

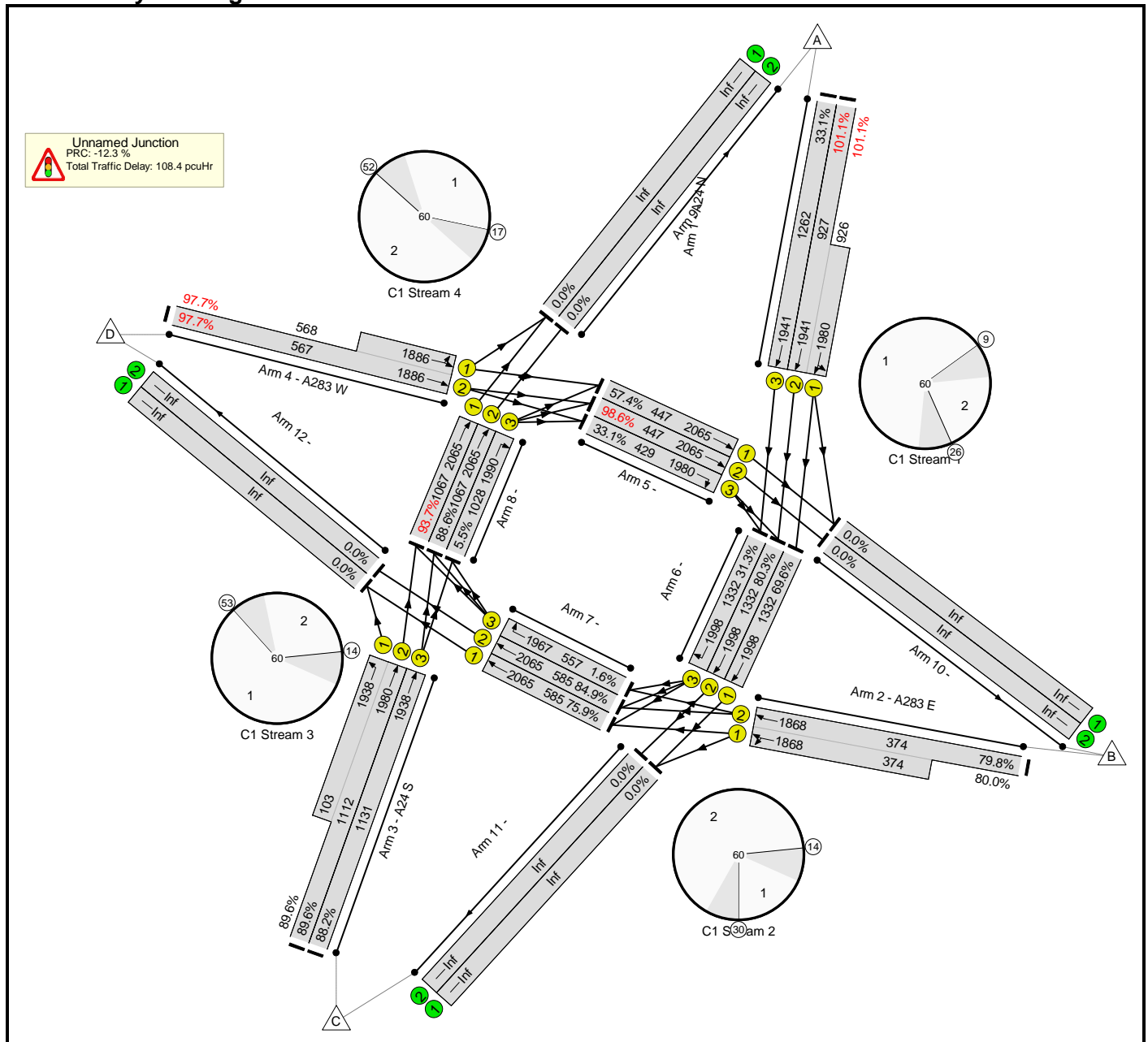
Appendix J Washington Roundabout Detailed Junction Modelling Outputs

Basic Results Summary
Basic Results Summary

User and Project Details

Project:	
Title:	
Location:	
Additional detail:	
File name:	Washington Rbt (3-Arm Circulatory).lsg3x
Author:	
Company:	
Address:	

