



# **Norwich Western Link**

## **Transport Assessment - Appendix 11 – Junction Model Results**

### **Sub Appendix 11f – Junction 8 Norwich Road/Formal A47 (Honingham Roundabout) junction**

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## **Contents**

1 Junction Model Results ..... 3

## **Figures**

Figure 1-1 Junction Assessment Scope ..... 3



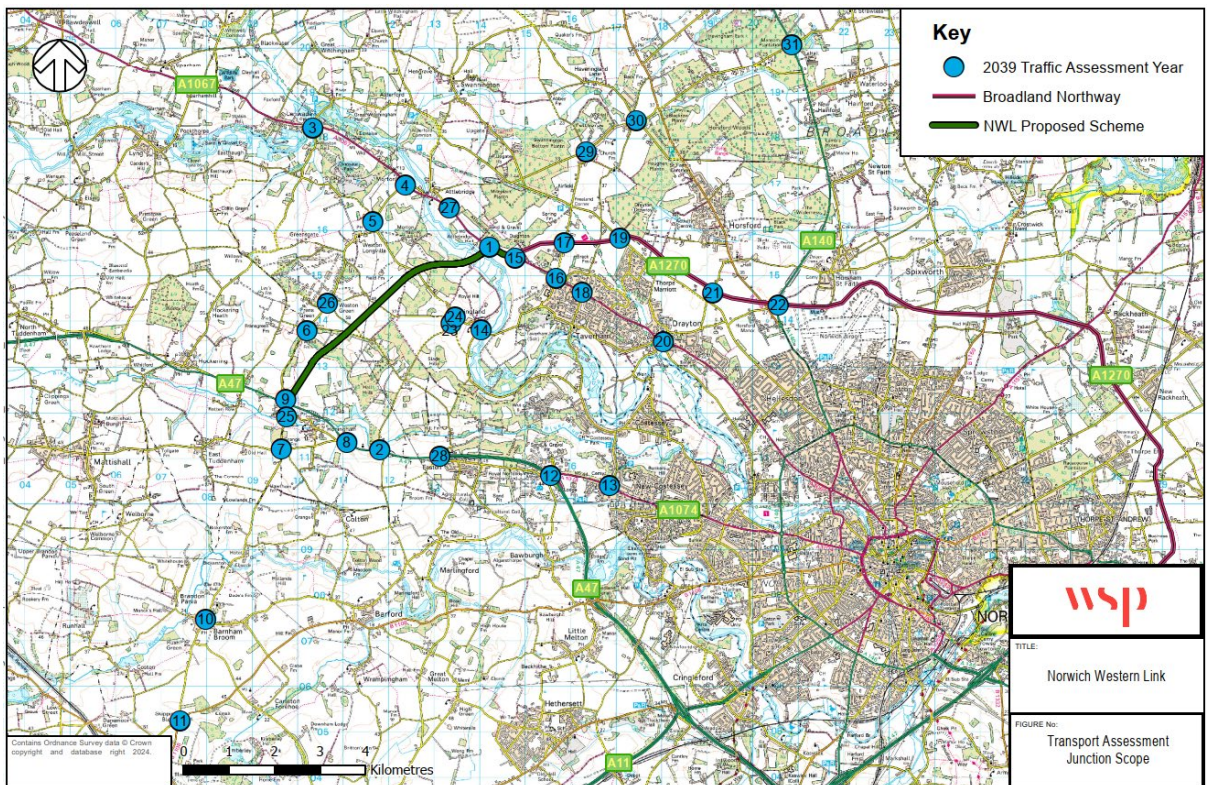
# 1 Junction Model Results

1.1.1 Junctions 10 modelling software output file that shows the junction capacity results for Junction 8 of the TA.

1.1.2 We have included a summary of key information shown in this document in an accessible format. However, some users may not be able to access all technical details. If you require this document in a more accessible format please contact [norwichwesternlink@norfolk.gov.uk](mailto:norwichwesternlink@norfolk.gov.uk)

1.1.3 The TA scope map is shown below as a location plan.

**Figure 1-1 Junction Assessment Scope**



1.1.4 The model results are presented for 2029 and 2039 future assessment years for AM and PM peak hours, taking 7.30-8.30am and AM peak and 5pm-6pm as PM peak.



1.1.5 The scenarios tested are as follows:

- Do Minimum – the baseline future situation with committed developments and planned highway improvements but without the Proposed Scheme.
- Do Something - the baseline future situation with the Proposed Scheme.
- Do Something + Mitigation - the baseline future situation with the Proposed Scheme added plus a package of traffic mitigation measures in the wider network (north of A1067 and south of A47 plus Honingham Lane closure).



## **J8 – Norwich Road/A47 junction (Honingham Roundabout) Results**

<h1>Junctions 10</h1>
<h2>ARCADY 10 - Roundabout Module</h2>
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**Filename:** J8.j10

**Path:** \\corp.pbwan.net\IN\IN\_Projects\70118686-70061370-Norwich Western Link 2019 20\04 Record of Issue\4A Internal WSP Doc Registers\20240129\_Model Reports(wo 2044)\J8

**Report generation date:** 29/01/2024 15:28:28

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- »2029DM, AM
  - »2029DM, PM
  - »2029DS, AM
  - »2029DS, PM
  - »2029DS\_Mitigation, AM
  - »2029DS\_Mitigation, PM
  - »2039DM, AM
  - »2039DM, PM
  - »2039DS, AM
  - »2039DS, PM
  - »2039DS\_Mitigation, AM
  - »2039DS\_Mitigation, PM



### Summary of junction performance

	AM					PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
<b>2029DM</b>										
A - A47 (W)	D1	0.0	3.11	0.02	A	D2	0.0	2.54	0.01	A
B - A47 (E)		0.1	2.66	0.10	A		0.0	2.30	0.03	A
C - Norwich Road		0.2	4.21	0.14	A		0.1	3.67	0.10	A
<b>2029DS</b>										
A - A47 (W)	D3	0.1	2.84	0.05	A	D4	0.0	2.89	0.03	A
B - A47 (E)		0.1	2.59	0.08	A		0.0	2.44	0.03	A
C - Norwich Road		0.1	3.77	0.13	A		0.1	3.80	0.11	A
<b>2029DS_Mitigation</b>										
A - A47 (W)	D5	0.0	2.76	0.04	A	D6	0.0	2.55	0.02	A
B - A47 (E)		0.1	2.58	0.08	A		0.0	2.43	0.04	A
C - Norwich Road		0.2	3.79	0.14	A		0.1	3.79	0.11	A
<b>2039DM</b>										
A - A47 (W)	D7	0.0	3.11	0.03	A	D8	0.0	2.55	0.01	A
B - A47 (E)		0.1	2.66	0.10	A		0.0	2.32	0.03	A
C - Norwich Road		0.2	4.19	0.16	A		0.1	3.71	0.11	A
<b>2039DS</b>										
A - A47 (W)	D9	0.1	2.92	0.05	A	D10	0.0	2.82	0.04	A
B - A47 (E)		0.1	2.63	0.08	A		0.0	2.45	0.04	A
C - Norwich Road		0.2	4.00	0.17	A		0.1	3.85	0.12	A
<b>2039DS_Mitigation</b>										
A - A47 (W)	D11	0.1	2.79	0.05	A	D12	0.0	2.57	0.03	A
B - A47 (E)		0.1	2.60	0.08	A		0.1	2.44	0.05	A
C - Norwich Road		0.2	3.91	0.16	A		0.1	3.83	0.11	A

