

Appendix H 2015 Junction Capacity Results

Junctions 8	
ARCADY 8 - Roundabout Module	
Version: 8.0.2.316 [14 Feb 2013] © Copyright TRL Limited, 2013	
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Filename: Hambledon Rd_Milton Rd_Elettra Ave_AM - 2015 Base.arc8
Path: J:\29169 Elettra Avenue, Waterloo\Technical\Transport\Junction Assessments\2015 Base
Report generation date: 30/08/2013 12:45:36

» (Default Analysis Set) - 2015 Base, AM

Summary of junction performance

	AM			
	Queue (Veh)	Delay (s)	RFC	LOS
A1 - 2015 Base				
Milton Road	2.75	15.00	0.74	B
Hambledon Road (S)	6.50	17.77	0.87	C
Elettra Ave	0.26	3.27	0.21	A
Hambledon Road (N)	1.30	4.94	0.57	A

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

"D1 - 2015 Base, AM" model duration: 08:00 - 09:00

Run using Junctions 8.0.2.316 at 30/08/2013 12:45:35

File summary

File Description

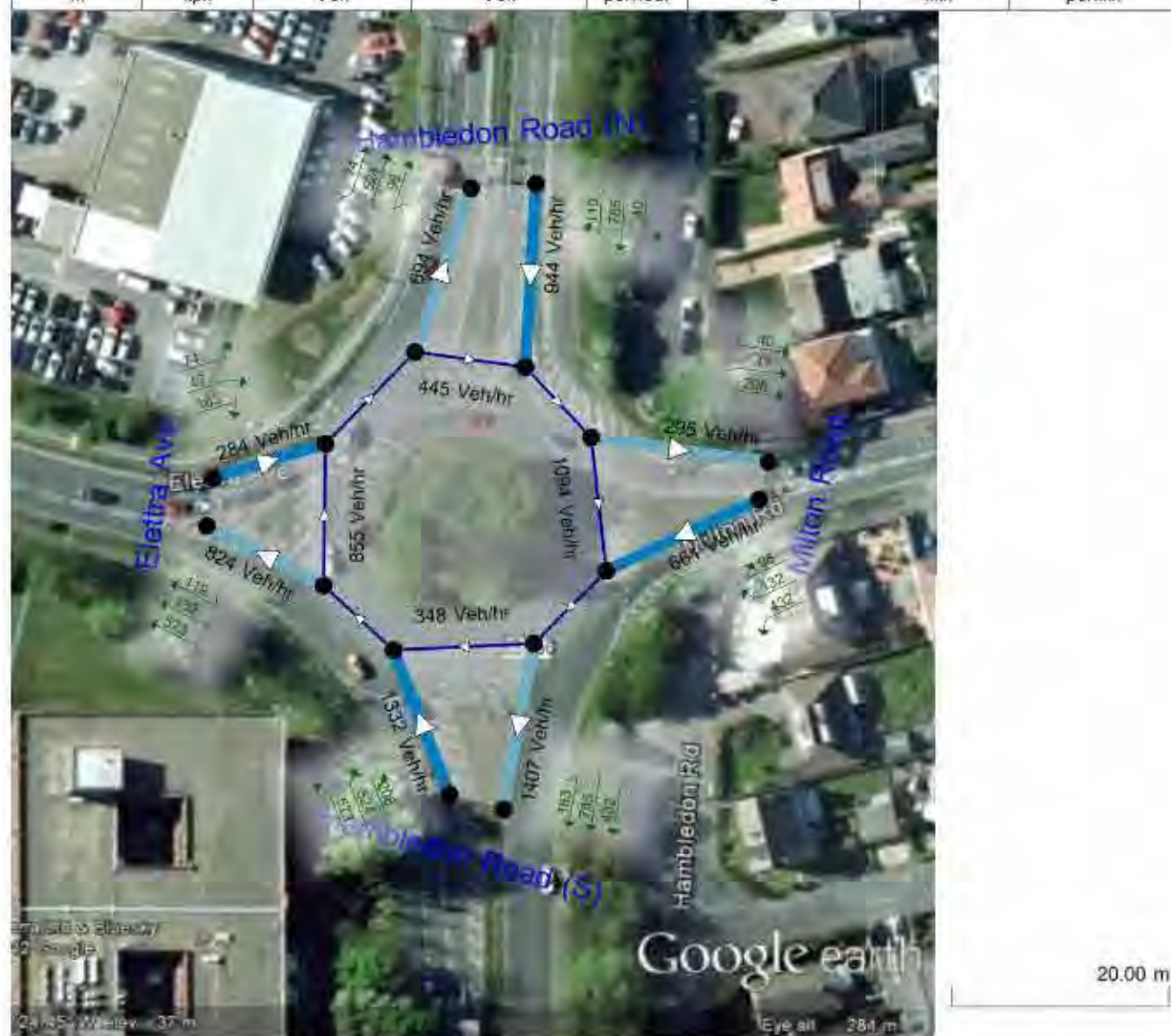
Title	Hambledon Rd / Milton Rd / Elettra Ave
Location	BAE Waterloo
Site Number	
Date	27/08/2013
Version	
Status	
Identifier	
Client	BAE
Jobnumber	29169
Enumerator	PBA\lekeen
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75			N/A	0.85	36.00	20.00

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	Veh	Veh	perHour	s	-Min	perMin



That picture shows modeled flow through the junction entry and slip flows. Veh/hr
Time Segment: (08:00-09:15)
Scenario Analysis Set: '01' - Default Set 'D' - 2015 Base, AM

The junction diagram reflects the last run of ARCADY.

(Default Analysis Set) - 2015 Base, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Hambledon Road (S) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	Eletra Ave - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	Hambledon Road (N) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2015 Base, AM	2015 Base	AM		FLAT	08:00	09:00	60	15				✓		

Junction Network

Junctions

Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Do Geometric Delay	Junction Delay (s)	Junction LOS
(untitled)	Roundabout	1,2,3,4				12.21	B

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Name	Description
Milton Road	Milton Road	
Hambledon Road (S)	Hambledon Road (S)	
Elettra Ave	Elettra Ave	
Hambledon Road (N)	Hambledon Road (N)	

Capacity Options

Name	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
Milton Road	0.00	99999.00		0.00
Hambledon Road (S)	0.00	99999.00		0.00
Elettra Ave	0.00	99999.00		0.00
Hambledon Road (N)	0.00	99999.00		0.00

Roundabout Geometry

Name	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
Milton Road	3.40	4.20	24.90	21.00	54.00	22.50	
Hambledon Road (S)	7.20	8.20	55.80	54.60	54.00	25.00	
Elettra Ave	3.30	7.50	52.88	21.00	54.00	23.00	
Hambledon Road (N)	3.60	7.70	127.60	6.00	54.00	22.00	

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Pedestrian Crossings

Name	Crossing Type
Milton Road	None
Hambledon Road (S)	None
Elettra Ave	None
Hambledon Road (N)	None

Slope / Intercept / Capacity

Arm Intercept Adjustments

Name	Type	Reason	Direct Intercept Adjustment (PCU/hr)	Percentage Intercept Adjustment (%)
Milton Road	None			
Hambledon Road (S)	Direct	Imbalance of flows	-1017.00	
Elettra Ave	None			
Hambledon Road (N)	None			

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
Milton Road		(calculated)	(calculated)	0.521	1285.444
Hambledon Road (S)		(calculated)	(calculated)	0.766	1570.472
Elettra Ave		(calculated)	(calculated)	0.664	2068.229
Hambledon Road (N)		(calculated)	(calculated)	0.625	2025.835

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

Arm Capacity Adjustments

Name	Type	Reason	Direct Capacity Adjustment (PCU/hr)	Percentage Capacity Adjustment (%)
Milton Road	Percentage	To validate against queue surveys		135.00
Hambledon Road (S)	Percentage	To validate against queue surveys		125.00
Elettra Ave	None			
Hambledon Road (N)	None			

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
Milton Road	FLAT	✓	671.00	100.000
Hambledon Road (S)	FLAT	✓	1355.00	100.000
Elettra Ave	FLAT	✓	285.00	100.000
Hambledon Road (N)	FLAT	✓	949.00	100.000

Turning Proportions

Turning Counts or Proportions (Veh/hr) - (untitled) (for whole period)

		To			
		1	2	3	4
From	1	0.000	439.000	134.000	98.000
	2	212.000	27.000	583.000	533.000
	3	47.000	164.000	0.000	74.000
	4	40.000	789.000	120.000	0.000

Turning Proportions (Veh) - (untitled) (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.65	0.20	0.15
	2	0.16	0.02	0.43	0.39
	3	0.16	0.58	0.00	0.26
	4	0.04	0.83	0.13	0.00

Vehicle Mix

Average PCU Per Vehicle - (untitled) (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.039	1.000	1.010
	2	1.099	1.000	1.012	1.053
	3	1.023	1.072	1.000	1.029
	4	1.025	1.025	1.045	1.000

Heavy Vehicle Percentages - (untitled) (for whole period)

		To			
		1	2	3	4
From	1	0.000	3.900	0.000	1.000
	2	9.900	0.000	1.200	5.300
	3	2.300	7.200	0.000	2.900
	4	2.500	2.500	4.500	0.000

Results

Results Summary for whole modelled period

Name	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (s)
Milton Road	0.74	15.00	2.75	B	671.00	671.00	156.96	14.04	2.62	157.21	14.06
Hambleton Road (S)	0.87	17.77	6.50	C	1355.00	1355.00	357.94	15.85	5.97	358.75	15.89
Elettra Ave	0.21	3.27	0.26	A	285.00	285.00	15.39	3.24	0.26	15.39	3.24
Hambleton Road (N)	0.57	4.94	1.30	A	949.00	949.00	76.71	4.85	1.28	76.74	4.85

Main Results for each time segment

Main results: (08:00-08:15)

Name	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
Milton Road	671.00	167.75	660.60	294.96	1094.03	0.00	914.76	335.27	0.734	0.00	2.60	13.659	B
Hambledon Road (S)	1355.00	338.75	1331.62	1406.88	347.76	0.00	1559.47	1637.57	0.869	0.00	5.84	14.576	B
Elettra Ave	285.00	71.25	283.98	824.22	855.16	0.00	1393.73	1306.99	0.204	0.00	0.26	3.241	A
Hambledon Road (N)	949.00	237.25	943.87	694.02	445.12	0.00	1680.33	1155.57	0.565	0.00	1.28	4.856	A

Main results: (08:15-08:30)

Name	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
Milton Road	671.00	167.75	670.57	298.73	1099.91	0.00	910.61	335.27	0.737	2.60	2.71	14.935	B
Hambledon Road (S)	1355.00	338.75	1353.30	1418.64	351.85	0.00	1555.68	1637.57	0.871	5.84	6.27	17.453	C
Elettra Ave	285.00	71.25	284.99	836.18	868.97	0.00	1384.51	1306.99	0.206	0.26	0.26	3.273	A
Hambledon Road (N)	949.00	237.25	948.95	704.27	449.70	0.00	1677.31	1155.57	0.566	1.28	1.29	4.942	A

Main results: (08:30-08:45)

Name	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
Milton Road	671.00	167.75	670.87	298.90	1099.97	0.00	910.57	335.27	0.737	2.71	2.74	14.984	B
Hambledon Road (S)	1355.00	338.75	1354.38	1418.89	351.95	0.00	1555.58	1637.57	0.871	6.27	6.42	17.684	C
Elettra Ave	285.00	71.25	285.00	836.71	869.63	0.00	1384.07	1306.99	0.206	0.26	0.26	3.274	A
Hambledon Road (N)	949.00	237.25	948.99	704.74	449.89	0.00	1677.18	1155.57	0.566	1.29	1.30	4.943	A

Main results: (08:45-09:00)

Name	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
Milton Road	671.00	167.75	670.93	298.95	1099.98	0.00	910.56	335.27	0.737	2.74	2.75	14.999	B
Hambledon Road (S)	1355.00	338.75	1354.68	1418.94	351.98	0.00	1555.56	1637.57	0.871	6.42	6.50	17.771	C
Elettra Ave	285.00	71.25	285.00	836.85	869.81	0.00	1383.95	1306.99	0.206	0.26	0.26	3.275	A
Hambledon Road (N)	949.00	237.25	948.99	704.87	449.94	0.00	1677.15	1155.57	0.566	1.30	1.30	4.943	A

Queueing Delay Results for each time segment

Queueing Delay results: (08:00-08:15)

Name	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
Milton Road	34.88	2.33	13.659	B	B
Hambledon Road (S)	74.07	4.94	14.576	B	B
Elettra Ave	3.76	0.25	3.241	A	A
Hambledon Road (N)	18.46	1.23	4.856	A	A

Queueing Delay results: (08:15-08:30)

Name	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
Milton Road	39.99	2.67	14.935	B	B
Hambledon Road (S)	91.51	6.10	17.453	C	B
Elettra Ave	3.86	0.26	3.273	A	A
Hambledon Road (N)	19.34	1.29	4.942	A	A

Queueing Delay results: (08:30-08:45)

Name	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
Milton Road	40.87	2.72	14.984	B	B
Hambledon Road (S)	95.34	6.36	17.684	C	B
Elettra Ave	3.88	0.26	3.274	A	A
Hambledon Road (N)	19.44	1.30	4.943	A	A

Queueing Delay results: (08:45-09:00)

Name	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
Milton Road	41.22	2.75	14.999	B	B
Hambledon Road (S)	97.01	6.47	17.771	C	B
Elettra Ave	3.88	0.26	3.275	A	A
Hambledon Road (N)	19.47	1.30	4.943	A	A

Junctions 8	
ARCADY 8 - Roundabout Module	
Version: 8.0.2.316 [14 Feb 2013] © Copyright TRL Limited, 2013	
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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: Hambledon Rd_Milton Rd_Elettra Ave_PM - 2015 Base.arc8
Path: J:\29169 Elettra Avenue, Waterloo\Technical\Transport\Junction Assessments\2015 Base
Report generation date: 30/08/2013 12:42:40

» (Default Analysis Set) - 2015 Base, PM

Summary of junction performance

	PM			
	Queue (Veh)	Delay (s)	RFC	LOS
A1 - 2015 Base				
Arm 1	1.69	14.38	0.63	B
Arm 2	1.80	4.21	0.64	A
Arm 3	27.89	122.48	1.00	F
Arm 4	3.47	19.54	0.78	C

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

"D2 - 2015 Base, PM" model duration: 16:45 - 17:45

Run using Junctions 8.0.2.316 at 30/08/2013 12:42:39

File summary

File Description

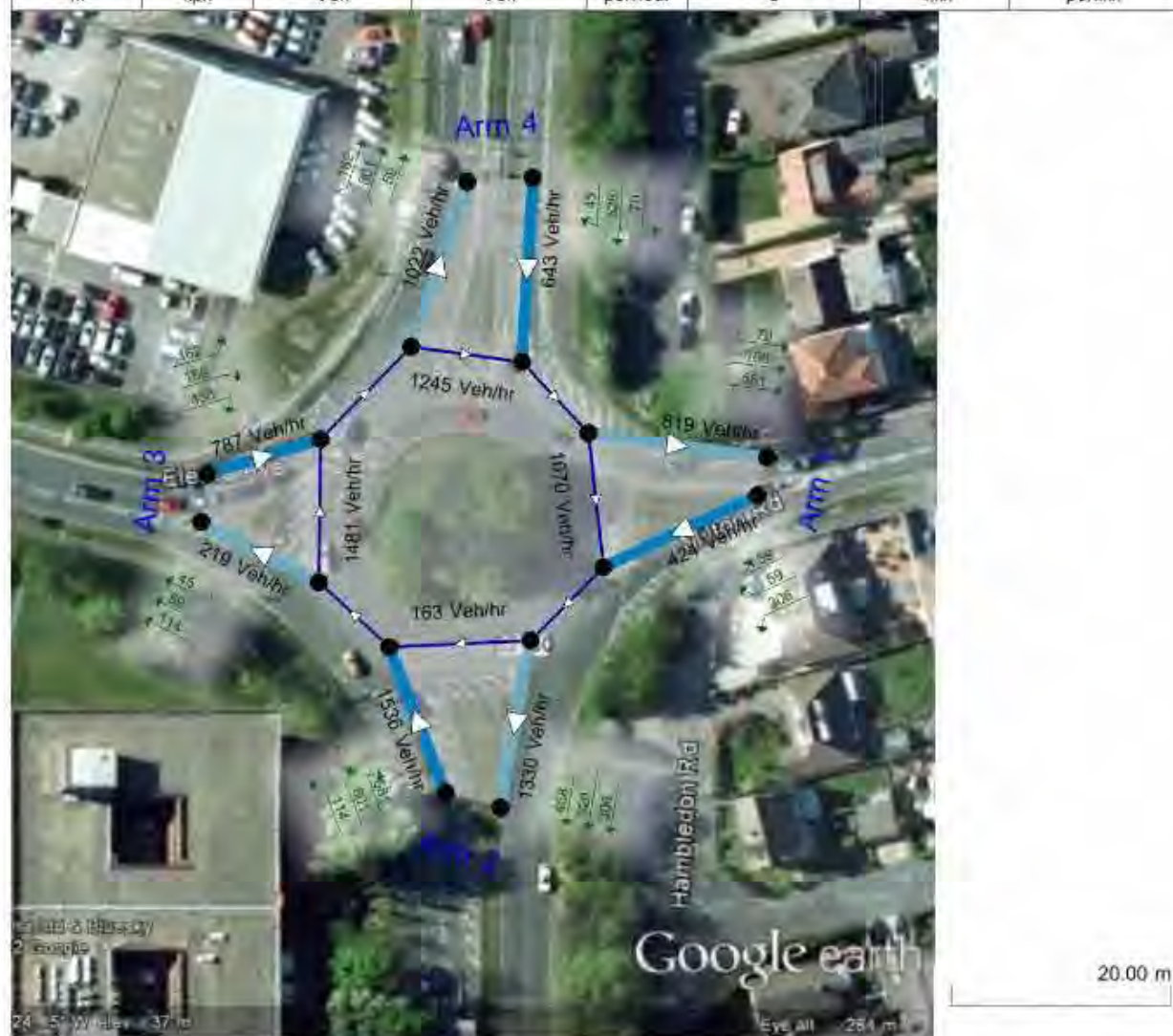
Title	Hambledon Rd / Milton Rd / Elettra Ave
Location	BAE Waterloo
Site Number	
Date	31/05/2012
Version	
Status	(new file)
Identifier	
Client	BAE
Jobnumber	26365
Enumerator	PBA\lekeen
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75			N/A	0.85	36.00	20.00

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	Veh	Veh	perHour	s	-Min	perMin



Flow overlays show, including flow through the junction (entry and exit flows, Veh/hr).

Time Segment: 15:40-17:00

Scenario Analysis Set: "A1" Demand File: "TU - 2015 Base PM"

The junction diagram reflects the last run of ARCADY.

