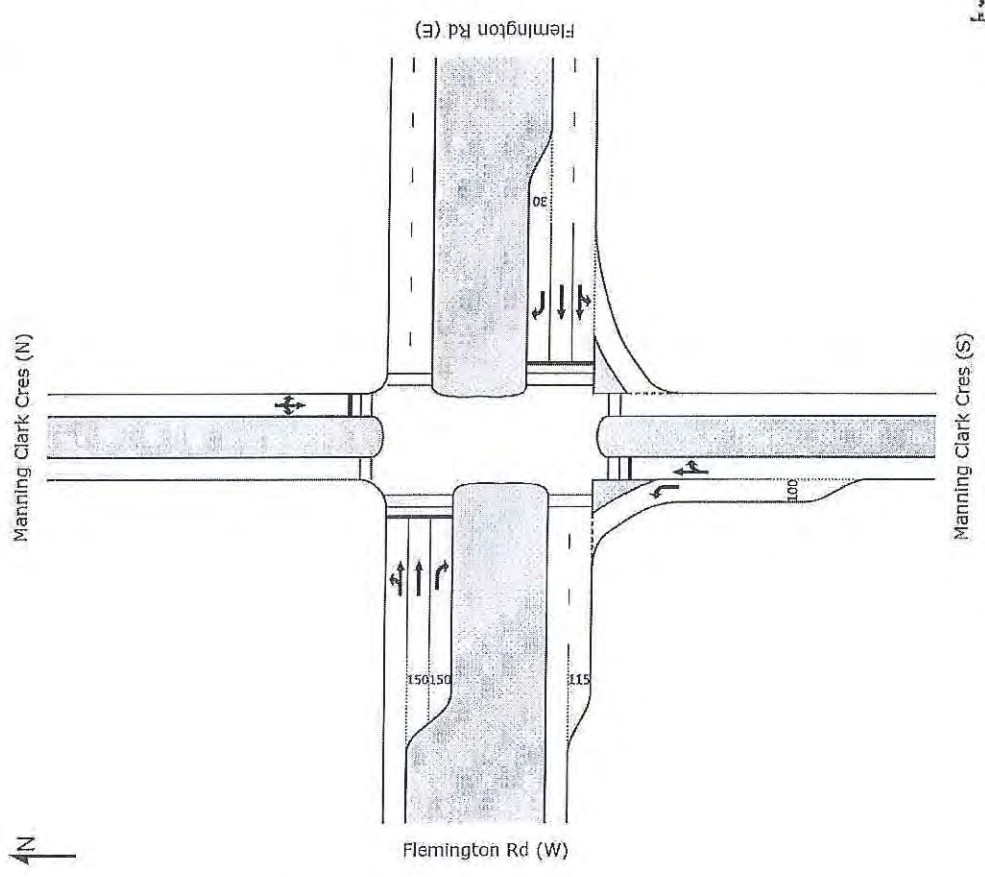


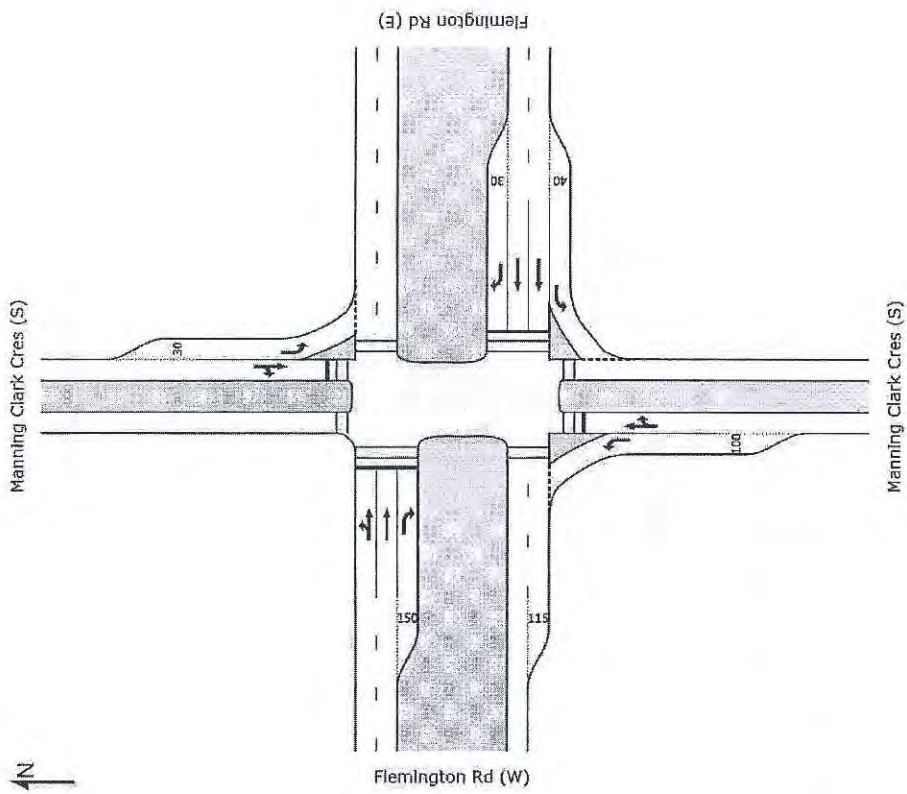
6: Layout used in 'Base' scenario



6: Layout used in GTCERN scenario

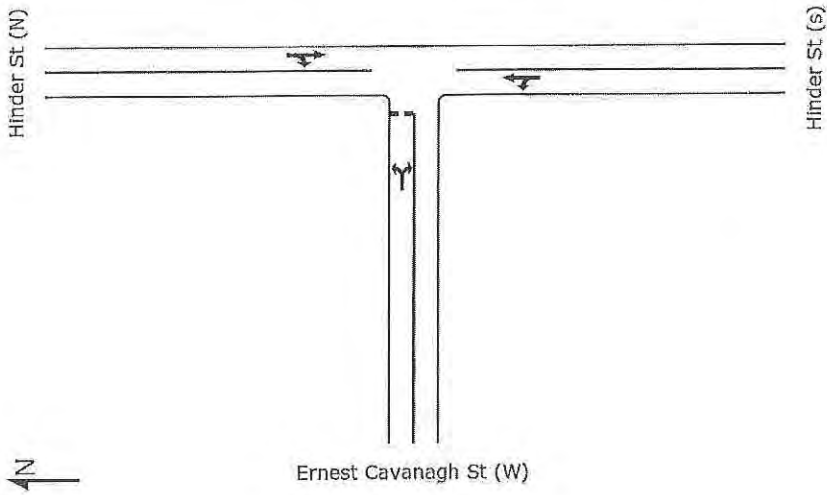
191A



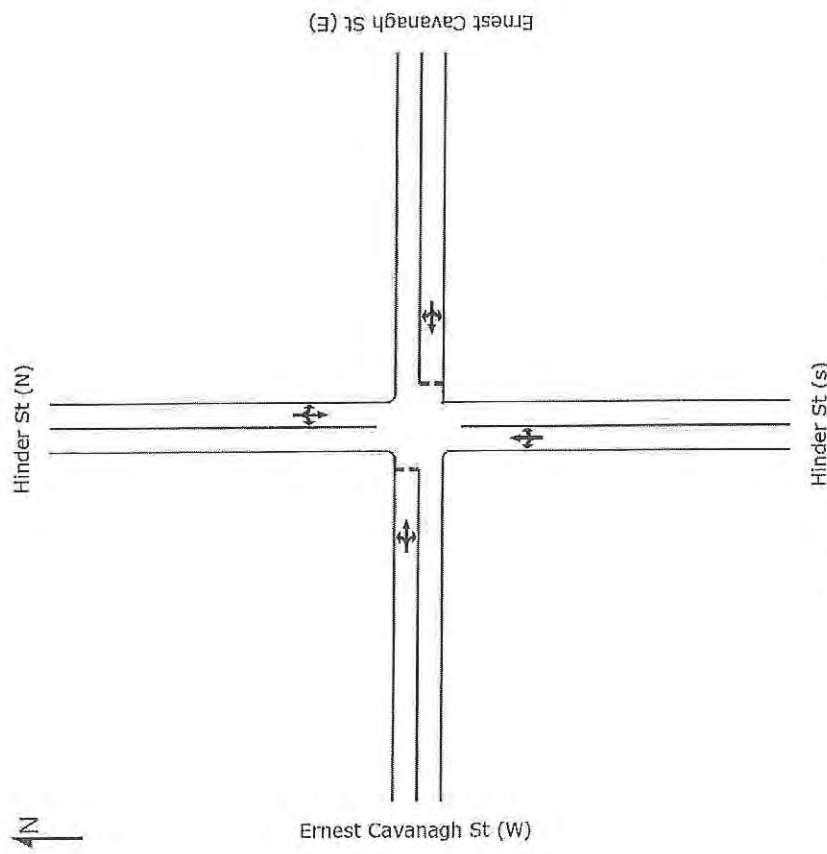


6: Layout used in Alternative scenario

1915

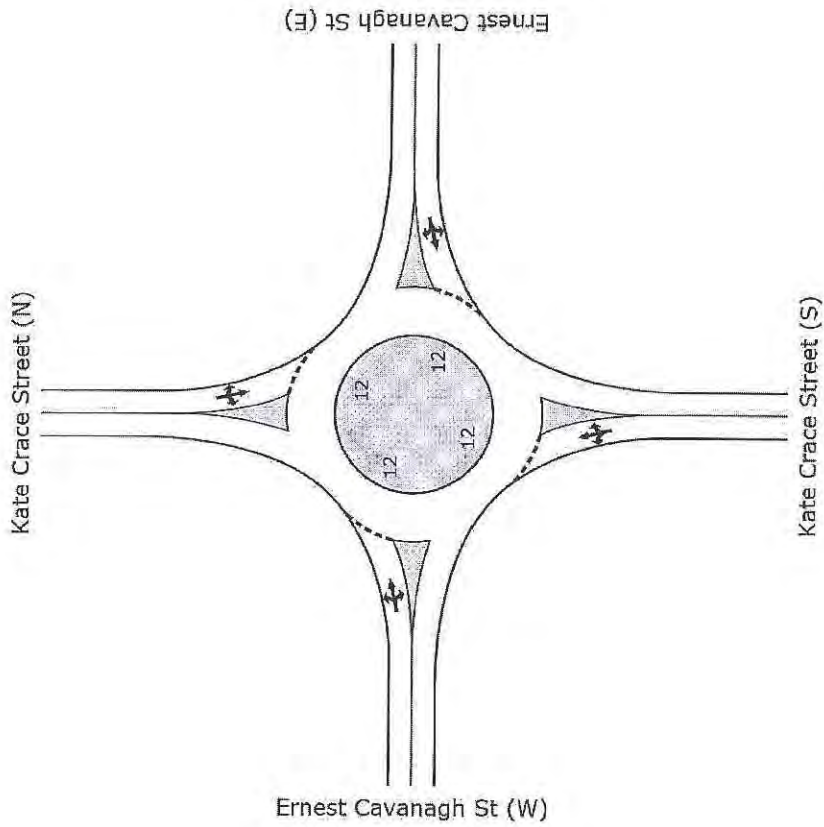


7. Layout used in 'Base' scenario



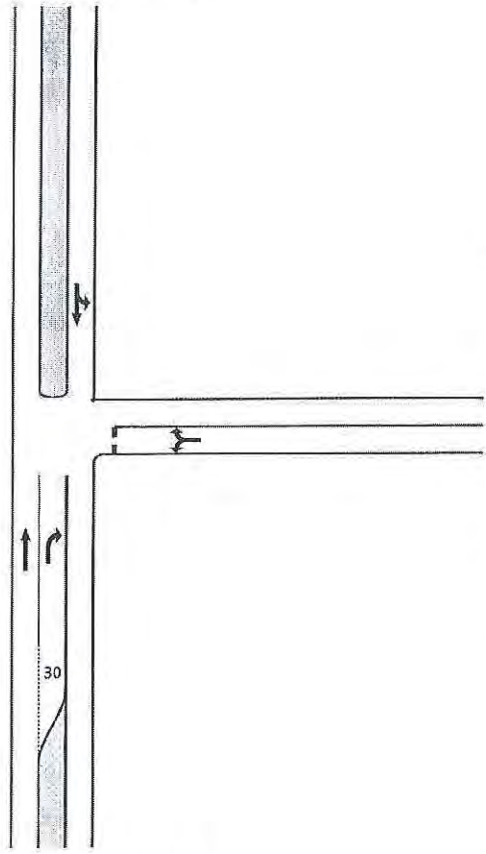
7. Layout used in GTCERN scenario





8: Only Exists in GTCERN scenario

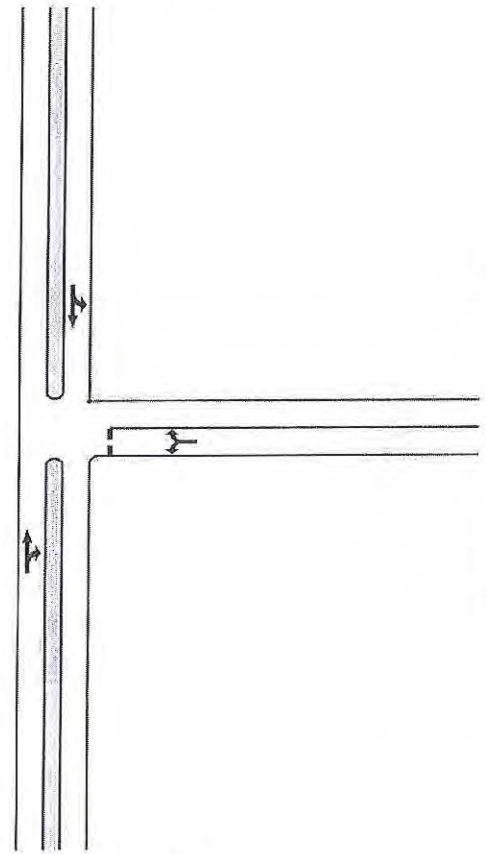
Ernest Cavanagh Street (W)



Ian Potter Crescent Extension (S)

9: Scenario used in GTCERN scenario

Ernest Cavanagh Street (E)



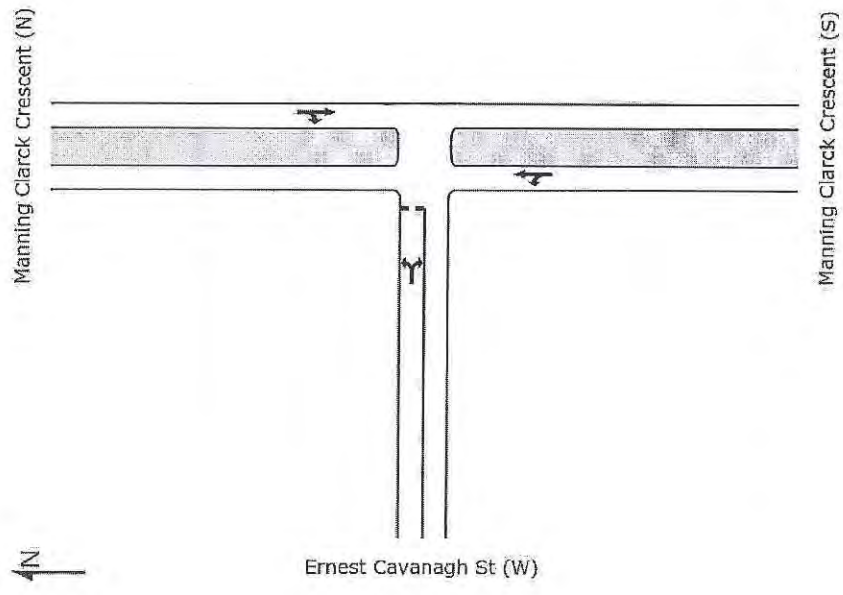
Ian Potter Crescent Extension (S)

9: Scenario used in Alternative scenario

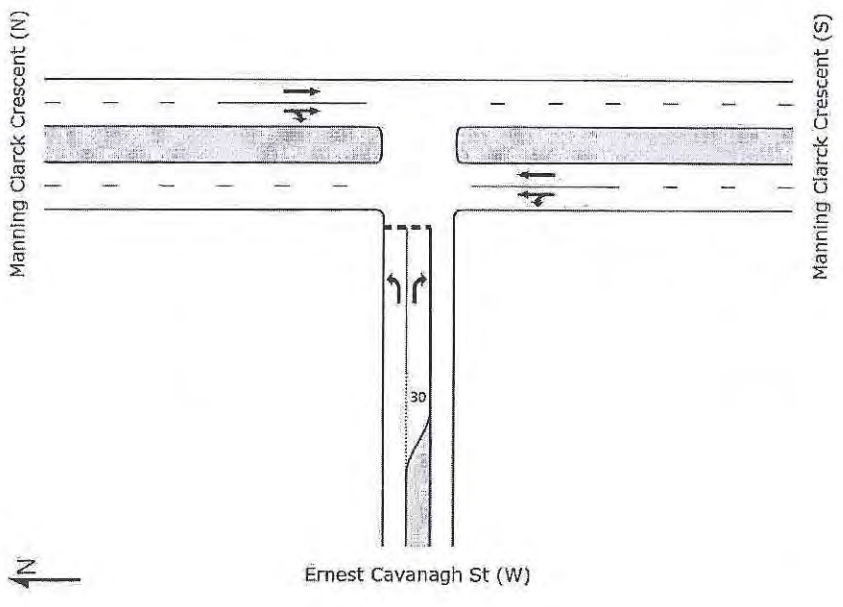
Ernest Cavanagh Street (E)

