

APPENDIX D

OPTIONS MODELLING RESULTS (TURNING VOLUMES, SIDRA AND PARAMICS ANALYSIS)

D1 SIDRA MODELLING RESULTS FOR OPTIONS

This section summarises SIDRA modelling results for the eight options tested. About 13 intersections are modelled for each option. The result for each option was compared with the existing base case for 2011 traffic conditions.

D1.1 OPTION A

Table D-2 Option A – AM Peak Intersections Performance

ID	Intersection Type	Intersection	Base Case		Option A	
			Delay (sec)	LoS	Delay (sec)	LoS
A-1	Signalised	Bells Line of Rd - Gross Vale Rd	38	C	38	C
A-2	Priority	Kurrajong Rd - Old Kurrajong Rd	3 (70)	A (E)	2 (66)	A (E)
A-3	Signalised	Kurrajong Rd - Bosworth St	34	C	>100	F
A-4	Priority	Castlereagh Rd - Lennox St	5 (13)	A (A)	5 (26)	A (B)
A-5	Priority	Castlereagh Rd - Inalls La	7 (15)	A (B)	6 (17)	A (B)
A-6	Signalised	Lennox St - East Market St	18	B	18	B
A-7	Signalised	March St - East Market St	22	B	21	B
A-8	Signalised	Windsor St - East Market St	24	B	25	B
B-2	Signalised	Lennox St - Paget St	13	A	13	A
B-3	Roundabout	Windsor St – Bosworth St	7 (10)	A (A)	7 (11)	A (A)
B-5	Priority	Bells Line of Rd - Charles St	4 (10)	A (A)	4 (10)	A (A)
B-6	Signalised	Lennox St - Bourke St	21	B	21	B
B-7	Signalised	Windsor St - Bourke St	16	B	16	B

Note: For sign controlled and roundabout intersections, delay and LoS of the worst movement are shown in the bracket.

Table D-3 Option A – PM Peak Intersections Performance

ID	Intersection Type	Intersection	Base Case		Option A	
			Delay (sec)	LoS	Delay (sec)	LoS
A-1	Signalised	Bells Line of Rd – Gross Vale Rd	39	C	39	C
A-2	Priority	Kurrajong Rd – Old Kurrajong Rd	13 (>100)	A (F)	14 (>100)	A (F)
A-3	Signalised	Kurrajong Rd – Bosworth St	45	D	111	F
A-4	Priority	Castlereagh Rd – Lennox St	6 (19)	A (B)	8 (32)	A (C)
A-5	Priority	Castlereagh Rd – Inalls La	6 (17)	A (B)	6 (18)	A (B)
A-6	Signalised	Lennox St – East Market St	21	B	21	B
A-7	Signalised	March St – East Market St	28	B	28	B
A-8	Signalised	Windsor St – East Market St	29	C	30	C
B-2	Signalised	Lennox St - Paget St	15	B	15	B
B-3	Roundabout	Windsor St – Bosworth St	8 (11)	A (A)	8 (11)	A (A)
B-5	Priority	Bells Line of Rd - Charles St	2 (11)	A (A)	2 (11)	A (A)
B-6	Signalised	Lennox St - Bourke St	23	B	23	B
B-7	Signalised	Windsor St - Bourke St	19	B	19	B

Note: For sign controlled and roundabout intersections, delay and LoS of the worst movement are shown in the bracket.

D1.2 OPTION B

Table D-4 Option B – AM Peak Intersections Performance

ID	Intersection Type	Intersection	Base Case		Option B	
			Delay (sec)	LoS	Delay (sec)	LoS
A-1	Signalised	Bells Line of Rd - Gross Vale Rd	38	C	38	C
A-2	Priority	Kurrajong Rd - Old Kurrajong Rd	3 (70)	A (E)	1 (77)	A (F)
A-3	Signalised	Kurrajong Rd - Bosworth St	34	C	418	F
A-4	Priority	Castlereagh Rd - Lennox St	5 (13)	A (A)	5 (26)	A (B)
A-5	Priority	Castlereagh Rd - Inalls La	7 (15)	A (B)	6 (17)	A (B)
A-6	Signalised	Lennox St - East Market St	18	B	18	B
A-7	Signalised	March St - East Market St	22	B	22	B
A-8	Signalised	Windsor St - East Market St	24	B	24	B
B-2	Signalised	Lennox St - Paget St	13	A	13	A
B-3	Roundabout	Windsor St – Bosworth St	7 (10)	A (A)	7 (11)	A (A)
B-5	Priority	Bells Line of Rd - Charles St	4 (10)	A (A)	4 (10)	A (A)
B-6	Signalised	Lennox St - Bourke St	21	B	21	B
B-7	Signalised	Windsor St - Bourke St	16	B	16	B

Note: For sign controlled and roundabout intersections, delay and LoS of the worst movement are shown in the bracket

Table D-5 Option B – PM Peak Intersections Performance

ID	Intersection Type	Intersection	Base Case		Option B	
			Delay (sec)	LoS	Delay (sec)	LoS
A-1	Signalised	Bells Line of Rd - Gross Vale Rd	39	C	39	C
A-2	Priority	Kurrajong Rd - Old Kurrajong Rd	13 (>100)	A (F)	15 (>100)	B (F)
A-3	Signalised	Kurrajong Rd - Bosworth St	45	D	166	F
A-4	Priority	Castlereagh Rd - Lennox St	6 (19)	A (B)	8 (32)	A (C)
A-5	Priority	Castlereagh Rd - Inalls La	6 (17)	A (B)	6 (18)	A (B)
A-6	Signalised	Lennox St - East Market St	21	B	21	B
A-7	Signalised	March St - East Market St	28	B	28	B
A-8	Signalised	Windsor St - East Market St	29	C	29	C
B-2	Signalised	Lennox St - Paget St	15	B	15	B
B-3	Roundabout	Windsor St – Bosworth St	8 (11)	A (A)	8 (11)	A (A)
B-5	Priority	Bells Line of Rd - Charles St	2 (11)	A (A)	2 (11)	A (A)
B-6	Signalised	Lennox St - Bourke St	23	B	23	B
B-7	Signalised	Windsor St - Bourke St	19	B	19	B

Note: For sign controlled and roundabout intersections, delay and LoS of the worst movement are shown in the bracket

D1.3 OPTION C

Table D-6 Option C – AM Peak Intersections Performance

ID	Intersection Type	Intersection	Base Case		Option A		Option C	
			Delay (sec)	LoS	Delay (sec)	LoS	Delay (sec)	LoS
A-1	Signalised	Bells Line of Rd - Gross Vale Rd	38	C	38	C	38	C
A-2	Priority	Kurrajong Rd - Old Kurrajong Rd	3 (70)	A (E)	2 (66)	A (E)	2 (66)	A (E)
A-3	Signalised	Kurrajong Rd - Bosworth St	34	C	>100	F	49	D
A-4	Priority	Castlereagh Rd - Lennox St	5 (13)	A (A)	5 (26)	A (B)	5 (26)	A (B)
A-5	Priority	Castlereagh Rd - Inalls La	7 (15)	A (B)	6 (17)	A (B)	6 (17)	A (B)
A-6	Signalised	Lennox St - East Market St	18	B	18	B	18	B
A-7	Signalised	March St - East Market St	22	B	21	B	21	B
A-8	Signalised	Windsor St - East Market St	24	B	25	B	25	B
B-2	Signalised	Lennox St - Paget St	13	A	13	A	13	A
B-3	Roundabout	Windsor St – Bosworth St	7 (10)	A (A)	7 (11)	A (A)	7 (11)	A (A)
B-5	Priority	Bells Line of Rd - Charles St	4 (10)	A (A)	4 (10)	A (A)	4 (10)	A (A)
B-6	Signalised	Lennox St - Bourke St	21	B	21	B	21	B
B-7	Signalised	Windsor St - Bourke St	16	B	16	B	16	B

Note: For sign controlled and roundabout intersections, delay and LoS of the worst movement are shown in the bracket

Table D-7 Option C – PM Peak Intersections Performance

ID	Intersection Type	Intersection	Base Case		Option A		Option C	
			Delay (sec)	LoS	Delay (sec)	LoS	Delay (sec)	LoS
A-1	Signalised	Bells Line of Rd - Gross Vale Rd	39	C	39	C	39	C
A-2	Priority	Kurrajong Rd - Old Kurrajong Rd	13 (>100)	A (F)	14 (>100)	A (F)	14 (>100)	A (F)
A-3	Signalised	Kurrajong Rd - Bosworth St	45	D	111	F	41	C
A-4	Priority	Castlereagh Rd - Lennox St	6 (19)	A (B)	8 (32)	A (C)	8 (32)	A (C)
A-5	Priority	Castlereagh Rd - Inalls La	6 (17)	A (B)	6 (18)	A (B)	6 (18)	A (B)
A-6	Signalised	Lennox St - East Market St	21	B	21	B	21	B
A-7	Signalised	March St - East Market St	28	B	28	B	28	B
A-8	Signalised	Windsor St - East Market St	29	C	30	C	30	C
B-2	Signalised	Lennox St - Paget St	15	B	15	B	15	B
B-3	Roundabout	Windsor St – Bosworth St	8 (11)	A (A)	8 (11)	A (A)	8 (11)	A (A)
B-5	Priority	Bells Line of Rd - Charles St	2 (11)	A (A)	2 (11)	A (A)	2 (11)	A (A)
B-6	Signalised	Lennox St - Bourke St	23	B	23	B	23	B
B-7	Signalised	Windsor St - Bourke St	19	B	19	B	19	B

Note: For sign controlled and roundabout intersections, delay and LoS of the worst movement are shown in the bracket

D.1.4 OPTION D

Table D-8 Option D – AM Peak Intersections Performance

ID	Intersection Type	Intersection	Base Case		Option D	
			Delay (sec)	LoS	Delay (sec)	LoS
A-1	Signalised	Bells Line of Rd - Gross Vale Rd	38	C	38	C
A-2	Priority	Kurrajong Rd - Old Kurrajong Rd	3 (70)	A (E)	3 (70)	A (E)
A-3	Signalised	Kurrajong Rd - Bosworth St	34	C	18	B
A-4	Priority	Castlereagh Rd - Lennox St	5 (13)	A (A)	5 (13)	A (A)
A-5	Priority	Castlereagh Rd - Inalls La	7 (15)	A (B)	7 (15)	A (B)
A-6	Signalised	Lennox St - East Market St	18	B	19	B
A-7	Signalised	March St - East Market St	22	B	22	B
A-8	Signalised	Windsor St - East Market St	24	B	24	B
B-2	Signalised	Lennox St - Paget St	13	A	13	A
B-3	Roundabout	Windsor St – Bosworth St	7 (10)	A (A)	7 (10)	A (A)
B-5	Priority	Bells Line of Rd - Charles St	4 (10)	A (A)	4 (10)	A (A)
B-6	Signalised	Lennox St - Bourke St	21	B	21	B
B-7	Signalised	Windsor St - Bourke St	16	B	16	B