Scenario 1: 'Local Plan Mitigation AM' (FG1: 'Local Plan Mitigation AM', Plan 1: 'Network Control Plan 1')
Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	101.1%	0	0	0	108.4	-	-
Unnamed Junction	-	-	-		-	-	-	-	-	-	101.1%	0	0	0	108.4	-	-
1/2+1/1	A24 N Ahead Left	U	A		1	38	-	1873	1941:1980	927+926	101.1 : 101.1%	-	-	-	31.7 (15.9+15.8)	60.9 (61.0:60.9)	54.4
1/3	A24 N Ahead	U	A		1	38	-	417	1941	1262	33.1%	-	-	-	0.8	6.8	3.3
2/2+2/1	A283 E Ahead Left	U	C		1	11	-	597	1868:1868	374+374	79.8 : 80.0%	-	-	-	5.7 (2.9+2.9)	34.5 (34.5:34.5)	6.7
3/2+3/1	A24 S Ahead Left	U	E		1	34	-	1088	1980:1938	1112+103	89.6 : 89.6%	-	-	-	7.1 (6.6+0.5)	23.5 (23.9:19.0)	18.6
3/3	A24 S Ahead	U	E		1	34	-	997	1938	1131	88.2%	-	-	-	6.5	23.5	17.7
4/2+4/1	A283 W Ahead Left	U	G		1	20	-	1109	1886:1886	567+568	97.7 : 97.7%	-	-	-	16.8 (8.4+8.4)	54.7 (54.7:54.7)	21.9
5/1	Ahead	U	B		1	12	-	257	2065	447	57.4%	-	-	-	1.2	17.3	4.3
5/2	Ahead	U	B		1	12	-	441	2065	447	98.6%	-	-	-	10.1	82.8	16.3
5/3	Right	U	B		1	12	-	142	1980	429	33.1%	-	-	-	0.4	10.2	1.8
6/1	Ahead	U	D		1	39	-	936	1998	1332	69.6%	-	-	-	1.2	4.7	1.4
6/2	Ahead	U	D		1	39	-	1079	1998	1332	80.3%	-	-	-	3.2	10.8	15.6
6/3	Right	U	D		1	39	-	417	1998	1332	31.3%	-	-	-	0.3	2.2	0.3
7/1	Ahead	U	F		1	16	-	444	2065	585	75.9%	-	-	-	4.7	38.0	8.6
7/2	Ahead	U	F		1	16	-	497	2065	585	84.9%	-	-	-	6.4	46.6	10.8
7/3	Right	U	F		1	16	-	9	1967	557	1.6%	-	-	-	0.1	31.2	0.2
8/1	Ahead	U	H		1	30	-	1000	2065	1067	93.7%	-	-	-	7.4	26.5	12.6
8/2	Ahead	U	H		1	30	-	945	2065	1067	88.6%	-	-	-	4.7	17.8	7.2
8/3	Right	U	H		1	30	-	57	1990	1028	5.5%	-	-	-	0.1	5.4	0.2