(Default Analysis Set) - 2015 Base, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 2 - 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.
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2015 Base, PM	2015 Base	PM		FLAT	16:45	17:45	60	15				✓		

Junction Network

Junctions

Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Do Geometric Delay	Junction Delay (s)	Junction LOS
(untitled)	Roundabout	1,2,3,4				36.74	E

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Milton Road	
2	Hambledon Road (S)	
3	Elettra Ave	
4	Hambledon Road (N)	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
1	0.00	99999.00		0.00
2	0.00	99999.00		0.00
3	0.00	99999.00		0.00
4	0.00	99999.00		0.00

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	3.40	4.20	24.90	21.00	54.00	22.50	
2	7.20	8.20	55.80	54.60	54.00	25.00	
3	3.30	7.50	52.88	21.00	54.00	23.00	
4	3.60	7.70	127.60	6.00	54.00	22.00	

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Pedestrian Crossings

Arm	Crossing Type
1	None
2	None
3	None
4	None

Slope / Intercept / Capacity

Arm Intercept Adjustments

Arm	Type	Reason	Direct Intercept Adjustment (PCU/hr)	Percentage Intercept Adjustment (%)
1	None			
2	Direct	Imbalance of flows	-418.00	
3	None			
4	None			

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.521	1285.444
2		(calculated)	(calculated)	0.766	2169.472
3		(calculated)	(calculated)	0.664	2068.229
4		(calculated)	(calculated)	0.625	2025.835

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

Arm Capacity Adjustments

Arm	Type	Reason	Direct Capacity Adjustment (PCU/hr)	Percentage Capacity Adjustment (%)
1	None			
2	Percentage	To validate against queue		120.00
3	Percentage	To validate against queue		80.00
4	Percentage	To validate against queue		70.00

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
1	FLAT	✓	430.00	100.000
2	FLAT	✓	1543.00	100.000
3	FLAT	✓	841.00	100.000
4	FLAT	✓	655.00	100.000

Turning Proportions

Turning Counts or Proportions (Veh/hr) - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.000	310.000	60.000	60.000
	2	584.000	39.000	115.000	805.000
	3	179.000	489.000	0.000	173.000
	4	71.000	538.000	46.000	0.000

Turning Proportions (Veh) - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.72	0.14	0.14
	2	0.38	0.03	0.07	0.52
	3	0.21	0.58	0.00	0.21
	4	0.11	0.82	0.07	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.042	1.017	1.017
	2	1.022	1.026	1.026	1.019
	3	1.019	1.005	1.000	1.000
	4	1.000	1.015	1.022	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.000	4.200	1.700	1.700
	2	2.200	2.600	2.600	1.900
	3	1.900	0.500	0.000	0.000
	4	0.000	1.500	2.200	0.000

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (s)
1	0.63	14.38	1.69	B	430.00	430.00	95.93	13.39	1.60	96.06	13.40
2	0.64	4.21	1.80	A	1543.01	1543.01	106.23	4.13	1.77	106.27	4.13
3	1.00	122.48	27.89	F	841.00	841.00	1101.52	78.59	18.36	1129.24	80.56
4	0.78	19.54	3.47	C	655.00	655.00	190.91	17.49	3.18	191.34	17.53

Main Results for each time segment

Main results: (16:45-17:00)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
1	430.00	107.50	423.80	818.54	1069.63	0.00	696.99	702.54	0.617	0.00	1.55	12.909	B
2	1543.01	385.75	1535.90	1330.02	163.41	0.00	2400.46	2316.83	0.643	0.00	1.78	4.130	A
3	841.00	210.25	787.22	218.74	1480.56	0.00	845.77	435.60	0.994	0.00	13.44	44.631	E
4	655.00	163.75	642.75	1022.37	1245.42	0.00	852.72	835.20	0.768	0.00	3.06	16.316	C

Main results: (17:00-17:15)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
1	430.00	107.50	429.60	828.72	1097.02	0.00	683.08	702.54	0.630	1.55	1.65	14.165	B
2	1543.01	385.75	1542.95	1360.80	165.82	0.00	2398.26	2316.83	0.643	1.78	1.79	4.208	A
3	841.00	210.25	816.83	220.87	1487.89	0.00	841.83	435.60	0.999	13.44	19.49	84.189	F
4	655.00	163.75	653.95	1032.94	1271.78	0.00	841.22	835.20	0.779	3.06	3.32	19.019	C

Main results: (17:15-17:30)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
1	430.00	107.50	429.89	830.05	1101.02	0.00	681.04	702.54	0.631	1.65	1.68	14.314	B
2	1543.01	385.75	1542.99	1364.97	165.94	0.00	2398.14	2316.83	0.643	1.79	1.80	4.209	A
3	841.00	210.25	822.70	220.96	1487.97	0.00	841.78	435.60	0.999	19.49	24.06	105.450	F
4	655.00	163.75	654.62	1034.22	1276.46	0.00	839.18	835.20	0.781	3.32	3.42	19.380	C

Main results: (17:30-17:45)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
1	430.00	107.50	429.94	830.71	1102.92	0.00	680.08	702.54	0.632	1.68	1.69	14.377	B
2	1543.01	385.75	1543.00	1366.90	165.97	0.00	2398.12	2316.83	0.643	1.80	1.80	4.209	A
3	841.00	210.25	825.69	220.98	1487.98	0.00	841.78	435.60	0.999	24.06	27.89	122.483	F
4	655.00	163.75	654.80	1034.83	1278.83	0.00	838.15	835.20	0.781	3.42	3.47	19.542	C

Queueing Delay Results for each time segment

Queueing Delay results: (16:45-17:00)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	21.33	1.42	12.909	B	B
2	25.57	1.70	4.130	A	A
3	133.56	8.90	44.631	E	D
4	40.17	2.68	16.316	C	B

Queueing Delay results: (17:00-17:15)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	24.28	1.62	14.165	B	B
2	26.79	1.79	4.208	A	A
3	249.75	16.65	84.189	F	F
4	48.43	3.23	19.019	C	B

Queueing Delay results: (17:15-17:30)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	25.01	1.67	14.314	B	B
2	26.91	1.79	4.209	A	A
3	327.84	21.86	105.450	F	F
4	50.66	3.38	19.380	C	B

Queueing Delay results: (17:30-17:45)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	25.31	1.69	14.377	B	B
2	26.96	1.80	4.209	A	A
3	390.36	26.02	122.483	F	F
4	51.66	3.44	19.542	C	B

Junctions 8	
ARCADY 8 - Roundabout Module	
Version: 8.0.2.316 [14 Feb 2013] © Copyright TRL Limited, 2013	
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Filename: Site Access Junction_2015_AM.arc8

Path: J:\29169 Elettra Avenue, Waterloooville\Technical\Transport\Junction Assessments\2015 Base

Report generation date: 27/08/2013 16:15:29

« (Default Analysis Set) - 2015 Base, AM

- » Junction Network
- » Arms
- » Traffic Flows
- » Entry Flows
- » Turning Proportions
- » Vehicle Mix
- » Results

Summary of junction performance

	AM			
	Queue (Veh)	Delay (s)	RFC	LOS
A1 - 2015 Base				
Elettra Avenue (E)	0.75	3.22	0.43	A
Site Access	0.06	4.89	0.05	A
Elettra Avenue (W)	0.07	4.65	0.06	A
Waterberry Drive	0.21	3.72	0.17	A

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

'D1 - 2015 Base, AM " model duration: 08:00 - 09:00

Run using Junctions 8.0.2.316 at 27/08/2013 16:15:28

File summary

File Description

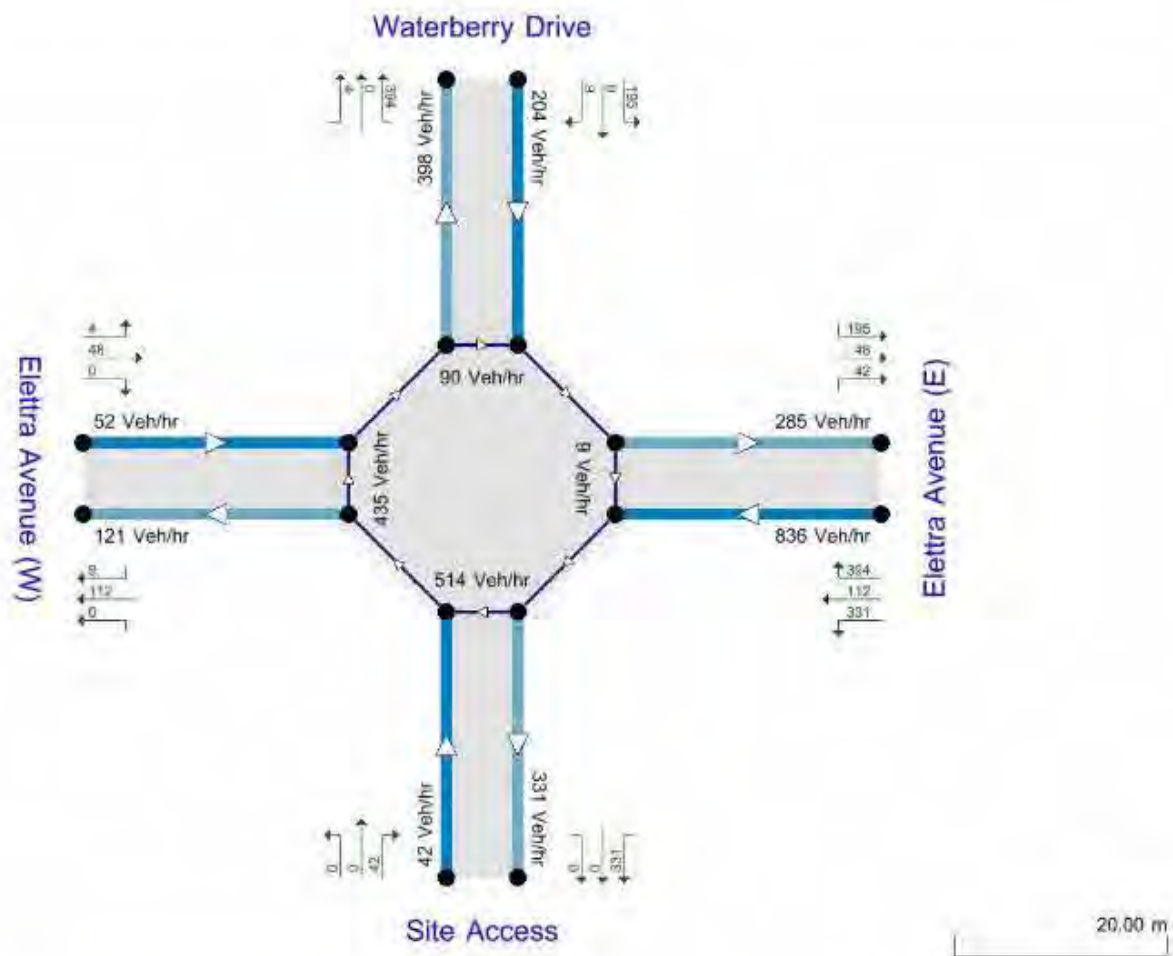
Title	Site Access Junction
Location	Elettra Avenue Waterloooville
Site Number	
Date	27/08/2013
Version	
Status	
Identifier	
Client	BAE
Jobnumber	29169
Enumerator	PBA\keen
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75			N/A	0.85	36.00	20.00

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	Veh	Veh	perHour	s	-Min	perMin



Plan overlays show included flow through the junction entry and exit lanes (Veh/hr).
 Time: 09:00-10:00 (h)
 Scenario Analysis Set: 10.1 - Demand Set: 10.1 - 2015 Base, AM

The junction diagram reflects the last run of ARCADY.

(Default Analysis Set) - 2015 Base, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Elettra Avenue (E) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2015 Base, AM	2015 Base	AM		FLAT	08:00	09:00	60	15				✓		

Junction Network

Junctions

Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Do Geometric Delay	Junction Delay (s)	Junction LOS
(untitled)	Roundabout	1,2,3,4				3.44	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Name	Description
Elettra Avenue (E)	Elettra Avenue (E)	
Site Access	Site Access	
Elettra Avenue (W)	Elettra Avenue (W)	
Waterberry Drive	Waterberry Drive	

Capacity Options

Name	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
Elettra Avenue (E)	0.00	99999.00		0.00
Site Access	0.00	99999.00		0.00
Elettra Avenue (W)	0.00	99999.00		0.00
Waterberry Drive	0.00	99999.00		0.00

Roundabout Geometry

Name	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
Elettra Avenue (E)	3.00	7.40	41.50	25.69	44.00	19.50	
Site Access	6.20	9.10	11.08	19.46	44.00	24.00	
Elettra Avenue (W)	3.60	7.30	27.90	28.48	44.00	15.50	
Waterberry Drive	3.76	7.50	13.36	55.40	44.00	11.50	

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Pedestrian Crossings

Name	Crossing Type
Elettra Avenue (E)	None
Site Access	None
Elettra Avenue (W)	None
Waterberry Drive	None

Slope / Intercept / Capacity

Arm Intercept Adjustments

Name	Type	Reason	Direct Intercept Adjustment (PCU/hr)	Percentage Intercept Adjustment (%)
Elettra Avenue (E)	None			
Site Access	Direct		-1201.00	
Elettra Avenue (W)	Direct		-827.00	
Waterberry Drive	Direct		-597.00	

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
Elettra Avenue (E)		(calculated)	(calculated)	0.703	1994.478
Site Access		(calculated)	(calculated)	0.775	1201.663
Elettra Avenue (W)		(calculated)	(calculated)	0.709	1172.711
Waterberry Drive		(calculated)	(calculated)	0.699	1305.815

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

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
Elettra Avenue (E)	FLAT	✓	839.00	100.000
Site Access	FLAT	✓	42.00	100.000
Elettra Avenue (W)	FLAT	✓	52.00	100.000
Waterberry Drive	FLAT	✓	205.00	100.000

Turning Proportions

Turning Counts or Proportions (Veh/hr) - (untitled) (for whole period)

		To			
		1	2	3	4
From	1	0.000	332.000	112.000	395.000
	2	42.000	0.000	0.000	0.000
	3	48.000	0.000	0.000	4.000
	4	196.000	0.000	9.000	0.000

Turning Proportions (Veh) - (untitled) (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.40	0.13	0.47
	2	1.00	0.00	0.00	0.00
	3	0.92	0.00	0.00	0.08
	4	0.96	0.00	0.04	0.00

Vehicle Mix

Average PCU Per Vehicle - (untitled) (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.017	1.018	1.013
	2	1.023	1.000	1.000	1.000
	3	1.042	1.000	1.000	1.000
	4	1.061	1.000	1.000	1.000

Heavy Vehicle Percentages - (untitled) (for whole period)

		To			
		1	2	3	4
From	1	0.000	1.700	1.800	1.300
	2	2.300	0.000	0.000	0.000
	3	4.200	0.000	0.000	0.000
	4	6.100	0.000	0.000	0.000

Results

Results Summary for whole modelled period

Name	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (s)
Elettra Avenue (E)	0.43	3.22	0.75	A	839.00	839.00	44.54	3.18	0.74	44.54	3.19
Site Access	0.05	4.89	0.06	A	42.00	42.00	3.39	4.84	0.06	3.39	4.84
Elettra Avenue (W)	0.06	4.65	0.07	A	52.00	52.00	3.99	4.60	0.07	3.99	4.60
Waterberry Drive	0.17	3.72	0.21	A	205.00	205.00	12.61	3.69	0.21	12.61	3.69

Main Results for each time segment

Main results: (08:00-08:15)

Name	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
Elettra Avenue (E)	839.00	209.75	836.02	284.72	8.96	0.00	1958.31	1938.37	0.428	0.00	0.74	3.200	A
Site Access	42.00	10.50	41.77	330.82	514.16	0.00	779.86	246.45	0.054	0.00	0.06	4.876	A
Elettra Avenue (W)	52.00	13.00	51.73	120.57	435.37	0.00	827.57	325.72	0.063	0.00	0.07	4.639	A
Waterberry Drive	205.00	51.25	204.16	397.58	89.53	0.00	1172.75	860.29	0.175	0.00	0.21	3.713	A

Main results: (08:15-08:30)

Name	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
Elettra Avenue (E)	839.00	209.75	838.99	286.00	9.00	0.00	1958.29	1938.37	0.428	0.74	0.75	3.215	A
Site Access	42.00	10.50	42.00	332.00	515.99	0.00	778.46	246.45	0.054	0.06	0.06	4.887	A
Elettra Avenue (W)	52.00	13.00	52.00	121.00	437.00	0.00	826.45	325.72	0.063	0.07	0.07	4.648	A
Waterberry Drive	205.00	51.25	205.00	399.00	90.00	0.00	1172.43	860.29	0.175	0.21	0.21	3.720	A

Main results: (08:30-08:45)

Name	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
Elettra Avenue (E)	839.00	209.75	839.00	286.00	9.00	0.00	1958.29	1938.37	0.428	0.75	0.75	3.215	A
Site Access	42.00	10.50	42.00	332.00	516.00	0.00	778.45	246.45	0.054	0.06	0.06	4.887	A
Elettra Avenue (W)	52.00	13.00	52.00	121.00	437.00	0.00	826.45	325.72	0.063	0.07	0.07	4.648	A
Waterberry Drive	205.00	51.25	205.00	399.00	90.00	0.00	1172.42	860.29	0.175	0.21	0.21	3.720	A

Main results: (08:45-09:00)

Name	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
Elettra Avenue (E)	839.00	209.75	839.00	286.00	9.00	0.00	1958.29	1938.37	0.428	0.75	0.75	3.215	A
Site Access	42.00	10.50	42.00	332.00	516.00	0.00	778.45	246.45	0.054	0.06	0.06	4.887	A
Elettra Avenue (W)	52.00	13.00	52.00	121.00	437.00	0.00	826.45	325.72	0.063	0.07	0.07	4.648	A
Waterberry Drive	205.00	51.25	205.00	399.00	90.00	0.00	1172.42	860.29	0.175	0.21	0.21	3.720	A

Queueing Delay Results for each time segment

Queueing Delay results: (08:00-08:15)

Name	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
Elettra Avenue (E)	10.90	0.73	3.200	A	A
Site Access	0.83	0.06	4.876	A	A
Elettra Avenue (W)	0.98	0.07	4.639	A	A
Waterberry Drive	3.09	0.21	3.713	A	A

Queueing Delay results: (08:15-08:30)

Name	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
Elettra Avenue (E)	11.20	0.75	3.215	A	A
Site Access	0.85	0.06	4.887	A	A
Elettra Avenue (W)	1.00	0.07	4.648	A	A
Waterberry Drive	3.17	0.21	3.720	A	A

Queueing Delay results: (08:30-08:45)

Name	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
Elettra Avenue (E)	11.22	0.75	3.215	A	A
Site Access	0.85	0.06	4.887	A	A
Elettra Avenue (W)	1.00	0.07	4.648	A	A
Waterberry Drive	3.17	0.21	3.720	A	A

