

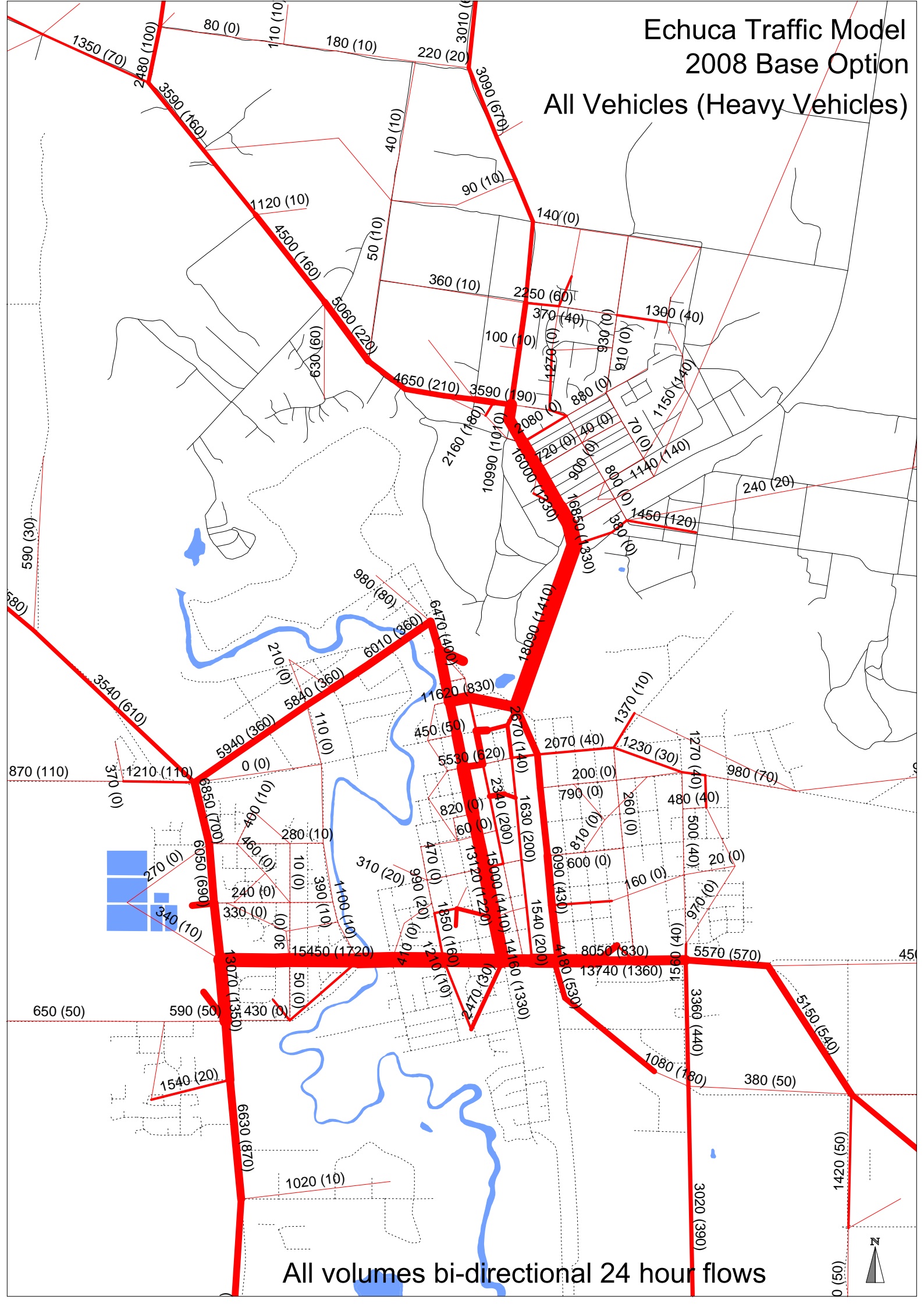
Appendix B: Traffic volume maps

This appendix contains maps of forecast traffic volumes for each modelled scenario. Maps are included for the scenarios shown in the following table.

	2008	2023	2038
Network configuration			
Base case (do nothing)	●	●	●
Options 2A/2B		●	●
Options 2C/2D		●	●
Warren Street flooding		●	●

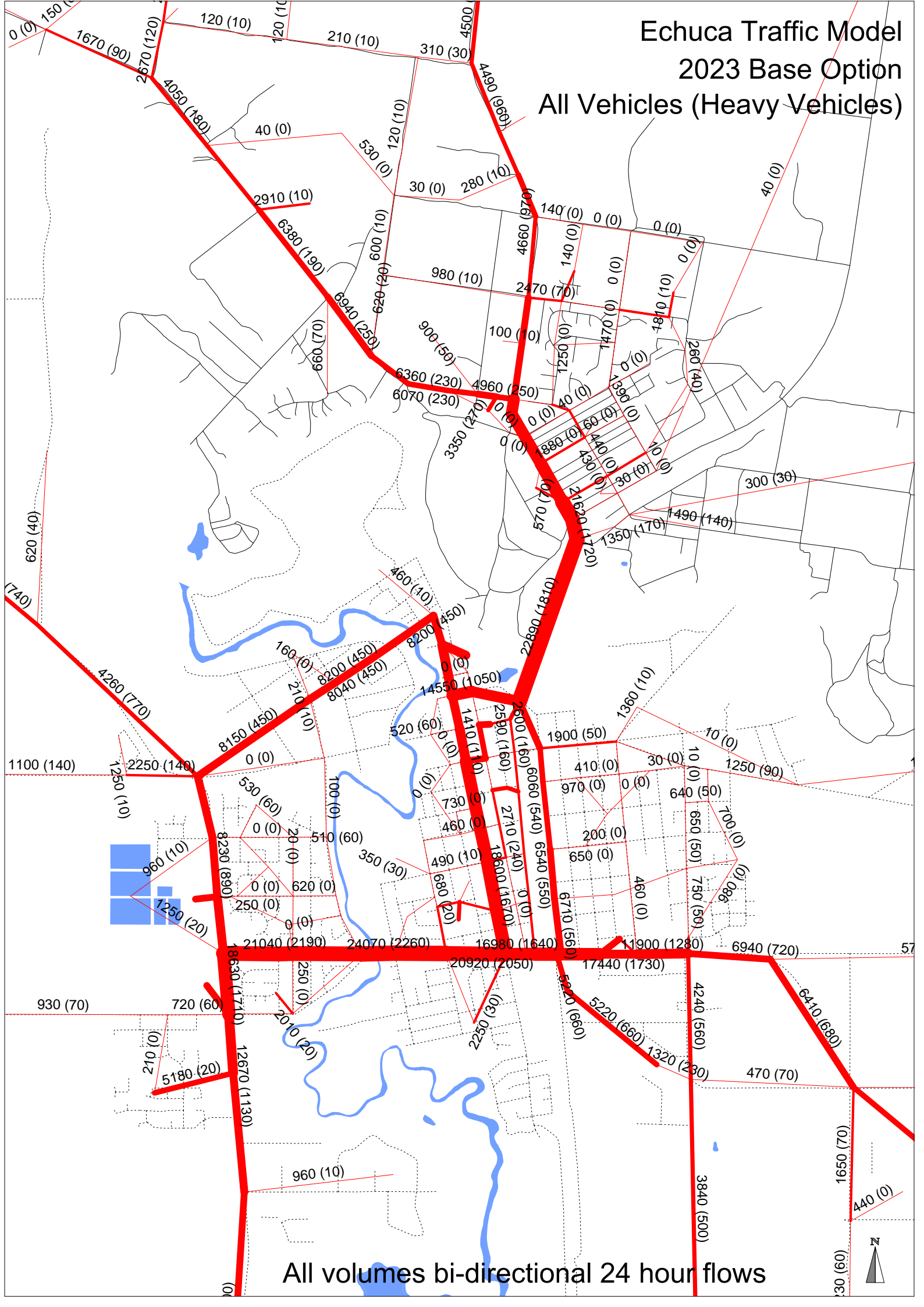
Each map shows daily two-way traffic volumes. Heavy vehicle volumes are shown in parentheses.

Echuca Traffic Model 2008 Base Option All Vehicles (Heavy Vehicles)



All volumes bi-directional 24 hour flows

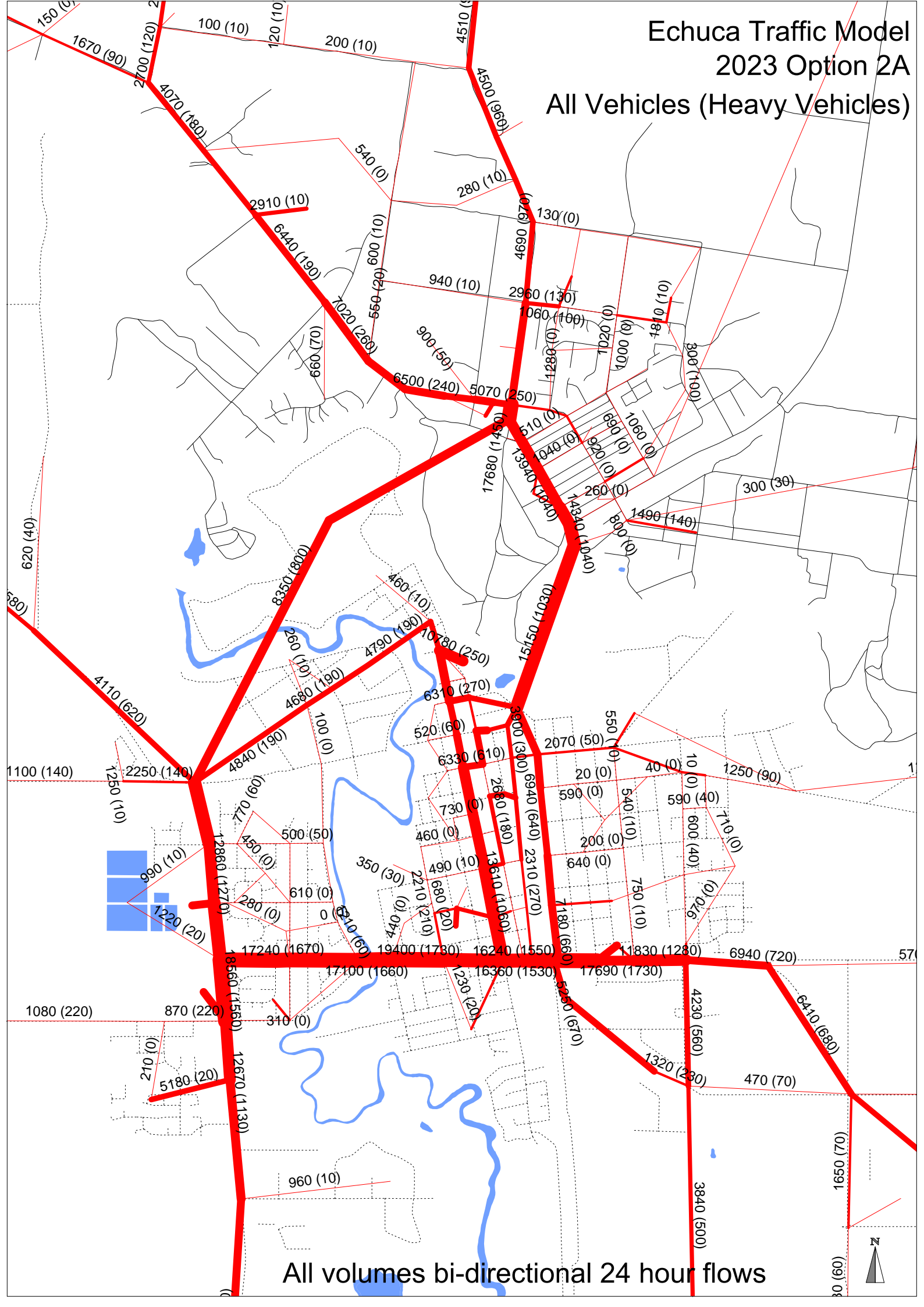
Echuca Traffic Model 2023 Base Option All Vehicles (Heavy Vehicles)