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

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

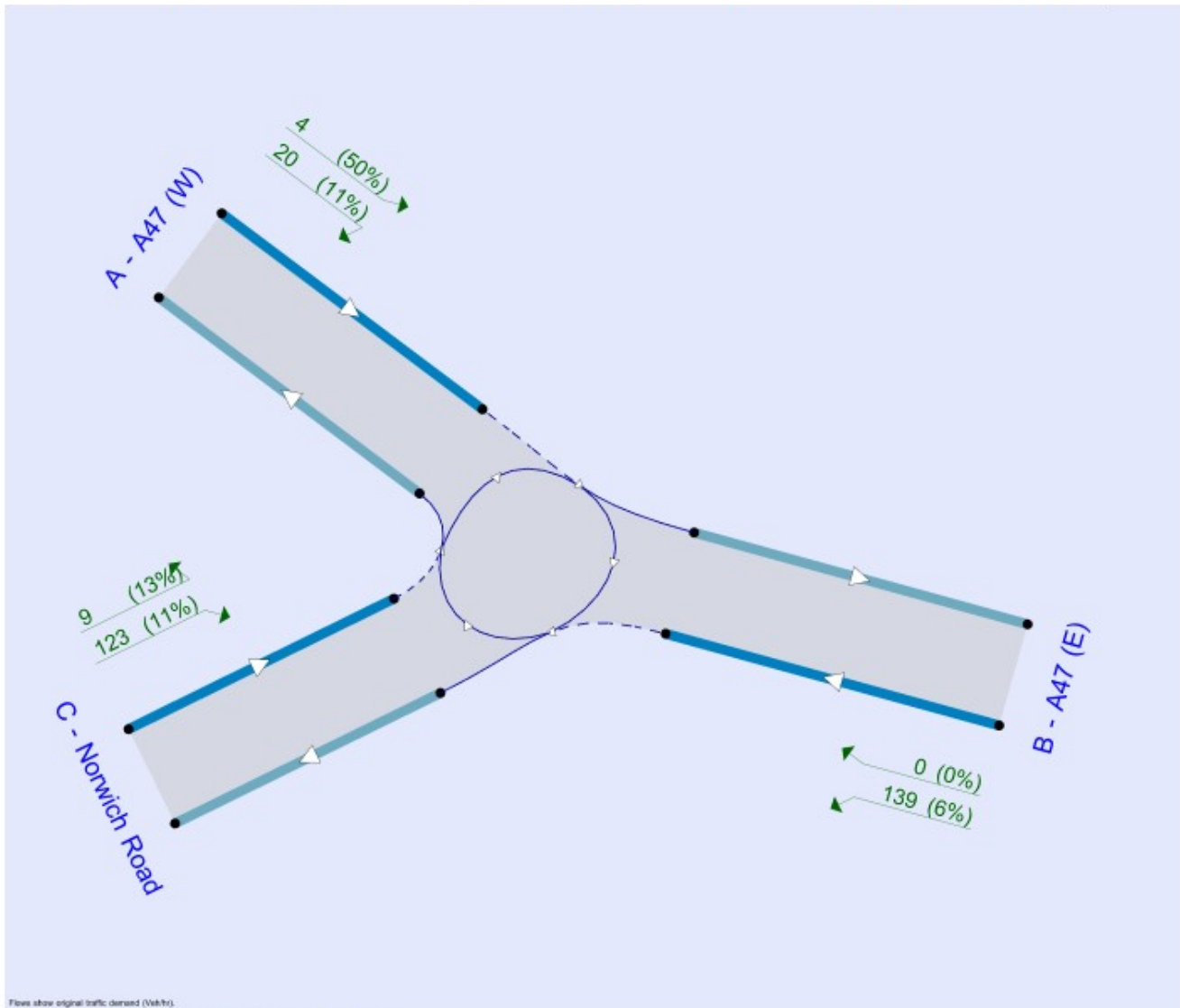
### File summary

#### File Description

Title	A47/ Norwich Road
Location	52.658336551810535, 1.1194236190374918
Site number	J8
Date	26/04/2023
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	CORP\INAL03507
Description	

### Units

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



Flows show original traffic demand (Veh/hr).

The junction diagram reflects the last run of Junctions.

### Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
5.75						0.85	36.00	20.00		500

### Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2029DM	AM	ONE HOUR	07:15	08:45	15	✓
D2	2029DM	PM	ONE HOUR	16:45	18:15	15	✓
D3	2029DS	AM	ONE HOUR	07:15	08:45	15	✓
D4	2029DS	PM	ONE HOUR	16:45	18:15	15	✓
D5	2029DS_Mitigation	AM	ONE HOUR	07:15	08:45	15	✓
D6	2029DS_Mitigation	PM	ONE HOUR	16:45	18:15	15	✓
D7	2039DM	AM	ONE HOUR	07:15	08:45	15	✓
D8	2039DM	PM	ONE HOUR	16:45	18:15	15	✓
D9	2039DS	AM	ONE HOUR	07:15	08:45	15	✓
D10	2039DS	PM	ONE HOUR	16:45	18:15	15	✓
D11	2039DS_Mitigation	AM	ONE HOUR	07:15	08:45	15	✓
D12	2039DS_Mitigation	PM	ONE HOUR	16:45	18:15	15	✓



### Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

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# 2029DM, AM

## Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	B - A47 (E) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

## Junction Network

### Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
J8	A47/ Norwich Road	Standard Roundabout		A, B, C	3.40	A

### Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	3.40	A

## Arms

### Arms

Arm	Name	Description	No give-way line
A	A47 (W)		
B	A47 (E)		
C	Norwich Road		

### 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)	Entry only	Exit only
A - A47 (W)	3.80	4.50	1.4	19.3	50.0	41.0		
B - A47 (E)	3.50	4.10	64.7	17.4	50.0	10.0		
C - Norwich Road	2.80	5.40	5.3	15.3	50.0	38.0		

## Slope / Intercept / Capacity

### Arm Intercept Adjustments

Arm	Type	Reason	Direct intercept adjustment (PCU/hr)
A - A47 (W)	Direct		280
B - A47 (E)	Direct		300
C - Norwich Road	None		

### Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
A - A47 (W)	0.499	1464
B - A47 (E)	0.553	1614
C - Norwich Road	0.487	1114

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

## Traffic Demand

### Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2029DM	AM	ONE HOUR	07:15	08:45	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

### Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - A47 (W)		ONE HOUR	✓	25	100.000
B - A47 (E)		ONE HOUR	✓	139	100.000
C - Norwich Road		ONE HOUR	✓	131	100.000

## Origin-Destination Data

### Demand (Veh/hr)

From	To			
		A - A47 (W)	B - A47 (E)	C - Norwich Road
A - A47 (W)		0	4	20
B - A47 (E)		0	0	139
C - Norwich Road		9	123	0

### Proportions

From	To			
		A - A47 (W)	B - A47 (E)	C - Norwich Road
A - A47 (W)		0.00	0.17	0.83
B - A47 (E)		0.00	0.00	1.00
C - Norwich Road		0.07	0.93	0.00

## Vehicle Mix

### Heavy Vehicle Percentages

From	To			
		A - A47 (W)	B - A47 (E)	C - Norwich Road
A - A47 (W)		0	50	11
B - A47 (E)		0	0	6
C - Norwich Road		13	11	0

### Average PCU Per Veh

From	To			
		A - A47 (W)	B - A47 (E)	C - Norwich Road
A - A47 (W)		1.000	1.500	1.105
B - A47 (E)		1.000	1.000	1.062
C - Norwich Road		1.125	1.113	1.000

## Detailed Demand Data

### Demand for each time segment

Arm	Time Segment	Demand (Veh/hr)	Demand in PCU (PCU/hr)
A - A47 (W)	07:15-07:30	18	22
	07:30-07:45	22	26
	07:45-08:00	27	32
	08:00-08:15	27	32
	08:15-08:30	22	26
	08:30-08:45	18	22
B - A47 (E)	07:15-07:30	104	111
	07:30-07:45	125	132
	07:45-08:00	153	162
	08:00-08:15	153	162
	08:15-08:30	125	132
	08:30-08:45	104	111
C - Norwich Road	07:15-07:30	99	110
	07:30-07:45	118	131
	07:45-08:00	144	161
	08:00-08:15	144	161
	08:15-08:30	118	131
	08:30-08:45	99	110

## Results

### Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
A - A47 (W)	0.02	3.11	0.0	A	26	40
B - A47 (E)	0.10	2.66	0.1	A	135	202
C - Norwich Road	0.14	4.21	0.2	A	134	201

### Main Results for each time segment

#### 07:15 - 07:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	22	5	102	1413	0.015	22	7	0.0	0.0	3.037	A
B - A47 (E)	111	28	17	1605	0.069	110	107	0.0	0.1	2.557	A
C - Norwich Road	110	27	0	1114	0.099	109	127	0.0	0.1	3.991	A