Note: For sign controlled and roundabout intersections, delay and LoS of the worst movement are shown in the bracket

Table D-9 Option D – PM Peak Intersections Performance

ID	Intersection Type	Intersection	Base Case		Option D	
			Delay (sec)	LoS	Delay (sec)	LoS
A-1	Signalised	Bells Line of Rd - Gross Vale Rd	39	C	33	C
A-2	Priority	Kurrajong Rd - Old Kurrajong Rd	13 (>100)	A (F)	13 (>100)	A (F)
A-3	Signalised	Kurrajong Rd - Bosworth St	45	D	45	D
A-4	Priority	Castlereagh Rd - Lennox St	6 (19)	A (B)	6 (19)	A (B)
A-5	Priority	Castlereagh Rd - Inalls La	6 (17)	A (B)	6 (17)	A (B)
A-6	Signalised	Lennox St - East Market St	21	B	21	B
A-7	Signalised	March St - East Market St	28	B	28	B
A-8	Signalised	Windsor St - East Market St	29	C	29	C
B-2	Signalised	Lennox St - Paget St	15	B	15	B
B-3	Roundabout	Windsor St – Bosworth St	8 (11)	A (A)	8 (11)	A (A)
B-5	Priority	Bells Line of Rd - Charles St	2 (11)	A (A)	2 (11)	A (A)
B-6	Signalised	Lennox St - Bourke St	23	B	23	B
B-7	Signalised	Windsor St - Bourke St	19	B	19	B

Note: For sign controlled and roundabout intersections, delay and LoS of the worst movement are shown in the bracket

D.1.5 OPTION E

Table D-10 Option E – AM Peak Intersections Performance

ID	Intersection Type	Intersection	Base Case		Option E	
			Delay (sec)	LoS	Delay (sec)	LoS
A-1	Signalised	Bells Line of Rd - Gross Vale Rd	38	C	38	C
A-2	Priority	Kurrajong Rd - Old Kurrajong Rd	3 (70)	A (E)	3 (70)	A (E)
A-3	Signalised	Kurrajong Rd - Bosworth St	34	C	34	C
A-4	Priority	Castlereagh Rd - Lennox St	5 (13)	A (A)	5 (13)	A (A)
A-5	Priority	Castlereagh Rd - Inalls La	7 (15)	A (B)	7 (15)	A (B)
A-6	Signalised	Lennox St - East Market St	18	B	18	B
A-7	Signalised	March St - East Market St	22	B	22	B
A-8	Signalised	Windsor St - East Market St	24	B	24	B
B-2	Signalised	Lennox St - Paget St	13	A	13	A
B-3	Roundabout	Windsor St – Bosworth St	7 (10)	A (A)	7 (10)	A (A)
B-5	Priority	Bells Line of Rd - Charles St	4 (10)	A (A)	5 (10)	A (A)
B-6	Signalised	Lennox St - Bourke St	21	B	21	B
B-7	Signalised	Windsor St - Bourke St	16	B	16	B

Note: For sign controlled and roundabout intersections, delay and LoS of the worst movement are shown in the bracket.

Table D-11 Option E – PM Peak Intersections Performance

ID	Intersection Type	Intersection	Base Case		Option E	
			Delay (sec)	LoS	Delay (sec)	LoS
A-1	Signalised	Bells Line of Rd - Gross Vale Rd	39	C	34	C
A-2	Priority	Kurrajong Rd - Old Kurrajong Rd	13 (>100)	A (F)	13 (>100)	A (F)
A-3	Signalised	Kurrajong Rd - Bosworth St	45	D	45	D
A-4	Priority	Castlereagh Rd - Lennox St	6 (19)	A (B)	6 (19)	A (B)
A-5	Priority	Castlereagh Rd - Inalls La	6 (17)	A (B)	6 (17)	A (B)
A-6	Signalised	Lennox St - East Market St	21	B	21	B
A-7	Signalised	March St - East Market St	28	B	28	B
A-8	Signalised	Windsor St - East Market St	29	C	29	C
B-2	Signalised	Lennox St - Paget St	15	B	15	B
B-3	Roundabout	Windsor St – Bosworth St	8 (11)	A (A)	8 (11)	A (A)
B-5	Priority	Bells Line of Rd - Charles St	2 (11)	A (A)	2 (11)	A (A)
B-6	Signalised	Lennox St - Bourke St	23	B	23	B
B-7	Signalised	Windsor St - Bourke St	19	B	19	B

Note: For sign controlled and roundabout intersections, delay and LoS of the worst movement are shown in the bracket.

D1.6 OPTION F

Table D-12 Option F – AM Peak Intersections Performance

ID	Intersection Type	Intersection	Base Case		Option F	
			Delay (sec)	LoS	Delay (sec)	LoS
A-1	Signalised	Bells Line of Rd - Gross Vale Rd	38	C	38	C
A-2	Priority	Kurrajong Rd - Old Kurrajong Rd	3 (70)	A (E)	3 (70)	A (E)
A-3	Signalised	Kurrajong Rd - Bosworth St	34	C	34	C
A-4	Priority	Castlereagh Rd - Lennox St	5 (13)	A (A)	5 (13)	A (A)
A-5	Priority	Castlereagh Rd - Inalls La	7 (15)	A (B)	7 (15)	A (B)
A-6	Signalised	Lennox St - East Market St	18	B	18	B
A-7	Signalised	March St - East Market St	22	B	22	B
A-8	Signalised	Windsor St - East Market St	24	B	24	B
B-2	Signalised	Lennox St - Paget St	13	A	13	A
B-3	Roundabout	Windsor St – Bosworth St	7 (10)	A (A)	7 (10)	A (A)
B-5	Priority	Bells Line of Rd - Charles St	4 (10)	A (A)	4 (10)	A (A)
B-6	Signalised	Lennox St - Bourke St	21	B	21	B
B-7	Signalised	Windsor St - Bourke St	16	B	16	B

Note: For sign controlled and roundabout intersections, delay and LoS of the worst movement are shown in the bracket.

Table D-13 Option F – PM Peak Intersections Performance

ID	Intersection Type	Intersection	Base Case		Option F	
			Delay (sec)	LoS	Delay (sec)	LoS
A-1	Signalised	Bells Line of Rd - Gross Vale Rd	39	C	34	C
A-2	Priority	Kurrajong Rd - Old Kurrajong Rd	13 (>100)	A (F)	13 (>100)	A (F)
A-3	Signalised	Kurrajong Rd - Bosworth St	45	D	45	D
A-4	Priority	Castlereagh Rd - Lennox St	6 (19)	A (B)	6 (19)	A (B)
A-5	Priority	Castlereagh Rd - Inalls La	6 (17)	A (B)	6 (17)	A (B)
A-6	Signalised	Lennox St - East Market St	21	B	21	B
A-7	Signalised	March St - East Market St	28	B	28	B
A-8	Signalised	Windsor St - East Market St	29	C	29	C
B-2	Signalised	Lennox St - Paget St	15	B	15	B
B-3	Roundabout	Windsor St – Bosworth St	8 (11)	A (A)	8 (11)	A (A)
B-5	Priority	Bells Line of Rd - Charles St	2 (11)	A (A)	2 (11)	A (A)
B-6	Signalised	Lennox St - Bourke St	23	B	23	B
B-7	Signalised	Windsor St - Bourke St	19	B	19	B

Note: For sign controlled and roundabout intersections, delay and LoS of the worst movement are shown in the bracket.

D1.7 OPTION G

Table D-14 Option G – AM Peak Intersections Performance

ID	Intersection Type	Intersection	Base Case		Option G	
			Delay (sec)	LoS	Delay (sec)	LoS
A-1	Signalised	Bells Line of Rd - Gross Vale Rd	38	C	33	C
A-2	Priority	Kurrajong Rd - Old Kurrajong Rd	3 (70)	A (E)	2 (85)	A (F)
A-3	Signalised	Kurrajong Rd - Bosworth St	34	C	49	D
A-4	Priority	Castlereagh Rd - Lennox St	5 (13)	A (A)	5 (26)	A (B)
A-5	Priority	Castlereagh Rd - Inalls La	7 (15)	A (B)	6 (17)	A (B)
A-6	Signalised	Lennox St - East Market St	18	B	18	B
A-7	Signalised	March St - East Market St	22	B	21	B
A-8	Signalised	Windsor St - East Market St	24	B	25	B
B-2	Signalised	Lennox St - Paget St	13	A	13	A
B-3	Roundabout	Windsor St – Bosworth St	7 (10)	A (A)	7 (11)	A (A)
B-5	Priority	Bells Line of Rd - Charles St	4 (10)	A (A)	5 (10)	A (A)
B-6	Signalised	Lennox St - Bourke St	21	B	21	B
B-7	Signalised	Windsor St - Bourke St	16	B	16	B

Note: For sign controlled and roundabout intersections, delay and LoS of the worst movement are shown in the bracket.

Table D-15 Option G – PM Peak Intersections Performance

ID	Intersection Type	Intersection	Base Case		Option G	
			Delay (sec)	LoS	Delay (sec)	LoS
A-1	Signalised	Bells Line of Rd - Gross Vale Rd	39	C	33	C
A-2	Priority	Kurrajong Rd - Old Kurrajong Rd	13 (>100)	A (F)	8 (74)	A (F)
A-3	Signalised	Kurrajong Rd - Bosworth St	45	D	41	C
A-4	Priority	Castlereagh Rd - Lennox St	6 (19)	A (B)	8 (32)	A (C)
A-5	Priority	Castlereagh Rd - Inalls La	6 (17)	A (B)	6 (18)	A (B)
A-6	Signalised	Lennox St - East Market St	21	B	21	B
A-7	Signalised	March St - East Market St	28	B	28	B
A-8	Signalised	Windsor St - East Market St	29	C	30	C
B-2	Signalised	Lennox St - Paget St	15	B	15	B
B-3	Roundabout	Windsor St – Bosworth St	8 (11)	A (A)	8 (11)	A (A)
B-5	Priority	Bells Line of Rd - Charles St	2 (11)	A (A)	2 (11)	A (A)
B-6	Signalised	Lennox St - Bourke St	23	B	23	B
B-7	Signalised	Windsor St - Bourke St	19	B	19	B

Note: For sign controlled and roundabout intersections, delay and LoS of the worst movement are shown in the bracket.