All volumes bi-directional 24 hour flows

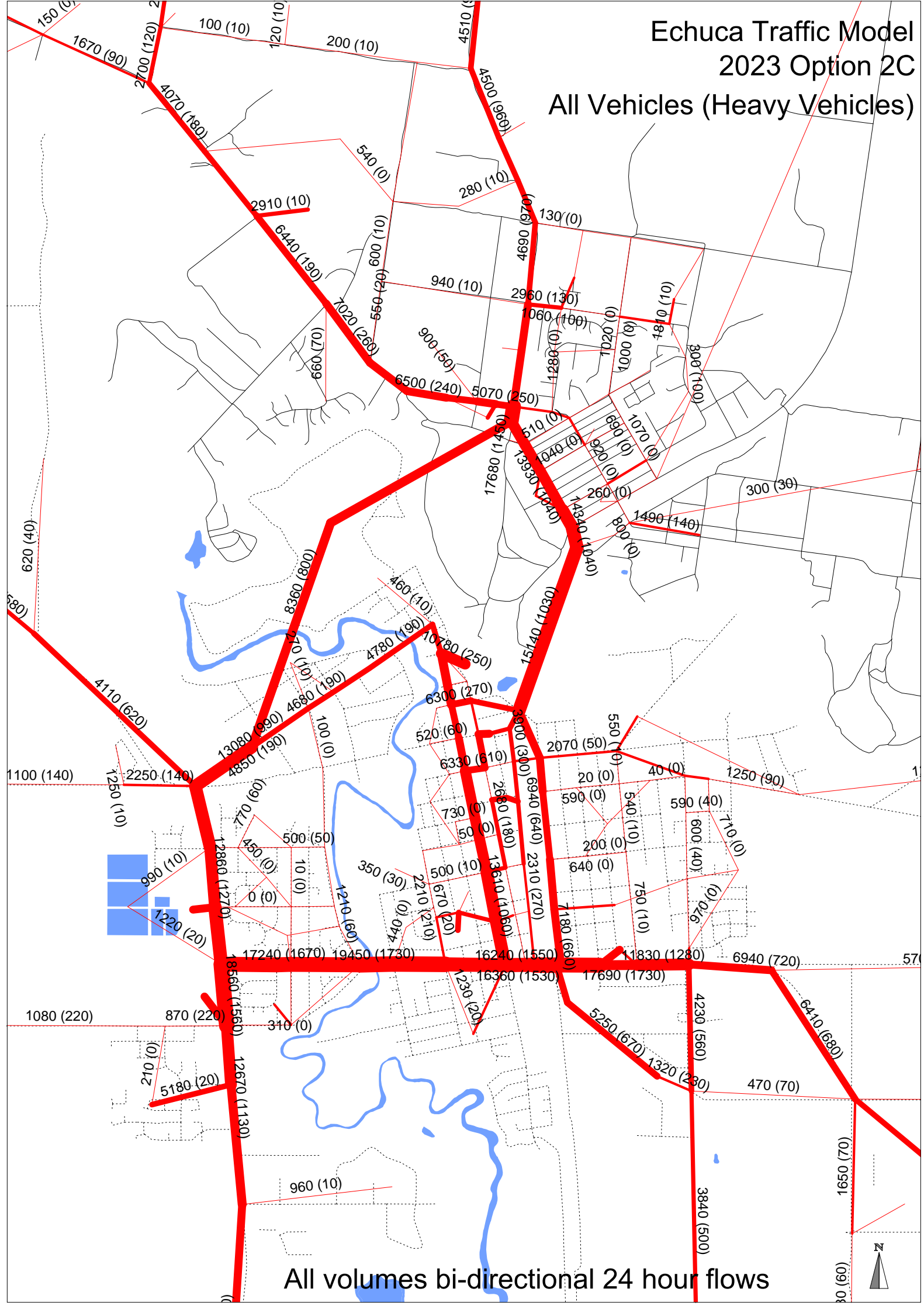


Echuca Traffic Model 2023 Option 2A All Vehicles (Heavy Vehicles)



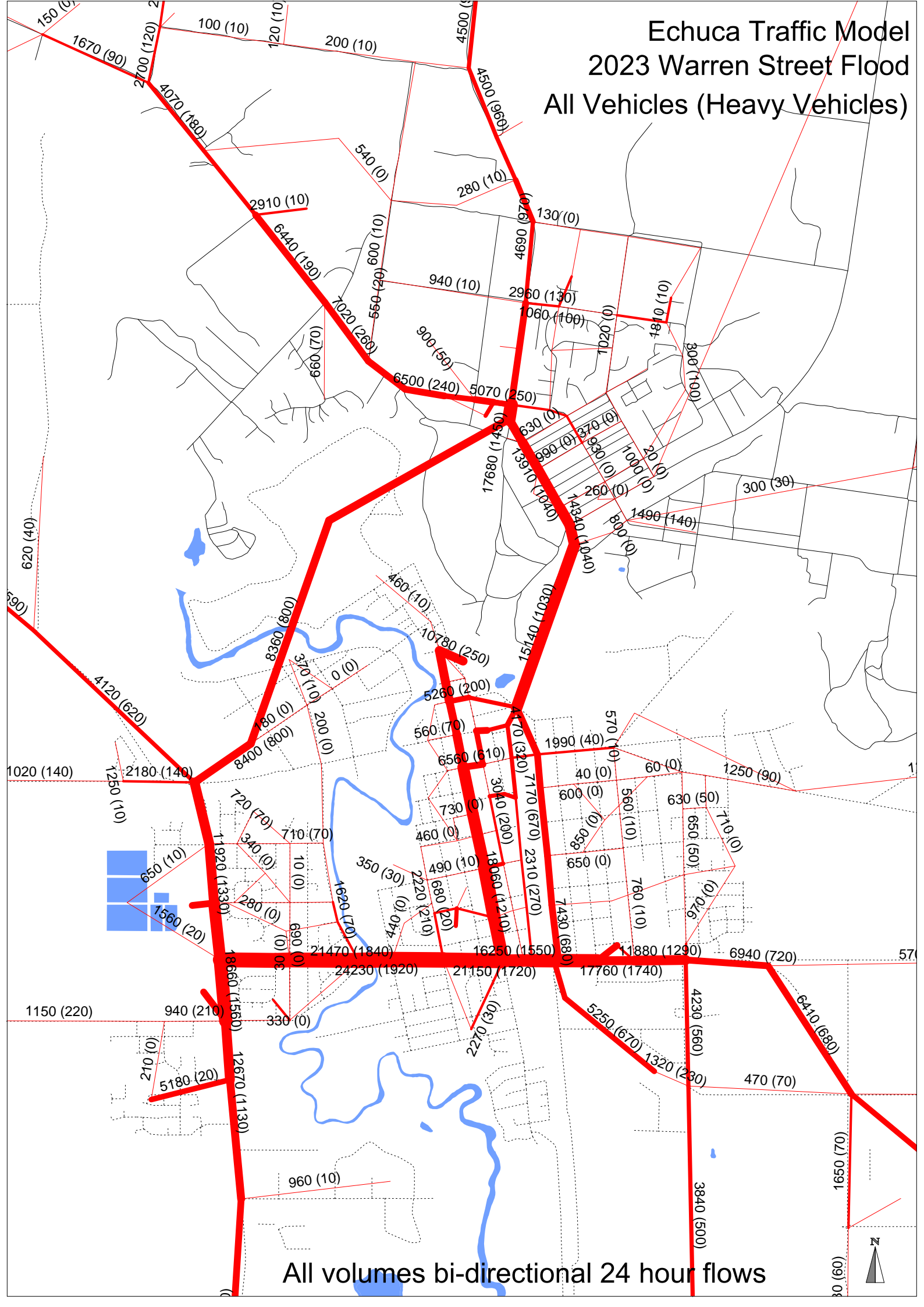
All volumes bi-directional 24 hour flows

Echuca Traffic Model 2023 Option 2C All Vehicles (Heavy Vehicles)



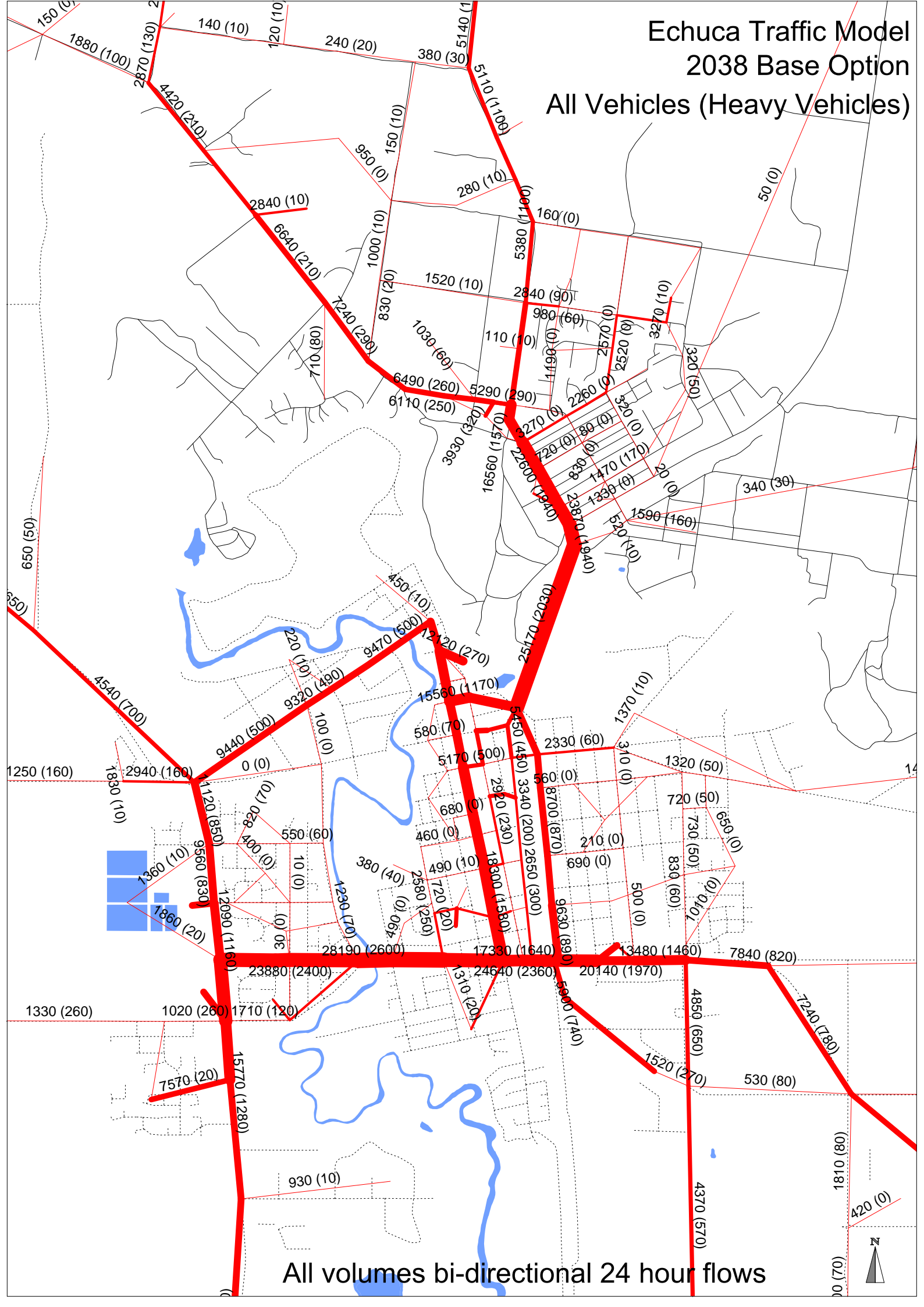
All volumes bi-directional 24 hour flows

