Appendix 3.4 – Road Safety Collision Data and Assessment

Job Name:	symmetry park, Kettering
Job Number:	30062
Title	Personal Injury Collision Analysis

	Growth Factors				
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
	A14	**A509 (S)**	**A509 (N)**	**Isham Rd**	**Warkton Lane**
Combined AM / PM to AADT	6.18	5.48	5.62	3.50	4.96

Accidents on Links

		Observed Data										Anticipated (National) Data			
Link Reference	Link Description	Total Observed Accidents	AM Peak	PM Peak	Combined AM / PM	Approx AADT	Link Length (Km)	Rate (PIA/MV-km)	DMRB Link No.	Speed Limit	DMRB Description	Link only Accident Rate	Link & Junction Accident Rate	Link only Accident Rate	Link & Junction Accident Rate
1.5	A14 - Northwest of A14 Jct 9	11			12833	79307	2.2	0.03	10	70	Modern D2 Roads	0.08	0.12	32	47
1.6	A14 - West of A14 Jct 10	8			10431	64461	1.4	0.05	10	70	Modern D2 Roads	0.08	0.12	17	24
2.3	A509 - South of A509 / Finedon Station Road Priority Junction and North of A509 / B574 Orlingbury Road / Furnace Lane Priority	3	2253	2278	4531	28002	0.8	0.07	8	60	Older S2 A Roads	0.15	0.26	8	13
2.4	A509 - South of A509 / Orlingbury Road Mini Roundabout and North of A509 / Finedon Station Road Priority Junction	2	2002	1964	3966	21734	1.1	0.04	8	30/60	Older S2 A Roads	0.15	0.26	9	15
2.5	A509 - South of A509 / Station Road Mini Roundabout and North of A509 / Orlingbury Road Mini Roundabout	3	2173	2094	4267	23383	0.5	0.13	8	30	Older S2 A Roads	0.24	0.67	7	19
2.6	A509 - South of New Isham Bypass and North of A509 / Station Road Mini Roundabout	4	1944	2084	4028	22073	0.8	0.12	8	60	Older S2 A Roads	0.15	0.26	6	10
2.7	A509 - South of A14 Jct 9 and North of New Isham Bypass	2	1957	2112	4069	22298	0.5	0.10	8	60	Older S2 A Roads	0.15	0.26	4	7
4.1	A509 - North of A14 Jct 9 and South of A509 / Kettering Parkway Roundabout	2	2021	2357	4378	24604	0.2	0.20	10	40	Modern D2 Roads	0.24	0.80	3	10
4.2	A509 - North of of A509 / Kettering Parkway Roundabout and South of A509 / Pytchley Road / Orion Way / Carina Road / Holdenby	0	1759	2247	4006	24757	0.3	0.00	10	40	Modern D2 Roads	0.24	0.80	4	13
4.3	A509 Pytchley Road - North of A509 / Pytchley Road / Orion Way / Carina Road / Holdenby Roundabout and South of A509 Pytchley	1	1566	1569	3135	17619	0.3	0.10	4	30	Modern S2 Roads	0.24	0.67	3	8
5.1	Station Road - East of A509 / Station Road Mini Roundabout and West of Station Road / Polwell Lane Junction	0	460	614	1074	3759	1.1	0.00	9	60	Other S2 Roads	0.29	0.39	3	4
6.3	Isham Road - East of High Street / Stringer's Hill Priority Junction and West of A14 Jct 9	0	379	337	716	2506	1.8	0.00	9	60	Other S2 Roads	0.29	0.39	3	4

Prepared by:	M Balding 26/07/2017
Checked by:	P Cullen 28/07/2017
Date of 1st Issue:	
Revision:	

Rev Mark	Revision Description	Date	Check

Job Name:	symmetry park, Kettering
Job Number:	30062
Title	Collision Data Spreadsheet