D1.8 OPTION H

Table D-16 Option H – AM Peak Intersections Performance

ID	Intersection Type	Intersection	Base Case		Option H	
			Delay (sec)	LoS	Delay (sec)	LoS
A-1	Signalised	Bells Line of Rd - Gross Vale Rd	38	C	33	C
A-2	Priority	Kurrajong Rd - Old Kurrajong Rd	3 (70)	A (E)	3 (52)	A (D)
A-3	Signalised	Kurrajong Rd - Bosworth St	34	C	34	C
A-4	Priority	Castlereagh Rd - Lennox St	5 (13)	A (A)	5 (13)	A (A)
A-5	Priority	Castlereagh Rd - Inalls La	7 (15)	A (B)	7 (15)	A (B)
A-6	Signalised	Lennox St - East Market St	18	B	18	B
A-7	Signalised	March St - East Market St	22	B	22	B
A-8	Signalised	Windsor St - East Market St	24	B	24	B
B-2	Signalised	Lennox St - Paget St	13	A	13	A
B-3	Roundabout	Windsor St – Bosworth St	7 (10)	A (A)	7 (10)	A (A)
B-5	Priority	Bells Line of Rd - Charles St	4 (10)	A (A)	5 (10)	A (A)
B-6	Signalised	Lennox St - Bourke St	21	B	21	B
B-7	Signalised	Windsor St - Bourke St	16	B	16	B

Note: For sign controlled and roundabout intersections, delay and LoS of the worst movement are shown in the bracket.

Table D-17 Option H – PM Peak Intersections Performance

ID	Intersection Type	Intersection	Base Case		Option H	
			Delay (sec)	LoS	Delay (sec)	LoS
A-1	Signalised	Bells Line of Rd - Gross Vale Rd	39	C	33	C
A-2	Priority	Kurrajong Rd - Old Kurrajong Rd	13 (>100)	A (F)	8 (54)	A (D)
A-3	Signalised	Kurrajong Rd - Bosworth St	45	D	45	D
A-4	Priority	Castlereagh Rd - Lennox St	6 (19)	A (B)	6 (19)	A (B)
A-5	Priority	Castlereagh Rd - Inalls La	6 (17)	A (B)	6 (17)	A (B)
A-6	Signalised	Lennox St - East Market St	21	B	21	B
A-7	Signalised	March St - East Market St	28	B	28	B
A-8	Signalised	Windsor St - East Market St	29	C	29	C
B-2	Signalised	Lennox St - Paget St	15	B	15	B
B-3	Roundabout	Windsor St – Bosworth St	8 (11)	A (A)	8 (11)	A (A)
B-5	Priority	Bells Line of Rd - Charles St	2 (11)	A (A)	2 (11)	A (A)
B-6	Signalised	Lennox St - Bourke St	23	B	23	B
B-7	Signalised	Windsor St - Bourke St	19	B	19	B

Note: For sign controlled and roundabout intersections, delay and LoS of the worst movement are shown in the bracket.

D2 INTERSECTION TURNING VOLUMES

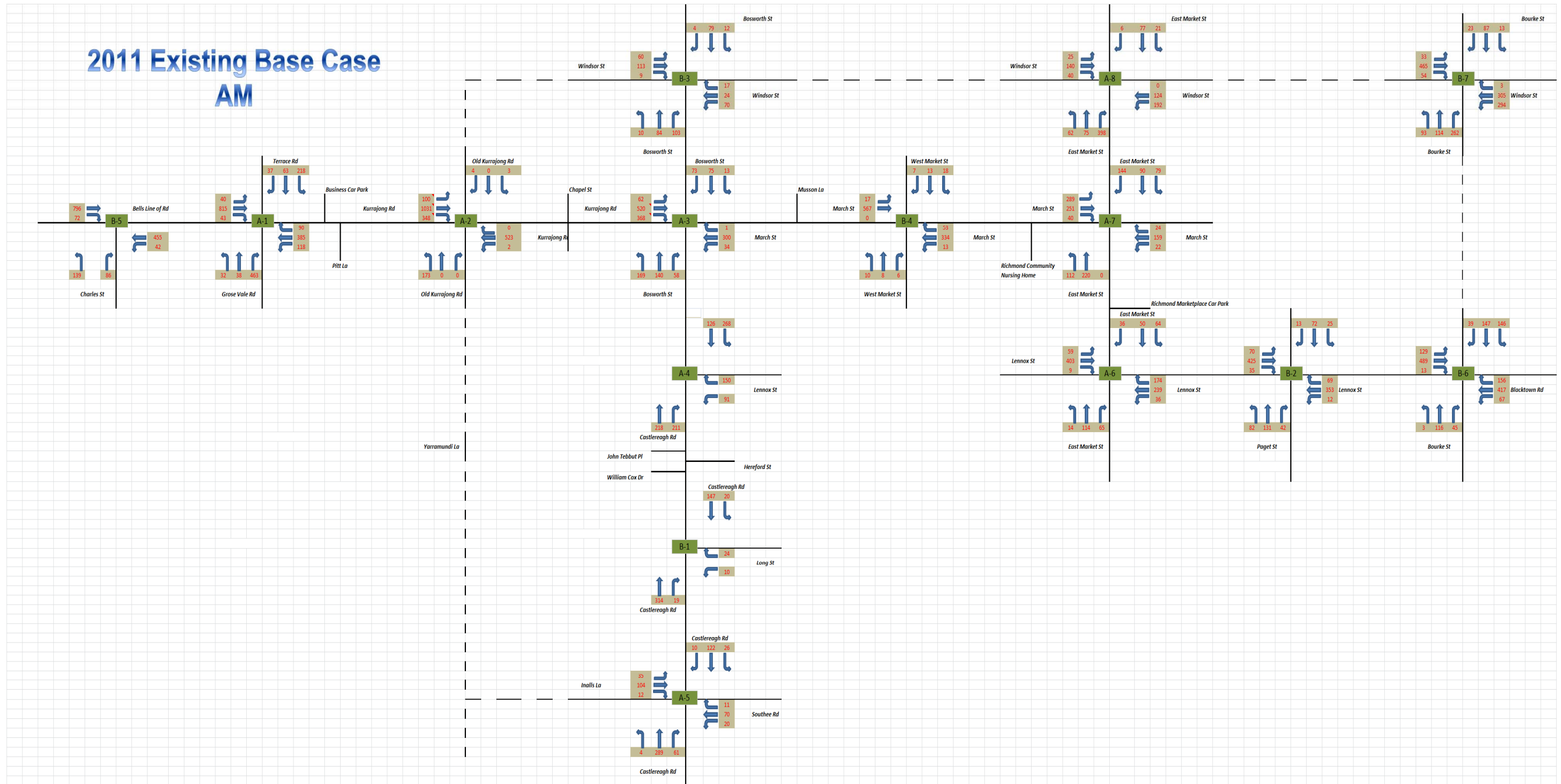


Figure D-1 Intersection turning volumes-2011 Base Case AM Peak

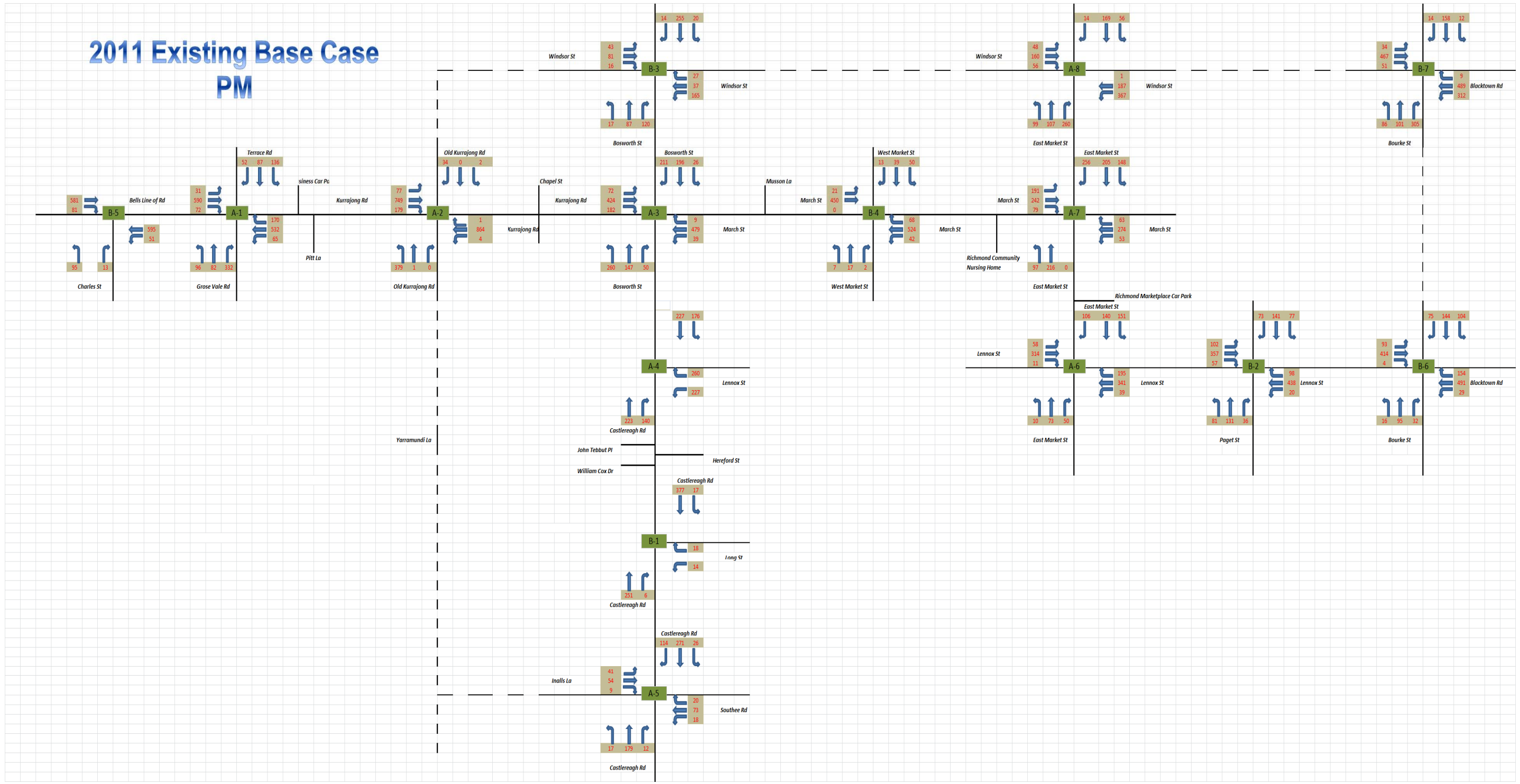
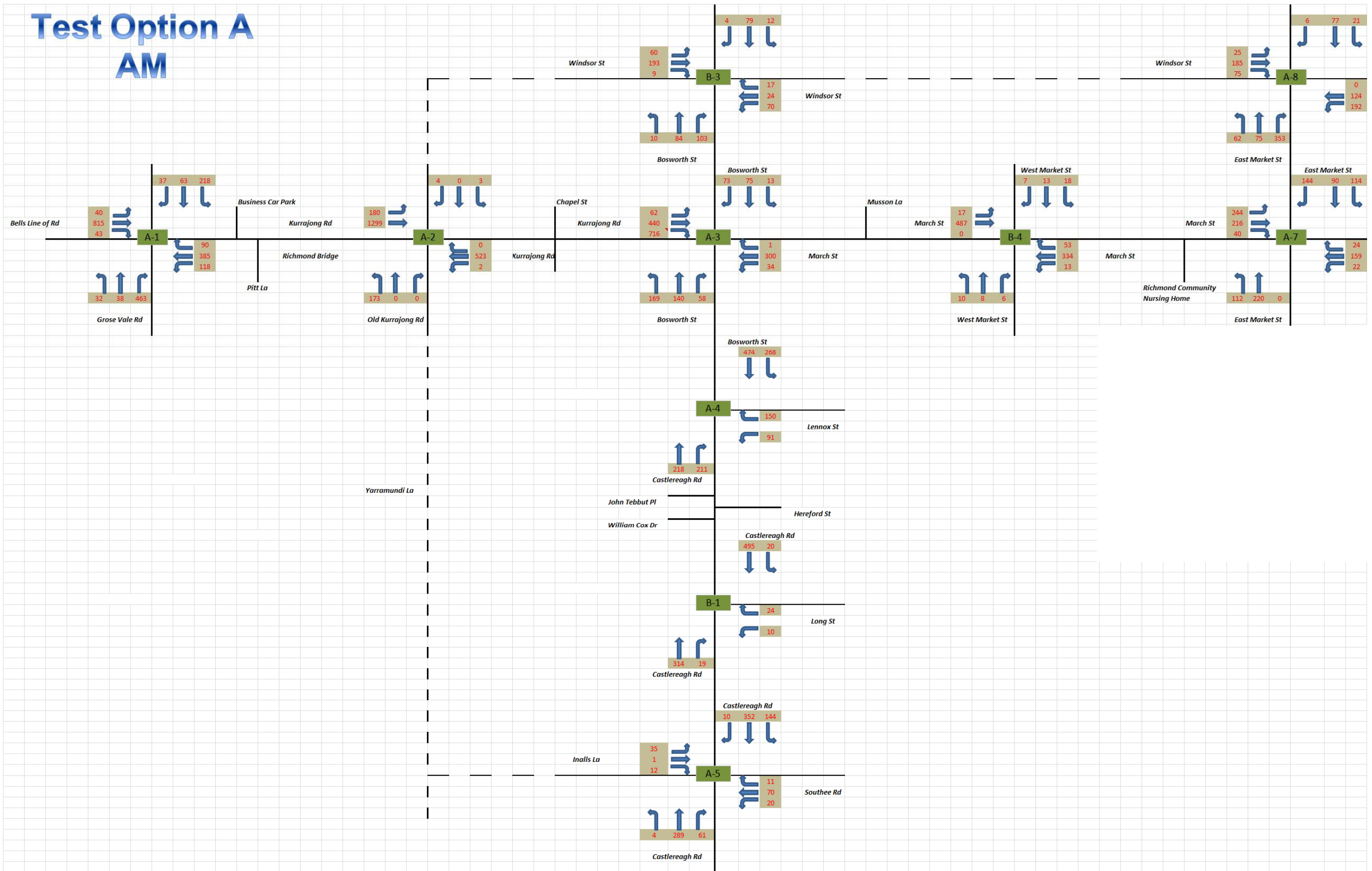


