

MOVEMENT SUMMARY

Site: M06 AM 2025 Freemans_Deaves with signals

Freemans Drive and Deaves Road
AM 2025 volumes with signals
Signals - Fixed Time Cycle Time = 60 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Freemans Drive (SE)											
21	L	12	8.3	0.021	17.5	LOS B	0.2	1.3	0.52	0.70	44.5
22	T	700	8.3	0.738	15.1	LOS B	17.1	128.2	0.85	0.80	44.9
Approach		712	8.3	0.738	15.2	LOS B	17.1	128.2	0.85	0.80	44.9
North West: Freemans Drive (NW)											
28	T	800	8.3	0.615	6.3	LOS A	12.4	92.7	0.57	0.56	55.6
29	R	77	8.3	0.428	39.1	LOS C	2.3	17.3	0.98	0.76	30.8
Approach		877	8.3	0.615	9.2	LOS A	12.4	92.7	0.60	0.58	52.0
South West: Deaves Road											
30	L	88	8.3	0.181	25.7	LOS B	2.0	14.7	0.78	0.76	35.3
32	R	15	8.3	0.105	36.7	LOS C	0.4	3.2	0.94	0.69	29.9
Approach		103	8.3	0.181	27.3	LOS B	2.0	14.7	0.80	0.75	34.4
All Vehicles		1692	8.3	0.738	12.8	LOS A	17.1	128.2	0.72	0.68	47.4

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

INTERSECTION SUMMARY

Site: M06 PM 2025 Freemans_Deaves with signals

Freemans Drive and Deaves Road
Existing layout PM Peak Hour 2022 without dev
Signals - Fixed Time Cycle Time = 70 seconds (Practical Cycle Time)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	1871	veh/h	2807	pers/h
Percent Heavy Vehicles	6.7	%		
Degree of Saturation	0.822			
Practical Spare Capacity	9.5	%		
Effective Intersection Capacity	2277	veh/h		
Control Delay (Total)	7.44	veh-h/h	11.16	pers-h/h
Control Delay (Average)	14.3	sec	14.3	sec
Control Delay (Worst Lane)	44.7	sec		
Control Delay (Worst Movement)	44.7	sec	44.7	sec
Geometric Delay (Average)	1.9	sec		
Stop-Line Delay (Average)	12.5	sec		
Intersection Level of Service (LOS)	LOS A			
95% Back of Queue - Vehicles (Worst Lane)	28.0	veh		
95% Back of Queue - Distance (Worst Lane)	207.2	m		
Total Effective Stops	1309	veh/h	1963	pers/h
Effective Stop Rate	0.70	per veh	0.70	per pers
Proportion Queued	0.71		0.71	
Performance Index	58.7		58.7	
Travel Distance (Total)	1134.2	veh-km/h	1701.2	pers-km/h
Travel Distance (Average)	606	m	606	m
Travel Time (Total)	24.7	veh-h/h	37.1	pers-h/h
Travel Time (Average)	47.6	sec	47.6	sec
Travel Speed	45.9	km/h	45.9	km/h
Cost (Total)	880.58	$/h	880.58	$/h
Fuel Consumption (Total)	142.5	L/h		
Carbon Dioxide (Total)	357.3	kg/h		
Hydrocarbons (Total)	0.552	kg/h		
Carbon Monoxide (Total)	25.28	kg/h		
NOx (Total)	0.853	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
Intersection LOS value for Vehicles is based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M06 PM 2025 Freemans_Deaves with signals

Freemans Drive and Deaves Road
Existing layout PM Peak Hour 2022 without dev
Signals - Fixed Time Cycle Time = 70 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Freemans Drive (SE)											
21	L	15	6.7	0.025	16.2	LOS B	0.2	1.6	0.45	0.70	45.6
22	T	900	6.7	0.822	18.2	LOS B	28.0	207.2	0.87	0.88	42.2
Approach		915	6.7	0.822	18.1	LOS B	28.0	207.2	0.87	0.87	42.2
North West: Freemans Drive (NW)											
28	T	800	6.7	0.573	5.5	LOS A	12.2	90.1	0.48	0.49	57.0
29	R	64	6.7	0.411	44.7	LOS D	2.2	16.6	0.99	0.75	28.5
Approach		864	6.7	0.573	8.4	LOS A	12.2	90.1	0.52	0.51	53.1
South West: Deaves Road											
30	L	82	6.7	0.195	30.9	LOS C	2.2	16.6	0.82	0.76	32.5
32	R	10	6.7	0.081	42.0	LOS C	0.3	2.5	0.94	0.67	27.8
Approach		92	6.7	0.195	32.1	LOS C	2.2	16.6	0.83	0.75	31.9
All Vehicles		1871	6.7	0.822	14.3	LOS A	28.0	207.2	0.71	0.70	45.9

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.

J.8 M07 Freemans Drive and Avondale Road

INTERSECTION SUMMARY

Site: M07 AM Existing
Avondale Rd- Freemans Dr

M07 Freemans Drive and Avondale Road existing layout
AM peak existing 2009 flows
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	802	veh/h	1203	pers/h
Percent Heavy Vehicles	8.0	%		
Degree of Saturation	0.190			
Practical Spare Capacity	321.7	%		
Effective Intersection Capacity	4228	veh/h		
Control Delay (Total)	1.60	veh-h/h	2.40	pers-h/h
Control Delay (Average)	7.2	sec	7.2	sec
Control Delay (Worst Lane)	12.8	sec		
Control Delay (Worst Movement)	12.8	sec	12.8	sec
Geometric Delay (Average)	P	sec		
Stop-Line Delay (Average)	P	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	0.8	veh		
95% Back of Queue - Distance (Worst Lane)	5.8	m		
Total Effective Stops	396	veh/h	593	pers/h
Effective Stop Rate	0.49	per veh	0.49	per pers
Proportion Queued	0.22		0.22	
Performance Index	12.9		12.9	
Travel Distance (Total)	484.6	veh-km/h	726.9	pers-km/h
Travel Distance (Average)	604	m	604	m
Travel Time (Total)	9.7	veh-h/h	14.5	pers-h/h
Travel Time (Average)	43.3	sec	43.3	sec
Travel Speed	50.2	km/h	50.2	km/h
Cost (Total)	353.57	$/h	353.57	$/h
Fuel Consumption (Total)	59.3	L/h		
Carbon Dioxide (Total)	148.6	kg/h		
Hydrocarbons (Total)	0.222	kg/h		
Carbon Monoxide (Total)	10.65	kg/h		
NOx (Total)	0.341	kg/h		

P: You need to Process this Site (F9) for this variable to be computed.

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M07 AM Existing
Avondale Rd- Freemans Dr

M07 Freemans Drive and Avondale Road existing layout
AM peak existing 2009 flows
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Freemans Drive South											
1	L	49	8.0	0.105	8.5	LOS A	0.0	0.0	0.00	0.94	49.0
2	T	143	8.0	0.105	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
3	R	143	8.0	0.105	8.9	LOS A	0.4	3.2	0.22	0.63	47.9
Approach		335	8.0	0.105	5.1	NA	0.4	3.2	0.09	0.40	52.6
East: Newport Road											
4	L	98	8.0	0.165	10.5	LOS A	0.7	5.0	0.27	0.64	46.9
5	T	34	8.0	0.165	9.3	LOS A	0.7	5.0	0.27	0.67	47.9
6	R	1	8.0	0.002	11.3	LOS A	0.0	0.0	0.50	0.64	45.7
Approach		133	8.0	0.165	10.2	LOS A	0.7	5.0	0.27	0.65	47.1
North: Freemans Drive North											
7	L	1	8.0	0.053	8.2	LOS A	0.0	0.0	0.00	1.08	49.0
8	T	98	8.0	0.053	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
9	R	49	8.0	0.037	9.2	LOS A	0.1	1.1	0.30	0.63	47.5
Approach		148	8.0	0.053	3.1	NA	0.1	1.1	0.10	0.21	55.1
West: Avondale Road											
10	L	48	8.0	0.190	12.3	LOS A	0.8	5.8	0.46	0.68	45.3
11	T	69	8.0	0.190	11.1	LOS A	0.8	5.8	0.46	0.76	46.1
12	R	69	8.0	0.118	12.8	LOS A	0.4	3.1	0.55	0.83	44.6
Approach		186	8.0	0.190	12.0	LOS A	0.8	5.8	0.49	0.76	45.3
All Vehicles		802	8.0	0.190	7.2	NA	0.8	5.8	0.22	0.49	50.2

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.

INTERSECTION SUMMARY

Site: M07 PM Existing
Avondale Rd- Freemans Dr

Freemans Drive and Avondale Road existing layout
PM peak existing 2009 flows
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	935	veh/h	1403	pers/h
Percent Heavy Vehicles	5.2	%		
Degree of Saturation	0.270			
Practical Spare Capacity	196.1	%		
Effective Intersection Capacity	3461	veh/h		
Control Delay (Total)	2.00	veh-h/h	3.00	pers-h/h
Control Delay (Average)	7.7	sec	7.7	sec
Control Delay (Worst Lane)	12.9	sec		
Control Delay (Worst Movement)	12.9	sec	12.9	sec
Geometric Delay (Average)	P	sec		
Stop-Line Delay (Average)	P	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	1.2	veh		
95% Back of Queue - Distance (Worst Lane)	8.6	m		
Total Effective Stops	498	veh/h	747	pers/h
Effective Stop Rate	0.53	per veh	0.53	per pers
Proportion Queued	0.26		0.26	
Performance Index	15.5		15.5	
Travel Distance (Total)	564.9	veh-km/h	847.4	pers-km/h
Travel Distance (Average)	604	m	604	m
Travel Time (Total)	11.4	veh-h/h	17.1	pers-h/h
Travel Time (Average)	43.9	sec	43.9	sec
Travel Speed	49.6	km/h	49.6	km/h
Cost (Total)	408.71	$/h	408.71	$/h
Fuel Consumption (Total)	65.9	L/h		
Carbon Dioxide (Total)	165.1	kg/h		
Hydrocarbons (Total)	0.257	kg/h		
Carbon Monoxide (Total)	12.09	kg/h		
NOx (Total)	0.383	kg/h		

P: You need to Process this Site (F9) for this variable to be computed.

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M07 PM Existing
Avondale Rd- Freemans Dr

Freemans Drive and Avondale Road existing layout
PM peak existing 2009 flows
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Freemans Drive South											
1	L	69	5.2	0.090	8.4	LOS A	0.0	0.0	0.00	0.86	49.0
2	T	98	5.2	0.090	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
3	R	98	5.2	0.070	8.9	LOS A	0.3	2.1	0.26	0.63	47.7
Approach		265	5.2	0.090	5.5	NA	0.3	2.1	0.09	0.46	52.0
East: Newport Road											
4	L	143	5.2	0.270	10.9	LOS A	1.2	8.6	0.37	0.66	46.5
5	T	69	5.2	0.270	9.6	LOS A	1.2	8.6	0.37	0.72	47.4
6	R	1	5.2	0.002	11.3	LOS A	0.0	0.0	0.49	0.64	45.7
Approach		213	5.2	0.270	10.5	LOS A	1.2	8.6	0.37	0.68	46.8
North: Freemans Drive North											
7	L	1	5.2	0.076	8.2	LOS A	0.0	0.0	0.00	1.09	49.0
8	T	143	5.2	0.076	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
9	R	48	5.2	0.035	9.0	LOS A	0.1	1.0	0.27	0.62	47.7
Approach		192	5.2	0.076	2.3	NA	0.1	1.0	0.07	0.16	56.3
West: Avondale Road											
10	L	69	5.2	0.243	11.6	LOS A	1.0	7.7	0.42	0.66	45.8
11	T	98	5.2	0.243	10.4	LOS A	1.0	7.7	0.42	0.73	46.7
12	R	98	5.2	0.166	12.9	LOS A	0.6	4.4	0.56	0.86	44.4
Approach		265	5.2	0.243	11.6	LOS A	1.0	7.7	0.47	0.76	45.6
All Vehicles		935	5.2	0.270	7.7	NA	1.2	8.6	0.26	0.53	49.6

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.

INTERSECTION SUMMARY

Site: M07 AM 2025 Freeman - Newport - Avondale with signals

Freemans Drive and Avondale Road
AM Peak 2022 WD, TS
Signals - Fixed Time Cycle Time = 70 seconds (Practical Cycle Time)

Intersection Performance - Hourly Values						
Performance Measure	Vehicles		Pedestrians		Persons	
Demand Flows (Total)	1713	veh/h	150	ped/h	2720	pers/h
Percent Heavy Vehicles	8.0	%				
Degree of Saturation	0.838		0.012			
Practical Spare Capacity	7.4	%				
Effective Intersection Capacity	2044	veh/h				
Control Delay (Total)	17.22	veh-h/h	0.53	ped-h/h	26.36	pers-h/h
Control Delay (Average)	36.2	sec	12.8	sec	34.9	sec
Control Delay (Worst Lane)	48.6	sec				
Control Delay (Worst Movement)	48.6	sec	15.1	sec	48.6	sec
Geometric Delay (Average)	P	sec				
Stop-Line Delay (Average)	P	sec				
Intersection Level of Service (LOS)	LOS C		LOS B			
95% Back of Queue - Vehicles (Worst Lane)	17.2	veh				
95% Back of Queue - Distance (Worst Lane)	128.6	m				
Total Effective Stops	1543	veh/h	90	ped/h	2404	pers/h
Effective Stop Rate	0.90	per veh	0.60	per ped	0.88	per pers
Proportion Queued	0.98		0.60		0.96	
Performance Index	80.3		2.0		82.3	
Travel Distance (Total)	1035.9	veh-km/h	4.6	ped-km/h	1558.4	pers-km/h
Travel Distance (Average)	605	m	31	m	573	m
Travel Time (Total)	35.1	veh-h/h	1.5	ped-h/h	54.1	pers-h/h
Travel Time (Average)	73.7	sec	36.3	sec	71.7	sec
Travel Speed	29.5	km/h	3.0	km/h	28.8	km/h
Cost (Total)	1192.28	$/h	25.40	$/h	1217.68	$/h
Fuel Consumption (Total)	166.5	L/h				
Carbon Dioxide (Total)	417.5	kg/h				
Hydrocarbons (Total)	0.686	kg/h				
Carbon Monoxide (Total)	32.45	kg/h				
NOx (Total)	0.975	kg/h				

P: You need to Process this Site (F9) for this variable to be computed.

Level of Service (LOS) Method: Delay (RTA NSW).
Intersection LOS value for Vehicles is based on average delay for all vehicle movements.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M07 AM 2025 Freeman - Newport - Avondale with signals

Freemans Drive and Avondale Road
AM Peak 2022 WD, TS
Signals - Fixed Time Cycle Time = 70 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Freemans Drive South											
1	L	90	8.0	0.809	38.9	LOS C	9.9	70.7	0.99	0.90	30.1
2	T	143	8.0	0.809	30.4	LOS C	9.9	70.7	0.99	0.89	30.3
3	R	176	8.0	0.631	36.3	LOS C	7.3	54.5	0.93	0.81	30.1
Approach		409	8.0	0.809	34.8	LOS C	9.9	70.7	0.96	0.86	30.2
East: Newport Road											
4	L	170	8.0	0.838	48.6	LOS D	8.4	62.7	1.00	0.99	25.7
5	T	69	8.0	0.520	33.5	LOS C	5.1	38.4	0.98	0.77	29.0
6	R	40	8.0	0.519	42.1	LOS C	5.1	38.4	0.98	0.78	28.8
Approach		279	8.0	0.838	44.0	LOS D	8.4	62.7	0.99	0.91	26.9
North: Freemans Drive North											
7	L	10	8.0	0.674	45.7	LOS D	5.4	40.4	1.00	0.84	28.0
8	T	98	8.0	0.676	37.3	LOS C	5.4	40.4	1.00	0.84	28.1
9	R	49	8.0	0.322	43.5	LOS D	2.5	18.9	0.98	0.74	27.3
Approach		157	8.0	0.676	39.8	LOS C	5.4	40.4	0.99	0.81	27.9
West: Avondale Road											
10	L	48	8.0	0.773	35.9	LOS C	16.1	120.5	0.97	0.95	31.9
11	T	384	8.0	0.774	27.5	LOS B	16.1	120.5	0.97	0.92	32.2
12	R	436	8.0	0.819	38.9	LOS C	17.2	128.6	0.99	0.95	29.0
Approach		868	8.0	0.819	33.7	LOS C	17.2	128.6	0.98	0.94	30.5
All Vehicles		1713	8.0	0.838	36.2	LOS C	17.2	128.6	0.98	0.90	29.5

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

INTERSECTION SUMMARY

Site: M07 PM 2025 Freeman - Newport - Avondale signals

Freemans Drive and Avondale Road
AM Peak 2022 WD, TS
Signals - Fixed Time Cycle Time = 90 seconds (Practical Cycle Time)

Intersection Performance - Hourly Values						
Performance Measure	**Vehicles**		**Pedestrians**		**Persons**	
Demand Flows (Total)	1605	veh/h	150	ped/h	2558	pers/h
Percent Heavy Vehicles	8.0	%				
Degree of Saturation	0.925		0.014			
Practical Spare Capacity	-2.7	%				
Effective Intersection Capacity	1736	veh/h				
Control Delay (Total)	19.93	veh-h/h	0.77	ped-h/h	30.67	pers-h/h
Control Delay (Average)	44.7	sec	18.6	sec	43.2	sec
Control Delay (Worst Lane)	56.5	sec				
Control Delay (Worst Movement)	61.2	sec	22.1	sec	61.2	sec
Geometric Delay (Average)	4.8	sec				
Stop-Line Delay (Average)	39.9	sec				
Intersection Level of Service (LOS)	LOS D		LOS B			
95% Back of Queue - Vehicles (Worst Lane)	26.2	veh				
95% Back of Queue - Distance (Worst Lane)	176.0	m				
Total Effective Stops	1544	veh/h	96	ped/h	2411	pers/h
Effective Stop Rate	0.96	per veh	0.64	per ped	0.94	per pers
Proportion Queued	0.95		0.64		0.94	
Performance Index	90.5		2.3		92.9	
Travel Distance (Total)	971.1	veh-km/h	4.9	ped-km/h	1461.6	pers-km/h
Travel Distance (Average)	605	m	33	m	571	m
Travel Time (Total)	36.7	veh-h/h	1.8	ped-h/h	56.9	pers-h/h
Travel Time (Average)	82.4	sec	43.6	sec	80.1	sec
Travel Speed	26.4	km/h	2.7	km/h	25.7	km/h
Cost (Total)	1229.54	$/h	30.49	$/h	1260.02	$/h
Fuel Consumption (Total)	163.0	L/h				
Carbon Dioxide (Total)	408.8	kg/h				
Hydrocarbons (Total)	0.682	kg/h				
Carbon Monoxide (Total)	31.32	kg/h				
NOx (Total)	0.937	kg/h				

Level of Service (LOS) Method: Delay (RTA NSW).
Intersection LOS value for Vehicles is based on average delay for all vehicle movements.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M07 PM 2025 Freeman - Newport - Avondale signals

Freemans Drive and Avondale Road
AM Peak 2022 WD, TS
Signals - Fixed Time Cycle Time = 90 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Freemans Drive South											
1	L	436	8.0	0.925	41.7	LOS C	26.2	176.0	0.99	1.00	28.3
2	T	98	8.0	0.925	33.2	LOS C	26.2	176.0	0.99	0.99	28.4
3	R	100	8.0	0.251	24.7	LOS B	2.2	16.8	0.54	0.74	35.8
Approach		634	8.0	0.925	37.7	LOS C	26.2	176.0	0.91	0.96	29.3
East: Newport Road											
4	L	166	8.0	0.616	40.9	LOS C	6.3	47.5	0.89	0.81	28.3
5	T	384	8.0	0.881	47.3	LOS D	19.7	147.2	1.00	1.08	25.0
6	R	1	8.0	0.881	55.6	LOS D	19.7	147.2	1.00	1.08	24.9
Approach		551	8.0	0.881	45.4	LOS D	19.7	147.2	0.97	1.00	25.9
North: Freemans Drive North											
7	L	1	8.0	0.865	61.2	LOS E	7.3	54.4	1.00	1.01	23.4
8	T	143	8.0	0.865	53.0	LOS D	7.3	54.4	1.00	1.01	23.5
9	R	48	8.0	0.304	52.3	LOS D	2.1	15.6	0.97	0.74	24.6
Approach		192	8.0	0.865	52.9	LOS D	7.3	54.4	0.99	0.94	23.7
West: Avondale Road											
10	L	69	8.0	0.852	60.7	LOS E	6.9	51.7	1.00	0.99	23.0
11	T	69	8.0	0.852	52.3	LOS D	6.9	51.7	1.00	0.99	23.1
12	R	90	8.0	0.570	54.0	LOS D	4.1	30.4	1.00	0.79	24.2
Approach		228	8.0	0.852	55.5	LOS D	6.9	51.7	1.00	0.91	23.5
All Vehicles		1605	8.0	0.925	44.7	LOS D	26.2	176.0	0.95	0.96	26.4

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

J.9 M08 Coorumbung Road and Newport Road

INTERSECTION SUMMARY

Site: M08 AM Existing
Coorumbung Rd - Newport

M08 Coorumbung and Newport Existing layout
AM peak 2009 existing volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	435	veh/h	522	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.124			
Practical Spare Capacity	543.5	%		
Effective Intersection Capacity	3497	veh/h		
Control Delay (Total)	0.12	veh-h/h	0.14	pers-h/h
Control Delay (Average)	1.0	sec	1.0	sec
Control Delay (Worst Lane)	12.7	sec		
Control Delay (Worst Movement)	12.7	sec	12.7	sec
Geometric Delay (Average)	0.4	sec		
Stop-Line Delay (Average)	0.6	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	0.6	veh		
95% Back of Queue - Distance (Worst Lane)	4.5	m		
Total Effective Stops	17	veh/h	20	pers/h
Effective Stop Rate	0.04	per veh	0.04	per pers
Proportion Queued	0.18		0.18	
Performance Index	5.5		5.5	
Travel Distance (Total)	249.9	veh-km/h	299.9	pers-km/h
Travel Distance (Average)	575	m	575	m
Travel Time (Total)	5.2	veh-h/h	6.3	pers-h/h
Travel Time (Average)	43.3	sec	43.3	sec
Travel Speed	47.8	km/h	47.8	km/h
Cost (Total)	155.12	$/h	155.12	$/h
Fuel Consumption (Total)	19.7	L/h		
Carbon Dioxide (Total)	49.3	kg/h		
Hydrocarbons (Total)	0.075	kg/h		
Carbon Monoxide (Total)	2.27	kg/h		
NOx (Total)	0.087	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M08 AM Existing
Coorumbung Rd - Newport

M08 Coorumbung and Newport Existing layout
AM peak 2009 existing volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Newport Rd South											
2	T	178	0.0	0.093	1.1	LOS A	0.6	4.5	0.40	0.00	45.3
3	R	2	0.0	0.093	9.3	LOS A	0.6	4.5	0.40	0.80	48.6
Approach		180	0.0	0.093	1.2	NA	0.6	4.5	0.40	0.01	45.4
North East: Coorumbong Road											
24	L	1	0.0	0.026	12.7	LOS A	0.1	0.7	0.51	0.63	44.4
26	R	12	0.0	0.026	12.7	LOS A	0.1	0.7	0.51	0.74	44.4
Approach		13	0.0	0.026	12.7	LOS A	0.1	0.7	0.51	0.73	44.4
North West: Newport Rd north											
7	L	6	0.0	0.124	8.2	LOS A	0.0	0.0	0.00	0.90	49.0
8	T	236	0.0	0.124	0.0	LOS A	0.0	0.0	0.00	0.00	50.0
Approach		242	0.0	0.124	0.2	NA	0.0	0.0	0.00	0.02	50.0
All Vehicles		435	0.0	0.124	1.0	NA	0.6	4.5	0.18	0.04	47.8

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.