	Growth Factors			
	Factor 1	Factor 2	Factor 3	Factor 4
	A14	**A509 (S)**	**A509 (N)**	**Road Name**
Combined AM / PM to AADT	6.18	5.48	5.62	

Year of Count Data			2016

Observed Accidents at Junctions

Junction Reference	Junction Description	Total Observed Accidents	Junction Type	Coba Junction type	Coeff 'a'	Power 'b'	Formula Type	AM & PM peak inflow Major Arm (s)	AM & PM peak inflow Minor Arm (s)	Major Arm AADT	Minor Arm AADT	(f)	2000 BASE		Junction Type		Accident Rate (β)	2014	
													(A) Predicted accidents per year	Total Anticipated accidents in 5 years	COBA Junction Types Classification (A, B, C or D)	Desc.		(A) Predicted accidents per year	Total Anticipated accidents in 6.25 years
	A14 Junction 9	9	Roundabout	60	0.006	1.73	I	7720	658	47709.6	4066.44	51.78	5.541	28	A	Major BU	0.991	5	31
	A14 Junction 10	20	Roundabout	60	0.006	1.73	I	4093	2279	25294.7	14084.2	39.38	3.451	17	A	Major BU	0.991	3	19
	A509 Kettering Road / Station Road	2	Mini-Roundabout	62	0.033	0.76	C	4173	531	22868	3281.58	75.04	0.879	4	D	Minor, NBU	0.996	1	5
	A509 Kettering Road / Orlingbury Road	0	Mini-Roundabout	62	0.033	0.76	C	2270	2032	12439.6	12557.8	156.21	1.534	8	D	Minor, NBU	0.996	1	9
	A509 Pytchley Road / Holdenby / A509 / Carina Road / Orion Way	9	Roundabout	60	0.006	1.73	I	3725	1906	20934.5	11779.1	32.71	2.504	13	A	Major BU	0.991	2	14

FORMULA

Anticipated Accidents

A_N = $A_0 \times \beta^N$

where:

β Accident Rate (Table XX)