Queueing Delay results: (08:45-09:00)

Name	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
Elettra Avenue (E)	11.22	0.75	3.215	A	A
Site Access	0.85	0.06	4.887	A	A
Elettra Avenue (W)	1.01	0.07	4.648	A	A
Waterberry Drive	3.17	0.21	3.720	A	A

Junctions 8	
ARCADY 8 - Roundabout Module	
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Filename: Site Access Junction_2015_PM.arc8

Path: J:\29169 Elettra Avenue, Waterloooville\Technical\Transport\Junction Assessments\2015 Base

Report generation date: 27/08/2013 16:17:02

« (Default Analysis Set) - 2015 Base, PM

- » Junction Network
- » Arms
- » Traffic Flows
- » Entry Flows
- » Turning Proportions
- » Vehicle Mix
- » Results

Summary of junction performance

	PM			
	Queue (Veh)	Delay (s)	RFC	LOS
A1 - 2015 Base				
Elettra Avenue (E)	0.18	2.85	0.15	A
Site Access	0.33	4.63	0.25	A
Elettra Avenue (W)	0.21	5.01	0.17	A
Waterberry Drive	0.82	6.45	0.45	A

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

'D2 - 2015 Base, PM' model duration: 16:45 - 17:45

Run using Junctions 8.0.2.316 at 27/08/2013 16:17:01

File summary

File Description

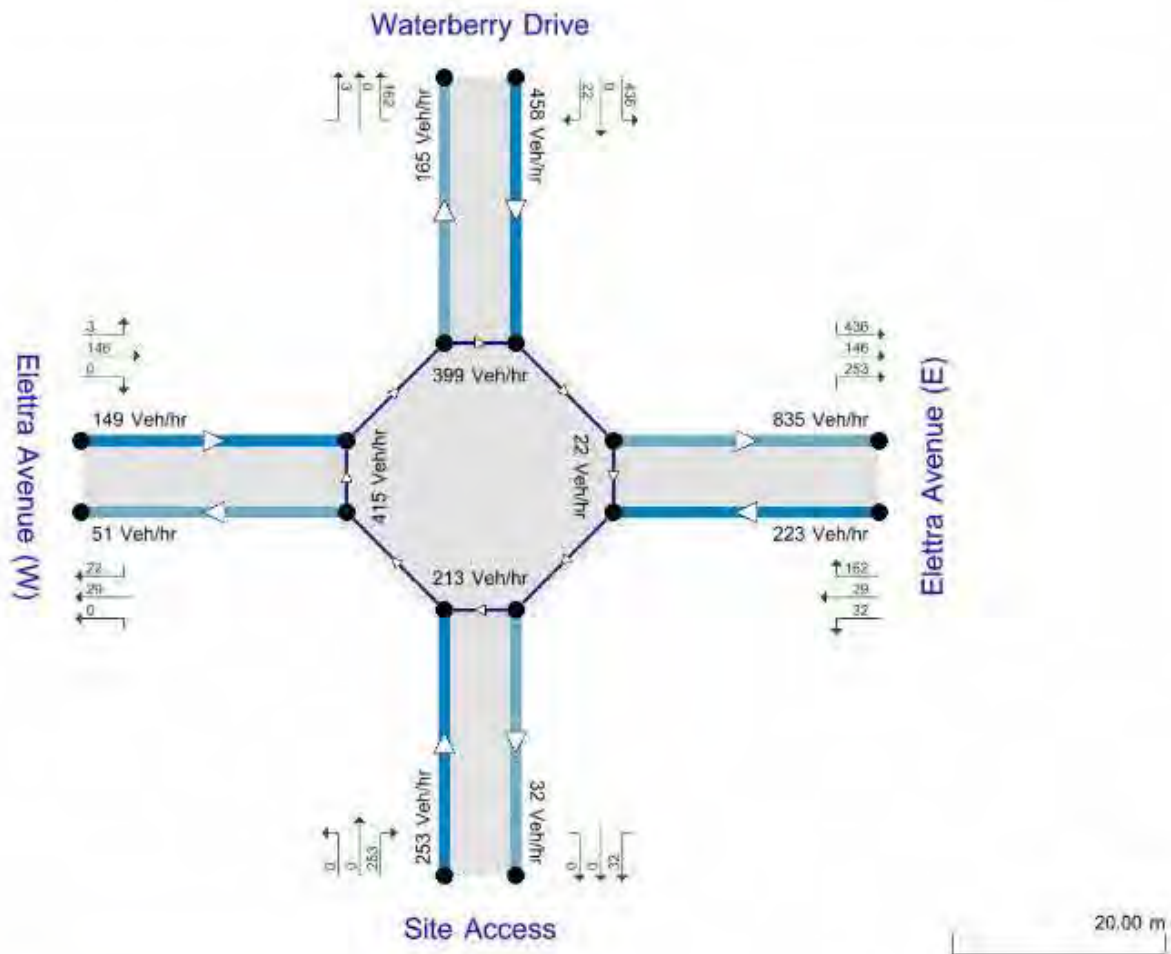
Title	Site Access Junction
Location	Elettra Avenue Waterloooville
Site Number	
Date	27/08/2013
Version	
Status	
Identifier	
Client	BAE
Jobnumber	29169
Enumerator	PBA\keen
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75			N/A	0.85	36.00	20.00

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	Veh	Veh	perHour	s	-Min	perMin



Flow overlays show movement flow through the junction entry and exit flows. (Veh/hr)

Time Segment: (15:40-17:00)

Showing Analysis Set: "S1" Demand File: "TM - 2015 Base PM"

The junction diagram reflects the last run of ARCADY.

(Default Analysis Set) - 2015 Base, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Elettra Avenue (E) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2015 Base, PM	2015 Base	PM		FLAT	16:45	17:45	60	15				✓		

Junction Network

Junctions

Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Do Geometric Delay	Junction Delay (s)	Junction LOS
(untitled)	Roundabout	1,2,3,4				5.08	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Name	Description
Elettra Avenue (E)	Elettra Avenue (E)	
Site Access	Site Access	
Elettra Avenue (W)	Elettra Avenue (W)	
Waterberry Drive	Waterberry Drive	

Capacity Options

Name	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
Elettra Avenue (E)	0.00	99999.00		0.00
Site Access	0.00	99999.00		0.00
Elettra Avenue (W)	0.00	99999.00		0.00
Waterberry Drive	0.00	99999.00		0.00

Roundabout Geometry

Name	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
Elettra Avenue (E)	3.00	7.40	41.50	25.69	44.00	19.50	
Site Access	6.20	9.10	11.08	19.46	44.00	24.00	
Elettra Avenue (W)	3.60	7.30	27.90	28.48	44.00	15.50	
Waterberry Drive	3.76	7.50	13.36	55.40	44.00	11.50	

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Pedestrian Crossings

Name	Crossing Type
Elettra Avenue (E)	None
Site Access	None
Elettra Avenue (W)	None
Waterberry Drive	None

Slope / Intercept / Capacity

Arm Intercept Adjustments

Name	Type	Reason	Direct Intercept Adjustment (PCU/hr)	Percentage Intercept Adjustment (%)
Elettra Avenue (E)	Direct		-458.00	
Site Access	Direct		-1201.00	
Elettra Avenue (W)	Direct		-827.00	
Waterberry Drive	Direct		-592.00	

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
Elettra Avenue (E)		(calculated)	(calculated)	0.703	1536.478
Site Access		(calculated)	(calculated)	0.775	1201.663
Elettra Avenue (W)		(calculated)	(calculated)	0.709	1172.711
Waterberry Drive		(calculated)	(calculated)	0.699	1310.815

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

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
Elettra Avenue (E)	FLAT	✓	224.00	100.000
Site Access	FLAT	✓	254.00	100.000
Elettra Avenue (W)	FLAT	✓	150.00	100.000
Waterberry Drive	FLAT	✓	461.00	100.000

Turning Proportions

Turning Counts or Proportions (Veh/hr) - (untitled) (for whole period)

		To			
		1	2	3	4
From	1	0.000	32.000	29.000	163.000
	2	254.000	0.000	0.000	0.000
	3	147.000	0.000	0.000	3.000
	4	439.000	0.000	22.000	0.000

Turning Proportions (Veh) - (untitled) (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.14	0.13	0.73
	2	1.00	0.00	0.00	0.00
	3	0.98	0.00	0.00	0.02
	4	0.95	0.00	0.05	0.00

Vehicle Mix

Average PCU Per Vehicle - (untitled) (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.000	1.069	1.018
	2	1.000	1.000	1.000	1.000
	3	1.007	1.000	1.000	1.000
	4	1.011	1.000	1.000	1.000

Heavy Vehicle Percentages - (untitled) (for whole period)

		To			
		1	2	3	4
From	1	0.000	0.000	6.900	1.800
	2	0.000	0.000	0.000	0.000
	3	0.700	0.000	0.000	0.000
	4	1.100	0.000	0.000	0.000

Results

Results Summary for whole modelled period

Name	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (s)
Elettra Avenue (E)	0.15	2.85	0.18	A	224.00	224.00	10.56	2.83	0.18	10.56	2.83
Site Access	0.25	4.63	0.33	A	254.00	254.00	19.37	4.58	0.32	19.38	4.58
Elettra Avenue (W)	0.17	5.01	0.21	A	150.00	150.00	12.38	4.95	0.21	12.38	4.95
Waterberry Drive	0.45	6.45	0.82	A	461.00	461.00	48.62	6.33	0.81	48.64	6.33

Main Results for each time segment

Main results: (16:45-17:00)

Name	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
Elettra Avenue (E)	224.00	56.00	223.29	834.79	21.84	0.00	1488.34	1470.82	0.151	0.00	0.18	2.844	A
Site Access	254.00	63.50	252.70	31.90	213.24	0.00	1032.65	163.19	0.246	0.00	0.32	4.608	A
Elettra Avenue (W)	150.00	37.50	149.17	50.75	415.19	0.00	870.24	282.40	0.172	0.00	0.21	4.988	A
Waterberry Drive	461.00	115.25	457.74	165.47	398.89	0.00	1020.49	991.46	0.452	0.00	0.81	6.360	A

Main results: (17:00-17:15)

Name	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
Elettra Avenue (E)	224.00	56.00	224.00	839.97	22.00	0.00	1488.23	1470.82	0.151	0.18	0.18	2.846	A
Site Access	254.00	63.50	253.99	32.00	214.00	0.00	1032.05	163.19	0.246	0.32	0.33	4.626	A
Elettra Avenue (W)	150.00	37.50	150.00	51.00	416.99	0.00	868.96	282.40	0.173	0.21	0.21	5.006	A
Waterberry Drive	461.00	115.25	460.97	166.00	400.99	0.00	1019.04	991.46	0.452	0.81	0.82	6.450	A

Main results: (17:15-17:30)

Name	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
Elettra Avenue (E)	224.00	56.00	224.00	839.99	22.00	0.00	1488.23	1470.82	0.151	0.18	0.18	2.846	A
Site Access	254.00	63.50	254.00	32.00	214.00	0.00	1032.05	163.19	0.246	0.33	0.33	4.626	A
Elettra Avenue (W)	150.00	37.50	150.00	51.00	417.00	0.00	868.96	282.40	0.173	0.21	0.21	5.006	A
Waterberry Drive	461.00	115.25	460.99	166.00	401.00	0.00	1019.03	991.46	0.452	0.82	0.82	6.450	A

Main results: (17:30-17:45)

Name	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
Elettra Avenue (E)	224.00	56.00	224.00	840.00	22.00	0.00	1488.23	1470.82	0.151	0.18	0.18	2.846	A
Site Access	254.00	63.50	254.00	32.00	214.00	0.00	1032.05	163.19	0.246	0.33	0.33	4.626	A
Elettra Avenue (W)	150.00	37.50	150.00	51.00	417.00	0.00	868.95	282.40	0.173	0.21	0.21	5.006	A
Waterberry Drive	461.00	115.25	460.99	166.00	401.00	0.00	1019.03	991.46	0.452	0.82	0.82	6.450	A

Queueing Delay Results for each time segment

Queueing Delay results: (16:45-17:00)

Name	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
Elettra Avenue (E)	2.60	0.17	2.844	A	A
Site Access	4.73	0.32	4.608	A	A
Elettra Avenue (W)	3.02	0.20	4.988	A	A
Waterberry Drive	11.69	0.78	6.360	A	A

Queueing Delay results: (17:00-17:15)

Name	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
Elettra Avenue (E)	2.65	0.18	2.846	A	A
Site Access	4.87	0.32	4.626	A	A
Elettra Avenue (W)	3.11	0.21	5.006	A	A
Waterberry Drive	12.27	0.82	6.450	A	A

Queueing Delay results: (17:15-17:30)

Name	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
Elettra Avenue (E)	2.65	0.18	2.846	A	A
Site Access	4.88	0.33	4.626	A	A
Elettra Avenue (W)	3.12	0.21	5.006	A	A
Waterberry Drive	12.32	0.82	6.450	A	A

Queueing Delay results: (17:30-17:45)

Name	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
Elettra Avenue (E)	2.65	0.18	2.846	A	A
Site Access	4.89	0.33	4.626	A	A
Elettra Avenue (W)	3.12	0.21	5.006	A	A
Waterberry Drive	12.34	0.82	6.450	A	A

Appendix I 2020 Base Junction Capacity Results

Junctions 8				
ARCADY 8 - Roundabout Module				
Version: 8.0.2.316 [14 Feb 2013] © Copyright TRL Limited, 2013				
For sales and distribution information, program advice and maintenance, contact TRL: Tel: +44 (0)1344 770758 E-mail: 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: Hambledon Rd_Milton Rd_Elettra Ave_AM - 2020 Base.arc8

Path: J:\29169 Elettra Avenue, Waterloo\Technical\Transport\Junction Assessments\2020 Base

Report generation date: 30/08/2013 12:49:28

» (Default Analysis Set) - 2020 Base, AM

Summary of junction performance

	AM			
	Queue (Veh)	Delay (s)	RFC	LOS
A1 - 2020 Base				
Milton Road	4.09	20.63	0.81	C
Hambledon Road (S)	9.34	24.69	0.91	C
Elettra Ave	0.27	3.36	0.21	A
Hambledon Road (N)	1.35	5.08	0.58	A

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

"D1 - 2020 Base, AM" model duration: 08:00 - 09:00

Run using Junctions 8.0.2.316 at 30/08/2013 12:49:27

File summary

File Description

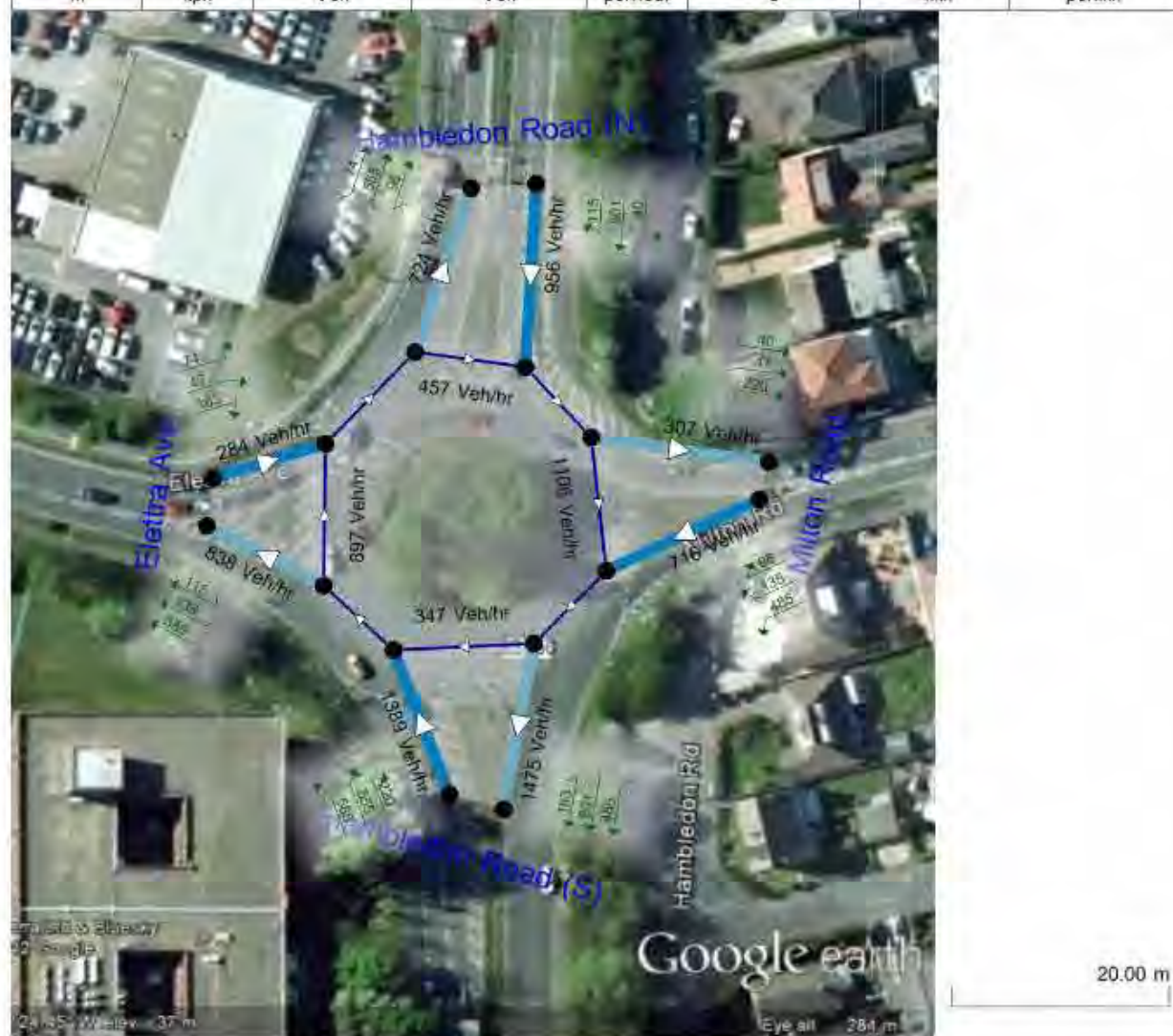
Title	Hambledon Rd / Milton Rd / Elettra Ave
Location	BAE Waterloo\ville
Site Number	
Date	27/08/2013
Version	
Status	
Identifier	
Client	BAE
Jobnumber	29169
Enumerator	PBA\lekeen
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75			N/A	0.85	36.00	20.00

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	Veh	Veh	perHour	s	-Min	perMin



That picture shows modeled flow through the junction entry and exit flows. Veh/hr

Time Segment: (08:00-09:15)

Scenario Analysis Set: '01' - Demand Set: 'D1' - 2020 Base, AM

The junction diagram reflects the last run of ARCADY.

