

Junctions 9
ARCADY 9 - Roundabout Module
Version: 9.0.0.4211 [] © Copyright TRL Limited, 2016
For sales and distribution information, program advice and maintenance, contact TRL: Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk
The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Juntion A - B4265_Proposed NAR.j9
Path: K:\data\A097000-A097999\A097705 - NAR, St Athan\A097705 Transport\Analysis\Arcady
Report generation date: 01/12/2016 10:33:18

- »2019, AM
- »2019, PM
- »2029, AM
- »2029, PM

Summary of junction performance

	AM				PM			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
2019								
Arm 1	0.2	2.83	0.19	A	0.2	2.81	0.18	A
Arm 2	0.0	2.38	0.02	A	0.4	3.17	0.26	A
Arm 3	0.3	2.83	0.20	A	0.4	3.13	0.25	A
2029								
Arm 1	1.2	7.11	0.53	A	0.5	3.95	0.31	A
Arm 2	0.4	3.25	0.28	A	8.3	21.22	0.90	C
Arm 3	3.1	9.22	0.74	A	1.4	5.92	0.56	A

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

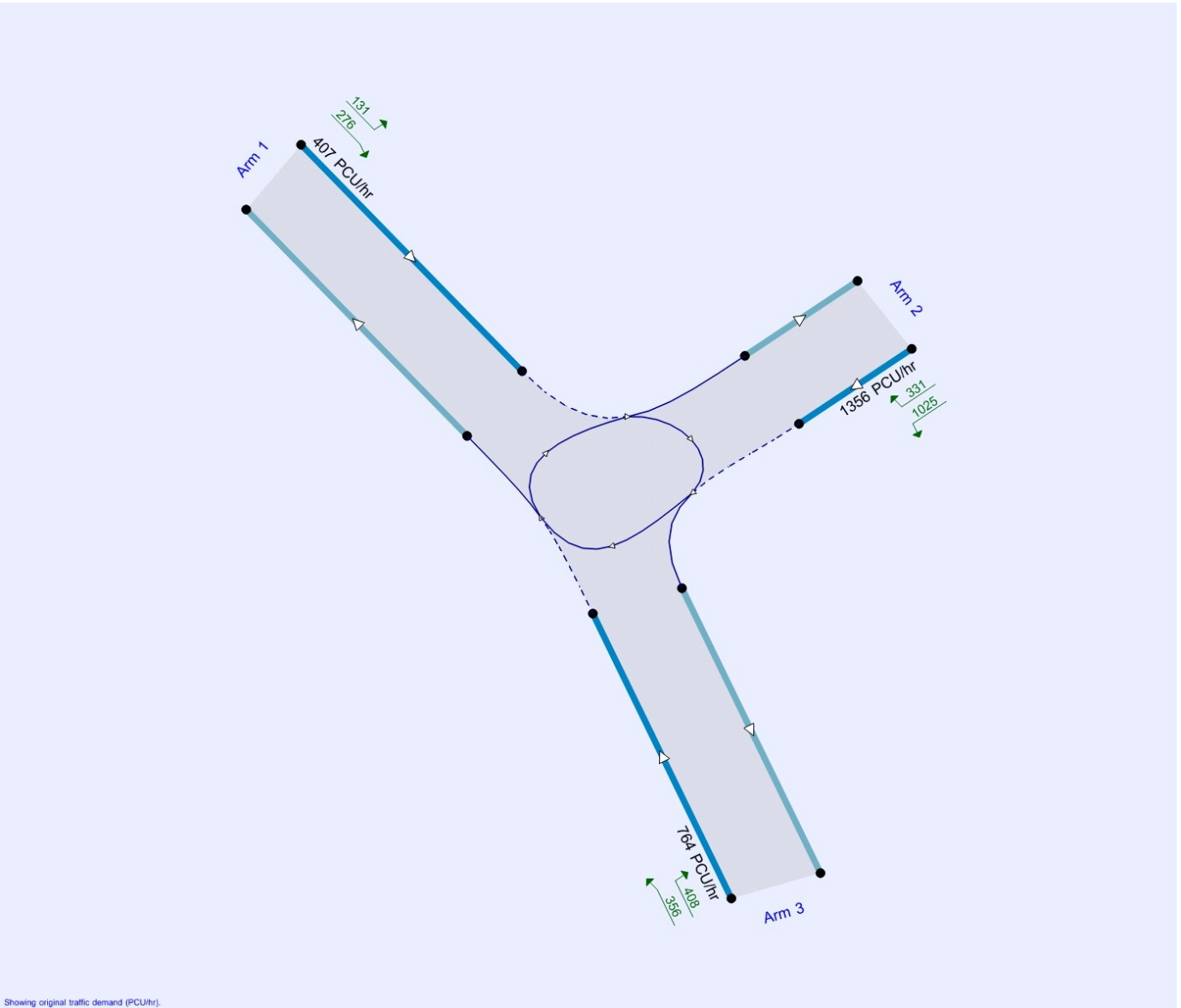
File summary

File Description

Title	Junction 2
Location	B4265 / Proposed NAR
Site number	
Date	16/08/2016
Version	
Status	(new file)
Identifier	
Client	Welsh Government
Jobnumber	A099705
Enumerator	WYG"ben.jones2
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



The junction diagram reflects the last run of Junctions.

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

Scenario name	Time Period name	Traffic profile type	Model start time (HH:mm)	Model finish time (HH:mm)	Time segment length (min)
2019	AM	ONE HOUR	08:00	09:30	15
2019	PM	ONE HOUR	17:00	18:30	15
2029	AM	ONE HOUR	08:00	09:30	15
2029	PM	ONE HOUR	17:00	18:30	15



2019, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

Junction Network

Junctions

Junction	Name	Junction Type	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	2.81	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	B4265 (W)	
2	Proposed NAR	
3	B4265 (E)	

Capacity Options

Arm	Minimum capacity (PCU/hr)	Maximum capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00