N = number of years

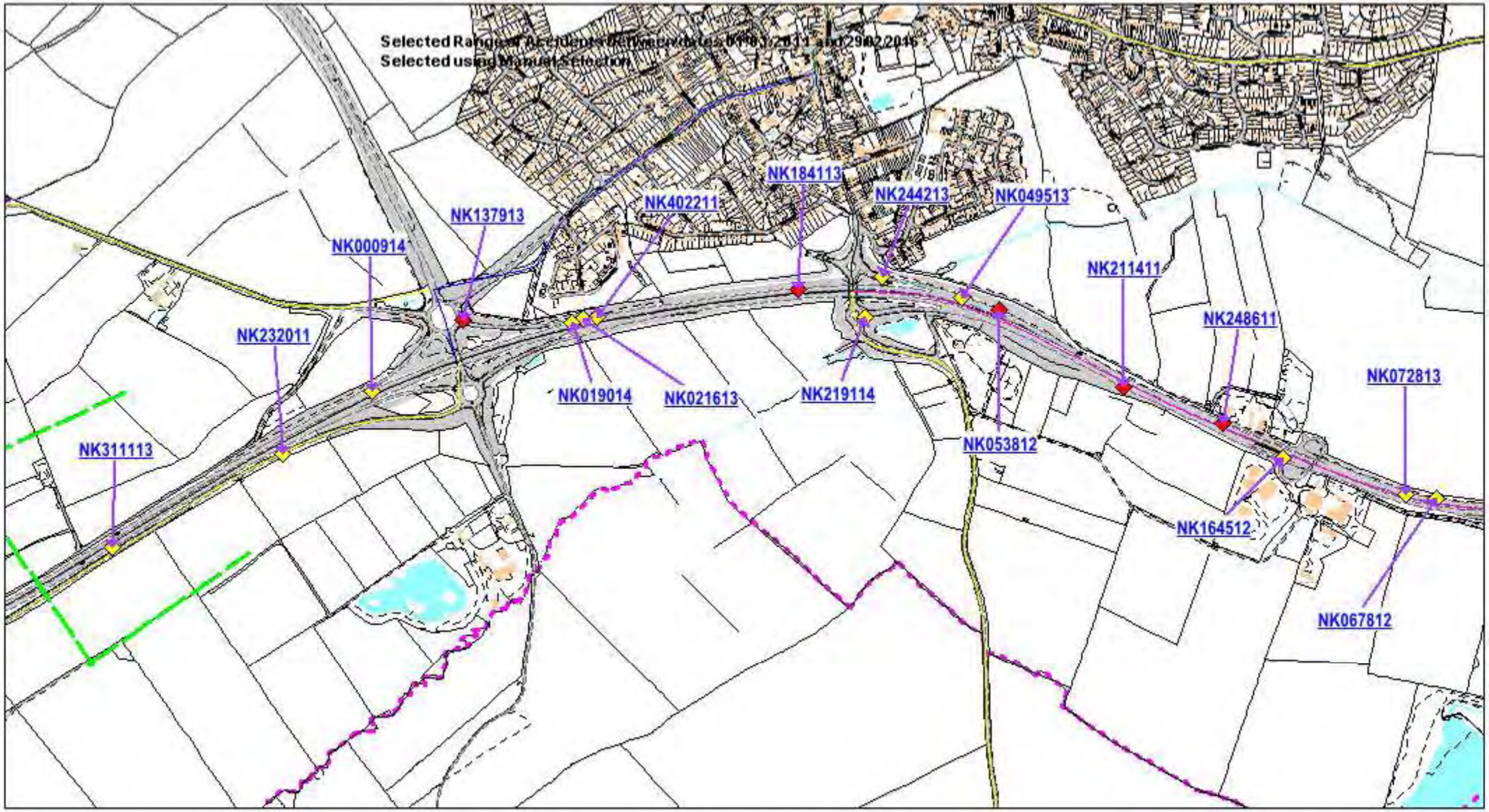
A = $a\ (f)^b$

FORMULA TYPE

Reference		Description
C =	Cross product	combined inflow from two major opposing links multiplied by the sum of inflows on other one or two minor links in thousands of vehicles per annual average day
I =	Inflow	value of total inflow from all links in thousands of vehicles per annual average day

Rev Mark	Revision Description	Date	Check

Prepared by:	
Checked by:	
Date of 1st Issue:	
Revision:	