(Default Analysis Set) - 2020 Base, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Hambleton Road (S) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	Elettra Ave - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	Hambleton Road (N) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2020 Base, AM	2020 Base	AM		FLAT	08:00	09:00	60	15				✓		

Junction Network

Junctions

Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Do Geometric Delay	Junction Delay (s)	Junction LOS
(untitled)	Roundabout	1,2,3,4				16.49	C

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Name	Description
Milton Road	Milton Road	
Hambledon Road (S)	Hambledon Road (S)	
Elettra Ave	Elettra Ave	
Hambledon Road (N)	Hambledon Road (N)	

Capacity Options

Name	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
Milton Road	0.00	99999.00		0.00
Hambledon Road (S)	0.00	99999.00		0.00
Elettra Ave	0.00	99999.00		0.00
Hambledon Road (N)	0.00	99999.00		0.00

Roundabout Geometry

Name	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
Milton Road	3.40	4.20	24.90	21.00	54.00	22.50	
Hambledon Road (S)	7.20	8.20	55.80	54.60	54.00	25.00	
Elettra Ave	3.30	7.50	52.88	21.00	54.00	23.00	
Hambledon Road (N)	3.60	7.70	127.60	6.00	54.00	22.00	

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Pedestrian Crossings

Name	Crossing Type
Milton Road	None
Hambledon Road (S)	None
Elettra Ave	None
Hambledon Road (N)	None

Slope / Intercept / Capacity

Arm Intercept Adjustments

Name	Type	Reason	Direct Intercept Adjustment (PCU/hr)	Percentage Intercept Adjustment (%)
Milton Road	None			
Hambledon Road (S)	Direct	Imbalance of flows	-1015.00	
Elettra Ave	None			
Hambledon Road (N)	None			

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
Milton Road		(calculated)	(calculated)	0.521	1285.444
Hambledon Road (S)		(calculated)	(calculated)	0.766	1572.472
Elettra Ave		(calculated)	(calculated)	0.664	2068.229
Hambledon Road (N)		(calculated)	(calculated)	0.625	2025.835

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

Arm Capacity Adjustments

Name	Type	Reason	Direct Capacity Adjustment (PCU/hr)	Percentage Capacity Adjustment (%)
Milton Road	Percentage	To validate against queue surveys		135.00
Hambledon Road (S)	Percentage	To validate against queue surveys		125.00
Elettra Ave	None			
Hambledon Road (N)	None			

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
Milton Road	FLAT	✓	731.00	100.000
Hambledon Road (S)	FLAT	✓	1420.00	100.000
Elettra Ave	FLAT	✓	285.00	100.000
Hambledon Road (N)	FLAT	✓	961.00	100.000

Turning Proportions

Turning Counts or Proportions (Veh/hr) - (untitled) (for whole period)

		To			
		1	2	3	4
From	1	0.000	495.000	138.000	98.000
	2	225.000	27.000	601.000	567.000
	3	47.000	164.000	0.000	74.000
	4	40.000	805.000	116.000	0.000

Turning Proportions (Veh) - (untitled) (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.68	0.19	0.13
	2	0.16	0.02	0.42	0.40
	3	0.16	0.58	0.00	0.26
	4	0.04	0.84	0.12	0.00

Vehicle Mix

Average PCU Per Vehicle - (untitled) (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.034	1.000	1.010
	2	1.093	1.000	1.012	1.049
	3	1.023	1.072	1.000	1.029
	4	1.025	1.025	1.046	1.000

Heavy Vehicle Percentages - (untitled) (for whole period)

		To			
		1	2	3	4
From	1	0.000	3.400	0.000	1.000
	2	9.300	0.000	1.200	4.900
	3	2.300	7.200	0.000	2.900
	4	2.500	2.500	4.600	0.000

Results

Results Summary for whole modelled period

Name	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (s)
Milton Road	0.81	20.63	4.09	C	731.00	731.00	227.08	18.64	3.78	227.64	18.68
Hambleton Road (S)	0.91	24.69	9.34	C	1420.00	1420.00	493.25	20.84	8.22	494.92	20.91
Elettra Ave	0.21	3.36	0.27	A	285.00	285.00	15.79	3.32	0.26	15.79	3.32
Hambleton Road (N)	0.58	5.08	1.35	A	961.00	961.00	79.74	4.98	1.33	79.78	4.98

Main Results for each time segment

Main results: (08:00-08:15)

Name	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
Milton Road	731.00	182.75	716.14	306.65	1105.70	0.00	908.86	339.09	0.804	0.00	3.72	17.538	C
Hambledon Road (S)	1420.00	355.00	1388.71	1475.27	346.56	0.00	1566.23	1655.28	0.907	0.00	7.82	17.939	C
Elettra Ave	285.00	71.25	283.95	838.31	896.96	0.00	1367.83	1297.25	0.208	0.00	0.26	3.318	A
Hambledon Road (N)	961.00	240.25	955.68	724.24	456.67	0.00	1673.40	1157.83	0.574	0.00	1.33	4.979	A

Main results: (08:15-08:30)

Name	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
Milton Road	731.00	182.75	730.01	311.41	1111.87	0.00	904.50	339.09	0.808	3.72	3.96	20.372	C
Hambledon Road (S)	1420.00	355.00	1416.28	1490.20	351.67	0.00	1561.47	1655.28	0.909	7.82	8.75	23.577	C
Elettra Ave	285.00	71.25	284.99	853.23	914.72	0.00	1356.01	1297.25	0.210	0.26	0.27	3.360	A
Hambledon Road (N)	961.00	240.25	960.95	737.37	462.33	0.00	1669.68	1157.83	0.576	1.33	1.35	5.079	A

Main results: (08:30-08:45)

Name	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
Milton Road	731.00	182.75	730.67	311.76	1111.95	0.00	904.44	339.09	0.808	3.96	4.05	20.564	C
Hambledon Road (S)	1420.00	355.00	1418.47	1490.72	351.89	0.00	1561.27	1655.28	0.910	8.75	9.14	24.362	C
Elettra Ave	285.00	71.25	285.00	854.29	916.08	0.00	1355.11	1297.25	0.210	0.27	0.27	3.363	A
Hambledon Road (N)	961.00	240.25	960.99	738.35	462.73	0.00	1669.42	1157.83	0.576	1.35	1.35	5.081	A

Main results: (08:45-09:00)

Name	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
Milton Road	731.00	182.75	730.83	311.87	1111.97	0.00	904.42	339.09	0.808	4.05	4.09	20.630	C
Hambledon Road (S)	1420.00	355.00	1419.17	1490.86	351.94	0.00	1561.22	1655.28	0.910	9.14	9.34	24.691	C
Elettra Ave	285.00	71.25	285.00	854.61	916.50	0.00	1354.83	1297.25	0.210	0.27	0.27	3.364	A
Hambledon Road (N)	961.00	240.25	961.00	738.65	462.85	0.00	1669.34	1157.83	0.576	1.35	1.35	5.081	A

Queueing Delay Results for each time segment

Queueing Delay results: (08:00-08:15)

Name	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
Milton Road	47.86	3.19	17.538	C	B
Hambledon Road (S)	94.38	6.29	17.939	C	B
Elettra Ave	3.85	0.26	3.318	A	A
Hambledon Road (N)	19.15	1.28	4.979	A	A

Queueing Delay results: (08:15-08:30)

Name	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
Milton Road	58.01	3.87	20.372	C	C
Hambledon Road (S)	125.62	8.37	23.577	F	C
Elettra Ave	3.96	0.26	3.360	A	A
Hambledon Road (N)	20.11	1.34	5.079	A	A

Queueing Delay results: (08:30-08:45)

Name	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
Milton Road	60.16	4.01	20.564	C	C
Hambledon Road (S)	134.51	8.97	24.362	C	C
Elettra Ave	3.98	0.27	3.363	A	A
Hambledon Road (N)	20.22	1.35	5.081	A	A

Queueing Delay results: (08:45-09:00)

Name	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
Milton Road	61.05	4.07	20.630	C	C
Hambledon Road (S)	138.74	9.25	24.691	F	C
Elettra Ave	3.99	0.27	3.364	A	A
Hambledon Road (N)	20.26	1.35	5.081	A	A

Junctions 8	
ARCADY 8 - Roundabout Module	
Version: 8.0.2.316 [14 Feb 2013] © Copyright TRL Limited, 2013	
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Filename: Hambledon Rd_Milton Rd_Elettra Ave_PM - 2020 Base.arc8

Path: J:\29169 Elettra Avenue, Waterloo\Technical\Transport\Junction Assessments\2020 Base

Report generation date: 30/08/2013 12:47:19

» (Default Analysis Set) - 2020 Base, PM

Summary of junction performance

PM				
	Queue (Veh)	Delay (s)	RFC	LOS
A1 - 2020 Base				
Arm 1	2.94	22.34	0.75	C
Arm 2	1.93	4.52	0.66	A
Arm 3	45.09	192.30	1.04	F
Arm 4	5.58	28.93	0.86	D

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

"D2 - 2020 Base, PM" model duration: 16:45 - 17:45

Run using Junctions 8.0.2.316 at 30/08/2013 12:47:18

File summary

File Description

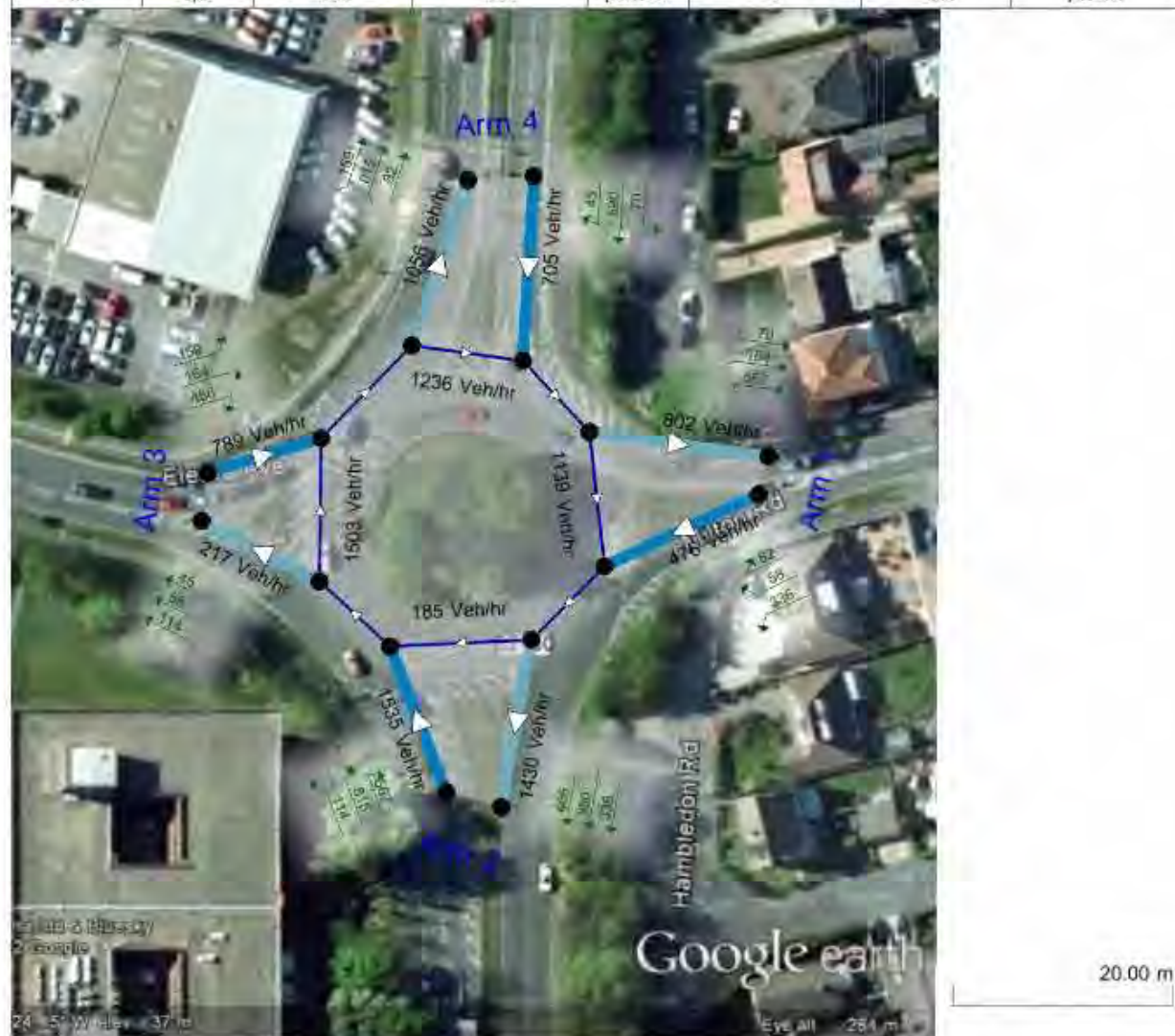
Title	Hambledon Rd / Milton Rd / Elettra Ave
Location	BAE Waterloo
Site Number	
Date	31/05/2012
Version	
Status	(new file)
Identifier	
Client	BAE
Jobnumber	26365
Enumerator	PBA\lekeen
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75			N/A	0.85	36.00	20.00

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	Veh	Veh	perHour	s	-Min	perMin



The junction diagram reflects the last run of ARCADY.

(Default Analysis Set) - 2020 Base, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 2 - 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.
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2020 Base, PM	2020 Base	PM		FLAT	16:45	17:45	60	15				✓		

Junction Network

Junctions

Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Do Geometric Delay	Junction Delay (s)	Junction LOS
(untitled)	Roundabout	1,2,3,4				56.02	F

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Milton Road	
2	Hambledon Road (S)	
3	Elettra Ave	
4	Hambledon Road (N)	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
1	0.00	99999.00		0.00
2	0.00	99999.00		0.00
3	0.00	99999.00		0.00
4	0.00	99999.00		0.00

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	3.40	4.20	24.90	21.00	54.00	22.50	
2	7.20	8.20	55.80	54.60	54.00	25.00	
3	3.30	7.50	52.88	21.00	54.00	23.00	
4	3.60	7.70	127.60	6.00	54.00	22.00	

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Pedestrian Crossings

Arm	Crossing Type
1	None
2	None
3	None
4	None

Slope / Intercept / Capacity

Arm Intercept Adjustments

Arm	Type	Reason	Direct Intercept Adjustment (PCU/hr)	Percentage Intercept Adjustment (%)
1	None			
2	Direct	Imbalance of flows	-451.00	
3	None			
4	None			

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.521	1285.444
2		(calculated)	(calculated)	0.766	2136.472
3		(calculated)	(calculated)	0.664	2068.229
4		(calculated)	(calculated)	0.625	2025.835

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

Arm Capacity Adjustments

Arm	Type	Reason	Direct Capacity Adjustment (PCU/hr)	Percentage Capacity Adjustment (%)
1	None			
2	Percentage	To validate against queue		120.00
3	Percentage	To validate against queue		80.00
4	Percentage	To validate against queue		70.00

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
1	FLAT	✓	486.00	100.000
2	FLAT	✓	1543.00	100.000
3	FLAT	✓	859.00	100.000
4	FLAT	✓	723.00	100.000

Turning Proportions

Turning Counts or Proportions (Veh/hr) - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.000	343.000	59.000	84.000
	2	570.000	39.000	115.000	819.000
	3	179.000	507.000	0.000	173.000
	4	72.000	605.000	46.000	0.000

Turning Proportions (Veh) - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.71	0.12	0.17
	2	0.37	0.03	0.07	0.53
	3	0.21	0.59	0.00	0.20
	4	0.10	0.84	0.06	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.038	1.017	1.012
	2	1.023	1.026	1.026	1.018
	3	1.019	1.004	1.000	1.000
	4	1.000	1.013	1.022	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.000	3.800	1.700	1.200
	2	2.300	2.600	2.600	1.800
	3	1.900	0.400	0.000	0.000
	4	0.000	1.300	2.200	0.000

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (s)
1	0.75	22.34	2.94	C	486.00	486.00	160.19	19.78	2.67	160.59	19.83
2	0.66	4.52	1.93	A	1542.99	1542.99	113.80	4.43	1.90	113.84	4.43
3	1.04	192.30	46.09	F	859.00	859.00	1623.59	113.41	27.06	1700.38	118.77
4	0.86	28.93	5.58	D	723.00	723.00	294.36	24.43	4.91	295.48	24.52

Main Results for each time segment

Main results: (16:45-17:00)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
1	486.00	121.50	475.93	801.82	1139.10	0.00	664.96	692.00	0.731	0.00	2.52	18.196	C
2	1542.99	385.75	1535.39	1430.16	184.87	0.00	2342.81	2276.36	0.659	0.00	1.90	4.417	A
3	859.00	214.75	789.24	217.04	1503.23	0.00	834.50	445.01	1.029	0.00	17.44	53.702	F
4	723.00	180.75	704.63	1056.18	1236.29	0.00	858.10	848.53	0.843	0.00	4.59	21.433	C

Main results: (17:00-17:15)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
1	486.00	121.50	484.87	811.92	1169.86	0.00	649.26	692.00	0.749	2.52	2.80	21.642	C
2	1542.99	385.75	1542.91	1466.23	188.51	0.00	2339.48	2276.36	0.660	1.90	1.92	4.519	A
3	859.00	214.75	816.74	219.70	1511.73	0.00	829.92	445.01	1.035	17.44	28.00	113.024	F
4	723.00	180.75	720.57	1067.26	1261.22	0.00	847.22	848.53	0.853	4.59	5.20	27.446	D

Main results: (17:15-17:30)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
1	486.00	121.50	485.63	813.12	1174.09	0.00	647.11	692.00	0.751	2.80	2.89	22.145	C
2	1542.99	385.75	1542.97	1470.90	188.83	0.00	2339.19	2276.36	0.660	1.92	1.93	4.521	A
3	859.00	214.75	821.68	219.89	1511.91	0.00	829.82	445.01	1.035	28.00	37.33	154.301	F
4	723.00	180.75	722.02	1068.41	1265.18	0.00	845.49	848.53	0.855	5.20	5.44	28.481	D

Main results: (17:30-17:45)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
1	486.00	121.50	485.82	813.65	1175.86	0.00	646.21	692.00	0.752	2.89	2.94	22.337	C
2	1542.99	385.75	1542.98	1472.76	188.91	0.00	2339.11	2276.36	0.660	1.93	1.93	4.521	A
3	859.00	214.75	823.99	219.94	1511.95	0.00	829.80	445.01	1.035	37.33	46.09	192.298	F
4	723.00	180.75	722.46	1068.92	1267.04	0.00	844.68	848.53	0.856	5.44	5.58	28.931	D

Queueing Delay Results for each time segment

Queueing Delay results: (16:45-17:00)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	33.11	2.21	18.196	C	B
2	27.28	1.82	4.417	A	A
3	163.13	10.88	53.702	F	D
4	57.04	3.80	21.433	C	C