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	3.65	7.30	15.0	45.0	49.0	41.4	
2	3.65	7.40	24.0	28.0	49.0	34.0	
3	3.65	7.30	18.0	25.0	49.0	42.3	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1	0.610	1706.327
2	0.644	1863.620
3	0.607	1718.220

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	Model start time (HH:mm)	Model finish time (HH:mm)	Time segment length (min)
D1	2019	AM	ONE HOUR	08:00	09:30	15

Vehicle mix varies over turn	Vehicle mix varies over entry	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		✓	289.00	100.000
2		✓	25.00	100.000
3		✓	310.00	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1	2	3
From	1	0.000	6.000	283.000
	2	6.000	0.000	19.000
	3	291.000	19.000	0.000

Vehicle Mix

Heavy Vehicle proportion

		To		
		1	2	3
From	1	8	8	8
	2	8	8	8
	3	8	8	8

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
1	0.19	2.83	0.2	A
2	0.02	2.38	0.0	A
3	0.20	2.83	0.3	A

Main Results for each time segment

Main results: (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)	LOS
1	217.57	14.26	1697.62	0.128	216.94	0.2	2.624	A
2	18.82	212.44	1726.80	0.011	18.77	0.0	2.275	A
3	233.38	4.51	1715.49	0.136	232.71	0.2	2.620	A

Main results: (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)	LOS
1	259.81	17.07	1695.91	0.153	259.66	0.2	2.706	A
2	22.47	254.27	1699.86	0.013	22.46	0.0	2.317	A
3	278.68	5.39	1714.95	0.163	278.53	0.2	2.706	A

Main results: (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)	LOS
1	318.19	20.91	1693.57	0.188	317.98	0.2	2.826	A
2	27.53	311.38	1663.08	0.017	27.51	0.0	2.376	A
3	341.32	6.60	1714.21	0.199	341.08	0.3	2.831	A

Main results: (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)	LOS
1	318.19	20.92	1693.56	0.188	318.19	0.2	2.826	A
2	27.53	311.59	1662.95	0.017	27.53	0.0	2.376	A
3	341.32	6.61	1714.21	0.199	341.31	0.3	2.831	A

Main results: (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)	LOS
1	259.81	17.09	1695.89	0.153	260.02	0.2	2.707	A
2	22.47	254.62	1699.64	0.013	22.49	0.0	2.317	A
3	278.68	5.40	1714.94	0.163	278.91	0.2	2.707	A