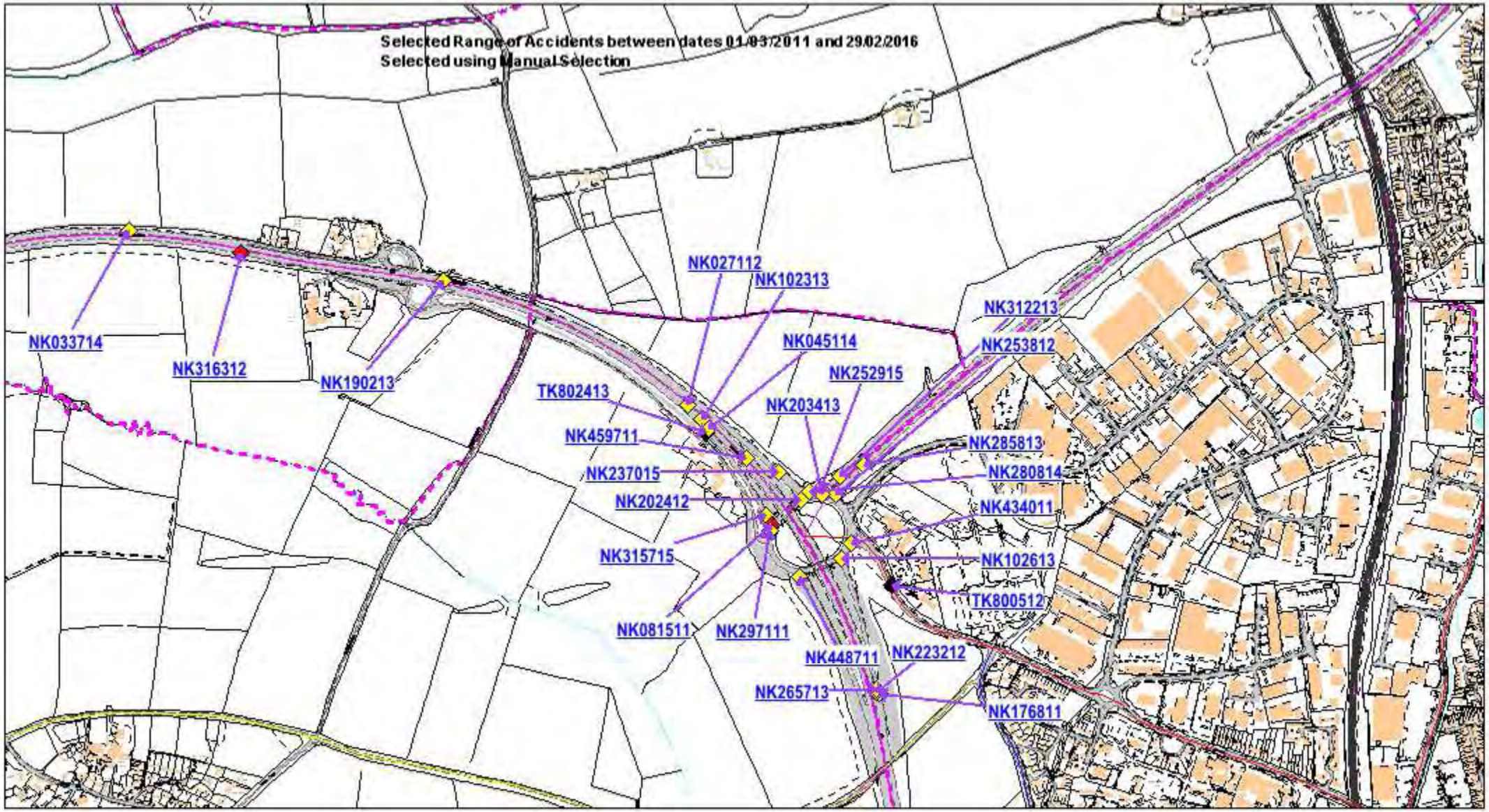


Northamptonshire County Council

Selected map area

A14 - Kettering and Surrounds. 5 years collision data up to and including the 29th February 2016. Part Map 1.