INTERSECTION SUMMARY

Site: 8 PM Existing
Coorumbung Rd - Newport

Coorumbung and Newport Existing layout
PM peak 2009 existing volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	892	veh/h	1070	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.242			
Practical Spare Capacity	230.6	%		
Effective Intersection Capacity	3684	veh/h		
Control Delay (Total)	0.42	veh-h/h	0.50	pers-h/h
Control Delay (Average)	1.7	sec	1.7	sec
Control Delay (Worst Lane)	20.0	sec		
Control Delay (Worst Movement)	20.0	sec	20.0	sec
Geometric Delay (Average)	0.2	sec		
Stop-Line Delay (Average)	1.5	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	2.3	veh		
95% Back of Queue - Distance (Worst Lane)	16.3	m		
Total Effective Stops	16	veh/h	20	pers/h
Effective Stop Rate	0.02	per veh	0.02	per pers
Proportion Queued	0.33		0.33	
Performance Index	11.7		11.7	
Travel Distance (Total)	511.9	veh-km/h	614.2	pers-km/h
Travel Distance (Average)	574	m	574	m
Travel Time (Total)	11.1	veh-h/h	13.4	pers-h/h
Travel Time (Average)	44.9	sec	44.9	sec
Travel Speed	46.0	km/h	46.0	km/h
Cost (Total)	329.17	$/h	329.17	$/h
Fuel Consumption (Total)	42.5	L/h		
Carbon Dioxide (Total)	106.3	kg/h		
Hydrocarbons (Total)	0.165	kg/h		
Carbon Monoxide (Total)	5.44	kg/h		
NOx (Total)	0.195	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: 8 PM Existing
Coorumbung Rd - Newport

Coorumbung and Newport Existing layout
PM peak 2009 existing volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Newport Rd South											
2	T	465	0.0	0.242	2.6	LOS A	2.3	16.3	0.61	0.00	43.1
3	R	3	0.0	0.242	10.8	LOS A	2.3	16.3	0.61	0.89	48.0
Approach		468	0.0	0.242	2.7	NA	2.3	16.3	0.61	0.01	43.2
North East: Coorumbung Road											
24	L	4	0.0	0.040	20.0	LOS B	0.1	0.9	0.69	0.74	38.7
26	R	6	0.0	0.040	20.0	LOS B	0.1	0.9	0.69	0.90	38.7
Approach		11	0.0	0.040	20.0	LOS B	0.1	0.9	0.69	0.84	38.7
North West: Newport Rd north											
7	L	5	0.0	0.212	8.2	LOS A	0.0	0.0	0.00	0.90	49.0
8	T	407	0.0	0.212	0.0	LOS A	0.0	0.0	0.00	0.00	50.0
Approach		413	0.0	0.212	0.1	NA	0.0	0.0	0.00	0.01	50.0
All Vehicles		892	0.0	0.242	1.7	NA	2.3	16.3	0.33	0.02	46.0

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

J.10 M09 Coorumbung Road- Gradwells Road

INTERSECTION SUMMARY

Site: M09 AM Existing Coorumbung Rd - Gradwells Rd

M09 Coorumbung Rd- Gradwells Rd Existing layout
AM peak hour existing 2009 volumes
Stop (All-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	100	veh/h	120	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.074			
Practical Spare Capacity	976.7	%		
Effective Intersection Capacity	1346	veh/h		
Control Delay (Total)	0.52	veh-h/h	0.62	pers-h/h
Control Delay (Average)	18.7	sec	18.7	sec
Control Delay (Worst Lane)	24.2	sec		
Control Delay (Worst Movement)	24.4	sec	24.4	sec
Geometric Delay (Average)	P	sec		
Stop-Line Delay (Average)	P	sec		
Intersection Level of Service (LOS)	LOS B			
95% Back of Queue - Vehicles (Worst Lane)	0.3	veh		
95% Back of Queue - Distance (Worst Lane)	1.8	m		
Total Effective Stops	124	veh/h	149	pers/h
Effective Stop Rate	1.24	per veh	1.24	per pers
Proportion Queued	0.80		0.80	
Performance Index	2.6		2.6	
Travel Distance (Total)	60.2	veh-km/h	72.2	pers-km/h
Travel Distance (Average)	602	m	602	m
Travel Time (Total)	1.5	veh-h/h	1.8	pers-h/h
Travel Time (Average)	53.2	sec	53.2	sec
Travel Speed	40.7	km/h	40.7	km/h
Cost (Total)	47.35	$/h	47.35	$/h
Fuel Consumption (Total)	7.3	L/h		
Carbon Dioxide (Total)	18.3	kg/h		
Hydrocarbons (Total)	0.033	kg/h		
Carbon Monoxide (Total)	1.53	kg/h		
NOx (Total)	0.044	kg/h		

P: You need to Process this Site (F9) for this variable to be computed.

Level of Service (LOS) Method: Delay (RTA NSW).
Intersection LOS value for Vehicles is based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M09 AM Existing Coorumbung Rd - Gradwells Rd

M09 Coorumbung Rd- Gradwells Rd Existing layout
AM peak hour existing 2009 volumes
Stop (All-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Gradwells Rd South											
1	L	4	0.0	0.060	16.1	LOS B	0.2	1.2	0.69	1.23	42.6
2	T	11	0.0	0.060	15.7	LOS B	0.2	1.2	0.69	1.24	42.9
3	R	27	0.0	0.060	16.0	LOS B	0.2	1.2	0.69	1.25	42.7
Approach		42	0.0	0.060	15.9	LOS B	0.2	1.2	0.69	1.24	42.7
East: Coorumbung Rd East											
4	L	13	0.0	0.074	24.4	LOS B	0.3	1.8	0.94	1.24	37.1
5	T	7	0.0	0.074	23.9	LOS B	0.3	1.8	0.94	1.24	37.2
6	R	1	0.0	0.074	24.2	LOS B	0.3	1.8	0.94	1.25	37.2
Approach		21	0.0	0.074	24.2	LOS B	0.3	1.8	0.94	1.24	37.1
North: Gradwells Rd north											
7	L	2	0.0	0.036	19.2	LOS B	0.1	0.8	0.84	1.23	40.5
8	T	13	0.0	0.036	18.8	LOS B	0.1	0.8	0.84	1.24	40.7
9	R	1	0.0	0.036	19.0	LOS B	0.1	0.8	0.84	1.24	40.7
Approach		16	0.0	0.036	18.8	LOS B	0.1	0.8	0.84	1.24	40.7
West: Coorumbung Rd West											
10	L	3	0.0	0.047	19.1	LOS B	0.1	1.0	0.84	1.24	40.5
11	T	12	0.0	0.047	18.6	LOS B	0.1	1.0	0.84	1.24	40.7
12	R	6	0.0	0.047	18.9	LOS B	0.1	1.0	0.84	1.24	40.7
Approach		21	0.0	0.047	18.8	LOS B	0.1	1.0	0.84	1.24	40.7
All Vehicles		100	0.0	0.074	18.7	LOS B	0.3	1.8	0.80	1.24	40.7

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.

INTERSECTION SUMMARY

Site: M09 PM Existing Coorumbung Rd - Gradwells Rd

9 PM Coorumbung Rd- Gradwells Rd Existing layout
2009 PM peak existing volumes
Stop (All-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	81	veh/h	97	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.060			
Practical Spare Capacity	1241.8	%		
Effective Intersection Capacity	1359	veh/h		
Control Delay (Total)	0.40	veh-h/h	0.48	pers-h/h
Control Delay (Average)	17.7	sec	17.7	sec
Control Delay (Worst Lane)	28.6	sec		
Control Delay (Worst Movement)	28.9	sec	28.9	sec
Geometric Delay (Average)	P	sec		
Stop-Line Delay (Average)	P	sec		
Intersection Level of Service (LOS)	LOS B			
95% Back of Queue - Vehicles (Worst Lane)	0.2	veh		
95% Back of Queue - Distance (Worst Lane)	1.2	m		
Total Effective Stops	100	veh/h	121	pers/h
Effective Stop Rate	1.24	per veh	1.24	per pers
Proportion Queued	0.75		0.75	
Performance Index	2.1		2.1	
Travel Distance (Total)	48.7	veh-km/h	58.5	pers-km/h
Travel Distance (Average)	601	m	601	m
Travel Time (Total)	1.2	veh-h/h	1.4	pers-h/h
Travel Time (Average)	52.2	sec	52.2	sec
Travel Speed	41.4	km/h	41.4	km/h
Cost (Total)	37.79	$/h	37.79	$/h
Fuel Consumption (Total)	5.9	L/h		
Carbon Dioxide (Total)	14.7	kg/h		
Hydrocarbons (Total)	0.026	kg/h		
Carbon Monoxide (Total)	1.23	kg/h		
NOx (Total)	0.035	kg/h		

P: You need to Process this Site (F9) for this variable to be computed.

Level of Service (LOS) Method: Delay (RTA NSW).
Intersection LOS value for Vehicles is based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M09 PM Existing Coorumbung Rd - Gradwells Rd

9 PM Coorumbung Rd- Gradwells Rd Existing layout
2009 PM peak existing volumes
Stop (All-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Gradwells Rd South											
1	L	6	0.0	0.028	16.6	LOS B	0.1	0.6	0.72	1.23	42.3
2	T	7	0.0	0.028	16.1	LOS B	0.1	0.6	0.72	1.23	42.6
3	R	4	0.0	0.028	16.4	LOS B	0.1	0.6	0.72	1.24	42.5
Approach		18	0.0	0.028	16.3	LOS B	0.1	0.6	0.72	1.23	42.5
East: Coorumbung Rd East											
4	L	1	0.0	0.016	28.9	LOS C	0.1	0.4	0.98	1.23	34.4
5	T	1	0.0	0.016	28.4	LOS B	0.1	0.4	0.98	1.23	34.6
6	R	1	0.0	0.016	28.7	LOS C	0.1	0.4	0.98	1.23	34.5
Approach		3	0.0	0.016	28.6	LOS C	0.1	0.4	0.98	1.23	34.5
North: Gradwells Rd north											
7	L	1	0.0	0.060	15.9	LOS B	0.2	1.2	0.67	1.24	42.8
8	T	41	0.0	0.060	15.5	LOS B	0.2	1.2	0.67	1.24	43.1
9	R	1	0.0	0.060	15.7	LOS B	0.2	1.2	0.67	1.26	43.0
Approach		43	0.0	0.060	15.5	LOS B	0.2	1.2	0.67	1.24	43.1
West: Coorumbung Rd West											
10	L	3	0.0	0.054	22.9	LOS B	0.2	1.2	0.92	1.24	37.9
11	T	6	0.0	0.054	22.4	LOS B	0.2	1.2	0.92	1.24	38.1
12	R	7	0.0	0.054	22.6	LOS B	0.2	1.2	0.92	1.24	38.1
Approach		17	0.0	0.054	22.6	LOS B	0.2	1.2	0.92	1.24	38.1
All Vehicles		81	0.0	0.060	17.7	LOS B	0.2	1.2	0.75	1.24	41.4

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

J.11 M10 Newport Road Gradwells Road

INTERSECTION SUMMARY

Site: M10 AM Existing
Newport Rd- Gradwells Rd 1

Newport Gradwells Existing layout
2009 AM peak existing volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	455	veh/h	546	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.122			
Practical Spare Capacity	555.3	%		
Effective Intersection Capacity	3725	veh/h		
Control Delay (Total)	0.32	veh-h/h	0.39	pers-h/h
Control Delay (Average)	2.5	sec	2.5	sec
Control Delay (Worst Lane)	11.0	sec		
Control Delay (Worst Movement)	11.9	sec	11.9	sec
Geometric Delay (Average)	P	sec		
Stop-Line Delay (Average)	P	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	0.8	veh		
95% Back of Queue - Distance (Worst Lane)	5.7	m		
Total Effective Stops	61	veh/h	74	pers/h
Effective Stop Rate	0.14	per veh	0.14	per pers
Proportion Queued	0.37		0.37	
Performance Index	5.9		5.9	
Travel Distance (Total)	275.5	veh-km/h	330.6	pers-km/h
Travel Distance (Average)	606	m	606	m
Travel Time (Total)	5.3	veh-h/h	6.3	pers-h/h
Travel Time (Average)	41.8	sec	41.8	sec
Travel Speed	52.1	km/h	52.1	km/h
Cost (Total)	165.19	$/h	165.19	$/h
Fuel Consumption (Total)	25.2	L/h		
Carbon Dioxide (Total)	63.1	kg/h		
Hydrocarbons (Total)	0.099	kg/h		
Carbon Monoxide (Total)	3.79	kg/h		
NOx (Total)	0.138	kg/h		

P: You need to Process this Site (F9) for this variable to be computed.

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M10 AM Existing
Newport Rd- Gradwells Rd 1

Newport Gradwells Existing layout
2009 AM peak existing volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Newport Rd South East											
1	L	1	0.0	0.099	9.2	LOS A	0.7	4.6	0.38	0.63	49.0
2	T	166	0.0	0.099	1.0	LOS A	0.7	4.6	0.38	0.00	53.0
3	R	15	0.0	0.099	9.5	LOS A	0.7	4.6	0.38	0.94	49.0
Approach		182	0.0	0.099	1.8	NA	0.7	4.6	0.38	0.08	52.6
North East: Gradwells Rd East											
4	L	22	0.0	0.047	10.4	LOS A	0.2	1.2	0.39	0.64	46.6
5	T	1	0.0	0.047	9.2	LOS A	0.2	1.2	0.39	0.65	47.5
6	R	11	0.0	0.047	10.6	LOS A	0.2	1.2	0.39	0.75	46.5
Approach		34	0.0	0.047	10.5	LOS A	0.2	1.2	0.39	0.68	46.6
North West: Newport Rd North West											
7	L	33	0.0	0.122	8.9	LOS A	0.8	5.7	0.35	0.65	48.9
8	T	202	0.0	0.122	0.7	LOS A	0.8	5.7	0.35	0.00	53.4
9	R	1	0.0	0.122	9.2	LOS A	0.8	5.7	0.35	0.92	48.9
Approach		236	0.0	0.122	1.9	NA	0.8	5.7	0.35	0.09	52.7
South West: Gradwells Rd West											
10	L	1	0.0	0.005	11.2	LOS A	0.0	0.1	0.41	0.57	45.9
11	T	1	0.0	0.005	9.9	LOS A	0.0	0.1	0.41	0.59	46.8
12	R	1	0.0	0.005	11.9	LOS A	0.0	0.1	0.41	0.74	45.4
Approach		3	0.0	0.005	11.0	LOS A	0.0	0.1	0.41	0.63	46.0
All Vehicles		455	0.0	0.122	2.5	NA	0.8	5.7	0.37	0.14	52.1

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.

INTERSECTION SUMMARY

Site: M10 PM Existing
Newport Rd- Gradwells Rd 1

M10 Newport Gradwells Existing layout
2009 PM peak existing volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	914	veh/h	1096	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.232			
Practical Spare Capacity	244.5	%		
Effective Intersection Capacity	3934	veh/h		
Control Delay (Total)	1.03	veh-h/h	1.24	pers-h/h
Control Delay (Average)	4.1	sec	4.1	sec
Control Delay (Worst Lane)	19.2	sec		
Control Delay (Worst Movement)	19.5	sec	19.5	sec
Geometric Delay (Average)	P	sec		
Stop-Line Delay (Average)	P	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	2.0	veh		
95% Back of Queue - Distance (Worst Lane)	14.3	m		
Total Effective Stops	117	veh/h	140	pers/h
Effective Stop Rate	0.13	per veh	0.13	per pers
Proportion Queued	0.58		0.58	
Performance Index	12.8		12.8	
Travel Distance (Total)	553.6	veh-km/h	664.3	pers-km/h
Travel Distance (Average)	606	m	606	m
Travel Time (Total)	11.3	veh-h/h	13.5	pers-h/h
Travel Time (Average)	44.4	sec	44.4	sec
Travel Speed	49.1	km/h	49.1	km/h
Cost (Total)	351.49	$/h	351.49	$/h
Fuel Consumption (Total)	54.8	L/h		
Carbon Dioxide (Total)	137.0	kg/h		
Hydrocarbons (Total)	0.221	kg/h		
Carbon Monoxide (Total)	9.26	kg/h		
NOx (Total)	0.312	kg/h		

P: You need to Process this Site (F9) for this variable to be computed.

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M10 PM Existing
Newport Rd- Gradwells Rd 1

M10 Newport Gradwells Existing layout
2009 PM peak existing volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Newport Rd South East											
1	L	17	0.0	0.218	10.3	LOS A	2.0	13.7	0.57	0.45	49.2
2	T	405	0.0	0.218	2.2	LOS A	2.0	13.7	0.57	0.00	50.2
3	R	1	0.0	0.218	10.6	LOS A	2.0	13.7	0.57	0.97	49.2
Approach		423	0.0	0.218	2.5	NA	2.0	13.7	0.57	0.02	50.2
North East: Gradwells Rd North											
4	L	1	0.0	0.015	19.4	LOS B	0.1	0.4	0.69	0.67	39.1
5	T	1	0.0	0.015	18.1	LOS B	0.1	0.4	0.69	0.80	39.6
6	R	2	0.0	0.015	19.5	LOS B	0.1	0.4	0.69	0.87	39.1
Approach		4	0.0	0.015	19.2	LOS B	0.1	0.4	0.69	0.81	39.2
North West: Newport Rd North West											
7	L	1	0.0	0.232	10.9	LOS A	2.0	14.3	0.60	0.41	48.5
8	T	366	0.0	0.232	2.7	LOS A	2.0	14.3	0.60	0.00	49.7
9	R	40	0.0	0.232	11.2	LOS A	2.0	14.3	0.60	0.98	48.5
Approach		407	0.0	0.232	3.5	NA	2.0	14.3	0.60	0.10	49.6
South West: Gradwells Rd South											
10	L	58	0.0	0.169	14.2	LOS A	0.6	4.2	0.58	0.80	43.0
11	T	1	0.0	0.169	13.0	LOS A	0.6	4.2	0.58	0.81	43.7
12	R	20	0.0	0.169	15.0	LOS B	0.6	4.2	0.58	0.90	42.7
Approach		79	0.0	0.169	14.4	LOS A	0.6	4.2	0.58	0.82	42.9
All Vehicles		914	0.0	0.232	4.1	NA	2.0	14.3	0.58	0.13	49.1

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.

INTERSECTION SUMMARY

Site: M010 AM 2015 Newport Rd- Gradwells Rd

Newport Gradwells Existing layout
AM 2015 volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	675	veh/h	810	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.174			
Practical Spare Capacity	358.5	%		
Effective Intersection Capacity	3867	veh/h		
Control Delay (Total)	0.69	veh-h/h	0.82	pers-h/h
Control Delay (Average)	3.7	sec	3.7	sec
Control Delay (Worst Lane)	13.1	sec		
Control Delay (Worst Movement)	14.0	sec	14.0	sec
Geometric Delay (Average)	1.8	sec		
Stop-Line Delay (Average)	1.9	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	1.2	veh		
95% Back of Queue - Distance (Worst Lane)	8.1	m		
Total Effective Stops	110	veh/h	132	pers/h
Effective Stop Rate	0.16	per veh	0.16	per pers
Proportion Queued	0.47		0.47	
Performance Index	9.3		9.3	
Travel Distance (Total)	408.7	veh-km/h	490.4	pers-km/h
Travel Distance (Average)	606	m	606	m
Travel Time (Total)	8.1	veh-h/h	9.7	pers-h/h
Travel Time (Average)	43.3	sec	43.3	sec
Travel Speed	50.3	km/h	50.3	km/h
Cost (Total)	254.07	$/h	254.07	$/h
Fuel Consumption (Total)	39.2	L/h		
Carbon Dioxide (Total)	98.0	kg/h		
Hydrocarbons (Total)	0.157	kg/h		
Carbon Monoxide (Total)	6.35	kg/h		
NOx (Total)	0.219	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M010 AM 2015 Newport Rd- Gradwells Rd

Newport Gradwells Existing layout
AM 2015 volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Newport Rd South East											
1	L	1	0.0	0.149	9.7	LOS A	1.1	7.8	0.46	0.56	49.1
2	T	263	0.0	0.149	1.5	LOS A	1.1	7.8	0.46	0.00	51.8
3	R	15	0.0	0.149	9.9	LOS A	1.1	7.8	0.46	0.96	49.2
Approach		279	0.0	0.149	2.0	NA	1.1	7.8	0.46	0.05	51.7
North East: Gradwells Rd East											
4	L	53	0.0	0.174	12.7	LOS A	0.7	4.6	0.52	0.72	44.4
5	T	1	0.0	0.174	11.5	LOS A	0.7	4.6	0.52	0.78	45.1
6	R	42	0.0	0.174	12.9	LOS A	0.7	4.6	0.52	0.85	44.3
Approach		96	0.0	0.174	12.8	LOS A	0.7	4.6	0.52	0.78	44.3
North West: Newport Rd North West											
7	L	33	0.0	0.153	9.5	LOS A	1.2	8.1	0.46	0.55	49.0
8	T	263	0.0	0.153	1.3	LOS A	1.2	8.1	0.46	0.00	51.7
9	R	1	0.0	0.153	9.8	LOS A	1.2	8.1	0.46	0.93	49.1
Approach		297	0.0	0.153	2.2	NA	1.2	8.1	0.46	0.06	51.4
South West: Gradwells Rd West											
10	L	1	0.0	0.007	13.2	LOS A	0.0	0.2	0.52	0.60	44.0
11	T	1	0.0	0.007	12.0	LOS A	0.0	0.2	0.52	0.65	44.7
12	R	1	0.0	0.007	14.0	LOS A	0.0	0.2	0.52	0.78	43.6
Approach		3	0.0	0.007	13.1	LOS A	0.0	0.2	0.52	0.68	44.1
All Vehicles		675	0.0	0.174	3.7	NA	1.2	8.1	0.47	0.16	50.3

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.