Figure D-2 Intersection turning volumes-2011 Base Case PM Peak

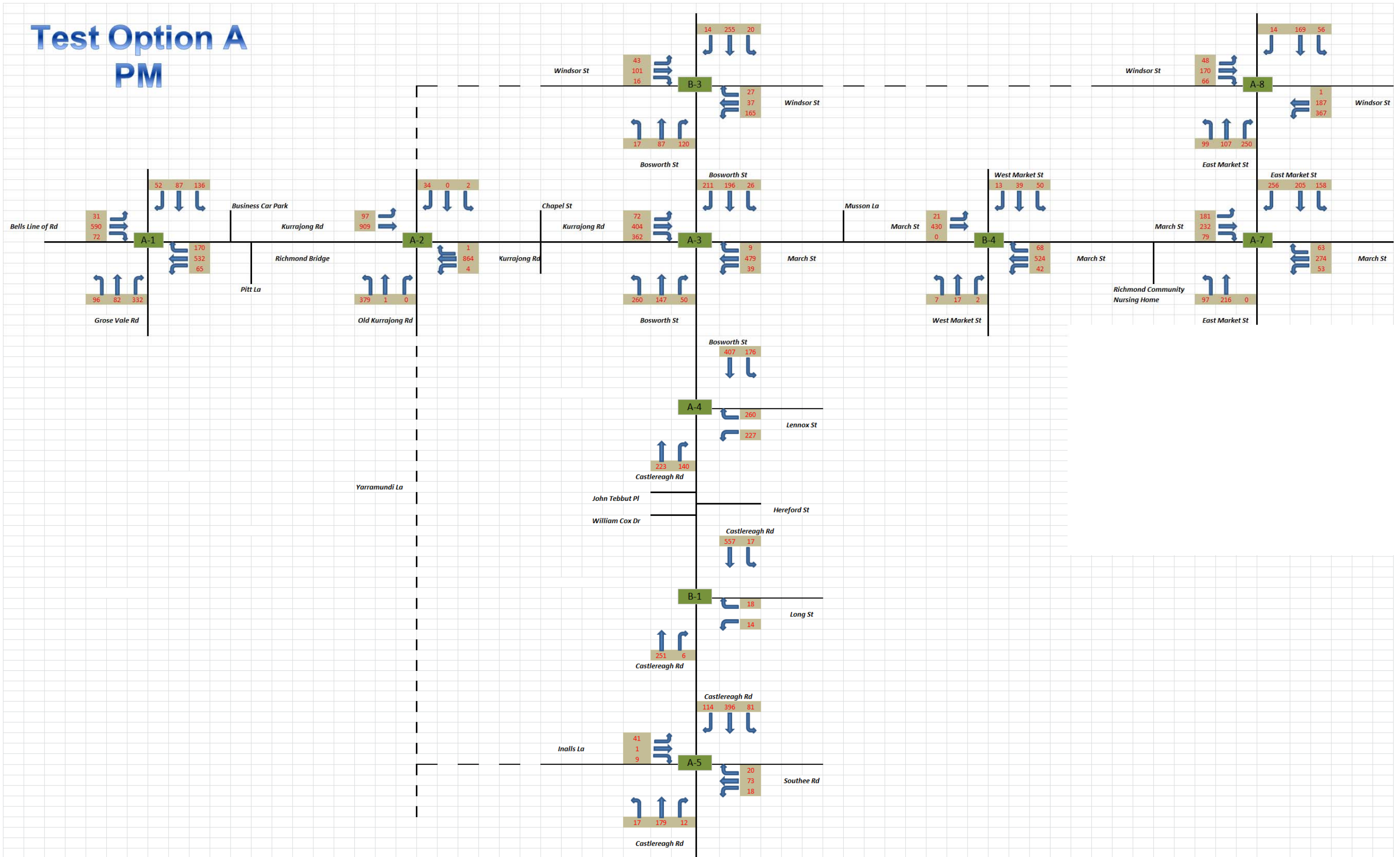
Test Option A AM



Note: The turning volumes of the rest of intersections are the same as base case.

Figure D-3 Intersection turning volumes-2011 Option A AM Peak

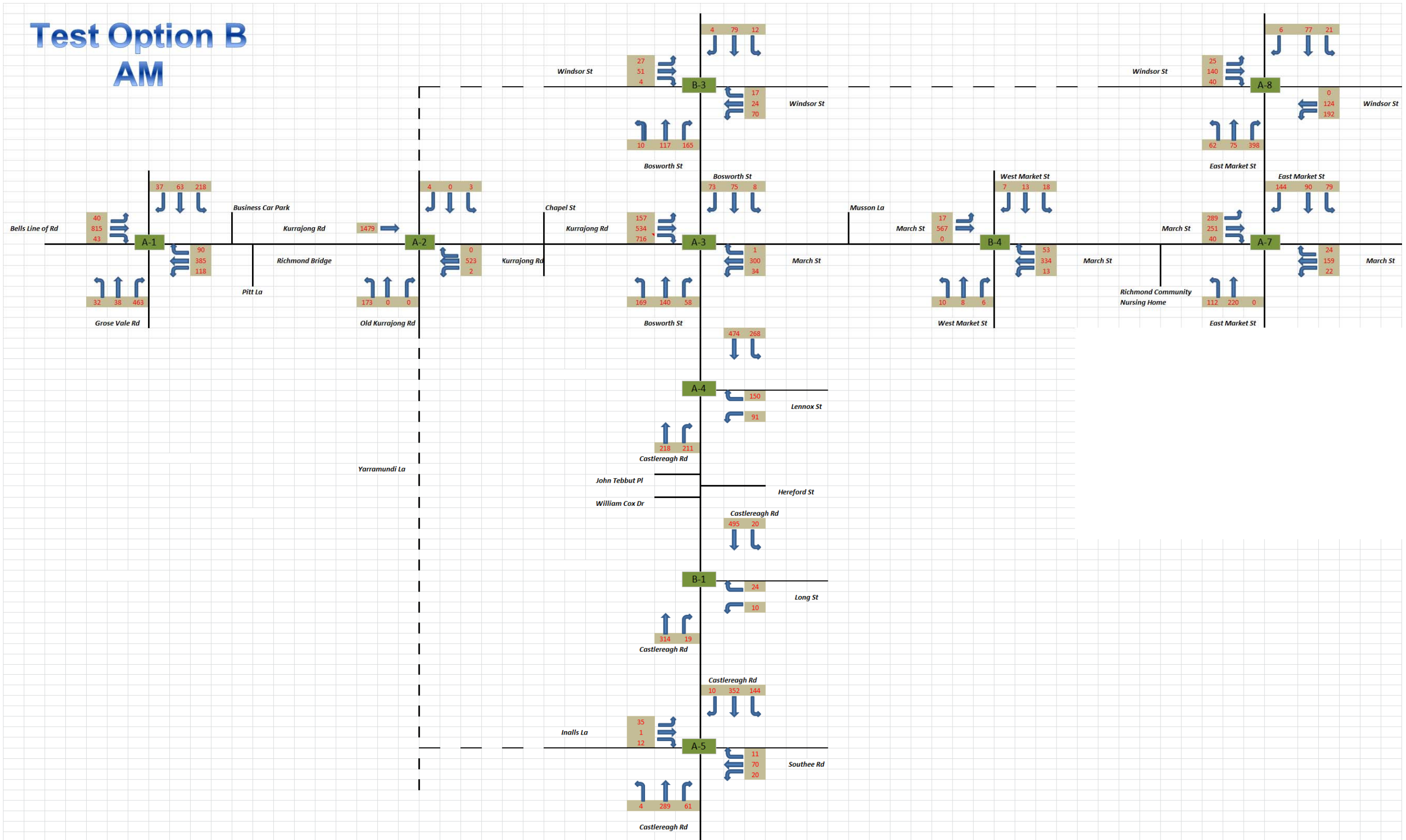
Test Option A PM



Note: The turning volumes of the rest of intersections are the same as base case.