SCALE	1 : 11000
DATE	05/04/2016
DRAWING No.	
DRAWN BY	S Barber

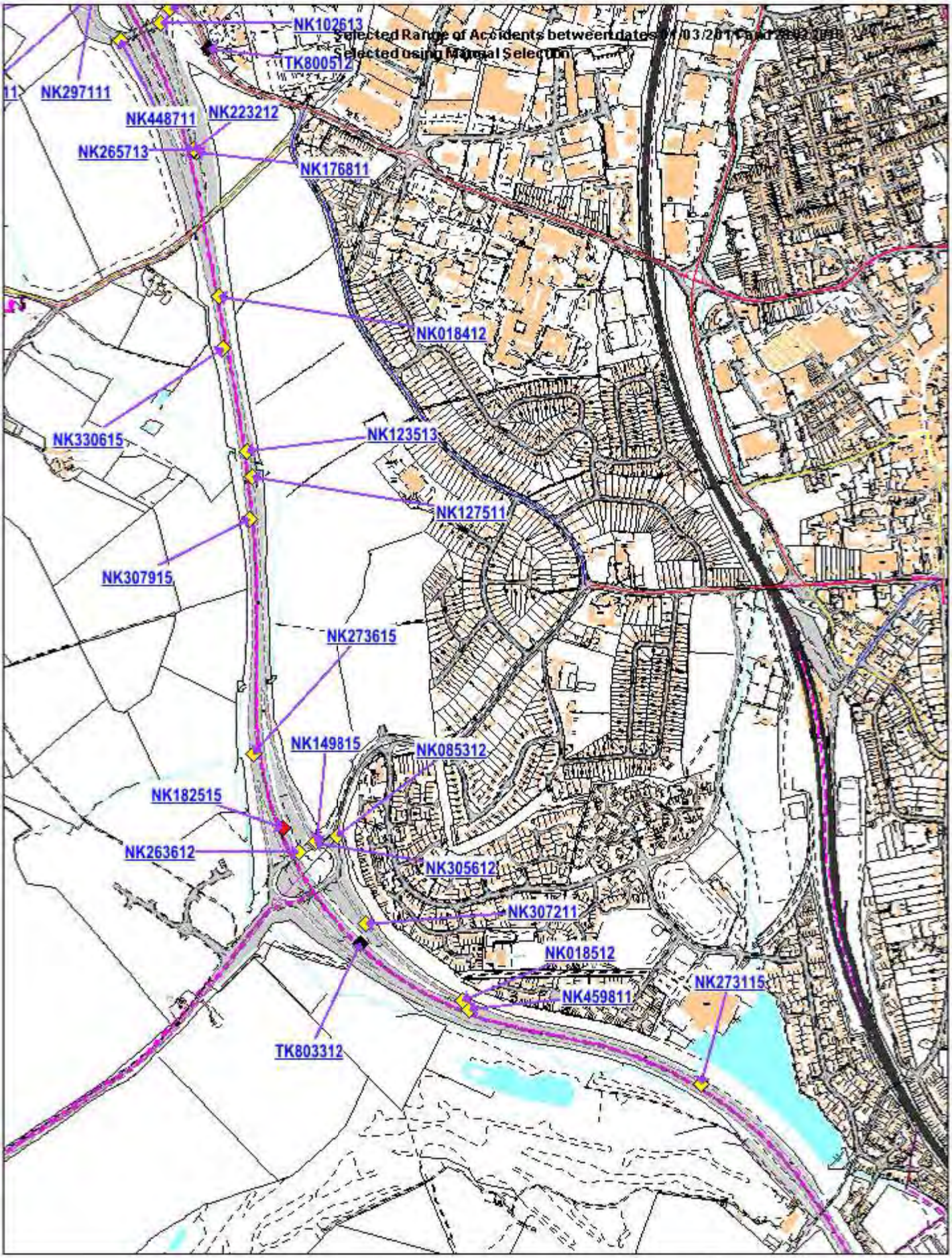


Northamptonshire County Council

Selected map area

A14 - Kettering and Surrounds.5 years collision data up to and including the 29th February 2016. Part Map 2

SCALE	1 : 11000
DATE	05/04/2016
DRAWING No.	
DRAWN BY	S Barber.