INTERSECTION SUMMARY

Site: M10 PM 2015 Newport Rd- Gradwells Rd

Newport Gradwells Existing layout
PM 2015 volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	764	veh/h	917	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.190			
Practical Spare Capacity	320.9	%		
Effective Intersection Capacity	4020	veh/h		
Control Delay (Total)	0.99	veh-h/h	1.19	pers-h/h
Control Delay (Average)	4.7	sec	4.7	sec
Control Delay (Worst Lane)	13.9	sec		
Control Delay (Worst Movement)	14.9	sec	14.9	sec
Geometric Delay (Average)	2.6	sec		
Stop-Line Delay (Average)	2.1	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	1.4	veh		
95% Back of Queue - Distance (Worst Lane)	9.8	m		
Total Effective Stops	168	veh/h	201	pers/h
Effective Stop Rate	0.22	per veh	0.22	per pers
Proportion Queued	0.51		0.51	
Performance Index	11.1		11.1	
Travel Distance (Total)	462.6	veh-km/h	555.2	pers-km/h
Travel Distance (Average)	605	m	605	m
Travel Time (Total)	9.4	veh-h/h	11.3	pers-h/h
Travel Time (Average)	44.2	sec	44.2	sec
Travel Speed	49.3	km/h	49.3	km/h
Cost (Total)	294.92	$/h	294.92	$/h
Fuel Consumption (Total)	45.9	L/h		
Carbon Dioxide (Total)	114.8	kg/h		
Hydrocarbons (Total)	0.187	kg/h		
Carbon Monoxide (Total)	7.84	kg/h		
NOx (Total)	0.261	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M10 PM 2015 Newport Rd- Gradwells Rd

Newport Gradwells Existing layout
PM 2015 volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Newport Rd South East											
1	L	1	0.0	0.188	10.1	LOS A	1.4	9.8	0.50	0.48	48.7
2	T	263	0.0	0.188	1.9	LOS A	1.4	9.8	0.50	0.00	50.8
3	R	53	0.0	0.188	10.4	LOS A	1.4	9.8	0.50	0.93	48.7
Approach		317	0.0	0.188	3.4	NA	1.4	9.8	0.50	0.16	50.5
North East: Gradwells Rd North											
4	L	53	0.0	0.190	13.5	LOS A	0.7	5.0	0.55	0.74	43.6
5	T	1	0.0	0.190	12.3	LOS A	0.7	5.0	0.55	0.80	44.4
6	R	42	0.0	0.190	13.7	LOS A	0.7	5.0	0.55	0.86	43.6
Approach		96	0.0	0.190	13.6	LOS A	0.7	5.0	0.55	0.79	43.6
North West: Newport Rd North West											
7	L	84	0.0	0.181	9.5	LOS A	1.4	9.8	0.50	0.47	48.6
8	T	263	0.0	0.181	1.3	LOS A	1.4	9.8	0.50	0.00	50.7
9	R	1	0.0	0.181	9.8	LOS A	1.4	9.8	0.50	0.87	48.8
Approach		348	0.0	0.181	3.4	NA	1.4	9.8	0.50	0.12	50.2
South West: Gradwells Rd South											
10	L	1	0.0	0.007	14.1	LOS A	0.0	0.2	0.54	0.60	43.2
11	T	1	0.0	0.007	12.8	LOS A	0.0	0.2	0.54	0.68	43.9
12	R	1	0.0	0.007	14.9	LOS B	0.0	0.2	0.54	0.79	42.8
Approach		3	0.0	0.007	13.9	LOS A	0.0	0.2	0.54	0.69	43.3
All Vehicles		764	0.0	0.190	4.7	NA	1.4	9.8	0.51	0.22	49.3

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.

J.12 M11 (a) Wamsley Street /Dora Street

INTERSECTION SUMMARY

Site: M11(a) AM Existing
Warmsley St - Dora St

M11 (a) Wamsley Stree/Dora Street
2009 AM peak existing flows
Stop (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	595	veh/h	714	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.189			
Practical Spare Capacity	324.0	%		
Effective Intersection Capacity	3152	veh/h		
Control Delay (Total)	1.58	veh-h/h	1.90	pers-h/h
Control Delay (Average)	9.6	sec	9.6	sec
Control Delay (Worst Lane)	13.1	sec		
Control Delay (Worst Movement)	13.1	sec	13.1	sec
Geometric Delay (Average)	P	sec		
Stop-Line Delay (Average)	P	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	2.1	veh		
95% Back of Queue - Distance (Worst Lane)	14.9	m		
Total Effective Stops	313	veh/h	375	pers/h
Effective Stop Rate	0.53	per veh	0.53	per pers
Proportion Queued	0.32		0.32	
Performance Index	8.7		8.7	
Travel Distance (Total)	225.5	veh-km/h	270.6	pers-km/h
Travel Distance (Average)	379	m	379	m
Travel Time (Total)	6.0	veh-h/h	7.2	pers-h/h
Travel Time (Average)	36.2	sec	36.2	sec
Travel Speed	37.7	km/h	37.7	km/h
Cost (Total)	185.58	$/h	185.58	$/h
Fuel Consumption (Total)	26.5	L/h		
Carbon Dioxide (Total)	66.3	kg/h		
Hydrocarbons (Total)	0.117	kg/h		
Carbon Monoxide (Total)	5.49	kg/h		
NOx (Total)	0.150	kg/h		

P: You need to Process this Site (F9) for this variable to be computed.

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M11(a) AM Existing
Warmsley St - Dora St

M11 (a) Wamsley Stree/Dora Street
2009 AM peak existing flows
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Wamsley Street											
1	L	251	0.0	0.189	13.1	LOS A	2.1	14.9	0.62	0.38	38.9
3	R	32	0.0	0.189	13.1	LOS A	2.1	14.9	0.62	0.90	38.9
Approach		282	0.0	0.189	13.1	LOS A	2.1	14.9	0.62	0.44	38.9
East: Dora Street											
4	L	24	0.0	0.037	10.3	LOS A	0.1	1.0	0.34	0.86	40.6
5	T	18	0.0	0.037	10.3	LOS A	0.1	1.0	0.34	0.86	40.6
Approach		42	0.0	0.037	10.3	LOS A	0.1	1.0	0.34	0.86	40.6
West: Dora Street											
11	T	22	0.0	0.145	0.0	LOS A	0.0	0.0	0.00	0.00	50.0
12	R	248	0.0	0.145	6.3	LOS A	0.0	0.0	0.00	0.62	31.0
Approach		271	0.0	0.145	5.8	NA	0.0	0.0	0.00	0.57	32.0
All Vehicles		595	0.0	0.189	9.6	NA	2.1	14.9	0.32	0.53	37.7

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

INTERSECTION SUMMARY

Site: M11(a) PM Existing
Warmsley St - Dora St

M11 (a) Wamsley Street/Dora Street
PM peak 2009 existing flows
Stop (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	680	veh/h	816	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.216			
Practical Spare Capacity	271.2	%		
Effective Intersection Capacity	3155	veh/h		
Control Delay (Total)	1.80	veh-h/h	2.17	pers-h/h
Control Delay (Average)	9.6	sec	9.6	sec
Control Delay (Worst Lane)	13.8	sec		
Control Delay (Worst Movement)	13.8	sec	13.8	sec
Geometric Delay (Average)	P	sec		
Stop-Line Delay (Average)	P	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	2.4	veh		
95% Back of Queue - Distance (Worst Lane)	16.8	m		
Total Effective Stops	362	veh/h	434	pers/h
Effective Stop Rate	0.53	per veh	0.53	per pers
Proportion Queued	0.33		0.33	
Performance Index	10.2		10.2	
Travel Distance (Total)	263.9	veh-km/h	316.7	pers-km/h
Travel Distance (Average)	388	m	388	m
Travel Time (Total)	7.0	veh-h/h	8.3	pers-h/h
Travel Time (Average)	36.8	sec	36.8	sec
Travel Speed	38.0	km/h	38.0	km/h
Cost (Total)	214.92	$/h	214.92	$/h
Fuel Consumption (Total)	30.4	L/h		
Carbon Dioxide (Total)	76.0	kg/h		
Hydrocarbons (Total)	0.133	kg/h		
Carbon Monoxide (Total)	6.14	kg/h		
NOx (Total)	0.170	kg/h		

P: You need to Process this Site (F9) for this variable to be computed.

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M11(a) PM Existing
Warmsley St - Dora St

M11 (a) Wamsley Street/Dora Street
PM peak 2009 existing flows
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Wamsley Street											
1	L	246	0.0	0.216	13.8	LOS A	2.4	16.8	0.65	0.35	38.5
3	R	46	0.0	0.216	13.8	LOS A	2.4	16.8	0.65	0.92	38.4
Approach		293	0.0	0.216	13.8	LOS A	2.4	16.8	0.65	0.44	38.5
East: Dora Street											
4	L	36	0.0	0.081	10.3	LOS A	0.3	2.3	0.34	0.87	40.6
5	T	57	0.0	0.081	10.3	LOS A	0.3	2.3	0.34	0.87	40.6
Approach		93	0.0	0.081	10.3	LOS A	0.3	2.3	0.34	0.87	40.6
West: Dora Street											
11	T	57	0.0	0.157	0.0	LOS A	0.0	0.0	0.00	0.00	50.0
12	R	238	0.0	0.157	6.3	LOS A	0.0	0.0	0.00	0.64	31.0
Approach		295	0.0	0.157	5.1	NA	0.0	0.0	0.00	0.52	33.4
All Vehicles		680	0.0	0.216	9.6	NA	2.4	16.8	0.33	0.53	38.0

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

J.13 M11 (b) Macquarie Street / Wamsley Street/Dora Street

INTERSECTION SUMMARY

Site: M11(b) AM Existing Warmsley St - Dora St - Macquarie St

M11 (b) Macquarie / Wamsley Street/Dora Street
2009 AM peak existing flows
Stop (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	1172	veh/h	1406	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.447			
Practical Spare Capacity	78.9	%		
Effective Intersection Capacity	2620	veh/h		
Control Delay (Total)	2.03	veh-h/h	2.44	pers-h/h
Control Delay (Average)	6.2	sec	6.2	sec
Control Delay (Worst Lane)	15.9	sec		
Control Delay (Worst Movement)	15.9	sec	15.9	sec
Geometric Delay (Average)	P	sec		
Stop-Line Delay (Average)	P	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	2.6	veh		
95% Back of Queue - Distance (Worst Lane)	17.9	m		
Total Effective Stops	503	veh/h	604	pers/h
Effective Stop Rate	0.43	per veh	0.43	per pers
Proportion Queued	0.23		0.23	
Performance Index	18.9		18.9	
Travel Distance (Total)	699.2	veh-km/h	839.1	pers-km/h
Travel Distance (Average)	597	m	597	m
Travel Time (Total)	14.3	veh-h/h	17.2	pers-h/h
Travel Time (Average)	44.0	sec	44.0	sec
Travel Speed	48.9	km/h	48.9	km/h
Cost (Total)	441.59	$/h	441.59	$/h
Fuel Consumption (Total)	62.1	L/h		
Carbon Dioxide (Total)	155.2	kg/h		
Hydrocarbons (Total)	0.245	kg/h		
Carbon Monoxide (Total)	8.61	kg/h		
NOx (Total)	0.316	kg/h		

P: You need to Process this Site (F9) for this variable to be computed.

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M11(b) AM Existing Warmsley St - Dora St - Macquarie St

M11 (b) Macquarie / Wamsley Street/Dora Street
2009 AM peak existing flows
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Macquarie Street											
2	T	315	0.0	0.161	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
3	R	193	0.0	0.447	15.9	LOS B	2.6	17.9	0.68	0.98	36.2
Approach		507	0.0	0.447	6.0	NA	2.6	17.9	0.26	0.37	48.3
East: Dora Street											
4	L	173	0.0	0.328	12.8	LOS A	1.6	11.3	0.53	0.93	39.0
6	R	99	0.0	0.328	14.2	LOS A	1.6	11.3	0.53	1.02	44.1
Approach		272	0.0	0.328	13.3	LOS A	1.6	11.3	0.53	0.97	40.8
North: Wamsley Street											
7	L	78	0.0	0.042	8.2	LOS A	0.0	0.0	0.00	0.67	49.0
8	T	315	0.0	0.161	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		393	0.0	0.161	1.6	NA	0.0	0.0	0.00	0.13	57.4
All Vehicles		1172	0.0	0.447	6.2	NA	2.6	17.9	0.23	0.43	48.9

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

INTERSECTION SUMMARY

Site: M11(b) PM Existing Warmsley St - Dora St - Macquarie St

M11 (b) Macqaurie St / Wamsley Street/Dora Street
PM peak 2009 existing flows
Stop (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	1302	veh/h	1563	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.530			
Practical Spare Capacity	51.0	%		
Effective Intersection Capacity	2457	veh/h		
Control Delay (Total)	2.52	veh-h/h	3.03	pers-h/h
Control Delay (Average)	7.0	sec	7.0	sec
Control Delay (Worst Lane)	21.0	sec		
Control Delay (Worst Movement)	21.0	sec	21.0	sec
Geometric Delay (Average)	P	sec		
Stop-Line Delay (Average)	P	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	3.1	veh		
95% Back of Queue - Distance (Worst Lane)	21.4	m		
Total Effective Stops	583	veh/h	700	pers/h
Effective Stop Rate	0.45	per veh	0.45	per pers
Proportion Queued	0.25		0.25	
Performance Index	21.6		21.6	
Travel Distance (Total)	777.7	veh-km/h	933.3	pers-km/h
Travel Distance (Average)	597	m	597	m
Travel Time (Total)	16.1	veh-h/h	19.3	pers-h/h
Travel Time (Average)	44.6	sec	44.6	sec
Travel Speed	48.2	km/h	48.2	km/h
Cost (Total)	496.92	$/h	496.92	$/h
Fuel Consumption (Total)	69.5	L/h		
Carbon Dioxide (Total)	173.8	kg/h		
Hydrocarbons (Total)	0.275	kg/h		
Carbon Monoxide (Total)	9.65	kg/h		
NOx (Total)	0.354	kg/h		

P: You need to Process this Site (F9) for this variable to be computed.

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M11(b) PM Existing Warmsley St - Dora St - Macquarie St

M11 (b) Macqaurie St / Wamsley Street/Dora Street
PM peak 2009 existing flows
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Macquarie Street											
2	T	308	0.0	0.158	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
3	R	182	0.0	0.530	21.0	LOS B	3.1	21.4	0.77	1.07	33.2
Approach		491	0.0	0.530	7.8	NA	3.1	21.4	0.29	0.40	46.5
East: Dora Street											
4	L	202	0.0	0.393	13.9	LOS A	2.2	15.2	0.59	1.02	38.3
6	R	101	0.0	0.393	15.2	LOS B	2.2	15.2	0.59	1.05	43.3
Approach		303	0.0	0.393	14.3	LOS A	2.2	15.2	0.59	1.03	39.9
North: Wamsley Street											
7	L	113	0.0	0.061	8.2	LOS A	0.0	0.0	0.00	0.67	49.0
8	T	396	0.0	0.203	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		508	0.0	0.203	1.8	NA	0.0	0.0	0.00	0.15	57.2
All Vehicles		1302	0.0	0.530	7.0	NA	3.1	21.4	0.25	0.45	48.2

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.

J.14 M12 Freemans Drive -Gimberts Road

INTERSECTION SUMMARY

Site: M12 AM Existing
Gimberts Rd-Freeman Dr

M12 Freemans Rd -Gimberts Rd Existing layout
AM peak 2009 existing volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	344	veh/h	413	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.108			
Practical Spare Capacity	643.6	%		
Effective Intersection Capacity	3199	veh/h		
Control Delay (Total)	0.20	veh-h/h	0.25	pers-h/h
Control Delay (Average)	2.1	sec	2.1	sec
Control Delay (Worst Lane)	10.0	sec		
Control Delay (Worst Movement)	10.2	sec	10.2	sec
Geometric Delay (Average)	P	sec		
Stop-Line Delay (Average)	P	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	1.1	veh		
95% Back of Queue - Distance (Worst Lane)	7.4	m		
Total Effective Stops	39	veh/h	47	pers/h
Effective Stop Rate	0.11	per veh	0.11	per pers
Proportion Queued	0.25		0.25	
Performance Index	4.4		4.4	
Travel Distance (Total)	208.5	veh-km/h	250.2	pers-km/h
Travel Distance (Average)	606	m	606	m
Travel Time (Total)	3.9	veh-h/h	4.6	pers-h/h
Travel Time (Average)	40.4	sec	40.4	sec
Travel Speed	54.0	km/h	54.0	km/h
Cost (Total)	120.32	$/h	120.32	$/h
Fuel Consumption (Total)	18.0	L/h		
Carbon Dioxide (Total)	45.0	kg/h		
Hydrocarbons (Total)	0.069	kg/h		
Carbon Monoxide (Total)	2.42	kg/h		
NOx (Total)	0.095	kg/h		

P: You need to Process this Site (F9) for this variable to be computed.

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M12 AM Existing
Gimberts Rd-Freeman Dr

M12 Freemans Rd -Gimberts Rd Existing layout
AM peak 2009 existing volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Freemans Rd South											
1	L	6	0.0	0.058	8.2	LOS A	0.0	0.0	0.00	1.05	49.0
2	T	107	0.0	0.058	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		114	0.0	0.058	0.5	NA	0.0	0.0	0.00	0.06	59.3
North: Freemans Rd north											
8	T	185	0.0	0.108	1.3	LOS A	1.1	7.4	0.39	0.00	52.9
9	R	9	0.0	0.108	9.7	LOS A	1.1	7.4	0.39	0.94	49.1
Approach		195	0.0	0.108	1.7	NA	1.1	7.4	0.39	0.05	52.7
West: Gimberts Rd West											
10	L	20	0.0	0.047	9.9	LOS A	0.2	1.2	0.29	0.60	47.1
12	R	16	0.0	0.047	10.2	LOS A	0.2	1.2	0.29	0.73	46.9
Approach		36	0.0	0.047	10.0	LOS A	0.2	1.2	0.29	0.66	47.0
All Vehicles		344	0.0	0.108	2.1	NA	1.1	7.4	0.25	0.11	54.0

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

INTERSECTION SUMMARY

Site: M12 PM Existing
Freemans -Gimberts

M12 PM Freemans Rd -Gimberts Rd Existing layout
PM peak 2009 existing volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	380	veh/h	456	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.103			
Practical Spare Capacity	678.3	%		
Effective Intersection Capacity	3697	veh/h		
Control Delay (Total)	0.89	veh-h/h	1.07	pers-h/h
Control Delay (Average)	8.4	sec	8.4	sec
Control Delay (Worst Lane)	10.9	sec		
Control Delay (Worst Movement)	11.0	sec	11.0	sec
Geometric Delay (Average)	P	sec		
Stop-Line Delay (Average)	P	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	1.0	veh		
95% Back of Queue - Distance (Worst Lane)	7.0	m		
Total Effective Stops	194	veh/h	232	pers/h
Effective Stop Rate	0.51	per veh	0.51	per pers
Proportion Queued	0.27		0.27	
Performance Index	6.3		6.3	
Travel Distance (Total)	229.2	veh-km/h	275.0	pers-km/h
Travel Distance (Average)	603	m	603	m
Travel Time (Total)	4.7	veh-h/h	5.7	pers-h/h
Travel Time (Average)	44.8	sec	44.8	sec
Travel Speed	48.4	km/h	48.4	km/h
Cost (Total)	154.13	$/h	154.13	$/h
Fuel Consumption (Total)	25.1	L/h		
Carbon Dioxide (Total)	62.7	kg/h		
Hydrocarbons (Total)	0.107	kg/h		
Carbon Monoxide (Total)	5.07	kg/h		
NOx (Total)	0.151	kg/h		

P: You need to Process this Site (F9) for this variable to be computed.

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M12 PM Existing Freemans -Gimberts

M12 PM Freemans Rd -Gimberts Rd Existing layout
PM peak 2009 existing volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Freemans Rd South											
1	L	22	0.0	0.076	8.2	LOS A	0.0	0.0	0.00	0.71	49.0
2	T	125	0.0	0.076	6.9	LOS A	0.0	0.0	0.00	0.58	50.4
Approach		147	0.0	0.076	7.1	LOS A	0.0	0.0	0.00	0.60	50.1
North: Freemans Rd north											
8	T	160	0.0	0.103	8.6	LOS A	1.0	7.0	0.44	0.33	47.9
9	R	15	0.0	0.103	10.2	LOS A	1.0	7.0	0.44	0.72	47.3
Approach		175	0.0	0.103	8.8	LOS A	1.0	7.0	0.44	0.36	47.9
West: Gimberts Rd West											
10	L	29	0.0	0.085	10.7	LOS A	0.3	2.2	0.44	0.69	46.2
12	R	28	0.0	0.085	11.0	LOS A	0.3	2.2	0.44	0.76	46.1
Approach		58	0.0	0.085	10.9	LOS A	0.3	2.2	0.44	0.72	46.1
All Vehicles		380	0.0	0.103	8.4	NA	1.0	7.0	0.27	0.51	48.4

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.

INTERSECTION SUMMARY

Site: M012 AM 2015 Gimberts Rd-Freeman Dr

Freemans Rd -Gimberts Rd Existing layout
AM 2015 volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	560	veh/h	672	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.168			
Practical Spare Capacity	376.1	%		
Effective Intersection Capacity	3333	veh/h		
Control Delay (Total)	1.38	veh-h/h	1.66	pers-h/h
Control Delay (Average)	8.9	sec	8.9	sec
Control Delay (Worst Lane)	13.2	sec		
Control Delay (Worst Movement)	13.3	sec	13.3	sec
Geometric Delay (Average)	7.1	sec		
Stop-Line Delay (Average)	1.8	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	2.1	veh		
95% Back of Queue - Distance (Worst Lane)	14.4	m		
Total Effective Stops	237	veh/h	284	pers/h
Effective Stop Rate	0.42	per veh	0.42	per pers
Proportion Queued	0.36		0.36	
Performance Index	9.3		9.3	
Travel Distance (Total)	337.7	veh-km/h	405.3	pers-km/h
Travel Distance (Average)	603	m	603	m
Travel Time (Total)	7.0	veh-h/h	8.4	pers-h/h
Travel Time (Average)	45.1	sec	45.1	sec
Travel Speed	48.1	km/h	48.1	km/h
Cost (Total)	228.35	$/h	228.35	$/h
Fuel Consumption (Total)	37.0	L/h		
Carbon Dioxide (Total)	92.6	kg/h		
Hydrocarbons (Total)	0.158	kg/h		
Carbon Monoxide (Total)	7.46	kg/h		
NOx (Total)	0.223	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M012 AM 2015 Gimberts Rd-Freeman Dr

Freemans Rd -Gimberts Rd Existing layout
AM 2015 volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Freemans Rd South											
1	L	6	0.0	0.111	8.2	LOS A	0.0	0.0	0.00	0.72	49.0
2	T	209	0.0	0.111	6.9	LOS A	0.0	0.0	0.00	0.59	50.4
Approach		216	0.0	0.111	7.0	LOS A	0.0	0.0	0.00	0.59	50.3
North: Freemans Rd north											
8	T	299	0.0	0.168	9.7	LOS A	2.1	14.4	0.59	0.24	47.2
9	R	9	0.0	0.168	11.2	LOS A	2.1	14.4	0.59	0.78	46.5
Approach		308	0.0	0.168	9.7	LOS A	2.1	14.4	0.59	0.26	47.2
West: Gimberts Rd West											
10	L	20	0.0	0.071	13.1	LOS A	0.3	1.8	0.55	0.77	44.0
12	R	16	0.0	0.071	13.3	LOS A	0.3	1.8	0.55	0.85	43.9
Approach		36	0.0	0.071	13.2	LOS A	0.3	1.8	0.55	0.81	44.0
All Vehicles		560	0.0	0.168	8.9	NA	2.1	14.4	0.36	0.42	48.1

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.