Echuca Traffic Model 2023 Warren Street Flood All Vehicles (Heavy Vehicles)



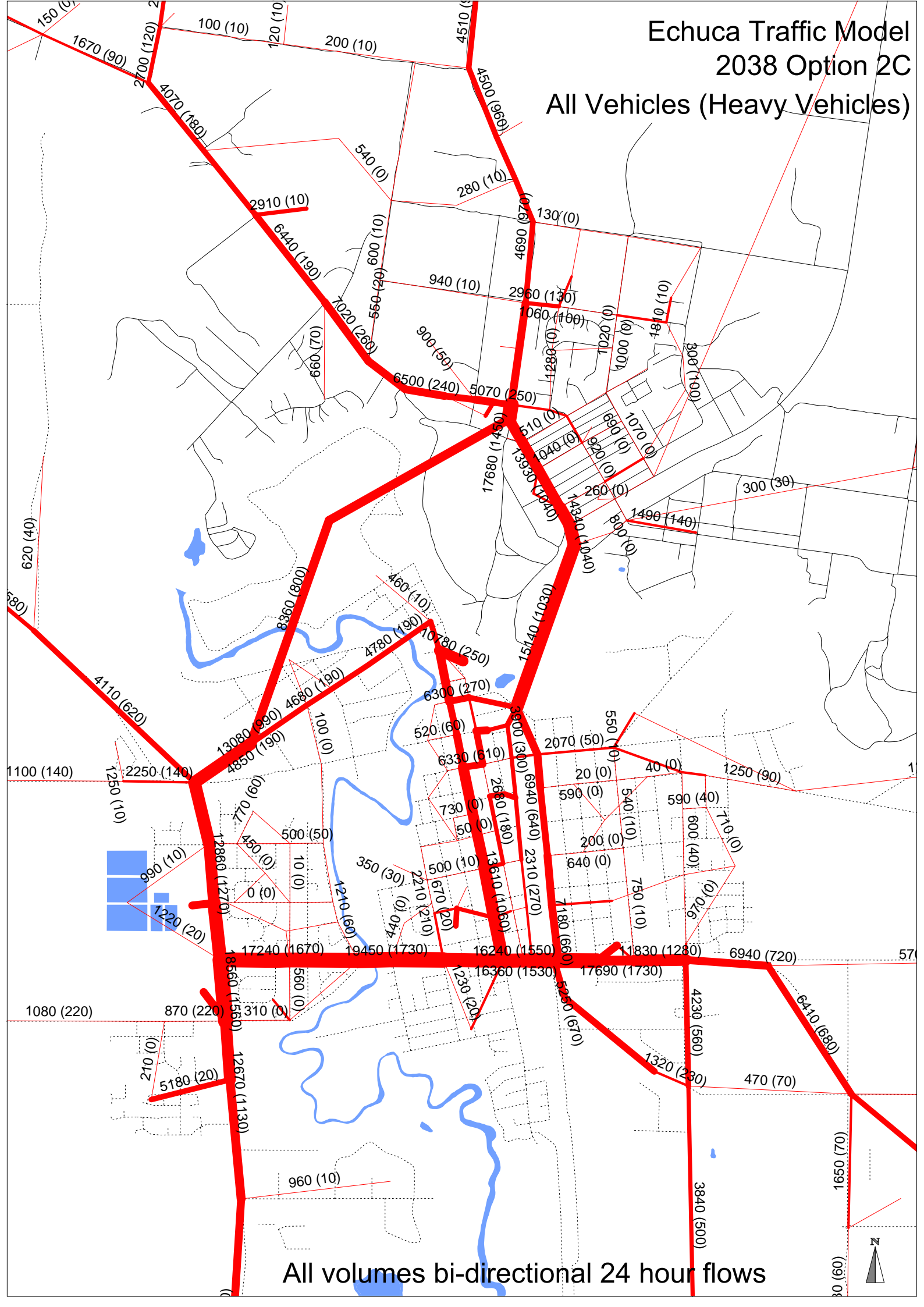
All volumes bi-directional 24 hour flows

Echuca Traffic Model 2038 Base Option All Vehicles (Heavy Vehicles)



All volumes bi-directional 24 hour flows

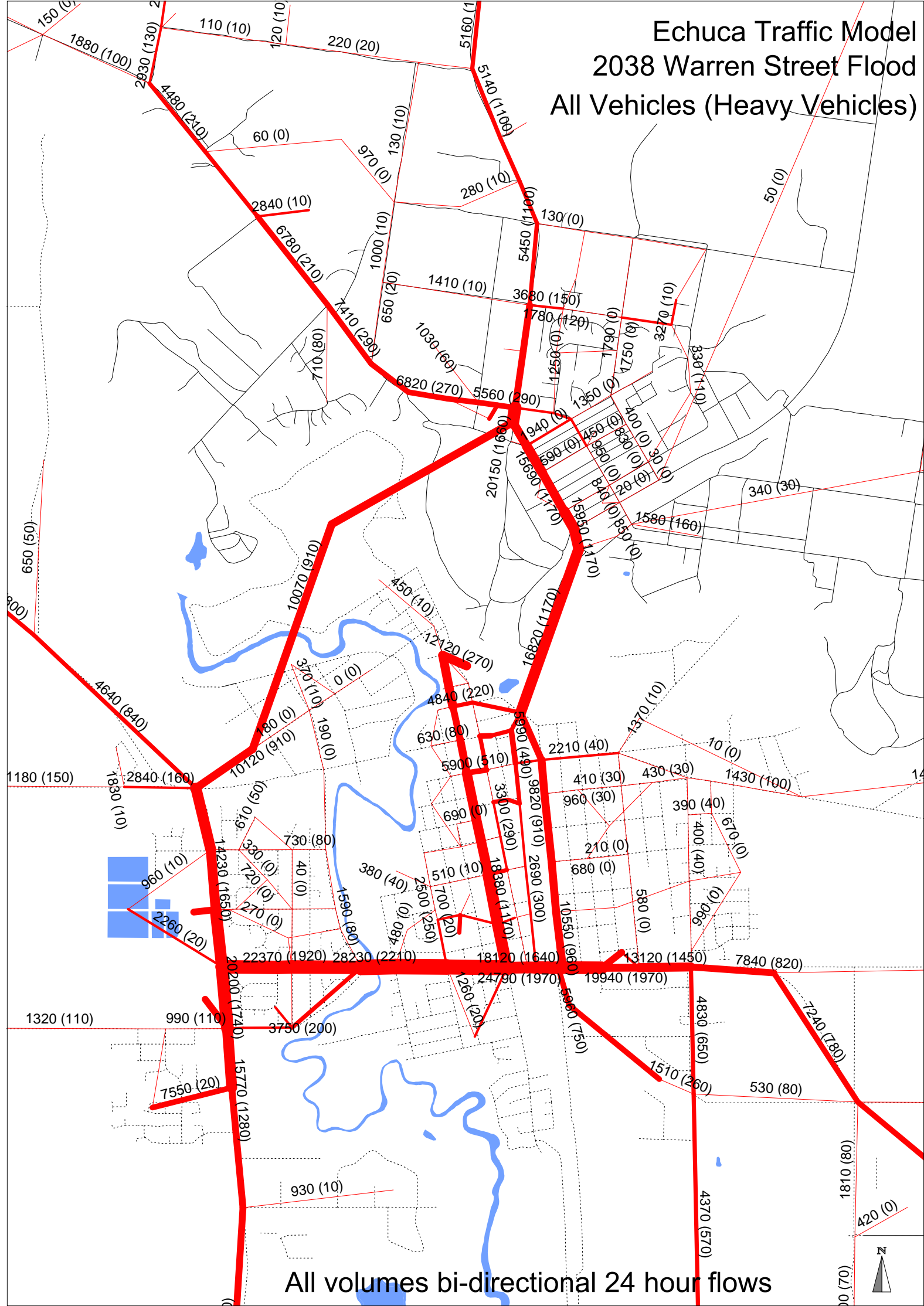
Echuca Traffic Model 2038 Option 2C All Vehicles (Heavy Vehicles)



All volumes bi-directional 24 hour flows



Echuca Traffic Model 2038 Warren Street Flood All Vehicles (Heavy Vehicles)



All volumes bi-directional 24 hour flows



Appendix C: SIDRA output summary

Output Tables

Option 2A

New Bridge Road Roundabout

Run Information

```
* Basic Parameters:
Intersection Type: Roundabout
Driving on the left-hand side of the road
Input data specified in Metric units
Model Defaults: Copy of Standard Left
Peak Flow Period (for performance): 30 minutes
Unit time (for volumes): 60 minutes.
Delay definition: Control delay
                    Geometric delay included
SIDRA Standard Delay model used
SIDRA Standard Queue model used
Level of Service based on: Delay (HCM method)
Queue definition: Back of queue, 95th Percentile
```

Table S.5 - Movement Performance

Mov ID	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue 95% Back (vehs)	Queue (m)	Perf. Index	Aver. Speed (km/h)

South: Northern Highway									
1 L	0.41	0.61	7.2	0.27	0.47	1.7	13	2.97	63.0
2 T	0.88	1.32	7.9	0.28	0.49	1.7	13	6.15	62.2
3 R	0.75	1.13	16.6	0.29	0.68	1.7	12	3.20	53.1