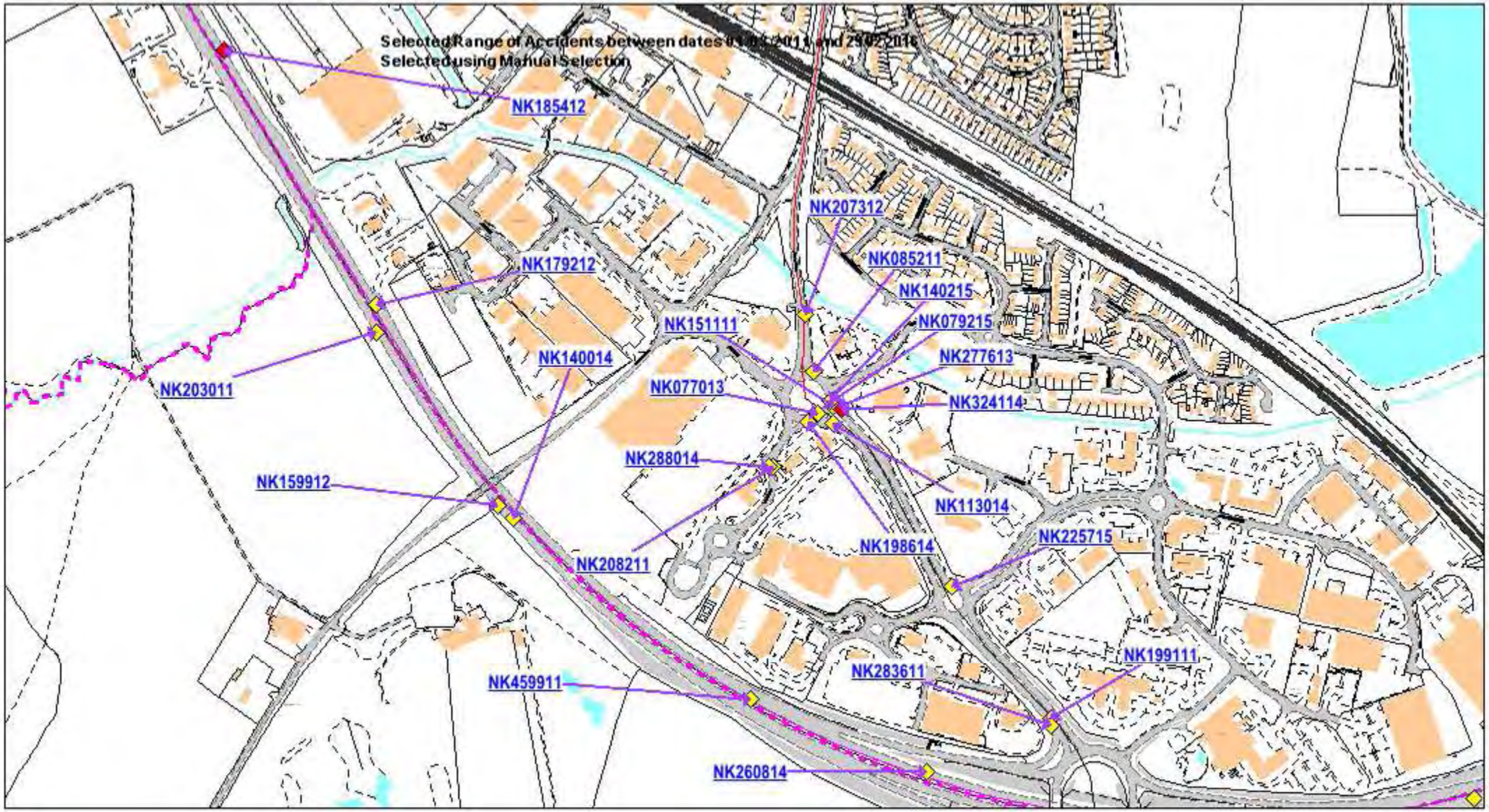


Northamptonshire County Council

Selected map area

A14 - Kettering and Surrounds. 5 years collision data up to and including the 29th February 2016. Part Map 3

SCALE	1 : 11000
DATE	05/04/2016
DRAWING No.	
DRAWN BY	S Barber.