8101



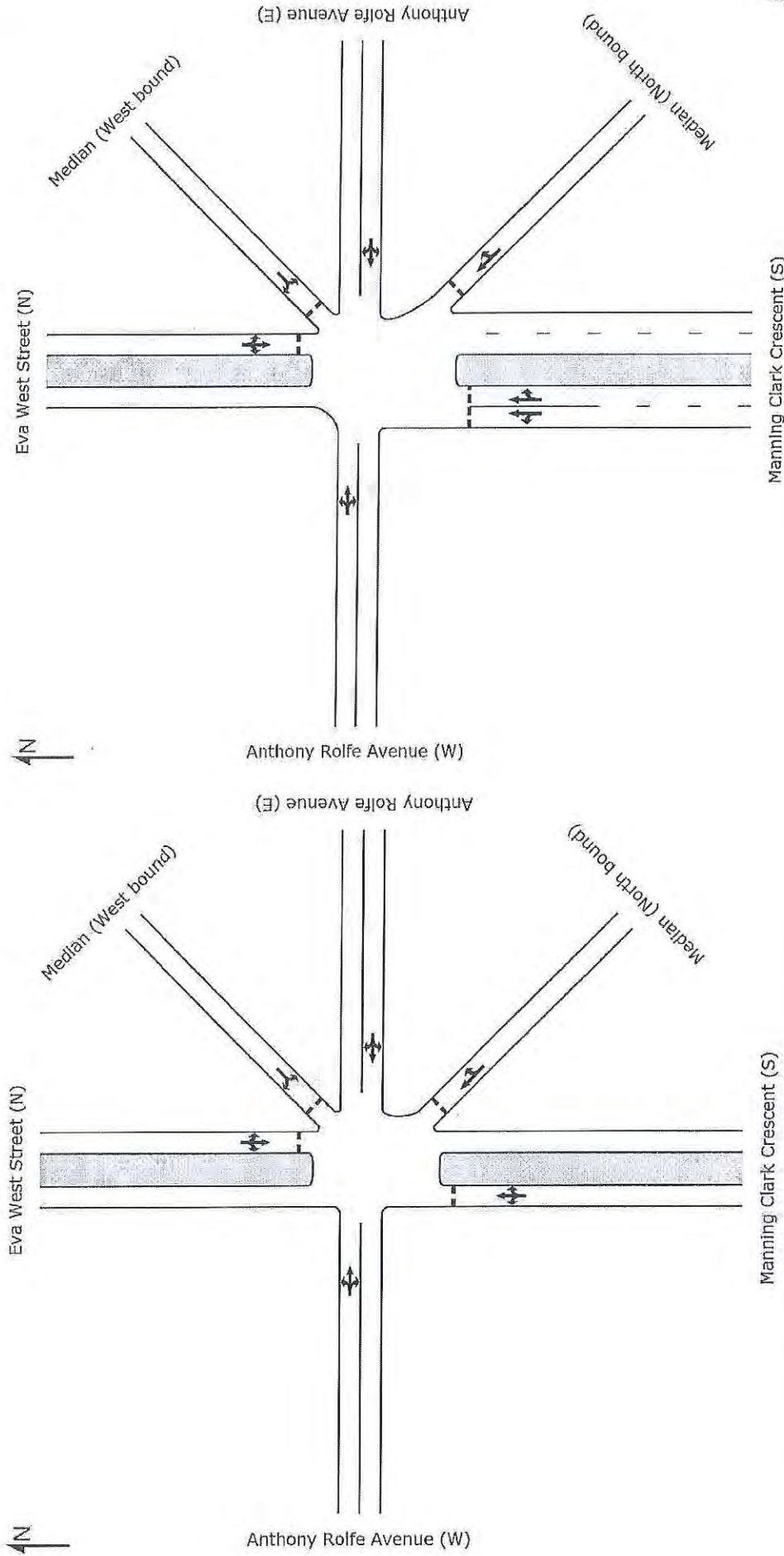


10: Layout used in Alternative scenario



10: Layout used in GTCERN scenario





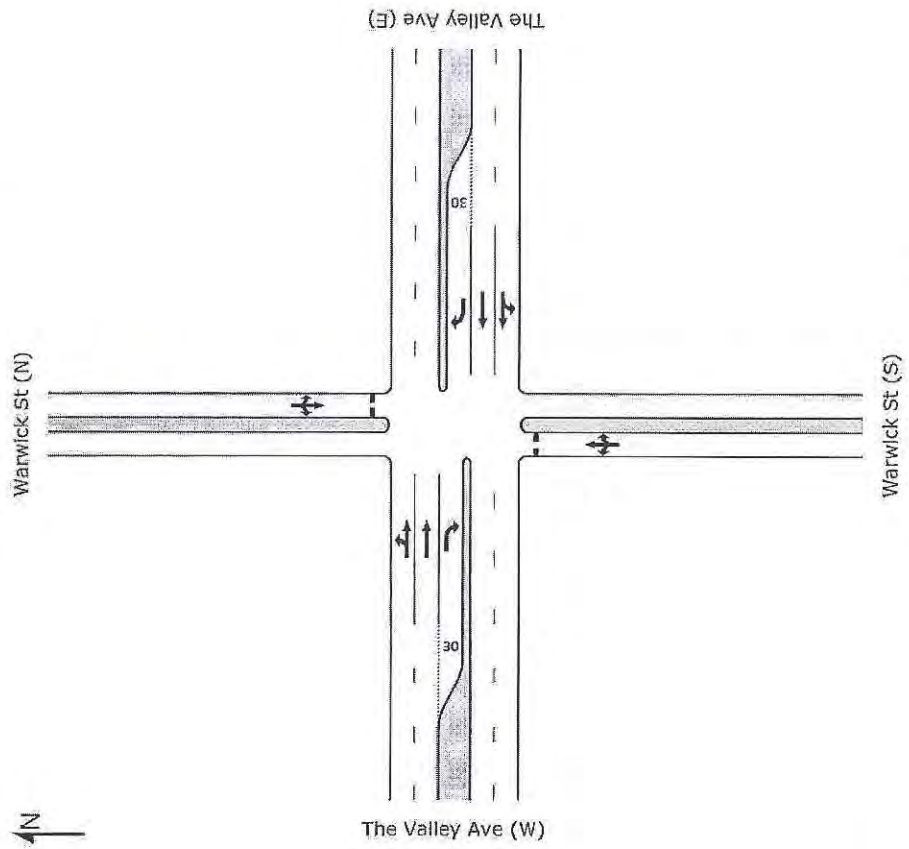
1920

11: Layout used in GTCERN scenario

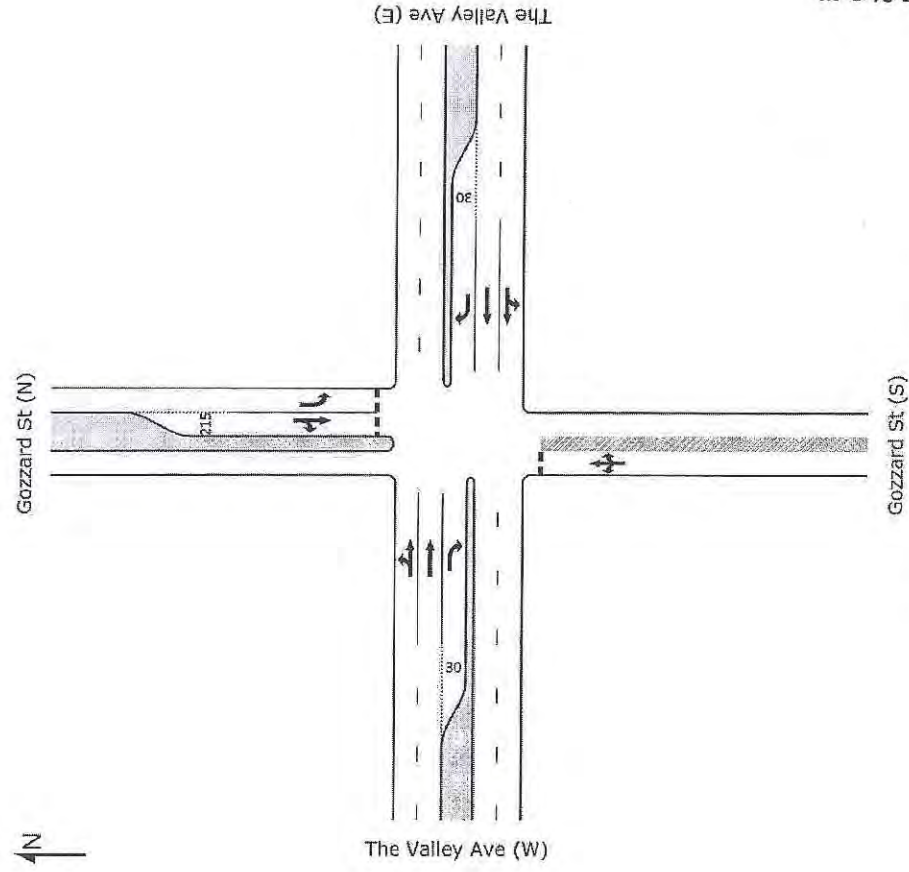
11: Layout used in 'Base' and Alternative scenario



# Layouts of Intersections Surrounding GTCERN



12: Same Layout in both Scenarios



13: Same Layout in both Scenarios

1291

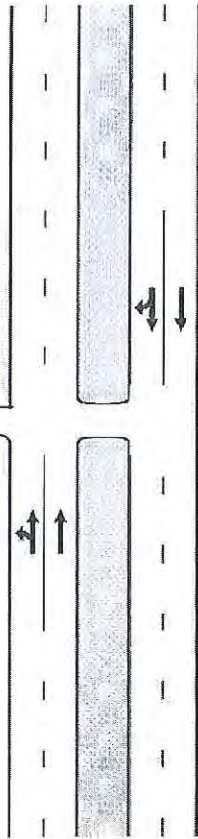






Gungahlin PI (N)

The Valley Ave (W)



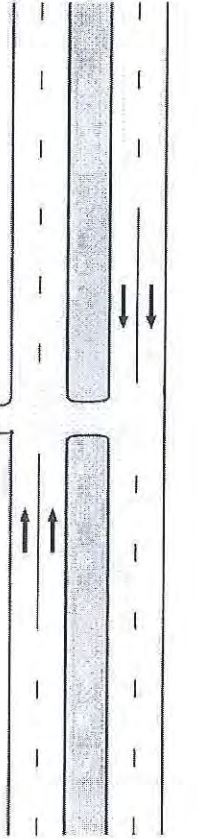
14: Same Layout in both Scenarios



Gungahlin PI (N)

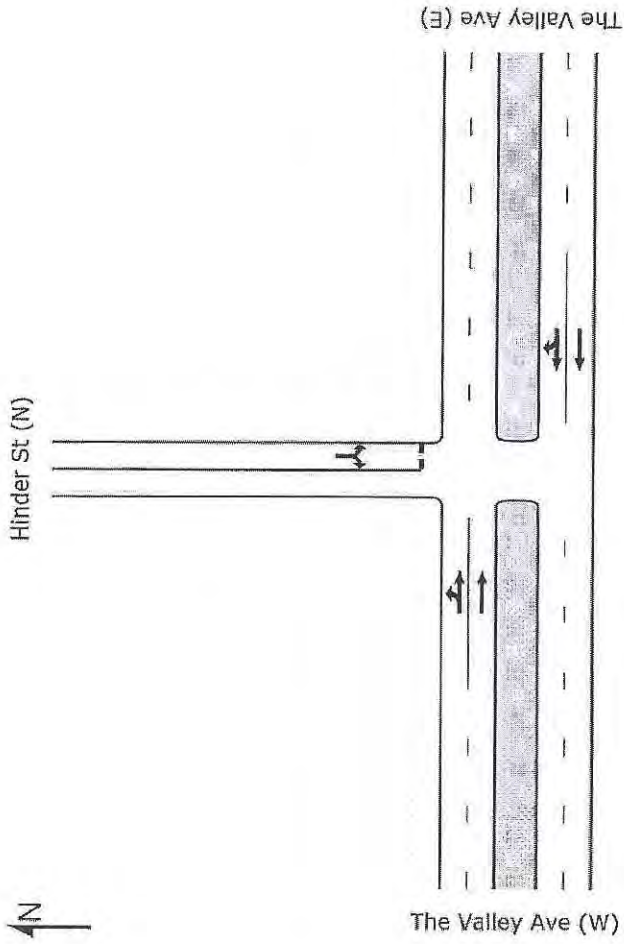
The Valley Ave (W)

The Valley Ave (E)

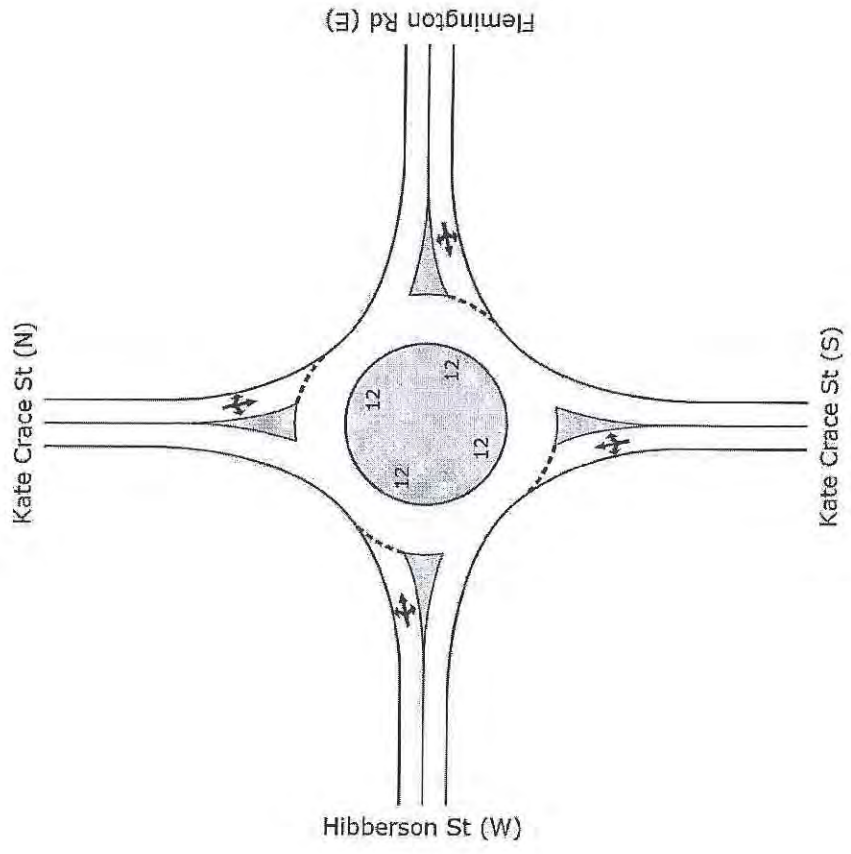


15: Same Layout in both Scenarios





16: Same Layout in both Scenarios



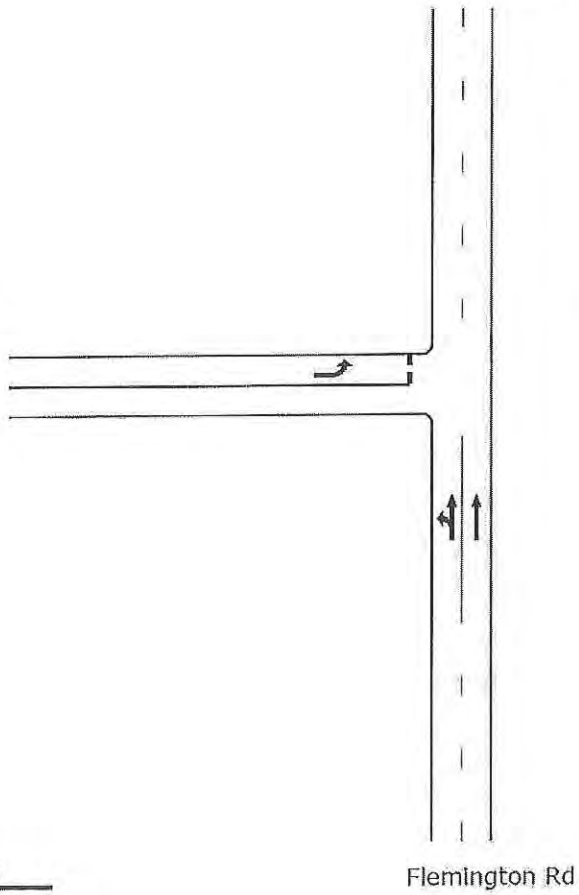
17: Same Layout in both Scenarios

1923





Hammer St

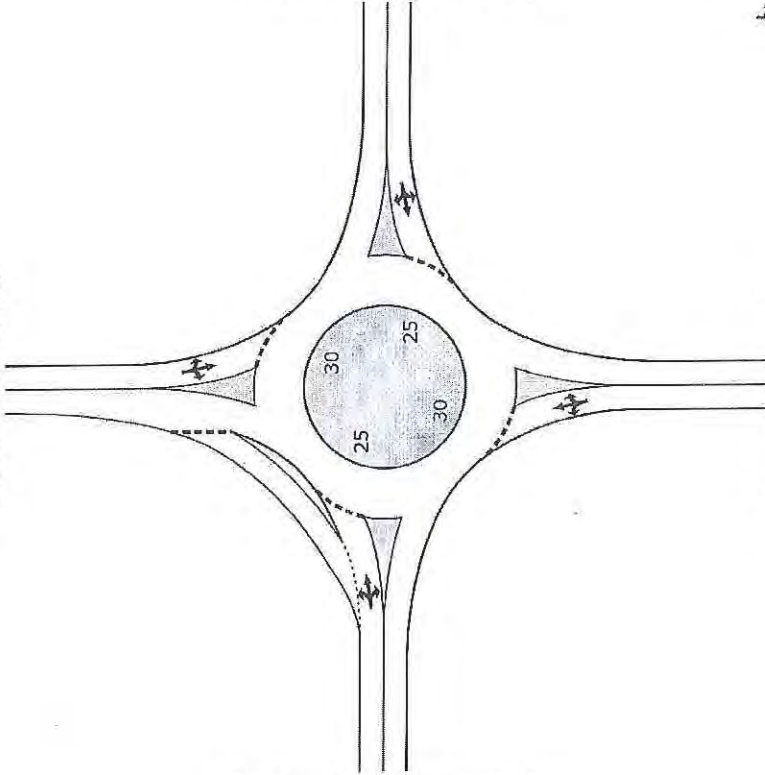


Flemington Rd

Flemington Rd



Tesselaar Street (N)