Figure D-4 Intersection turning volumes-2011 Option A PM Peak

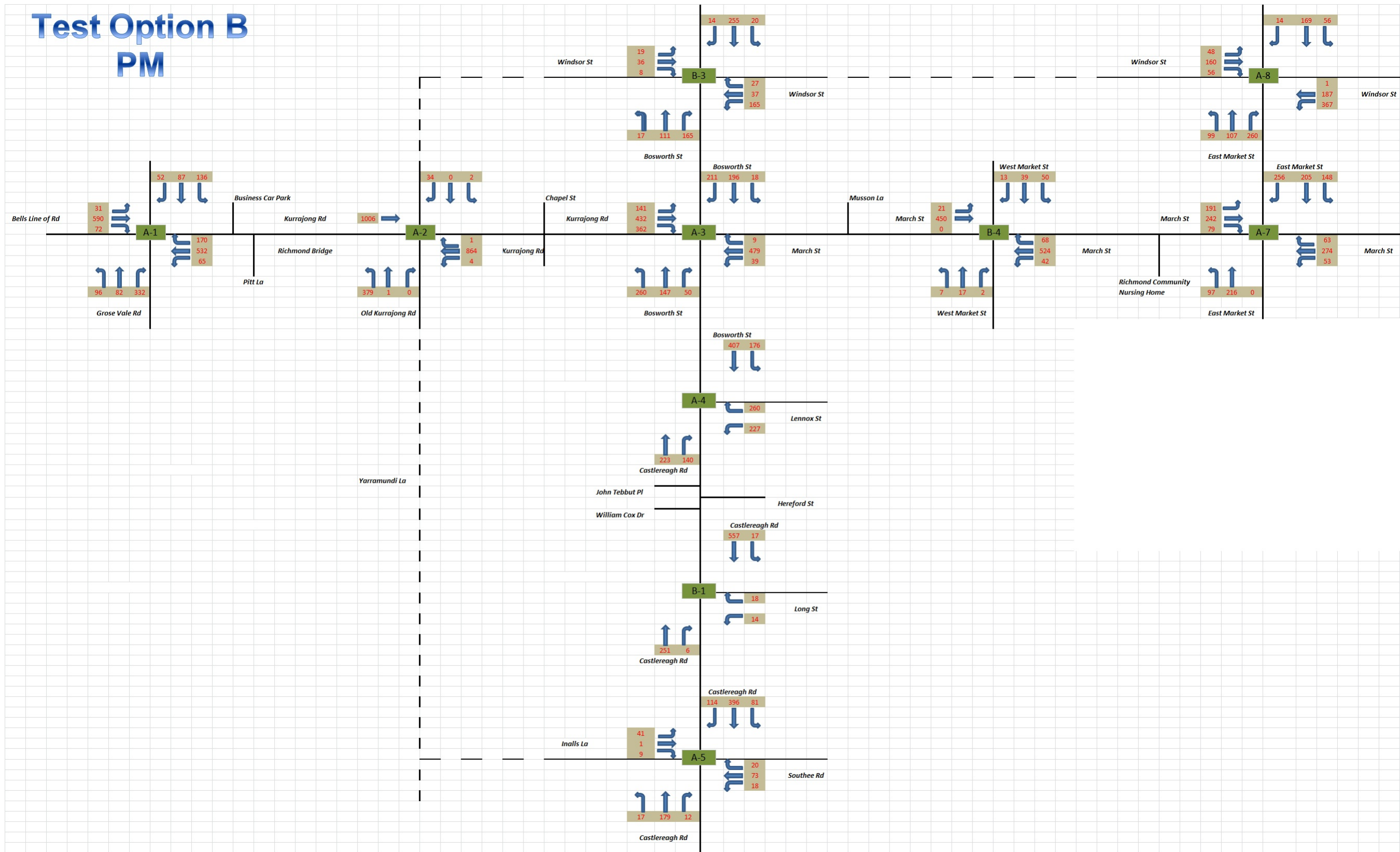
Test Option B AM



Note: The turning volumes of the rest of intersections are the same as base case.

Figure D-5 Intersection turning volumes-2011 Option B AM Peak

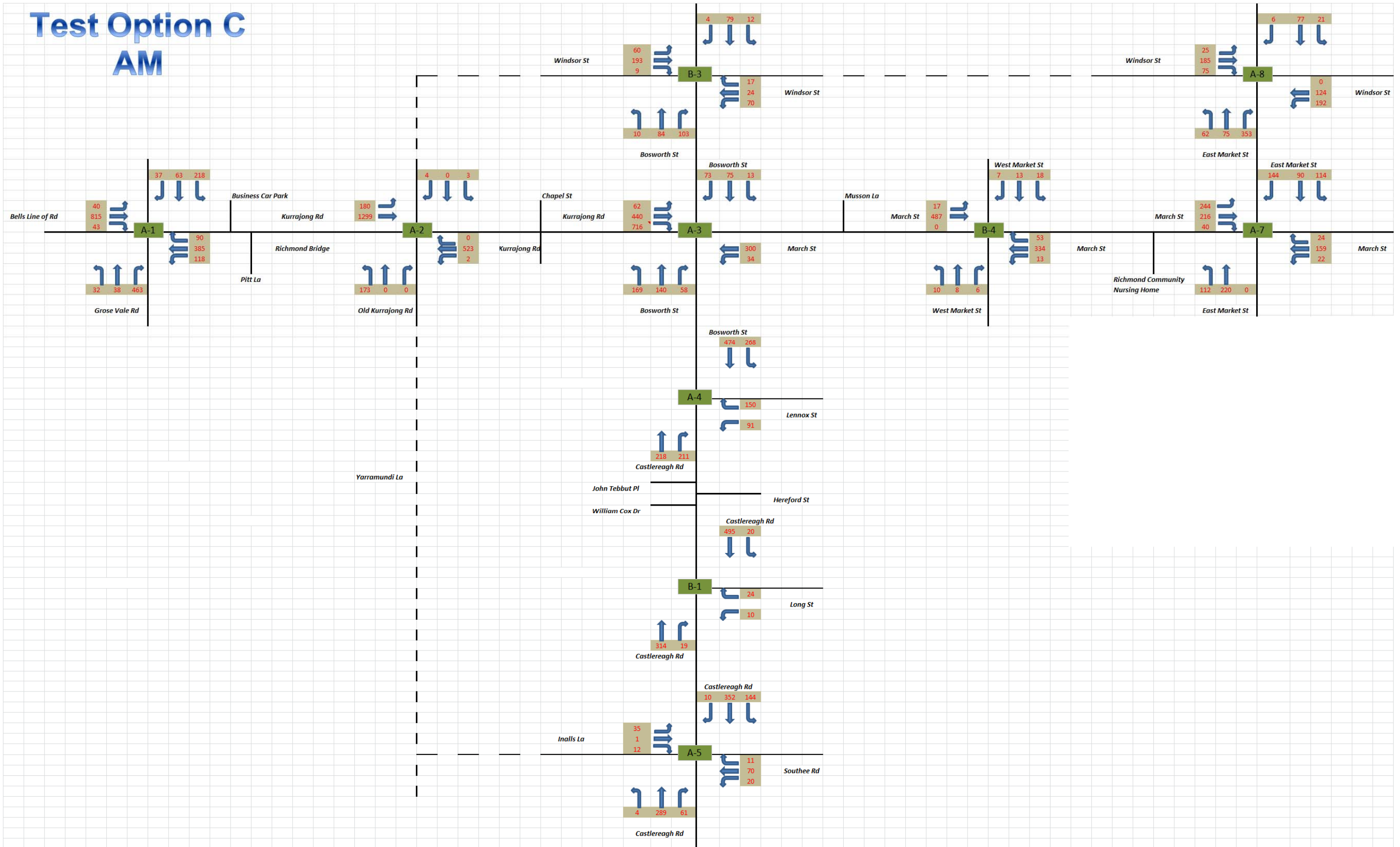
Test Option B PM



Note: The turning volumes of the rest of intersections are the same as base case.

Figure D-6 Intersection turning volumes-2011 Option B PM Peak

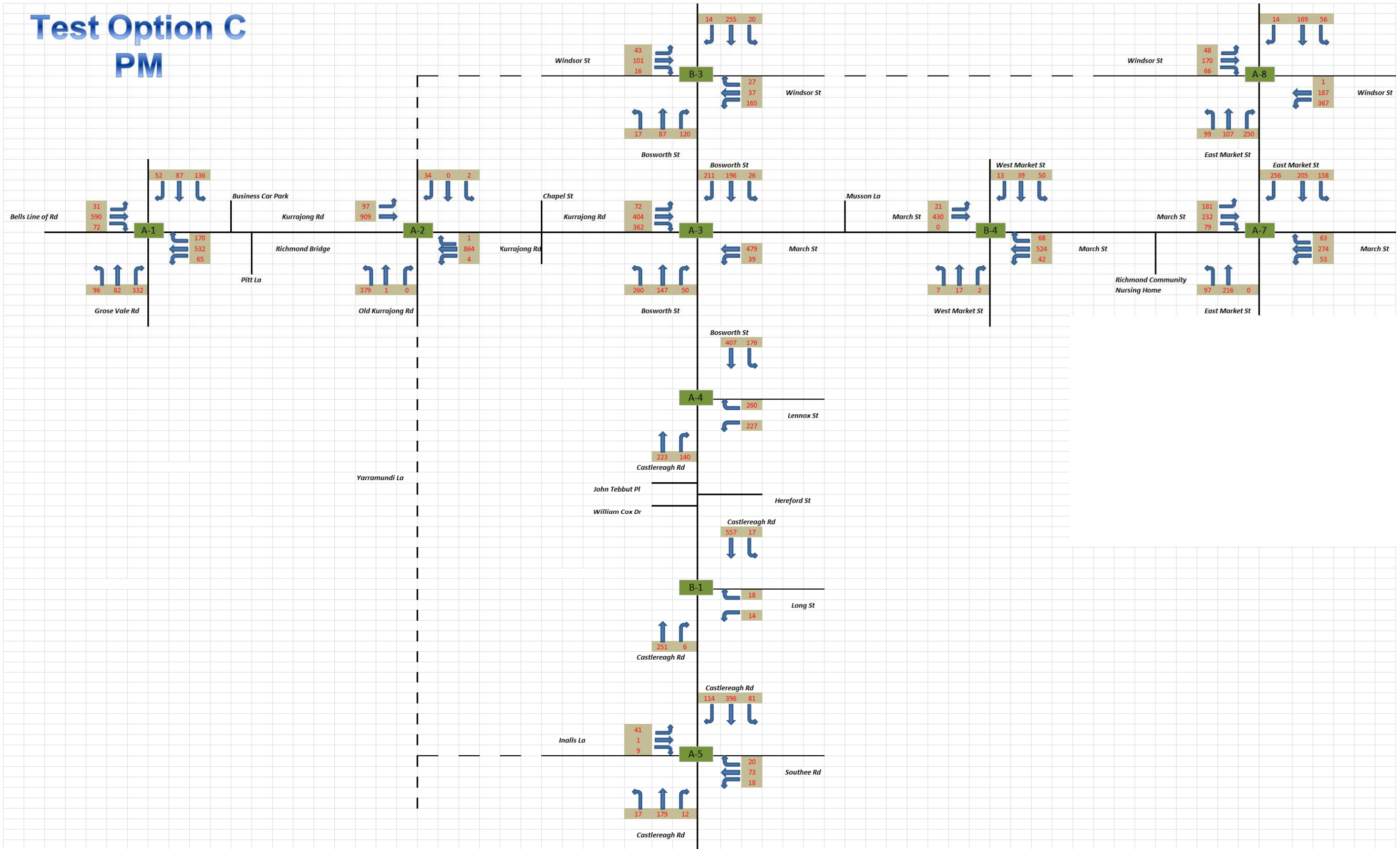
Test Option C AM



Note: The turning volumes of the rest of intersections are the same as base case.