#### 07:30 - 07:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	26	6	123	1403	0.018	26	9	0.0	0.0	3.069	A
B - A47 (E)	132	33	20	1603	0.083	132	128	0.1	0.1	2.598	A
C - Norwich Road	131	33	0	1114	0.118	131	152	0.1	0.1	4.081	A

**07:45 - 08:00**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	32	8	150	1389	0.023	32	11	0.0	0.0	3.113	A
B - A47 (E)	162	40	25	1600	0.101	162	157	0.1	0.1	2.656	A
C - Norwich Road	161	40	0	1114	0.144	161	185	0.1	0.2	4.208	A

**08:00 - 08:15**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	32	8	150	1389	0.023	32	11	0.0	0.0	3.113	A
B - A47 (E)	162	40	25	1600	0.101	162	157	0.1	0.1	2.656	A
C - Norwich Road	161	40	0	1114	0.144	161	187	0.2	0.2	4.208	A

**08:15 - 08:30**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	26	6	123	1402	0.018	26	9	0.0	0.0	3.071	A
B - A47 (E)	132	33	20	1603	0.083	132	129	0.1	0.1	2.600	A
C - Norwich Road	131	33	0	1114	0.118	131	152	0.2	0.1	4.084	A

**08:30 - 08:45**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	22	5	103	1412	0.015	22	7	0.0	0.0	3.040	A
B - A47 (E)	111	28	17	1605	0.069	111	108	0.1	0.1	2.559	A
C - Norwich Road	110	27	0	1114	0.099	110	128	0.1	0.1	3.997	A



# 2029DM, PM

## Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	B - A47 (E) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

## Junction Network

### Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
J8	A47/ Norwich Road	Standard Roundabout		A, B, C	3.23	A

### Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	3.23	A

## Traffic Demand

### Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	2029DM	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

### Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - A47 (W)		ONE HOUR	✓	8	100.000
B - A47 (E)		ONE HOUR	✓	42	100.000
C - Norwich Road		ONE HOUR	✓	100	100.000

## Origin-Destination Data

### Demand (Veh/hr)

From	To		
	A - A47 (W)	B - A47 (E)	C - Norwich Road
A - A47 (W)	0	0	8
B - A47 (E)	3	0	39
C - Norwich Road	33	67	0

### Proportions

From	To		
	A - A47 (W)	B - A47 (E)	C - Norwich Road
A - A47 (W)	0.00	0.00	1.00
B - A47 (E)	0.07	0.00	0.93
C - Norwich Road	0.33	0.67	0.00

## Vehicle Mix

### Heavy Vehicle Percentages

From	To		
	A - A47 (W)	B - A47 (E)	C - Norwich Road
A - A47 (W)	0	0	0
B - A47 (E)	0	0	0
C - Norwich Road	3	1	0

### Average PCU Per Veh

From	To		
	A - A47 (W)	B - A47 (E)	C - Norwich Road
A - A47 (W)	1.000	1.000	1.000
B - A47 (E)	1.000	1.000	1.000
C - Norwich Road	1.030	1.015	1.000

## Detailed Demand Data

### Demand for each time segment

Arm	Time Segment	Demand (Veh/hr)	Demand in PCU (PCU/hr)
A - A47 (W)	16:45-17:00	6	6
	17:00-17:15	7	7
	17:15-17:30	9	9
	17:30-17:45	9	9
	17:45-18:00	7	7
	18:00-18:15	6	6
B - A47 (E)	16:45-17:00	32	32
	17:00-17:15	38	38
	17:15-17:30	46	46
	17:30-17:45	46	46
	17:45-18:00	38	38
	18:00-18:15	32	32
C - Norwich Road	16:45-17:00	75	77
	17:00-17:15	90	92
	17:15-17:30	110	112
	17:30-17:45	110	112
	17:45-18:00	90	92
	18:00-18:15	75	77

## Results

### Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
A - A47 (W)	0.01	2.54	0.0	A	7	11
B - A47 (E)	0.03	2.30	0.0	A	39	58
C - Norwich Road	0.10	3.67	0.1	A	94	140

### Main Results for each time segment

#### 16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	6	2	51	1438	0.004	6	28	0.0	0.0	2.513	A
B - A47 (E)	32	8	6	1611	0.020	32	51	0.0	0.0	2.279	A
C - Norwich Road	77	19	2	1112	0.089	76	35	0.0	0.1	3.544	A

#### 17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	7	2	61	1433	0.005	7	33	0.0	0.0	2.524	A
B - A47 (E)	38	9	7	1610	0.023	38	61	0.0	0.0	2.289	A
C - Norwich Road	92	23	3	1112	0.082	92	42	0.1	0.1	3.597	A

**17:15 - 17:30**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	9	2	75	1426	0.006	9	41	0.0	0.0	2.539	A
B - A47 (E)	46	12	9	1609	0.029	46	75	0.0	0.0	2.303	A
C - Norwich Road	112	28	3	1112	0.101	112	52	0.1	0.1	3.672	A

**17:30 - 17:45**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	9	2	75	1426	0.006	9	41	0.0	0.0	2.539	A
B - A47 (E)	46	12	9	1609	0.029	46	75	0.0	0.0	2.303	A
C - Norwich Road	112	28	3	1112	0.101	112	52	0.1	0.1	3.672	A

**17:45 - 18:00**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	7	2	61	1433	0.005	7	33	0.0	0.0	2.524	A
B - A47 (E)	38	9	7	1610	0.023	38	61	0.0	0.0	2.291	A
C - Norwich Road	92	23	3	1112	0.082	92	42	0.1	0.1	3.597	A

**18:00 - 18:15**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	6	2	51	1438	0.004	6	28	0.0	0.0	2.513	A
B - A47 (E)	32	8	6	1611	0.020	32	51	0.0	0.0	2.281	A
C - Norwich Road	77	19	2	1112	0.069	77	35	0.1	0.1	3.547	A



# 2029DS, AM

## Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	B - A47 (E) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

## Junction Network

### Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
J8	A47/ Norwich Road	Standard Roundabout		A, B, C	3.14	A

### Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	3.14	A

## Traffic Demand

### Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	2029DS	AM	ONE HOUR	07:15	08:45	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

### Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - A47 (W)		ONE HOUR	✓	55	100.000
B - A47 (E)		ONE HOUR	✓	112	100.000
C - Norwich Road		ONE HOUR	✓	126	100.000

## Origin-Destination Data

### Demand (Veh/hr)

From	To		
	A - A47 (W)	B - A47 (E)	C - Norwich Road
A - A47 (W)	0	7	48
B - A47 (E)	2	0	110
C - Norwich Road	62	64	0

### Proportions

From	To		
	A - A47 (W)	B - A47 (E)	C - Norwich Road
A - A47 (W)	0.00	0.13	0.87
B - A47 (E)	0.02	0.00	0.98
C - Norwich Road	0.49	0.51	0.00

## Vehicle Mix

### Heavy Vehicle Percentages

From	To		
	A - A47 (W)	B - A47 (E)	C - Norwich Road
A - A47 (W)	0	29	4
B - A47 (E)	50	0	4
C - Norwich Road	2	2	0

### Average PCU Per Veh

From	To		
	A - A47 (W)	B - A47 (E)	C - Norwich Road
A - A47 (W)	1.000	1.286	1.044
B - A47 (E)	1.500	1.000	1.039
C - Norwich Road	1.017	1.017	1.000

## Detailed Demand Data

### Demand for each time segment

Arm	Time Segment	Demand (Veh/hr)	Demand in PCU (PCU/hr)
A - A47 (W)	07:15-07:30	42	45
	07:30-07:45	50	54
	07:45-08:00	61	66
	08:00-08:15	61	66
	08:15-08:30	50	54
	08:30-08:45	42	45
B - A47 (E)	07:15-07:30	84	88
	07:30-07:45	101	105
	07:45-08:00	123	129
	08:00-08:15	123	129
	08:15-08:30	101	105
	08:30-08:45	84	88
C - Norwich Road	07:15-07:30	95	96
	07:30-07:45	113	115
	07:45-08:00	138	141
	08:00-08:15	138	141
	08:15-08:30	113	115
	08:30-08:45	95	96

## Results

### Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
A - A47 (W)	0.05	2.84	0.1	A	55	82
B - A47 (E)	0.08	2.59	0.1	A	108	161
C - Norwich Road	0.13	3.77	0.1	A	117	176