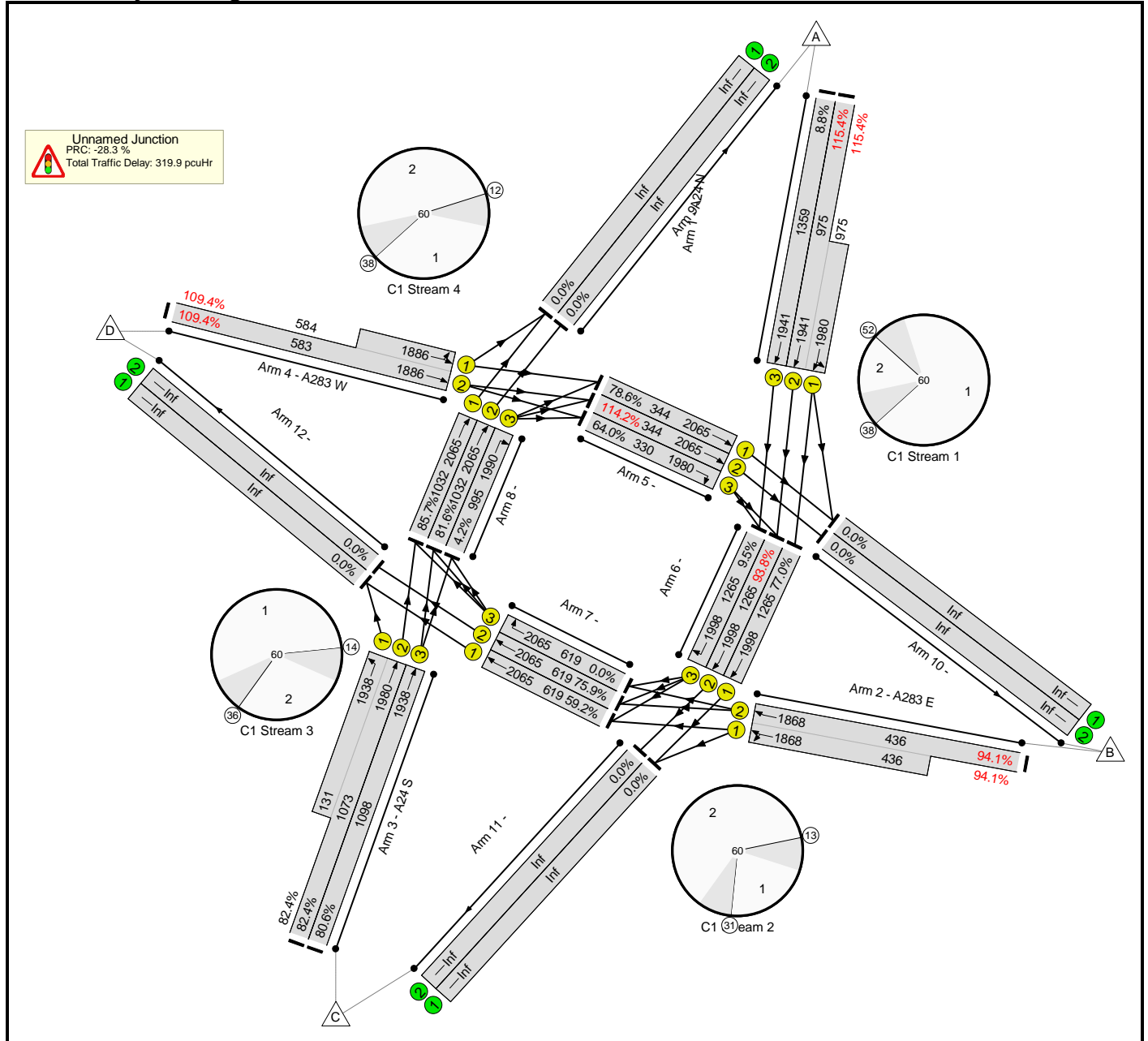
Basic Results Summary

C1	Stream: 1 PRC for Signalled Lanes (%)	-12.3	Total Delay for Signalled Lanes (pcuHr)	44.27	Cycle Time (s)	60
C1	Stream: 2 PRC for Signalled Lanes (%)	12.1	Total Delay for Signalled Lanes (pcuHr)	10.39	Cycle Time (s)	60
C1	Stream: 3 PRC for Signalled Lanes (%)	0.5	Total Delay for Signalled Lanes (pcuHr)	24.82	Cycle Time (s)	60
C1	Stream: 4 PRC for Signalled Lanes (%)	-8.5	Total Delay for Signalled Lanes (pcuHr)	28.96	Cycle Time (s)	60
	PRC Over All Lanes (%)	-12.3	Total Delay Over All Lanes(pcuHr)	108.44		