Queueing Delay results: (17:00-17:15)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	40.54	2.70	21.642	C	C
2	28.71	1.91	4.519	A	A
3	343.24	22.88	113.024	F	F
4	74.48	4.97	27.446	D	C

Queueing Delay results: (17:15-17:30)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	42.80	2.85	22.145	C	C
2	28.87	1.92	4.521	A	A
3	491.02	32.73	154.301	F	F
4	80.09	5.34	28.481	D	C

Queueing Delay results: (17:30-17:45)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	43.74	2.92	22.337	C	C
2	28.94	1.93	4.521	A	A
3	626.19	41.75	192.298	F	F
4	82.77	5.52	28.931	D	C

Junctions 8	
ARCADY 8 - Roundabout Module	
Version: 8.0.2.316 [14 Feb 2013] © Copyright TRL Limited, 2013	
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Filename: Site Access Junction_2020_AM.arc8

Path: J:\29169 Elettra Avenue, Waterloooville\Technical\Transport\Junction Assessments\2020 Base

Report generation date: 27/08/2013 16:18:54

« (Default Analysis Set) - 2020 Base, AM

- » Junction Network
- » Arms
- » Traffic Flows
- » Entry Flows
- » Turning Proportions
- » Vehicle Mix
- » Results

Summary of junction performance

	AM			
	Queue (Veh)	Delay (s)	RFC	LOS
A1 - 2020 Base				
Elettra Avenue (E)	0.78	3.26	0.44	A
Site Access	0.06	4.98	0.05	A
Elettra Avenue (W)	0.07	4.71	0.06	A
Waterberry Drive	0.21	3.72	0.17	A

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

"D1 - 2020 Base, AM" model duration: 08:00 - 09:00

Run using Junctions 8.0.2.316 at 27/08/2013 16:18:53

File summary

File Description

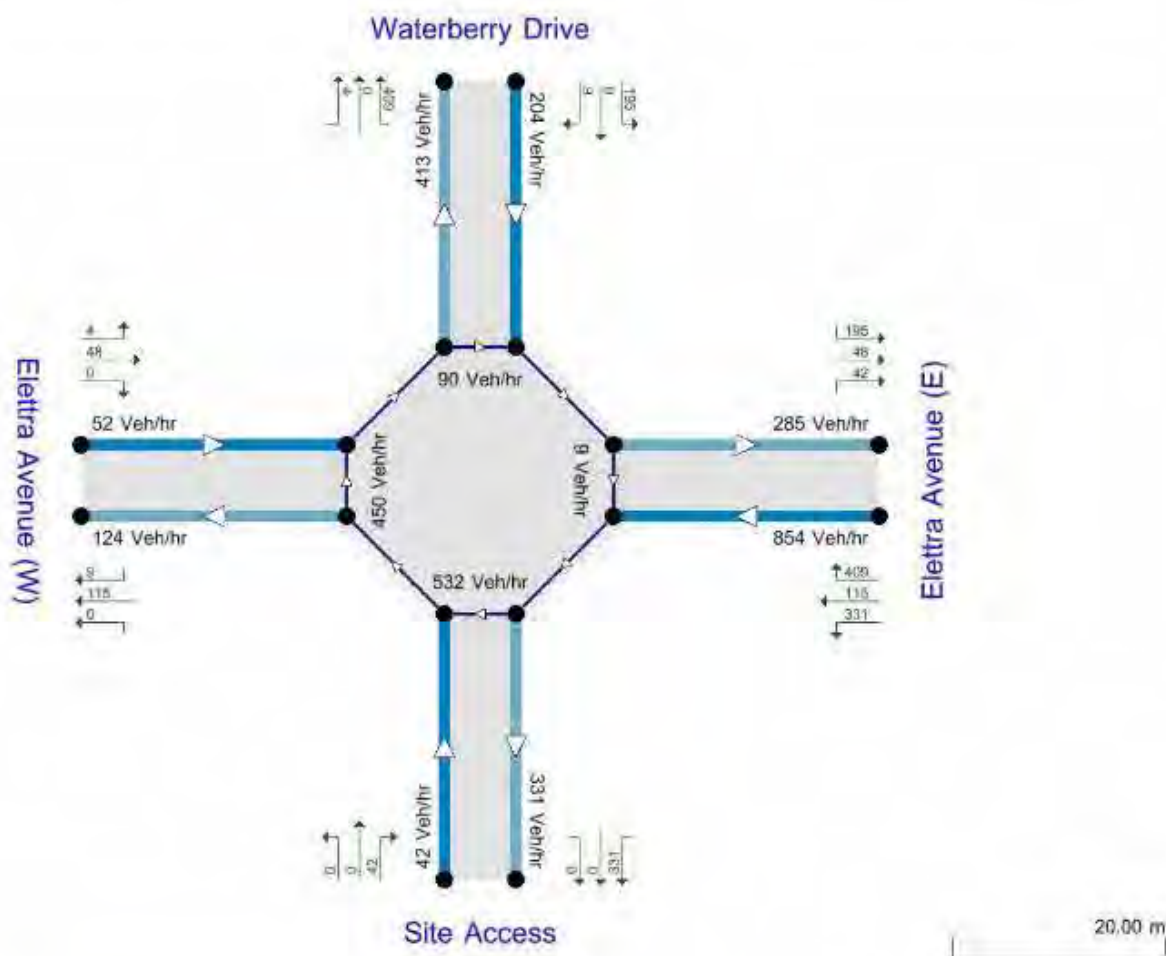
Title	Site Access Junction
Location	Elettra Avenue Waterloooville
Site Number	
Date	27/08/2013
Version	
Status	
Identifier	
Client	BAE
Jobnumber	29169
Enumerator	PBA\keen
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75			N/A	0.85	36.00	20.00

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	Veh	Veh	perHour	s	-Min	perMin



Plan overlays show installed flow through the junction entry and exit flows (Veh/hr).
 Time: 09:00-10:15
 Scenario Analysis: Site 10.1 - Junction Site 10.1 - 2010 Base, AM

The junction diagram reflects the last run of ARCADY.

(Default Analysis Set) - 2020 Base, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Elettra Avenue (E) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2020 Base, AM	2020 Base	AM		FLAT	08:00	09:00	60	15				✓		

Junction Network

Junctions

Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Do Geometric Delay	Junction Delay (s)	Junction LOS
(untitled)	Roundabout	1,2,3,4				3.48	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Name	Description
Elettra Avenue (E)	Elettra Avenue (E)	
Site Access	Site Access	
Elettra Avenue (W)	Elettra Avenue (W)	
Waterberry Drive	Waterberry Drive	

Capacity Options

Name	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
Elettra Avenue (E)	0.00	99999.00		0.00
Site Access	0.00	99999.00		0.00
Elettra Avenue (W)	0.00	99999.00		0.00
Waterberry Drive	0.00	99999.00		0.00

Roundabout Geometry

Name	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
Elettra Avenue (E)	3.00	7.40	41.50	25.69	44.00	19.50	
Site Access	6.20	9.10	11.08	19.46	44.00	24.00	
Elettra Avenue (W)	3.60	7.30	27.90	28.48	44.00	15.50	
Waterberry Drive	3.76	7.50	13.36	55.40	44.00	11.50	

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Pedestrian Crossings

Name	Crossing Type
Elettra Avenue (E)	None
Site Access	None
Elettra Avenue (W)	None
Waterberry Drive	None

Slope / Intercept / Capacity

Arm Intercept Adjustments

Name	Type	Reason	Direct Intercept Adjustment (PCU/hr)	Percentage Intercept Adjustment (%)
Elettra Avenue (E)	None			
Site Access	Direct		-1201.00	
Elettra Avenue (W)	Direct		-827.00	
Waterberry Drive	Direct		-597.00	

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
Elettra Avenue (E)		(calculated)	(calculated)	0.703	1994.478
Site Access		(calculated)	(calculated)	0.775	1201.663
Elettra Avenue (W)		(calculated)	(calculated)	0.709	1172.711
Waterberry Drive		(calculated)	(calculated)	0.699	1305.815

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

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
Elettra Avenue (E)	FLAT	✓	857.00	100.000
Site Access	FLAT	✓	42.00	100.000
Elettra Avenue (W)	FLAT	✓	52.00	100.000
Waterberry Drive	FLAT	✓	205.00	100.000

Turning Proportions

Turning Counts or Proportions (Veh/hr) - (untitled) (for whole period)

		To			
		1	2	3	4
From	1	0.000	332.000	115.000	410.000
	2	42.000	0.000	0.000	0.000
	3	48.000	0.000	0.000	4.000
	4	196.000	0.000	9.000	0.000

Turning Proportions (Veh) - (untitled) (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.39	0.13	0.48
	2	1.00	0.00	0.00	0.00
	3	0.92	0.00	0.00	0.08
	4	0.96	0.00	0.04	0.00

Vehicle Mix

Average PCU Per Vehicle - (untitled) (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.017	1.017	1.012
	2	1.023	1.000	1.000	1.000
	3	1.042	1.000	1.000	1.000
	4	1.061	1.000	1.000	1.000

Heavy Vehicle Percentages - (untitled) (for whole period)

		To			
		1	2	3	4
From	1	0.000	1.700	1.700	1.200
	2	2.300	0.000	0.000	0.000
	3	4.200	0.000	0.000	0.000
	4	6.100	0.000	0.000	0.000

Results

Results Summary for whole modelled period

Name	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (s)
Elettra Avenue (E)	0.44	3.26	0.78	A	857.00	857.00	46.17	3.23	0.77	46.18	3.23
Site Access	0.05	4.98	0.06	A	42.00	42.00	3.45	4.93	0.06	3.45	4.93
Elettra Avenue (W)	0.06	4.71	0.07	A	52.00	52.00	4.04	4.66	0.07	4.04	4.66
Waterberry Drive	0.17	3.72	0.21	A	205.00	205.00	12.61	3.69	0.21	12.61	3.69

Main Results for each time segment

Main results: (08:00-08:15)

Name	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
Elettra Avenue (E)	857.00	214.25	853.91	284.71	8.96	0.00	1959.55	1939.32	0.437	0.00	0.77	3.246	A
Site Access	42.00	10.50	41.77	330.80	532.07	0.00	766.51	234.24	0.055	0.00	0.06	4.966	A
Elettra Avenue (W)	52.00	13.00	51.73	123.55	450.29	0.00	817.53	324.37	0.064	0.00	0.07	4.700	A
Waterberry Drive	205.00	51.25	204.16	412.50	89.52	0.00	1172.75	869.41	0.175	0.00	0.21	3.713	A

Main results: (08:15-08:30)

Name	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
Elettra Avenue (E)	857.00	214.25	856.99	286.00	9.00	0.00	1959.52	1939.32	0.437	0.77	0.77	3.264	A
Site Access	42.00	10.50	42.00	332.00	534.00	0.00	765.03	234.24	0.055	0.06	0.06	4.978	A
Elettra Avenue (W)	52.00	13.00	52.00	124.00	452.00	0.00	816.36	324.37	0.064	0.07	0.07	4.709	A
Waterberry Drive	205.00	51.25	205.00	414.00	90.00	0.00	1172.43	869.41	0.175	0.21	0.21	3.720	A

Main results: (08:30-08:45)

Name	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
Elettra Avenue (E)	857.00	214.25	856.99	286.00	9.00	0.00	1959.52	1939.32	0.437	0.77	0.78	3.264	A
Site Access	42.00	10.50	42.00	332.00	534.00	0.00	765.03	234.24	0.055	0.06	0.06	4.978	A
Elettra Avenue (W)	52.00	13.00	52.00	124.00	452.00	0.00	816.35	324.37	0.064	0.07	0.07	4.709	A
Waterberry Drive	205.00	51.25	205.00	414.00	90.00	0.00	1172.42	869.41	0.175	0.21	0.21	3.720	A

Main results: (08:45-09:00)

Name	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
Elettra Avenue (E)	857.00	214.25	857.00	286.00	9.00	0.00	1959.52	1939.32	0.437	0.78	0.78	3.264	A
Site Access	42.00	10.50	42.00	332.00	534.00	0.00	765.03	234.24	0.055	0.06	0.06	4.978	A
Elettra Avenue (W)	52.00	13.00	52.00	124.00	452.00	0.00	816.35	324.37	0.064	0.07	0.07	4.709	A
Waterberry Drive	205.00	51.25	205.00	414.00	90.00	0.00	1172.42	869.41	0.175	0.21	0.21	3.720	A

Queueing Delay Results for each time segment

Queueing Delay results: (08:00-08:15)

Name	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
Elettra Avenue (E)	11.30	0.75	3.246	A	A
Site Access	0.84	0.06	4.966	A	A
Elettra Avenue (W)	0.99	0.07	4.700	A	A
Waterberry Drive	3.09	0.21	3.713	A	A

Queueing Delay results: (08:15-08:30)

Name	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
Elettra Avenue (E)	11.61	0.77	3.264	A	A
Site Access	0.87	0.06	4.978	A	A
Elettra Avenue (W)	1.02	0.07	4.709	A	A
Waterberry Drive	3.17	0.21	3.720	A	A

Queueing Delay results: (08:30-08:45)

Name	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
Elettra Avenue (E)	11.63	0.78	3.264	A	A
Site Access	0.87	0.06	4.978	A	A
Elettra Avenue (W)	1.02	0.07	4.709	A	A
Waterberry Drive	3.17	0.21	3.720	A	A

Queueing Delay results: (08:45-09:00)

Name	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
Elettra Avenue (E)	11.64	0.78	3.264	A	A
Site Access	0.87	0.06	4.978	A	A
Elettra Avenue (W)	1.02	0.07	4.709	A	A
Waterberry Drive	3.17	0.21	3.720	A	A

Junctions 8	
ARCADY 8 - Roundabout Module	
Version: 8.0.2.316 [14 Feb 2013] © Copyright TRL Limited, 2013	
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Filename: Site Access Junction_2020_PM.arc8

Path: J:\29169 Elettra Avenue, Waterloo\Technical\Transport\Junction Assessments\2020 Base

Report generation date: 27/08/2013 16:20:34

« (Default Analysis Set) - 2020 Base, PM

- » Junction Network
- » Arms
- » Traffic Flows
- » Entry Flows
- » Turning Proportions
- » Vehicle Mix
- » Results

Summary of junction performance

	PM			
	Queue (Veh)	Delay (s)	RFC	LOS
A1 - 2020 Base				
Elettra Avenue (E)	0.18	2.84	0.15	A
Site Access	0.33	4.64	0.25	A
Elettra Avenue (W)	0.22	5.04	0.18	A
Waterberry Drive	0.88	6.68	0.47	A

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

"D2 - 2020 Base, PM" model duration: 16:45 - 17:45

Run using Junctions 8.0.2.316 at 27/08/2013 16:20:33

File summary

File Description

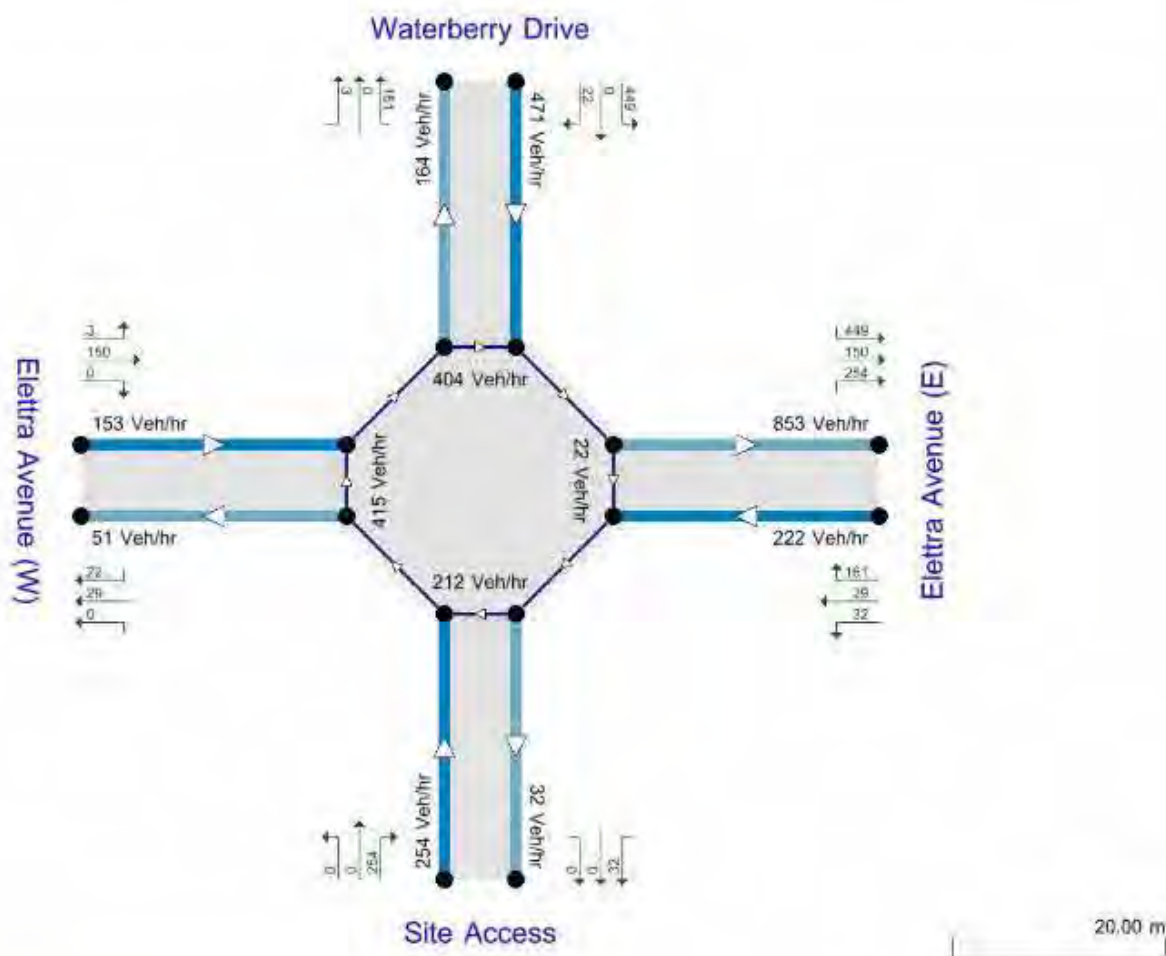
Title	Site Access Junction
Location	Elettra Avenue Waterloo
Site Number	
Date	27/08/2013
Version	
Status	
Identifier	
Client	BAE
Jobnumber	29169
Enumerator	PBA\keen
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75			N/A	0.85	36.00	20.00

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	Veh	Veh	perHour	s	-Min	perMin



Flow overlays show estimated flow through the junction entry and exit flows (Veh/hr).
Time Segment: 17:40-17:50
Showing Analysis Set: 181 - Demand File: T10 - 2020 Base, PM

The junction diagram reflects the last run of ARCADY.