Main results: (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)	LOS
1	217.57	14.31	1697.59	0.128	217.72	0.2	2.627	A
2	18.82	213.20	1726.31	0.011	18.83	0.0	2.278	A
3	233.38	4.52	1715.48	0.136	233.54	0.2	2.623	A



2019, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

Junction Network

Junctions

Junction	Name	Junction Type	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	3.06	A

Junction Network Options

[same as above]

Arms

Arms

[same as above]

Capacity Options

[same as above]

Roundabout Geometry

[same as above]

Slope / Intercept / Capacity

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Model start time (HH:mm)	Model finish time (HH:mm)	Time segment length (min)
D2	2019	PM	ONE HOUR	17:00	18:30	15

Vehicle mix varies over turn	Vehicle mix varies over entry	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		✓	282.00	100.000
2		✓	400.00	100.000
3		✓	375.00	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1	2	3
From	1	0.000	6.000	276.000
	2	98.000	0.000	302.000
	3	356.000	19.000	0.000

Vehicle Mix

Heavy Vehicle proportion

		To		
		1	2	3
From	1	8	8	8
	2	8	8	8
	3	8	8	8

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
1	0.18	2.81	0.2	A
2	0.26	3.17	0.4	A
3	0.25	3.13	0.4	A

Main Results for each time segment

Main results: (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)	LOS
1	212.30	14.26	1697.62	0.125	211.69	0.2	2.615	A
2	301.14	207.18	1730.19	0.174	300.23	0.2	2.718	A
3	282.32	73.56	1673.59	0.169	281.45	0.2	2.791	A

Main results: (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)	LOS
1	253.51	17.07	1695.91	0.149	253.37	0.2	2.694	A
2	359.59	247.98	1703.91	0.211	359.35	0.3	2.891	A
3	337.12	88.04	1664.80	0.203	336.90	0.3	2.927	A

Main results: (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)	LOS
1	310.49	20.90	1693.57	0.183	310.28	0.2	2.810	A
2	440.41	303.68	1668.04	0.264	440.02	0.4	3.166	A
3	412.88	107.80	1652.81	0.250	412.54	0.4	3.134	A

Main results: (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)	LOS
1	310.49	20.92	1693.56	0.183	310.49	0.2	2.810	A
2	440.41	303.88	1667.91	0.264	440.40	0.4	3.166	A
3	412.88	107.90	1652.75	0.250	412.88	0.4	3.135	A

Main results: (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)	LOS
1	253.51	17.10	1695.89	0.149	253.72	0.2	2.695	A
2	359.59	248.32	1703.69	0.211	359.98	0.3	2.893	A
3	337.12	88.19	1664.70	0.203	337.45	0.3	2.931	A

Main results: (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)	LOS
1	212.30	14.32	1697.59	0.125	212.45	0.2	2.619	A
2	301.14	207.93	1729.71	0.174	301.39	0.2	2.721	A
3	282.32	73.84	1673.41	0.169	282.54	0.2	2.795	A

2029, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

Junction Network

Junctions

Junction	Name	Junction Type	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	7.46	A

Junction Network Options

[same as above]

Arms

Arms

[same as above]

Capacity Options

[same as above]

Roundabout Geometry

[same as above]

Slope / Intercept / Capacity

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Model start time (HH:mm)	Model finish time (HH:mm)	Time segment length (min)
D3	2029	AM	ONE HOUR	08:00	09:30	15

Vehicle mix varies over turn	Vehicle mix varies over entry	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		✓	550.00	100.000
2		✓	424.00	100.000
3		✓	1116.00	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1	2	3
From	1	0.000	267.000	283.000
	2	103.000	0.000	321.000
	3	291.000	825.000	0.000

Vehicle Mix

Heavy Vehicle proportion

		To		
		1	2	3
From	1	8	8	8
	2	8	8	8
	3	8	8	8

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
1	0.53	7.11	1.2	A
2	0.28	3.25	0.4	A
3	0.74	9.22	3.1	A

Main Results for each time segment

Main results: (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)	LOS
1	414.07	617.91	1329.13	0.312	412.13	0.5	4.231	A
2	319.21	212.06	1727.05	0.185	318.23	0.2	2.758	A
3	840.18	77.31	1671.31	0.503	835.86	1.1	4.630	A