East: Warren Street									
4 L	0.50	0.74	10.9	0.53	0.73	0.9	6	2.82	57.2
5 T	0.22	0.33	9.7	0.54	0.65	0.5	4	1.41	59.4
6 R	0.01	0.02	18.3	0.54	0.80	0.5	4	0.04	51.7

North: New Bridge Road									
7 L	0.01	0.01	10.6	0.49	0.69	1.3	10	0.03	57.6
8 T	1.08	1.62	10.1	0.49	0.66	1.3	10	6.50	58.5
9 R	0.24	0.37	18.3	0.50	0.78	1.2	9	1.01	51.9

West: Murray Valley Highway									
10 L	0.17	0.26	11.6	0.50	0.74	0.8	6	0.95	57.4
11 T	0.22	0.34	10.5	0.50	0.69	0.8	6	1.32	58.4
12 R	0.97	1.45	17.7	0.50	0.81	1.1	8	3.96	51.8

Table S.6 - Intersection Performance

Option 2A
 New Bridge Road Roundabout
 Intersection ID: 0
 Roundabout

Total Flow (veh/h)	Deg. Satn x	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue (m)	Perf. Index	Aver. Speed (km/h)

South: Northern Highway									
769	0.258	2.04	3.06	9.6	0.28	0.53	13	12.32	60.0

East: Warren Street									
246	0.152	0.72	1.09	10.6	0.54	0.70	6	4.26	57.9

North: New Bridge Road									
436	0.209	1.33	2.00	11.0	0.49	0.67	10	7.54	57.6

West: Murray Valley Highway									
327	0.194	1.36	2.05	15.0	0.50	0.77	8	6.23	54.1

ALL VEHICLES:									
1778	0.258	5.46	8.19	11.1	0.41	0.63	13	30.36	58.0

INTERSECTION (persons):									
2667	0.258		8.19	11.1	0.41	0.63		30.36	58.0

Queue values in this table are 95% back of queue (metres).

Table S.15 - Capacity and Level of Service

Option 2A
 New Bridge Road Roundabout
 Intersection ID: 0
 Roundabout

Mov ID	Mov Typ	Total Flow (veh/h)	Total Cap. (veh/h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS	Longest Queue 95% Back (vehs)	Queue (m)

South: Northern Highway								
1	L	204	792	0.258*	7.2	A	1.7	13
2	T	401	1556	0.258*	7.9	A	1.7	13
3	R	164	636	0.258*	16.6	B	1.7	12

East: Warren Street								
4	L	163	1072	0.152	10.9	B	0.9	6
5	T	81	793	0.102	9.7	A	0.5	4
6	R	2	20	0.100	18.3	B	0.5	4

North: New Bridge Road								
7	L	2	10	0.200	10.6	B	1.3	10
8	T	386	1851	0.209	10.1	B	1.3	10
9	R	48	230	0.209	18.3	B	1.2	9

West: Murray Valley Highway								
10	L	54	367	0.147	11.6	B	0.8	6
11	T	77	523	0.147	10.5	B	0.8	6
12	R	196	1009	0.194	17.7	B	1.1	8

ALL VEHICLES:		1778		0.258	11.1	B	1.7	13

Level of Service calculations are based on average control delay including geometric delay (HCM criteria), independent of the current delay definition used. For the criteria, refer to the "Level of Service" topic in the

SIDRA Output Guide or the Output section of the on-line help.
* Maximum v/c ratio, or critical green periods
" Movement Level of service has been determined using adjacent lane
v/c ratio rather than short lane v/c ratio (v/c=1.0)



SIDRA SOLUTIONS

Site: 2A Roundabout

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A0039, Sinclair Knight Merz, Large Office

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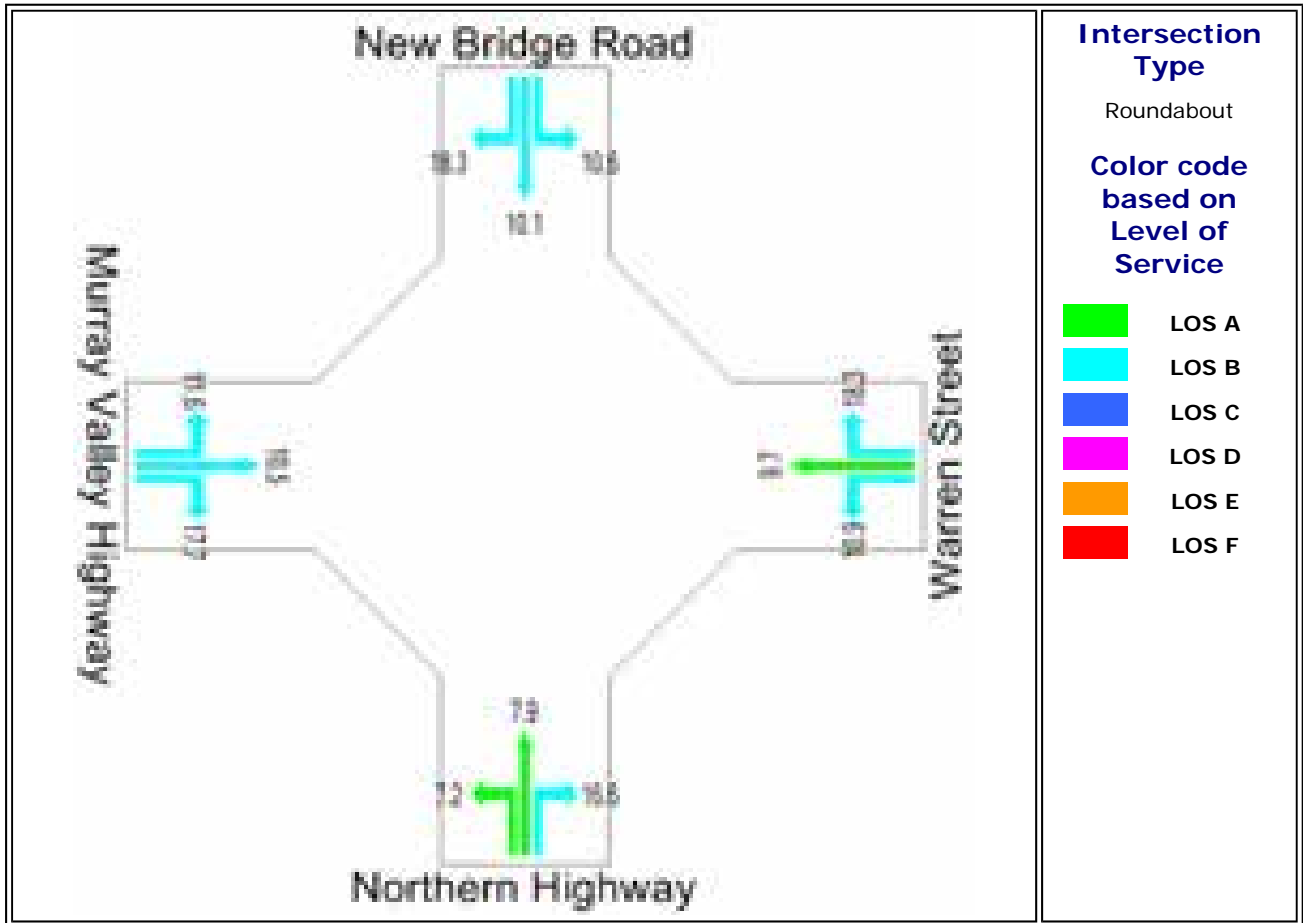
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Control Delay (Average)

Average control delay per vehicle (seconds)

Option 2A

New Bridge Road Roundabout



Output Tables

Option 2A

New Bridge Road and Cobb Highway

Run Information

```

Cycle Time = 30 (Practical Cycle Time)

* Basic Parameters:
Intersection Type: Signalised - Fixed Time
Driving on the left-hand side of the road
Input data specified in Metric units
Model Defaults: Standard Left
Peak Flow Period (for performance): 30 minutes
Unit time (for volumes): 60 minutes.
Delay definition: Control delay
                  Geometric delay included
SIDRA Standard Delay model used
SIDRA Standard Queue model used
Level of Service based on: Delay (HCM method)
Queue definition: Back of queue, 95th Percentile

* Iteration Data:
No. of Main (Timing-Capacity) Iterations = 1
Comparison of last two iterations:
Difference in intersection degree of satn = 0.0 %
Largest difference in eff. green times = 0 secs
(max. value for stopping = 0 secs)
    
```

Table S.5 - Movement Performance

Mov ID	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue 95% Back (vehs)	Queue (m)	Perf. Index	Aver. Speed (km/h)

East: Cobb Highway									
4 L	1.30	1.95	9.7	0.58	0.76	3.1	24	9.48	47.0
5 T	1.41	2.11	12.8	0.94	0.77	4.1	30	10.62	44.4

West: New Bridge Road									
11 T	1.50	2.25	13.0	0.95	0.79	4.3	32	11.24	44.2
12 R	0.28	0.42	23.6	0.92	0.73	1.0	8	1.27	36.9

SouthWest: Meninya Street									
30 L	0.12	0.18	10.6	0.43	0.68	0.2	2	0.77	46.6
32 R	2.41	3.62	17.5	0.89	0.91	8.7	65	14.20	40.7

Table S.6 - Intersection Performance

Option 2A
 New Bridge Road and Cobb Highway
 Intersection ID: 1
 Fixed-Time Signals, Cycle Time = 30 (Practical Cycle Time)

Total Flow (veh/h)	Deg. Satn x	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue (m)	Perf. Index	Aver. Speed (km/h)

East: Cobb Highway									
876	0.534	2.71	4.06	11.1	0.75	0.77	30	20.10	45.8

West: New Bridge Road									
458	0.561	1.78	2.67	14.0	0.94	0.78	32	12.51	43.4

SouthWest: Meninya Street									
535	0.707	2.53	3.79	17.0	0.86	0.89	65	14.97	41.1

ALL VEHICLES:									
1869	0.707	7.02	10.52	13.5	0.83	0.81	65	47.58	43.7

INTERSECTION (persons):									
2804	0.707		10.52	13.5	0.83	0.81		47.58	43.7

Queue values in this table are 95% back of queue (metres).

Table S.15 - Capacity and Level of Service

Option 2A
 New Bridge Road and Cobb Highway
 Intersection ID: 1
 Fixed-Time Signals, Cycle Time = 30 (Practical Cycle Time)

Mov ID	Mov Typ	Green Time Ratio (g/C)		Total Flow (veh/h)	Total Cap. (veh/h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS	Longest Queue 95% Back (vehs)	Queue (m)
		1st grn	2nd grn							

East: Cobb Highway										
4	L (Slp)	0.400	0.200*	480	1053	0.456	9.7	A	3.1	24
5	T	0.200		396	741	0.534	12.8	B	4.1	30

West: New Bridge Road										
11	T	0.200		415	739	0.561	13.0	B	4.3	32
12	R	0.133		43	234	0.184	23.6	C	1.0	8

SouthWest: Meninya Street										
30	L (Slp)	0.400	0.200	40	1006	0.040	10.6	B	0.2	2
32	R	0.400*		495	700	0.707*	17.5	B	8.7	65

ALL VEHICLES:				1869		0.707	13.5	B	8.7	65

INTERSECTION (persons):				2804			13.5		8.7	65

Level of Service calculations are based on average control delay including geometric delay (HCM criteria), independent of the current delay definition used.