(Default Analysis Set) - 2020 Base, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Elettra Avenue (E) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2020 Base, PM	2020 Base	PM		FLAT	16:45	17:45	60	15				✓		

Junction Network

Junctions

Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Do Geometric Delay	Junction Delay (s)	Junction LOS
(untitled)	Roundabout	1,2,3,4				5.20	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Name	Description
Elettra Avenue (E)	Elettra Avenue (E)	
Site Access	Site Access	
Elettra Avenue (W)	Elettra Avenue (W)	
Waterberry Drive	Waterberry Drive	

Capacity Options

Name	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
Elettra Avenue (E)	0.00	99999.00		0.00
Site Access	0.00	99999.00		0.00
Elettra Avenue (W)	0.00	99999.00		0.00
Waterberry Drive	0.00	99999.00		0.00

Roundabout Geometry

Name	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
Elettra Avenue (E)	3.00	7.40	41.50	25.69	44.00	19.50	
Site Access	6.20	9.10	11.08	19.46	44.00	24.00	
Elettra Avenue (W)	3.60	7.30	27.90	28.48	44.00	15.50	
Waterberry Drive	3.76	7.50	13.36	55.40	44.00	11.50	

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Pedestrian Crossings

Name	Crossing Type
Elettra Avenue (E)	None
Site Access	None
Elettra Avenue (W)	None
Waterberry Drive	None

Slope / Intercept / Capacity

Arm Intercept Adjustments

Name	Type	Reason	Direct Intercept Adjustment (PCU/hr)	Percentage Intercept Adjustment (%)
Elettra Avenue (E)	Direct		-457.00	
Site Access	Direct		-1201.00	
Elettra Avenue (W)	Direct		-827.00	
Waterberry Drive	Direct		-594.00	

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
Elettra Avenue (E)		(calculated)	(calculated)	0.703	1537.478
Site Access		(calculated)	(calculated)	0.775	1201.663
Elettra Avenue (W)		(calculated)	(calculated)	0.709	1172.711
Waterberry Drive		(calculated)	(calculated)	0.699	1308.815

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

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
Elettra Avenue (E)	FLAT	✓	223.00	100.000
Site Access	FLAT	✓	255.00	100.000
Elettra Avenue (W)	FLAT	✓	154.00	100.000
Waterberry Drive	FLAT	✓	474.00	100.000

Turning Proportions

Turning Counts or Proportions (Veh/hr) - (untitled) (for whole period)

		To			
From		1	2	3	4
	1	0.000	32.000	29.000	162.000
	2	255.000	0.000	0.000	0.000
	3	151.000	0.000	0.000	3.000
	4	452.000	0.000	22.000	0.000

Turning Proportions (Veh) - (untitled) (for whole period)

		To			
From		1	2	3	4
	1	0.00	0.14	0.13	0.73
	2	1.00	0.00	0.00	0.00
	3	0.98	0.00	0.00	0.02
	4	0.95	0.00	0.05	0.00

Vehicle Mix

Average PCU Per Vehicle - (untitled) (for whole period)

		To			
From		1	2	3	4
	1	1.000	1.000	1.069	1.019
	2	1.002	1.000	1.000	1.000
	3	1.007	1.000	1.000	1.000
	4	1.011	1.000	1.000	1.000

Heavy Vehicle Percentages - (untitled) (for whole period)

		To			
From		1	2	3	4
	1	0.000	0.000	6.900	1.900
	2	0.200	0.000	0.000	0.000
	3	0.700	0.000	0.000	0.000
	4	1.100	0.000	0.000	0.000

Results

Results Summary for whole modelled period

Name	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (s)
Elettra Avenue (E)	0.15	2.84	0.18	A	223.00	223.00	10.51	2.83	0.18	10.51	2.83
Site Access	0.25	4.64	0.33	A	255.00	255.00	19.51	4.59	0.33	19.51	4.59
Elettra Avenue (W)	0.18	5.04	0.22	A	154.00	154.00	12.78	4.98	0.21	12.79	4.98
Waterberry Drive	0.47	6.68	0.88	A	474.00	474.00	51.69	6.54	0.86	51.71	6.55

Main Results for each time segment

Main results: (16:45-17:00)

Name	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
Elettra Avenue (E)	223.00	55.75	222.30	852.56	21.84	0.00	1488.23	1471.68	0.150	0.00	0.18	2.842	A
Site Access	255.00	63.75	253.89	31.90	212.24	0.00	1031.25	163.23	0.247	0.00	0.33	4.622	A
Elettra Avenue (W)	154.00	38.50	153.15	50.75	415.19	0.00	869.78	282.22	0.177	0.00	0.21	5.017	A
Waterberry Drive	474.00	118.50	470.54	164.47	403.86	0.00	1014.70	989.23	0.467	0.00	0.86	6.576	A

Main results: (17:00-17:15)

Name	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
Elettra Avenue (E)	223.00	55.75	223.00	857.96	22.00	0.00	1488.12	1471.68	0.150	0.18	0.18	2.844	A
Site Access	255.00	63.75	254.99	32.00	213.00	0.00	1030.65	163.23	0.247	0.33	0.33	4.640	A
Elettra Avenue (W)	154.00	38.50	154.00	51.00	417.00	0.00	868.50	282.22	0.177	0.21	0.21	5.038	A
Waterberry Drive	474.00	118.50	473.97	165.00	405.99	0.00	1013.21	989.23	0.468	0.86	0.87	6.675	A

Main results: (17:15-17:30)

Name	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
Elettra Avenue (E)	223.00	55.75	223.00	857.99	22.00	0.00	1488.12	1471.68	0.150	0.18	0.18	2.844	A
Site Access	255.00	63.75	255.00	32.00	213.00	0.00	1030.65	163.23	0.247	0.33	0.33	4.640	A
Elettra Avenue (W)	154.00	38.50	154.00	51.00	417.00	0.00	868.49	282.22	0.177	0.21	0.22	5.038	A
Waterberry Drive	474.00	118.50	473.99	165.00	406.00	0.00	1013.21	989.23	0.468	0.87	0.87	6.675	A

Main results: (17:30-17:45)

Name	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
Elettra Avenue (E)	223.00	55.75	223.00	858.00	22.00	0.00	1488.12	1471.68	0.150	0.18	0.18	2.844	A
Site Access	255.00	63.75	255.00	32.00	213.00	0.00	1030.65	163.23	0.247	0.33	0.33	4.640	A
Elettra Avenue (W)	154.00	38.50	154.00	51.00	417.00	0.00	868.49	282.22	0.177	0.22	0.22	5.038	A
Waterberry Drive	474.00	118.50	474.00	165.00	406.00	0.00	1013.21	989.23	0.468	0.87	0.88	6.675	A

Queueing Delay Results for each time segment

Queueing Delay results: (16:45-17:00)

Name	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
Elettra Avenue (E)	2.59	0.17	2.842	A	A
Site Access	4.76	0.32	4.622	A	A
Elettra Avenue (W)	3.12	0.21	5.017	A	A
Waterberry Drive	12.41	0.83	6.576	A	A

Queueing Delay results: (17:00-17:15)

Name	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
Elettra Avenue (E)	2.64	0.18	2.844	A	A
Site Access	4.91	0.33	4.640	A	A
Elettra Avenue (W)	3.22	0.21	5.038	A	A
Waterberry Drive	13.04	0.87	6.675	A	A

Queueing Delay results: (17:15-17:30)

Name	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
Elettra Avenue (E)	2.64	0.18	2.844	A	A
Site Access	4.92	0.33	4.640	A	A
Elettra Avenue (W)	3.22	0.21	5.038	A	A
Waterberry Drive	13.11	0.87	6.675	A	A

Queueing Delay results: (17:30-17:45)

Name	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
Elettra Avenue (E)	2.64	0.18	2.844	A	A
Site Access	4.92	0.33	4.640	A	A
Elettra Avenue (W)	3.23	0.22	5.038	A	A
Waterberry Drive	13.13	0.88	6.675	A	A

Appendix J 2020 Base + Development Junction Capacity Results

Junctions 8	
ARCADY 8 - Roundabout Module	
Version: 8.0.2.316 [14 Feb 2013] © Copyright TRL Limited, 2013	
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Filename: Hambledon Rd_Milton Rd_Elettra Ave_AM - 2020 Base + Dev.arc8
Path: J:\29169 Elettra Avenue, Waterloo\Technical\Transport\Junction Assessments\2020 Base + Development
Report generation date: 02/09/2013 09:25:40

» (Default Analysis Set) - 2020 Base + Development, AM

Summary of junction performance

	AM			
	Queue (Veh)	Delay (s)	RFC	LOS
A1 - 2020 Base + Development				
Milton Road	3.18	16.65	0.76	C
Hambledon Road (S)	2.35	7.24	0.70	A
Elettra Ave	0.27	3.37	0.21	A
Hambledon Road (N)	1.31	4.98	0.57	A

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

"D1 - 2020 Base + Development, AM" model duration: 08:00 - 09:00

Run using Junctions 8.0.2.316 at 02/09/2013 09:25:39

File summary

File Description

Title	Hambledon Rd / Milton Rd / Elettra Ave
Location	BAE Waterloo
Site Number	
Date	27/08/2013
Version	
Status	
Identifier	
Client	BAE
Jobnumber	29169
Enumerator	PBA\lekeen
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75			N/A	0.85	36.00	20.00

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	s	-Min	perMin



Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Hambleton Road (S) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	Elettra Ave - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	Hambleton Road (N) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Rela
2020 Base + Development, AM	2020 Base + Development	AM		FLAT	08:00	09:00	60	15				✓		

Junction Network

Junctions

Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Do Geometric Delay	Junction Delay (s)	Junction LOS
(untitled)	Roundabout	1,2,3,4				8.29	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Name	Description
Milton Road	Milton Road	
Hambledon Road (S)	Hambledon Road (S)	
Elettra Ave	Elettra Ave	
Hambledon Road (N)	Hambledon Road (N)	

Capacity Options

Name	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
Milton Road	0.00	99999.00		0.00
Hambledon Road (S)	0.00	99999.00		0.00
Elettra Ave	0.00	99999.00		0.00
Hambledon Road (N)	0.00	99999.00		0.00

Roundabout Geometry

Name	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
Milton Road	3.40	4.20	24.90	21.00	54.00	22.50	
Hambledon Road (S)	7.20	8.20	55.80	54.60	54.00	25.00	
Elettra Ave	3.30	7.50	52.88	21.00	54.00	23.00	
Hambledon Road (N)	3.60	7.70	127.60	6.00	54.00	22.00	

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Pedestrian Crossings

Name	Crossing Type
Milton Road	None
Hambledon Road (S)	None
Elettra Ave	None
Hambledon Road (N)	None

Slope / Intercept / Capacity

Arm Intercept Adjustments

Name	Type	Reason	Direct Intercept Adjustment (PCU/hr)	Percentage Intercept Adjustment (%)
Milton Road	None			
Hambledon Road (S)	Direct	Imbalance of flows	-943.00	
Elettra Ave	None			
Hambledon Road (N)	None			

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
Milton Road		(calculated)	(calculated)	0.521	1285.444
Hambledon Road (S)		(calculated)	(calculated)	0.766	1644.472
Elettra Ave		(calculated)	(calculated)	0.664	2068.229
Hambledon Road (N)		(calculated)	(calculated)	0.625	2025.835

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

Arm Capacity Adjustments

Name	Type	Reason	Direct Capacity Adjustment (PCU/hr)	Percentage Capacity Adjustment (%)
Milton Road	Percentage	To validate against queue surveys		135.00
Hambledon Road (S)	Percentage	To validate against queue surveys		125.00
Elettra Ave	None			
Hambledon Road (N)	None			

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
Milton Road	FLAT	✓	701.00	100.000
Hambledon Road (S)	FLAT	✓	1179.00	100.000
Elettra Ave	FLAT	✓	290.00	100.000
Hambledon Road (N)	FLAT	✓	950.00	100.000

Turning Proportions

Turning Counts or Proportions (Veh/hr) - (untitled) (for whole period)

		To			
		1	2	3	4
From	1	0.000	493.000	110.000	98.000
	2	224.000	27.000	362.000	566.000
	3	54.000	158.000	0.000	78.000
	4	40.000	805.000	105.000	0.000

Turning Proportions (Veh) - (untitled) (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.70	0.16	0.14
	2	0.19	0.02	0.31	0.48
	3	0.19	0.54	0.00	0.27
	4	0.04	0.85	0.11	0.00

Vehicle Mix

Average PCU Per Vehicle - (untitled) (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.034	1.000	1.010
	2	1.093	1.000	1.013	1.049
	3	1.019	1.074	1.000	1.027
	4	1.025	1.025	1.032	1.000

Heavy Vehicle Percentages - (untitled) (for whole period)

		To			
		1	2	3	4
From	1	0.000	3.400	0.000	1.000
	2	9.300	0.000	1.300	4.900
	3	1.900	7.400	0.000	2.700
	4	2.500	2.500	3.200	0.000

Results

Results Summary for whole modelled period

Name	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (s)
Milton Road	0.76	16.65	3.18	C	701.00	701.00	180.11	15.42	3.00	180.45	15.44
Hambleton Road (S)	0.70	7.24	2.35	A	1179.00	1179.00	137.39	6.99	2.29	137.49	7.00
Elettra Ave	0.21	3.37	0.27	A	290.00	290.00	16.13	3.34	0.27	16.13	3.34
Hambleton Road (N)	0.57	4.98	1.31	A	950.00	950.00	77.46	4.89	1.29	77.49	4.89

Main Results for each time segment

Main results: (08:00-08:15)

Name	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
Milton Road	701.00	175.25	689.10	315.84	1089.24	0.00	920.75	403.53	0.761	0.00	2.97	14.867	B
Hambledon Road (S)	1179.00	294.75	1169.83	1469.45	308.90	0.00	1679.93	1731.37	0.702	0.00	2.29	6.938	A
Elettra Ave	290.00	72.50	288.92	571.74	906.98	0.00	1363.27	1128.17	0.213	0.00	0.27	3.348	A
Hambledon Road (N)	950.00	237.50	944.82	735.64	460.26	0.00	1674.06	1198.73	0.567	0.00	1.30	4.903	A

Main results: (08:15-08:30)

Name	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
Milton Road	701.00	175.25	700.43	317.96	1094.95	0.00	916.71	403.53	0.765	2.97	3.12	16.543	C
Hambledon Road (S)	1179.00	294.75	1178.84	1482.55	312.83	0.00	1676.30	1731.37	0.703	2.29	2.34	7.229	A
Elettra Ave	290.00	72.50	289.99	576.85	914.80	0.00	1358.08	1128.17	0.214	0.27	0.27	3.369	A
Hambledon Road (N)	950.00	237.50	949.96	741.84	462.96	0.00	1672.29	1198.73	0.568	1.30	1.31	4.983	A

Main results: (08:30-08:45)

Name	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
Milton Road	701.00	175.25	700.82	317.99	1094.98	0.00	916.68	403.53	0.765	3.12	3.16	16.620	C
Hambledon Road (S)	1179.00	294.75	1178.95	1482.86	312.94	0.00	1676.19	1731.37	0.703	2.34	2.35	7.237	A
Elettra Ave	290.00	72.50	290.00	576.95	914.94	0.00	1357.99	1128.17	0.214	0.27	0.27	3.370	A
Hambledon Road (N)	950.00	237.50	949.99	741.95	462.99	0.00	1672.27	1198.73	0.568	1.31	1.31	4.983	A

Main results: (08:45-09:00)

Name	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
Milton Road	701.00	175.25	700.91	318.00	1094.99	0.00	916.68	403.53	0.765	3.16	3.18	16.645	C
Hambledon Road (S)	1179.00	294.75	1178.98	1482.93	312.97	0.00	1676.16	1731.37	0.703	2.35	2.35	7.240	A
Elettra Ave	290.00	72.50	290.00	576.98	914.97	0.00	1357.97	1128.17	0.214	0.27	0.27	3.370	A
Hambledon Road (N)	950.00	237.50	950.00	741.97	463.00	0.00	1672.27	1198.73	0.568	1.31	1.31	4.983	A

Queueing Delay Results for each time segment

Queueing Delay results: (08:00-08:15)

Name	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
Milton Road	39.39	2.63	14.867	B	B
Hambledon Road (S)	32.17	2.14	6.938	A	A
Elettra Ave	3.95	0.26	3.348	A	A
Hambledon Road (N)	18.65	1.24	4.903	A	A

Queueing Delay results: (08:15-08:30)

Name	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
Milton Road	45.95	3.06	16.543	C	B
Hambledon Road (S)	34.80	2.32	7.229	A	A
Elettra Ave	4.05	0.27	3.369	A	A
Hambledon Road (N)	19.53	1.30	4.983	A	A

Queueing Delay results: (08:30-08:45)

Name	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
Milton Road	47.15	3.14	16.620	C	B
Hambledon Road (S)	35.14	2.34	7.237	A	A
Elettra Ave	4.06	0.27	3.370	A	A
Hambledon Road (N)	19.62	1.31	4.983	A	A

Queueing Delay results: (08:45-09:00)

Name	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
Milton Road	47.62	3.17	16.645	C	B
Hambledon Road (S)	35.28	2.35	7.240	A	A
Elettra Ave	4.07	0.27	3.370	A	A
Hambledon Road (N)	19.65	1.31	4.983	A	A

Junctions 8	
ARCADY 8 - Roundabout Module	
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Filename: Hambledon Rd_Milton Rd_Elettra Ave_PM - 2020 Base + Dev.arc8
Path: J:\29169 Elettra Avenue, Waterloo\Technical\Transport\Junction Assessments\2020 Base + Development
Report generation date: 02/09/2013 09:29:29

» (Default Analysis Set) - 2020 Base + Development, PM

Summary of junction performance

	PM			
	Queue (Veh)	Delay (s)	RFC	LOS
A1 - 2020 Base + Development				
Milton Road	4.55	30.86	0.83	D
Hambledon Road (S)	3.18	7.08	0.76	A
Elettra Ave	13.83	66.35	0.95	F
Hambledon Road (N)	6.50	32.18	0.88	D