INTERSECTION SUMMARY

Site: M012 PM 2015 Freemans -Gimberts

Freemans Rd -Gimberts Rd Existing layout
2015 PM volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	687	veh/h	825	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.172			
Practical Spare Capacity	364.7	%		
Effective Intersection Capacity	3993	veh/h		
Control Delay (Total)	1.87	veh-h/h	2.24	pers-h/h
Control Delay (Average)	9.8	sec	9.8	sec
Control Delay (Worst Lane)	15.3	sec		
Control Delay (Worst Movement)	15.4	sec	15.4	sec
Geometric Delay (Average)	7.1	sec		
Stop-Line Delay (Average)	2.7	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	2.4	veh		
95% Back of Queue - Distance (Worst Lane)	16.8	m		
Total Effective Stops	310	veh/h	371	pers/h
Effective Stop Rate	0.45	per veh	0.45	per pers
Proportion Queued	0.36		0.36	
Performance Index	11.7		11.7	
Travel Distance (Total)	414.6	veh-km/h	497.5	pers-km/h
Travel Distance (Average)	603	m	603	m
Travel Time (Total)	8.8	veh-h/h	10.5	pers-h/h
Travel Time (Average)	46.0	sec	46.0	sec
Travel Speed	47.2	km/h	47.2	km/h
Cost (Total)	284.58	$/h	284.58	$/h
Fuel Consumption (Total)	45.7	L/h		
Carbon Dioxide (Total)	114.3	kg/h		
Hydrocarbons (Total)	0.196	kg/h		
Carbon Monoxide (Total)	9.19	kg/h		
NOx (Total)	0.275	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M012 PM 2015 Freemans -Gimberts

Freemans Rd -Gimberts Rd Existing layout
2015 PM volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Freemans Rd South											
1	L	22	0.0	0.172	8.2	LOS A	0.0	0.0	0.00	0.72	49.0
2	T	312	0.0	0.172	6.9	LOS A	0.0	0.0	0.00	0.59	50.4
Approach		334	0.0	0.172	7.0	LOS A	0.0	0.0	0.00	0.60	50.3
North: Freemans Rd north											
8	T	281	0.0	0.172	11.8	LOS A	2.4	16.8	0.72	0.17	45.2
9	R	15	0.0	0.172	13.3	LOS A	2.4	16.8	0.72	0.87	44.6
Approach		296	0.0	0.172	11.8	LOS A	2.4	16.8	0.72	0.20	45.2
West: Gimberts Rd West											
10	L	29	0.0	0.139	15.1	LOS B	0.5	3.5	0.62	0.86	42.2
12	R	28	0.0	0.139	15.4	LOS B	0.5	3.5	0.62	0.89	42.2
Approach		58	0.0	0.139	15.3	LOS B	0.5	3.5	0.62	0.88	42.2
All Vehicles		687	0.0	0.172	9.8	NA	2.4	16.8	0.36	0.45	47.2

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.

INTERSECTION SUMMARY

Site: M012 AM 2025 Gimberts Rd-Freeman Dr

Freemans Rd -Gimberts Rd Existing layout
AM 2025 volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	1020	veh/h	1224	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.327			
Practical Spare Capacity	144.8	%		
Effective Intersection Capacity	3121	veh/h		
Control Delay (Total)	3.33	veh-h/h	3.99	pers-h/h
Control Delay (Average)	11.7	sec	11.7	sec
Control Delay (Worst Lane)	24.6	sec		
Control Delay (Worst Movement)	24.8	sec	24.8	sec
Geometric Delay (Average)	7.0	sec		
Stop-Line Delay (Average)	4.7	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	6.2	veh		
95% Back of Queue - Distance (Worst Lane)	43.2	m		
Total Effective Stops	295	veh/h	354	pers/h
Effective Stop Rate	0.29	per veh	0.29	per pers
Proportion Queued	0.58		0.58	
Performance Index	17.9		17.9	
Travel Distance (Total)	615.2	veh-km/h	738.3	pers-km/h
Travel Distance (Average)	603	m	603	m
Travel Time (Total)	13.6	veh-h/h	16.3	pers-h/h
Travel Time (Average)	47.9	sec	47.9	sec
Travel Speed	45.3	km/h	45.3	km/h
Cost (Total)	437.62	$/h	437.62	$/h
Fuel Consumption (Total)	69.3	L/h		
Carbon Dioxide (Total)	173.2	kg/h		
Hydrocarbons (Total)	0.299	kg/h		
Carbon Monoxide (Total)	13.98	kg/h		
NOx (Total)	0.416	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M012 AM 2025 Gimberts Rd-Freeman Dr

Freemans Rd -Gimberts Rd Existing layout
AM 2025 volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Freemans Rd South											
1	L	6	0.0	0.192	8.2	LOS A	0.0	0.0	0.00	0.72	49.0
2	T	368	0.0	0.192	6.9	LOS A	0.0	0.0	0.00	0.59	50.4
Approach		375	0.0	0.192	7.0	LOS A	0.0	0.0	0.00	0.59	50.3
North: Freemans Rd north											
8	T	600	0.0	0.327	13.9	LOS A	6.2	43.2	0.92	0.05	43.3
9	R	9	0.0	0.327	15.4	LOS B	6.2	43.2	0.92	0.98	42.9
Approach		609	0.0	0.327	13.9	LOS A	6.2	43.2	0.92	0.06	43.3
West: Gimberts Rd West											
10	L	20	0.0	0.168	24.5	LOS B	0.5	3.8	0.82	0.94	35.7
12	R	16	0.0	0.168	24.8	LOS B	0.5	3.8	0.82	0.95	35.7
Approach		36	0.0	0.168	24.6	LOS B	0.5	3.8	0.82	0.94	35.7
All Vehicles		1020	0.0	0.327	11.7	NA	6.2	43.2	0.58	0.29	45.3

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.

INTERSECTION SUMMARY

Site: M012 PM 2025 Freemans -Gimberts

Freemans Rd -Gimberts Rd Existing layout
2025 PM volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	900	veh/h	1080	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.256			
Practical Spare Capacity	212.6	%		
Effective Intersection Capacity	3517	veh/h		
Control Delay (Total)	2.83	veh-h/h	3.39	pers-h/h
Control Delay (Average)	11.3	sec	11.3	sec
Control Delay (Worst Lane)	20.8	sec		
Control Delay (Worst Movement)	20.9	sec	20.9	sec
Geometric Delay (Average)	7.1	sec		
Stop-Line Delay (Average)	4.2	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	3.8	veh		
95% Back of Queue - Distance (Worst Lane)	26.4	m		
Total Effective Stops	389	veh/h	467	pers/h
Effective Stop Rate	0.43	per veh	0.43	per pers
Proportion Queued	0.38		0.38	
Performance Index	15.8		15.8	
Travel Distance (Total)	542.8	veh-km/h	651.4	pers-km/h
Travel Distance (Average)	603	m	603	m
Travel Time (Total)	11.9	veh-h/h	14.2	pers-h/h
Travel Time (Average)	47.5	sec	47.5	sec
Travel Speed	45.7	km/h	45.7	km/h
Cost (Total)	382.27	$/h	382.27	$/h
Fuel Consumption (Total)	60.4	L/h		
Carbon Dioxide (Total)	151.0	kg/h		
Hydrocarbons (Total)	0.260	kg/h		
Carbon Monoxide (Total)	12.06	kg/h		
NOx (Total)	0.361	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M012 PM 2025 Freemans -Gimberts

Freemans Rd -Gimberts Rd Existing layout
2025 PM volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Freemans Rd South											
1	L	22	0.0	0.256	8.2	LOS A	0.0	0.0	0.00	0.72	49.0
2	T	476	0.0	0.256	6.9	LOS A	0.0	0.0	0.00	0.59	50.4
Approach		498	0.0	0.256	7.0	LOS A	0.0	0.0	0.00	0.59	50.3
North: Freemans Rd north											
8	T	329	0.0	0.206	15.9	LOS B	3.8	26.4	0.87	0.07	41.7
9	R	15	0.0	0.206	17.4	LOS B	3.8	26.4	0.87	0.97	41.3
Approach		344	0.0	0.206	15.9	LOS B	3.8	26.4	0.87	0.11	41.6
West: Gimberts Rd West											
10	L	29	0.0	0.207	20.7	LOS B	0.7	5.1	0.77	0.93	38.1
12	R	28	0.0	0.207	20.9	LOS B	0.7	5.1	0.77	0.94	38.1
Approach		58	0.0	0.207	20.8	LOS B	0.7	5.1	0.77	0.94	38.1
All Vehicles		900	0.0	0.256	11.3	NA	3.8	26.4	0.38	0.43	45.7

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

J.15 M13 Fishery Point Road-Morisset Park Road

INTERSECTION SUMMARY

Site: M13 AM Existing Fishery Point Rd- Morriset Park Rd

M13 Fishery Point Road-Morisset Park Road Existing layout
2009 AM peak existing flows
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	1018	veh/h	1221	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.643			
Practical Spare Capacity	24.4	%		
Effective Intersection Capacity	1583	veh/h		
Control Delay (Total)	2.80	veh-h/h	3.35	pers-h/h
Control Delay (Average)	9.9	sec	9.9	sec
Control Delay (Worst Lane)	14.4	sec		
Control Delay (Worst Movement)	14.4	sec	14.4	sec
Geometric Delay (Average)	P	sec		
Stop-Line Delay (Average)	P	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	5.9	veh		
95% Back of Queue - Distance (Worst Lane)	41.1	m		
Total Effective Stops	771	veh/h	925	pers/h
Effective Stop Rate	0.76	per veh	0.76	per pers
Proportion Queued	0.41		0.41	
Performance Index	20.0		20.0	
Travel Distance (Total)	615.3	veh-km/h	738.3	pers-km/h
Travel Distance (Average)	604	m	604	m
Travel Time (Total)	13.1	veh-h/h	15.8	pers-h/h
Travel Time (Average)	46.4	sec	46.4	sec
Travel Speed	46.9	km/h	46.9	km/h
Cost (Total)	422.68	$/h	422.68	$/h
Fuel Consumption (Total)	66.4	L/h		
Carbon Dioxide (Total)	166.0	kg/h		
Hydrocarbons (Total)	0.284	kg/h		
Carbon Monoxide (Total)	12.81	kg/h		
NOx (Total)	0.390	kg/h		

P: You need to Process this Site (F9) for this variable to be computed.

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M13 AM Existing Fishery Point Rd- Morriset Park Rd

M13 Fishery Point Road-Morisset Park Road Existing layout
2009 AM peak existing flows
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Morisset Park											
2	T	79	0.0	0.137	1.7	LOS A	0.7	5.1	0.44	0.00	51.0
3	R	98	0.0	0.137	9.9	LOS A	0.7	5.1	0.44	0.79	47.9
Approach		177	0.0	0.137	6.3	NA	0.7	5.1	0.44	0.44	49.3
North East: Fishery Point Road East											
4	L	44	0.0	0.643	14.4	LOS A	5.9	41.1	0.67	0.96	42.9
6	R	457	0.0	0.643	14.4	LOS A	5.9	41.1	0.67	1.06	42.9
Approach		501	0.0	0.643	14.4	LOS A	5.9	41.1	0.67	1.06	42.9
North West: Fishery Point Road north											
7	L	212	0.0	0.180	8.2	LOS A	0.0	0.0	0.00	0.78	49.0
8	T	128	0.0	0.180	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		340	0.0	0.180	5.1	NA	0.0	0.0	0.00	0.48	52.6
All Vehicles		1018	0.0	0.643	9.9	NA	5.9	41.1	0.41	0.76	46.9

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

INTERSECTION SUMMARY

Site: M13 PM Existing Fishery Point Rd- Morriset Park Rd

M15 Fishery Point Road-Morisset Park Road existing layout
PM peak 2009 existing flows
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	958	veh/h	1149	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.438			
Practical Spare Capacity	82.6	%		
Effective Intersection Capacity	2186	veh/h		
Control Delay (Total)	2.29	veh-h/h	2.74	pers-h/h
Control Delay (Average)	8.6	sec	8.6	sec
Control Delay (Worst Lane)	12.1	sec		
Control Delay (Worst Movement)	12.1	sec	12.1	sec
Geometric Delay (Average)	P	sec		
Stop-Line Delay (Average)	P	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	2.6	veh		
95% Back of Queue - Distance (Worst Lane)	18.3	m		
Total Effective Stops	631	veh/h	757	pers/h
Effective Stop Rate	0.66	per veh	0.66	per pers
Proportion Queued	0.28		0.28	
Performance Index	16.8		16.8	
Travel Distance (Total)	579.0	veh-km/h	694.9	pers-km/h
Travel Distance (Average)	604	m	604	m
Travel Time (Total)	12.0	veh-h/h	14.4	pers-h/h
Travel Time (Average)	45.2	sec	45.2	sec
Travel Speed	48.1	km/h	48.1	km/h
Cost (Total)	388.94	$/h	388.94	$/h
Fuel Consumption (Total)	62.3	L/h		
Carbon Dioxide (Total)	155.8	kg/h		
Hydrocarbons (Total)	0.266	kg/h		
Carbon Monoxide (Total)	12.20	kg/h		
NOx (Total)	0.369	kg/h		

P: You need to Process this Site (F9) for this variable to be computed.

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M13 PM Existing Fishery Point Rd- Morriset Park Rd

M15 Fishery Point Road-Morisset Park Road existing layout
PM peak 2009 existing flows
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Morisset Park											
2	T	93	0.0	0.106	2.6	LOS A	0.7	4.7	0.51	0.00	50.3
3	R	51	0.0	0.106	10.8	LOS A	0.7	4.7	0.51	0.87	47.6
Approach		143	0.0	0.106	5.5	NA	0.7	4.7	0.51	0.31	49.3
North East: Fishery Point Road East											
4	L	62	0.0	0.438	12.0	LOS A	2.6	18.3	0.56	0.83	45.0
6	R	282	0.0	0.438	12.1	LOS A	2.6	18.3	0.56	0.89	45.0
Approach		344	0.0	0.438	12.1	LOS A	2.6	18.3	0.56	0.88	45.0
North West: Fishery Point Road north											
7	L	401	0.0	0.252	8.2	LOS A	0.0	0.0	0.00	0.71	49.0
8	T	69	0.0	0.252	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		471	0.0	0.252	7.0	NA	0.0	0.0	0.00	0.60	50.3
All Vehicles		958	0.0	0.438	8.6	NA	2.6	18.3	0.28	0.66	48.1

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.

J.16 M14 Fishery Point Road- Station Road

INTERSECTION SUMMARY

Site: M14 AM Existing Fishery Point Rd- Station St

M14 Fishery Point Road- Station Road existing layout
AM peak 2009 existing flows
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	980	veh/h	1176	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.289			
Practical Spare Capacity	176.4	%		
Effective Intersection Capacity	3386	veh/h		
Control Delay (Total)	1.04	veh-h/h	1.25	pers-h/h
Control Delay (Average)	3.8	sec	3.8	sec
Control Delay (Worst Lane)	14.6	sec		
Control Delay (Worst Movement)	14.7	sec	14.7	sec
Geometric Delay (Average)	P	sec		
Stop-Line Delay (Average)	P	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	1.9	veh		
95% Back of Queue - Distance (Worst Lane)	13.5	m		
Total Effective Stops	210	veh/h	251	pers/h
Effective Stop Rate	0.21	per veh	0.21	per pers
Proportion Queued	0.32		0.32	
Performance Index	13.4		13.4	
Travel Distance (Total)	593.3	veh-km/h	711.9	pers-km/h
Travel Distance (Average)	605	m	605	m
Travel Time (Total)	11.4	veh-h/h	13.7	pers-h/h
Travel Time (Average)	42.1	sec	42.1	sec
Travel Speed	51.8	km/h	51.8	km/h
Cost (Total)	357.91	$/h	357.91	$/h
Fuel Consumption (Total)	53.9	L/h		
Carbon Dioxide (Total)	134.8	kg/h		
Hydrocarbons (Total)	0.212	kg/h		
Carbon Monoxide (Total)	7.98	kg/h		
NOx (Total)	0.291	kg/h		

P: You need to Process this Site (F9) for this variable to be computed.

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M14 AM Existing Fishery Point Rd- Station St

M14 Fishery Point Road- Station Road existing layout
AM peak 2009 existing flows
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Fishery Point Road South											
2	T	495	0.0	0.234	1.4	LOS A	1.9	13.5	0.41	0.00	52.6
3	R	28	0.0	0.234	10.0	LOS A	1.9	13.5	0.50	0.92	49.2
Approach		523	0.0	0.234	1.9	NA	1.9	13.5	0.41	0.05	52.4
North East: Station Street											
4	L	14	0.0	0.289	12.9	LOS A	1.2	8.4	0.63	0.77	38.1
6	R	134	0.0	0.289	14.7	LOS B	1.2	8.4	0.63	0.91	42.7
Approach		147	0.0	0.289	14.6	LOS B	1.2	8.4	0.63	0.90	42.2
North West: Fishery Point Road North											
7	L	77	0.0	0.041	8.2	LOS A	0.0	0.0	0.00	0.67	49.0
8	T	233	0.0	0.119	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		309	0.0	0.119	2.0	NA	0.0	0.0	0.00	0.17	56.8
All Vehicles		980	0.0	0.289	3.8	NA	1.9	13.5	0.32	0.21	51.8

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.

INTERSECTION SUMMARY

Site: M14 PM Existing Fishery Point Rd- Station St

M14 Fishery Point Road- Station Road existing layout
PM peak 2009 existing flows
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	1076	veh/h	1291	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.303			
Practical Spare Capacity	163.7	%		
Effective Intersection Capacity	3546	veh/h		
Control Delay (Total)	0.98	veh-h/h	1.17	pers-h/h
Control Delay (Average)	3.3	sec	3.3	sec
Control Delay (Worst Lane)	15.4	sec		
Control Delay (Worst Movement)	15.6	sec	15.6	sec
Geometric Delay (Average)	P	sec		
Stop-Line Delay (Average)	P	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	1.4	veh		
95% Back of Queue - Distance (Worst Lane)	9.5	m		
Total Effective Stops	184	veh/h	221	pers/h
Effective Stop Rate	0.17	per veh	0.17	per pers
Proportion Queued	0.18		0.18	
Performance Index	13.6		13.6	
Travel Distance (Total)	651.6	veh-km/h	781.9	pers-km/h
Travel Distance (Average)	606	m	606	m
Travel Time (Total)	12.0	veh-h/h	14.4	pers-h/h
Travel Time (Average)	40.2	sec	40.2	sec
Travel Speed	54.2	km/h	54.2	km/h
Cost (Total)	375.15	$/h	375.15	$/h
Fuel Consumption (Total)	55.6	L/h		
Carbon Dioxide (Total)	139.0	kg/h		
Hydrocarbons (Total)	0.213	kg/h		
Carbon Monoxide (Total)	7.29	kg/h		
NOx (Total)	0.290	kg/h		

P: You need to Process this Site (F9) for this variable to be computed.

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M14 PM Existing Fishery Point Rd- Station St

M14 Fishery Point Road- Station Road existing layout
PM peak 2009 existing flows
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Fishery Point Road South											
2	T	244	0.0	0.134	3.9	LOS A	1.4	9.5	0.52	0.00	50.8
3	R	23	0.0	0.134	13.2	LOS A	1.4	9.5	0.66	1.02	46.5
Approach		267	0.0	0.134	4.7	NA	1.4	9.5	0.53	0.09	50.4
North East: Station Street											
4	L	7	0.0	0.164	13.8	LOS A	0.6	4.0	0.69	0.88	37.5
6	R	61	0.0	0.164	15.6	LOS B	0.6	4.0	0.69	0.90	41.9
Approach		68	0.0	0.164	15.4	LOS B	0.6	4.0	0.69	0.90	41.4
North West: Fishery Point Road North											
7	L	148	0.0	0.080	8.2	LOS A	0.0	0.0	0.00	0.67	49.0
8	T	592	0.0	0.303	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		740	0.0	0.303	1.6	NA	0.0	0.0	0.00	0.13	57.4
All Vehicles		1076	0.0	0.303	3.3	NA	1.4	9.5	0.18	0.17	54.2

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.

J.17 M15 Newport Road Cadillac Close

INTERSECTION SUMMARY

Site: M15 AM Existing
Cadillac Close - Newport Rd

M15 Newport Rd Cadillac Close Existing layout
AM peak 2009 existing volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	293	veh/h	351	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.077			
Practical Spare Capacity	938.9	%		
Effective Intersection Capacity	3800	veh/h		
Control Delay (Total)	0.64	veh-h/h	0.77	pers-h/h
Control Delay (Average)	7.9	sec	7.9	sec
Control Delay (Worst Lane)	10.4	sec		
Control Delay (Worst Movement)	10.4	sec	10.4	sec
Geometric Delay (Average)	7.1	sec		
Stop-Line Delay (Average)	0.8	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	0.7	veh		
95% Back of Queue - Distance (Worst Lane)	4.9	m		
Total Effective Stops	147	veh/h	176	pers/h
Effective Stop Rate	0.50	per veh	0.50	per pers
Proportion Queued	0.20		0.20	
Performance Index	4.7		4.7	
Travel Distance (Total)	176.5	veh-km/h	211.8	pers-km/h
Travel Distance (Average)	603	m	603	m
Travel Time (Total)	3.6	veh-h/h	4.3	pers-h/h
Travel Time (Average)	44.3	sec	44.3	sec
Travel Speed	49.1	km/h	49.1	km/h
Cost (Total)	117.32	$/h	117.32	$/h
Fuel Consumption (Total)	19.1	L/h		
Carbon Dioxide (Total)	47.8	kg/h		
Hydrocarbons (Total)	0.081	kg/h		
Carbon Monoxide (Total)	3.82	kg/h		
NOx (Total)	0.115	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M15 AM Existing
Cadillac Close - Newport Rd

M15 Newport Rd Cadillac Close Existing layout
AM peak 2009 existing volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Newport Rd East											
2	T	117	0.0	0.074	8.4	LOS A	0.7	4.9	0.42	0.34	48.1
3	R	11	0.0	0.074	9.8	LOS A	0.7	4.9	0.42	0.69	47.5
Approach		127	0.0	0.074	8.6	LOS A	0.7	4.9	0.42	0.37	48.0
East: Cadillac Close											
4	L	4	0.0	0.023	10.3	LOS A	0.1	0.6	0.37	0.60	46.7
6	R	12	0.0	0.023	10.4	LOS A	0.1	0.6	0.37	0.68	46.6
Approach		16	0.0	0.023	10.4	LOS A	0.1	0.6	0.37	0.65	46.6
North: Newport Rd West											
7	L	14	0.0	0.077	8.2	LOS A	0.0	0.0	0.00	0.72	49.0
8	T	136	0.0	0.077	6.9	LOS A	0.0	0.0	0.00	0.59	50.4
Approach		149	0.0	0.077	7.0	LOS A	0.0	0.0	0.00	0.60	50.2
All Vehicles		293	0.0	0.077	7.9	NA	0.7	4.9	0.20	0.50	49.1

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.