For the criteria, refer to the "Level of Service" topic in the SIDRA Output Guide or the Output section of the on-line help.

* Maximum v/c ratio, or critical green periods

" Movement Level of service has been determined using adjacent lane v/c ratio rather than short lane v/c ratio (v/c=1.0)



Site: 2A Meninya Street 3 way
\\skmconsulting.com\melprojects\SBIF\Projects\SB19740\Technical\SIDRA_analysis.aap
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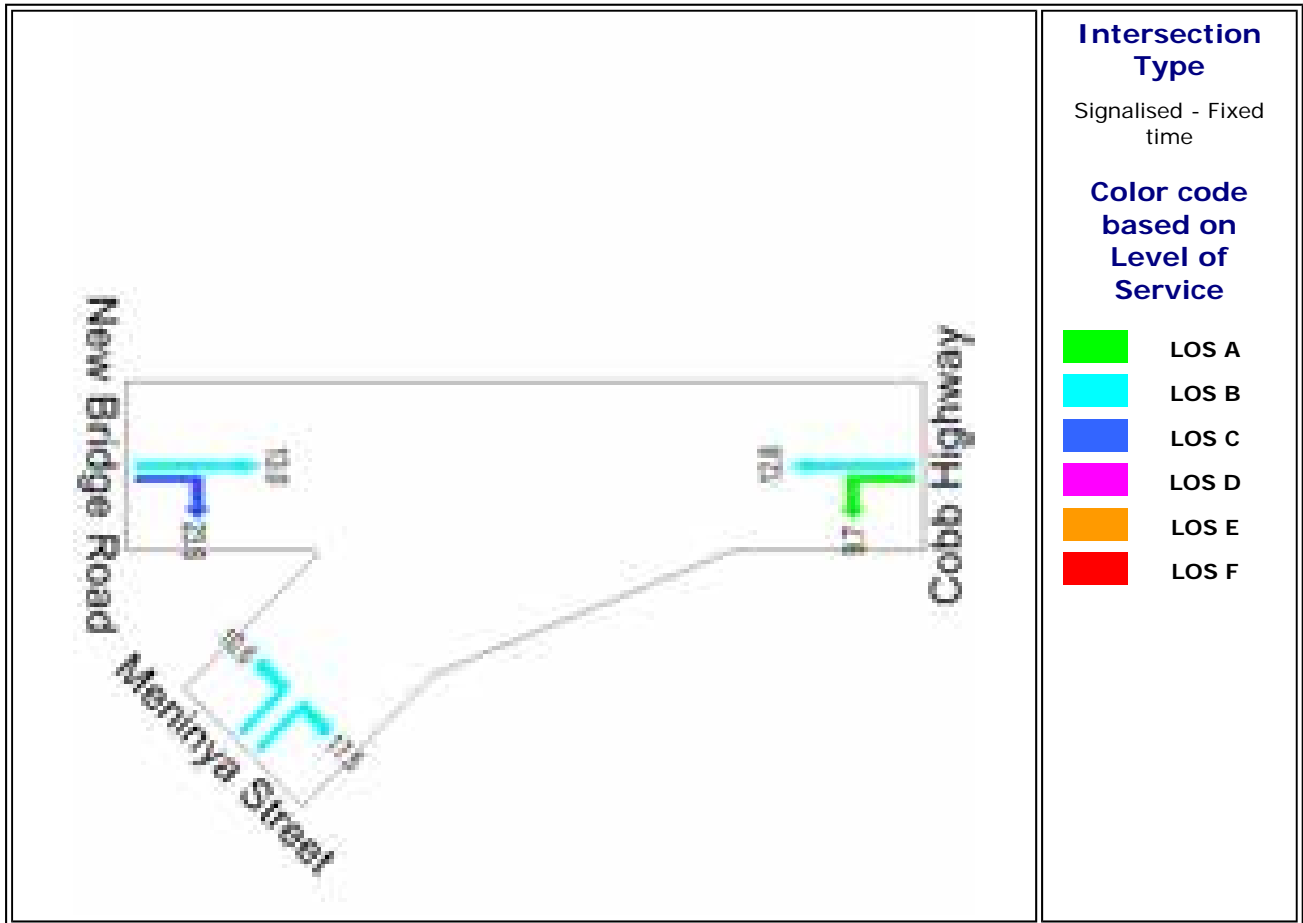
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Control Delay (Average)

Average control delay per vehicle (seconds)

Option 2A

New Bridge Road and Cobb Highway



Output Tables

Option 2A

Perricoota Road and Cobb Highway Intersection

Run Information

```

Cycle Time = 50 (Practical Cycle Time)

* Basic Parameters:
Intersection Type: Signalised - Fixed Time
Driving on the left-hand side of the road
Input data specified in Metric units
Model Defaults: Standard Left
Peak Flow Period (for performance): 30 minutes
Unit time (for volumes): 60 minutes.
Delay definition: Control delay
                  Geometric delay included
SIDRA Standard Delay model used
SIDRA Standard Queue model used
Level of Service based on: Delay (HCM method)
Queue definition: Back of queue, 95th Percentile

* Iteration Data:
No. of Main (Timing-Capacity) Iterations = 1
Comparison of last two iterations:
Difference in intersection degree of satn = 0.0 %
Largest difference in eff. green times = 0 secs
(max. value for stopping = 0 secs)
    
```

Table S.5 - Movement Performance

Mov ID	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue 95% Back (vehs)	Queue (m)	Perf. Index	Aver. Speed (km/h)

South: Francis Street									
1 L	0.14	0.21	7.3	0.26	0.62	0.3	2	1.36	43.5
2 T	0.04	0.05	7.3	0.54	0.39	0.4	3	0.43	43.9
3 R	0.04	0.05	14.1	0.54	0.65	0.2	1	0.25	38.6

East: Cobb Highway									
4 L	0.02	0.03	7.3	0.25	0.60	0.0	0	0.18	43.5
5 T	1.56	2.35	16.1	0.84	0.68	4.9	38	11.48	37.3
6 R	0.15	0.23	26.2	0.85	0.71	0.7	6	0.77	32.0

North: Perricoota Road									
7 L	0.05	0.07	8.8	0.25	0.63	0.1	1	0.36	48.4
8 T	0.04	0.05	7.3	0.54	0.39	0.4	3	0.40	50.0
9 R	2.47	3.71	19.6	0.82	0.85	10.6	78	14.76	39.2

West: New Bridge Road									
10 L	1.17	1.75	8.8	0.35	0.69	2.9	21	9.08	47.9
11 T	1.64	2.46	16.2	0.85	0.69	5.1	40	11.28	41.5

12 R	0.53	0.79	26.3	0.86	0.76	2.3	16	2.51	34.9

Pedestrian Movements									
P1	0.29	0.29	19.4	0.88	0.88	0.1	0	0.92	2.7
P3	0.24	0.24	16.0	0.80	0.80	0.1	0	0.92	3.1
P5	0.29	0.29	19.4	0.88	0.88	0.1	0	0.92	2.7
P7	0.24	0.24	16.0	0.80	0.80	0.1	0	0.92	3.1

Table S.6 - Intersection Performance

Option 2A
Perricoota Road and Cobb Highway Intersection
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 50 (Practical Cycle Time)

Total Flow (veh/h)	Deg. Satn x	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue (m)	Perf. Index	Aver. Speed (km/h)

South: Francis Street									
96	0.051	0.21	0.32	8.0	0.34	0.58	3	2.04	43.0

East: Cobb Highway									
380	0.348	1.73	2.60	16.4	0.83	0.68	38	12.42	37.1

North: Perricoota Road									
493	0.662	2.56	3.84	18.7	0.78	0.83	78	15.52	39.8

West: New Bridge Road									
912	0.365	3.33	5.00	13.2	0.59	0.69	40	22.87	43.9

Pedestrians:									
53	0.022	0.24	0.24	16.0	0.80	0.80	0	0.92	3.1

ALL VEHICLES:									
1881	0.662	7.84	11.76	15.0	0.67	0.72	78	52.85	41.3

INTERSECTION (persons):									
3034	0.662		12.80	15.2	0.69	0.73		56.52	38.9

Queue values in this table are 95% back of queue (metres).

Table S.15 - Capacity and Level of Service

Option 2A
Perricoota Road and Cobb Highway Intersection
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 50 (Practical Cycle Time)

Mov ID	Mov Typ	Green Ratio (g/C)	Green Time (s)	Total Flow (veh/h)	Total Cap. (veh/h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS	Longest Queue 95% Back (vehs)	Queue (m)
		1st grn	2nd grn							

South: Francis Street										
1	L (Slp)	0.480	0.280	69	1364<	0.051	7.3	A	0.3	2
2	T	0.480		18	936	0.019	7.3	A	0.4	3
3	R	0.480		9	662<	0.014	14.1	B	0.2	1

East: Cobb Highway										

4	L (Slp)	0.480	0.280	9	1411	0.006	7.3	A	0.0	0
5	T	0.280		350	1006	0.348	16.1	B	4.9	38
6	R	0.200		21	209	0.100	26.2	C	0.7	6

North: Perricoota Road										
7	L (Slp)	0.480	0.280	20	1275	0.016	8.8	A	0.1	1
8	T	0.480		18	936	0.019	7.3	A	0.4	3
9	R	0.480*		455	687	0.662*	19.6	B	10.6	78

West: New Bridge Road										
10	L (Slp)	0.480	0.280	475	1357	0.350	8.8	A	2.9	21
11	T	0.280*		365	1001	0.365	16.2	B	5.1	40
12	R	0.220		72	295	0.244	26.3	C	2.3	16

Pedestrian Movements										
P1	(Ped)	0.120		53	1440	0.037	19.4	B	0.1	0
P3	(Ped)	0.200		53	2400	0.022	16.0	B	0.1	0
P5	(Ped)	0.120		53	1440	0.037	19.4	B	0.1	0
P7	(Ped)	0.200		53	2400	0.022	16.0	B	0.1	0

ALL VEHICLES:				1881		0.662	15.0	B	10.6	78

INTERSECTION (persons):				3034			15.2		10.6	78

Level of Service calculations are based on average control delay including geometric delay (HCM criteria), independent of the current delay definition used. For the criteria, refer to the "Level of Service" topic in the SIDRA Output Guide or the Output section of the on-line help. Intersection capacity is calculated considering vehicle movements only.