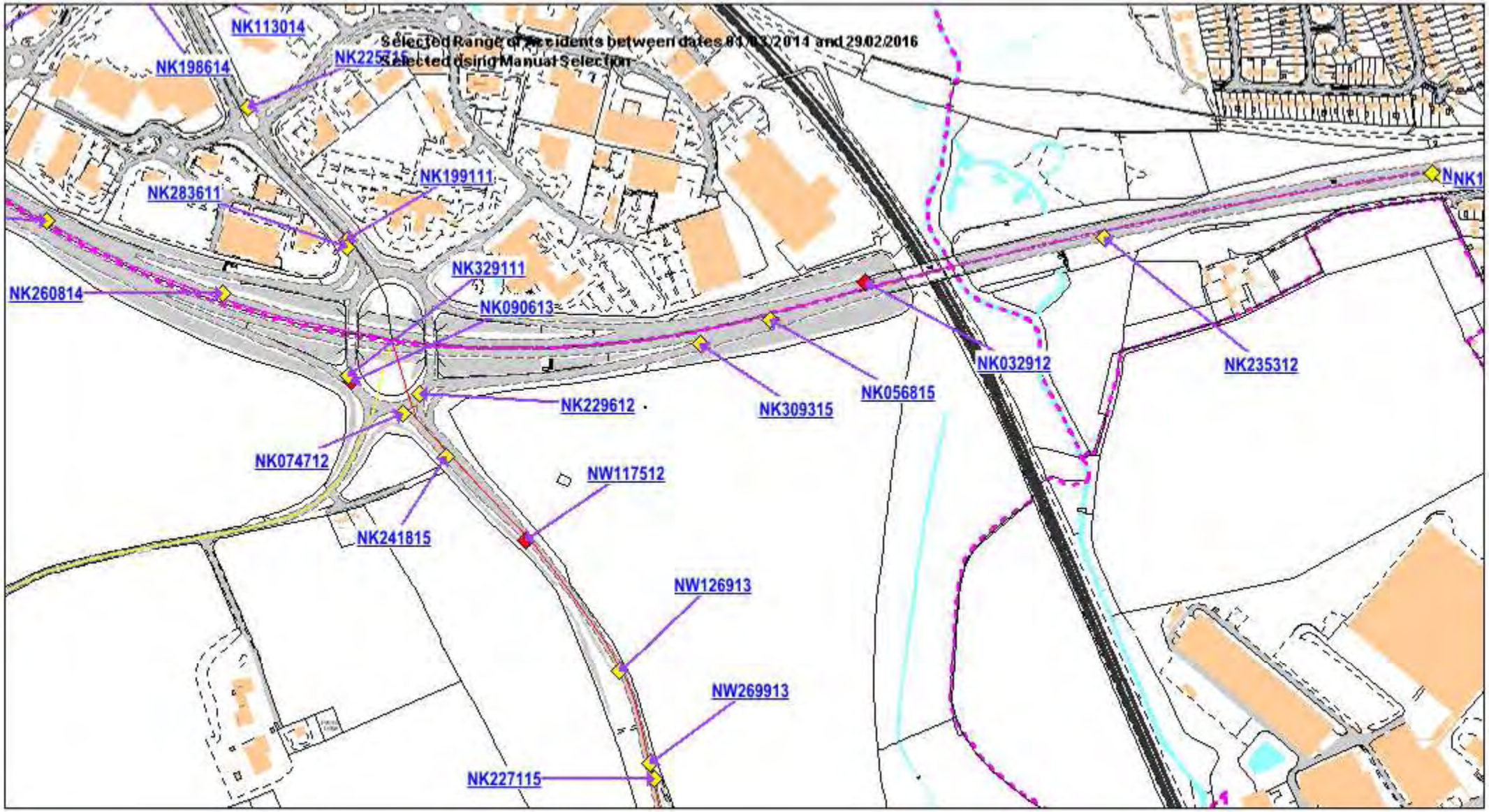


Northamptonshire County Council

Selected map area

A14 - Kettering and Surrounds. 5 years collision data up to and including the 29th February 2016. Part Map 4

SCALE	1 : 6240
DATE	05/04/2016
DRAWING No.	
DRAWN BY	S Barber.