### Main Results for each time segment

#### 07:15 - 07:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	45	11	49	1439	0.031	45	50	0.0	0.0	2.779	A
B - A47 (E)	88	22	38	1593	0.055	88	56	0.0	0.1	2.505	A
C - Norwich Road	96	24	2	1112	0.087	96	123	0.0	0.1	3.602	A

#### 07:30 - 07:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	54	13	58	1435	0.037	54	59	0.0	0.0	2.806	A
B - A47 (E)	105	26	45	1589	0.066	105	67	0.1	0.1	2.541	A
C - Norwich Road	115	29	3	1112	0.103	115	147	0.1	0.1	3.670	A



**07:45 - 08:00**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	66	16	72	1428	0.046	66	73	0.0	0.1	2.845	A
B - A47 (E)	129	32	55	1583	0.082	129	82	0.1	0.1	2.592	A
C - Norwich Road	141	35	4	1112	0.127	141	181	0.1	0.1	3.769	A

**08:00 - 08:15**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	66	16	72	1428	0.046	66	73	0.1	0.1	2.845	A
B - A47 (E)	129	32	55	1583	0.082	129	82	0.1	0.1	2.592	A
C - Norwich Road	141	35	4	1112	0.127	141	181	0.1	0.1	3.769	A

**08:15 - 08:30**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	54	13	59	1435	0.037	54	59	0.1	0.0	2.807	A
B - A47 (E)	105	26	45	1589	0.066	105	67	0.1	0.1	2.541	A
C - Norwich Road	115	29	3	1112	0.103	115	148	0.1	0.1	3.674	A

**08:30 - 08:45**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	45	11	49	1439	0.031	45	50	0.0	0.0	2.782	A
B - A47 (E)	88	22	38	1593	0.055	88	56	0.1	0.1	2.508	A
C - Norwich Road	96	24	2	1112	0.087	96	124	0.1	0.1	3.605	A

# 2029DS, PM

## Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	B - A47 (E) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

## Junction Network

### Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
J8	A47/ Norwich Road	Standard Roundabout		A, B, C	3.29	A

### Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	3.29	A

## Traffic Demand

### Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	2029DS	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

### Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - A47 (W)		ONE HOUR	✓	32	100.000
B - A47 (E)		ONE HOUR	✓	48	100.000
C - Norwich Road		ONE HOUR	✓	106	100.000

## Origin-Destination Data

### Demand (Veh/hr)

From	To			
	A - A47 (W)	B - A47 (E)	C - Norwich Road	
A - A47 (W)	0	0	32	
B - A47 (E)	15	0	31	
C - Norwich Road	66	40	0	

### Proportions

From	To			
	A - A47 (W)	B - A47 (E)	C - Norwich Road	
A - A47 (W)	0.00	0.00	1.00	
B - A47 (E)	0.33	0.00	0.67	
C - Norwich Road	0.62	0.38	0.00	

## Vehicle Mix

### Heavy Vehicle Percentages

From	To			
	A - A47 (W)	B - A47 (E)	C - Norwich Road	
A - A47 (W)	0	0	13	
B - A47 (E)	13	0	0	
C - Norwich Road	5	3	0	

### Average PCU Per Veh

From	To			
	A - A47 (W)	B - A47 (E)	C - Norwich Road	
A - A47 (W)	1.000	1.000	1.125	
B - A47 (E)	1.133	1.000	1.000	
C - Norwich Road	1.045	1.025	1.000	

## Detailed Demand Data

### Demand for each time segment

Arm	Time Segment	Demand (Veh/hr)	Demand in PCU (PCU/hr)
A - A47 (W)	16:45-17:00	24	27
	17:00-17:15	29	32
	17:15-17:30	35	40
	17:30-17:45	35	40
	17:45-18:00	29	32
	18:00-18:15	24	27
B - A47 (E)	16:45-17:00	35	38
	17:00-17:15	41	43
	17:15-17:30	51	53
	17:30-17:45	51	53
	17:45-18:00	41	43
	18:00-18:15	35	38
C - Norwich Road	16:45-17:00	80	83
	17:00-17:15	95	99
	17:15-17:30	117	121
	17:30-17:45	117	121
	17:45-18:00	95	99
	18:00-18:15	80	83

## Results

### Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
A - A47 (W)	0.03	2.89	0.0	A	33	50
B - A47 (E)	0.03	2.44	0.0	A	44	68
C - Norwich Road	0.11	3.80	0.1	A	101	151

### Main Results for each time segment

#### 16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	27	7	31	1448	0.019	27	65	0.0	0.0	2.848	A
B - A47 (E)	38	9	27	1599	0.023	38	31	0.0	0.0	2.403	A
C - Norwich Road	83	21	13	1107	0.075	82	50	0.0	0.1	3.845	A

#### 17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	32	8	37	1445	0.022	32	77	0.0	0.0	2.885	A
B - A47 (E)	43	11	32	1596	0.027	43	37	0.0	0.0	2.418	A
C - Norwich Road	99	25	15	1108	0.089	99	60	0.1	0.1	3.708	A



**17:15 - 17:30**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	40	10	45	1441	0.028	40	95	0.0	0.0	2.888	A
B - A47 (E)	53	13	40	1592	0.033	53	45	0.0	0.0	2.440	A
C - Norwich Road	121	30	19	1104	0.110	121	74	0.1	0.1	3.798	A

**17:30 - 17:45**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	40	10	45	1441	0.028	40	95	0.0	0.0	2.889	A
B - A47 (E)	53	13	40	1592	0.033	53	45	0.0	0.0	2.440	A
C - Norwich Road	121	30	19	1104	0.110	121	74	0.1	0.1	3.798	A

**17:45 - 18:00**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	32	8	37	1445	0.022	32	77	0.0	0.0	2.868	A
B - A47 (E)	43	11	32	1596	0.027	43	37	0.0	0.0	2.418	A
C - Norwich Road	99	25	15	1106	0.089	99	60	0.1	0.1	3.708	A

**18:00 - 18:15**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	27	7	31	1448	0.019	27	65	0.0	0.0	2.851	A
B - A47 (E)	36	9	27	1599	0.023	36	31	0.0	0.0	2.403	A
C - Norwich Road	83	21	13	1107	0.075	83	50	0.1	0.1	3.646	A

# 2029DS\_Mitigation, AM

## Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	B - A47 (E) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

## Junction Network

### Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
J8	A47/ Norwich Road	Standard Roundabout		A, B, C	3.17	A

### Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	3.17	A

## Traffic Demand

### Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	2029DS_Mitigation	AM	ONE HOUR	07:15	08:45	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

### Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - A47 (W)		ONE HOUR	✓	49	100.000
B - A47 (E)		ONE HOUR	✓	108	100.000
C - Norwich Road		ONE HOUR	✓	140	100.000

## Origin-Destination Data

### Demand (Veh/hr)

From	To		
	A - A47 (W)	B - A47 (E)	C - Norwich Road
A - A47 (W)	0	7	42
B - A47 (E)	2	0	106
C - Norwich Road	54	85	0

### Proportions

From	To		
	A - A47 (W)	B - A47 (E)	C - Norwich Road
A - A47 (W)	0.00	0.15	0.85
B - A47 (E)	0.02	0.00	0.98
C - Norwich Road	0.39	0.81	0.00

## Vehicle Mix

### Heavy Vehicle Percentages

From	To		
	A - A47 (W)	B - A47 (E)	C - Norwich Road
A - A47 (W)	0	29	0
B - A47 (E)	50	0	4
C - Norwich Road	0	1	0

### Average PCU Per Veh

From	To		
	A - A47 (W)	B - A47 (E)	C - Norwich Road
A - A47 (W)	1.000	1.286	1.000
B - A47 (E)	1.500	1.000	1.040
C - Norwich Road	1.000	1.013	1.000



## Detailed Demand Data

### Demand for each time segment

Arm	Time Segment	Demand (Veh/hr)	Demand in PCU (PCU/hr)
A - A47 (W)	07:15-07:30	37	39
	07:30-07:45	44	46
	07:45-08:00	54	56
	08:00-08:15	54	56
	08:15-08:30	44	46
	08:30-08:45	37	39
B - A47 (E)	07:15-07:30	81	85
	07:30-07:45	97	102
	07:45-08:00	119	124
	08:00-08:15	119	124
	08:15-08:30	97	102
	08:30-08:45	81	85
C - Norwich Road	07:15-07:30	105	106
	07:30-07:45	126	126
	07:45-08:00	154	155
	08:00-08:15	154	155
	08:15-08:30	126	126
	08:30-08:45	105	106