Anthony Rolfe Avenue (W)

Anthony Rolfe Avenue (E)

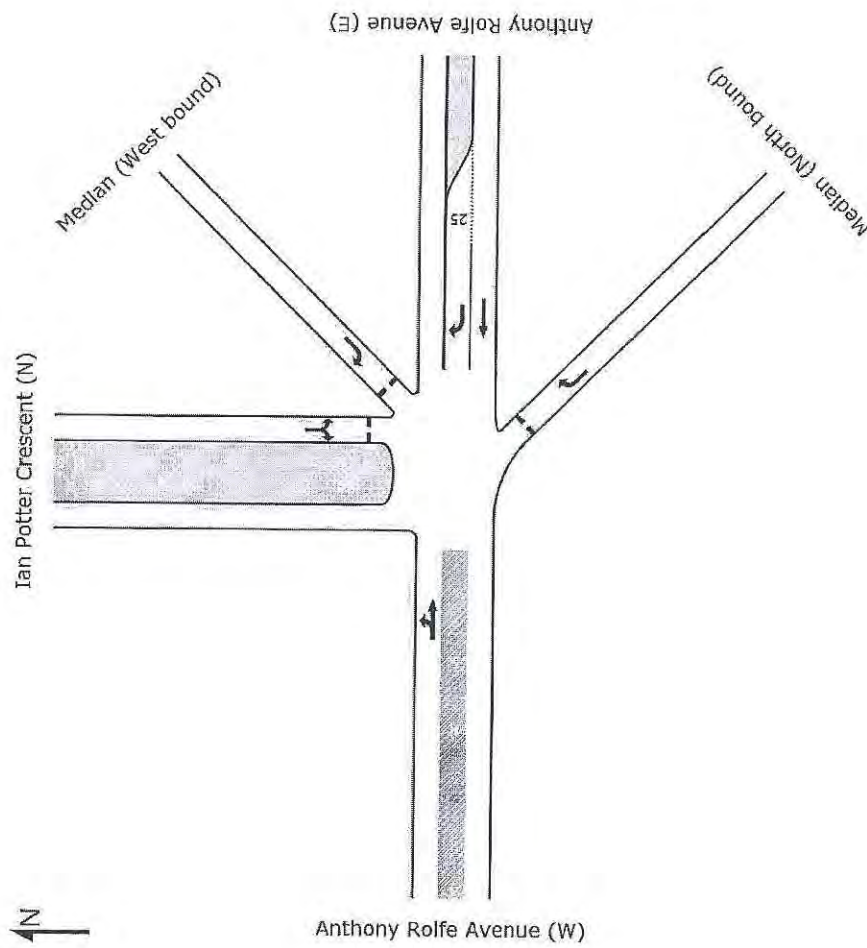
Kate Crace Street (S)

1924

18: Same Layout in both Scenarios

19: Same Layout in both Scenarios





20: Same Layout in both Scenarios



**APPENDIX L – DETAILED SIDRA RESULTS**

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## Movement Summary Base Scenario

6 Flemington Road – Manning Clark Crescent

Turn	Demand Flow veh/h	HV %	Deg. Satn. v/c	Average Delay sec	Total Delay veh-h/h	Level of Service	Percentile Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	Tot. Travel Time veh-h/h	Perf. Index
South													
Left	288	3.0	0.341	14.0	1.12	LOS B	5.5	39.5	0.51	0.72	40.0	4.7	9.4
Right	6	3.0	0.025	43.2	0.08	LOS D	0.2	1.7	0.88	0.66	26.7	0.2	0.3
Approach	295	3.0	0.341	14.6	1.19	LOS B	5.5	39.5	0.51	0.71	39.6	4.8	9.7
East													
Left	13	3.0	0.021	12.3	0.04	LOS B	0.2	1.2	0.36	0.64	48.6	0.2	0.3
Through	832	3.0	0.786	28.5	6.59	LOS C	21.4	153.5	0.91	0.83	35.5	15.1	38.1
Approach	844	3.0	0.786	28.3	6.64	LOS C	21.4	153.5	0.90	0.82	35.6	15.3	38.4
West													
Through	680	3.0	0.259	4.5	0.85	LOS A	5.0	36.1	0.37	0.32	59.2	7.4	14.5
Right	413	3.0	0.797	43.8	5.02	LOS D	18.3	131.5	0.98	0.92	28.2	8.6	21.8
Approach	1093	3.0	0.797	19.4	5.88	LOS B	18.3	131.5	0.60	0.55	42.6	16.0	36.3
All Vehicles	2232	3.0	0.797	22.1	13.71	LOS C	21.4	153.5	0.70	0.67	39.2	36.1	84.4

7 Ernest Cavanagh Street – Hinder Street

Turn	Demand Flow veh/h	HV %	Deg. Satn. v/c	Average Delay sec	Total Delay veh-h/h	Level of Service	Percentile Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	Tot. Travel Time veh-h/h	Perf. Index
South													
Left	11	3.0	0.030	6.5	0.02	LOS A	0.0	0.0	0.00	0.84	34.4	0.1	0.1
Through	46	3.0	0.030	0.0	0.00	LOS A	0.0	0.0	0.00	0.00	50.0	0.2	0.2
Approach	57	3.0	0.030	1.2	0.02	LOS X	0.0	0.0	0.00	0.16	46.1	0.2	0.3
North													
Through	61	3.0	0.389	0.8	0.01	LOS A	2.1	15.2	0.29	0.00	37.3	0.3	0.3
Right	333	3.0	0.389	7.7	0.71	LOS A	2.1	15.2	0.29	0.66	30.3	1.8	3.7
Approach	394	3.0	0.389	6.6	0.72	LOS X	2.1	15.2	0.29	0.55	31.2	2.1	4.1
West													
Left	72	3.0	0.102	7.4	0.15	LOS A	0.4	3.0	0.13	0.56	41.6	0.9	1.2
Right	46	3.0	0.102	7.8	0.10	LOS A	0.4	3.0	0.13	0.69	41.3	0.6	0.8
Approach	118	3.0	0.102	7.6	0.25	LOS A	0.4	3.0	0.13	0.61	41.5	1.4	2.0
All Vehicles	568	3.0	0.389	6.3	0.99	LOS X	2.1	15.2	0.23	0.53	36.1	3.7	6.4

Turn	Demand Flow veh/h	HV %	Deg. Satn. v/c	Average		Total Delay veh-h/h	Level of Service	Percentile Back of Queue		Prop. Queued	Effective		Average Speed km/h	Tot. Travel Time veh-h/h	Perf. Index
				Delay sec	Delay veh-h/h			Vehicles veh	Distance m		Stop Rate per veh	Time			
South															
Left	17	3.0	0.051	9.6	0.04	0.04	LOSA	0.2	1.4	0.31	0.62	47.6	0.2	0.3	
Through	1	3.0	0.051	8.2	0.00	0.00	LOSA	0.2	1.4	0.31	0.57	48.4	0.0	0.0	
Right	23	3.0	0.051	9.6	0.06	0.06	LOSA	0.2	1.4	0.31	0.66	47.5	0.3	0.4	
Approach	41	3.0	0.051	9.5	0.11	0.11	LOSA	0.2	1.4	0.31	0.64	47.6	0.5	0.7	
SouthEast															
Through	11	3.0	0.048	8.4	0.02	0.02	LOSA	0.2	1.3	0.37	0.54	48.2	0.1	0.2	
Right	23	3.0	0.048	11.1	0.07	0.07	LOS B	0.2	1.3	0.37	0.74	46.2	0.3	0.5	
Approach	34	3.0	0.048	10.3	0.10	0.10	LOS B	0.2	1.3	0.37	0.67	46.8	0.4	0.6	
East															
Left	2	3.0	0.092	8.2	0.00	0.00	LOSA	0.0	0.0	0.00	1.04	49.0	0.0	0.0	
Through	154	3.0	0.092	0.0	0.00	0.00	LOSA	0.0	0.0	0.00	0.00	60.0	1.6	1.6	
Right	11	3.0	0.092	7.6	0.02	0.02	LOSA	0.0	0.0	0.00	1.13	48.5	0.1	0.2	
Approach	166	3.0	0.092	0.6	0.03	0.03	LOS X	0.0	0.0	0.00	0.08	59.0	1.7	1.8	
NorthEast															
Left	2	3.0	0.010	7.5	0.00	0.00	LOSA	0.0	0.3	0.29	0.56	48.8	0.0	0.0	
Right	13	3.0	0.010	7.5	0.03	0.03	LOSA	0.0	0.3	0.29	0.54	35.2	0.1	0.1	
Approach	15	3.0	0.010	7.5	0.03	0.03	LOSA	0.0	0.3	0.29	0.54	38.9	0.1	0.2	
North															
Left	4	3.0	0.015	7.9	0.01	0.01	LOSA	0.1	0.4	0.28	0.58	42.8	0.1	0.1	
Through	1	3.0	0.015	7.6	0.00	0.00	LOSA	0.1	0.4	0.28	0.55	48.6	0.0	0.0	
Right	13	3.0	0.015	8.0	0.03	0.03	LOSA	0.1	0.4	0.28	0.60	42.8	0.2	0.2	
Approach	18	3.0	0.015	8.0	0.04	0.04	LOSA	0.1	0.4	0.28	0.59	43.1	0.3	0.3	
West															
Left	1	3.0	0.101	7.4	0.00	0.00	LOSA	0.0	0.0	0.00	1.16	38.1	0.0	0.0	
Through	177	3.0	0.101	0.0	0.00	0.00	LOSA	0.0	0.0	0.00	0.00	60.0	0.8	0.8	
Right	4	3.0	0.101	8.3	0.01	0.01	LOSA	0.0	0.0	0.00	1.09	48.9	0.1	0.1	
Approach	182	3.0	0.101	0.2	0.01	0.01	LOS X	0.0	0.0	0.00	0.03	59.1	0.8	0.9	
All Vehicles	456	3.0	0.101	2.5	0.31	0.31	LOS X	0.2	1.4	0.08	0.19	54.6	3.9	4.5	



Turn	Demand Flow veh/h	HV %	Deg. Satn. v/c	Average Delay sec	Total Delay veh-h/h	Level of Service	Percentile Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	Tot. Travel Time veh-h/h	Perf. Index
South													
Left	2	3.0	0.082	23.1	0.01	LOSC	0.2	1.8	0.82	0.82	19.5	0.0	0.0
Through	2	3.0	0.082	21.2	0.01	LOSC	0.2	1.8	0.82	0.91	17.8	0.0	0.0
Right	13	3.0	0.082	22.2	0.08	LOSC	0.2	1.8	0.82	0.93	17.7	0.1	0.3
Approach	17	3.0	0.082	22.2	0.10	LOSC	0.2	1.8	0.82	0.91	17.9	0.2	0.3
East													
Left	1	3.0	0.193	6.4	0.00	LOSA	0.0	0.0	0.00	0.92	43.3	0.0	0.0
Through	699	3.0	0.193	0.0	0.00	LOSA	0.0	0.0	0.00	0.00	51.3	8.3	8.5
Right	1	3.0	0.001	8.9	0.00	LOSA	0.0	0.0	0.49	0.61	41.2	0.0	0.0
Approach	701	3.0	0.193	0.0	0.00	LOSX	0.0	0.0	0.00	0.00	51.2	8.3	8.5
North													
Left	8	3.0	0.356	28.8	0.07	LOSD	1.2	8.8	0.87	1.00	22.0	0.1	0.2
Through	1	3.0	0.356	27.6	0.01	LOSD	1.2	8.8	0.87	0.99	22.2	0.0	0.0
Right	57	3.0	0.356	29.5	0.47	LOSD	1.2	8.8	0.87	1.00	23.2	0.8	1.6
Approach	66	3.0	0.356	29.3	0.54	LOSD	1.2	8.8	0.87	1.00	23.0	1.0	1.9
West													
Left	107	3.0	0.188	7.5	0.22	LOSA	0.0	0.0	0.00	0.92	48.6	1.3	1.8
Through	568	3.0	0.188	1.2	0.19	LOSA	0.0	0.0	0.00	0.11	57.0	5.7	6.0
Right	2	3.0	0.003	10.1	0.01	LOSB	0.0	0.1	0.50	0.65	45.8	0.0	0.0
Approach	678	3.0	0.188	2.2	0.42	LOSX	0.0	0.1	0.00	0.24	55.4	7.0	7.8
All Vehicles	1462	3.0	0.356	2.6	1.07	LOSX	1.2	8.8	0.05	0.17	51.0	16.5	18.5

Turn	Demand Flow veh/h	HV %	Deg. Satn. v/c	Average Delay sec	Total Delay veh-h/h	Level of Service	Percentile Back of Queue Vehicles veh	Distance m.	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	Tot. Travel Time veh-h/h	Perf. Index
South													
Left	1	3.0	0.034	21.4	0.01	LOSC	0.1	0.8	0.76	0.64	17.4	0.0	0.0
Through	2	3.0	0.034	20.2	0.01	LOSC	0.1	0.8	0.76	0.88	17.7	0.0	0.0
Right	4	3.0	0.034	22.1	0.03	LOSC	0.1	0.8	0.76	0.91	19.5	0.0	0.1
Approach	7	3.0	0.034	21.5	0.04	LOSC	0.1	0.8	0.76	0.86	18.7	0.1	0.1
East													
Left	48	3.0	0.129	7.5	0.10	LOSA	0.0	0.0	0.00	1.00	48.6	0.6	0.8
Through	417	3.0	0.129	1.2	0.14	LOSA	0.0	0.0	0.00	0.11	57.0	4.2	4.4
Right	4	3.0	0.006	9.9	0.01	LOSA	0.0	0.1	0.50	0.64	46.0	0.1	0.1
Approach	469	3.0	0.129	1.9	0.25	LOS X	0.0	0.1	0.00	0.21	55.8	4.8	5.3
North													
Left	15	3.0	0.013	9.0	0.04	LOSA	0.1	0.4	0.48	0.64	37.1	0.1	0.2
Through	9	3.0	1.565	553.1	1.42	LOS F	74.4	533.9	1.00	4.96	1.8	1.5	2.7
Right	284	3.0	1.565	554.1	43.74	LOS F	74.4	533.9	1.00	5.02	1.8	45.4	82.3
Approach	307	3.0	1.565	529.5	45.20	LOS F	74.4	533.9	0.97	4.81	1.9	47.0	85.2
West													
Left	101	3.0	0.154	6.5	0.18	LOSA	0.0	0.0	0.00	0.77	43.3	1.3	1.8
Through	453	3.0	0.154	0.0	0.00	LOSA	0.0	0.0	0.00	0.00	51.3	5.4	5.5
Right	6	3.0	0.007	8.5	0.01	LOSA	0.0	0.2	0.46	0.62	41.5	0.1	0.1
Approach	560	3.0	0.154	1.3	0.20	LOS X	0.0	0.2	0.01	0.15	49.6	6.8	7.4
All Vehicles	1344	3.0	1.565	122.4	45.70	LOS X	74.4	533.9	0.23	1.24	11.9	58.7	98.0

Turn	Demand Flow veh/h	HV %	Deg. Satn. v/c	Average Delay sec	Total Delay veh-h/h	Level of Service	Percentile Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	Tot. Travel Time veh-h/h	Perf. Index
East													
Through	844	3.0	0.233	1.3	0.30	LOSA	1.9	13.6	0.29	0.00	54.7	9.4	9.6
Right	1	3.0	0.233	10.0	0.00	LOSA	1.9	13.6	0.58	1.02	48.9	0.0	0.0
Approach	845	3.0	0.233	1.3	0.31	LOS X	1.9	13.6	0.29	0.00	54.7	9.4	9.6
North													
Approach	0	0.0	0.000	0.0	0.00	LOS X	0.0	0.0	0.00	0.00	0.0	0.0	0.0
West													
Left	269	3.0	0.156	7.5	0.56	LOSA	0.0	0.0	0.00	0.65	48.6	3.2	4.1
Through	261	3.0	0.144	0.0	0.00	LOSA	0.0	0.0	0.00	0.00	60.0	2.6	2.6
Approach	531	3.0	0.156	3.8	0.56	LOS X	0.0	0.0	0.00	0.33	53.8	5.8	6.8
All Vehicles	1376	3.0	0.233	2.3	0.87	LOS X	1.9	13.6	0.18	0.13	54.3	15.2	16.4