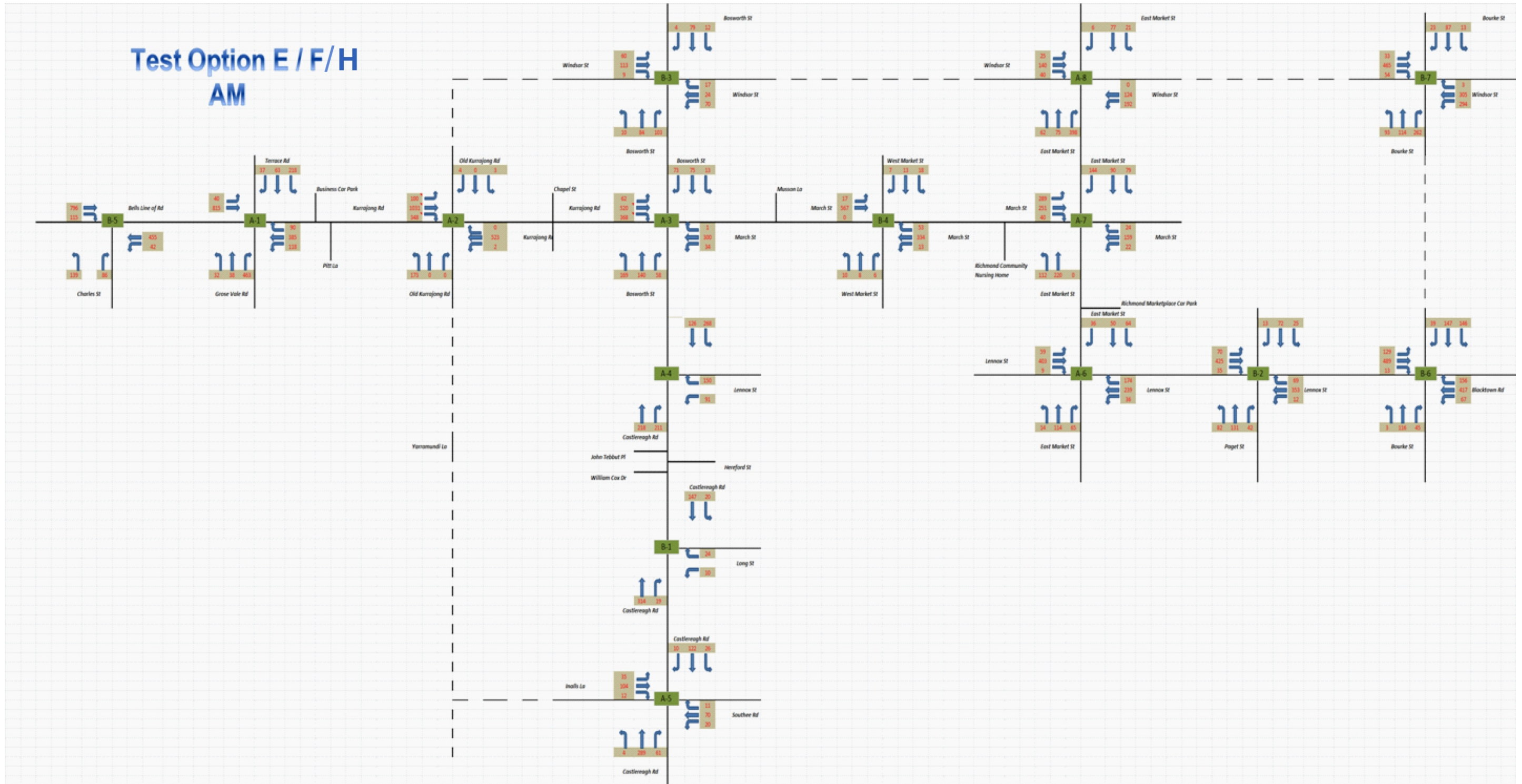
Figure D-7 Intersection turning volumes-2011 Option C AM Peak

Test Option C PM



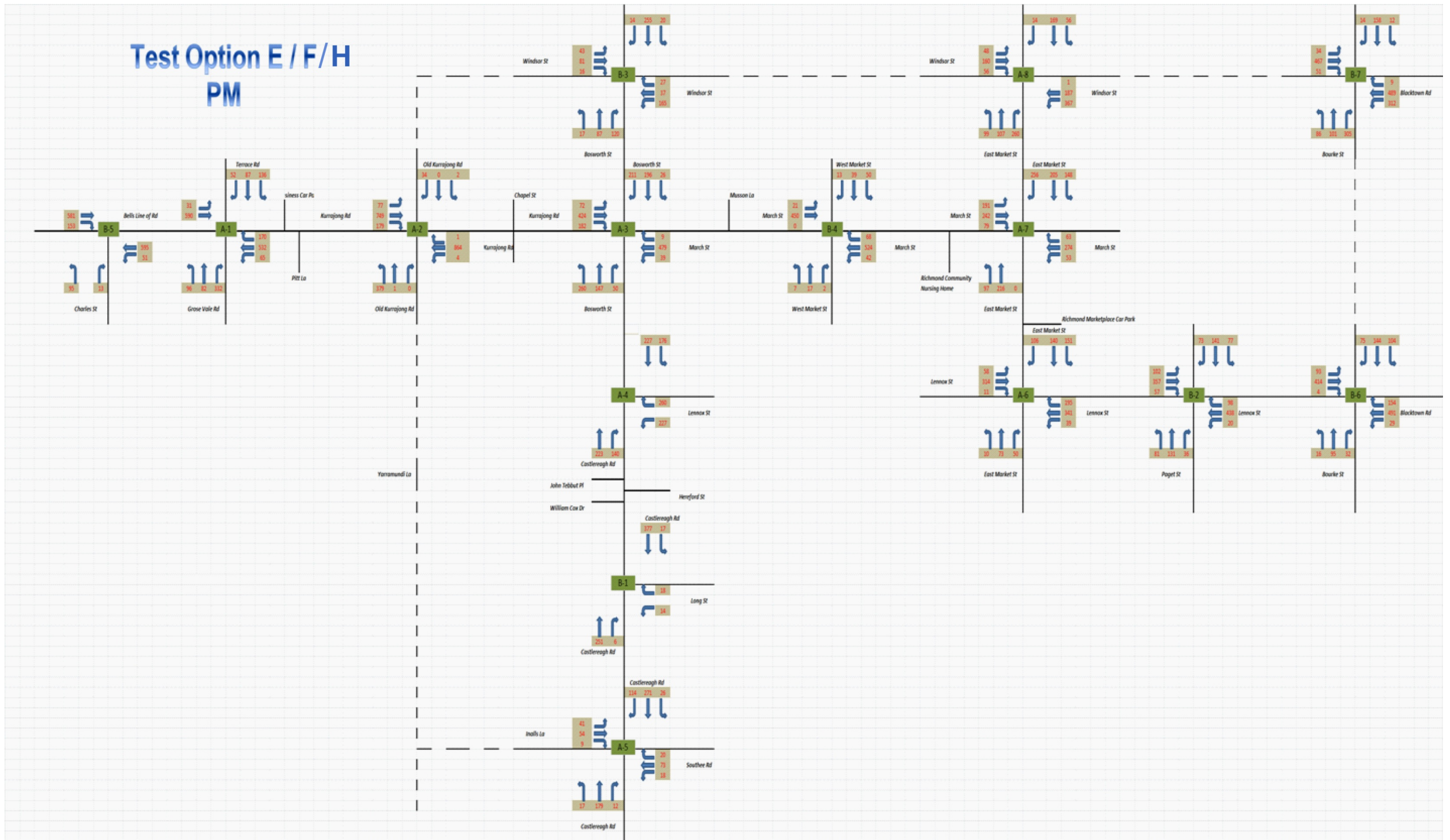
Note: The turning volumes of the rest of intersections are the same as base case.