< Reduced capacity due to a short lane effect
* Maximum v/c ratio, or critical green periods
" Movement Level of service has been determined using adjacent lane v/c ratio rather than short lane v/c ratio (v/c=1.0)



Site: 2A CobbHighwayFrancis
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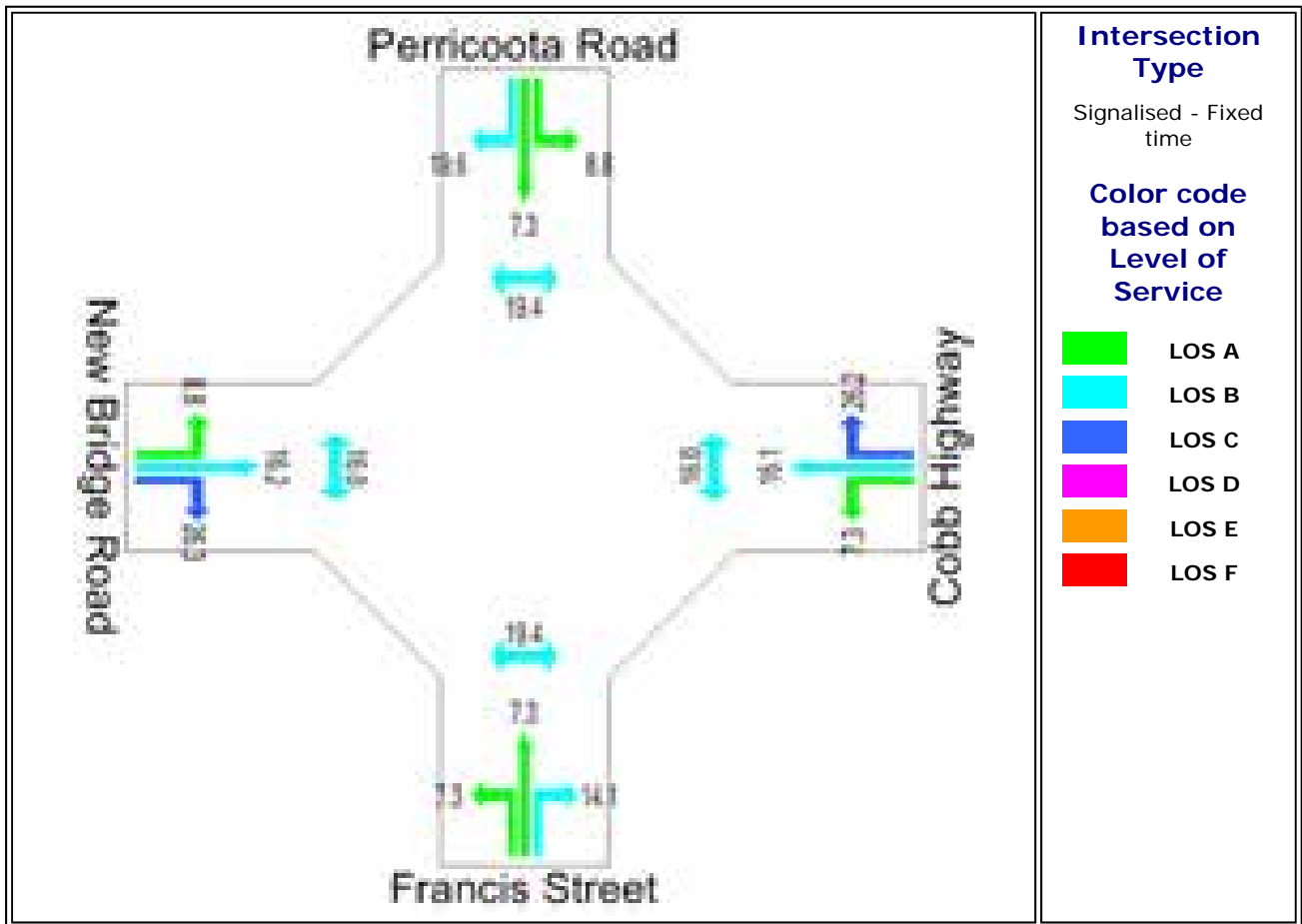
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Control Delay (Average)

Average control delay per vehicle, or pedestrian delay (seconds)

Option 2A

Perricoota Road and Cobb Highway Intersection



Output Tables

Option 2C

Northern Highway Roundabout

Run Information

```
* Basic Parameters:
Intersection Type: Roundabout
Driving on the left-hand side of the road
Input data specified in Metric units
Model Defaults: Standard Left
Peak Flow Period (for performance): 30 minutes
Unit time (for volumes): 60 minutes.
Delay definition: Control delay
                  Geometric delay included
SIDRA Standard Delay model used
SIDRA Standard Queue model used
Level of Service based on: Delay (HCM method)
Queue definition: Back of queue, 95th Percentile
```

Table S.5 - Movement Performance

Mov ID	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue 95% Back (vehs)	Queue (m)	Perf. Index	Aver. Speed (km/h)

South: Northern Highway									
1 L	0.41	0.61	7.2	0.27	0.47	1.7	13	2.98	63.0
3 R	2.65	3.97	16.9	0.28	0.67	1.7	13	11.13	53.3

East: Warren Street									
4 L	1.55	2.33	10.2	0.39	0.63	1.8	14	9.03	58.4
6 R	0.56	0.84	15.5	0.39	0.69	1.8	13	2.53	53.8

NorthWest: Murray Valley Highway									
27 L	0.22	0.33	6.1	0.49	0.54	0.9	7	2.17	49.8
29 R	0.86	1.29	15.8	0.51	0.82	0.9	7	3.81	53.9

Table S.6 - Intersection Performance

```
Option 2C
Northern Highway Roundabout
Intersection ID: 1
Roundabout
```


Total Flow (veh/h)	Deg. Satn x	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue (m)	Perf. Index	Aver. Speed (km/h)
South: Northern Highway									
768	0.256	3.05	4.58	14.3	0.28	0.62	13	14.10	55.3
East: Warren Street									
678	0.275	2.11	3.17	11.2	0.39	0.64	14	11.56	57.4
NorthWest: Murray Valley Highway									
328	0.171	1.08	1.63	11.9	0.50	0.71	7	5.98	52.3
ALL VEHICLES:									
1774	0.275	6.25	9.38	12.7	0.36	0.64	14	31.64	55.5
INTERSECTION (persons):									
2661	0.275		9.38	12.7	0.36	0.64		31.64	55.5

Queue values in this table are 95% back of queue (metres).

Table S.15 - Capacity and Level of Service

Option 2C
Northern Highway Roundabout
Intersection ID: 1
Roundabout

Mov ID	Mov Typ	Total Flow (veh/h)	Total Cap. (veh/h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS	Longest Queue 95% Back (vehs)	Queue (m)
South: Northern Highway								
1	L	204	796	0.256	7.2	A	1.7	13
3	R	564	2201	0.256	16.9	B	1.7	13
East: Warren Street								
4	L	548	1994	0.275*	10.2	B	1.8	14
6	R	130	473	0.275*	15.5	B	1.8	13
NorthWest: Murray Valley Highway								
27	L	132	771	0.171	6.1	A	0.9	7
29	R	196	1145	0.171	15.8	B	0.9	7
ALL VEHICLES:		1774		0.275	12.7	B	1.8	14

Level of Service calculations are based on average control delay including geometric delay (HCM criteria), independent of the current delay definition used.

For the criteria, refer to the "Level of Service" topic in the SIDRA Output Guide or the Output section of the on-line help.

* Maximum v/c ratio, or critical green periods



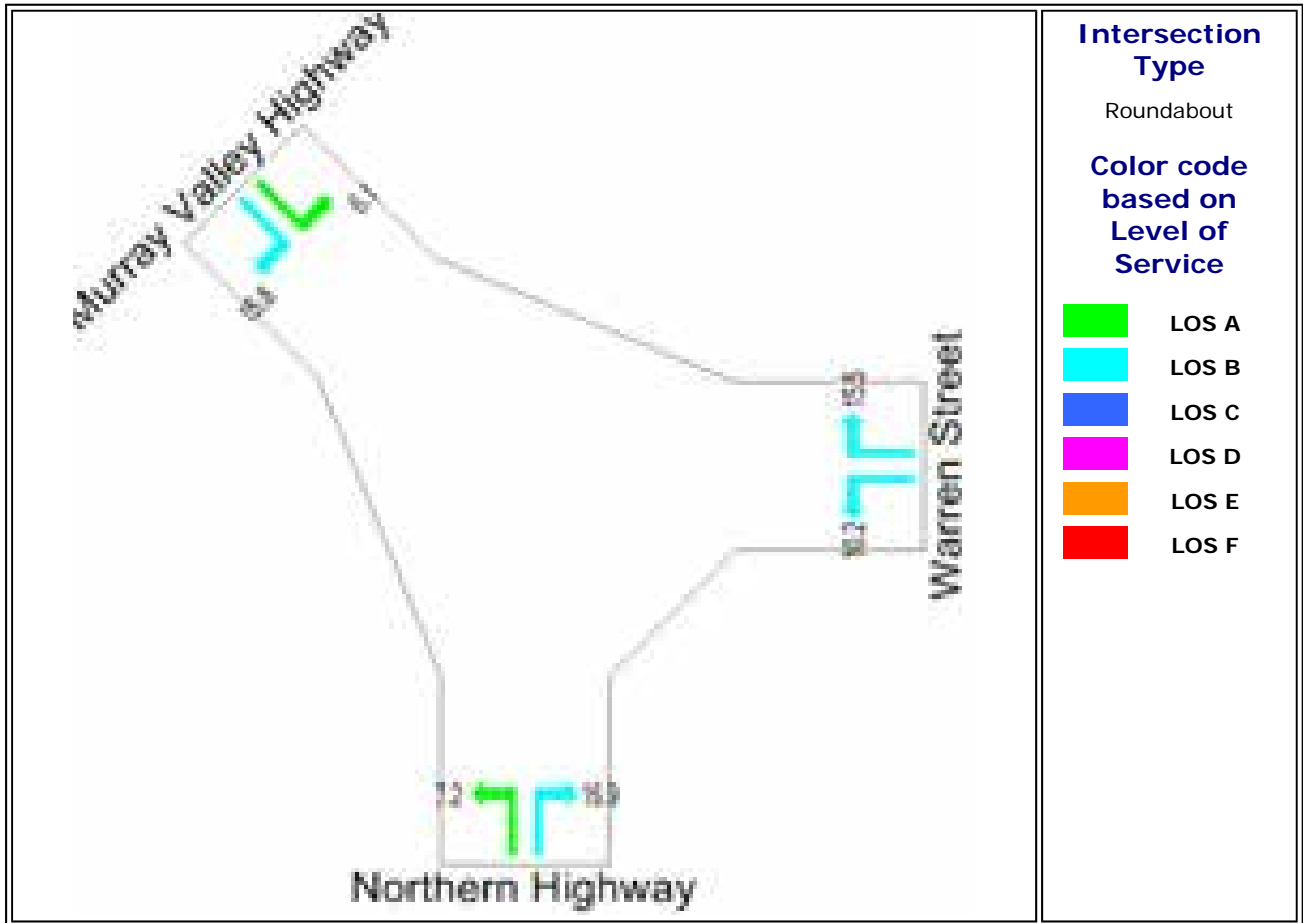
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Control Delay (Average)