Basic Results Summary

Scenario 2: 'Local Plan Mitigation PM' (FG2: 'Local Plan Mitigation PM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	115.4%	0	0	0	319.9	-	-
Unnamed Junction	-	-	-		-	-	-	-	-	-	115.4%	0	0	0	319.9	-	-
1/2+1/1	A24 N Ahead Left	U	A		1	41	-	2251	1941:1980	975+975	115.4 : 115.4%	-	-	-	168.9 (84.5+84.4)	270.1 (270.1:270.1)	200.2
1/3	A24 N Ahead	U	A		1	41	-	120	1941	1359	8.8%	-	-	-	0.1	4.4	0.7
2/2+2/1	A283 E Ahead Left	U	C		1	13	-	820	1868:1868	436+436	94.1 : 94.1%	-	-	-	11.5 (5.8+5.8)	50.5 (50.5:50.5)	13.0
3/2+3/1	A24 S Ahead Left	U	E		1	33	-	993	1980:1938	1073+131	82.4 : 82.4%	-	-	-	5.0 (4.6+0.4)	18.1 (18.5:14.3)	13.9
3/3	A24 S Ahead	U	E		1	33	-	885	1938	1098	80.6%	-	-	-	4.6	18.7	13.6
4/2+4/1	A283 W Ahead Left	U	G		1	21	-	1277	1886:1886	583+584	109.4 : 109.4%	-	-	-	69.3 (34.6+34.7)	195.5 (195.5:195.5)	78.1
5/1	Ahead	U	B		1	9	-	294	2065	344	78.6%	-	-	-	2.8	37.4	6.2
5/2	Ahead	U	B		1	9	-	428	2065	344	114.2%	-	-	-	31.2	286.0	36.0
5/3	Right	U	B		1	9	-	231	1980	330	64.0%	-	-	-	1.6	26.6	4.4
6/1	Ahead	U	D		1	37	-	1125	1998	1265	77.0%	-	-	-	4.5	16.8	11.5
6/2	Ahead	U	D		1	37	-	1357	1998	1265	93.8%	-	-	-	9.8	29.6	20.0
6/3	Right	U	D		1	37	-	120	1998	1265	9.5%	-	-	-	0.2	5.9	0.8
7/1	Ahead	U	F		1	17	-	367	2065	619	59.2%	-	-	-	1.2	12.1	1.9
7/2	Ahead	U	F		1	17	-	470	2065	619	75.9%	-	-	-	2.1	16.1	2.8
7/3	Right	U	F		1	17	-	0	2065	619	0.0%	-	-	-	0.0	0.0	0.0
8/1	Ahead	U	H		1	29	-	885	2065	1032	85.7%	-	-	-	3.9	15.8	5.3
8/2	Ahead	U	H		1	29	-	843	2065	1032	81.6%	-	-	-	3.1	13.4	4.3
8/3	Right	U	H		1	29	-	42	1990	995	4.2%	-	-	-	0.1	5.8	0.1

Basic Results Summary

C1	Stream: 1 PRC for Signalled Lanes (%)	-28.3	Total Delay for Signalled Lanes (pcuHr)	204.60	Cycle Time (s)	60
C1	Stream: 2 PRC for Signalled Lanes (%)	-4.5	Total Delay for Signalled Lanes (pcuHr)	26.01	Cycle Time (s)	60
C1	Stream: 3 PRC for Signalled Lanes (%)	9.2	Total Delay for Signalled Lanes (pcuHr)	12.91	Cycle Time (s)	60
C1	Stream: 4 PRC for Signalled Lanes (%)	-21.6	Total Delay for Signalled Lanes (pcuHr)	76.42	Cycle Time (s)	60
	PRC Over All Lanes (%)	-28.3	Total Delay Over All Lanes(pcuHr)	319.95		

Junctions 9
ARCADY 9 - Roundabout Module
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Filename: Washington Rbt.j9
Path: \\pba.int\cbh\Transport\45539 Horsham Transport Study\Models\Forecasting\09 Junction Models\Core Scenario\Washington Rbt J9
Report generation date: 30/04/2021 16:08:43

- »2036 Baseline, AM
- »2036 Baseline, PM

Summary of junction performance

		AM				PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
2036 Baseline										
Arm 1	D1	3.8	19.83	0.78	C	D2	1.9	12.57	0.65	B
Arm 2		50.7	92.32	1.04	F		15.4	29.60	0.95	D
Arm 3		86.7	245.14	1.15	F		110.2	262.65	1.18	F
Arm 4		139.7	239.54	1.13	F		437.3	823.92	1.35	F

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	
Location	
Site number	
Date	30/04/2021
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	CORP\dansmith
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2036 Baseline	AM	ONE HOUR	08:00	09:30	15
D2	2036 Baseline	PM	ONE HOUR	17:00	18:30	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2036 Baseline, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 1 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	Arm 3 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	168.97	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	untitled	
2	untitled	
3	untitled	
4	untitled	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1	3.71	6.86	69.0	20.4	75.6	26.6	
2	7.67	7.69	0.4	32.3	70.7	27.4	
3	2.81	7.80	47.1	39.5	73.8	31.7	
4	6.50	7.42	20.5	31.8	71.0	8.8	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1	0.530	1982
2	0.617	2393
3	0.543	2017
4	0.634	2415