Figure D-8 Intersection turning volumes-2011 Option C PM Peak



Note: Option D turning volumes are the same as Base Case

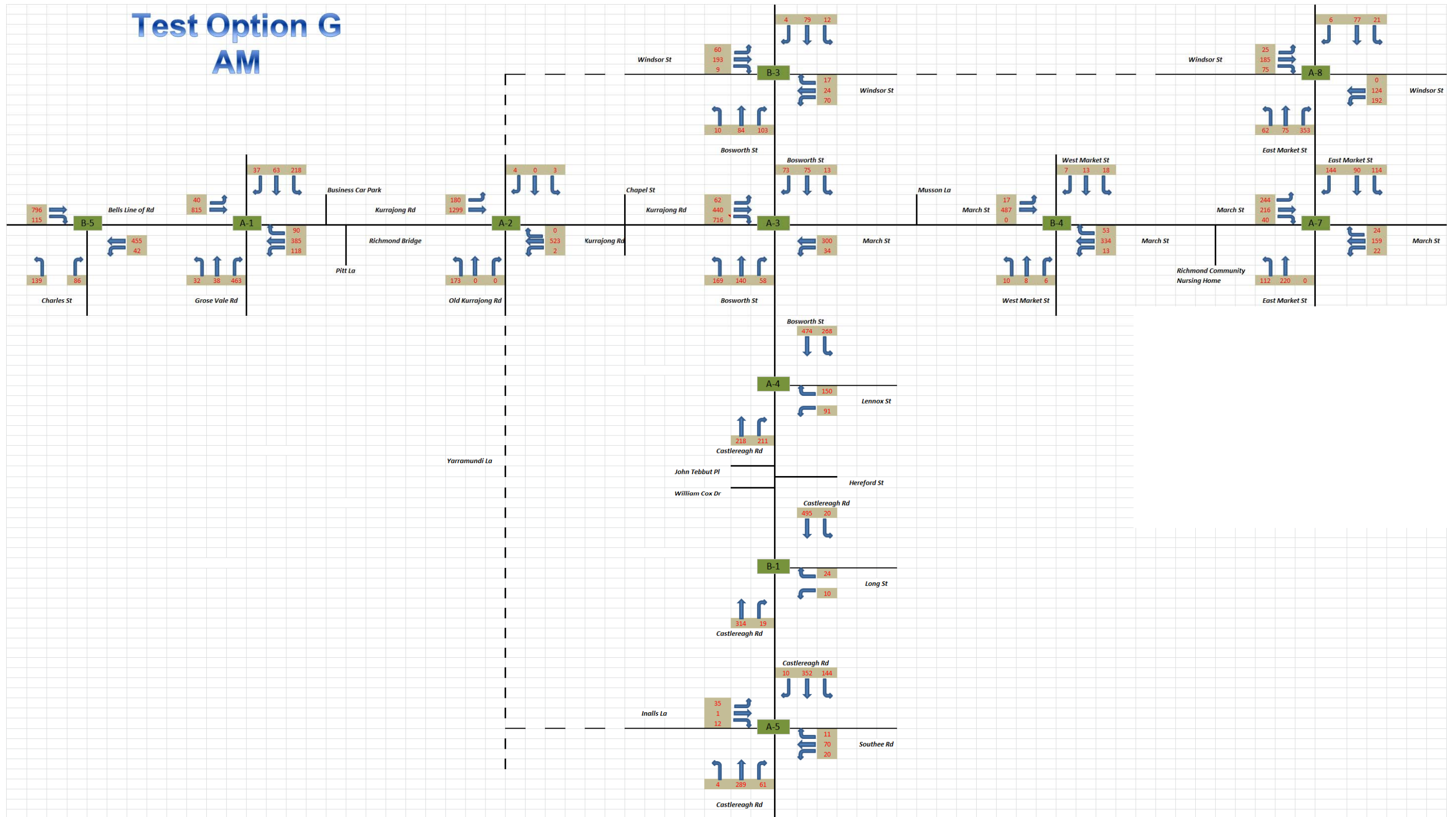
Figure D-9 Intersection turning volumes-2011 Options E, F and H AM Peak



Note: Option D turning volumes are the same as Base Case

Figure D-10 Intersection turning volumes-2011 Options E, F and H PM Peak

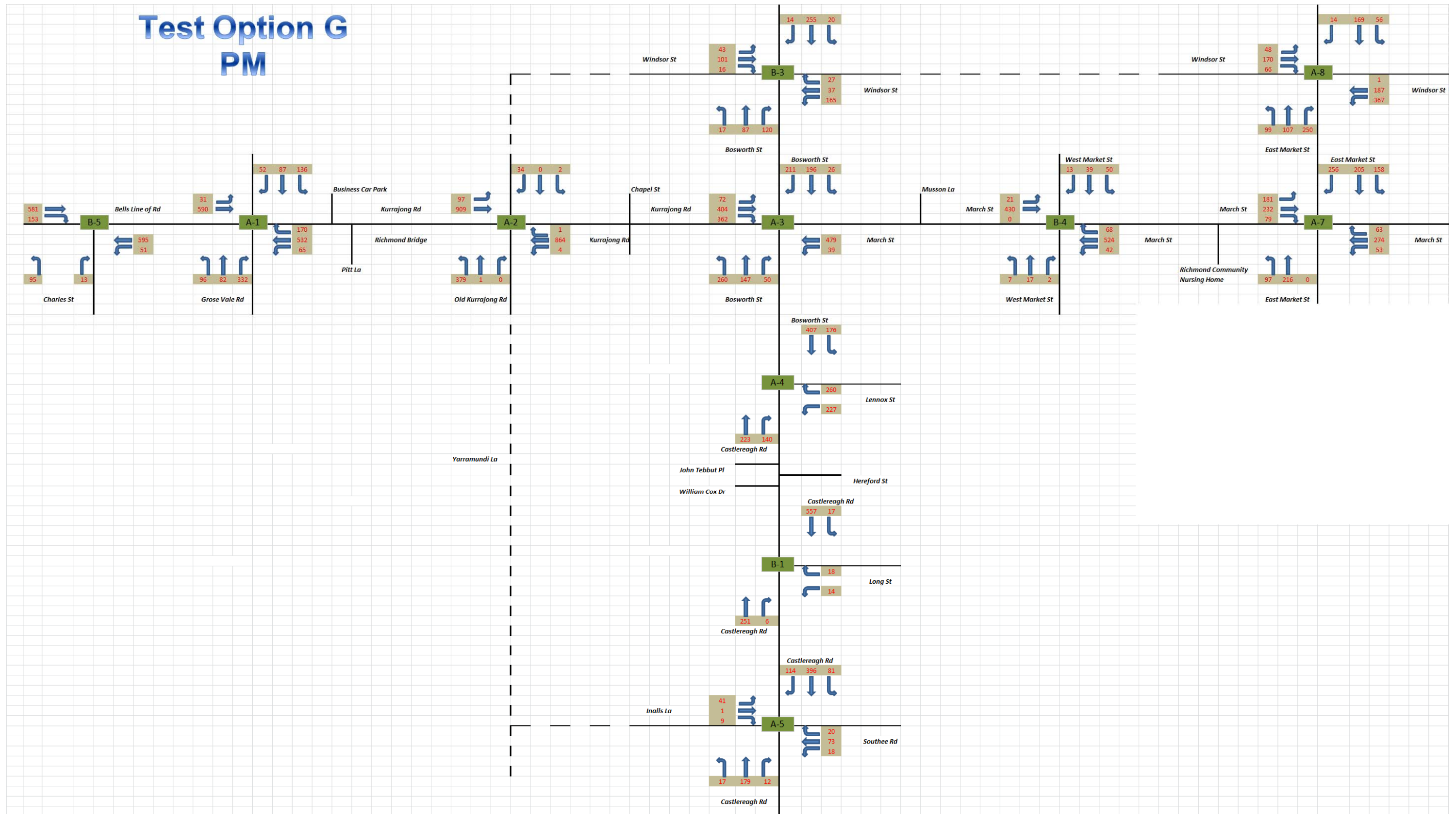
Test Option G AM



Note: The turning volumes of the rest of intersections are the same as base case.

Figure D-11 Intersection turning volumes-2011 Option G AM Peak

Test Option G PM



Note: The turning volumes of the rest of intersections are the same as base case.

Figure D-12 Intersection turning volumes-2011 Option G PM Peak

D3 TRAFFIC FORECAST ON KEY ROADS

The future traffic growth up to 2021 is reported at eleven key mid-block locations in the study area (see Figure C-1). Traffic forecasts for the study area are based on RMS' own modelling investigation using their Emme/2 Sydney Strategic Model. The RMS' traffic forecast was used as an input to this future Paramics model.

Detailed traffic forecast on key roads are summarised in Tables D-18 and D-19 for the AM and PM Peak periods.

Table D-18 Traffic forecast on key roads, AM Peak one hour (two ways)

Ref	Road	Location	2011 Base Case Volumes	2016 Future Volumes	Annual Growth Rates (2011-2016)	2021 Future Volumes	Annual Growth Rates (2011-2021)
M-1	Bells Line of Rd	Richmond Bridge	2,164	2,375	2.0%	2,586	2.0%
M-2	Bells Line of Rd	West of Gross Vale Rd	1,257	1,353	1.5%	1,480	1.8%
M-3	Kurrajong Rd	West of Bosworth St	1,514	1,643	1.7%	1,774	1.7%
M-4	March St	West of East Market St	916	977	1.3%	1,061	1.6%
M-5	Lennox St	West of East Market St	773	811	1.0%	866	1.2%
M-6	Windsor St	West of East Market St	275	310	2.5%	324	1.8%
M-7	March St	East of East Market St	395	441	2.4%	481	2.2%
M-8	Castlereagh Rd	North of Southee Rd	490	528	1.5%	595	2.1%
M-9	Yarramundi Ln	South of Kurrajong Rd	445	500	2.5%	554	2.5%
M-10	Lennox St	East of Paget St	907	981	1.6%	1,024	1.3%
M-11	Windsor St	East of East Market St	890	940	1.1%	1,017	1.4%

Note: The traffic volumes are reported from Paramics model.

Table D-19 Traffic forecast on key roads, PM Peak one hour (two ways)

Ref	Road	Location	2011 Base Case Volumes	2016 Future Volumes	Annual Growth Rates (2011-2016)	2021 Future Volumes	Annual Growth Rates (2011-2021)
M-1	Bells Line of Rd	Richmond Bridge	2,179	2,436	2.4%	2,630	2.1%
M-2	Bells Line of Rd	West of Gross Vale Rd	1,315	1,418	1.6%	1,541	1.7%
M-3	Kurrajong Rd	West of Bosworth St	1,556	1,735	2.3%	1,835	1.8%
M-4	March St	West of East Market St	1,007	1,112	2.1%	1,171	1.6%
M-5	Lennox St	West of East Market St	964	1,013	1.0%	1,076	1.2%
M-6	Windsor St	West of East Market St	462	509	2.0%	547	1.8%
M-7	March St	East of East Market St	548	628	2.9%	696	2.7%
M-8	Castlereagh Rd	North of Southee Rd	721	811	2.5%	868	2.0%
M-9	Yarramundi Ln	South of Kurrajong Rd	503	577	2.9%	627	2.5%
M-10	Lennox St	East of Paget St	994	1,061	1.3%	1,111	1.2%
M-11	Windsor St	East of East Market St	1,150	1,225	1.3%	1,264	1.0%

Note: The traffic volumes are reported from Paramics model.

D4 FUTURE NETWORK PERFORMANCE OF OPTION H

Findings from the Option H modelling for future years 2016 and 2021 years are summarised in Tables D-20 and D-21 below. The results are based on Paramics model.

Table D-20 Option H modelling outcome for future year 2016

ID	Location	Findings
1.	Bells Line of Road/Grose Vale Rd intersection	<ul style="list-style-type: none"> The model forecasts overall intersection LoS E and LoS C for the AM and PM peak periods respectively. The Paramics model showed that low LoS E during AM peak is predominantly a result of by high delays along the Grose Vale Road approach (LoS F). The Paramics snap shot of queues along Grose Vale Road during AM peak is shown in Figure D-13; The model forecasts LoS D for the critical western approach during the AM peak and LoS C for the critical eastern approach during PM Peak.
2.	Richmond Bridge	<ul style="list-style-type: none"> No significant traffic slowdown was observed during both the AM and PM peak periods.
2.	Kurrajong Road/Yarramundi Lane intersection	<ul style="list-style-type: none"> The model forecasts that the proposed upgrade would provide a good level of service for both the eastern and western approaches during the AM and PM peak periods. The model suggested that right turning vehicles from Kurrajong Road to Yarramundi Lane would not exceed the capacity of the provided right turn bay during both AM and PM peak periods. The model showed that, the provided left turn slip lane on Yarramundi Lane with a westbound acceleration lane on Kurrajong Road, would have adequate capacity to accommodate left turning demand from Yarramundi Lane during the PM peak. The model indicates that the right turn movement from Old Kurrajong Road to Kurrajong Road would experience high delays during both AM and PM peak periods.
3.	Kurrajong Road/Bosworth Street	<ul style="list-style-type: none"> The model forecasts overall intersection LoS between C and D for the AM and PM peak periods respectively. The Paramics model showed that the proposed clearway between Chapel St and Bosworth St would contribute to satisfactory LoS (C/D) for the western approach during the AM and PM peak periods. The model forecasts high delays (LoS F) on Bosworth Street southern approach during PM peak period.