Turn	Demand Flow veh/h	HV %	Deg. Satn. v/c	Average Delay sec	Total Delay veh-h/h	Level of Service	Percentile Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	Tot. Travel Time veh-h/h	Perf. Index
East Through	528	3.0	0.146	0.0	0.00	LOS A	0.0	0.0	0.00	0.00	60.0	5.3	5.3
Approach North	528	3.0	0.146	0.0	0.00	LOS X	0.0	0.0	0.00	0.00	60.0	5.3	5.3
Left	1	3.0	0.222	8.2	0.00	LOS A	1.1	8.1	0.39	0.65	42.5	0.0	0.0
Right	316	3.0	0.222	8.2	0.72	LOS A	1.1	8.1	0.39	0.64	42.5	4.5	6.1
Approach West	317	3.0	0.222	8.2	0.72	LOS A	1.1	8.1	0.39	0.64	42.5	4.5	6.1
Through	261	3.0	0.072	0.0	0.00	LOS A	0.0	0.0	0.00	0.00	60.0	2.6	2.6
Approach	261	3.0	0.072	0.0	0.00	LOS X	0.0	0.0	0.00	0.00	60.0	2.6	2.6
All Vehicles	1106	3.0	0.222	2.3	0.72	LOS X	1.1	8.1	0.11	0.18	53.7	12.5	14.1

Turn	Demand Flow veh/h	HV %	Deg. Satn. v/c	Average Delay sec	Total Delay veh-h/h	Level of Service	Percentile Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	Tot. Travel Time veh-h/h	Perf. Index
East													
Through	158	3.0	0.044	0.4	0.02	LOS A	0.2	1.7	0.16	0.00	54.2	0.9	0.9
Right	1	3.0	0.044	8.1	0.00	LOS A	0.2	1.7	0.33	0.95	41.0	0.0	0.0
Approach	159	3.0	0.044	0.5	0.02	LOS X	0.2	1.7	0.16	0.01	54.1	0.9	0.9
North													
Left	1	3.0	0.046	7.9	0.00	LOS A	0.2	1.3	0.29	0.60	32.6	0.0	0.0
Right	55	3.0	0.046	7.8	0.12	LOS A	0.2	1.3	0.29	0.60	32.8	0.3	0.6
Approach	56	3.0	0.046	7.8	0.12	LOS A	0.2	1.3	0.29	0.60	32.8	0.3	0.6
West													
Left	154	3.0	0.089	7.5	0.32	LOS A	0.0	0.0	0.00	0.65	48.6	1.8	2.3
Through	107	3.0	0.059	0.0	0.00	LOS A	0.0	0.0	0.00	0.00	60.0	1.1	1.1
Approach	261	3.0	0.089	4.4	0.32	LOS X	0.0	0.0	0.00	0.38	52.8	2.9	3.4
All Vehicles	476	3.0	0.089	3.5	0.46	LOS X	0.2	1.7	0.09	0.28	51.5	4.1	5.0

Turn	Demand Flow veh/h	HV %	Deg. Satn. v/c	Average Delay sec	Total Delay veh-h/h	Level of Service	Percentile Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	Tot. Travel Time veh-h/h	Perf. Index
South													
Left	8	3.0	0.622	22.6	0.05	LOSC	6.5	46.8	1.00	1.17	21.5	0.1	0.2
Through	84	3.0	0.622	21.8	0.51	LOSC	6.5	46.8	1.00	1.17	21.7	0.9	2.3
Right	168	3.0	0.622	28.2	1.32	LOSC	6.5	46.8	1.00	1.17	24.2	2.3	5.2
Approach	261	3.0	0.622	25.9	1.88	LOSC	6.5	46.8	1.00	1.17	23.4	3.3	7.7
East													
Left	229	3.0	0.930	18.6	1.19	LOS B	29.0	208.2	1.00	0.84	40.1	2.8	6.3
Through	640	3.0	0.930	17.9	3.19	LOS B	29.0	208.2	1.00	0.84	40.0	8.0	17.4
Right	259	3.0	0.930	22.3	1.60	LOSC	29.0	208.2	1.00	0.84	38.2	3.5	7.4
Approach	1128	3.0	0.930	19.1	5.98	LOS B	29.0	208.2	1.00	0.84	39.6	14.3	31.0
North													
Left	526	3.0	0.919	35.2	5.15	LOS D	23.7	170.3	1.00	1.66	20.4	8.1	20.4
Through	149	3.0	0.919	33.2	1.38	LOSC	23.7	170.3	1.00	1.66	17.7	2.2	5.5
Right	36	3.0	0.919	37.8	0.38	LOS D	23.7	170.3	1.00	1.66	17.7	0.6	1.4
Approach	712	3.0	0.919	34.9	6.91	LOSC	23.7	170.3	1.00	1.66	19.8	10.9	27.3
West													
Left	69	3.0	0.565	11.3	0.22	LOS B	5.4	39.1	0.87	0.92	39.7	1.0	1.7
Through	398	3.0	0.565	12.0	1.32	LOS B	5.4	39.1	0.87	0.91	41.3	6.2	10.3
Right	4	3.0	0.565	15.2	0.02	LOS B	5.4	39.1	0.87	0.97	37.9	0.1	0.1
Approach	472	3.0	0.565	11.9	1.56	LOS B	5.4	39.1	0.87	0.92	41.0	7.3	12.1
All Vehicles	2573	3.0	0.930	22.8	16.33	LOSC	29.0	208.2	0.98	1.11	32.4	35.8	78.2

Turn	Demand Flow veh/h	HV %	Deg. Satn. v/c	Average Delay sec	Total Delay veh-h/h	Level of Service	Percentile Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	Tot. Travel Time veh-h/h	Perf. Index
Approach East	0	0.0	0.000	0.0	0.00	LOS X	0.0	0.0	0.00	0.00	0.0	0.0	0.0
Approach North													
Left	1	3.0	0.002	11.0	0.00	LOS B	0.0	0.0	0.55	0.63	36.7	0.0	0.0
Approach West	1	3.0	0.002	11.0	0.00	LOS B	0.0	0.0	0.55	0.63	36.7	0.0	0.0
Left	2	3.0	0.190	8.7	0.01	LOS A	0.0	0.0	0.00	1.41	35.8	0.0	0.0
Through	686	3.0	0.190	0.0	0.00	LOS A	0.0	0.0	0.00	0.00	70.0	2.6	2.6
Approach	688	3.0	0.190	0.0	0.01	LOS X	0.0	0.0	0.00	0.00	69.9	2.6	2.6
All Vehicles	689	3.0	0.190	0.0	0.01	LOS X	0.0	0.0	0.00	0.01	69.7	2.6	2.6

Turn	Demand Flow veh/h	HV %	Deg. Satn. v/c	Average Delay sec	Total Delay veh-h/h	Level of Service	Percentile Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	Tot. Travel Time veh-h/h	Perf. Index
South													
Left	80	3.0	0.275	5.6	0.12	LOSA	2.0	14.6	0.65	0.59	35.6	0.6	1.0
Through	135	3.0	0.275	4.7	0.18	LOSA	2.0	14.6	0.65	0.53	35.6	1.0	1.6
Right	72	3.0	0.275	11.0	0.22	LOSB	2.0	14.6	0.65	0.78	34.2	0.6	1.2
Approach	286	3.0	0.275	6.5	0.52	LOSA	2.0	14.6	0.65	0.61	35.2	2.1	3.8
East													
Left	120	3.0	0.542	9.8	0.33	LOSA	5.1	36.3	0.86	0.89	41.1	1.7	2.8
Through	352	3.0	0.542	8.5	0.83	LOSA	5.1	36.3	0.86	0.87	41.3	4.9	8.1
Right	2	3.0	0.542	14.7	0.01	LOSB	5.1	36.3	0.86	0.97	38.9	0.0	0.1
Approach	474	3.0	0.542	8.8	1.16	LOSA	5.1	36.3	0.86	0.87	41.3	6.6	11.0
North													
Left	6	3.0	0.331	6.2	0.01	LOSA	2.4	17.1	0.67	0.65	32.8	0.0	0.1
Through	333	3.0	0.331	5.3	0.49	LOSA	2.4	17.1	0.67	0.58	32.8	1.8	3.7
Right	1	3.0	0.331	11.5	0.00	LOSB	2.4	17.1	0.67	0.86	31.3	0.0	0.0
Approach	340	3.0	0.331	5.3	0.50	LOSA	2.4	17.1	0.67	0.59	32.8	1.9	3.8
West													
Left	6	3.0	0.294	4.8	0.01	LOSA	2.2	15.5	0.51	0.45	42.9	0.1	0.1
Through	120	3.0	0.294	3.9	0.13	LOSA	2.2	15.5	0.51	0.44	43.1	1.6	2.1
Right	225	3.0	0.294	10.2	0.64	LOSB	2.2	15.5	0.51	0.70	40.7	3.4	4.9
Approach	352	3.0	0.294	7.9	0.77	LOSA	2.2	15.5	0.51	0.60	41.5	5.1	7.1
All Vehicles	1452	3.0	0.542	7.3	2.96	LOSA	5.1	36.3	0.69	0.69	39.5	15.8	25.7



Turn	Demand Flow veh/h	HV %	Deg. Satn. v/c	Average Delay sec	Total Delay veh-h/h	Level of Service	Percentile Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	Tot. Travel Time veh-h/h	Perf. Index
SouthEast													
Right	34	3.0	0.051	8.1	0.08	LOSA	0.2	1.4	0.38	0.58	49.0	0.4	0.6
Approach	34	3.0	0.051	8.1	0.08	LOSA	0.2	1.4	0.38	0.58	49.0	0.4	0.6
East													
Through	149	3.0	0.082	0.0	0.00	LOSA	0.0	0.0	0.00	0.00	60.0	1.5	1.5
Right	34	3.0	0.020	7.4	0.07	LOSA	0.0	0.0	0.00	0.63	48.7	0.4	0.5
Approach	183	3.0	0.082	1.4	0.07	LOS X	0.0	0.0	0.00	0.12	57.6	1.9	2.0
NorthEast													
Right	324	3.0	0.211	7.4	0.66	LOSA	1.1	7.9	0.33	0.57	35.3	1.8	3.2
Approach	324	3.0	0.211	7.4	0.66	LOSA	1.1	7.9	0.33	0.57	35.3	1.8	3.2
North													
Left	46	3.0	0.294	8.1	0.10	LOSA	1.5	10.5	0.34	0.62	42.7	0.7	0.9
Right	324	3.0	0.294	8.0	0.72	LOSA	1.5	10.5	0.34	0.62	42.7	4.6	6.3
Approach	371	3.0	0.294	8.0	0.82	LOSA	1.5	10.5	0.34	0.62	42.7	5.3	7.2
West													
Left	63	3.0	0.111	7.5	0.13	LOSA	0.0	0.0	0.00	0.92	38.1	0.4	0.7
Through	135	3.0	0.111	0.0	0.00	LOSA	0.0	0.0	0.00	0.00	60.0	0.6	0.6
Approach	198	3.0	0.111	2.4	0.13	LOS X	0.0	0.0	0.00	0.30	51.4	1.0	1.3
All Vehicles	1109	3.0	0.294	5.7	1.77	LOS X	1.5	10.5	0.22	0.46	45.2	10.4	14.3

# Movement Summary GTCERN Scenario

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Turn	Demand Flow veh/h	HV %	Deg. Satn. v/c	Average Delay sec	Total Delay veh-h/h	Level of Service	Percentile Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	Tot. Travel Time veh-h/h	Perf. Index
East													
Through Right	358	3.0	0.187	0.0	0.00	LOSA	0.0	0.0	0.00	0.00	60.0	3.6	3.6
Approach North	472	3.0	0.212	3.0	0.39	LOSB	0.9	6.2	0.53	0.79	44.8	1.5	2.4
Through Left	36	3.0	0.310	19.4	0.19	LOSC	1.3	9.4	0.65	0.82	39.2	0.6	0.9
Approach West	105	3.0	0.310	18.7	0.55	LOSC	1.3	9.4	0.65	0.91	26.6	0.7	1.4
Through Left	65	3.0	0.091	7.5	0.14	LOSA	0.0	0.0	0.00	0.87	48.6	0.8	1.1
Approach All Vehicles	903	3.0	0.310	4.3	1.08	LOSX	1.3	9.4	0.14	0.27	53.1	9.8	12.0

Turn	Demand Flow veh/h	HV %	Deg. Satn. v/c	Average Delay sec	Total Delay veh-h/h	Level of Service	Percentile Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	Tot. Travel Time veh-h/h	Perf. Index
East													
Through	411	3.0	0.115	1.7	0.19	LOS A	1.4	10.1	0.29	0.00	54.6	4.6	4.9
Right	8	3.0	0.115	11.7	0.03	LOS B	1.4	10.1	0.63	0.90	47.9	0.1	0.2
Approach	419	3.0	0.115	1.9	0.22	LOS X	1.4	10.1	0.30	0.02	54.4	4.7	5.1
North													
Left	1	3.0	0.226	20.6	0.01	LOS C	0.9	6.1	0.73	0.79	38.4	0.0	0.0
Right	63	3.0	0.226	19.5	0.34	LOS C	0.9	6.1	0.73	0.92	25.7	0.7	1.3
Approach	64	3.0	0.226	19.5	0.35	LOS C	0.9	6.1	0.73	0.92	26.1	0.7	1.4
West													
Left	1	3.0	0.083	7.4	0.00	LOS A	0.0	0.0	0.00	1.18	48.6	0.0	0.0
Through	301	3.0	0.083	0.0	0.00	LOS A	0.0	0.0	0.00	0.00	60.0	3.0	3.0
Approach	302	3.0	0.083	0.0	0.00	LOS X	0.0	0.0	0.00	0.00	60.0	3.1	3.1
All Vehicles	785	3.0	0.226	2.6	0.57	LOS X	1.4	10.1	0.22	0.09	54.1	8.4	9.5

Turn	Demand Flow veh/h	HV %	Deg. Satn. v/c	Average Delay sec	Total Delay veh-h/h	Level of Service	Percentile Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	Tot. Travel Time veh-h/h	Perf. Index
South													
Left	189	3.0	0.259	9.8	0.52	LOSA	1.4	10.2	0.41	0.71	47.3	2.4	3.5
Through	109	3.0	0.259	8.8	0.27	LOSA	1.4	10.2	0.41	0.34	47.7	1.4	1.8
Approach	299	3.0	0.259	9.5	0.79	LOSA	1.4	10.2	0.41	0.57	47.5	3.8	5.3
North													
Through	358	3.0	0.312	0.0	0.00	LOSA	0.0	0.0	0.00	0.00	60.0	3.6	3.6
Right	227	3.0	0.312	8.2	0.52	LOSA	0.0	0.0	0.00	0.85	49.1	2.8	3.9
Approach	585	3.0	0.312	3.2	0.52	LOS X	0.0	0.0	0.00	0.33	55.2	6.4	7.5
West													
Left	238	3.0	0.131	8.3	0.55	LOSA	0.0	0.0	0.00	0.67	49.0	2.9	3.8
Right	65	3.0	0.231	20.7	0.37	LOSC	0.9	6.3	0.74	0.93	38.3	1.0	1.7
Approach	303	3.0	0.231	10.9	0.92	LOS B	0.9	6.3	0.16	0.72	46.2	4.0	5.5
All Vehicles	1187	3.0	0.312	6.7	2.22	LOS X	1.4	10.2	0.14	0.49	50.6	14.2	18.4

Turn	Demand Flow veh/h	HV %	Deg. Satn. v/c	Average Delay sec	Total Delay veh-h/h	Level of Service	Percentile Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	Tot. Travel Time veh-h/h	Perf. Index
South												
Left	8	3.0	0.016	12.4	0.03	LOS B	0.1	0.57	0.76	40.9	0.1	0.2
Approach	8	3.0	0.016	12.4	0.03	LOS B	0.1	0.57	0.76	40.9	0.1	0.2
East												
Left	63	3.0	0.350	8.8	0.15	LOS A	0.0	0.00	1.38	53.1	0.7	1.2
Through	602	3.0	0.350	0.0	0.00	LOS A	0.0	0.00	0.00	70.0	5.6	5.6
Approach	665	3.0	0.350	0.8	0.15	LOS X	0.0	0.00	0.13	68.1	6.2	6.7
West												
Approach	0	0.0	0.000	0.0	0.00	LOS X	0.0	0.00	0.00	0.0	0.0	0.0
All Vehicles	674	3.0	0.350	1.0	0.18	LOS X	0.1	0.01	0.14	67.6	6.4	6.9

1942

Turn	Demand Flow veh/h	HV %	Deg. Satn. v/c	Average Delay sec	Total Delay veh-h/h	Level of Service	Percentile Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	Tot. Travel Time veh-h/h	Perf. Index
East													
Approach North	0	0.0	0.000	0.0	0.00	LOS X	0.0	0.0	0.00	0.00	0.0	0.0	0.0
Left	69	3.0	0.092	10.2	0.20	LOS B	0.3	2.3	0.46	0.74	42.6	1.0	1.5
Approach West	69	3.0	0.092	10.2	0.20	LOS B	0.3	2.3	0.46	0.74	42.6	1.0	1.5
Left	1	3.0	0.221	8.7	0.00	LOS A	0.0	0.0	0.00	1.41	53.1	0.0	0.0
Through	400	3.0	0.221	0.0	0.00	LOS A	0.0	0.0	0.00	0.00	70.0	3.7	3.7
Approach	401	3.0	0.221	0.0	0.00	LOS X	0.0	0.0	0.00	0.00	69.9	3.7	3.7
All Vehicles	471	3.0	0.221	1.5	0.20	LOS X	0.3	2.3	0.07	0.11	64.0	4.7	5.2