INTERSECTION SUMMARY

Site: M15 PM Existing
Cadillac Close - Newport Rd

PM Existing Newport Rd Cadillac Close Existing layout 2009 volumes

Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	411	veh/h	493	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.111			
Practical Spare Capacity	618.5	%		
Effective Intersection Capacity	3687	veh/h		
Control Delay (Total)	0.93	veh-h/h	1.12	pers-h/h
Control Delay (Average)	8.2	sec	8.2	sec
Control Delay (Worst Lane)	11.8	sec		
Control Delay (Worst Movement)	11.8	sec	11.8	sec
Geometric Delay (Average)	7.0	sec		
Stop-Line Delay (Average)	1.2	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	1.2	veh		
95% Back of Queue - Distance (Worst Lane)	8.6	m		
Total Effective Stops	185	veh/h	222	pers/h
Effective Stop Rate	0.45	per veh	0.45	per pers
Proportion Queued	0.27		0.27	
Performance Index	6.6		6.6	
Travel Distance (Total)	247.6	veh-km/h	297.2	pers-km/h
Travel Distance (Average)	603	m	603	m
Travel Time (Total)	5.1	veh-h/h	6.1	pers-h/h
Travel Time (Average)	44.6	sec	44.6	sec
Travel Speed	48.7	km/h	48.7	km/h
Cost (Total)	165.53	$/h	165.53	$/h
Fuel Consumption (Total)	26.9	L/h		
Carbon Dioxide (Total)	67.3	kg/h		
Hydrocarbons (Total)	0.115	kg/h		
Carbon Monoxide (Total)	5.39	kg/h		
NOx (Total)	0.162	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M15 PM Existing
Cadillac Close - Newport Rd

PM Existing Newport Rd Cadillac Close Existing layout 2009 volumes

Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Newport Rd east											
2	T	199	0.0	0.111	9.0	LOS A	1.2	8.6	0.51	0.29	47.6
3	R	6	0.0	0.111	10.4	LOS A	1.2	8.6	0.51	0.72	47.1
Approach		205	0.0	0.111	9.1	LOS A	1.2	8.6	0.51	0.30	47.6
East: Cadillac Close											
4	L	3	0.0	0.025	11.8	LOS A	0.1	0.6	0.45	0.61	45.3
6	R	11	0.0	0.025	11.8	LOS A	0.1	0.6	0.45	0.72	45.2
Approach		14	0.0	0.025	11.8	LOS A	0.1	0.6	0.45	0.69	45.2
North: Newport Rd west											
7	L	9	0.0	0.098	8.2	LOS A	0.0	0.0	0.00	0.72	49.0
8	T	182	0.0	0.098	6.9	LOS A	0.0	0.0	0.00	0.59	50.4
Approach		192	0.0	0.098	7.0	LOS A	0.0	0.0	0.00	0.59	50.3
All Vehicles		411	0.0	0.111	8.2	NA	1.2	8.6	0.27	0.45	48.7

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

INTERSECTION SUMMARY

Site: M015 AM 2025 Cadillac Close - Newport Rd

Newport Rd Cadillac Close
AM 2025 volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	497	veh/h	596	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.170			
Practical Spare Capacity	370.0	%		
Effective Intersection Capacity	2919	veh/h		
Control Delay (Total)	0.49	veh-h/h	0.59	pers-h/h
Control Delay (Average)	3.6	sec	3.6	sec
Control Delay (Worst Lane)	10.7	sec		
Control Delay (Worst Movement)	10.8	sec	10.8	sec
Geometric Delay (Average)	2.8	sec		
Stop-Line Delay (Average)	0.7	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	0.7	veh		
95% Back of Queue - Distance (Worst Lane)	4.7	m		
Total Effective Stops	125	veh/h	150	pers/h
Effective Stop Rate	0.25	per veh	0.25	per pers
Proportion Queued	0.12		0.12	
Performance Index	6.5		6.5	
Travel Distance (Total)	300.9	veh-km/h	361.0	pers-km/h
Travel Distance (Average)	606	m	606	m
Travel Time (Total)	5.5	veh-h/h	6.6	pers-h/h
Travel Time (Average)	39.9	sec	39.9	sec
Travel Speed	54.6	km/h	54.6	km/h
Cost (Total)	173.12	$/h	173.12	$/h
Fuel Consumption (Total)	25.7	L/h		
Carbon Dioxide (Total)	64.3	kg/h		
Hydrocarbons (Total)	0.099	kg/h		
Carbon Monoxide (Total)	3.43	kg/h		
NOx (Total)	0.134	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M015 AM 2025 Cadillac Close - Newport Rd

Newport Rd Cadillac Close
AM 2025 volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Newport Rd East											
2	T	169	0.0	0.087	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
3	R	31	0.0	0.053	10.3	LOS A	0.2	1.2	0.38	0.67	46.7
Approach		200	0.0	0.087	1.6	NA	0.2	1.2	0.06	0.10	57.5
East: Cadellac Close											
4	L	67	0.0	0.170	10.7	LOS A	0.7	4.7	0.39	0.65	46.3
6	R	54	0.0	0.170	10.8	LOS A	0.7	4.7	0.39	0.77	46.3
Approach		121	0.0	0.170	10.7	LOS A	0.7	4.7	0.39	0.70	46.3
North: Newport Rd West											
7	L	19	0.0	0.091	8.2	LOS A	0.0	0.0	0.00	1.02	49.0
8	T	157	0.0	0.091	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		176	0.0	0.091	0.9	NA	0.0	0.0	0.00	0.11	58.6
All Vehicles		497	0.0	0.170	3.6	NA	0.7	4.7	0.12	0.25	54.6

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.

INTERSECTION SUMMARY

Site: M015 PM 2025 Cadillac Close - Newport Rd

Newport Rd Cadillac Close
2025 PM volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	618	veh/h	741	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.146			
Practical Spare Capacity	446.3	%		
Effective Intersection Capacity	4219	veh/h		
Control Delay (Total)	0.51	veh-h/h	0.62	pers-h/h
Control Delay (Average)	3.0	sec	3.0	sec
Control Delay (Worst Lane)	11.7	sec		
Control Delay (Worst Movement)	11.8	sec	11.8	sec
Geometric Delay (Average)	2.3	sec		
Stop-Line Delay (Average)	0.7	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	0.5	veh		
95% Back of Queue - Distance (Worst Lane)	3.5	m		
Total Effective Stops	139	veh/h	167	pers/h
Effective Stop Rate	0.23	per veh	0.23	per pers
Proportion Queued	0.09		0.09	
Performance Index	7.9		7.9	
Travel Distance (Total)	374.2	veh-km/h	449.1	pers-km/h
Travel Distance (Average)	606	m	606	m
Travel Time (Total)	6.8	veh-h/h	8.1	pers-h/h
Travel Time (Average)	39.3	sec	39.3	sec
Travel Speed	55.4	km/h	55.4	km/h
Cost (Total)	211.36	$/h	211.36	$/h
Fuel Consumption (Total)	31.0	L/h		
Carbon Dioxide (Total)	77.5	kg/h		
Hydrocarbons (Total)	0.118	kg/h		
Carbon Monoxide (Total)	3.83	kg/h		
NOx (Total)	0.158	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M015 PM 2025 Cadillac Close - Newport Rd

Newport Rd Cadillac Close
2025 PM volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Newport Rd east											
2	T	211	0.0	0.108	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
3	R	73	0.0	0.127	11.7	LOS A	0.5	3.5	0.48	0.75	45.3
Approach		283	0.0	0.127	3.0	NA	0.5	3.5	0.12	0.19	55.4
East: Cadellac Close											
4	L	33	0.0	0.085	11.7	LOS A	0.3	2.2	0.46	0.68	45.3
6	R	19	0.0	0.085	11.8	LOS A	0.3	2.2	0.46	0.81	45.3
Approach		52	0.0	0.085	11.7	LOS A	0.3	2.2	0.46	0.73	45.3
North: Newport Rd west											
7	L	48	0.0	0.146	8.2	LOS A	0.0	0.0	0.00	0.98	49.0
8	T	235	0.0	0.146	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		283	0.0	0.146	1.4	NA	0.0	0.0	0.00	0.17	57.8
All Vehicles		618	0.0	0.146	3.0	NA	0.5	3.5	0.09	0.23	55.4

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.

INTERSECTION SUMMARY

Site: M016 AM 2015 new access NE Newport Freemans

New residential Access Road
2015 AM priority control
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	589	veh/h	864	pers/h
Percent Heavy Vehicles	7.1	%		
Degree of Saturation	0.169			
Practical Spare Capacity	373.8	%		
Effective Intersection Capacity	3490	veh/h		
Control Delay (Total)	0.23	veh-h/h	0.27	pers-h/h
Control Delay (Average)	1.4	sec	1.1	sec
Control Delay (Worst Lane)	12.8	sec		
Control Delay (Worst Movement)	12.8	sec	12.8	sec
Geometric Delay (Average)	0.9	sec		
Stop-Line Delay (Average)	0.5	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	0.4	veh		
95% Back of Queue - Distance (Worst Lane)	2.9	m		
Total Effective Stops	50	veh/h	60	pers/h
Effective Stop Rate	0.09	per veh	0.07	per pers
Proportion Queued	0.05		0.04	
Performance Index	6.6		6.6	
Travel Distance (Total)	357.2	veh-km/h	523.9	pers-km/h
Travel Distance (Average)	606	m	606	m
Travel Time (Total)	6.2	veh-h/h	9.0	pers-h/h
Travel Time (Average)	37.8	sec	37.5	sec
Travel Speed	57.8	km/h	58.2	km/h
Cost (Total)	208.98	$/h	208.98	$/h
Fuel Consumption (Total)	31.3	L/h		
Carbon Dioxide (Total)	78.3	kg/h		
Hydrocarbons (Total)	0.099	kg/h		
Carbon Monoxide (Total)	2.60	kg/h		
NOx (Total)	0.130	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M016 AM 2015 new access NE Newport Freemans

New residential Access Road
2015 AM priority control
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Freemans Drive South											
2	T	211	8.0	0.114	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
3	R	3	0.0	0.006	11.8	LOS A	0.0	0.1	0.47	0.67	45.2
Approach		214	7.9	0.114	0.2	NA	0.0	0.1	0.01	0.01	59.7
East: Access road											
4	L	29	0.0	0.111	12.8	LOS A	0.4	2.9	0.52	0.71	44.3
6	R	29	0.0	0.111	12.8	LOS A	0.4	2.9	0.52	0.84	44.3
Approach		59	0.0	0.111	12.8	LOS A	0.4	2.9	0.52	0.78	44.3
North: Freemans Drive North											
7	L	3	0.0	0.002	8.2	LOS A	0.0	0.0	0.00	0.67	49.0
8	T	313	8.0	0.169	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		316	7.9	0.169	0.1	NA	0.0	0.0	0.00	0.01	59.9
All Vehicles		589	7.1	0.169	1.4	NA	0.4	2.9	0.05	0.09	57.8

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.

INTERSECTION SUMMARY

Site: M016 2015 PM New access NE Newport Freemans

New residential access road NE of Newport and Freemans
2015 AM volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	491	veh/h	716	pers/h
Percent Heavy Vehicles	4.5	%		
Degree of Saturation	0.112			
Practical Spare Capacity	615.2	%		
Effective Intersection Capacity	4394	veh/h		
Control Delay (Total)	0.19	veh-h/h	0.23	pers-h/h
Control Delay (Average)	1.4	sec	1.1	sec
Control Delay (Worst Lane)	11.4	sec		
Control Delay (Worst Movement)	11.5	sec	11.5	sec
Geometric Delay (Average)	1.2	sec		
Stop-Line Delay (Average)	0.2	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	0.2	veh		
95% Back of Queue - Distance (Worst Lane)	1.2	m		
Total Effective Stops	47	veh/h	57	pers/h
Effective Stop Rate	0.10	per veh	0.08	per pers
Proportion Queued	0.03		0.03	
Performance Index	5.5		5.5	
Travel Distance (Total)	297.8	veh-km/h	434.1	pers-km/h
Travel Distance (Average)	606	m	606	m
Travel Time (Total)	5.2	veh-h/h	7.5	pers-h/h
Travel Time (Average)	37.7	sec	37.5	sec
Travel Speed	57.8	km/h	58.2	km/h
Cost (Total)	171.26	$/h	171.26	$/h
Fuel Consumption (Total)	25.1	L/h		
Carbon Dioxide (Total)	62.8	kg/h		
Hydrocarbons (Total)	0.084	kg/h		
Carbon Monoxide (Total)	2.31	kg/h		
NOx (Total)	0.111	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M016 2015 PM New access NE Newport Freemans

New residential access road NE of Newport and Freemans
2015 AM volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Freemans Drive South											
2	T	211	5.2	0.112	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
3	R	29	0.0	0.052	10.8	LOS A	0.2	1.2	0.41	0.70	46.1
Approach		240	4.6	0.112	1.3	NA	0.2	1.2	0.05	0.09	57.9
East: New residential access road											
4	L	5	0.0	0.018	11.4	LOS A	0.1	0.4	0.43	0.62	45.6
6	R	5	0.0	0.018	11.5	LOS A	0.1	0.4	0.43	0.73	45.6
Approach		11	0.0	0.018	11.4	LOS A	0.1	0.4	0.43	0.67	45.6
North: Freemans Drive North											
7	L	29	0.0	0.016	8.2	LOS A	0.0	0.0	0.00	0.67	49.0
8	T	211	5.2	0.112	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		240	4.6	0.112	1.0	NA	0.0	0.0	0.00	0.08	58.4
All Vehicles		491	4.5	0.112	1.4	NA	0.2	1.2	0.03	0.10	57.8

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.

INTERSECTION SUMMARY

Site: M016 AM 2025 Proposed new resi access

New residential access NE Newport and Freemans
2025 AM volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	1169	veh/h	1733	pers/h
Percent Heavy Vehicles	7.5	%		
Degree of Saturation	0.324			
Practical Spare Capacity	147.1	%		
Effective Intersection Capacity	3613	veh/h		
Control Delay (Total)	0.50	veh-h/h	0.60	pers-h/h
Control Delay (Average)	1.5	sec	1.2	sec
Control Delay (Worst Lane)	28.4	sec		
Control Delay (Worst Movement)	28.4	sec	28.4	sec
Geometric Delay (Average)	0.5	sec		
Stop-Line Delay (Average)	1.1	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	1.1	veh		
95% Back of Queue - Distance (Worst Lane)	7.4	m		
Total Effective Stops	65	veh/h	78	pers/h
Effective Stop Rate	0.06	per veh	0.05	per pers
Proportion Queued	0.04		0.04	
Performance Index	13.1		13.1	
Travel Distance (Total)	709.0	veh-km/h	1050.9	pers-km/h
Travel Distance (Average)	606	m	606	m
Travel Time (Total)	12.3	veh-h/h	18.1	pers-h/h
Travel Time (Average)	37.9	sec	37.6	sec
Travel Speed	57.6	km/h	58.0	km/h
Cost (Total)	417.79	$/h	417.79	$/h
Fuel Consumption (Total)	61.3	L/h		
Carbon Dioxide (Total)	153.7	kg/h		
Hydrocarbons (Total)	0.190	kg/h		
Carbon Monoxide (Total)	4.53	kg/h		
NOx (Total)	0.245	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M016 AM 2025 Proposed new resi access

New residential access NE Newport and Freemans
2025 AM volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Freemans Drive South											
2	T	500	8.0	0.270	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
3	R	5	0.0	0.016	17.0	LOS B	0.1	0.4	0.64	0.80	40.8
Approach		505	7.9	0.270	0.2	NA	0.1	0.4	0.01	0.01	59.7
East: New access road											
4	L	29	0.0	0.293	28.3	LOS B	1.1	7.4	0.81	0.98	33.7
6	R	29	0.0	0.293	28.4	LOS B	1.1	7.4	0.81	0.97	33.6
Approach		59	0.0	0.293	28.4	LOS B	1.1	7.4	0.81	0.98	33.6
North: Freemans Drive North											
7	L	5	0.0	0.003	8.2	LOS A	0.0	0.0	0.00	0.67	49.0
8	T	600	8.0	0.324	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		605	7.9	0.324	0.1	NA	0.0	0.0	0.00	0.01	59.9
All Vehicles		1169	7.5	0.324	1.5	NA	1.1	7.4	0.04	0.06	57.6

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.

INTERSECTION SUMMARY

Site: M016 PM 2025 Proposed new resi access

New residential NE Newport and Freemans
2025 PM volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	925	veh/h	1367	pers/h
Percent Heavy Vehicles	4.8	%		
Degree of Saturation	0.259			
Practical Spare Capacity	208.6	%		
Effective Intersection Capacity	3570	veh/h		
Control Delay (Total)	0.24	veh-h/h	0.29	pers-h/h
Control Delay (Average)	0.9	sec	0.8	sec
Control Delay (Worst Lane)	18.0	sec		
Control Delay (Worst Movement)	18.0	sec	18.0	sec
Geometric Delay (Average)	0.6	sec		
Stop-Line Delay (Average)	0.3	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	0.3	veh		
95% Back of Queue - Distance (Worst Lane)	1.9	m		
Total Effective Stops	53	veh/h	64	pers/h
Effective Stop Rate	0.06	per veh	0.05	per pers
Proportion Queued	0.03		0.02	
Performance Index	10.0		10.0	
Travel Distance (Total)	561.0	veh-km/h	828.9	pers-km/h
Travel Distance (Average)	606	m	606	m
Travel Time (Total)	9.6	veh-h/h	14.1	pers-h/h
Travel Time (Average)	37.3	sec	37.1	sec
Travel Speed	58.5	km/h	58.8	km/h
Cost (Total)	321.52	$/h	321.52	$/h
Fuel Consumption (Total)	46.1	L/h		
Carbon Dioxide (Total)	115.5	kg/h		
Hydrocarbons (Total)	0.150	kg/h		
Carbon Monoxide (Total)	3.69	kg/h		
NOx (Total)	0.196	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M016 PM 2025 Proposed new resi access

New residential NE Newport and Freemans
2025 PM volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Freemans Drive South											
2	T	367	5.2	0.195	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
3	R	29	0.0	0.074	15.1	LOS B	0.3	1.9	0.58	0.84	42.3
Approach		396	4.8	0.195	1.1	NA	0.3	1.9	0.04	0.06	58.2
East: New access road											
4	L	5	0.0	0.034	17.9	LOS B	0.1	0.8	0.66	0.75	40.1
6	R	5	0.0	0.034	18.0	LOS B	0.1	0.8	0.66	0.89	40.1
Approach		11	0.0	0.034	18.0	LOS B	0.1	0.8	0.66	0.82	40.1
North: Freemans Drive North											
7	L	29	0.0	0.016	8.2	LOS A	0.0	0.0	0.00	0.67	49.0
8	T	489	5.2	0.259	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		518	4.9	0.259	0.5	NA	0.0	0.0	0.00	0.04	59.2
All Vehicles		925	4.8	0.259	0.9	NA	0.3	1.9	0.03	0.06	58.5

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.

J.19 M17 Wyee Road/Alliance Avenue

INTERSECTION SUMMARY

Site: M17 AM Existing - Wyee Rd - Alliance Ave

M17 Wyee Road/Alliance Ave existing layout
AM peak 2009 existing flows
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	794	veh/h	952	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.155			
Practical Spare Capacity	415.8	%		
Effective Intersection Capacity	5117	veh/h		
Control Delay (Total)	0.82	veh-h/h	0.99	pers-h/h
Control Delay (Average)	3.7	sec	3.7	sec
Control Delay (Worst Lane)	10.8	sec		
Control Delay (Worst Movement)	10.9	sec	10.9	sec
Geometric Delay (Average)	P	sec		
Stop-Line Delay (Average)	P	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	0.6	veh		
95% Back of Queue - Distance (Worst Lane)	4.1	m		
Total Effective Stops	212	veh/h	255	pers/h
Effective Stop Rate	0.27	per veh	0.27	per pers
Proportion Queued	0.14		0.14	
Performance Index	10.4		10.4	
Travel Distance (Total)	480.9	veh-km/h	577.0	pers-km/h
Travel Distance (Average)	606	m	606	m
Travel Time (Total)	8.9	veh-h/h	10.6	pers-h/h
Travel Time (Average)	40.2	sec	40.2	sec
Travel Speed	54.3	km/h	54.3	km/h
Cost (Total)	279.20	$/h	279.20	$/h
Fuel Consumption (Total)	41.8	L/h		
Carbon Dioxide (Total)	104.4	kg/h		
Hydrocarbons (Total)	0.163	kg/h		
Carbon Monoxide (Total)	5.79	kg/h		
NOx (Total)	0.221	kg/h		

P: You need to Process this Site (F9) for this variable to be computed.

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M17 AM Existing - Wyee Rd - Alliance Ave

M17 Wyee Road/Alliance Ave existing layout
AM peak 2009 existing flows
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Wyee Road South											
1	L	57	0.0	0.031	8.2	LOS A	0.0	0.0	0.00	0.67	49.0
2	T	273	0.0	0.140	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		329	0.0	0.140	1.4	NA	0.0	0.0	0.00	0.12	57.8
North: Wyee Road North											
8	T	217	0.0	0.111	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
9	R	133	0.0	0.102	9.4	LOS A	0.5	3.3	0.43	0.67	47.1
Approach		349	0.0	0.111	3.6	NA	0.5	3.3	0.16	0.25	54.4
West: Alliance Ave											
10	L	73	0.0	0.155	10.9	LOS A	0.6	4.1	0.45	0.72	46.2
12	R	42	0.0	0.155	10.7	LOS A	0.6	4.1	0.45	0.80	46.3
Approach		115	0.0	0.155	10.8	LOS A	0.6	4.1	0.45	0.75	46.2
All Vehicles		794	0.0	0.155	3.7	NA	0.6	4.1	0.14	0.27	54.3

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.