Figure D-13 2016 Option H AM Peak –Bells Line of Rd/Grose Vale Rd intersection

Table D-21 Option H modelling outcomes for future year 2021

ID	Location	Findings
1.	Bells Line of Road/Grose Vale Rd intersection	<ul style="list-style-type: none"> The model forecasts overall intersection LoS F and LoS C for AM and PM peak periods respectively. The Paramics model showed that low LoS F during AM peak is predominantly a result of high delays along the Grose Vale Road approach (LoS F) and the western approach (LoS F). A Paramics 'snap shot' of Bells Line of Road/Grose Vale Road during the AM peak is shown in Figure D-14; The model forecasts LoS F for the critical western approach during the AM peak and LoS C for the critical eastern approach during the PM Peak.
2.	Richmond Bridge	<ul style="list-style-type: none"> No significant traffic slowdown was observed during both the AM and PM peak periods. However, the model shows increased vehicle density on this section of Bells Line of Road/Kurrajong Road between Grose Vale Rd and Yarramundi Lane. In 2021, with predicted growth, the model forecasts eastbound traffic flow on the bridge in the order of 1,750 vehicles per hour (AM peak). The predicted volume on the bridge is higher than theoretical capacity between 1400 and 1600 vehicles per hour per lane. The increased traffic volumes on the bridge may have potential to cause congestion particularly for incidents, aggressive or slow driving. The bridge capacity should be further investigated during the next stage of strategic concept options study.
3.	Kurrajong Road/Yarramundi Lane intersection	<ul style="list-style-type: none"> The model forecasts that the proposed upgrade would provide a good level of service for both the eastern and western approaches during the AM and PM peak period. However, the model shows occasional interruptions to the westbound through flow during the PM peak when left turning vehicles from Yarramundi Lane merge from the acceleration lane to main stream flow. The model suggested that right turning vehicles from Kurrajong Road to Yarramundi Lane would not exceed the capacity of the provided right turn bay during both the AM and PM peak periods. The model indicates that the right turn movement from Old Kurrajong Road to Kurrajong Road would experience high delays (LoS F) during both the AM and PM peak periods. The Paramics model 'snapshot' of intersection operation during the PM peak is shown in Figure D-15;
4.	Kurrajong Road/Bosworth Street intersection (with clearway condition)	<ul style="list-style-type: none"> The model forecasts that overall intersection LoS would be between D and E for both the AM and PM peak periods. The model forecasts LoS C and F for the western approach during the AM and PM peak periods respectively. The model forecasts LoS E for the March Street approach during the PM peak period. The model forecasts high delays (LoS F) on the Bosworth Street southern approach during the PM peak period. The Paramics model snapshot of intersection operation during the PM peak is shown in Figure D-16;
5.	Kurrajong Road/Bosworth Street intersection (with clearway condition and proposed upgrade)	<ul style="list-style-type: none"> This intersection was re-assessed with one additional eastbound right turn bay on Kurrajong Road. The model showed that an exclusive right turn bay would improve overall intersection Level of service in 2021 (LoS C/D). The model forecasts improved Levels of Service for the western approach (LoS A/B) during both the AM and PM peak periods. The model forecasts LoS E for the March Street approach during the PM peak period. The model forecasts high delays (LoS F) on the Bosworth Street southern approach during the PM peak period.

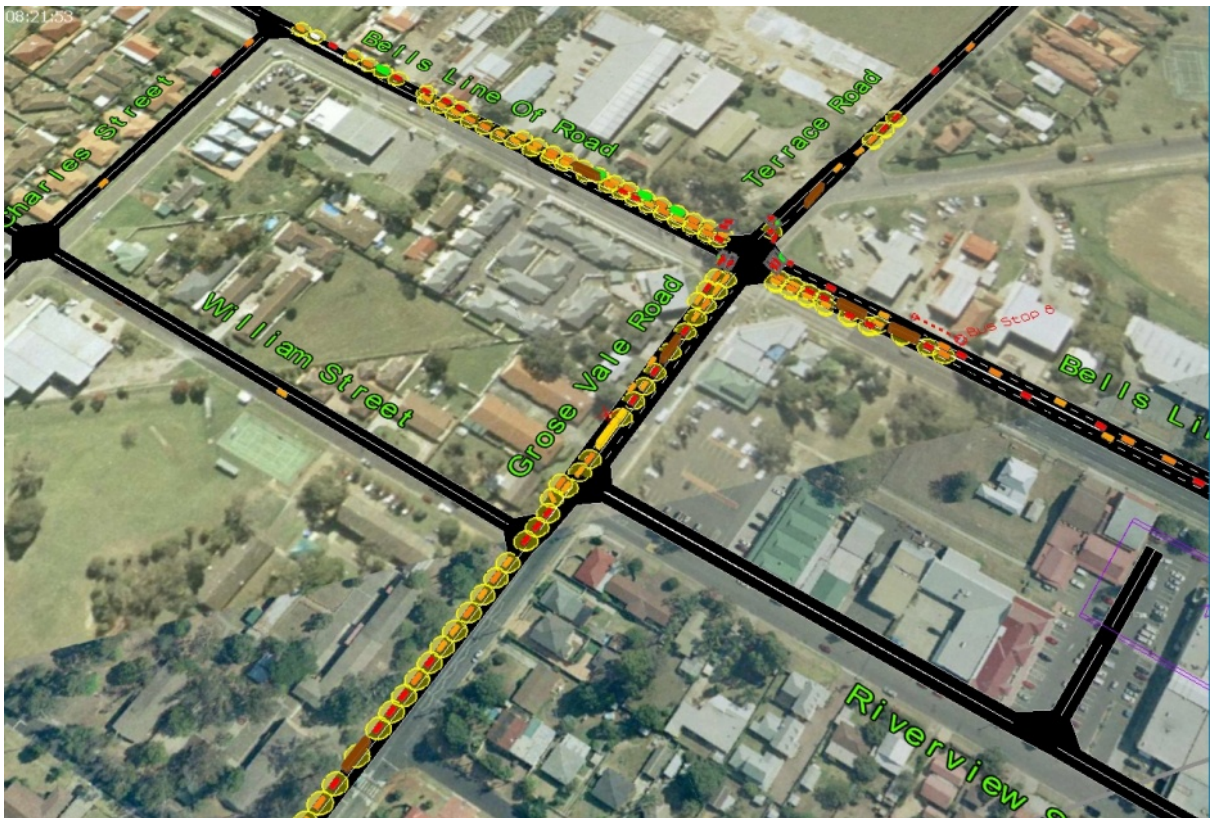


Figure D-14 2021 Option H AM Peak –Bells Line of Rd/Grose Vale Rd intersection, showing queues along Grose Vale Road and Bells Line of Road western approaches

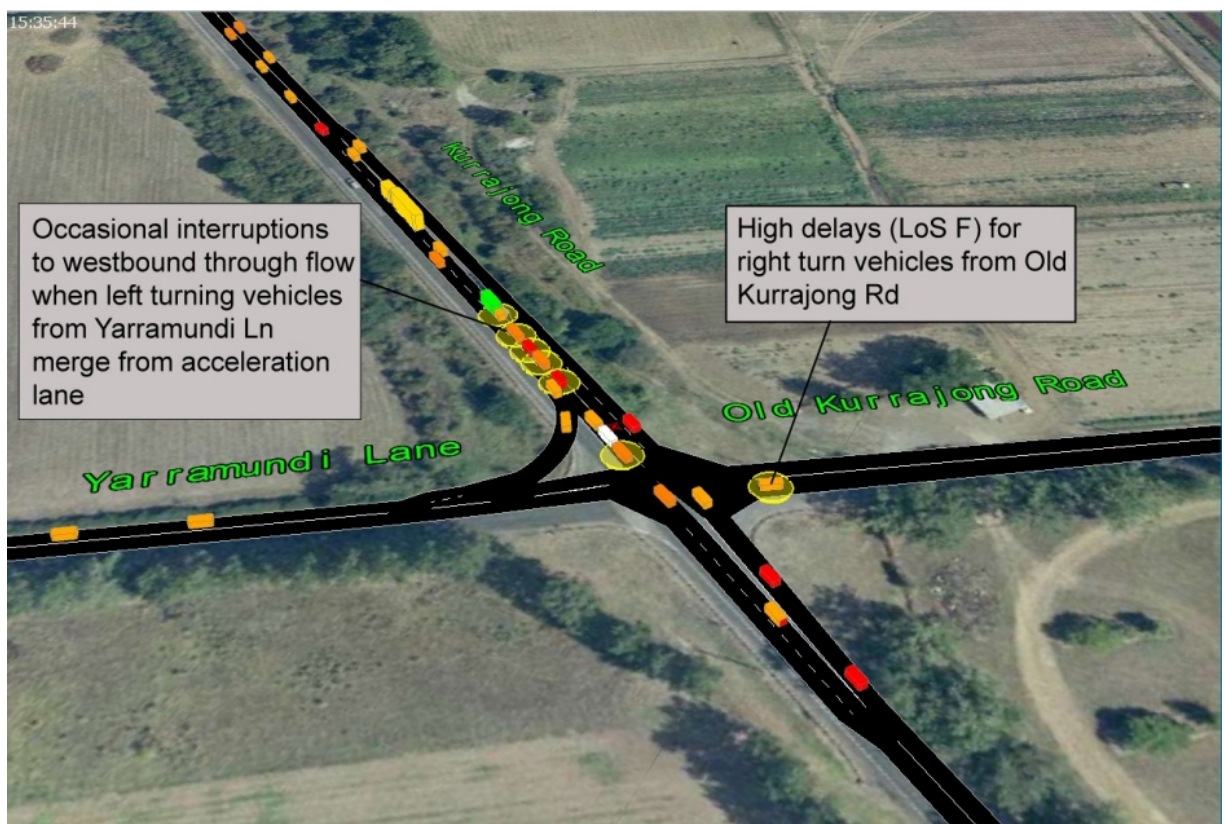


Figure D-15 2021 Option H PM Peak-Kurrajong Rd/Yarramundi Ln intersection



Figure D-16 2021 Option H PM Peak-Kurrajong Road/Bosworth St Intersection (with assumed clearway condition), showing expected queues along eastern (March St) and western (Kurrajong Rd) approaches