## Results

### Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
A - A47 (W)	0.04	2.76	0.0	A	47	70
B - A47 (E)	0.08	2.58	0.1	A	104	156
C - Norwich Road	0.14	3.79	0.2	A	129	194

### Main Results for each time segment

#### 07:15 - 07:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	39	10	65	1431	0.027	38	43	0.0	0.0	2.696	A
B - A47 (E)	85	21	31	1597	0.053	85	72	0.0	0.1	2.499	A
C - Norwich Road	106	26	2	1112	0.095	106	114	0.0	0.1	3.600	A

#### 07:30 - 07:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	46	11	78	1425	0.032	46	52	0.0	0.0	2.723	A
B - A47 (E)	102	25	37	1593	0.064	102	86	0.1	0.1	2.532	A
C - Norwich Road	126	32	3	1112	0.114	126	136	0.1	0.1	3.679	A

**07:45 - 08:00**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	56	14	95	1416	0.040	56	63	0.0	0.0	2.761	A
B - A47 (E)	124	31	46	1589	0.078	124	106	0.1	0.1	2.579	A
C - Norwich Road	155	39	4	1112	0.139	155	167	0.1	0.2	3.789	A

**08:00 - 08:15**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	56	14	95	1416	0.040	56	63	0.0	0.0	2.761	A
B - A47 (E)	124	31	46	1589	0.078	124	106	0.1	0.1	2.579	A
C - Norwich Road	155	39	4	1112	0.139	155	167	0.2	0.2	3.789	A

**08:15 - 08:30**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	46	11	78	1425	0.032	46	52	0.0	0.0	2.723	A
B - A47 (E)	102	25	37	1593	0.064	102	86	0.1	0.1	2.534	A
C - Norwich Road	126	32	3	1112	0.114	127	136	0.2	0.1	3.680	A

**08:30 - 08:45**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	39	10	65	1431	0.027	39	43	0.0	0.0	2.698	A
B - A47 (E)	85	21	31	1597	0.053	85	72	0.1	0.1	2.499	A
C - Norwich Road	106	26	2	1112	0.095	106	114	0.1	0.1	3.606	A

# 2029DS\_Mitigation, PM

## Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	B - A47 (E) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

## Junction Network

### Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
J8	A47/ Norwich Road	Standard Roundabout		A, B, C	3.20	A

### Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	3.20	A

## Traffic Demand

### Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	2029DS_Mitigation	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

### Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - A47 (W)		ONE HOUR	✓	23	100.000
B - A47 (E)		ONE HOUR	✓	59	100.000
C - Norwich Road		ONE HOUR	✓	103	100.000

## Origin-Destination Data

### Demand (Veh/hr)

		To		
		A - A47 (W)	B - A47 (E)	C - Norwich Road
From	A - A47 (W)	0	0	23
	B - A47 (E)	15	0	44
	C - Norwich Road	59	44	0

### Proportions

		To		
		A - A47 (W)	B - A47 (E)	C - Norwich Road
From	A - A47 (W)	0.00	0.00	1.00
	B - A47 (E)	0.25	0.00	0.75
	C - Norwich Road	0.57	0.43	0.00

## Vehicle Mix

### Heavy Vehicle Percentages

		To		
		A - A47 (W)	B - A47 (E)	C - Norwich Road
From	A - A47 (W)	0	0	0
	B - A47 (E)	13	0	0
	C - Norwich Road	5	2	0

### Average PCU Per Veh

		To		
		A - A47 (W)	B - A47 (E)	C - Norwich Road
From	A - A47 (W)	1.000	1.000	1.000
	B - A47 (E)	1.133	1.000	1.000
	C - Norwich Road	1.051	1.023	1.000



## Detailed Demand Data

### Demand for each time segment

Arm	Time Segment	Demand (Veh/hr)	Demand in PCU (PCU/hr)
A - A47 (W)	16:45-17:00	17	17
	17:00-17:15	21	21
	17:15-17:30	25	25
	17:30-17:45	25	25
	17:45-18:00	21	21
	18:00-18:15	17	17
B - A47 (E)	16:45-17:00	44	46
	17:00-17:15	53	55
	17:15-17:30	65	67
	17:30-17:45	65	67
	17:45-18:00	53	55
	18:00-18:15	44	46
C - Norwich Road	16:45-17:00	77	80
	17:00-17:15	92	96
	17:15-17:30	113	117
	17:30-17:45	113	117
	17:45-18:00	92	96
	18:00-18:15	77	80

## Results

### Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
A - A47 (W)	0.02	2.55	0.0	A	21	32
B - A47 (E)	0.04	2.43	0.0	A	56	84
C - Norwich Road	0.11	3.79	0.1	A	98	147

### Main Results for each time segment

#### 16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	17	4	33	1447	0.012	17	59	0.0	0.0	2.517	A
B - A47 (E)	46	11	17	1604	0.029	46	33	0.0	0.0	2.387	A
C - Norwich Road	80	20	13	1107	0.073	80	50	0.0	0.1	3.640	A

#### 17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	21	5	40	1444	0.014	21	71	0.0	0.0	2.529	A
B - A47 (E)	55	14	21	1602	0.034	55	40	0.0	0.0	2.404	A
C - Norwich Road	96	24	15	1108	0.087	96	60	0.1	0.1	3.701	A

**17:15 - 17:30**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	25	6	49	1439	0.018	25	87	0.0	0.0	2.545	A
B - A47 (E)	67	17	25	1600	0.042	67	49	0.0	0.0	2.427	A
C - Norwich Road	117	29	19	1104	0.106	117	74	0.1	0.1	3.788	A

**17:30 - 17:45**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	25	6	49	1439	0.018	25	87	0.0	0.0	2.545	A
B - A47 (E)	67	17	25	1600	0.042	67	49	0.0	0.0	2.427	A
C - Norwich Road	117	29	19	1104	0.106	117	74	0.1	0.1	3.788	A

**17:45 - 18:00**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	21	5	40	1444	0.014	21	71	0.0	0.0	2.529	A
B - A47 (E)	55	14	21	1602	0.034	55	40	0.0	0.0	2.404	A
C - Norwich Road	96	24	15	1106	0.087	96	60	0.1	0.1	3.704	A

**18:00 - 18:15**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	17	4	34	1447	0.012	17	60	0.0	0.0	2.519	A
B - A47 (E)	46	11	17	1604	0.029	46	34	0.0	0.0	2.388	A
C - Norwich Road	80	20	13	1107	0.073	80	50	0.1	0.1	3.641	A



# 2039DM, AM

## Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	B - A47 (E) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

## Junction Network

### Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
J8	A47/ Norwich Road	Standard Roundabout		A, B, C	3.41	A

### Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	3.41	A

## Traffic Demand

### Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D7	2039DM	AM	ONE HOUR	07:15	08:45	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

### Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - A47 (W)		ONE HOUR	✓	30	100.000
B - A47 (E)		ONE HOUR	✓	139	100.000
C - Norwich Road		ONE HOUR	✓	144	100.000

## Origin-Destination Data

### Demand (Veh/hr)

From	To		
	A - A47 (W)	B - A47 (E)	C - Norwich Road
A - A47 (W)	0	8	25
B - A47 (E)	0	0	139
C - Norwich Road	18	128	0

### Proportions

From	To		
	A - A47 (W)	B - A47 (E)	C - Norwich Road
A - A47 (W)	0.00	0.19	0.81
B - A47 (E)	0.00	0.00	1.00
C - Norwich Road	0.12	0.88	0.00

## Vehicle Mix

### Heavy Vehicle Percentages

From	To		
	A - A47 (W)	B - A47 (E)	C - Norwich Road
A - A47 (W)	0	50	9
B - A47 (E)	0	0	6
C - Norwich Road	10	9	0

### Average PCU Per Veh

From	To		
	A - A47 (W)	B - A47 (E)	C - Norwich Road
A - A47 (W)	1.000	1.500	1.087
B - A47 (E)	1.000	1.000	1.061
C - Norwich Road	1.100	1.093	1.000