INTERSECTION SUMMARY

Site: M17 PM Existing - Wyee Rd - Alliance Ave

M17 Wyee Road/Alliance Ave existing intersection
PM peak 2009 existing flows
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	683	veh/h	820	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.190			
Practical Spare Capacity	321.0	%		
Effective Intersection Capacity	3595	veh/h		
Control Delay (Total)	0.65	veh-h/h	0.78	pers-h/h
Control Delay (Average)	3.4	sec	3.4	sec
Control Delay (Worst Lane)	10.3	sec		
Control Delay (Worst Movement)	10.4	sec	10.4	sec
Geometric Delay (Average)	P	sec		
Stop-Line Delay (Average)	P	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	0.7	veh		
95% Back of Queue - Distance (Worst Lane)	5.2	m		
Total Effective Stops	167	veh/h	200	pers/h
Effective Stop Rate	0.24	per veh	0.24	per pers
Proportion Queued	0.12		0.12	
Performance Index	8.8		8.8	
Travel Distance (Total)	414.0	veh-km/h	496.8	pers-km/h
Travel Distance (Average)	606	m	606	m
Travel Time (Total)	7.6	veh-h/h	9.1	pers-h/h
Travel Time (Average)	39.8	sec	39.8	sec
Travel Speed	54.8	km/h	54.8	km/h
Cost (Total)	237.84	$/h	237.84	$/h
Fuel Consumption (Total)	35.4	L/h		
Carbon Dioxide (Total)	88.5	kg/h		
Hydrocarbons (Total)	0.136	kg/h		
Carbon Monoxide (Total)	4.73	kg/h		
NOx (Total)	0.185	kg/h		

P: You need to Process this Site (F9) for this variable to be computed.

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M17 PM Existing - Wyee Rd - Alliance Ave

M17 Wyee Road/Alliance Ave existing intersection
PM peak 2009 existing flows
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Wyee Road											
1	L	37	0.0	0.020	8.2	LOS A	0.0	0.0	0.00	0.67	49.0
2	T	211	0.0	0.108	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		247	0.0	0.108	1.2	NA	0.0	0.0	0.00	0.10	58.1
North: Wyee Road											
8	T	233	0.0	0.119	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
9	R	49	0.0	0.035	9.0	LOS A	0.2	1.1	0.36	0.63	47.4
Approach		282	0.0	0.119	1.6	NA	0.2	1.1	0.06	0.11	57.3
West: Alliance Ave											
10	L	82	0.0	0.190	10.4	LOS A	0.7	5.2	0.41	0.69	46.7
12	R	72	0.0	0.190	10.2	LOS A	0.7	5.2	0.41	0.76	46.8
Approach		154	0.0	0.190	10.3	LOS A	0.7	5.2	0.41	0.72	46.7
All Vehicles		683	0.0	0.190	3.4	NA	0.7	5.2	0.12	0.24	54.8

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.

INTERSECTION SUMMARY

Site: M017 AM 2015 - Wyee Rd - Alliance Ave

Wyee Road/Alliance Ave intersection
2015 AM peak
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	1124	veh/h	1349	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.350			
Practical Spare Capacity	128.9	%		
Effective Intersection Capacity	3216	veh/h		
Control Delay (Total)	1.56	veh-h/h	1.87	pers-h/h
Control Delay (Average)	5.0	sec	5.0	sec
Control Delay (Worst Lane)	13.8	sec		
Control Delay (Worst Movement)	13.9	sec	13.9	sec
Geometric Delay (Average)	3.6	sec		
Stop-Line Delay (Average)	1.4	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	1.6	veh		
95% Back of Queue - Distance (Worst Lane)	11.4	m		
Total Effective Stops	388	veh/h	466	pers/h
Effective Stop Rate	0.35	per veh	0.35	per pers
Proportion Queued	0.20		0.20	
Performance Index	16.1		16.1	
Travel Distance (Total)	681.1	veh-km/h	817.3	pers-km/h
Travel Distance (Average)	606	m	606	m
Travel Time (Total)	12.9	veh-h/h	15.5	pers-h/h
Travel Time (Average)	41.4	sec	41.4	sec
Travel Speed	52.7	km/h	52.7	km/h
Cost (Total)	408.35	$/h	408.35	$/h
Fuel Consumption (Total)	61.3	L/h		
Carbon Dioxide (Total)	153.3	kg/h		
Hydrocarbons (Total)	0.243	kg/h		
Carbon Monoxide (Total)	9.05	kg/h		
NOx (Total)	0.330	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.

MOVEMENT SUMMARY

Site: M017 AM 2015 - Wyee Rd - Alliance Ave

Wyee Road/Alliance Ave intersection
2015 AM peak
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Wyee Road South											
1	L	88	0.0	0.048	8.2	LOS A	0.0	0.0	0.00	0.67	49.0
2	T	322	0.0	0.165	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		411	0.0	0.165	1.8	NA	0.0	0.0	0.00	0.14	57.2
North: Wyee Road North											
8	T	301	0.0	0.154	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
9	R	208	0.0	0.176	9.9	LOS A	0.8	5.8	0.50	0.72	46.8
Approach		509	0.0	0.176	4.1	NA	0.8	5.8	0.20	0.30	53.8
West: Alliance Ave											
10	L	112	0.0	0.350	13.9	LOS A	1.6	11.4	0.58	0.86	43.4
12	R	93	0.0	0.350	13.7	LOS A	1.6	11.4	0.58	0.89	43.5
Approach		204	0.0	0.350	13.8	LOS A	1.6	11.4	0.58	0.87	43.5
All Vehicles		1124	0.0	0.350	5.0	NA	1.6	11.4	0.20	0.35	52.7

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

INTERSECTION SUMMARY

Site: M017 PM Existing - Wyee Rd - Alliance Ave

Wyee Road/Alliance Ave intersection
2015 PM volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	937	veh/h	1124	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.333			
Practical Spare Capacity	140.1	%		
Effective Intersection Capacity	2811	veh/h		
Control Delay (Total)	1.10	veh-h/h	1.32	pers-h/h
Control Delay (Average)	4.2	sec	4.2	sec
Control Delay (Worst Lane)	12.0	sec		
Control Delay (Worst Movement)	12.1	sec	12.1	sec
Geometric Delay (Average)	3.2	sec		
Stop-Line Delay (Average)	1.1	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	1.6	veh		
95% Back of Queue - Distance (Worst Lane)	11.0	m		
Total Effective Stops	278	veh/h	333	pers/h
Effective Stop Rate	0.30	per veh	0.30	per pers
Proportion Queued	0.16		0.16	
Performance Index	12.8		12.8	
Travel Distance (Total)	567.7	veh-km/h	681.3	pers-km/h
Travel Distance (Average)	606	m	606	m
Travel Time (Total)	10.6	veh-h/h	12.7	pers-h/h
Travel Time (Average)	40.6	sec	40.6	sec
Travel Speed	53.7	km/h	53.7	km/h
Cost (Total)	333.12	$/h	333.12	$/h
Fuel Consumption (Total)	49.7	L/h		
Carbon Dioxide (Total)	124.2	kg/h		
Hydrocarbons (Total)	0.194	kg/h		
Carbon Monoxide (Total)	6.93	kg/h		
NOx (Total)	0.263	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M017 PM Existing - Wyee Rd - Alliance Ave

Wyee Road/Alliance Ave intersection
2015 PM volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Wyee Road											
1	L	57	0.0	0.031	8.2	LOS A	0.0	0.0	0.00	0.67	49.0
2	T	274	0.0	0.140	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		331	0.0	0.140	1.4	NA	0.0	0.0	0.00	0.11	57.8
North: Wyee Road											
8	T	299	0.0	0.153	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
9	R	72	0.0	0.057	9.5	LOS A	0.3	1.8	0.43	0.66	47.1
Approach		371	0.0	0.153	1.8	NA	0.3	1.8	0.08	0.13	57.0
West: Alliance Ave											
10	L	133	0.0	0.333	12.1	LOS A	1.6	11.0	0.52	0.79	45.1
12	R	103	0.0	0.333	11.9	LOS A	1.6	11.0	0.52	0.85	45.1
Approach		236	0.0	0.333	12.0	LOS A	1.6	11.0	0.52	0.82	45.1
All Vehicles		937	0.0	0.333	4.2	NA	1.6	11.0	0.16	0.30	53.7

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

INTERSECTION SUMMARY

Site: M017 AM 2025 - Wyee Rd - Alliance Ave

Wyee Road/Alliance Ave intersection
Roundabout

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	1400	veh/h	1680	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.519			
Practical Spare Capacity	63.7	%		
Effective Intersection Capacity	2697	veh/h		
Control Delay (Total)	2.95	veh-h/h	3.54	pers-h/h
Control Delay (Average)	7.6	sec	7.6	sec
Control Delay (Worst Lane)	9.1	sec		
Control Delay (Worst Movement)	12.2	sec	12.2	sec
Geometric Delay (Average)	6.3	sec		
Stop-Line Delay (Average)	1.2	sec		
Intersection Level of Service (LOS)	LOS A			
95% Back of Queue - Vehicles (Worst Lane)	4.6	veh		
95% Back of Queue - Distance (Worst Lane)	31.9	m		
Total Effective Stops	810	veh/h	971	pers/h
Effective Stop Rate	0.58	per veh	0.58	per pers
Proportion Queued	0.47		0.47	
Performance Index	25.5		25.5	
Travel Distance (Total)	873.3	veh-km/h	1048.0	pers-km/h
Travel Distance (Average)	624	m	624	m
Travel Time (Total)	18.1	veh-h/h	21.7	pers-h/h
Travel Time (Average)	46.5	sec	46.5	sec
Travel Speed	48.3	km/h	48.3	km/h
Cost (Total)	580.21	$/h	580.21	$/h
Fuel Consumption (Total)	90.9	L/h		
Carbon Dioxide (Total)	227.4	kg/h		
Hydrocarbons (Total)	0.378	kg/h		
Carbon Monoxide (Total)	16.97	kg/h		
NOx (Total)	0.533	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
Intersection LOS value for Vehicles is based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M017 AM 2025 - Wyee Rd - Alliance Ave

Wyee Road/Alliance Ave intersection
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Wyee Road South											
1	L	99	0.0	0.460	7.3	LOS A	3.2	22.7	0.59	0.65	48.8
2	T	389	0.0	0.460	6.4	LOS A	3.2	22.7	0.59	0.58	48.8
Approach		488	0.0	0.460	6.5	LOS A	3.2	22.7	0.59	0.59	48.8
North: Wyee Road North											
8	T	421	0.0	0.519	5.1	LOS A	4.6	31.9	0.40	0.42	49.9
9	R	282	0.0	0.519	12.0	LOS A	4.6	31.9	0.40	0.72	46.1
Approach		703	0.0	0.519	7.9	LOS A	4.6	31.9	0.40	0.54	48.2
West: Alliance Ave											
10	L	115	0.0	0.193	6.5	LOS A	0.8	5.5	0.40	0.57	49.1
12	R	94	0.0	0.193	12.2	LOS A	0.8	5.5	0.40	0.77	45.6
Approach		208	0.0	0.193	9.1	LOS A	0.8	5.5	0.40	0.66	47.4
All Vehicles		1400	0.0	0.519	7.6	LOS A	4.6	31.9	0.47	0.58	48.3

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.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

INTERSECTION SUMMARY

Site: M017 PM 2025 - Wyee Rd - Alliance Ave

Wyee Road/Alliance Ave intersection
Roundabout

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	1335	veh/h	1602	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.422			
Practical Spare Capacity	101.2	%		
Effective Intersection Capacity	3160	veh/h		
Control Delay (Total)	2.52	veh-h/h	3.02	pers-h/h
Control Delay (Average)	6.8	sec	6.8	sec
Control Delay (Worst Lane)	9.2	sec		
Control Delay (Worst Movement)	12.4	sec	12.4	sec
Geometric Delay (Average)	5.8	sec		
Stop-Line Delay (Average)	0.9	sec		
Intersection Level of Service (LOS)	LOS A			
95% Back of Queue - Vehicles (Worst Lane)	3.1	veh		
95% Back of Queue - Distance (Worst Lane)	21.9	m		
Total Effective Stops	720	veh/h	863	pers/h
Effective Stop Rate	0.54	per veh	0.54	per pers
Proportion Queued	0.40		0.40	
Performance Index	23.0		23.0	
Travel Distance (Total)	827.1	veh-km/h	992.6	pers-km/h
Travel Distance (Average)	620	m	620	m
Travel Time (Total)	16.8	veh-h/h	20.2	pers-h/h
Travel Time (Average)	45.3	sec	45.3	sec
Travel Speed	49.2	km/h	49.2	km/h
Cost (Total)	539.59	$/h	539.59	$/h
Fuel Consumption (Total)	84.6	L/h		
Carbon Dioxide (Total)	211.5	kg/h		
Hydrocarbons (Total)	0.349	kg/h		
Carbon Monoxide (Total)	15.50	kg/h		
NOx (Total)	0.494	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
Intersection LOS value for Vehicles is based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M017 PM 2025 - Wyee Rd - Alliance Ave

Wyee Road/Alliance Ave intersection
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Wyee Road South											
1	L	79	0.0	0.352	5.8	LOS A	2.4	16.7	0.31	0.50	50.4
2	T	389	0.0	0.352	4.9	LOS A	2.4	16.7	0.31	0.42	51.0
Approach		468	0.0	0.352	5.0	LOS A	2.4	16.7	0.31	0.44	50.9
North: Wyee Road North											
8	T	421	0.0	0.422	5.5	LOS A	3.1	21.9	0.46	0.49	49.7
9	R	92	0.0	0.422	12.3	LOS A	3.1	21.9	0.46	0.79	46.4
Approach		513	0.0	0.422	6.7	LOS A	3.1	21.9	0.46	0.54	49.0
West: Alliance Ave											
10	L	197	0.0	0.318	6.7	LOS A	1.3	9.2	0.41	0.58	49.1
12	R	157	0.0	0.318	12.4	LOS A	1.3	9.2	0.41	0.79	45.6
Approach		354	0.0	0.318	9.2	LOS A	1.3	9.2	0.41	0.67	47.4
All Vehicles		1335	0.0	0.422	6.8	LOS A	3.1	21.9	0.40	0.54	49.2

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.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

INTERSECTION SUMMARY

Site: M018 AM 2025
Proposed Middle Access dev

New Middle Access on Freemans Drive for Cooranbong
2025 AM peak
Signals - Fixed Time Cycle Time = 80 seconds (Practical Cycle Time)

Intersection Performance - Hourly Values						
Performance Measure	Vehicles		Pedestrians		Persons	
Demand Flows (Total)	1601	veh/h	20	ped/h	2422	pers/h
Percent Heavy Vehicles	8.7	%				
Degree of Saturation	0.894		0.022			
Practical Spare Capacity	0.7	%				
Effective Intersection Capacity	1791	veh/h				
Control Delay (Total)	13.11	veh-h/h	0.19	ped-h/h	19.86	pers-h/h
Control Delay (Average)	29.5	sec	34.2	sec	29.5	sec
Control Delay (Worst Lane)	54.1	sec				
Control Delay (Worst Movement)	54.1	sec	34.2	sec	54.1	sec
Geometric Delay (Average)	2.4	sec				
Stop-Line Delay (Average)	27.1	sec				
Intersection Level of Service (LOS)	LOS C		LOS D			
95% Back of Queue - Vehicles (Worst Lane)	27.8	veh				
95% Back of Queue - Distance (Worst Lane)	208.8	m				
Total Effective Stops	1262	veh/h	19	ped/h	1912	pers/h
Effective Stop Rate	0.79	per veh	0.93	per ped	0.79	per pers
Proportion Queued	0.74		0.93		0.74	
Performance Index	69.0		0.4		69.4	
Travel Distance (Total)	969.5	veh-km/h	0.7	ped-km/h	1454.9	pers-km/h
Travel Distance (Average)	606	m	33	m	601	m
Travel Time (Total)	30.0	veh-h/h	0.3	ped-h/h	45.3	pers-h/h
Travel Time (Average)	67.5	sec	59.2	sec	67.4	sec
Travel Speed	32.3	km/h	2.0	km/h	32.1	km/h
Cost (Total)	1026.88	$/h	5.53	$/h	1032.41	$/h
Fuel Consumption (Total)	144.7	L/h				
Carbon Dioxide (Total)	363.0	kg/h				
Hydrocarbons (Total)	0.573	kg/h				
Carbon Monoxide (Total)	26.00	kg/h				
NOx (Total)	0.814	kg/h				

Level of Service (LOS) Method: Delay (RTA NSW).
Intersection LOS value for Vehicles is based on average delay for all vehicle movements.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M018 AM 2025
Proposed Middle Access dev

New Middle Access on Freemans Drive for Cooranbong
2025 AM peak
Signals - Fixed Time Cycle Time = 80 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Freemans Drive South											
1	L	50	8.7	0.053	13.1	LOS A	0.6	4.2	0.35	0.70	44.4
2	T	600	8.7	0.888	38.3	LOS C	27.8	208.8	1.00	1.11	27.9
Approach		650	8.7	0.888	36.3	LOS C	27.8	208.8	0.95	1.07	28.7
North: Freemans Drive North											
8	T	550	8.7	0.482	5.0	LOS A	6.5	48.6	0.33	0.29	51.4
9	R	3	8.7	0.016	38.1	LOS C	0.1	0.7	0.79	0.64	29.4
Approach		553	8.7	0.482	5.1	LOS A	6.5	48.6	0.33	0.29	51.2
West: New Access Road											
10	L	23	8.7	0.055	19.8	LOS B	0.5	3.5	0.54	0.70	39.0
12	R	375	8.7	0.894	54.1	LOS D	17.9	134.9	1.00	1.03	24.1
Approach		398	8.7	0.894	52.1	LOS D	17.9	134.9	0.97	1.01	24.7
All Vehicles		1601	8.7	0.894	29.5	LOS C	27.8	208.8	0.74	0.79	32.3

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.

INTERSECTION SUMMARY

Site: M018 PM 2025 Proposed middle Access dev

New Middle Access on Freemans Drive for North Cooranbong
2025 PM volumes
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Intersection Performance - Hourly Values						
Performance Measure	**Vehicles**		**Pedestrians**		**Persons**	
Demand Flows (Total)	2273	veh/h	20	ped/h	3430	pers/h
Percent Heavy Vehicles	6.0	%				
Degree of Saturation	0.921		0.004			
Practical Spare Capacity	-2.2	%				
Effective Intersection Capacity	2469	veh/h				
Control Delay (Total)	19.29	veh-h/h	0.14	ped-h/h	29.07	pers-h/h
Control Delay (Average)	30.5	sec	24.8	sec	30.5	sec
Control Delay (Worst Lane)	49.6	sec				
Control Delay (Worst Movement)	49.6	sec	30.4	sec	49.6	sec
Geometric Delay (Average)	3.4	sec				
Stop-Line Delay (Average)	27.1	sec				
Intersection Level of Service (LOS)	LOS C		LOS C			
95% Back of Queue - Vehicles (Worst Lane)	48.1	veh				
95% Back of Queue - Distance (Worst Lane)	354.2	m				
Total Effective Stops	1858	veh/h	14	ped/h	2800	pers/h
Effective Stop Rate	0.82	per veh	0.70	per ped	0.82	per pers
Proportion Queued	0.71		0.70		0.71	
Performance Index	105.4		0.4		105.8	
Travel Distance (Total)	1375.9	veh-km/h	0.7	ped-km/h	2064.6	pers-km/h
Travel Distance (Average)	605	m	33	m	602	m
Travel Time (Total)	43.2	veh-h/h	0.3	ped-h/h	65.0	pers-h/h
Travel Time (Average)	68.4	sec	49.8	sec	68.3	sec
Travel Speed	31.9	km/h	2.3	km/h	31.7	km/h
Cost (Total)	1454.81	$/h	4.65	$/h	1459.46	$/h
Fuel Consumption (Total)	198.6	L/h				
Carbon Dioxide (Total)	497.8	kg/h				
Hydrocarbons (Total)	0.818	kg/h				
Carbon Monoxide (Total)	36.76	kg/h				
NOx (Total)	1.127	kg/h				

Level of Service (LOS) Method: Delay (RTA NSW).
Intersection LOS value for Vehicles is based on average delay for all vehicle movements.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M018 PM 2025 Proposed middle Access dev

New Middle Access on Freemans Drive for North Cooranbong
2025 PM volumes
Signals - Fixed Time Cycle Time = 100 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Freemans Drive South											
1	L	447	6.0	0.400	10.7	LOS A	5.1	32.9	0.26	0.72	46.6
2	T	803	6.0	0.921	46.3	LOS D	48.1	354.2	1.00	1.13	25.3
Approach		1250	6.0	0.921	33.6	LOS C	48.1	354.2	0.73	0.98	30.2
North: Freemans Drive North											
8	T	550	6.0	0.500	8.2	LOS A	9.8	72.2	0.40	0.36	47.4
9	R	23	6.0	0.118	30.8	LOS C	0.5	3.9	0.87	0.71	32.5
Approach		573	6.0	0.500	9.1	LOS A	9.8	72.2	0.42	0.37	46.6
West: New Access Road											
10	L	3	6.0	0.009	26.0	LOS B	0.1	0.6	0.60	0.65	35.1
12	R	447	6.0	0.828	49.6	LOS D	22.6	166.4	1.00	0.93	25.4
Approach		450	6.0	0.828	49.4	LOS D	22.6	166.4	0.99	0.93	25.4
All Vehicles		2273	6.0	0.921	30.5	LOS C	48.1	354.2	0.71	0.82	31.9

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.

J.21 M19 Newcastle Street – Doyalson Street

INTERSECTION SUMMARY

Site: M19 AM Existing
Newcastle St - Doyalson

M19 Newcastle St - Doyalson Existing layout
AM peak 2009 existing volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	163	veh/h	196	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.065			
Practical Spare Capacity	1137.1	%		
Effective Intersection Capacity	2523	veh/h		
Control Delay (Total)	0.29	veh-h/h	0.35	pers-h/h
Control Delay (Average)	6.5	sec	6.5	sec
Control Delay (Worst Lane)	8.2	sec		
Control Delay (Worst Movement)	8.7	sec	8.7	sec
Geometric Delay (Average)	P	sec		
Stop-Line Delay (Average)	P	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	0.2	veh		
95% Back of Queue - Distance (Worst Lane)	1.7	m		
Total Effective Stops	81	veh/h	98	pers/h
Effective Stop Rate	0.50	per veh	0.50	per pers
Proportion Queued	0.12		0.12	
Performance Index	2.7		2.7	
Travel Distance (Total)	98.7	veh-km/h	118.4	pers-km/h
Travel Distance (Average)	605	m	605	m
Travel Time (Total)	2.0	veh-h/h	2.4	pers-h/h
Travel Time (Average)	43.2	sec	43.2	sec
Travel Speed	50.4	km/h	50.4	km/h
Cost (Total)	63.27	$/h	63.27	$/h
Fuel Consumption (Total)	10.1	L/h		
Carbon Dioxide (Total)	25.3	kg/h		
Hydrocarbons (Total)	0.042	kg/h		
Carbon Monoxide (Total)	1.89	kg/h		
NOx (Total)	0.059	kg/h		

P: You need to Process this Site (F9) for this variable to be computed.