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2036 Baseline	AM	ONE HOUR	08:00	09:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	651	100.000
2		✓	1649	100.000
3		✓	1111	100.000
4		✓	1968	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	51	532	68
	2	51	0	48	1550
	3	682	93	0	336
	4	0	1571	397	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	15	15	15	15
	2	0	0	0	0
	3	12	12	12	12
	4	8	8	8	8

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.78	19.83	3.8	C
2	1.04	92.32	50.7	F
3	1.15	245.14	86.7	F
4	1.13	239.54	139.7	F

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	490	1540	1166	0.420	487	0.8	6.064	A
2	1241	745	1933	0.642	1234	1.8	5.105	A
3	836	1249	1338	0.625	829	1.8	7.811	A
4	1482	617	2024	0.732	1470	2.9	6.887	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	585	1828	1013	0.578	582	1.5	9.543	A
2	1482	889	1844	0.804	1474	3.9	9.513	A
3	999	1492	1207	0.828	987	4.8	17.449	C
4	1769	734	1949	0.908	1746	8.8	17.370	C

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	717	1988	929	0.772	709	3.6	18.166	C
2	1816	1036	1753	1.036	1709	30.6	46.127	E
3	1223	1733	1076	1.137	1060	45.8	98.994	F
4	2167	792	1912	1.133	1899	75.6	88.668	F

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	717	1999	923	0.777	716	3.8	19.830	C
2	1816	1045	1748	1.039	1735	50.7	92.320	F
3	1223	1759	1061	1.153	1059	86.7	233.192	F
4	2167	793	1912	1.133	1911	139.7	208.950	F

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	585	1976	935	0.626	592	2.0	12.334	B
2	1482	926	1821	0.814	1666	4.9	40.514	E
3	999	1679	1105	0.904	1091	63.7	245.136	F
4	1769	812	1900	0.931	1885	110.7	239.536	F

09:15 - 09:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	490	1983	931	0.526	493	1.3	9.503	A
2	1241	836	1877	0.662	1253	2.0	5.877	A
3	836	1268	1328	0.630	1083	2.0	41.839	E
4	1482	794	1911	0.775	1892	8.0	117.321	F

2036 Baseline, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 1 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	Arm 3 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	388.34	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	2036 Baseline	PM	ONE HOUR	17:00	18:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	500	100.000
2		✓	1808	100.000
3		✓	1243	100.000
4		✓	2279	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	89	411	0
	2	42	0	366	1400
	3	583	308	0	352
	4	0	2227	52	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	3	3	3	3
	2	0	0	0	0
	3	5	5	0	5
	4	3	3	3	3

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.65	12.57	1.9	B
2	0.95	29.60	15.4	D
3	1.18	262.65	110.2	F
4	1.35	823.92	437.3	F

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	376	1921	964	0.390	374	0.7	6.253	A
2	1361	346	2179	0.625	1355	1.6	4.333	A
3	936	1080	1430	0.654	928	1.9	7.419	A
4	1716	697	1973	0.870	1691	6.2	12.251	B

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	449	2139	849	0.530	448	1.1	9.202	A
2	1625	410	2139	0.760	1620	3.1	6.852	A
3	1117	1292	1315	0.850	1104	5.3	16.925	C
4	2049	829	1889	1.085	1866	52.0	65.415	F

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	551	2145	845	0.651	548	1.9	12.336	B
2	1991	493	2089	0.953	1951	13.0	21.673	C
3	1369	1556	1172	1.168	1160	57.4	108.569	F
4	2509	877	1859	1.350	1858	214.8	263.506	F

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	551	2146	845	0.652	550	1.9	12.571	B
2	1991	495	2087	0.954	1981	15.4	29.603	D
3	1369	1580	1159	1.181	1157	110.2	262.654	F
4	2509	876	1859	1.349	1859	377.2	582.840	F

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	449	2125	856	0.525	452	1.2	9.254	A
2	1625	413	2138	0.760	1674	3.3	8.534	A
3	1117	1335	1292	0.865	1280	69.6	252.080	F
4	2049	956	1808	1.133	1808	437.3	806.235	F

18:15 - 18:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	376	2141	848	0.444	378	0.8	7.913	A
2	1361	353	2175	0.626	1368	1.7	4.493	A
3	936	1091	1424	0.657	1206	2.1	48.732	E
4	1716	896	1846	0.929	1842	405.7	823.921	F