## Detailed Demand Data

### Demand for each time segment

Arm	Time Segment	Demand (Veh/hr)	Demand in PCU (PCU/hr)
A - A47 (W)	07:15-07:30	23	28
	07:30-07:45	27	32
	07:45-08:00	33	39
	08:00-08:15	33	39
	08:15-08:30	27	32
	08:30-08:45	23	28
B - A47 (E)	07:15-07:30	105	111
	07:30-07:45	125	133
	07:45-08:00	153	163
	08:00-08:15	153	163
	08:15-08:30	125	133
	08:30-08:45	105	111
C - Norwich Road	07:15-07:30	108	118
	07:30-07:45	129	141
	07:45-08:00	158	173
	08:00-08:15	158	173
	08:15-08:30	129	141
	08:30-08:45	108	118

## Results

### Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
A - A47 (W)	0.03	3.11	0.0	A	32	48
B - A47 (E)	0.10	2.66	0.1	A	133	203
C - Norwich Road	0.16	4.19	0.2	A	144	217

### Main Results for each time segment

#### 07:15 - 07:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	28	7	103	1412	0.019	28	15	0.0	0.0	3.025	A
B - A47 (E)	111	28	20	1603	0.069	111	110	0.0	0.1	2.560	A
C - Norwich Road	118	30	0	1114	0.106	118	131	0.0	0.1	3.953	A

#### 07:30 - 07:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	32	8	124	1402	0.023	32	18	0.0	0.0	3.059	A
B - A47 (E)	133	33	24	1601	0.083	133	131	0.1	0.1	2.602	A
C - Norwich Road	141	35	0	1114	0.127	141	157	0.1	0.2	4.050	A

**07:45 - 08:00**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	39	10	152	1388	0.028	39	21	0.0	0.0	3.106	A
B - A47 (E)	163	41	29	1598	0.102	163	161	0.1	0.1	2.661	A
C - Norwich Road	173	43	0	1114	0.156	173	192	0.2	0.2	4.187	A

**08:00 - 08:15**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	39	10	152	1388	0.028	39	22	0.0	0.0	3.107	A
B - A47 (E)	163	41	29	1598	0.102	163	161	0.1	0.1	2.661	A
C - Norwich Road	173	43	0	1114	0.156	173	192	0.2	0.2	4.187	A

**08:15 - 08:30**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	32	8	124	1402	0.023	32	18	0.0	0.0	3.062	A
B - A47 (E)	133	33	24	1601	0.083	133	132	0.1	0.1	2.604	A
C - Norwich Road	141	35	0	1114	0.127	142	157	0.2	0.2	4.052	A

**08:30 - 08:45**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	26	7	104	1412	0.019	26	15	0.0	0.0	3.025	A
B - A47 (E)	111	28	20	1603	0.069	111	110	0.1	0.1	2.563	A
C - Norwich Road	118	30	0	1114	0.106	119	131	0.2	0.1	3.959	A



# 2039DM, PM

## Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	B - A47 (E) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

## Junction Network

### Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
J8	A47/ Norwich Road	Standard Roundabout		A, B, C	3.23	A

### Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	3.23	A

## Traffic Demand

### Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D8	2039DM	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

### Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - A47 (W)		ONE HOUR	✓	13	100.000
B - A47 (E)		ONE HOUR	✓	51	100.000
C - Norwich Road		ONE HOUR	✓	110	100.000

## Origin-Destination Data

### Demand (Veh/hr)

From		To		
		A - A47 (W)	B - A47 (E)	C - Norwich Road
From	A - A47 (W)	0	0	13
	B - A47 (E)	8	0	44
	C - Norwich Road	40	70	0

### Proportions

From		To		
		A - A47 (W)	B - A47 (E)	C - Norwich Road
From	A - A47 (W)	0.00	0.00	1.00
	B - A47 (E)	0.12	0.00	0.88
	C - Norwich Road	0.37	0.63	0.00

## Vehicle Mix

### Heavy Vehicle Percentages

From		To		
		A - A47 (W)	B - A47 (E)	C - Norwich Road
From	A - A47 (W)	0	0	0
	B - A47 (E)	0	0	0
	C - Norwich Road	2	1	0

### Average PCU Per Veh

From		To		
		A - A47 (W)	B - A47 (E)	C - Norwich Road
From	A - A47 (W)	1.000	1.000	1.000
	B - A47 (E)	1.000	1.000	1.000
	C - Norwich Road	1.025	1.014	1.000



## Detailed Demand Data

### Demand for each time segment

Arm	Time Segment	Demand (Veh/hr)	Demand in PCU (PCU/hr)
A - A47 (W)	16:45-17:00	10	10
	17:00-17:15	11	11
	17:15-17:30	14	14
	17:30-17:45	14	14
	17:45-18:00	11	11
	18:00-18:15	10	10
B - A47 (E)	16:45-17:00	38	38
	17:00-17:15	46	46
	17:15-17:30	56	56
	17:30-17:45	56	56
	17:45-18:00	46	46
	18:00-18:15	38	38
C - Norwich Road	16:45-17:00	83	84
	17:00-17:15	99	101
	17:15-17:30	121	123
	17:30-17:45	121	123
	17:45-18:00	99	101
	18:00-18:15	83	84

## Results

### Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
A - A47 (W)	0.01	2.55	0.0	A	12	17
B - A47 (E)	0.03	2.32	0.0	A	46	70
C - Norwich Road	0.11	3.71	0.1	A	103	154

### Main Results for each time segment

#### 16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	10	2	53	1437	0.007	10	36	0.0	0.0	2.521	A
B - A47 (E)	38	10	10	1609	0.024	38	53	0.0	0.0	2.291	A
C - Norwich Road	84	21	5	1111	0.076	84	43	0.0	0.1	3.668	A

#### 17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	11	3	63	1432	0.008	11	43	0.0	0.0	2.533	A
B - A47 (E)	46	11	11	1608	0.028	46	63	0.0	0.0	2.304	A
C - Norwich Road	101	25	6	1111	0.091	101	51	0.1	0.1	3.627	A

**17:15 - 17:30**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	14	3	78	1425	0.010	14	52	0.0	0.0	2.550	A
B - A47 (E)	58	14	14	1608	0.035	58	78	0.0	0.0	2.321	A
C - Norwich Road	123	31	7	1110	0.111	123	63	0.1	0.1	3.713	A

**17:30 - 17:45**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	14	3	78	1425	0.010	14	52	0.0	0.0	2.551	A
B - A47 (E)	58	14	14	1608	0.035	58	78	0.0	0.0	2.321	A
C - Norwich Road	123	31	7	1110	0.111	123	63	0.1	0.1	3.713	A

**17:45 - 18:00**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	11	3	64	1432	0.008	11	43	0.0	0.0	2.535	A
B - A47 (E)	46	11	11	1608	0.028	46	64	0.0	0.0	2.304	A
C - Norwich Road	101	25	6	1111	0.091	101	51	0.1	0.1	3.628	A

**18:00 - 18:15**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	10	2	53	1437	0.007	10	38	0.0	0.0	2.521	A
B - A47 (E)	38	10	10	1609	0.024	38	53	0.0	0.0	2.292	A
C - Norwich Road	84	21	5	1111	0.076	84	43	0.1	0.1	3.568	A

# 2039DS, AM

## Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	B - A47 (E) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

## Junction Network

### Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
J8	A47/ Norwich Road	Standard Roundabout		A, B, C	3.33	A

### Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	3.33	A

## Traffic Demand

### Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D9	2039DS	AM	ONE HOUR	07:15	08:45	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

### Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - A47 (W)		ONE HOUR	✓	85	100.000
B - A47 (E)		ONE HOUR	✓	113	100.000
C - Norwich Road		ONE HOUR	✓	165	100.000

## Origin-Destination Data

### Demand (Veh/hr)

From	To			
	A - A47 (W)	B - A47 (E)	C - Norwich Road	
A - A47 (W)	0	12	53	
B - A47 (E)	4	0	109	
C - Norwich Road	106	59	0	

### Proportions

From	To			
	A - A47 (W)	B - A47 (E)	C - Norwich Road	
A - A47 (W)	0.00	0.18	0.82	
B - A47 (E)	0.04	0.00	0.96	
C - Norwich Road	0.64	0.36	0.00	