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

"D2 - 2020 Base + Development, PM" model duration: 16:45 - 17:45

Run using Junctions 8.0.2.316 at 02/09/2013 09:29:28

File summary

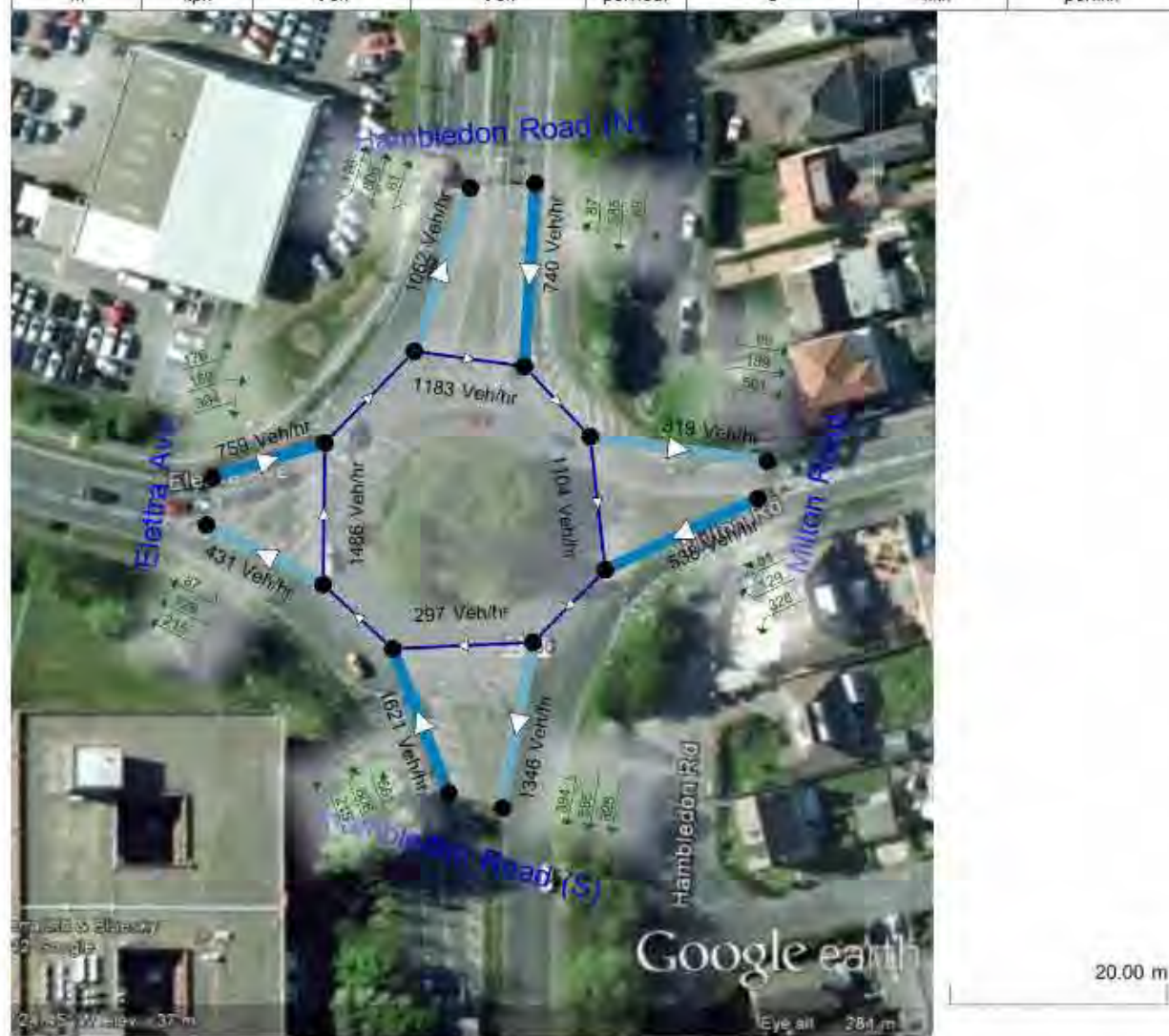
File Description

Title	Hambledon Rd / Milton Rd / Elettra Ave
Location	BAE Waterloo
Site Number	
Date	31/05/2012
Version	
Status	(new file)
Identifier	
Client	BAE
Jobnumber	26365
Enumerator	PBA\lekeen
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75			N/A	0.85	36.00	20.00

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	s	-Min	perMin



Time Segment: 15:45-17:00
 General Abstracts Set: 311 • Demand File: TS • 2010 Book = Gewinnzonen: BM

The junction diagram reflects the last run of ARCADY.

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Hambleton Road (S) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	Elettra Ave - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	Hambleton Road (N) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Rela
2020 Base + Development, PM	2020 Base + Development	PM		FLAT	16:45	17:45	60	15				✓		

Junction Network

Junctions

Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Do Geometric Delay	Junction Delay (s)	Junction LOS
(untitled)	Roundabout	1,2,3,4				28.18	D

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Name	Description
Milton Road	Milton Road	
Hambledon Road (S)	Hambledon Road (S)	
Elettra Ave	Elettra Ave	
Hambledon Road (N)	Hambledon Road (N)	

Capacity Options

Name	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
Milton Road	0.00	99999.00		0.00
Hambledon Road (S)	0.00	99999.00		0.00
Elettra Ave	0.00	99999.00		0.00
Hambledon Road (N)	0.00	99999.00		0.00

Roundabout Geometry

Name	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
Milton Road	3.40	4.20	24.90	21.00	54.00	22.50	
Hambledon Road (S)	7.20	8.20	55.80	54.60	54.00	25.00	
Elettra Ave	3.30	7.50	52.88	21.00	54.00	23.00	
Hambledon Road (N)	3.60	7.70	127.60	6.00	54.00	22.00	

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Pedestrian Crossings

Name	Crossing Type
Milton Road	None
Hambledon Road (S)	None
Elettra Ave	None
Hambledon Road (N)	None

Slope / Intercept / Capacity

Arm Intercept Adjustments

Name	Type	Reason	Direct Intercept Adjustment (PCU/hr)	Percentage Intercept Adjustment (%)
Milton Road	None			
Hambledon Road (S)	Direct	Imbalance of flows	-533.00	
Elettra Ave	None			
Hambledon Road (N)	None			

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
Milton Road		(calculated)	(calculated)	0.521	1285.444
Hambledon Road (S)		(calculated)	(calculated)	0.766	2054.472
Elettra Ave		(calculated)	(calculated)	0.664	2068.229
Hambledon Road (N)		(calculated)	(calculated)	0.625	2025.835

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

Arm Capacity Adjustments

Name	Type	Reason	Direct Capacity Adjustment (PCU/hr)	Percentage Capacity Adjustment (%)
Milton Road	None			
Hambledon Road (S)	Percentage	To validate against queue		120.00
Elettra Ave	Percentage	To validate against queue		80.00
Hambledon Road (N)	Percentage	To validate against queue		70.00

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
Milton Road	FLAT	✓	553.00	100.000
Hambledon Road (S)	FLAT	✓	1633.00	100.000
Elettra Ave	FLAT	✓	795.00	100.000
Hambledon Road (N)	FLAT	✓	761.00	100.000

Turning Proportions

Turning Counts or Proportions (Veh/hr) - (untitled) (for whole period)

		To			
		1	2	3	4
From	1	0.000	337.000	133.000	83.000
	2	565.000	39.000	217.000	812.000
	3	198.000	413.000	0.000	184.000
	4	71.000	601.000	89.000	0.000

Turning Proportions (Veh) - (untitled) (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.61	0.24	0.15
	2	0.35	0.02	0.13	0.50
	3	0.25	0.52	0.00	0.23
	4	0.09	0.79	0.12	0.00

Vehicle Mix

Average PCU Per Vehicle - (untitled) (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.038	1.007	1.012
	2	1.023	1.026	1.014	1.018
	3	1.014	1.005	1.000	1.000
	4	1.000	1.013	1.011	1.000

Heavy Vehicle Percentages - (untitled) (for whole period)

		To			
		1	2	3	4
From	1	0.000	3.800	0.700	1.200
	2	2.300	2.600	1.400	1.800
	3	1.400	0.500	0.000	0.000
	4	0.000	1.300	1.100	0.000

Results

Results Summary for whole modelled period

Name	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (s)
Milton Road	0.83	30.86	4.55	D	553.00	553.00	239.15	25.95	3.99	240.08	26.05
Hambleton Road (S)	0.76	7.08	3.18	A	1633.00	1633.00	184.66	6.78	3.08	184.80	6.79
Elettra Ave	0.95	66.35	13.83	F	795.00	795.00	637.95	48.15	10.63	644.81	48.66
Hambleton Road (N)	0.88	32.18	6.50	D	761.00	761.00	337.99	26.65	5.63	339.45	26.76

Main Results for each time segment

Main results: (16:45-17:00)

Name	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
Milton Road	553.00	138.25	538.36	818.88	1104.17	0.00	685.49	665.23	0.807	0.00	3.66	22.644	C
Hambledon Road (S)	1633.00	408.25	1620.71	1345.70	296.84	0.00	2148.37	2091.21	0.760	0.00	3.07	6.676	A
Elettra Ave	795.00	198.75	759.16	431.41	1486.15	0.00	843.89	613.81	0.942	0.00	8.96	34.247	D
Hambledon Road (N)	761.00	190.25	740.14	1062.40	1182.91	0.00	882.04	853.72	0.863	0.00	5.22	22.819	C

Main results: (17:00-17:15)

Name	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
Milton Road	553.00	138.25	550.72	831.08	1133.91	0.00	670.25	665.23	0.825	3.66	4.23	29.168	D
Hambledon Road (S)	1633.00	408.25	1632.69	1380.86	303.74	0.00	2142.09	2091.21	0.762	3.07	3.15	7.056	A
Elettra Ave	795.00	198.75	784.88	438.04	1498.40	0.00	837.30	613.81	0.949	8.96	11.49	55.163	F
Hambledon Road (N)	761.00	190.25	757.88	1076.16	1207.11	0.00	871.46	853.72	0.873	5.22	6.00	30.224	D

Main results: (17:15-17:30)

Name	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
Milton Road	553.00	138.25	552.15	832.44	1137.89	0.00	668.21	665.23	0.828	4.23	4.44	30.384	D
Hambledon Road (S)	1633.00	408.25	1632.90	1385.53	304.51	0.00	2141.39	2091.21	0.763	3.15	3.17	7.074	A
Elettra Ave	795.00	198.75	789.37	438.63	1498.79	0.00	837.09	613.81	0.950	11.49	12.90	62.204	F
Hambledon Road (N)	761.00	190.25	759.70	1077.52	1210.63	0.00	869.92	853.72	0.875	6.00	6.32	31.580	D

Main results: (17:30-17:45)

Name	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
Milton Road	553.00	138.25	552.56	832.99	1139.42	0.00	667.43	665.23	0.829	4.44	4.55	30.860	D
Hambledon Road (S)	1633.00	408.25	1632.95	1387.23	304.74	0.00	2141.18	2091.21	0.763	3.17	3.18	7.080	A
Elettra Ave	795.00	198.75	791.29	438.80	1498.89	0.00	837.03	613.81	0.950	12.90	13.83	66.348	F
Hambledon Road (N)	761.00	190.25	760.28	1078.05	1212.12	0.00	869.27	853.72	0.875	6.32	6.50	32.183	D

Queueing Delay Results for each time segment

Queueing Delay results: (16:45-17:00)

Name	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
Milton Road	46.02	3.07	22.644	C	C
Hambledon Road (S)	42.75	2.85	6.676	A	A
Elettra Ave	97.63	6.51	34.247	D	C
Hambledon Road (N)	63.63	4.24	22.819	C	C

Queueing Delay results: (17:00-17:15)

Name	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
Milton Road	60.27	4.02	29.168	D	C
Hambledon Road (S)	46.80	3.12	7.056	A	A
Elettra Ave	155.70	10.38	55.163	F	E
Hambledon Road (N)	85.34	5.69	30.224	D	C

Queueing Delay results: (17:15-17:30)

Name	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
Milton Road	65.29	4.35	30.384	D	C
Hambledon Road (S)	47.43	3.16	7.074	A	A
Elettra Ave	183.75	12.25	62.204	F	E
Hambledon Road (N)	92.71	6.18	31.580	D	C

Queueing Delay results: (17:30-17:45)

Name	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
Milton Road	67.56	4.50	30.860	D	C
Hambledon Road (S)	47.68	3.18	7.080	A	A
Elettra Ave	200.86	13.39	66.348	F	E
Hambledon Road (N)	96.31	6.42	32.183	D	C

Junctions 8	
ARCADY 8 - Roundabout Module	
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Filename: Site Access Junction_2020 + Dev_AM.arc8

Path: J:\29169 Elettra Avenue, Waterloooville\Technical\Transport\Junction Assessments\2020 Base + Development

Report generation date: 28/08/2013 13:46:00

« (Default Analysis Set) - 2020 Base + Development, AM

- » Junction Network
- » Arms
- » Traffic Flows
- » Entry Flows
- » Turning Proportions
- » Vehicle Mix
- » Results

Summary of junction performance

	AM			
	Queue (Veh)	Delay (s)	RFC	LOS
A1 - 2020 Base + Development				
Elettra Avenue (E)	0.59	3.69	0.37	A
Site Access	0.07	4.61	0.06	A
Elettra Avenue (W)	0.07	4.75	0.06	A
Waterberry Drive	0.21	3.74	0.18	A

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

'D1 - 2020 Base + Development, AM' model duration: 08:00 - 09:00

Run using Junctions 8.0.2.316 at 28/08/2013 13:45:59

File summary

File Description

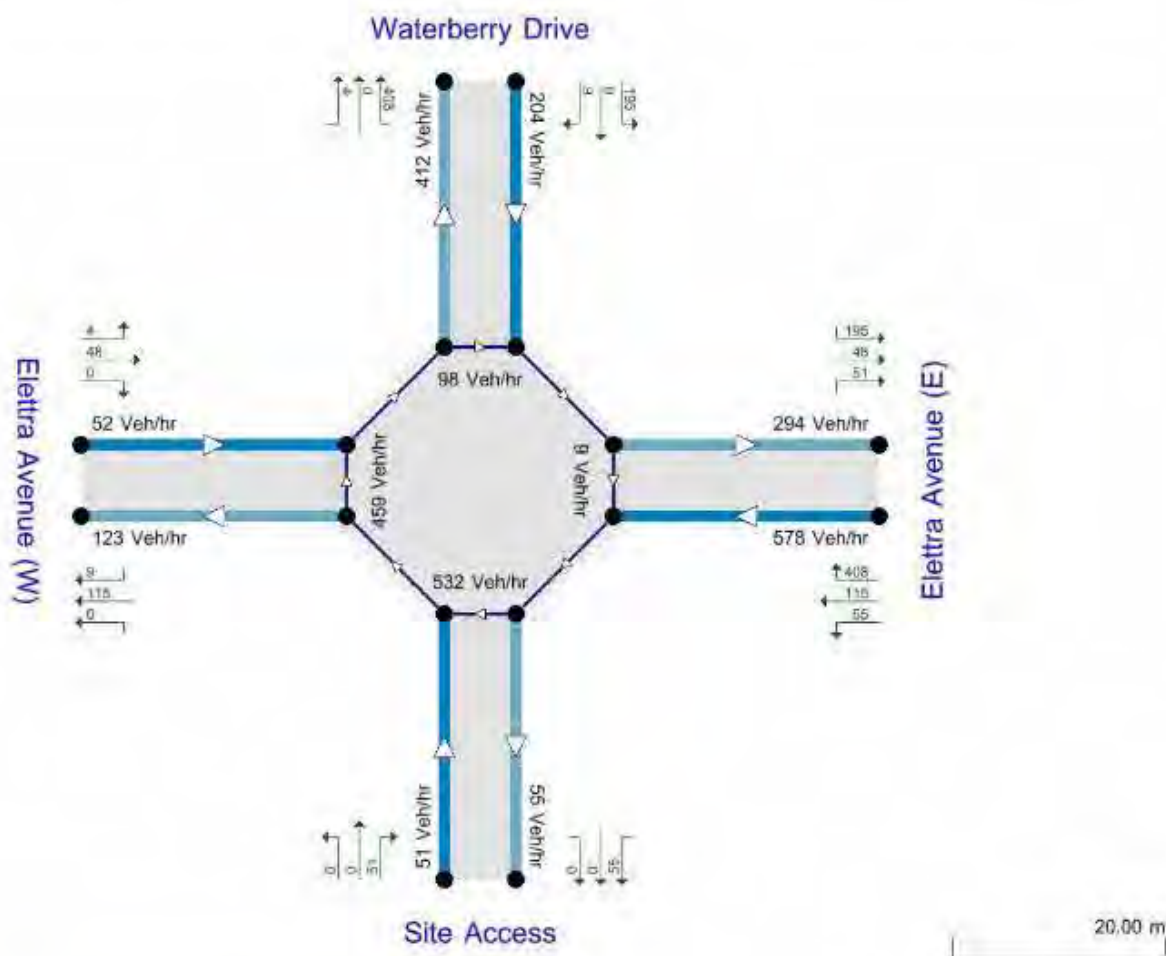
Title	Site Access Junction
Location	Elettra Avenue Waterloooville
Site Number	
Date	27/08/2013
Version	
Status	
Identifier	
Client	BAE
Jobnumber	29169
Enumerator	PBA\lekeen
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75			N/A	0.85	36.00	20.00

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	Veh	Veh	perHour	s	-Min	perMin



Flow overlays show capacities flow through the junction entry and exit flows (Veh/hr).

Time: 08:00-08:15

Scenario Analysis Set: 16.1 - Demand Set: 101 - 2010 Base + Development, AM

The junction diagram reflects the last run of ARCADY.