Main results: (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)	LOS
1	494.44	740.07	1254.55	0.394	493.60	0.7	5.104	A
2	381.17	253.98	1700.05	0.224	380.90	0.3	2.947	A
3	1003.26	92.53	1662.07	0.604	1001.11	1.6	5.863	A

Main results: (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)	LOS
1	605.56	904.14	1154.39	0.525	603.65	1.2	7.036	A
2	466.83	310.61	1663.58	0.281	466.40	0.4	3.248	A
3	1228.74	113.30	1649.47	0.745	1223.06	3.0	8.998	A

Main results: (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)	LOS
1	605.56	908.18	1151.93	0.526	605.51	1.2	7.115	A
2	466.83	311.56	1662.97	0.281	466.83	0.4	3.249	A
3	1228.74	113.40	1649.41	0.745	1228.52	3.1	9.223	A

Main results: (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)	LOS
1	494.44	745.86	1251.01	0.395	496.33	0.7	5.164	A
2	381.17	255.39	1699.14	0.224	381.59	0.3	2.951	A
3	1003.26	92.70	1661.97	0.604	1008.95	1.7	6.004	A

Main results: (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)	LOS
1	414.07	622.78	1326.15	0.312	414.94	0.5	4.270	A
2	319.21	213.51	1726.12	0.185	319.48	0.2	2.766	A
3	840.18	77.61	1671.13	0.503	842.46	1.1	4.706	A

2029, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

Junction Network

Junctions

Junction	Name	Junction Type	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	13.81	B

Junction Network Options

[same as above]

Arms

Arms

[same as above]

Capacity Options

[same as above]

Roundabout Geometry

[same as above]

Slope / Intercept / Capacity

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Model start time (HH:mm)	Model finish time (HH:mm)	Time segment length (min)
D4	2029	PM	ONE HOUR	17:00	18:30	15

Vehicle mix varies over turn	Vehicle mix varies over entry	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		✓	407.00	100.000
2		✓	1356.00	100.000
3		✓	764.00	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1	2	3
From	1	0.000	131.000	276.000
	2	331.000	0.000	1025.000
	3	356.000	408.000	0.000

Vehicle Mix

Heavy Vehicle proportion

		To		
		1	2	3
From	1	8	8	8
	2	8	8	8
	3	8	8	8

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
1	0.31	3.95	0.5	A
2	0.90	21.22	8.3	C
3	0.56	5.92	1.4	A

Main Results for each time segment

Main results: (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)	LOS
1	306.41	305.84	1519.63	0.202	305.32	0.3	3.198	A
2	1020.87	207.05	1730.27	0.590	1014.74	1.5	5.390	A
3	575.18	247.70	1567.92	0.367	572.69	0.6	3.897	A

Main results: (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)	LOS
1	365.88	366.27	1482.74	0.247	365.56	0.4	3.480	A
2	1219.02	247.90	1703.97	0.715	1214.60	2.6	7.872	A
3	686.82	296.48	1538.32	0.446	685.85	0.9	4.556	A

Main results: (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)	LOS
1	448.12	448.16	1432.75	0.313	447.57	0.5	3.945	A
2	1492.98	303.51	1668.15	0.895	1472.69	7.7	18.248	C
3	841.18	359.48	1500.09	0.561	839.20	1.4	5.865	A

Main results: (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)	LOS
1	448.12	449.19	1432.12	0.313	448.11	0.5	3.950	A
2	1492.98	303.88	1667.91	0.895	1490.49	8.3	21.216	C
3	841.18	363.83	1497.45	0.562	841.12	1.4	5.923	A

Main results: (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)	LOS
1	365.88	367.83	1481.79	0.247	366.42	0.4	3.489	A
2	1219.02	248.48	1703.59	0.716	1241.14	2.8	8.785	A
3	686.82	302.96	1534.38	0.448	688.78	0.9	4.609	A

Main results: (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)	LOS
1	306.41	307.70	1518.49	0.202	306.74	0.3	3.211	A
2	1020.87	208.01	1729.66	0.590	1025.76	1.6	5.560	A
3	575.18	250.39	1566.29	0.367	576.19	0.6	3.932	A