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M19 AM Existing
Newcastle St - Doyalson

M19 Newcsatle St - Doyalson Existing layout
AM peak 2009 existing volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Doyalson Rd South											
1	L	1	0.0	0.043	8.6	LOS A	0.2	1.5	0.17	0.63	48.5
2	T	15	0.0	0.043	0.4	LOS A	0.2	1.5	0.17	0.00	55.9
3	R	29	0.0	0.043	8.5	LOS A	0.2	1.5	0.17	0.68	48.5
Approach		45	0.0	0.043	5.9	NA	0.2	1.5	0.17	0.46	50.7
East: Newcastle Rd East											
4	L	55	0.0	0.065	8.4	LOS A	0.2	1.7	0.09	0.64	48.6
5	T	9	0.0	0.065	7.2	LOS A	0.2	1.7	0.09	0.55	49.8
6	R	6	0.0	0.065	8.4	LOS A	0.2	1.7	0.09	0.66	48.6
Approach		71	0.0	0.065	8.2	LOS A	0.2	1.7	0.09	0.63	48.7
North: Doyalson Rd North											
7	L	1	0.0	0.014	8.3	LOS A	0.1	0.7	0.11	0.88	48.9
8	T	21	0.0	0.014	0.1	LOS A	0.1	0.7	0.11	0.00	57.7
9	R	2	0.0	0.014	8.5	LOS A	0.1	0.7	0.11	0.97	48.8
Approach		24	0.0	0.014	1.2	NA	0.1	0.7	0.11	0.12	56.4
West: Newcastle Rd West											
10	L	3	0.0	0.024	8.7	LOS A	0.1	0.7	0.14	0.64	48.4
11	T	19	0.0	0.024	7.4	LOS A	0.1	0.7	0.14	0.55	49.5
12	R	1	0.0	0.024	8.7	LOS A	0.1	0.7	0.14	0.70	48.4
Approach		23	0.0	0.024	7.6	LOS A	0.1	0.7	0.14	0.57	49.3
All Vehicles		163	0.0	0.065	6.5	NA	0.2	1.7	0.12	0.50	50.4

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.

INTERSECTION SUMMARY

Site: M19 PM Existing
Newcastle St - Doyalson

M19 Newcastle St - Doyalson Existing layout
PM peak 2009 existing volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	274	veh/h	328	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.076			
Practical Spare Capacity	951.1	%		
Effective Intersection Capacity	3596	veh/h		
Control Delay (Total)	0.63	veh-h/h	0.76	pers-h/h
Control Delay (Average)	8.3	sec	8.3	sec
Control Delay (Worst Lane)	8.5	sec		
Control Delay (Worst Movement)	9.1	sec	9.1	sec
Geometric Delay (Average)	P	sec		
Stop-Line Delay (Average)	P	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	0.4	veh		
95% Back of Queue - Distance (Worst Lane)	3.1	m		
Total Effective Stops	157	veh/h	189	pers/h
Effective Stop Rate	0.57	per veh	0.57	per pers
Proportion Queued	0.18		0.18	
Performance Index	4.7		4.7	
Travel Distance (Total)	165.3	veh-km/h	198.3	pers-km/h
Travel Distance (Average)	604	m	604	m
Travel Time (Total)	3.4	veh-h/h	4.1	pers-h/h
Travel Time (Average)	44.8	sec	44.8	sec
Travel Speed	48.6	km/h	48.6	km/h
Cost (Total)	111.10	$/h	111.10	$/h
Fuel Consumption (Total)	18.2	L/h		
Carbon Dioxide (Total)	45.4	kg/h		
Hydrocarbons (Total)	0.078	kg/h		
Carbon Monoxide (Total)	3.70	kg/h		
NOx (Total)	0.110	kg/h		

P: You need to Process this Site (F9) for this variable to be computed.

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M19 PM Existing
Newcastle St - Doyalson

M19 Newcastle St - Doyalson Existing layout
PM peak 2009 existing volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Doyalson Rd South											
1	L	13	0.0	0.076	8.7	LOS A	0.4	3.1	0.21	0.55	48.1
2	T	38	0.0	0.076	7.4	LOS A	0.4	3.1	0.21	0.45	49.1
3	R	41	0.0	0.076	8.6	LOS A	0.4	3.1	0.21	0.62	48.2
Approach		92	0.0	0.076	8.2	LOS A	0.4	3.1	0.21	0.54	48.5
East: Newcastle Rd East											
4	L	51	0.0	0.076	8.7	LOS A	0.3	2.1	0.10	0.64	48.5
5	T	16	0.0	0.076	7.4	LOS A	0.3	2.1	0.10	0.56	49.7
6	R	11	0.0	0.076	8.7	LOS A	0.3	2.1	0.10	0.68	48.4
Approach		77	0.0	0.076	8.4	LOS A	0.3	2.1	0.10	0.63	48.7
North: Doyalson Rd North											
7	L	12	0.0	0.024	8.7	LOS A	0.2	1.2	0.26	0.51	47.9
8	T	19	0.0	0.024	7.5	LOS A	0.2	1.2	0.26	0.42	48.8
9	R	6	0.0	0.024	8.9	LOS A	0.2	1.2	0.26	0.65	47.9
Approach		37	0.0	0.024	8.1	LOS A	0.2	1.2	0.26	0.49	48.4
West: Newcastle Rd West											
10	L	23	0.0	0.076	9.0	LOS A	0.3	2.1	0.19	0.62	48.1
11	T	29	0.0	0.076	7.8	LOS A	0.3	2.1	0.19	0.56	49.2
12	R	16	0.0	0.076	9.1	LOS A	0.3	2.1	0.19	0.69	48.0
Approach		68	0.0	0.076	8.5	LOS A	0.3	2.1	0.19	0.61	48.5
All Vehicles		274	0.0	0.076	8.3	NA	0.4	3.1	0.18	0.57	48.6

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.

INTERSECTION SUMMARY

Site: M019 AM 2015
Newcastle St - Doyalson

Newcastle St - Doyalson Existing layout
2015 AM volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	446	veh/h	536	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.152			
Practical Spare Capacity	425.5	%		
Effective Intersection Capacity	2932	veh/h		
Control Delay (Total)	1.07	veh-h/h	1.29	pers-h/h
Control Delay (Average)	8.7	sec	8.7	sec
Control Delay (Worst Lane)	11.1	sec		
Control Delay (Worst Movement)	11.7	sec	11.7	sec
Geometric Delay (Average)	7.7	sec		
Stop-Line Delay (Average)	1.0	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	1.4	veh		
95% Back of Queue - Distance (Worst Lane)	9.9	m		
Total Effective Stops	238	veh/h	286	pers/h
Effective Stop Rate	0.53	per veh	0.53	per pers
Proportion Queued	0.29		0.29	
Performance Index	7.8		7.8	
Travel Distance (Total)	269.5	veh-km/h	323.4	pers-km/h
Travel Distance (Average)	604	m	604	m
Travel Time (Total)	5.6	veh-h/h	6.8	pers-h/h
Travel Time (Average)	45.4	sec	45.4	sec
Travel Speed	47.9	km/h	47.9	km/h
Cost (Total)	183.29	$/h	183.29	$/h
Fuel Consumption (Total)	29.8	L/h		
Carbon Dioxide (Total)	74.5	kg/h		
Hydrocarbons (Total)	0.128	kg/h		
Carbon Monoxide (Total)	6.08	kg/h		
NOx (Total)	0.180	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M019 AM 2015
Newcastle St - Doyalson

Newcastle St - Doyalson Existing layout
2015 AM volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Doyalson Rd South											
1	L	1	0.0	0.065	11.7	LOS A	0.4	2.6	0.48	0.36	45.5
2	T	23	0.0	0.065	10.5	LOS A	0.4	2.6	0.48	0.30	46.4
3	R	29	0.0	0.065	11.6	LOS A	0.4	2.6	0.48	0.73	45.6
Approach		54	0.0	0.065	11.1	LOS A	0.4	2.6	0.48	0.54	45.9
East: Newcastle Rd East											
4	L	55	0.0	0.102	9.9	LOS A	0.4	2.7	0.37	0.66	47.2
5	T	9	0.0	0.102	8.6	LOS A	0.4	2.7	0.37	0.62	48.1
6	R	19	0.0	0.102	9.9	LOS A	0.4	2.7	0.37	0.72	47.2
Approach		83	0.0	0.102	9.7	LOS A	0.4	2.7	0.37	0.67	47.3
North: Doyalson Rd North											
7	L	158	0.0	0.152	8.4	LOS A	1.4	9.9	0.23	0.53	48.0
8	T	126	0.0	0.152	7.2	LOS A	1.4	9.9	0.23	0.44	49.0
9	R	2	0.0	0.152	8.6	LOS A	1.4	9.9	0.23	0.64	48.0
Approach		286	0.0	0.152	7.9	LOS A	1.4	9.9	0.23	0.49	48.4
West: Newcastle Rd West											
10	L	3	0.0	0.028	9.5	LOS A	0.1	0.8	0.21	0.61	47.7
11	T	19	0.0	0.028	8.2	LOS A	0.1	0.8	0.21	0.58	48.8
12	R	1	0.0	0.028	9.6	LOS A	0.1	0.8	0.21	0.71	47.6
Approach		23	0.0	0.028	8.5	LOS A	0.1	0.8	0.21	0.59	48.6
All Vehicles		446	0.0	0.152	8.7	NA	1.4	9.9	0.29	0.53	47.9

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

INTERSECTION SUMMARY

Site: M019 PM 2015
Newcastle St - Doyalson

Newcastle St - Doyalson Existing layout
2015 PM volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	537	veh/h	644	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.297			
Practical Spare Capacity	169.2	%		
Effective Intersection Capacity	1806	veh/h		
Control Delay (Total)	1.43	veh-h/h	1.72	pers-h/h
Control Delay (Average)	9.6	sec	9.6	sec
Control Delay (Worst Lane)	10.9	sec		
Control Delay (Worst Movement)	11.0	sec	11.0	sec
Geometric Delay (Average)	7.7	sec		
Stop-Line Delay (Average)	1.9	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	1.3	veh		
95% Back of Queue - Distance (Worst Lane)	9.4	m		
Total Effective Stops	295	veh/h	354	pers/h
Effective Stop Rate	0.55	per veh	0.55	per pers
Proportion Queued	0.37		0.37	
Performance Index	9.7		9.7	
Travel Distance (Total)	324.2	veh-km/h	389.0	pers-km/h
Travel Distance (Average)	604	m	604	m
Travel Time (Total)	6.9	veh-h/h	8.2	pers-h/h
Travel Time (Average)	46.1	sec	46.1	sec
Travel Speed	47.2	km/h	47.2	km/h
Cost (Total)	223.51	$/h	223.51	$/h
Fuel Consumption (Total)	36.2	L/h		
Carbon Dioxide (Total)	90.4	kg/h		
Hydrocarbons (Total)	0.156	kg/h		
Carbon Monoxide (Total)	7.40	kg/h		
NOx (Total)	0.218	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M019 PM 2015
Newcastle St - Doyalson

Newcastle St - Doyalson Existing layout
2015 PM volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Doyalson Rd South											
1	L	13	0.0	0.123	9.3	LOS A	1.0	6.8	0.34	0.46	47.7
2	T	122	0.0	0.123	8.1	LOS A	1.0	6.8	0.34	0.38	48.4
3	R	41	0.0	0.123	9.2	LOS A	1.0	6.8	0.34	0.65	47.7
Approach		176	0.0	0.123	8.4	LOS A	1.0	6.8	0.34	0.45	48.2
East: Newcastle Rd East											
4	L	51	0.0	0.297	11.0	LOS A	1.3	9.4	0.34	0.59	46.1
5	T	16	0.0	0.297	9.7	LOS A	1.3	9.4	0.34	0.63	47.0
6	R	137	0.0	0.297	11.0	LOS A	1.3	9.4	0.34	0.74	46.0
Approach		203	0.0	0.297	10.9	LOS A	1.3	9.4	0.34	0.70	46.1
North: Doyalson Rd North											
7	L	43	0.0	0.052	9.6	LOS A	0.5	3.3	0.51	0.34	47.0
8	T	40	0.0	0.052	8.3	LOS A	0.5	3.3	0.51	0.28	47.4
9	R	6	0.0	0.052	9.8	LOS A	0.5	3.3	0.51	0.66	47.1
Approach		89	0.0	0.052	9.0	LOS A	0.5	3.3	0.51	0.33	47.2
West: Newcastle Rd West											
10	L	23	0.0	0.087	9.9	LOS A	0.3	2.4	0.34	0.63	47.2
11	T	29	0.0	0.087	8.7	LOS A	0.3	2.4	0.34	0.60	48.2
12	R	16	0.0	0.087	10.0	LOS A	0.3	2.4	0.34	0.73	47.2
Approach		68	0.0	0.087	9.4	LOS A	0.3	2.4	0.34	0.64	47.6
All Vehicles		537	0.0	0.297	9.6	NA	1.3	9.4	0.37	0.55	47.2

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.

INTERSECTION SUMMARY

Site: 19 AM 2025 AM
Newcastle St - Doyalson

Newcastle St - Doyalson Existing layout 2009 volumes
Roundabout

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	652	veh/h	782	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.256			
Practical Spare Capacity	231.6	%		
Effective Intersection Capacity	2542	veh/h		
Control Delay (Total)	1.39	veh-h/h	1.67	pers-h/h
Control Delay (Average)	7.7	sec	7.7	sec
Control Delay (Worst Lane)	9.6	sec		
Control Delay (Worst Movement)	12.0	sec	12.0	sec
Geometric Delay (Average)	7.4	sec		
Stop-Line Delay (Average)	0.3	sec		
Intersection Level of Service (LOS)	LOS A			
95% Back of Queue - Vehicles (Worst Lane)	1.4	veh		
95% Back of Queue - Distance (Worst Lane)	10.1	m		
Total Effective Stops	374	veh/h	448	pers/h
Effective Stop Rate	0.57	per veh	0.57	per pers
Proportion Queued	0.20		0.20	
Performance Index	11.0		11.0	
Travel Distance (Total)	395.9	veh-km/h	475.1	pers-km/h
Travel Distance (Average)	608	m	608	m
Travel Time (Total)	8.1	veh-h/h	9.7	pers-h/h
Travel Time (Average)	44.8	sec	44.8	sec
Travel Speed	48.9	km/h	48.9	km/h
Cost (Total)	263.31	$/h	263.31	$/h
Fuel Consumption (Total)	42.6	L/h		
Carbon Dioxide (Total)	106.4	kg/h		
Hydrocarbons (Total)	0.181	kg/h		
Carbon Monoxide (Total)	8.42	kg/h		
NOx (Total)	0.255	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
Intersection LOS value for Vehicles is based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: 19 AM 2025 AM
Newcastle St - Doyalson

Newcastle St - Doyalson Existing layout 2009 volumes
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Doyalson Rd South											
1	L	1	0.0	0.099	7.5	LOS A	0.3	2.4	0.15	0.62	49.2
2	T	101	0.0	0.099	6.6	LOS A	0.3	2.4	0.15	0.51	50.0
3	R	29	0.0	0.099	11.1	LOS A	0.3	2.4	0.15	0.80	46.2
Approach		132	0.0	0.099	7.6	LOS A	0.3	2.4	0.15	0.58	49.1
East: Newcastle Rd East											
4	L	55	0.0	0.104	7.9	LOS A	0.4	2.6	0.25	0.60	48.6
5	T	9	0.0	0.104	6.9	LOS A	0.4	2.6	0.25	0.51	49.2
6	R	63	0.0	0.104	11.4	LOS A	0.4	2.6	0.25	0.72	45.7
Approach		127	0.0	0.104	9.6	LOS A	0.4	2.6	0.25	0.66	47.1
North: Doyalson Rd North											
7	L	189	0.0	0.256	7.4	LOS A	1.4	10.1	0.18	0.59	49.2
8	T	178	0.0	0.256	6.7	LOS A	1.4	10.1	0.18	0.50	49.8
9	R	2	0.0	0.256	11.2	LOS A	1.4	10.1	0.18	0.77	46.1
Approach		369	0.0	0.256	7.1	LOS A	1.4	10.1	0.18	0.55	49.4
West: Newcastle Rd West											
10	L	3	0.0	0.021	8.2	LOS A	0.1	0.8	0.38	0.58	48.4
11	T	19	0.0	0.021	7.5	LOS A	0.1	0.8	0.38	0.52	48.6
12	R	1	0.0	0.021	12.0	LOS A	0.1	0.8	0.38	0.74	45.9
Approach		23	0.0	0.021	7.8	LOS A	0.1	0.8	0.38	0.54	48.5
All Vehicles		652	0.0	0.256	7.7	LOS A	1.4	10.1	0.20	0.57	48.9

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.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

INTERSECTION SUMMARY

Site: M019 PM 2025 AM
Newcastle St - Doyalson

PM Newcastle St - Doyalson Existing layout 2009 volumes
Roundabout

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	674	veh/h	808	pers/h
Percent Heavy Vehicles	0.0	%		
Degree of Saturation	0.195			
Practical Spare Capacity	336.1	%		
Effective Intersection Capacity	3456	veh/h		
Control Delay (Total)	1.68	veh-h/h	2.02	pers-h/h
Control Delay (Average)	9.0	sec	9.0	sec
Control Delay (Worst Lane)	10.2	sec		
Control Delay (Worst Movement)	13.3	sec	13.3	sec
Geometric Delay (Average)	8.4	sec		
Stop-Line Delay (Average)	0.6	sec		
Intersection Level of Service (LOS)	LOS A			
95% Back of Queue - Vehicles (Worst Lane)	0.7	veh		
95% Back of Queue - Distance (Worst Lane)	5.2	m		
Total Effective Stops	423	veh/h	508	pers/h
Effective Stop Rate	0.63	per veh	0.63	per pers
Proportion Queued	0.26		0.26	
Performance Index	11.8		11.8	
Travel Distance (Total)	412.7	veh-km/h	495.2	pers-km/h
Travel Distance (Average)	613	m	613	m
Travel Time (Total)	8.7	veh-h/h	10.4	pers-h/h
Travel Time (Average)	46.3	sec	46.3	sec
Travel Speed	47.6	km/h	47.6	km/h
Cost (Total)	280.85	$/h	280.85	$/h
Fuel Consumption (Total)	45.1	L/h		
Carbon Dioxide (Total)	112.8	kg/h		
Hydrocarbons (Total)	0.193	kg/h		
Carbon Monoxide (Total)	9.03	kg/h		
NOx (Total)	0.270	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
Intersection LOS value for Vehicles is based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M019 PM 2025 AM
Newcastle St - Doyalson

PM Newcastle St - Doyalson Existing layout 2009 volumes
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Doyalson Rd South											
1	L	13	0.0	0.164	8.0	LOS A	0.6	4.4	0.29	0.65	48.6
2	T	143	0.0	0.164	7.1	LOS A	0.6	4.4	0.29	0.56	49.1
3	R	41	0.0	0.164	11.6	LOS A	0.6	4.4	0.29	0.80	46.0
Approach		197	0.0	0.164	8.1	LOS A	0.6	4.4	0.29	0.62	48.4
East: Newcastle Rd East											
4	L	51	0.0	0.195	7.6	LOS A	0.7	5.2	0.17	0.58	48.9
5	T	16	0.0	0.195	6.7	LOS A	0.7	5.2	0.17	0.48	49.7
6	R	200	0.0	0.195	11.2	LOS A	0.7	5.2	0.17	0.70	45.9
Approach		266	0.0	0.195	10.2	LOS A	0.7	5.2	0.17	0.67	46.6
North: Doyalson Rd North											
7	L	75	0.0	0.111	7.6	LOS A	0.6	3.9	0.23	0.59	48.9
8	T	61	0.0	0.111	6.8	LOS A	0.6	3.9	0.23	0.50	49.4
9	R	6	0.0	0.111	11.3	LOS A	0.6	3.9	0.23	0.75	46.0
Approach		142	0.0	0.111	7.4	LOS A	0.6	3.9	0.23	0.56	49.0
West: Newcastle Rd West											
10	L	23	0.0	0.073	9.5	LOS A	0.4	2.8	0.54	0.65	47.5
11	T	29	0.0	0.073	8.8	LOS A	0.4	2.8	0.54	0.61	47.4
12	R	16	0.0	0.073	13.3	LOS A	0.4	2.8	0.54	0.76	44.7
Approach		68	0.0	0.073	10.1	LOS A	0.4	2.8	0.54	0.66	46.8
All Vehicles		674	0.0	0.195	9.0	LOS A	0.7	5.2	0.26	0.63	47.6

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.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

J.22 M20 Freemans Drive and Alton Road

INTERSECTION SUMMARY

Site: M20 AM Freeman/Alton

M20 Freemans Drive and Alton Road (Give Way)
AM Peak 2009 existing volumes
Stop (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	937	veh/h	1406	pers/h
Percent Heavy Vehicles	8.7	%		
Degree of Saturation	0.278			
Practical Spare Capacity	188.2	%		
Effective Intersection Capacity	3376	veh/h		
Control Delay (Total)	0.95	veh-h/h	1.43	pers-h/h
Control Delay (Average)	3.7	sec	3.7	sec
Control Delay (Worst Lane)	25.2	sec		
Control Delay (Worst Movement)	25.2	sec	25.2	sec
Geometric Delay (Average)	P	sec		
Stop-Line Delay (Average)	P	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	1.1	veh		
95% Back of Queue - Distance (Worst Lane)	8.0	m		
Total Effective Stops	194	veh/h	292	pers/h
Effective Stop Rate	0.21	per veh	0.21	per pers
Proportion Queued	0.13		0.13	
Performance Index	12.5		12.5	
Travel Distance (Total)	567.5	veh-km/h	851.3	pers-km/h
Travel Distance (Average)	606	m	606	m
Travel Time (Total)	10.6	veh-h/h	16.0	pers-h/h
Travel Time (Average)	40.9	sec	40.9	sec
Travel Speed	53.3	km/h	53.3	km/h
Cost (Total)	375.09	$/h	375.09	$/h
Fuel Consumption (Total)	57.4	L/h		
Carbon Dioxide (Total)	144.0	kg/h		
Hydrocarbons (Total)	0.191	kg/h		
Carbon Monoxide (Total)	6.77	kg/h		
NOx (Total)	0.267	kg/h		

P: You need to Process this Site (F9) for this variable to be computed.