1943

Turn	Demand Flow veh/h	HV %	Deg. Satn. v/c	Average Delay sec	Total Delay veh-h/h	Level of Service	Percentile Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	Tot. Travel Time veh-h/h	Perf. Index
South													
Left	57	3.0	0.061	10.7	0.17	LOS B	0.7	4.8	0.35	0.65	42.4	0.9	1.5
Through	105	3.0	0.821	43.5	1.27	LOS D	13.7	98.1	1.00	0.99	23.2	2.6	6.1
Right	183	3.0	0.821	50.5	2.57	LOS D	13.7	98.1	1.00	0.99	24.9	4.8	11.3
Approach	345	3.0	0.821	41.8	4.01	LOS D	13.7	98.1	0.89	0.94	26.2	8.3	18.9
East													
Left	181	3.0	0.337	12.2	0.61	LOS B	2.4	17.0	0.39	0.70	48.6	2.2	4.3
Through	585	3.0	0.834	38.7	6.30	LOS D	16.8	120.4	0.97	0.90	30.6	12.4	30.5
Right	74	3.0	0.641	56.8	1.16	LOS E	3.5	25.0	1.00	0.80	24.0	1.8	4.2
Approach	840	3.0	0.834	34.6	8.08	LOS C	16.8	120.4	0.85	0.84	32.3	16.3	39.0
North													
Left	189	3.0	0.471	40.5	2.13	LOS D	7.3	52.6	0.91	0.81	27.3	4.4	9.9
Through	320	3.0	0.813	40.7	3.62	LOS D	15.9	114.1	1.00	0.98	24.2	7.6	18.1
Right	23	3.0	0.813	47.8	0.31	LOS D	15.9	114.1	1.00	0.98	25.8	0.6	1.4
Approach	533	3.0	0.813	40.9	6.06	LOS D	15.9	114.1	0.97	0.92	25.4	12.6	29.4
West													
Left	11	3.0	0.456	41.3	0.12	LOS D	7.4	53.1	0.91	0.88	31.4	0.2	0.5
Through	375	3.0	0.456	32.5	3.38	LOS C	7.4	53.2	0.91	0.75	33.4	7.2	17.2
Right	84	3.0	0.732	58.2	1.36	LOS E	4.1	29.1	1.00	0.85	23.6	2.1	4.9
Approach	469	3.0	0.732	37.3	4.87	LOS D	7.4	53.2	0.92	0.77	31.2	9.5	22.7
All Vehicles	2187	3.0	0.834	37.9	23.01	LOS D	16.8	120.4	0.90	0.86	29.1	46.7	110.0

Turn	Demand Flow veh/h	HV %	Deg. Satn. v/c	Average Delay sec	Total Delay veh-h/h	Level of Service	Percentile Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	Tot. Travel Time veh-h/h	Perf. Index
South													
Left	1	3.0	0.031	8.7	0.00	LOS A	0.3	2.4	0.52	0.43	33.2	0.0	0.0
Through Right	53	3.0	0.031	2.3	0.03	LOS A	0.3	2.4	0.52	0.00	35.5	0.3	0.4
Approach	56	3.0	0.031	10.8	0.01	LOS B	0.3	2.4	0.52	0.81	47.9	0.0	0.0
East													
Left	11	3.0	0.082	2.8	0.04	LOS X	0.3	2.4	0.52	0.04	36.5	0.3	0.4
Through Right	42	3.0	0.082	10.0	0.03	LOS A	0.3	2.4	0.36	0.64	47.3	0.1	0.2
Approach	63	3.0	0.082	8.7	0.10	LOS A	0.3	2.4	0.36	0.60	48.3	0.5	0.8
North													
Left	189	3.0	0.133	10.3	0.03	LOS B	0.3	2.4	0.36	0.76	47.1	0.1	0.2
Through Right	38	3.0	0.133	9.2	0.16	LOS A	0.3	2.4	0.36	0.63	47.9	0.8	1.2
Approach	236	3.0	0.133	8.8	0.46	LOS A	0.9	6.6	0.46	0.38	47.2	2.4	3.1
West													
Left	63	3.0	0.070	0.5	0.01	LOS A	0.9	6.6	0.46	0.00	32.8	0.2	0.2
Through Right	17	3.0	0.070	7.4	0.02	LOS A	0.9	6.6	0.46	0.62	29.8	0.0	0.1
Approach	91	3.0	0.070	7.4	0.49	LOS X	0.9	6.6	0.46	0.33	45.9	2.7	3.3
All Vehicles	445	3.0	0.133	7.0	0.87	LOS X	0.9	6.6	0.46	0.39	45.0	4.9	6.4

1945



Turn	Demand Flow veh/h	HV %	Deg. Satn. v/c	Average Delay sec	Total Delay veh-h/h	Level of Service	Percentile Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	Tot. Travel Time veh-h/h	Perf. Index
South													
Left	19	3.0	0.090	7.2	0.04	LOSA	0.5	3.7	0.18	0.57	49.5	0.2	0.3
Through	105	3.0	0.090	4.6	0.14	LOSA	0.5	3.7	0.18	0.42	44.3	1.4	1.8
Right	1	3.0	0.090	11.2	0.00	LOSB	0.5	3.7	0.18	0.80	46.3	0.0	0.0
Approach	125	3.0	0.090	5.1	0.18	LOSA	0.5	3.7	0.18	0.44	45.1	1.6	2.1
East													
Left	6	3.0	0.010	8.2	0.01	LOSA	0.1	0.4	0.42	0.54	48.1	0.1	0.1
Through	2	3.0	0.010	7.5	0.00	LOSA	0.1	0.4	0.42	0.49	48.2	0.0	0.0
Right	2	3.0	0.010	12.2	0.01	LOSB	0.1	0.4	0.42	0.68	45.5	0.0	0.0
Approach	11	3.0	0.010	8.9	0.03	LOSA	0.1	0.4	0.42	0.56	47.6	0.1	0.2
North													
Left	67	3.0	0.197	7.1	0.13	LOSA	1.3	9.3	0.14	0.56	49.7	0.8	1.1
Through	194	3.0	0.197	4.5	0.24	LOSA	1.3	9.3	0.14	0.40	44.5	2.5	3.2
Right	42	3.0	0.197	11.2	0.13	LOSB	1.3	9.3	0.14	0.79	46.3	0.6	0.8
Approach	303	3.0	0.197	6.0	0.51	LOSA	1.3	9.3	0.14	0.49	45.8	3.9	5.2
West													
Left	4	3.0	0.022	7.5	0.01	LOSA	0.1	0.8	0.28	0.54	48.9	0.1	0.1
Through	13	3.0	0.022	6.9	0.02	LOSA	0.1	0.8	0.28	0.47	49.2	0.2	0.2
Right	11	3.0	0.022	11.6	0.03	LOSB	0.1	0.8	0.28	0.71	45.9	0.1	0.2
Approach	27	3.0	0.022	8.8	0.07	LOSA	0.1	0.8	0.28	0.57	47.8	0.4	0.5
All Vehicles	466	3.0	0.197	6.0	0.78	LOSA	1.3	9.3	0.16	0.48	45.8	6.0	8.0

1040

1947

9

Turn	Demand Flow veh/h	HV %	Deg. Satn. v/c	Average Delay sec	Total Delay veh-h/h	Level of Service	Percentile Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	Tot. Travel Time veh-h/h	Perf. Index
South													
Left	1	3.0	0.002	6.8	0.00	LOSA	0.0	0.1	0.06	0.57	43.0	0.0	0.0
Right	1	3.0	0.002	7.0	0.00	LOSA	0.0	0.1	0.06	0.63	42.7	0.0	0.0
Approach	2	3.0	0.002	6.9	0.00	LOSA	0.0	0.1	0.06	0.60	42.8	0.0	0.0
East													
Left	1	3.0	0.006	6.4	0.00	LOSA	0.0	0.0	0.00	0.88	43.3	0.0	0.0
Through	11	3.0	0.006	0.0	0.00	LOSA	0.0	0.0	0.00	0.00	50.0	0.1	0.1
Approach	12	3.0	0.006	0.6	0.00	LOS X	0.0	0.0	0.00	0.08	49.3	0.1	0.1
West													
Through	11	3.0	0.006	0.0	0.00	LOSA	0.0	0.0	0.00	0.00	50.0	0.1	0.1
Right	69	3.0	0.066	6.9	0.13	LOSA	0.2	1.4	0.08	0.61	42.7	0.9	1.2
Approach	80	3.0	0.066	6.0	0.13	LOS X	0.2	1.4	0.07	0.53	43.5	1.1	1.4
All Vehicles	94	3.0	0.066	5.3	0.14	LOS X	0.2	1.4	0.06	0.48	44.2	1.2	1.5



Turn	Demand Flow veh/h	HV %	Deg. Satn. v/c	Average Delay sec	Total Delay veh-h/h	Level of Service	Percentile Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	Tot. Travel Time veh-h/h	Perf. Index
South													
Left	2	3.0	0.050	8.2	0.00	LOSA	0.0	0.0	0.00	0.90	49.0	0.0	0.0
Through	189	3.0	0.050	0.0	0.00	LOSA	0.0	0.0	0.00	0.00	50.0	2.2	2.2
Approach	192	3.0	0.050	0.1	0.00	LOSX	0.0	0.0	0.00	0.01	50.0	2.2	2.2
North													
Through	505	3.0	0.134	1.1	0.15	LOSA	1.5	11.1	0.26	0.00	46.8	6.2	6.6
Right	2	3.0	0.134	10.2	0.01	LOSB	1.5	11.1	0.53	0.78	48.3	0.0	0.0
Approach	507	3.0	0.134	1.1	0.16	LOSX	1.5	11.1	0.26	0.00	46.8	6.2	6.6
West													
Left	11	3.0	0.011	9.1	0.03	LOSA	0.0	0.3	0.28	0.62	47.7	0.1	0.2
Right	27	3.0	0.094	18.8	0.14	LOSC	0.3	2.3	0.70	0.89	39.6	0.4	0.7
Approach	38	3.0	0.094	16.1	0.17	LOSC	0.3	2.3	0.58	0.82	41.6	0.6	0.9
All Vehicles	737	3.0	0.134	1.6	0.33	LOSX	1.5	11.1	0.21	0.05	47.3	9.0	9.7

1948

Turn	Demand Flow veh/h	HV %	Deg. Satn. v/c	Average Delay sec	Total Delay veh-h/h	Level of Service	Percentile Back of Queue Vehicles	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	Tot. Travel Time veh-h/h	Perf. Index
South													
Left	118	3.0	0.108	8.7	0.29	LOSA	0.4	3.0	0.21	0.63	48.0	1.5	2.1
Through Right	42	3.0	0.100	8.0	0.09	LOSA	0.4	3.0	0.28	0.56	48.7	0.5	0.7
Approach	40	3.0	0.100	9.2	0.10	LOSA	0.4	3.0	0.28	0.64	47.9	0.5	0.7
SouthEast	200	3.0	0.108	8.7	0.48	LOSA	0.4	3.0	0.24	0.62	48.1	2.5	3.5
Through Right	53	3.0	0.235	14.8	0.22	LOSB	0.9	6.8	0.65	0.85	42.2	0.8	1.2
Approach	40	3.0	0.235	17.6	0.20	LOSC	0.9	6.8	0.65	0.95	41.0	0.6	1.0
East	93	3.0	0.235	16.0	0.41	LOSC	0.9	6.8	0.65	0.89	41.7	1.3	2.2
Left	46	3.0	0.086	8.3	0.11	LOSA	0.0	0.0	0.00	0.88	49.0	0.6	0.8
Through Right	97	3.0	0.086	0.0	0.00	LOSA	0.0	0.0	0.00	0.00	60.0	1.0	1.0
Approach	11	3.0	0.086	7.6	0.02	LOSA	0.0	0.0	0.00	0.91	48.5	0.1	0.2
NorthEast	154	3.0	0.086	3.0	0.13	LOS X	0.0	0.0	0.00	0.33	55.4	1.7	2.0
Left	461	3.0	0.455	8.0	1.03	LOSA	2.6	18.8	0.39	0.61	48.5	5.7	8.3
Right	6	3.0	0.455	8.3	0.01	LOSA	2.6	18.8	0.39	0.66	34.5	0.0	0.1
Approach	467	3.0	0.455	8.0	1.04	LOSA	2.6	18.8	0.39	0.61	48.4	5.8	8.4
North													
Left	4	3.0	0.136	13.2	0.02	LOSB	0.5	3.7	0.55	0.54	39.4	0.1	0.1
Through Right	55	3.0	0.136	12.9	0.20	LOSB	0.5	3.7	0.55	0.81	44.2	0.7	1.2
Approach	6	3.0	0.136	13.2	0.02	LOSB	0.5	3.7	0.55	0.81	39.4	0.1	0.1
West	65	3.0	0.136	13.0	0.24	LOSB	0.5	3.7	0.55	0.80	43.4	0.9	1.4
Left	1	3.0	0.292	7.4	0.00	LOSA	0.0	0.0	0.00	0.72	38.1	0.0	0.0
Through Right	101	3.0	0.292	0.0	0.00	LOSA	0.0	0.0	0.00	0.00	60.0	0.4	0.4
Approach	406	3.0	0.292	8.2	0.92	LOSA	0.0	0.0	0.00	0.71	49.1	5.0	6.6
All Vehicles	508	3.0	0.292	6.5	0.92	LOS X	0.0	0.0	0.00	0.57	50.0	5.5	7.1
	1487	3.0	0.455	7.8	3.22	LOS X	2.6	18.8	0.22	0.59	48.7	17.7	24.5

12 (Give-way)

Turn	Demand Flow veh/h	HV %	Deg. Satn. v/c	Average Delay sec	Total Delay veh-h/h	Level of Service	Percentile Back of Queue Vehicles	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	Tot. Travel Time veh-h/h	Perf. Index
South													
Left	1	3.0	0.172	37.2	0.01	LOSE	0.5	3.6	0.91	0.98	14.0	0.0	0.0
Through	2	3.0	0.172	35.3	0.02	LOSE	0.5	3.6	0.91	0.96	12.5	0.0	0.1
Right	17	3.0	0.172	36.3	0.17	LOSE	0.5	3.6	0.91	0.97	12.5	0.2	0.5
Approach	20	3.0	0.172	36.3	0.20	LOSE	0.5	3.6	0.91	0.97	12.6	0.3	0.6
East													
Left	1	3.0	0.251	6.4	0.00	LOSA	0.0	0.0	0.00	0.92	43.3	0.0	0.0
Through	909	3.0	0.251	0.0	0.00	LOSA	0.0	0.0	0.00	0.00	51.3	10.8	11.0
Right	1	3.0	0.001	9.1	0.00	LOSA	0.0	0.0	0.50	0.62	41.0	0.0	0.0
Approach	912	3.0	0.251	0.0	0.00	LOSX	0.0	0.0	0.00	0.00	51.2	10.8	11.1
North													
Left	4	3.0	0.689	64.0	0.07	LOS F	2.6	18.9	0.96	1.23	13.0	0.1	0.2
Through	1	3.0	0.689	62.8	0.02	LOS F	2.6	18.9	0.96	1.14	13.1	0.0	0.0
Right	69	3.0	0.689	64.6	1.25	LOS F	2.6	18.9	0.96	1.14	14.0	1.7	3.1
Approach	75	3.0	0.689	64.5	1.34	LOS F	2.6	18.9	0.96	1.15	13.9	1.8	3.4
West													
Left	63	3.0	0.196	7.5	0.13	LOSA	0.0	0.0	0.00	1.02	48.6	0.7	1.1
Through	646	3.0	0.196	1.2	0.22	LOSA	0.0	0.0	0.00	0.11	57.0	6.5	6.8
Right	1	3.0	0.002	11.5	0.00	LOS B	0.0	0.0	0.59	0.67	44.4	0.0	0.0
Approach	711	3.0	0.196	1.8	0.35	LOS X	0.0	0.0	0.00	0.19	56.1	7.3	7.9
All Vehicles	1717	3.0	0.689	4.0	1.90	LOS X	2.6	18.9	0.05	0.14	49.1	20.2	22.9



12 (roundabout)