(Default Analysis Set) - 2020 Base + Development, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Elettra Avenue (E) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Rela
2020 Base + Development, AM	2020 Base + Development	AM		FLAT	08:00	09:00	60	15				✓		

Junction Network

Junctions

Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Do Geometric Delay	Junction Delay (s)	Junction LOS
(untitled)	Roundabout	1,2,3,4				3.82	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Name	Description
Elettra Avenue (E)	Elettra Avenue (E)	
Site Access	Site Access	
Elettra Avenue (W)	Elettra Avenue (W)	
Waterberry Drive	Waterberry Drive	

Capacity Options

Name	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
Elettra Avenue (E)	0.00	99999.00		0.00
Site Access	0.00	99999.00		0.00
Elettra Avenue (W)	0.00	99999.00		0.00
Waterberry Drive	0.00	99999.00		0.00

Roundabout Geometry

Name	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
Elettra Avenue (E)	3.00	7.40	41.50	25.69	44.00	19.50	
Site Access	3.40	8.96	16.96	19.46	44.00	24.00	
Elettra Avenue (W)	3.60	7.30	27.90	28.48	44.00	15.50	
Waterberry Drive	3.76	7.50	13.36	55.40	44.00	11.50	

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Pedestrian Crossings

Name	Crossing Type
Elettra Avenue (E)	None
Site Access	None
Elettra Avenue (W)	None
Waterberry Drive	None

Slope / Intercept / Capacity

Arm Intercept Adjustments

Name	Type	Reason	Direct Intercept Adjustment (PCU/hr)	Percentage Intercept Adjustment (%)
Elettra Avenue (E)	Direct		-413.00	
Site Access	Direct		-675.00	
Elettra Avenue (W)	Direct		-827.00	
Waterberry Drive	Direct		-597.00	

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
Elettra Avenue (E)		(calculated)	(calculated)	0.703	1581.478
Site Access		(calculated)	(calculated)	0.674	1213.426
Elettra Avenue (W)		(calculated)	(calculated)	0.709	1172.711
Waterberry Drive		(calculated)	(calculated)	0.699	1305.815

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

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
Elettra Avenue (E)	FLAT	✓	580.00	100.000
Site Access	FLAT	✓	51.00	100.000
Elettra Avenue (W)	FLAT	✓	52.00	100.000
Waterberry Drive	FLAT	✓	205.00	100.000

Turning Proportions

Turning Counts or Proportions (Veh/hr) - (untitled) (for whole period)

		To			
		1	2	3	4
From	1	0.000	55.000	115.000	410.000
	2	51.000	0.000	0.000	0.000
	3	48.000	0.000	0.000	4.000
	4	196.000	0.000	9.000	0.000

Turning Proportions (Veh) - (untitled) (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.09	0.20	0.71
	2	1.00	0.00	0.00	0.00
	3	0.92	0.00	0.00	0.08
	4	0.96	0.00	0.04	0.00

Vehicle Mix

Average PCU Per Vehicle - (untitled) (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.018	1.017	1.012
	2	1.020	1.000	1.000	1.000
	3	1.042	1.000	1.000	1.000
	4	1.061	1.000	1.000	1.000

Heavy Vehicle Percentages - (untitled) (for whole period)

		To			
		1	2	3	4
From	1	0.000	1.800	1.700	1.200
	2	2.000	0.000	0.000	0.000
	3	4.200	0.000	0.000	0.000
	4	6.100	0.000	0.000	0.000

Results

Results Summary for whole modelled period

Name	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (s)
Elettra Avenue (E)	0.37	3.69	0.59	A	580.00	580.00	35.36	3.66	0.59	35.37	3.66
Site Access	0.06	4.61	0.07	A	51.00	51.00	3.88	4.56	0.06	3.88	4.56
Elettra Avenue (W)	0.06	4.75	0.07	A	52.00	52.00	4.07	4.70	0.07	4.07	4.70
Waterberry Drive	0.18	3.74	0.21	A	205.00	205.00	12.69	3.71	0.21	12.69	3.71

Main Results for each time segment

Main results: (08:00-08:15)

Name	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
Elettra Avenue (E)	580.00	145.00	577.63	293.68	8.96	0.00	1554.10	1531.78	0.373	0.00	0.59	3.677	A
Site Access	51.00	12.75	50.74	54.78	531.82	0.00	833.79	234.52	0.061	0.00	0.06	4.596	A
Elettra Avenue (W)	52.00	13.00	51.73	123.49	459.07	0.00	811.51	217.56	0.064	0.00	0.07	4.737	A
Waterberry Drive	205.00	51.25	204.15	412.31	98.49	0.00	1166.79	937.56	0.176	0.00	0.21	3.736	A

Main results: (08:15-08:30)

Name	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
Elettra Avenue (E)	580.00	145.00	579.99	295.00	9.00	0.00	1554.08	1531.78	0.373	0.59	0.59	3.694	A
Site Access	51.00	12.75	51.00	55.00	534.00	0.00	832.34	234.52	0.061	0.06	0.07	4.607	A
Elettra Avenue (W)	52.00	13.00	52.00	124.00	460.99	0.00	810.17	217.56	0.064	0.07	0.07	4.747	A
Waterberry Drive	205.00	51.25	205.00	414.00	99.00	0.00	1166.44	937.56	0.176	0.21	0.21	3.743	A

Main results: (08:30-08:45)

Name	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
Elettra Avenue (E)	580.00	145.00	580.00	295.00	9.00	0.00	1554.08	1531.78	0.373	0.59	0.59	3.694	A
Site Access	51.00	12.75	51.00	55.00	534.00	0.00	832.33	234.52	0.061	0.07	0.07	4.607	A
Elettra Avenue (W)	52.00	13.00	52.00	124.00	461.00	0.00	810.17	217.56	0.064	0.07	0.07	4.747	A
Waterberry Drive	205.00	51.25	205.00	414.00	99.00	0.00	1166.44	937.56	0.176	0.21	0.21	3.743	A

Main results: (08:45-09:00)

Name	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
Elettra Avenue (E)	580.00	145.00	580.00	295.00	9.00	0.00	1554.08	1531.78	0.373	0.59	0.59	3.694	A
Site Access	51.00	12.75	51.00	55.00	534.00	0.00	832.33	234.52	0.061	0.07	0.07	4.607	A
Elettra Avenue (W)	52.00	13.00	52.00	124.00	461.00	0.00	810.17	217.56	0.064	0.07	0.07	4.747	A
Waterberry Drive	205.00	51.25	205.00	414.00	99.00	0.00	1166.44	937.56	0.176	0.21	0.21	3.743	A

Queueing Delay Results for each time segment

Queueing Delay results: (08:00-08:15)

Name	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
Elettra Avenue (E)	8.65	0.58	3.677	A	A
Site Access	0.95	0.06	4.596	A	A
Elettra Avenue (W)	1.00	0.07	4.737	A	A
Waterberry Drive	3.11	0.21	3.736	A	A

Queueing Delay results: (08:15-08:30)

Name	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
Elettra Avenue (E)	8.89	0.59	3.694	A	A
Site Access	0.97	0.06	4.607	A	A
Elettra Avenue (W)	1.02	0.07	4.747	A	A
Waterberry Drive	3.19	0.21	3.743	A	A

Queueing Delay results: (08:30-08:45)

Name	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
Elettra Avenue (E)	8.91	0.59	3.694	A	A
Site Access	0.98	0.07	4.607	A	A
Elettra Avenue (W)	1.03	0.07	4.747	A	A
Waterberry Drive	3.19	0.21	3.743	A	A

Queueing Delay results: (08:45-09:00)

Name	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
Elettra Avenue (E)	8.91	0.59	3.694	A	A
Site Access	0.98	0.07	4.607	A	A
Elettra Avenue (W)	1.03	0.07	4.747	A	A
Waterberry Drive	3.19	0.21	3.743	A	A

Junctions 8	
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Filename: Site Access Junction_2020 + Dev_PM.arc8

Path: J:\29169 Elettra Avenue, Waterloooville\Technical\Transport\Junction Assessments\2020 Base + Development

Report generation date: 28/08/2013 13:49:28

« (Default Analysis Set) - 2020 Base + Development, PM

- » Junction Network
- » Arms
- » Traffic Flows
- » Entry Flows
- » Turning Proportions
- » Vehicle Mix
- » Results

Summary of junction performance

	PM			
	Queue (Veh)	Delay (s)	RFC	LOS
A1 - 2020 Base + Development				
Elettra Avenue (E)	0.34	2.80	0.26	A
Site Access	0.26	4.26	0.21	A
Elettra Avenue (W)	0.21	4.88	0.17	A
Waterberry Drive	0.84	6.40	0.46	A

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

"D2 - 2020 Base + Development, PM" model duration: 16:45 - 17:45

Run using Junctions 8.0.2.316 at 28/08/2013 13:49:27

File summary

File Description

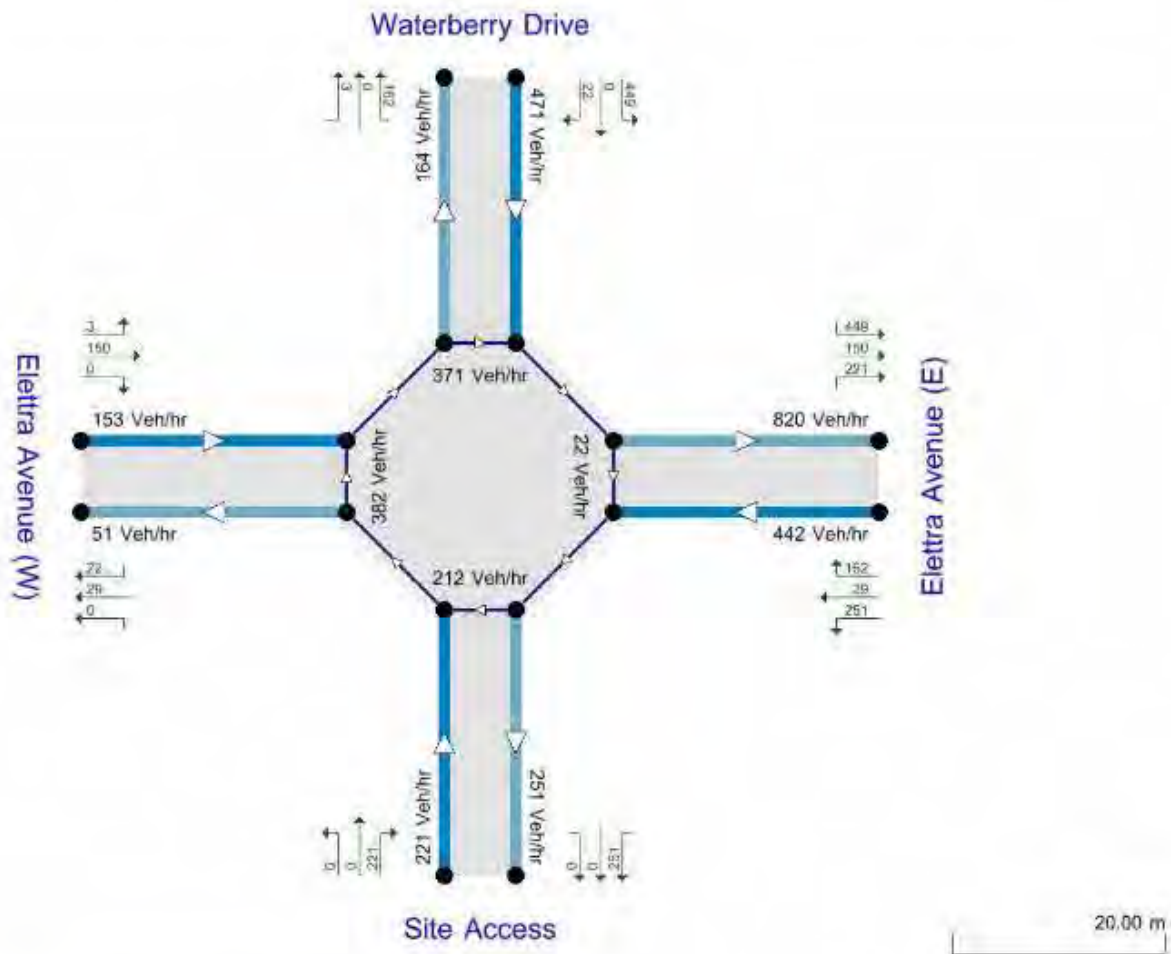
Title	Site Access Junction
Location	Elettra Avenue Waterloooville
Site Number	
Date	27/08/2013
Version	
Status	
Identifier	
Client	BAE
Jobnumber	29169
Enumerator	PBA\keen
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75			N/A	0.85	36.00	20.00

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	Veh	Veh	perHour	s	-Min	perMin



Flow overlays show movement flow through the junction entry and link flows. (Veh/hr)
Time Segment: 15:45-17:00
Showing Analysis Set: 181 - Demand Set: 170 - 2020 Base + Development PM

The junction diagram reflects the last run of ARCADY.

(Default Analysis Set) - 2020 Base + Development, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Elettra Avenue (E) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Rela
2020 Base + Development, PM	2020 Base + Development	PM		FLAT	16:45	17:45	60	15				✓		

Junction Network

Junctions

Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Do Geometric Delay	Junction Delay (s)	Junction LOS
(untitled)	Roundabout	1,2,3,4				4.62	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Name	Description
Elettra Avenue (E)	Elettra Avenue (E)	
Site Access	Site Access	
Elettra Avenue (W)	Elettra Avenue (W)	
Waterberry Drive	Waterberry Drive	

Capacity Options

Name	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
Elettra Avenue (E)	0.00	99999.00		0.00
Site Access	0.00	99999.00		0.00
Elettra Avenue (W)	0.00	99999.00		0.00
Waterberry Drive	0.00	99999.00		0.00

Roundabout Geometry

Name	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
Elettra Avenue (E)	3.00	7.40	41.50	25.69	44.00	19.50	
Site Access	3.40	8.96	16.96	19.46	44.00	24.00	
Elettra Avenue (W)	3.60	7.30	27.90	28.48	44.00	15.50	
Waterberry Drive	3.76	7.50	13.36	55.40	44.00	11.50	

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Pedestrian Crossings

Name	Crossing Type
Elettra Avenue (E)	None
Site Access	None
Elettra Avenue (W)	None
Waterberry Drive	None

Slope / Intercept / Capacity

Arm Intercept Adjustments

Name	Type	Reason	Direct Intercept Adjustment (PCU/hr)	Percentage Intercept Adjustment (%)
Elettra Avenue (E)	Direct		-231.00	
Site Access	Direct		-675.00	
Elettra Avenue (W)	Direct		-827.00	
Waterberry Drive	Direct		-594.00	

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
Elettra Avenue (E)		(calculated)	(calculated)	0.703	1763.478
Site Access		(calculated)	(calculated)	0.674	1213.426
Elettra Avenue (W)		(calculated)	(calculated)	0.709	1172.711
Waterberry Drive		(calculated)	(calculated)	0.699	1308.815

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

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
Elettra Avenue (E)	FLAT	✓	443.00	100.000
Site Access	FLAT	✓	222.00	100.000
Elettra Avenue (W)	FLAT	✓	154.00	100.000
Waterberry Drive	FLAT	✓	474.00	100.000

Turning Proportions

Turning Counts or Proportions (Veh/hr) - (untitled) (for whole period)

		To			
From		1	2	3	4
	1	0.000	252.000	29.000	162.000
	2	222.000	0.000	0.000	0.000
	3	151.000	0.000	0.000	3.000
	4	452.000	0.000	22.000	0.000

Turning Proportions (Veh) - (untitled) (for whole period)

		To			
From		1	2	3	4
	1	0.00	0.57	0.07	0.37
	2	1.00	0.00	0.00	0.00
	3	0.98	0.00	0.00	0.02
	4	0.95	0.00	0.05	0.00

Vehicle Mix

Average PCU Per Vehicle - (untitled) (for whole period)

		To			
From		1	2	3	4
	1	1.000	1.000	1.069	1.019
	2	1.000	1.000	1.000	1.000
	3	1.007	1.000	1.000	1.000
	4	1.011	1.000	1.000	1.000

Heavy Vehicle Percentages - (untitled) (for whole period)

		To			
From		1	2	3	4
	1	0.000	0.000	6.900	1.900
	2	0.000	0.000	0.000	0.000
	3	0.700	0.000	0.000	0.000
	4	1.100	0.000	0.000	0.000

Results

Results Summary for whole modelled period

Name	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (s)
Elettra Avenue (E)	0.26	2.80	0.34	A	443.00	443.00	20.54	2.78	0.34	20.54	2.78
Site Access	0.21	4.26	0.26	A	222.00	222.00	15.62	4.22	0.26	15.62	4.22
Elettra Avenue (W)	0.17	4.88	0.21	A	154.00	154.00	12.38	4.82	0.21	12.38	4.82
Waterberry Drive	0.46	6.40	0.84	A	474.00	474.00	49.61	6.28	0.83	49.63	6.28

Main Results for each time segment

Main results: (16:45-17:00)

Name	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
Elettra Avenue (E)	443.00	110.75	441.62	819.98	21.85	0.00	1728.30	1722.03	0.256	0.00	0.34	2.795	A
Site Access	222.00	55.50	220.96	251.22	212.25	0.00	1067.00	679.05	0.208	0.00	0.26	4.250	A
Elettra Avenue (W)	154.00	38.50	153.17	50.76	382.45	0.00	893.19	234.50	0.172	0.00	0.21	4.860	A
Waterberry Drive	474.00	118.50	470.68	164.48	371.14	0.00	1037.68	665.14	0.457	0.00	0.83	6.313	A

Main results: (17:00-17:15)

Name	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
Elettra Avenue (E)	443.00	110.75	442.99	824.97	22.00	0.00	1728.19	1722.03	0.256	0.34	0.34	2.800	A
Site Access	222.00	55.50	222.00	252.00	213.00	0.00	1066.48	679.05	0.208	0.26	0.26	4.262	A
Elettra Avenue (W)	154.00	38.50	154.00	51.00	383.99	0.00	892.10	234.50	0.173	0.21	0.21	4.876	A
Waterberry Drive	474.00	118.50	473.97	165.00	372.99	0.00	1036.40	665.14	0.457	0.83	0.84	6.400	A

Main results: (17:15-17:30)

Name	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
Elettra Avenue (E)	443.00	110.75	443.00	824.99	22.00	0.00	1728.19	1722.03	0.256	0.34	0.34	2.800	A
Site Access	222.00	55.50	222.00	252.00	213.00	0.00	1066.48	679.05	0.208	0.26	0.26	4.262	A
Elettra Avenue (W)	154.00	38.50	154.00	51.00	384.00	0.00	892.10	234.50	0.173	0.21	0.21	4.876	A
Waterberry Drive	474.00	118.50	473.99	165.00	373.00	0.00	1036.40	665.14	0.457	0.84	0.84	6.400	A

Main results: (17:30-17:45)

Name	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
Elettra Avenue (E)	443.00	110.75	443.00	824.99	22.00	0.00	1728.19	1722.03	0.256	0.34	0.34	2.800	A
Site Access	222.00	55.50	222.00	252.00	213.00	0.00	1066.48	679.05	0.208	0.26	0.26	4.262	A
Elettra Avenue (W)	154.00	38.50	154.00	51.00	384.00	0.00	892.10	234.50	0.173	0.21	0.21	4.876	A
Waterberry Drive	474.00	118.50	474.00	165.00	373.00	0.00	1036.40	665.14	0.457	0.84	0.84	6.400	A

Queueing Delay Results for each time segment

Queueing Delay results: (16:45-17:00)

Name	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
Elettra Avenue (E)	5.05	0.34	2.795	A	A
Site Access	3.82	0.25	4.250	A	A
Elettra Avenue (W)	3.02	0.20	4.860	A	A
Waterberry Drive	11.93	0.80	6.313	A	A

Queueing Delay results: (17:00-17:15)

Name	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
Elettra Avenue (E)	5.16	0.34	2.800	A	A
Site Access	3.93	0.26	4.262	A	A
Elettra Avenue (W)	3.11	0.21	4.876	A	A
Waterberry Drive	12.52	0.83	6.400	A	A

Queueing Delay results: (17:15-17:30)

Name	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
Elettra Avenue (E)	5.16	0.34	2.800	A	A
Site Access	3.93	0.26	4.262	A	A
Elettra Avenue (W)	3.12	0.21	4.876	A	A
Waterberry Drive	12.57	0.84	6.400	A	A

Queueing Delay results: (17:30-17:45)

Name	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
Elettra Avenue (E)	5.16	0.34	2.800	A	A
Site Access	3.94	0.26	4.262	A	A
Elettra Avenue (W)	3.12	0.21	4.876	A	A
Waterberry Drive	12.59	0.84	6.400	A	A