Average control delay per vehicle (seconds)

Option 2C

Northern Highway Roundabout



Output Tables

Option 2C

Warren Street and New Bridge Road Roundabout

Run Information

```
* Basic Parameters:
Intersection Type: Roundabout
Driving on the left-hand side of the road
Input data specified in Metric units
Model Defaults: Standard Left
Peak Flow Period (for performance): 30 minutes
Unit time (for volumes): 60 minutes.
Delay definition: Control delay
                    Geometric delay included
SIDRA Standard Delay model used
SIDRA Standard Queue model used
Level of Service based on: Delay (HCM method)
Queue definition: Back of queue, 95th Percentile
```

Table S.5 - Movement Performance

Mov ID	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue 95% Back (vehs)	Queue (m)	Perf. Index	Aver. Speed (km/h)

East: Warren Street East									
5 T	0.54	0.81	7.9	0.49	0.56	0.7	5	3.85	60.4
6 R	0.01	0.02	17.3	0.50	0.74	0.7	5	0.06	51.8

North: New Bridge Road									
7 L	0.01	0.01	10.6	0.38	0.58	0.0	0	0.05	58.4
9 R	2.09	3.13	17.4	0.44	0.74	2.3	18	8.64	52.1

West: Warren Street West									
10 L	1.22	1.82	9.6	0.03	0.59	1.9	14	7.19	61.4
11 T	0.67	1.01	8.8	0.03	0.53	1.3	11	4.26	63.0

Table S.6 - Intersection Performance

```
Option 2C
Warren Street and New Bridge Road Roundabout
Intersection ID: 1
Roundabout
```

Total Flow (veh/h)	Deg. Satn x	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue (m)	Perf. Index	Aver. Speed (km/h)

East: Warren Street East									
247	0.107	0.55	0.83	8.1	0.49	0.56	5	3.91	60.3

North: New Bridge Road									
435	0.350	2.10	3.14	17.3	0.44	0.74	18	8.69	52.1

West: Warren Street West									
730	0.266	1.89	2.83	9.3	0.03	0.57	14	11.45	62.0

ALL VEHICLES:									
1412	0.350	4.54	6.81	11.6	0.24	0.62	18	24.04	58.1

INTERSECTION (persons):									
2118	0.350		6.81	11.6	0.24	0.62		24.04	58.1

Queue values in this table are 95% back of queue (metres).

Table S.15 - Capacity and Level of Service

Option 2C
Warren Street and New Bridge Road Roundabout
Intersection ID: 1
Roundabout

Mov ID	Mov Typ	Total Flow (veh/h)	Total Cap. (veh/h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS	Longest Queue 95% Back (vehs)	Queue (m)

East: Warren Street East								
5	T	244	2301	0.106	7.9	A	0.7	5
6	R	3	28	0.107	17.3	B	0.7	5

North: New Bridge Road								
7	L	3	810	0.004	10.6	B	0.0	0
9	R	432	1234	0.350*	17.4	B	2.3	18

West: Warren Street West								
10	L	456	1714	0.266	9.6	A	1.9	14
11	T	274	1339	0.205	8.8	A	1.3	11

ALL VEHICLES:		1412		0.350	11.6	B	2.3	18

Level of Service calculations are based on average control delay including geometric delay (HCM criteria), independent of the current delay definition used.

For the criteria, refer to the "Level of Service" topic in the SIDRA Output Guide or the Output section of the on-line help.

* Maximum v/c ratio, or critical green periods

" Movement Level of service has been determined using adjacent lane v/c ratio rather than short lane v/c ratio (v/c=1.0)



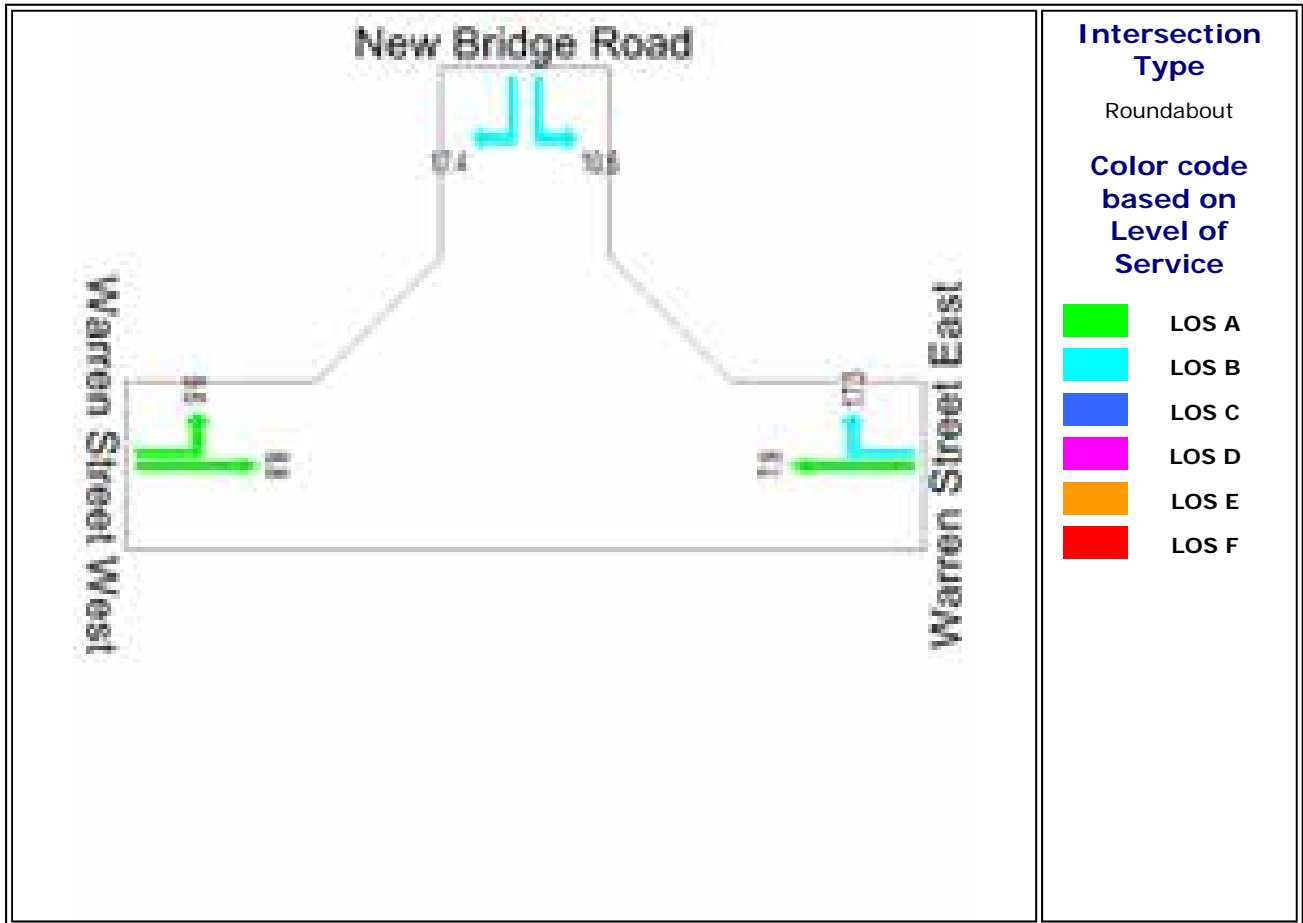
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Control Delay (Average)

Average control delay per vehicle (seconds)

Option 2C

Warren Street and New Bridge Road Roundabout



Output Tables

Option 2C

New Bridge Road and Cobb Highway

Run Information

```

Cycle Time = 30 (Practical Cycle Time)

* Basic Parameters:
Intersection Type: Signalised - Fixed Time
Driving on the left-hand side of the road
Input data specified in Metric units
Model Defaults: Standard Left
Peak Flow Period (for performance): 30 minutes
Unit time (for volumes): 60 minutes.
Delay definition: Control delay
                  Geometric delay included
SIDRA Standard Delay model used
SIDRA Standard Queue model used
Level of Service based on: Delay (HCM method)
Queue definition: Back of queue, 95th Percentile

* Iteration Data:
No. of Main (Timing-Capacity) Iterations = 1
Comparison of last two iterations:
Difference in intersection degree of satn = 0.0 %
Largest difference in eff. green times = 0 secs
(max. value for stopping = 0 secs)
    
```

Table S.5 - Movement Performance

Mov ID	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue 95% Back (vehs)	Queue (m)	Perf. Index	Aver. Speed (km/h)

East: Cobb Highway									
4 L	1.30	1.95	9.7	0.58	0.76	3.1	24	9.48	47.0
5 T	1.40	2.11	12.8	0.94	0.77	4.0	30	10.59	44.4

West: New Bridge Road									
11 T	1.50	2.25	13.0	0.95	0.79	4.3	32	11.24	44.2
12 R	0.29	0.43	23.6	0.92	0.73	1.0	8	1.30	36.9

SouthWest: Meninya Street									
30 L	0.12	0.18	10.6	0.43	0.68	0.2	2	0.79	46.6
32 R	2.42	3.63	17.6	0.89	0.91	8.7	66	14.24	40.6

Table S.6 - Intersection Performance

Option 2C
 New Bridge Road and Cobb Highway
 Intersection ID: 1
 Fixed-Time Signals, Cycle Time = 30 (Practical Cycle Time)

Total Flow (veh/h)	Deg. Satn x	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue (m)	Perf. Index	Aver. Speed (km/h)

East: Cobb Highway									
875	0.533	2.70	4.05	11.1	0.75	0.77	30	20.07	45.8

West: New Bridge Road									
459	0.561	1.79	2.68	14.0	0.94	0.78	32	12.54	43.4

SouthWest: Meninya Street									
537	0.708	2.54	3.81	17.0	0.86	0.90	66	15.03	41.0

ALL VEHICLES:									
1871	0.708	7.03	10.54	13.5	0.83	0.81	66	47.64	43.7

INTERSECTION (persons):									
2807	0.708		10.54	13.5	0.83	0.81		47.64	43.7

Queue values in this table are 95% back of queue (metres).

Table S.15 - Capacity and Level of Service

Option 2C
 New Bridge Road and Cobb Highway
 Intersection ID: 1
 Fixed-Time Signals, Cycle Time = 30 (Practical Cycle Time)

Mov ID	Mov Typ	Green Ratio (g/C)	Green Time (g/C)	Total Flow (veh/h)	Total Cap. (veh/h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS	Longest Queue 95% Back (vehs)	Queue (m)
		1st grn	2nd grn							

East: Cobb Highway										
4	L (Slp)	0.400	0.200*	480	1053	0.456	9.7	A	3.1	24
5	T	0.200		395	741	0.533	12.8	B	4.0	30

West: New Bridge Road										
11	T	0.200		415	739	0.561	13.0	B	4.3	32
12	R	0.133		44	235	0.187	23.6	C	1.0	8

SouthWest: Meninya Street										
30	L (Slp)	0.400	0.200	41	1009	0.041	10.6	B	0.2	2
32	R	0.400*		496	700	0.708*	17.6	B	8.7	66

ALL VEHICLES:				1871		0.708	13.5	B	8.7	66

INTERSECTION (persons):				2807			13.5		8.7	66

Level of Service calculations are based on average control delay including geometric delay (HCM criteria), independent of the current delay definition used.