Turn	Demand Flow veh/h	HV %	Deg. Satn. v/c	Average Delay sec	Total Delay veh-h/h	Level of Service	Percentile Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	Tot. Travel Time veh-h/h	Perf. Index
<b>South</b>													
Left	1	3.0	0.032	9.9	0.00	LOSA	0.1	1.0	0.63	0.74	30.6	0.0	0.0
Through Right	17	3.0	0.032	12.9	0.06	LOS B	0.1	1.0	0.63	0.79	27.1	0.1	0.2
Approach	20	3.0	0.032	12.2	0.07	LOS B	0.1	1.0	0.63	0.77	27.5	0.1	0.3
<b>East</b>													
Left	1	3.0	0.315	3.8	0.00	LOSA	2.1	15.3	0.26	0.40	44.7	0.0	0.0
Through Right	909	3.0	0.315	4.5	1.15	LOSA	2.1	15.3	0.26	0.41	45.2	12.3	16.0
Approach	912	3.0	0.315	4.6	1.15	LOSA	2.1	15.3	0.26	0.41	45.2	12.3	16.1
<b>North</b>													
Left	4	3.0	0.089	5.9	0.01	LOSA	0.4	2.7	0.54	0.60	37.5	0.0	0.1
Through Right	69	3.0	0.089	12.8	0.25	LOS B	0.4	2.7	0.54	0.78	35.7	0.7	1.2
Approach	75	3.0	0.089	12.3	0.25	LOS B	0.4	2.7	0.54	0.77	35.8	0.8	1.3
<b>West</b>													
Left	63	3.0	0.226	4.8	0.08	LOSA	1.4	10.4	0.11	0.46	51.2	0.7	1.0
Through Right	646	3.0	0.226	3.6	0.65	LOSA	1.4	10.4	0.12	0.33	52.5	7.1	9.1
Approach	711	3.0	0.226	3.7	0.74	LOSA	1.4	10.4	0.12	0.34	52.3	7.9	10.1
All Vehicles	1717	3.0	0.315	4.6	2.21	LOSA	2.1	15.3	0.22	0.40	47.4	21.1	27.8

13 (Give-way)

Turn	Demand Flow veh/h	HV %	Deg. Satn. v/c	Average Delay sec	Total Delay veh-h/h	Level of Service	Percentile Back of Queue Vehicles	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	Tot. Travel Time veh-h/h	Perf. Index
South													
Left	1	3.0	0.092	36.9	0.01	LOSE	0.3	2.0	0.88	0.81	11.7	0.0	0.0
Through	1	3.0	0.092	35.8	0.01	LOSE	0.3	2.0	0.88	0.94	11.8	0.0	0.0
Right	8	3.0	0.092	37.7	0.09	LOSE	0.3	2.0	0.88	0.96	13.4	0.1	0.3
Approach	11	3.0	0.092	37.4	0.11	LOSE	0.3	2.0	0.88	0.94	13.1	0.1	0.3
East													
Left	51	3.0	0.185	7.5	0.11	LOSA	0.0	0.0	0.00	1.05	48.6	0.6	0.9
Through	619	3.0	0.185	1.2	0.21	LOSA	0.0	0.0	0.00	0.11	57.0	6.2	6.5
Right	23	3.0	0.031	10.5	0.07	LOSB	0.1	0.8	0.53	0.73	45.4	0.3	0.4
Approach	693	3.0	0.185	2.0	0.38	LOSX	0.1	0.8	0.02	0.20	56.8	7.1	7.8
North													
Left	174	3.0	0.169	9.6	0.47	LOSA	0.8	5.4	0.56	0.77	36.6	1.5	2.6
Through	6	3.0	2.121	1014.3	1.78	LOSF	74.4	534.3	1.00	4.19	1.0	1.8	2.8
Right	208	3.0	2.121	1015.2	58.67	LOSF	74.4	534.3	1.00	4.22	1.0	59.9	93.8
Approach	376	3.0	2.121	582.5	60.91	LOSF	74.4	534.3	0.80	2.67	1.9	63.2	99.3
West													
Left	95	3.0	0.175	6.5	0.17	LOSA	0.0	0.0	0.00	0.80	43.3	1.3	1.7
Through	535	3.0	0.175	0.0	0.00	LOSA	0.0	0.0	0.00	0.00	51.3	6.3	6.5
Right	2	3.0	0.003	9.8	0.01	LOSA	0.0	0.1	0.54	0.64	40.5	0.0	0.0
Approach	632	3.0	0.175	1.0	0.18	LOSX	0.0	0.1	0.00	0.12	49.9	7.6	8.2
All Vehicles	1631	3.1	2.121	136.0	61.58	LOSX	74.4	534.3	0.20	0.78	11.5	78.1	115.6

13 (Roundabout)

Turn	Demand Flow veh/h	HV %	Deg. Satn. v/c	Average Delay sec	Total Delay veh-h/h	Level of Service	Percentile Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	Tot. Travel Time veh-h/h	Perf. Index
<b>South</b>													
Left	1	3.0	0.016	6.9	0.00	LOSA	0.1	0.5	0.65	0.60	28.9	0.0	0.0
Through Right	1	3.0	0.016	6.9	0.00	LOSA	0.1	0.5	0.65	0.60	28.9	0.0	0.0
Approach	8	3.0	0.016	13.8	0.03	LOS B	0.1	0.5	0.65	0.74	28.9	0.1	0.1
<b>East</b>													
Left	11	3.0	0.016	12.4	0.04	LOS B	0.1	0.5	0.65	0.71	28.9	0.1	0.2
<b>North</b>													
Left	51	3.0	0.305	6.2	0.09	LOSA	2.0	14.2	0.53	0.59	48.9	0.6	0.8
Through Right	619	3.0	0.305	5.1	0.87	LOSA	2.0	14.2	0.53	0.50	49.0	7.3	10.0
Approach	23	3.0	0.305	11.6	0.07	LOS B	1.9	13.8	0.54	0.88	46.0	0.3	0.5
<b>West</b>													
Left	693	3.0	0.305	5.4	1.04	LOSA	2.0	14.2	0.53	0.52	48.9	8.2	11.3
Through Right	1	3.0	0.002	7.3	0.00	LOSA	0.0	0.0	0.53	0.51	39.2	0.0	0.0
Approach	6	3.0	0.268	4.3	0.01	LOSA	1.3	9.5	0.55	0.49	37.1	0.1	0.1
<b>South</b>													
Left	288	3.0	0.268	10.7	0.86	LOS B	1.3	9.5	0.55	0.76	34.3	2.9	4.6
Through Right	296	3.0	0.268	10.5	0.87	LOS B	1.3	9.5	0.55	0.75	34.4	3.0	4.7
<b>North</b>													
Left	95	3.0	0.216	5.6	0.15	LOSA	1.3	9.1	0.15	0.59	43.8	1.2	1.7
Through Right	535	3.0	0.216	4.3	0.65	LOSA	1.3	9.1	0.15	0.38	45.9	7.1	9.2
Approach	2	3.0	0.216	9.0	0.01	LOSA	1.3	9.0	0.15	0.84	41.7	0.0	0.0
<b>West</b>													
Left	632	3.0	0.216	4.6	0.80	LOSA	1.3	9.1	0.15	0.41	45.5	8.4	10.9
Through Right	1631	3.0	0.305	6.0	2.74	LOSA	2.0	14.2	0.39	0.52	45.2	19.7	27.0



13 (Signalised)

Turn	Demand Flow veh/h	HV %	Deg. Satn. v/c	Average Delay sec	Total Delay veh-h/h	Level of Service	Percentile Back of Queue Vehicles	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	Tot. Travel Time veh-h/h	Perf. Index
South													
Left	1	3.0	0.039	56.9	0.02	LOSE	0.6	4.1	0.88	0.69	8.3	0.0	0.1
Through	1	3.0	0.039	50.4	0.01	LOSD	0.6	4.1	0.88	0.61	8.3	0.0	0.1
Right	8	3.0	0.039	57.6	0.13	LOSE	0.6	4.1	0.88	0.69	9.6	0.2	0.5
Approach	11	3.0	0.039	56.8	0.17	LOSE	0.6	4.1	0.88	0.68	9.3	0.2	0.6
East													
Left	51	3.0	0.560	45.8	0.64	LOSD	17.3	124.3	0.88	0.89	26.8	1.1	3.0
Through	619	3.0	0.560	39.5	6.80	LOSD	17.4	125.3	0.88	0.77	27.1	13.1	35.1
Right	23	3.0	0.291	76.5	0.49	LOSE	1.5	10.9	1.00	0.71	18.6	0.7	1.7
Approach	693	3.0	0.560	41.2	7.93	LOSD	17.4	125.3	0.88	0.78	26.7	14.9	39.8
North													
Left	1	3.0	0.007	41.9	0.01	LOSD	0.0	0.3	0.73	0.61	18.0	0.0	0.1
Through	6	3.0	0.569	42.8	0.08	LOSD	16.0	114.7	0.91	0.78	15.1	0.1	0.3
Right	288	3.0	0.569	49.1	3.93	LOSD	16.0	114.7	0.91	0.83	15.1	5.6	16.5
Approach	296	3.0	0.569	48.9	4.02	LOSD	16.0	114.7	0.91	0.83	15.1	5.8	16.9
West													
Left	95	3.0	0.528	44.3	1.17	LOSD	16.0	115.0	0.87	0.85	24.7	2.2	5.7
Through	535	3.0	0.528	37.8	5.62	LOSD	16.3	116.7	0.87	0.75	25.7	12.6	31.1
Right	2	3.0	0.026	72.9	0.04	LOSE	0.1	1.0	0.97	0.61	18.1	0.1	0.2
Approach	632	3.0	0.528	38.9	6.83	LOSD	16.3	116.7	0.87	0.76	25.5	14.9	37.0
All Vehicles	1631	3.0	0.569	41.8	18.94	LOSD	17.4	125.3	0.88	0.78	24.2	35.7	94.3

Turn	Demand Flow veh/h	HV %	Deg. Satn. v/c	Average Delay sec	Total Delay veh-h/h	Level of Service	Percentile Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	Tot. Travel Time veh-h/h	Perf. Index
East													
Through	766	3.0	0.220	1.6	0.34	LOSA	1.9	13.5	0.30	0.00	54.5	8.5	8.8
Right	15	3.0	0.220	10.7	0.04	LOS B	1.9	13.5	0.62	1.04	48.2	0.2	0.3
Approach	781	3.0	0.220	1.7	0.38	LOS X	1.9	13.5	0.30	0.02	54.4	8.7	9.1
North													
Approach	0	0.0	0.000	0.0	0.00	LOS X	0.0	0.0	0.00	0.00	0.0	0.0	0.0
West													
Left	204	3.0	0.178	7.5	0.43	LOSA	0.0	0.0	0.00	0.76	48.6	2.4	3.2
Through	429	3.0	0.178	0.0	0.00	LOSA	0.0	0.0	0.00	0.00	60.0	4.3	4.3
Approach	634	3.0	0.178	2.4	0.43	LOS X	0.0	0.0	0.00	0.24	55.9	6.8	7.6
All Vehicles	1415	3.0	0.220	2.0	0.81	LOS X	1.9	13.5	0.17	0.12	55.1	15.5	16.7

Turn	Demand Flow veh/h	HV %	Deg. Satn. v/c	Average Delay sec	Total Delay veh-h/h	Level of Service	Percentile Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	Tot. Travel Time veh-h/h	Perf. Index
East													
Through	472	3.0	0.130	0.0	0.00	LOSA	0.0	0.0	0.00	0.00	60.0	4.8	4.8
Approach	472	3.0	0.130	0.0	0.00	LOS X	0.0	0.0	0.00	0.00	60.0	4.8	4.8
North													
Left	11	3.0	0.264	9.1	0.03	LOSA	1.3	9.4	0.52	0.73	42.1	0.2	0.2
Right	309	3.0	0.264	9.0	0.78	LOSA	1.3	9.4	0.52	0.72	42.1	4.5	6.3
Approach	320	3.0	0.264	9.0	0.80	LOSA	1.3	9.4	0.52	0.72	42.1	4.6	6.5
West													
Through	429	3.0	0.118	0.0	0.00	LOSA	0.0	0.0	0.00	0.00	60.0	4.3	4.3
Approach	429	3.0	0.118	0.0	0.00	LOS X	0.0	0.0	0.00	0.00	60.0	4.3	4.3
All Vehicles	1221	3.0	0.264	2.4	0.80	LOS X	1.3	9.4	0.14	0.19	54.0	13.7	15.6

Turn	Demand Flow veh/h	HV %	Deg. Satn. v/c	Average Delay sec	Total Delay veh-h/h	Level of Service	Percentile Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	Tot. Travel Time veh-h/h	Perf. Index
East													
Through Right	421	3.0	0.120	0.8	0.10	LOSA	0.8	5.6	0.22	0.00	52.2	2.5	2.5
Approach	8	3.0	0.120	9.1	0.02	LOSA	0.8	5.6	0.47	0.97	41.0	0.1	0.1
North													
Left	429	3.0	0.120	1.0	0.12	LOS X	0.8	5.6	0.23	0.02	51.9	2.5	2.7
Right	4	3.0	0.040	8.8	0.01	LOSA	0.2	1.1	0.42	0.64	31.8	0.0	0.0
Approach	36	3.0	0.040	8.7	0.09	LOSA	0.2	1.1	0.42	0.65	31.9	0.2	0.4
West													
Left	40	3.0	0.040	8.7	0.10	LOSA	0.2	1.1	0.42	0.65	31.9	0.2	0.5
Through	118	3.0	0.123	7.5	0.25	LOSA	0.0	0.0	0.00	0.81	48.6	1.4	1.9
Approach	322	3.0	0.123	0.0	0.00	LOSA	0.0	0.0	0.00	0.00	60.0	3.3	3.3
All Vehicles	440	3.0	0.123	2.0	0.25	LOS X	0.0	0.0	0.00	0.22	56.6	4.7	5.2
	909	3.0	0.123	1.8	0.46	LOS X	0.8	5.6	0.13	0.14	54.2	7.4	8.3



Turn	Demand Flow veh/h	HV %	Deg. Satn. v/c	Average Delay sec	Total Delay veh-h/h	Level of Service	Percentile Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	Tot. Travel Time veh-h/h	Perf. Index
South													
Left	13	3.0	0.219	8.5	0.03	LOSA	1.4	10.3	0.69	0.71	33.3	0.1	0.2
Through Right	65 109	3.0 3.0	0.219 0.219	7.8 14.1	0.14 0.43	LOSA LOSB	1.4 1.4	10.3 10.3	0.69 0.69	0.68 0.80	33.2 34.0	0.5 1.0	0.9 2.0
Approach	187	3.0	0.219	11.6	0.60	LOSB	1.4	10.3	0.69	0.75	33.7	1.6	3.1
East													
Left	137	3.0	0.462	8.6	0.33	LOSA	4.1	29.5	0.46	0.59	49.8	1.4	2.1
Through Right	333 141	3.0 3.0	0.462 0.462	7.9 12.3	0.73 0.48	LOSA LOSB	4.1 4.1	29.5 29.5	0.46 0.46	0.54 0.72	49.7 46.8	3.3 1.6	5.0 2.5
Approach	611	3.0	0.462	9.1	1.54	LOSA	4.1	29.5	0.46	0.59	49.0	6.3	9.6
North													
Left	109	3.0	0.216	8.4	0.26	LOSA	1.4	9.9	0.55	0.65	38.6	0.9	1.6
Through Right	91 23	3.0 3.0	0.216 0.216	6.4 11.0	0.16 0.07	LOSA LOSB	1.4 1.4	9.9 9.9	0.55 0.55	0.57 0.76	35.4 33.1	0.7 0.2	1.1 0.4
Approach	223	3.0	0.216	7.8	0.49	LOSA	1.4	9.9	0.55	0.63	36.8	1.8	3.1
West													
Left	59	3.0	0.245	7.3	0.12	LOSA	1.6	11.5	0.57	0.65	42.3	0.8	1.2
Through Right	185 4	3.0 3.0	0.245 0.245	7.9 11.1	0.41 0.01	LOSA LOSB	1.6 1.6	11.5 11.5	0.57 0.57	0.63 0.79	43.7 40.4	2.7 0.1	3.9 0.1
Approach	248	3.0	0.245	7.8	0.54	LOSA	1.6	11.5	0.57	0.64	43.3	3.6	5.2
All Vehicles	1269	3.0	0.462	9.0	3.17	LOSA	4.1	29.5	0.53	0.63	43.9	13.2	20.9

Turn	Demand Flow veh/h	HV %	Deg. Satm. v/c	Average Delay sec	Total Delay veh-h/h	Level of Service	Percentile Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	Tot. Travel Time veh-h/h	Perf. Index
Approach East	0	0.0	0.000	0.0	0.00	LOS X	0.0	0.0	0.00	0.00	0.0	0.0	0.0
Approach North													
Left	1	3.0	0.002	11.5	0.00	LOS B	0.0	0.0	0.57	0.65	36.2	0.0	0.0
Approach West	1	3.0	0.002	11.5	0.00	LOS B	0.0	0.0	0.57	0.65	36.2	0.0	0.0
Left	4	3.0	0.206	8.8	0.01	LOS A	0.0	0.0	0.00	1.42	35.8	0.0	0.1
Through	743	3.0	0.206	0.0	0.00	LOS A	0.0	0.0	0.00	0.00	70.0	2.8	2.8
Approach	747	3.0	0.206	0.0	0.01	LOS X	0.0	0.0	0.00	0.01	69.7	2.8	2.9
All Vehicles	748	3.0	0.206	0.1	0.01	LOS X	0.0	0.0	0.00	0.01	69.6	2.8	2.9