## Vehicle Mix

### Heavy Vehicle Percentages

From	To			
	A - A47 (W)	B - A47 (E)	C - Norwich Road	
A - A47 (W)	0	24	7	
B - A47 (E)	58	0	4	
C - Norwich Road	3	2	0	

### Average PCU Per Veh

From	To			
	A - A47 (W)	B - A47 (E)	C - Norwich Road	
A - A47 (W)	1.000	1.242	1.067	
B - A47 (E)	1.583	1.000	1.039	
C - Norwich Road	1.030	1.018	1.000	



## Detailed Demand Data

### Demand for each time segment

Arm	Time Segment	Demand (Veh/hr)	Demand in PCU (PCU/hr)
A - A47 (W)	07:15-07:30	49	53
	07:30-07:45	58	64
	07:45-08:00	71	78
	08:00-08:15	71	78
	08:15-08:30	58	64
	08:30-08:45	49	53
B - A47 (E)	07:15-07:30	85	90
	07:30-07:45	102	108
	07:45-08:00	125	132
	08:00-08:15	125	132
	08:15-08:30	102	108
	08:30-08:45	85	90
C - Norwich Road	07:15-07:30	124	127
	07:30-07:45	148	152
	07:45-08:00	182	186
	08:00-08:15	182	186
	08:15-08:30	148	152
	08:30-08:45	124	127

## Results

### Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
A - A47 (W)	0.05	2.92	0.1	A	65	98
B - A47 (E)	0.08	2.63	0.1	A	110	165
C - Norwich Road	0.17	4.00	0.2	A	155	233

### Main Results for each time segment

#### 07:15 - 07:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	53	13	45	1441	0.037	53	87	0.0	0.0	2.850	A
B - A47 (E)	90	23	42	1590	0.057	90	56	0.0	0.1	2.542	A
C - Norwich Road	127	32	5	1111	0.115	127	127	0.0	0.1	3.750	A

#### 07:30 - 07:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	64	16	54	1437	0.044	64	104	0.0	0.1	2.880	A
B - A47 (E)	108	27	51	1586	0.068	108	67	0.1	0.1	2.580	A
C - Norwich Road	152	38	6	1111	0.137	152	153	0.1	0.2	3.852	A



**07:45 - 08:00**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	78	20	66	1431	0.055	78	127	0.1	0.1	2.924	A
B - A47 (E)	132	33	62	1579	0.084	132	82	0.1	0.1	2.635	A
C - Norwich Road	186	47	7	1110	0.168	186	187	0.2	0.2	3.997	A

**08:00 - 08:15**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	78	20	66	1431	0.055	78	128	0.1	0.1	2.924	A
B - A47 (E)	132	33	62	1579	0.084	132	82	0.1	0.1	2.635	A
C - Norwich Road	186	47	7	1110	0.168	186	187	0.2	0.2	3.997	A

**08:15 - 08:30**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	64	16	54	1437	0.044	64	104	0.1	0.1	2.883	A
B - A47 (E)	108	27	51	1586	0.068	108	67	0.1	0.1	2.580	A
C - Norwich Road	152	38	6	1111	0.137	152	153	0.2	0.2	3.855	A

**08:30 - 08:45**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	53	13	45	1441	0.037	54	87	0.1	0.0	2.850	A
B - A47 (E)	90	23	43	1590	0.057	90	56	0.1	0.1	2.542	A
C - Norwich Road	127	32	5	1111	0.115	127	128	0.2	0.1	3.756	A

# 2039DS, PM

## Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	B - A47 (E) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

## Junction Network

### Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
J8	A47/ Norwich Road	Standard Roundabout		A, B, C	3.27	A

### Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	3.27	A

## Traffic Demand

### Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D10	2039DS	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

### Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - A47 (W)		ONE HOUR	✓	45	100.000
B - A47 (E)		ONE HOUR	✓	55	100.000
C - Norwich Road		ONE HOUR	✓	114	100.000

## Origin-Destination Data

### Demand (Veh/hr)

From	To		
	A - A47 (W)	B - A47 (E)	C - Norwich Road
A - A47 (W)	0	0.67	45
B - A47 (E)	28	0	29
C - Norwich Road	77	37	0

### Proportions

From	To		
	A - A47 (W)	B - A47 (E)	C - Norwich Road
A - A47 (W)	0.00	0.01	0.99
B - A47 (E)	0.48	0.00	0.52
C - Norwich Road	0.68	0.32	0.00

## Vehicle Mix

### Heavy Vehicle Percentages

From	To		
	A - A47 (W)	B - A47 (E)	C - Norwich Road
A - A47 (W)	0	0	9
B - A47 (E)	8	0	0
C - Norwich Road	4	3	0

### Average PCU Per Veh

From	To		
	A - A47 (W)	B - A47 (E)	C - Norwich Road
A - A47 (W)	1.000	1.000	1.090
B - A47 (E)	1.076	1.000	1.000
C - Norwich Road	1.039	1.027	1.000

## Detailed Demand Data

### Demand for each time segment

Arm	Time Segment	Demand (Veh/hr)	Demand in PCU (PCU/hr)
A - A47 (W)	16:45-17:00	34	37
	17:00-17:15	41	44
	17:15-17:30	50	54
	17:30-17:45	50	54
	17:45-18:00	41	44
	18:00-18:15	34	37
B - A47 (E)	16:45-17:00	42	43
	17:00-17:15	50	52
	17:15-17:30	61	63
	17:30-17:45	61	63
	17:45-18:00	50	52
	18:00-18:15	42	43
C - Norwich Road	16:45-17:00	86	89
	17:00-17:15	102	106
	17:15-17:30	126	130
	17:30-17:45	126	130
	17:45-18:00	102	106
	18:00-18:15	86	89

## Results

### Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
A - A47 (W)	0.04	2.82	0.0	A	45	68
B - A47 (E)	0.04	2.45	0.0	A	53	79
C - Norwich Road	0.12	3.85	0.1	A	108	162

### Main Results for each time segment

#### 16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	37	9	28	1450	0.026	37	82	0.0	0.0	2.773	A
B - A47 (E)	43	11	37	1594	0.027	43	29	0.0	0.0	2.405	A
C - Norwich Road	89	22	21	1103	0.081	88	58	0.0	0.1	3.672	A

#### 17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	44	11	34	1447	0.031	44	98	0.0	0.0	2.792	A
B - A47 (E)	52	13	44	1590	0.032	52	34	0.0	0.0	2.424	A
C - Norwich Road	106	27	25	1101	0.096	106	70	0.1	0.1	3.743	A



**17:15 - 17:30**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	54	14	41	1443	0.038	54	120	0.0	0.0	2.820	A
B - A47 (E)	63	16	54	1584	0.040	63	42	0.0	0.0	2.451	A
C - Norwich Road	130	32	31	1098	0.118	130	85	0.1	0.1	3.847	A

**17:30 - 17:45**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	54	14	41	1443	0.038	54	120	0.0	0.0	2.820	A
B - A47 (E)	63	16	54	1584	0.040	63	42	0.0	0.0	2.451	A
C - Norwich Road	130	32	31	1098	0.118	130	88	0.1	0.1	3.847	A

**17:45 - 18:00**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	44	11	34	1447	0.031	44	98	0.0	0.0	2.795	A
B - A47 (E)	52	13	44	1590	0.032	52	34	0.0	0.0	2.426	A
C - Norwich Road	106	27	25	1101	0.096	106	70	0.1	0.1	3.744	A

**18:00 - 18:15**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	37	9	28	1450	0.026	37	82	0.0	0.0	2.775	A
B - A47 (E)	43	11	37	1594	0.027	43	29	0.0	0.0	2.407	A
C - Norwich Road	89	22	21	1103	0.081	89	59	0.1	0.1	3.676	A



# 2039DS\_Mitigation, AM

## Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	B - A47 (E) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

## Junction Network

### Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
J8	A47/ Norwich Road	Standard Roundabout		A, B, C	3.27	A

### Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	3.27	A

## Traffic Demand

### Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D11	2039DS_Mitigation	AM	ONE HOUR	07:15	08:45	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

### Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - A47 (W)		ONE HOUR	✓	57	100.000
B - A47 (E)		ONE HOUR	✓	107	100.000
C - Norwich Road		ONE HOUR	✓	161	100.000