For the criteria, refer to the "Level of Service" topic in the SIDRA Output Guide or the Output section of the on-line help.

* Maximum v/c ratio, or critical green periods

" Movement Level of service has been determined using adjacent lane v/c ratio rather than short lane v/c ratio (v/c=1.0)



Site: 2C Meninya Street 3 way
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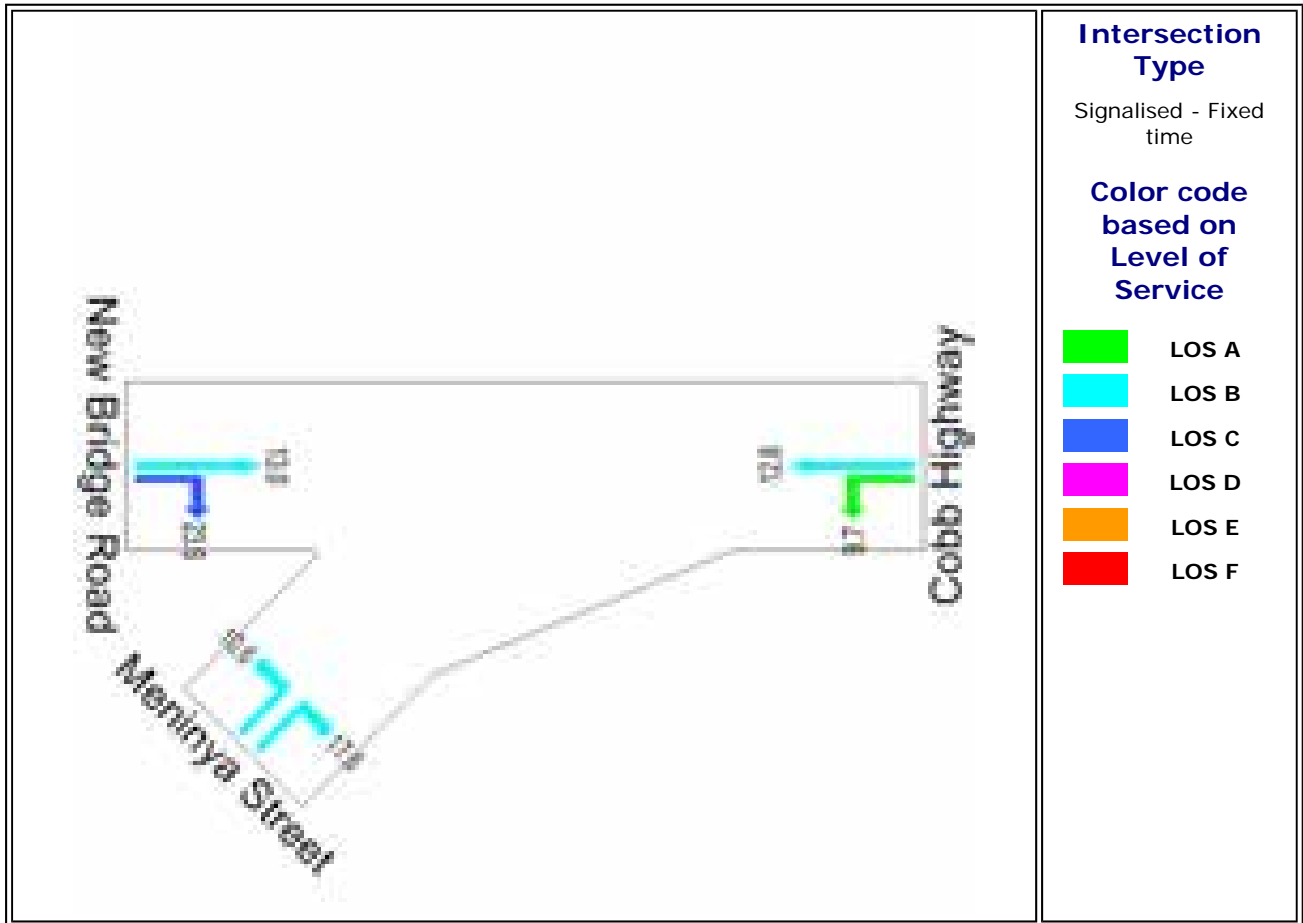
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Control Delay (Average)

Average control delay per vehicle (seconds)

Option 2C

New Bridge Road and Cobb Highway



Output Tables

Option 2C

Perricoota Road and Cobb Highway Intersection

Run Information

Cycle Time = 50 (Practical Cycle Time)

* Basic Parameters:

Intersection Type: Signalised - Fixed Time
 Driving on the left-hand side of the road
 Input data specified in Metric units
 Model Defaults: Standard Left
 Peak Flow Period (for performance): 30 minutes
 Unit time (for volumes): 60 minutes.
 Delay definition: Control delay
 Geometric delay included
 SIDRA Standard Delay model used
 SIDRA Standard Queue model used
 Level of Service based on: Delay (HCM method)
 Queue definition: Back of queue, 95th Percentile

* Iteration Data:

No. of Main (Timing-Capacity) Iterations = 1
 Comparison of last two iterations:
 Difference in intersection degree of satn = 0.0 %
 Largest difference in eff. green times = 0 secs
 (max. value for stopping = 0 secs)

Table S.5 - Movement Performance

Mov ID	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue 95% Back (vehs)	Queue (m)	Perf. Index	Aver. Speed (km/h)
South: Francis Street									
1 L	0.14	0.21	7.3	0.26	0.62	0.3	2	1.34	43.5
2 T	0.04	0.05	7.3	0.54	0.39	0.4	3	0.43	43.9
3 R	0.04	0.05	14.1	0.54	0.65	0.2	1	0.25	38.6
East: Cobb Highway									
4 L	0.02	0.03	7.3	0.25	0.60	0.0	0	0.18	43.5
5 T	1.56	2.35	16.1	0.84	0.68	4.9	38	11.48	37.3
6 R	0.15	0.23	26.2	0.85	0.71	0.7	6	0.77	32.0
North: Perricoota Road									
7 L	0.05	0.07	8.8	0.25	0.63	0.1	1	0.36	48.4
8 T	0.04	0.05	7.3	0.54	0.39	0.4	3	0.40	50.0
9 R	2.47	3.71	19.6	0.82	0.85	10.6	78	14.75	39.2
West: New Bridge Road									
10 L	1.17	1.75	8.8	0.35	0.69	2.9	21	9.08	47.9
11 T	1.64	2.46	16.2	0.85	0.69	5.1	40	11.28	41.5

12 R	0.53	0.79	26.3	0.86	0.76	2.3	16	2.51	34.9

Pedestrian Movements									
P1	0.29	0.29	19.4	0.88	0.88	0.1	0	0.92	2.7
P3	0.24	0.24	16.0	0.80	0.80	0.1	0	0.92	3.1
P5	0.29	0.29	19.4	0.88	0.88	0.1	0	0.92	2.7
P7	0.24	0.24	16.0	0.80	0.80	0.1	0	0.92	3.1

Table S.6 - Intersection Performance

Option 2C
Perricoota Road and Cobb Highway Intersection
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 50 (Practical Cycle Time)

Total Flow (veh/h)	Deg. Satn x	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue (m)	Perf. Index	Aver. Speed (km/h)

South: Francis Street									
95	0.050	0.21	0.32	8.0	0.34	0.58	3	2.02	43.0

East: Cobb Highway									
380	0.348	1.73	2.60	16.4	0.83	0.68	38	12.42	37.1

North: Perricoota Road									
493	0.662	2.56	3.84	18.7	0.78	0.82	78	15.51	39.8

West: New Bridge Road									
912	0.365	3.33	5.00	13.2	0.59	0.69	40	22.87	43.9

Pedestrians:									
53	0.022	0.24	0.24	16.0	0.80	0.80	0	0.92	3.1

ALL VEHICLES:									
1880	0.662	7.83	11.75	15.0	0.67	0.72	78	52.82	41.3

INTERSECTION (persons):									
3032	0.662		12.79	15.2	0.69	0.73		56.49	38.9

Queue values in this table are 95% back of queue (metres).

Table S.15 - Capacity and Level of Service

Option 2C
Perricoota Road and Cobb Highway Intersection
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 50 (Practical Cycle Time)

Mov ID	Mov Typ	Green Ratio (g/C)	Green Time (s)	Total Flow (veh/h)	Total Cap. (veh/h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS	Longest Queue 95% Back (vehs)	Queue (m)
		1st grn	2nd grn							

South: Francis Street										
1	L (Slp)	0.480	0.280	68	1364<	0.050	7.3	A	0.3	2
2	T	0.480		18	936	0.019	7.3	A	0.4	3
3	R	0.480		9	662<	0.014	14.1	B	0.2	1

East: Cobb Highway										

4	L	(Slp)	0.480	0.280	9	1411	0.006	7.3	A	0.0	0
5	T		0.280		350	1006	0.348	16.1	B	4.9	38
6	R		0.200		21	209	0.100	26.2	C	0.7	6

North: Perricoota Road											
7	L	(Slp)	0.480	0.280	20	1275	0.016	8.8	A	0.1	1
8	T		0.480		18	936	0.019	7.3	A	0.4	3
9	R		0.480*		455	687	0.662*	19.6	B	10.6	78

West: New Bridge Road											
10	L	(Slp)	0.480	0.280	475	1357	0.350	8.8	A	2.9	21
11	T		0.280*		365	1001	0.365	16.2	B	5.1	40
12	R		0.220		72	295	0.244	26.3	C	2.3	16

Pedestrian Movements											
P1	(Ped)		0.120		53	1440	0.037	19.4	B	0.1	0
P3	(Ped)		0.200		53	2400	0.022	16.0	B	0.1	0
P5	(Ped)		0.120		53	1440	0.037	19.4	B	0.1	0
P7	(Ped)		0.200		53	2400	0.022	16.0	B	0.1	0

ALL VEHICLES:					1880		0.662	15.0	B	10.6	78

INTERSECTION (persons):					3032			15.2		10.6	78

Level of Service calculations are based on average control delay including geometric delay (HCM criteria), independent of the current delay definition used. For the criteria, refer to the "Level of Service" topic in the SIDRA Output Guide or the Output section of the on-line help. Intersection capacity is calculated considering vehicle movements only.

< Reduced capacity due to a short lane effect
* Maximum v/c ratio, or critical green periods
" Movement Level of service has been determined using adjacent lane v/c ratio rather than short lane v/c ratio (v/c=1.0)



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Control Delay (Average)

Average control delay per vehicle, or pedestrian delay (seconds)

Option 2C

Perricoota Road and Cobb Highway Intersection