Turn	Demand Flow veh/h	HV %	Deg. Satn. v/c	Average Delay sec	Total Delay veh-h/h	Level of Service	Percentile Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	Tot. Travel Time veh-h/h	Perf. Index
South													
Left	13	3.0	0.146	5.6	0.02	LOS A	1.0	6.8	0.60	0.57	36.0	0.1	0.2
Through	86	3.0	0.146	4.7	0.11	LOS A	1.0	6.8	0.60	0.53	36.1	0.6	1.0
Right	53	3.0	0.146	11.0	0.16	LOS B	1.0	6.8	0.60	0.77	34.1	0.5	0.8
Approach	152	3.0	0.146	6.9	0.29	LOS A	1.0	6.8	0.60	0.61	35.3	1.2	2.0
East													
Left	84	3.0	0.396	5.5	0.13	LOS A	3.1	22.0	0.56	0.57	43.1	1.1	1.6
Through	343	3.0	0.396	4.2	0.40	LOS A	3.1	22.0	0.56	0.47	43.3	4.6	6.2
Right	46	3.0	0.396	10.5	0.13	LOS B	3.1	22.0	0.56	0.79	41.4	0.7	1.0
Approach	474	3.0	0.396	5.1	0.66	LOS A	3.1	22.0	0.56	0.52	43.1	6.4	8.8
North													
Left	141	3.0	0.284	5.7	0.22	LOS A	2.0	14.0	0.62	0.61	32.9	0.8	1.6
Through	162	3.0	0.284	4.9	0.22	LOS A	2.0	14.0	0.62	0.54	33.0	0.9	1.7
Right	1	3.0	0.284	11.1	0.00	LOS B	2.0	14.0	0.62	0.82	31.4	0.0	0.0
Approach	304	3.0	0.284	5.3	0.45	LOS A	2.0	14.0	0.62	0.57	32.9	1.7	3.3
West													
Left	8	3.0	0.262	4.7	0.01	LOS A	1.8	13.0	0.45	0.45	43.7	0.1	0.1
Through	248	3.0	0.262	3.7	0.26	LOS A	1.8	13.0	0.45	0.41	43.9	3.3	4.2
Right	67	3.0	0.262	10.0	0.19	LOS A	1.8	13.0	0.45	0.78	41.5	1.0	1.5
Approach	324	3.0	0.262	5.0	0.45	LOS A	1.8	13.0	0.45	0.49	43.4	4.4	5.9
All Vehicles	1254	3.0	0.396	5.3	1.86	LOS A	3.1	22.0	0.55	0.54	41.3	13.6	20.0

Turn	Demand Flow veh/h	HV %	Deg. Satn. v/c	Average Delay sec	Total Delay veh-h/h	Level of Service	Percentile Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	Tot. Travel Time veh-h/h	Perf. Index
SouthEast													
Right	34	3.0	0.080	12.2	0.11	LOS B	0.3	2.1	0.57	0.76	44.9	0.5	0.7
Approach East	34	3.0	0.080	12.2	0.11	LOS B	0.3	2.1	0.57	0.76	44.9	0.5	0.7
Through	189	3.0	0.104	0.0	0.00	LOS A	0.0	0.0	0.00	0.00	60.0	1.9	1.9
Right	34	3.0	0.020	7.4	0.07	LOS A	0.0	0.0	0.00	0.63	48.7	0.4	0.5
Approach	223	3.0	0.104	1.1	0.07	LOS X	0.0	0.0	0.00	0.10	58.1	2.3	2.4
NorthEast													
Right	282	3.0	0.191	7.5	0.59	LOS A	1.0	6.9	0.36	0.58	35.1	1.6	2.8
Approach	282	3.0	0.191	7.5	0.59	LOS A	1.0	6.9	0.36	0.58	35.1	1.6	2.8
North													
Left	91	3.0	0.388	10.4	0.26	LOS B	2.2	16.1	0.57	0.83	41.3	1.3	2.0
Right	282	3.0	0.388	10.2	0.80	LOS B	2.2	16.1	0.57	0.85	41.3	4.1	6.2
Approach	373	3.0	0.388	10.3	1.06	LOS B	2.2	16.1	0.57	0.85	41.3	5.5	8.2
West													
Left	25	3.0	0.243	7.5	0.05	LOS A	0.0	0.0	0.00	1.13	38.1	0.2	0.3
Through	415	3.0	0.243	0.0	0.00	LOS A	0.0	0.0	0.00	0.00	60.0	1.8	1.8
Approach	440	3.0	0.243	0.4	0.05	LOS X	0.0	0.0	0.00	0.07	58.3	2.0	2.2
All Vehicles	1352	3.0	0.388	5.0	1.89	LOS X	2.2	16.1	0.24	0.41	46.8	11.8	16.3



# Movement Summary Alternative Scenario

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Turn	Demand Flow veh/h	HV %	Deg. Satm. v/c	Average Delay sec	Total Delay veh-h/h	Level of Service	Percentile Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	Tot. Travel Time veh-h/h	Perf. Index
East													
Through Right	366	3.0	0.369	6.8	0.69	LOS A	5.8	41.4	0.80	0.00	46.5	4.8	6.2
Approach North	97	3.0	0.369	15.1	0.41	LOS C	5.8	41.4	0.80	1.01	44.8	1.3	2.4
Through Right	463	3.0	0.369	8.5	1.10	LOS X	5.8	41.4	0.80	0.21	46.1	6.1	8.6
Approach West	42	3.0	0.293	18.1	0.21	LOS C	1.2	8.8	0.62	0.80	40.1	0.6	1.0
Through Right	65	3.0	0.293	17.0	0.31	LOS C	1.2	8.8	0.62	0.89	27.6	0.6	1.3
Approach West	107	3.0	0.293	17.4	0.52	LOS C	1.2	8.8	0.62	0.85	33.8	1.3	2.3
Through Right	55	3.0	0.032	7.5	0.11	LOS A	0.0	0.0	0.00	0.65	48.6	0.6	0.8
Approach West	259	3.0	0.143	0.0	0.00	LOS A	0.0	0.0	0.00	0.00	60.0	2.6	2.6
Through Right	314	3.0	0.143	1.3	0.11	LOS X	0.0	0.0	0.00	0.11	57.7	3.3	3.5
All Vehicles	884	3.0	0.369	7.0	1.73	LOS X	5.8	41.4	0.50	0.25	48.2	10.6	14.4

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Turn	Demand Flow veh/h	HV %	Deg. Satn. v/c	Average Delay sec	Total Delay veh-h/h	Level of Service	Percentile Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	Tot. Travel Time veh-h/h	Perf. Index
East													
Through Right	402	3.0	0.229	4.4	0.49	LOSA	3.3	23.8	0.73	0.00	48.2	5.1	5.9
Approach	413	3.0	0.229	4.6	0.53	LOSB	3.3	23.8	0.73	0.94	47.6	0.1	0.2
North													
Left	1	3.0	0.226	21.6	0.01	LOSC	0.8	6.0	0.75	0.80	37.5	0.0	0.0
Right	59	3.0	0.226	20.8	0.34	LOSC	0.8	6.0	0.75	0.93	24.8	0.6	1.3
Approach	60	3.0	0.226	20.8	0.35	LOSC	0.8	6.0	0.75	0.93	25.1	0.7	1.3
West													
Left	1	3.0	0.168	7.4	0.00	LOSA	0.0	0.0	0.00	1.19	48.6	0.0	0.0
Through	303	3.0	0.168	0.0	0.00	LOSA	0.0	0.0	0.00	0.00	60.0	3.1	3.1
Approach	304	3.0	0.168	0.0	0.00	LOSX	0.0	0.0	0.00	0.00	60.0	3.1	3.1
All Vehicles	777	3.0	0.229	4.1	0.88	LOSX	3.3	23.8	0.44	0.09	50.6	8.9	10.5

Turn	Demand Flow veh/h	HV %	Deg. Satn. v/c	Average Delay sec	Total Delay veh-h/h	Level of Service	Percentile Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	Tot. Travel Time veh-h/h	Perf. Index
South													
Left	187	3.0	0.258	9.8	0.51	LOS A	1.4	10.2	0.41	0.71	47.3	2.4	3.5
Through	112	3.0	0.258	8.6	0.27	LOS A	1.4	10.2	0.41	0.34	48.0	1.4	1.8
Approach	299	3.0	0.258	9.4	0.78	LOS A	1.4	10.2	0.41	0.57	47.6	3.8	5.3
North													
Through	360	3.0	0.313	0.0	0.00	LOS A	0.0	0.0	0.00	0.00	60.0	3.6	3.6
Right	227	3.0	0.313	8.3	0.52	LOS A	0.0	0.0	0.00	0.88	48.9	2.8	3.9
Approach	587	3.0	0.313	3.2	0.52	LOS X	0.0	0.0	0.00	0.34	55.2	6.4	7.6
West													
Left	242	3.0	0.208	22.9	1.54	LOS C	3.9	28.0	0.88	0.08	36.8	4.0	5.5
Right	21	3.0	0.208	23.0	0.13	LOS C	3.9	28.0	0.88	0.96	36.8	0.3	0.6
Approach	263	3.0	0.208	22.9	1.68	LOS C	3.9	28.0	0.88	0.15	36.8	4.3	6.1
All Vehicles	1149	3.0	0.313	9.3	2.98	LOS X	3.9	28.0	0.31	0.36	47.7	14.6	19.0

Turn	Demand Flow veh/h	HV %	Deg. Satn. v/c	Average Delay sec	Total Delay veh-h/h	Level of Service	Percentile Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	Tot. Travel Time veh-h/h	Perf. Index
South													
Left	11	3.0	0.021	12.8	0.04	LOS B	0.1	0.5	0.59	0.79	40.7	0.2	0.2
Approach	11	3.0	0.021	12.8	0.04	LOS B	0.1	0.5	0.59	0.79	40.7	0.2	0.2
East													
Left	59	3.0	0.362	8.8	0.14	LOS A	0.0	0.0	0.00	1.40	53.1	0.6	1.1
Through	629	3.0	0.362	0.0	0.00	LOS A	0.0	0.0	0.00	0.00	70.0	5.8	5.8
Approach	688	3.0	0.362	0.8	0.14	LOS X	0.0	0.0	0.00	0.12	68.3	6.4	6.9
West													
Approach	0	0.0	0.000	0.0	0.00	LOS X	0.0	0.0	0.00	0.00	0.0	0.0	0.0
All Vehicles	699	3.0	0.362	0.9	0.18	LOS X	0.1	0.5	0.01	0.13	67.6	6.6	7.1

Turn	Demand Flow veh/h	HV %	Deg. Satn. v/c	Average Delay sec	Total Delay veh-h/h	Level of Service	Percentile Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	Tot. Travel Time veh-h/h	Perf. Index
Approach East	0	0.0	0.000	0.0	0.00	LOS X	0.0	0.0	0.00	0.00	0.0	0.0	0.0
Approach North													
Left	86	3.0	0.120	10.6	0.25	LOS B	0.4	3.1	0.49	0.77	42.3	1.3	1.9
Approach West	86	3.0	0.120	10.6	0.25	LOS B	0.4	3.1	0.49	0.77	42.3	1.3	1.9
Left	2	3.0	0.240	8.7	0.01	LOS A	0.0	0.0	0.00	1.41	53.1	0.0	0.0
Through	434	3.0	0.240	0.0	0.00	LOS A	0.0	0.0	0.00	0.00	70.0	4.0	4.0
Approach	436	3.0	0.240	0.0	0.01	LOS X	0.0	0.0	0.00	0.01	69.9	4.0	4.0
All Vehicles	522	3.0	0.240	1.8	0.26	LOS X	0.4	3.1	0.08	0.13	63.2	5.3	5.9

Turn	Demand Flow veh/h	HV %	Deg. Satn. v/c	Average Delay sec	Total Delay veh-h/h	Level of Service	Percentile Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	Tot. Travel Time veh-h/h	Perf. Index
South													
Left	53	3.0	0.057	10.9	0.16	LOS B	0.6	4.6	0.36	0.65	42.2	0.8	1.4
Through	107	3.0	0.845	45.4	1.35	LOS D	14.5	103.8	1.00	1.02	22.7	2.7	6.4
Right	189	3.0	0.845	52.4	2.76	LOS D	14.5	103.8	1.00	1.02	24.4	5.1	12.0
Approach	349	3.0	0.845	44.0	4.27	LOS D	14.5	103.8	0.90	0.97	25.5	8.6	19.8
East													
Left	173	3.0	0.323	12.2	0.59	LOS B	2.2	16.1	0.39	0.70	48.7	2.1	4.1
Through	611	3.0	0.879	41.7	7.07	LOS D	18.9	135.6	0.97	0.93	29.5	13.4	33.2
Right	55	3.0	0.476	55.4	0.84	LOS E	2.5	18.0	1.00	0.75	24.4	1.3	3.1
Approach	838	3.0	0.879	36.5	8.50	LOS D	18.9	135.6	0.86	0.87	31.4	16.8	40.4
North													
Left	126	3.0	0.299	11.1	0.39	LOS B	1.6	11.6	0.38	0.67	42.0	1.9	3.5
Through	331	3.0	0.843	43.1	3.95	LOS D	17.1	122.7	1.00	1.02	23.6	8.0	19.4
Right	25	3.0	0.843	50.2	0.35	LOS D	17.1	122.7	1.00	1.02	25.2	0.7	1.6
Approach	482	3.0	0.843	35.1	4.70	LOS D	17.1	122.7	0.84	0.93	27.1	10.6	24.4
West													
Left	6	3.0	0.510	41.8	0.07	LOS D	8.4	60.4	0.92	0.88	31.2	0.1	0.3
Through	425	3.0	0.510	33.0	3.90	LOS C	8.4	60.5	0.92	0.76	33.2	8.3	19.8
Right	84	3.0	0.732	58.2	1.36	LOS E	4.1	29.1	1.00	0.85	23.6	2.1	4.9
Approach	516	3.0	0.732	37.2	5.33	LOS D	8.4	60.5	0.93	0.78	31.3	10.5	25.1
All Vehicles	2185	3.0	0.879	37.6	22.80	LOS D	18.9	135.6	0.88	0.88	29.3	46.5	109.6

Turn	Demand Flow veh/h	HV %	Deg. Satn. v/c	Average Delay sec	Total Delay veh-h/h	Level of Service	Percentile Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	Tot. Travel Time veh-h/h	Perf. Index
South													
Left	4	3.0	0.036	8.8	0.01	LOSA	0.4	2.8	0.55	0.40	33.2	0.0	0.0
Through	61	3.0	0.036	2.4	0.04	LOSA	0.4	2.8	0.55	0.00	34.9	0.3	0.4
Right	1	3.0	0.036	10.8	0.00	LOSB	0.4	2.8	0.55	0.80	47.9	0.0	0.0
Approach	66	3.0	0.036	2.9	0.05	LOSX	0.4	2.8	0.55	0.04	35.3	0.4	0.5
East													
Left	1	3.0	0.063	10.3	0.00	LOSB	0.3	1.8	0.40	0.63	46.9	0.0	0.0
Through	34	3.0	0.063	9.1	0.09	LOSA	0.3	1.8	0.40	0.61	47.9	0.4	0.6
Right	11	3.0	0.063	10.7	0.03	LOSB	0.3	1.8	0.40	0.76	46.8	0.1	0.2
Approach	45	3.0	0.063	9.5	0.12	LOSA	0.3	1.8	0.40	0.64	47.6	0.6	0.8
North													
Left	175	3.0	0.134	8.8	0.43	LOSA	0.9	6.7	0.43	0.41	47.4	2.2	2.9
Through	59	3.0	0.134	0.6	0.01	LOSA	0.9	6.7	0.43	0.00	33.8	0.3	0.3
Right	6	3.0	0.134	7.4	0.01	LOSA	0.9	6.7	0.43	0.64	30.1	0.0	0.1
Approach	240	3.0	0.134	6.8	0.45	LOSX	0.9	6.7	0.43	0.31	45.7	2.5	3.2
West													
Left	51	3.0	0.077	7.0	0.10	LOSA	0.3	2.3	0.18	0.57	41.8	0.6	0.8
Through	19	3.0	0.077	7.6	0.04	LOSA	0.3	2.3	0.18	0.57	49.2	0.2	0.3
Right	27	3.0	0.077	7.4	0.06	LOSA	0.3	2.3	0.18	0.66	41.6	0.3	0.5
Approach	97	3.0	0.077	7.2	0.19	LOSA	0.3	2.3	0.18	0.60	43.2	1.2	1.6
All Vehicles	448	3.0	0.134	6.6	0.82	LOSX	0.9	6.7	0.39	0.37	44.5	4.7	6.2

Turn	Demand Flow veh/h	HV %	Deg. Satn. v/c	Average Delay sec	Total Delay veh-h/h	Level of Service	Percentile Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	Tot. Travel Time veh-h/h	Perf. Index
South													
Left	19	3.0	0.058	11.1	0.06	LOS B	0.7	4.9	0.62	0.32	47.6	0.2	0.3
Through	88	3.0	0.058	2.8	0.07	LOS A	0.7	4.9	0.62	0.00	42.7	1.2	1.3
Right	1	3.0	0.058	10.5	0.00	LOS B	0.7	4.9	0.62	0.73	47.7	0.0	0.0
Approach	108	3.0	0.058	4.3	0.13	LOS X	0.7	4.9	0.62	0.06	43.6	1.4	1.7
East													
Left	6	3.0	0.008	9.6	0.02	LOS A	0.0	0.2	0.34	0.62	47.5	0.1	0.1
Through	1	3.0	0.008	9.1	0.00	LOS A	0.0	0.2	0.34	0.60	47.5	0.0	0.0
Right	1	3.0	0.002	11.2	0.00	LOS B	0.0	0.1	0.48	0.59	46.0	0.0	0.0
Approach	8	3.0	0.008	9.7	0.02	LOS A	0.0	0.2	0.35	0.62	47.3	0.1	0.2
North													
Left	69	3.0	0.136	8.3	0.16	LOS A	0.0	0.0	0.00	0.83	49.0	0.9	1.2
Through	187	3.0	0.136	0.0	0.00	LOS A	0.0	0.0	0.00	0.00	50.0	2.1	2.1
Right	25	3.0	0.040	8.8	0.06	LOS A	0.1	0.9	0.26	0.59	48.2	0.3	0.5
Approach	282	3.0	0.136	2.8	0.22	LOS X	0.1	0.9	0.02	0.26	49.6	3.3	3.8
West													
Left	2	3.0	0.027	11.3	0.01	LOS B	0.1	0.7	0.42	0.59	46.0	0.0	0.0
Through	15	3.0	0.027	10.9	0.04	LOS B	0.1	0.7	0.42	0.66	46.3	0.2	0.3
Right	8	3.0	0.015	11.1	0.03	LOS B	0.1	0.4	0.46	0.65	46.2	0.1	0.2
Approach	25	3.0	0.027	11.0	0.08	LOS B	0.1	0.7	0.43	0.65	46.2	0.3	0.5
All Vehicles	424	3.0	0.136	3.8	0.45	LOS X	0.7	4.9	0.21	0.24	47.6	5.2	6.1