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M20 AM Freeman/Alton

M20 Freemans Drive and Alton Road (Give Way)
AM Peak 2009 existing volumes
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Freemans Drive South											
1	L	48	8.7	0.027	8.5	LOS A	0.0	0.0	0.00	0.67	49.0
2	T	462	8.7	0.250	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		510	8.7	0.250	0.8	NA	0.0	0.0	0.00	0.06	58.8
North: Freemans Drive North											
8	T	233	8.7	0.126	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
9	R	48	8.7	0.068	11.4	LOS A	0.2	1.7	0.51	0.75	45.9
Approach		281	8.7	0.126	1.9	NA	0.2	1.7	0.09	0.13	57.0
West: Alton Road											
10	L	84	8.7	0.130	11.0	LOS A	0.5	3.6	0.52	0.79	40.9
12	R	62	8.7	0.278	25.2	LOS B	1.1	8.0	0.80	0.97	32.3
Approach		146	8.7	0.278	17.0	LOS B	1.1	8.0	0.64	0.86	36.7
All Vehicles		937	8.7	0.278	3.7	NA	1.1	8.0	0.13	0.21	53.3

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.

INTERSECTION SUMMARY

Site: M20 PM Existing Freemans/Alton

Freemans Drive and Alton Road existing layout (Give Way)
PM Peak existing flows 2009
Stop (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	1138	veh/h	1707	pers/h
Percent Heavy Vehicles	5.8	%		
Degree of Saturation	0.533			
Practical Spare Capacity	50.1	%		
Effective Intersection Capacity	2135	veh/h		
Control Delay (Total)	1.87	veh-h/h	2.80	pers-h/h
Control Delay (Average)	5.9	sec	5.9	sec
Control Delay (Worst Lane)	37.5	sec		
Control Delay (Worst Movement)	37.5	sec	37.5	sec
Geometric Delay (Average)	P	sec		
Stop-Line Delay (Average)	P	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	2.4	veh		
95% Back of Queue - Distance (Worst Lane)	17.5	m		
Total Effective Stops	335	veh/h	502	pers/h
Effective Stop Rate	0.29	per veh	0.29	per pers
Proportion Queued	0.17		0.17	
Performance Index	16.9		16.9	
Travel Distance (Total)	688.8	veh-km/h	1033.3	pers-km/h
Travel Distance (Average)	605	m	605	m
Travel Time (Total)	13.6	veh-h/h	20.4	pers-h/h
Travel Time (Average)	43.0	sec	43.0	sec
Travel Speed	50.7	km/h	50.7	km/h
Cost (Total)	471.25	$/h	471.25	$/h
Fuel Consumption (Total)	69.7	L/h		
Carbon Dioxide (Total)	174.7	kg/h		
Hydrocarbons (Total)	0.251	kg/h		
Carbon Monoxide (Total)	9.42	kg/h		
NOx (Total)	0.348	kg/h		

P: You need to Process this Site (F9) for this variable to be computed.

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M20 PM Existing Freemans/Alton

Freemans Drive and Alton Road existing layout (Give Way)
PM Peak existing flows 2009
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Freemans Drive South											
1	L	98	5.8	0.055	8.4	LOS A	0.0	0.0	0.00	0.67	49.0
2	T	372	5.8	0.198	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		470	5.8	0.198	1.8	NA	0.0	0.0	0.00	0.14	57.3
North: Freemans Drive North											
8	T	357	5.8	0.190	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
9	R	152	5.8	0.201	11.0	LOS A	0.7	5.2	0.51	0.78	46.2
Approach		509	5.8	0.201	3.3	NA	0.7	5.2	0.15	0.23	55.1
West: Alton Road											
10	L	63	5.8	0.085	9.9	LOS A	0.3	2.2	0.46	0.72	41.7
12	R	96	5.8	0.533	37.5	LOS C	2.4	17.5	0.89	1.10	27.2
Approach		159	5.8	0.533	26.5	LOS B	2.4	17.5	0.72	0.95	31.6
All Vehicles		1138	5.8	0.533	5.9	NA	2.4	17.5	0.17	0.29	50.7

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

INTERSECTION SUMMARY

Site: M020 AM 2015
Freeman/Alton with Central Rd

Freemans Drive and Alton Road
2015 AM volumes
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	1016	veh/h	1524	pers/h
Percent Heavy Vehicles	8.7	%		
Degree of Saturation	0.270			
Practical Spare Capacity	196.5	%		
Effective Intersection Capacity	3765	veh/h		
Control Delay (Total)	0.85	veh-h/h	1.27	pers-h/h
Control Delay (Average)	3.0	sec	3.0	sec
Control Delay (Worst Lane)	14.4	sec		
Control Delay (Worst Movement)	14.4	sec	14.4	sec
Geometric Delay (Average)	2.4	sec		
Stop-Line Delay (Average)	0.6	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	0.5	veh		
95% Back of Queue - Distance (Worst Lane)	3.7	m		
Total Effective Stops	219	veh/h	329	pers/h
Effective Stop Rate	0.22	per veh	0.22	per pers
Proportion Queued	0.10		0.10	
Performance Index	13.0		13.0	
Travel Distance (Total)	615.6	veh-km/h	923.5	pers-km/h
Travel Distance (Average)	606	m	606	m
Travel Time (Total)	11.3	veh-h/h	16.9	pers-h/h
Travel Time (Average)	40.0	sec	40.0	sec
Travel Speed	54.5	km/h	54.5	km/h
Cost (Total)	399.57	$/h	399.57	$/h
Fuel Consumption (Total)	61.7	L/h		
Carbon Dioxide (Total)	154.8	kg/h		
Hydrocarbons (Total)	0.204	kg/h		
Carbon Monoxide (Total)	7.19	kg/h		
NOx (Total)	0.287	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M020 AM 2015 Freeman/Alton with Central Rd

Freemans Drive and Alton Road
2015 AM volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Freemans Drive South											
1	L	48	8.7	0.027	8.5	LOS A	0.0	0.0	0.00	0.67	49.0
2	T	498	8.7	0.270	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		546	8.7	0.270	0.7	NA	0.0	0.0	0.00	0.06	58.8
North: Freemans Drive North											
8	T	269	8.7	0.146	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
9	R	52	8.7	0.076	11.7	LOS A	0.3	2.0	0.53	0.77	45.7
Approach		321	8.7	0.146	1.9	NA	0.3	2.0	0.09	0.13	57.1
West: Alton Road											
10	L	84	8.7	0.137	14.4	LOS A	0.5	3.7	0.54	0.97	39.3
12	R	65	8.7	0.091	12.8	LOS A	0.2	1.4	0.41	1.00	40.4
Approach		149	8.7	0.137	13.7	LOS A	0.5	3.7	0.48	0.99	39.8
All Vehicles		1016	8.7	0.270	3.0	NA	0.5	3.7	0.10	0.22	54.5

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.

INTERSECTION SUMMARY

Site: M020 PM Existing Freemans/Alton with Central Rd

Freemans Drive and Alton Road
2015 PM Peak
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	1212	veh/h	1818	pers/h
Percent Heavy Vehicles	5.8	%		
Degree of Saturation	0.219			
Practical Spare Capacity	265.4	%		
Effective Intersection Capacity	5536	veh/h		
Control Delay (Total)	1.35	veh-h/h	2.03	pers-h/h
Control Delay (Average)	4.0	sec	4.0	sec
Control Delay (Worst Lane)	13.1	sec		
Control Delay (Worst Movement)	13.1	sec	13.1	sec
Geometric Delay (Average)	3.3	sec		
Stop-Line Delay (Average)	0.7	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	0.8	veh		
95% Back of Queue - Distance (Worst Lane)	5.8	m		
Total Effective Stops	360	veh/h	540	pers/h
Effective Stop Rate	0.30	per veh	0.30	per pers
Proportion Queued	0.14		0.14	
Performance Index	16.5		16.5	
Travel Distance (Total)	734.0	veh-km/h	1101.0	pers-km/h
Travel Distance (Average)	606	m	606	m
Travel Time (Total)	13.8	veh-h/h	20.7	pers-h/h
Travel Time (Average)	41.0	sec	41.0	sec
Travel Speed	53.2	km/h	53.2	km/h
Cost (Total)	483.02	$/h	483.02	$/h
Fuel Consumption (Total)	73.3	L/h		
Carbon Dioxide (Total)	183.7	kg/h		
Hydrocarbons (Total)	0.261	kg/h		
Carbon Monoxide (Total)	9.96	kg/h		
NOx (Total)	0.369	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M020 PM Existing Freemans/Alton with Central Rd

Freemans Drive and Alton Road
2015 PM Peak
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Freemans Drive South											
1	L	98	5.8	0.055	8.4	LOS A	0.0	0.0	0.00	0.67	49.0
2	T	397	5.8	0.211	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		495	5.8	0.211	1.7	NA	0.0	0.0	0.00	0.13	57.4
North: Freemans Drive North											
8	T	384	5.8	0.204	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
9	R	164	5.8	0.219	11.2	LOS A	0.8	5.8	0.53	0.79	46.0
Approach		548	5.8	0.219	3.4	NA	0.8	5.8	0.16	0.24	55.0
West: Alton Road											
10	L	63	5.8	0.087	13.1	LOS A	0.3	2.3	0.47	0.93	40.1
12	R	106	5.8	0.156	13.1	LOS A	0.3	2.5	0.47	1.00	40.2
Approach		169	5.8	0.156	13.1	LOS A	0.3	2.5	0.47	0.97	40.1
All Vehicles		1212	5.8	0.219	4.0	NA	0.8	5.8	0.14	0.30	53.2

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.

INTERSECTION SUMMARY

Site: M020 AM 2025
Freemans/Alton with Central Rd

Freemans Drive and Alton Road
PM
Signals - Fixed Time Cycle Time = 80 seconds (Practical Cycle Time)

Intersection Performance - Hourly Values						
Performance Measure	Vehicles		Pedestrians		Persons	
Demand Flows (Total)	1909	veh/h	53	ped/h	2917	pers/h
Percent Heavy Vehicles	5.8	%				
Degree of Saturation	1.000		0.011			
Practical Spare Capacity	-10.0	%				
Effective Intersection Capacity	1909	veh/h				
Control Delay (Total)	12.14	veh-h/h	0.22	ped-h/h	18.44	pers-h/h
Control Delay (Average)	22.9	sec	15.0	sec	22.8	sec
Control Delay (Worst Lane)	51.4	sec				
Control Delay (Worst Movement)	51.4	sec	15.0	sec	51.4	sec
Geometric Delay (Average)	1.6	sec				
Stop-Line Delay (Average)	21.3	sec				
Intersection Level of Service (LOS)	LOS B		LOS B			
95% Back of Queue - Vehicles (Worst Lane)	37.0	veh				
95% Back of Queue - Distance (Worst Lane)	271.7	m				
Total Effective Stops	1441	veh/h	32	ped/h	2195	pers/h
Effective Stop Rate	0.76	per veh	0.61	per ped	0.75	per pers
Proportion Queued	0.73		0.61		0.73	
Performance Index	76.1		0.8		76.9	
Travel Distance (Total)	1156.5	veh-km/h	1.7	ped-km/h	1736.4	pers-km/h
Travel Distance (Average)	606	m	32	m	595	m
Travel Time (Total)	32.7	veh-h/h	0.6	ped-h/h	49.7	pers-h/h
Travel Time (Average)	61.7	sec	39.5	sec	61.3	sec
Travel Speed	35.3	km/h	2.9	km/h	34.9	km/h
Cost (Total)	1101.12	$/h	9.78	$/h	1110.90	$/h
Fuel Consumption (Total)	156.4	L/h				
Carbon Dioxide (Total)	391.9	kg/h				
Hydrocarbons (Total)	0.627	kg/h				
Carbon Monoxide (Total)	28.34	kg/h				
NOx (Total)	0.887	kg/h				

Level of Service (LOS) Method: Delay (RTA NSW).
Intersection LOS value for Vehicles is based on average delay for all vehicle movements.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M020 AM 2025 Freemans/Alton with Central Rd

Freemans Drive and Alton Road
PM
Signals - Fixed Time Cycle Time = 80 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Freemans Drive South											
1	L	98	5.8	0.354	20.9	LOS B	2.1	15.5	0.58	0.74	38.2
2	T	800	5.8	0.896	34.3	LOS C	37.0	271.7	0.99	1.10	29.4
Approach		898	5.8	0.896	32.8	LOS C	37.0	271.7	0.94	1.06	30.2
North: Freemans Drive North											
8	T	719	5.8	0.495	3.5	LOS A	10.1	74.4	0.39	0.36	52.8
9	R	133	5.8	1.000 [3]	39.5	LOS C	4.4	32.6	0.95	0.78	28.8
Approach		852	5.8	1.000	9.1	LOS A	10.1	74.4	0.48	0.43	46.8
West: Alton Road											
10	L	63	5.8	0.266	24.8	LOS B	1.6	11.7	0.68	0.72	32.4
12	R	96	5.8	0.718	51.4	LOS D	4.1	30.1	1.00	0.87	23.2
Approach		159	5.8	0.718	40.8	LOS C	4.1	30.1	0.87	0.81	26.2
All Vehicles		1909	5.8	1.000	22.9	LOS B	37.0	271.7	0.73	0.76	35.3

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.

3 x = 1.00 due to short lane. Refer to the Lane Summary report for information about excess flow and related conditions.

INTERSECTION SUMMARY

Site: M020 PM 2025
Freemans/Alton with Central Rd

Freemans Drive and Alton Road
PM
Signals - Fixed Time Cycle Time = 70 seconds (Practical Cycle Time)

Intersection Performance - Hourly Values						
Performance Measure	Vehicles		Pedestrians		Persons	
Demand Flows (Total)	1909	veh/h	53	ped/h	2917	pers/h
Percent Heavy Vehicles	5.8	%				
Degree of Saturation	0.996		0.014			
Practical Spare Capacity	-9.6	%				
Effective Intersection Capacity	1917	veh/h				
Control Delay (Total)	11.40	veh-h/h	0.24	ped-h/h	17.34	pers-h/h
Control Delay (Average)	21.5	sec	16.5	sec	21.4	sec
Control Delay (Worst Lane)	44.3	sec				
Control Delay (Worst Movement)	44.3	sec	16.5	sec	44.3	sec
Geometric Delay (Average)	1.7	sec				
Stop-Line Delay (Average)	19.8	sec				
Intersection Level of Service (LOS)	LOS B		LOS B			
95% Back of Queue - Vehicles (Worst Lane)	29.9	veh				
95% Back of Queue - Distance (Worst Lane)	219.7	m				
Total Effective Stops	1475	veh/h	36	ped/h	2249	pers/h
Effective Stop Rate	0.77	per veh	0.69	per ped	0.77	per pers
Proportion Queued	0.75		0.69		0.75	
Performance Index	71.9		0.8		72.7	
Travel Distance (Total)	1156.4	veh-km/h	1.7	ped-km/h	1736.3	pers-km/h
Travel Distance (Average)	606	m	32	m	595	m
Travel Time (Total)	32.0	veh-h/h	0.6	ped-h/h	48.6	pers-h/h
Travel Time (Average)	60.3	sec	41.0	sec	60.0	sec
Travel Speed	36.1	km/h	2.8	km/h	35.7	km/h
Cost (Total)	1080.81	$/h	10.14	$/h	1090.95	$/h
Fuel Consumption (Total)	156.2	L/h				
Carbon Dioxide (Total)	391.3	kg/h				
Hydrocarbons (Total)	0.626	kg/h				
Carbon Monoxide (Total)	28.73	kg/h				
NOx (Total)	0.895	kg/h				

Level of Service (LOS) Method: Delay (RTA NSW).
Intersection LOS value for Vehicles is based on average delay for all vehicle movements.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M020 PM 2025 Freemans/Alton with Central Rd

Freemans Drive and Alton Road
PM
Signals - Fixed Time Cycle Time = 70 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Freemans Drive South											
1	L	98	5.8	0.350	22.1	LOS B	2.1	15.3	0.65	0.74	37.4
2	T	700	5.8	0.899	35.0	LOS C	29.9	219.7	1.00	1.15	29.1
Approach		798	5.8	0.899	33.4	LOS C	29.9	219.7	0.96	1.10	29.9
North: Freemans Drive North											
8	T	800	5.8	0.573	4.3	LOS A	12.2	89.4	0.48	0.44	51.5
9	R	152	5.8	0.996	35.2	LOS C	4.4	32.6	0.95	0.79	30.5
Approach		952	5.8	0.996	9.2	LOS A	12.2	89.4	0.56	0.50	46.4
West: Alton Road											
10	L	63	5.8	0.224	20.8	LOS B	1.3	9.6	0.64	0.72	34.5
12	R	96	5.8	0.628	44.3	LOS D	3.5	25.7	1.00	0.82	25.1
Approach		159	5.8	0.628	35.0	LOS C	3.5	25.7	0.86	0.78	28.1
All Vehicles		1909	5.8	0.996	21.5	LOS B	29.9	219.7	0.75	0.77	36.1

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.

INTERSECTION SUMMARY

Site: M023 AM Freemans Drive - Awaba Rd 2025

Freemans Rd and Awaba
2015 AM volumes roundabout
Roundabout

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	998	veh/h	1197	pers/h
Percent Heavy Vehicles	2.5	%		
Degree of Saturation	0.289			
Practical Spare Capacity	193.9	%		
Effective Intersection Capacity	3451	veh/h		
Control Delay (Total)	1.62	veh-h/h	1.94	pers-h/h
Control Delay (Average)	5.8	sec	5.8	sec
Control Delay (Worst Lane)	9.5	sec		
Control Delay (Worst Movement)	12.4	sec	12.4	sec
Geometric Delay (Average)	5.3	sec		
Stop-Line Delay (Average)	0.5	sec		
Intersection Level of Service (LOS)	LOS A			
95% Back of Queue - Vehicles (Worst Lane)	2.0	veh		
95% Back of Queue - Distance (Worst Lane)	14.5	m		
Total Effective Stops	459	veh/h	551	pers/h
Effective Stop Rate	0.46	per veh	0.46	per pers
Proportion Queued	0.24		0.24	
Performance Index	16.1		16.1	
Travel Distance (Total)	615.0	veh-km/h	737.9	pers-km/h
Travel Distance (Average)	616	m	616	m
Travel Time (Total)	12.1	veh-h/h	14.5	pers-h/h
Travel Time (Average)	43.7	sec	43.7	sec
Travel Speed	50.8	km/h	50.8	km/h
Cost (Total)	398.54	$/h	398.54	$/h
Fuel Consumption (Total)	65.2	L/h		
Carbon Dioxide (Total)	163.2	kg/h		
Hydrocarbons (Total)	0.253	kg/h		
Carbon Monoxide (Total)	11.41	kg/h		
NOx (Total)	0.376	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
Intersection LOS value for Vehicles is based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M023 AM Freemans Drive - Awaba Rd 2025

Freemans Rd and Awaba
2015 AM volumes roundabout
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Freemans Rd South											
2	T	417	4.0	0.289	5.0	LOS A	2.0	14.5	0.33	0.42	50.9
3	R	4	0.0	0.289	11.8	LOS A	2.0	14.5	0.33	0.83	46.8
Approach		421	4.0	0.289	5.1	LOS A	2.0	14.5	0.33	0.43	50.9
North East: Awaba St East											
4	L	105	0.0	0.168	6.5	LOS A	0.9	6.3	0.42	0.53	49.1
6	R	105	0.0	0.168	12.4	LOS A	0.9	6.3	0.42	0.72	45.5
Approach		211	0.0	0.168	9.5	LOS A	0.9	6.3	0.42	0.63	47.2
North West: Freemans Rd north											
7	L	84	0.0	0.206	5.3	LOS A	1.3	9.5	0.04	0.48	52.1
8	T	282	3.0	0.206	4.4	LOS A	1.3	9.5	0.04	0.38	53.3
Approach		366	2.3	0.206	4.6	LOS A	1.3	9.5	0.04	0.40	53.0
All Vehicles		998	2.5	0.289	5.8	LOS A	2.0	14.5	0.24	0.46	50.8

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.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

INTERSECTION SUMMARY

Site: M023 PM 2025 Freemans Dr- Awaba Rd

M023 Freemans Rd and Awaba Rd
2015 PM volumes roundabout
Roundabout

Intersection Performance - Hourly Values				
Performance Measure	Vehicles		Persons	
Demand Flows (Total)	1459	veh/h	1751	pers/h
Percent Heavy Vehicles	1.5	%		
Degree of Saturation	0.474			
Practical Spare Capacity	79.5	%		
Effective Intersection Capacity	3081	veh/h		
Control Delay (Total)	2.90	veh-h/h	3.48	pers-h/h
Control Delay (Average)	7.2	sec	7.2	sec
Control Delay (Worst Lane)	12.8	sec		
Control Delay (Worst Movement)	13.1	sec	13.1	sec
Geometric Delay (Average)	6.0	sec		
Stop-Line Delay (Average)	1.1	sec		
Intersection Level of Service (LOS)	LOS A			
95% Back of Queue - Vehicles (Worst Lane)	4.0	veh		
95% Back of Queue - Distance (Worst Lane)	28.2	m		
Total Effective Stops	790	veh/h	948	pers/h
Effective Stop Rate	0.54	per veh	0.54	per pers
Proportion Queued	0.49		0.49	
Performance Index	25.9		25.9	
Travel Distance (Total)	906.6	veh-km/h	1087.9	pers-km/h
Travel Distance (Average)	621	m	621	m
Travel Time (Total)	18.7	veh-h/h	22.4	pers-h/h
Travel Time (Average)	46.1	sec	46.1	sec
Travel Speed	48.5	km/h	48.5	km/h
Cost (Total)	609.54	$/h	609.54	$/h
Fuel Consumption (Total)	98.2	L/h		
Carbon Dioxide (Total)	245.6	kg/h		
Hydrocarbons (Total)	0.397	kg/h		
Carbon Monoxide (Total)	18.21	kg/h		
NOx (Total)	0.577	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
Intersection LOS value for Vehicles is based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: M023 PM 2025 Freemans Dr- Awaba Rd

M023 Freemans Rd and Awaba Rd
2015 PM volumes roundabout
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: Freemans Rd South											
2	T	514	2.1	0.474	5.8	LOS A	4.0	28.2	0.56	0.52	48.9
3	R	105	0.0	0.474	12.6	LOS A	4.0	28.2	0.56	0.78	46.4
Approach		619	1.7	0.474	7.0	LOS A	4.0	28.2	0.56	0.57	48.4
North East: Awaba Rd East											
4	L	11	0.0	0.198	7.2	LOS A	1.2	8.3	0.56	0.60	47.7
6	R	211	0.0	0.198	13.1	LOS A	1.2	8.3	0.56	0.72	44.4
Approach		221	0.0	0.198	12.8	LOS A	1.2	8.3	0.56	0.71	44.6
North West: Freemans Rd north											
7	L	211	0.0	0.420	5.9	LOS A	3.5	24.8	0.39	0.50	49.9
8	T	408	2.6	0.420	5.1	LOS A	3.5	24.8	0.39	0.43	50.4
Approach		619	1.7	0.420	5.3	LOS A	3.5	24.8	0.39	0.45	50.2
All Vehicles		1459	1.5	0.474	7.2	LOS A	4.0	28.2	0.49	0.54	48.5

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.