## Origin-Destination Data

### Demand (Veh/hr)

From	To		
	A - A47 (W)	B - A47 (E)	C - Norwich Road
A - A47 (W)	0	12	45
B - A47 (E)	4	0	103
C - Norwich Road	79	82	0

### Proportions

From	To		
	A - A47 (W)	B - A47 (E)	C - Norwich Road
A - A47 (W)	0.00	0.21	0.79
B - A47 (E)	0.04	0.00	0.96
C - Norwich Road	0.49	0.51	0.00

## Vehicle Mix

### Heavy Vehicle Percentages

From	To		
	A - A47 (W)	B - A47 (E)	C - Norwich Road
A - A47 (W)	0	24	0
B - A47 (E)	58	0	3
C - Norwich Road	1	1	0

### Average PCU Per Veh

From	To		
	A - A47 (W)	B - A47 (E)	C - Norwich Road
A - A47 (W)	1.000	1.242	1.000
B - A47 (E)	1.583	1.000	1.035
C - Norwich Road	1.009	1.013	1.000

## Detailed Demand Data

### Demand for each time segment

Arm	Time Segment	Demand (Veh/hr)	Demand in PCU (PCU/hr)
A - A47 (W)	07:15-07:30	43	45
	07:30-07:45	51	54
	07:45-08:00	63	66
	08:00-08:15	63	66
	08:15-08:30	51	54
	08:30-08:45	43	45
B - A47 (E)	07:15-07:30	81	85
	07:30-07:45	96	102
	07:45-08:00	118	124
	08:00-08:15	118	124
	08:15-08:30	96	102
	08:30-08:45	81	85
C - Norwich Road	07:15-07:30	121	123
	07:30-07:45	145	146
	07:45-08:00	177	179
	08:00-08:15	177	179
	08:15-08:30	145	146
	08:30-08:45	121	123

## Results

### Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
A - A47 (W)	0.05	2.79	0.1	A	55	82
B - A47 (E)	0.08	2.60	0.1	A	104	156
C - Norwich Road	0.16	3.91	0.2	A	149	224

### Main Results for each time segment

#### 07:15 - 07:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	45	11	63	1432	0.031	45	64	0.0	0.0	2.723	A
B - A47 (E)	85	21	34	1595	0.053	85	74	0.0	0.1	2.518	A
C - Norwich Road	123	31	5	1111	0.110	122	114	0.0	0.1	3.677	A

#### 07:30 - 07:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	54	13	75	1426	0.038	54	77	0.0	0.0	2.753	A
B - A47 (E)	102	25	41	1591	0.064	102	88	0.1	0.1	2.552	A
C - Norwich Road	146	37	6	1111	0.132	146	136	0.1	0.2	3.773	A

**07:45 - 08:00**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	66	16	92	1418	0.046	66	95	0.0	0.1	2.794	A
B - A47 (E)	124	31	50	1586	0.078	124	108	0.1	0.1	2.600	A
C - Norwich Road	179	45	7	1110	0.161	179	167	0.2	0.2	3.910	A

**08:00 - 08:15**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	66	16	92	1418	0.046	66	95	0.1	0.1	2.795	A
B - A47 (E)	124	31	50	1586	0.078	124	108	0.1	0.1	2.600	A
C - Norwich Road	179	45	7	1110	0.161	179	167	0.2	0.2	3.910	A

**08:15 - 08:30**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	54	13	75	1426	0.038	54	77	0.1	0.0	2.755	A
B - A47 (E)	102	25	41	1591	0.064	102	88	0.1	0.1	2.552	A
C - Norwich Road	146	37	6	1111	0.132	146	136	0.2	0.2	3.777	A

**08:30 - 08:45**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	45	11	63	1432	0.031	45	65	0.0	0.0	2.726	A
B - A47 (E)	85	21	34	1595	0.053	85	74	0.1	0.1	2.518	A
C - Norwich Road	123	31	5	1111	0.110	123	114	0.2	0.1	3.681	A



# 2039DS\_Mitigation, PM

## Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	B - A47 (E) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

## Junction Network

### Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
J8	A47/ Norwich Road	Standard Roundabout		A, B, C	3.19	A

### Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	3.19	A

## Traffic Demand

### Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D12	2039DS_Mitigation	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

### Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - A47 (W)		ONE HOUR	✓	38	100.000
B - A47 (E)		ONE HOUR	✓	68	100.000
C - Norwich Road		ONE HOUR	✓	110	100.000

## Origin-Destination Data

### Demand (Veh/hr)

From	To		
	A - A47 (W)	B - A47 (E)	C - Norwich Road
A - A47 (W)	0	0.67	35
B - A47 (E)	28	0	42
C - Norwich Road	68	43	0

### Proportions

From	To		
	A - A47 (W)	B - A47 (E)	C - Norwich Road
A - A47 (W)	0.00	0.02	0.98
B - A47 (E)	0.38	0.00	0.62
C - Norwich Road	0.61	0.39	0.00

## Vehicle Mix

### Heavy Vehicle Percentages

From	To		
	A - A47 (W)	B - A47 (E)	C - Norwich Road
A - A47 (W)	0	0	0
B - A47 (E)	8	0	0
C - Norwich Road	4	2	0

### Average PCU Per Veh

From	To		
	A - A47 (W)	B - A47 (E)	C - Norwich Road
A - A47 (W)	1.000	1.000	1.000
B - A47 (E)	1.078	1.000	1.000
C - Norwich Road	1.044	1.023	1.000



## Detailed Demand Data

### Demand for each time segment

Arm	Time Segment	Demand (Veh/hr)	Demand in PCU (PCU/hr)
A - A47 (W)	16:45-17:00	27	27
	17:00-17:15	32	32
	17:15-17:30	39	39
	17:30-17:45	39	39
	17:45-18:00	32	32
	18:00-18:15	27	27
B - A47 (E)	16:45-17:00	51	52
	17:00-17:15	61	63
	17:15-17:30	75	77
	17:30-17:45	75	77
	17:45-18:00	61	63
	18:00-18:15	51	52
C - Norwich Road	16:45-17:00	83	86
	17:00-17:15	99	103
	17:15-17:30	121	126
	17:30-17:45	121	126
	17:45-18:00	99	103
	18:00-18:15	83	86

## Results

### Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
A - A47 (W)	0.03	2.57	0.0	A	33	49
B - A47 (E)	0.05	2.44	0.1	A	64	96
C - Norwich Road	0.11	3.83	0.1	A	105	157

### Main Results for each time segment

#### 16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	27	7	33	1447	0.019	27	74	0.0	0.0	2.533	A
B - A47 (E)	52	13	26	1599	0.033	52	33	0.0	0.0	2.395	A
C - Norwich Road	86	22	21	1103	0.078	86	58	0.0	0.1	3.665	A

#### 17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	32	8	39	1444	0.022	32	88	0.0	0.0	2.548	A
B - A47 (E)	63	16	31	1596	0.039	63	40	0.0	0.0	2.415	A
C - Norwich Road	103	26	25	1101	0.093	103	69	0.1	0.1	3.734	A

**17:15 - 17:30**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	39	10	48	1440	0.027	39	108	0.0	0.0	2.570	A
B - A47 (E)	77	19	39	1593	0.048	77	49	0.0	0.1	2.444	A
C - Norwich Road	128	31	30	1099	0.115	128	85	0.1	0.1	3.833	A

**17:30 - 17:45**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	39	10	48	1440	0.027	39	108	0.0	0.0	2.570	A
B - A47 (E)	77	19	39	1593	0.048	77	49	0.1	0.1	2.444	A
C - Norwich Road	128	31	30	1099	0.115	128	85	0.1	0.1	3.833	A

**17:45 - 18:00**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	32	8	39	1444	0.022	32	88	0.0	0.0	2.549	A
B - A47 (E)	63	16	31	1596	0.039	63	40	0.1	0.0	2.418	A
C - Norwich Road	103	26	25	1101	0.093	103	69	0.1	0.1	3.738	A

**18:00 - 18:15**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A47 (W)	27	7	33	1447	0.019	27	74	0.0	0.0	2.533	A
B - A47 (E)	52	13	28	1599	0.033	52	33	0.0	0.0	2.397	A
C - Norwich Road	88	22	21	1103	0.078	88	58	0.1	0.1	3.669	A