Turn	Demand Flow veh/h	HV %	Deg. Satn. v/c	Average Delay sec	Total Delay veh-h/h	Level of Service	Percentile Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	Tot. Travel Time veh-h/h	Perf. Index
South													
Left	1	3.0	0.004	6.9	0.00	LOSA	0.0	0.1	0.08	0.56	42.8	0.0	0.0
Right	2	3.0	0.004	7.2	0.00	LOSA	0.0	0.1	0.08	0.62	42.6	0.0	0.0
Approach	3	3.0	0.004	7.1	0.01	LOSA	0.0	0.1	0.08	0.60	42.7	0.0	0.1
East													
Left	11	3.0	0.009	6.5	0.02	LOSA	0.0	0.0	0.00	0.70	43.3	0.1	0.2
Through	6	3.0	0.009	0.0	0.00	LOSA	0.0	0.0	0.00	0.00	50.0	0.1	0.1
Approach	17	3.0	0.009	4.0	0.02	LOS X	0.0	0.0	0.00	0.44	45.6	0.2	0.3
West													
Through	8	3.0	0.058	0.1	0.00	LOSA	0.2	1.7	0.07	0.00	48.8	0.1	0.1
Right	76	3.0	0.058	6.8	0.14	LOSA	0.2	1.7	0.07	0.63	42.9	1.0	1.4
Approach	84	3.0	0.058	6.1	0.14	LOS X	0.2	1.7	0.07	0.57	43.4	1.1	1.5
All Vehicles	104	3.0	0.058	5.8	0.17	LOS X	0.2	1.7	0.06	0.55	43.7	1.4	1.8



Turn	Demand Flow veh/h	HV %	Deg. Satn. v/c	Average Delay sec	Total Delay veh-h/h	Level of Service	Percentile Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	Tot. Travel Time veh-h/h	Perf. Index
South													
Left	2	3.0	0.087	8.2	0.00	LOSA	0.0	0.0	0.00	0.90	49.0	0.0	0.0
Through	164	3.0	0.087	0.0	0.00	LOSA	0.0	0.0	0.00	0.00	50.0	1.9	1.9
Approach	166	3.0	0.087	0.1	0.00	LOS X	0.0	0.0	0.00	0.01	50.0	1.9	1.9
North													
Through	472	3.0	0.250	2.3	0.30	LOSA	3.2	22.8	0.56	0.00	43.6	6.2	7.0
Right	2	3.0	0.250	10.5	0.01	LOS B	3.2	22.8	0.56	0.81	48.3	0.0	0.0
Approach	474	3.0	0.250	2.3	0.30	LOS X	3.2	22.8	0.56	0.00	43.6	6.2	7.0
West													
Left	17	3.0	0.065	13.3	0.06	LOS B	0.2	1.6	0.43	0.62	43.9	0.2	0.3
Right	15	3.0	0.065	13.4	0.05	LOS B	0.2	1.6	0.43	0.81	43.9	0.2	0.3
Approach	32	3.0	0.065	13.3	0.12	LOS B	0.2	1.6	0.43	0.71	43.9	0.4	0.7
All Vehicles	672	3.0	0.250	2.3	0.43	LOS X	3.2	22.8	0.42	0.04	45.1	8.6	9.6

Turn	Demand Flow veh/h	HV %	Deg. Satn. v/c	Average Delay sec	Total Delay veh-h/h	Level of Service	Percentile Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	Tot. Travel Time veh-h/h	Perf. Index
South													
Left	105	3.0	0.189	9.1	0.27	LOS A	0.8	5.9	0.27	0.63	47.8	1.3	1.9
Through	44	3.0	0.189	7.8	0.10	LOS A	0.8	5.9	0.27	0.57	48.7	0.5	0.8
Right	32	3.0	0.189	9.1	0.08	LOS A	0.8	5.9	0.27	0.67	47.8	0.4	0.6
Approach	181	3.0	0.189	8.8	0.44	LOS A	0.8	5.9	0.27	0.62	48.1	2.3	3.2
SouthEast													
Through	53	3.0	0.199	13.6	0.20	LOS B	0.8	5.5	0.62	0.82	43.3	0.7	1.2
Right	32	3.0	0.199	16.4	0.14	LOS C	0.8	5.5	0.62	0.94	41.9	0.5	0.7
Approach	84	3.0	0.199	14.7	0.34	LOS B	0.8	5.5	0.62	0.86	42.8	1.2	1.9
East													
Left	55	3.0	0.092	8.3	0.13	LOS A	0.0	0.0	0.00	0.87	49.0	0.7	0.9
Through	101	3.0	0.092	0.0	0.00	LOS A	0.0	0.0	0.00	0.00	60.0	1.0	1.0
Right	8	3.0	0.092	7.6	0.02	LOS A	0.0	0.0	0.00	0.90	48.5	0.1	0.1
Approach	164	3.0	0.092	3.1	0.14	LOS X	0.0	0.0	0.00	0.34	55.2	1.8	2.1
NorthEast													
Left	417	3.0	0.420	8.3	0.96	LOS A	2.2	15.6	0.39	0.63	48.3	5.2	7.4
Right	11	3.0	0.420	8.2	0.02	LOS A	2.2	15.6	0.39	0.64	34.4	0.1	0.1
Approach	427	3.0	0.420	8.3	0.98	LOS A	2.2	15.6	0.39	0.63	48.1	5.3	7.6
North													
Left	1	3.0	0.122	12.6	0.00	LOS B	0.5	3.4	0.58	0.55	39.8	0.0	0.0
Through	51	3.0	0.122	12.4	0.17	LOS B	0.5	3.4	0.58	0.81	44.7	0.7	1.1
Right	11	3.0	0.122	12.7	0.04	LOS B	0.5	3.4	0.58	0.80	39.8	0.2	0.2
Approach	62	3.0	0.122	12.4	0.21	LOS B	0.5	3.4	0.58	0.80	43.7	0.9	1.3
West													
Left	1	3.0	0.276	7.4	0.00	LOS A	0.0	0.0	0.00	0.71	38.1	0.0	0.0
Through	114	3.0	0.276	0.0	0.00	LOS A	0.0	0.0	0.00	0.00	60.0	0.5	0.5
Right	366	3.0	0.276	8.3	0.85	LOS A	0.0	0.0	0.00	0.74	48.9	4.5	6.0
Approach	481	3.0	0.276	6.3	0.85	LOS X	0.0	0.0	0.00	0.56	50.0	5.0	6.6
All Vehicles	1400	3.0	0.420	7.6	2.97	LOS X	2.2	15.6	0.22	0.59	48.8	16.4	22.7

## 6 Flemington Road – Manning Clark Crescent

Demand

Average Total

Percentile Back of Queue

Effective Average Tot. Travel

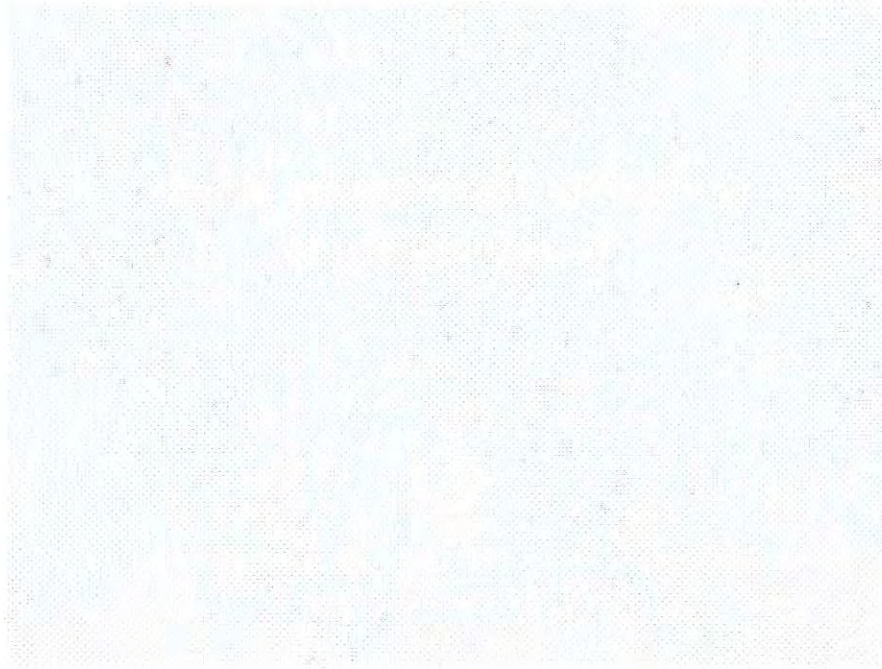
Turn	Flow veh/h	HV %	Satn. v/c	Delay sec	Delay veh-h/h	Level of Service	Vehicles veh	Distance m	Prop. Queued	Stop Rate per veh	Speed km/h	Time veh-h/h	Perf. Index
South													
Left	288	3.0	0.341	14.0	1.12	LOS B	5.5	39.5	0.51	0.72	40.0	4.7	9.4
Right	6	3.0	0.025	43.2	0.08	LOS D	0.2	1.7	0.88	0.66	26.7	0.2	0.3



**APPENDIX M – STAKEHOLDER COMMENTS REGISTER**


# Gungahlin Town Centre Roads Feasibility Study - Stakeholder Comments Register

Item No.	Date	Stakeholder	Contact	Comment	Response
1	26-Aug-11	ACT Government - Health Protection Service	John Woodlard	HPS request the proponent is advised to fully consider the potential for the presence of any contaminants in the study area including asbestos. Where asbestos is present the HPS request removal is completed by a licenced contractor	Phase 1 Contamination investigation low likelihood of asbestos or other contaminants on site. To be investigated further in future phases of the design
2	2-Sep-11	EDD	Jeremy Morris	The location of the New North South Road may need to be moved to the east depending on the land uses for the sites fronting Kate Grace Street. For example, if the new northern hospital is located in Gungahlin, and this may be a suitable location, the block size would need to be deeper.	Status of land use should be investigated during future phases of design development in consultation with EDD to ensure that road layout and block shape / size is consistent with ACT requirements
3	19-Aug-11	ACT ESA	Pat Jones	It is noted that there are several 150mm water main in close proximity to the stated area. The proponents will be required to meet standards as agreed by ACTEW and the ACTFB for any future developments.	Noted - ESA water supply requirements to be considered in future phases of the design
4	19-Aug-11	ACT ESA	Pat Jones	Roads and Driveways are to be suitably constructed to allow the access and egress of firefighting vehicles, crews and equipment. ACTFB pumpers require a minimum Turning Circle of 18metres and the Bronto requires a minimum turning circle of 22metres. Future development of the area may require the response of the ACTFB Bronto in the event of an emergency. The "Bronto" aerial appliance foot print has a width of 6.3 metres and 11.2metres in length. This vehicle has axle loads of 11tonne to the front and 19 tonne to the rear and can apply point loads up to 30tonne in certain circumstances. The ACTFB has the following requirements in relation to street furniture, future landscaping, existing trees and tree planting that should be adhered to: 1) Access to hydrants, other water supplies and services must not be impeded by trees, street furniture or landscaping. 2) Overhanging trees must not impede the progress of emergency service vehicles attending the facility. The minimum height clearance for ACTFB vehicles is 4.5 metres. 3) Street trees species to be selected for low bark flammability characteristics. 4) Street furniture and future landscaping must not impede the progress of emergency service vehicles attending the facility	Noted - ESA access requirements to be considered in future phases of the design
5	19-Aug-11	ACT ESA	Pat Jones	Variation to the Territory Plan No 300 requires an edge road to be constructed along the interface with the Muliangeri Nature Reserve for bushfire mitigation purposes, and to protect the natural values of the grasslands. Due to the sensitive location of this road, it is preferable that it be constructed prior to release of these sites. Therefore, this study should include design of the edge road.	Noted - ESA landscape requirements to be considered in future phases of the design
6	17-Aug-11	ESD PCL	Helen McKeown	There is a registered tree in the linear urban open space adjoining the new north-south road. It would be preferable for the road not to be constructed in this location, however, if it is determined that the road must be built, then there is to be no disturbance in the dripline plus 5.0m. This includes the construction of footpaths, street lights or trenching of any kind for the provision of services.	This road was not included as part of the study. It is noted that the Delta View extension potentially has heritage impacts
7	17-Aug-11	ESD PCL	Helen McKeown	There appears to be extensive fill encroaching into the urban open space at this location. This is not supported and the fill must be pushed back. If the resulting slope is too great for normal maintenance then the area should be stabilised with stone pitching.	Noted - Proposed design achieves this requirement Fill does encroach on the urban open space. Current design includes 4H:1V batters however these could be significantly flattened during future phases of the design to suit landscape objectives in the urban
8	17-Aug-11	ESD PCL	Helen McKeown	A tree impact plan needs to be prepared detailing how the trees in the urban open space that will be impacted by construction will survive both during construction and after (i.e. the extension of Ernest Cavanagh St).	Noted - Tree impact plan to be developed in future phases of the design
9	17-Aug-11	ESD PCL	Helen McKeown		



# Gungahlin Town Centre Roads Feasibility Study

GCC Presentation  
9 November 2011



**ACT**  
Government  
Environment and Sustainable Development

## Project Site



**ACT**  
Government  
Environment and Sustainable Development







## Components of the Study - Investigations

- Site Investigations
  - Geotechnical Investigation
  - Topographic Survey
  - Utilities

## Components of the Study - Environment

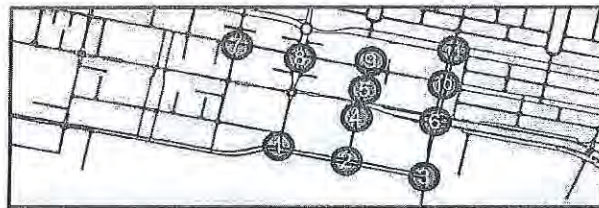
- Ecological Investigations
  - No threatened species were identified
  - 1 x Registered tree
  - Significant trees
- Contamination
  - No contamination anticipated

## Components of the Study – Cultural Heritage

- Aboriginal Heritage
  - No previously identified Aboriginal Heritage sites
  - Site investigation identified a PAD south of The Valley Avenue
- European Heritage
  - Old Wells Station Road and associated fence posts south of Valley Avenue

## Components of the Study - Traffic

- Traffic Assessments
  - Microsimulation Modelling
  - Intersection Modelling
    - Majority of intersections in 2031 LoS A-C (two D)



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Sustainable Development



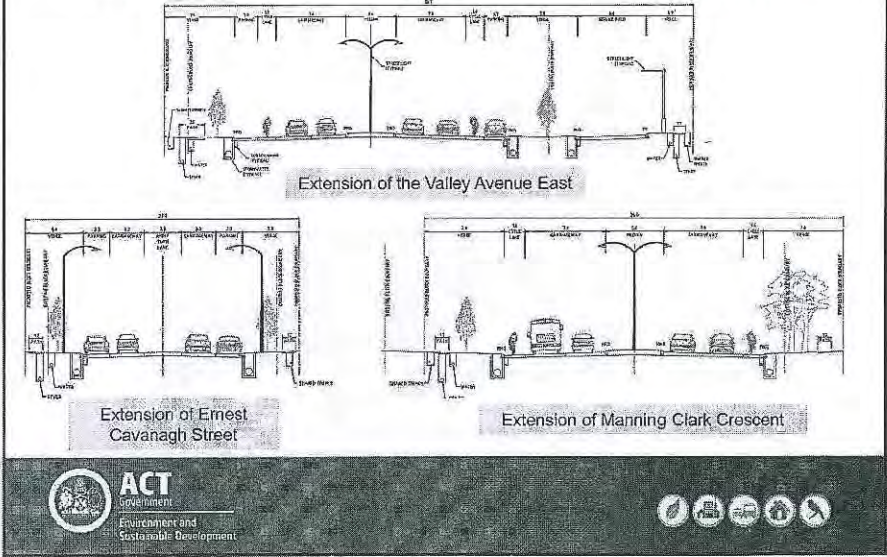
## Concept Design – Proposed Layout



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Sustainable Development



### Concept Design – Typical Cross Sections



### Preliminary Cost Estimate

Road	Total Network	Valley Ave Extension	Manning Clark Cres Extension	Ernest Cav. St Extension	New North-South Road
Cost	\$13.8 M	\$4.9 M	\$2.3 M	\$4.1 M	\$2.5 M



15/12/2011

1982