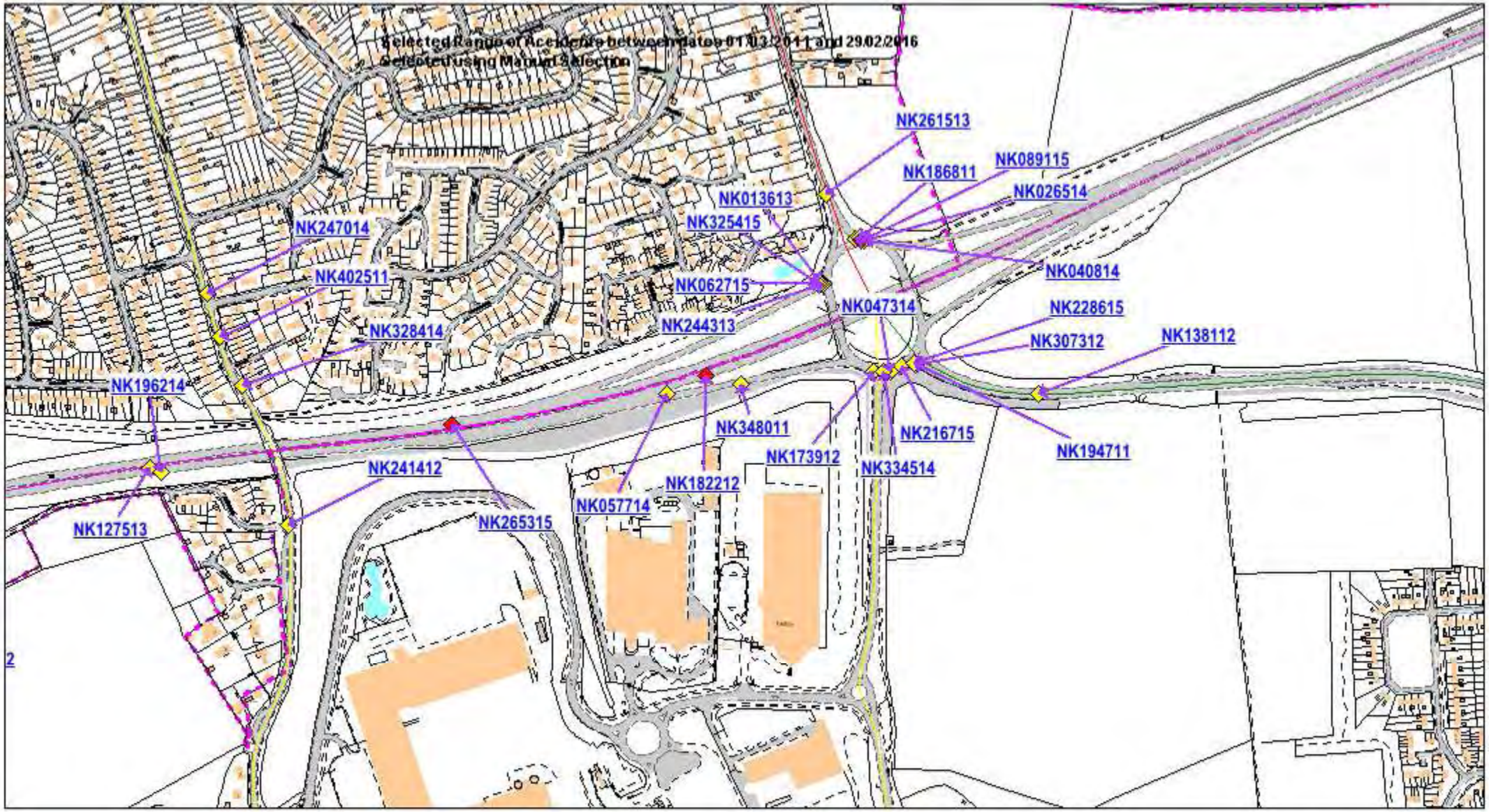


Northamptonshire County Council

Selected map area

A14 - Kettering and Surrounds. 5 years collision data up to and including the 29th February 2016. Part Map 5

SCALE	1 : 6240
DATE	05/04/2016
DRAWING No.	
DRAWN BY	S Barber.

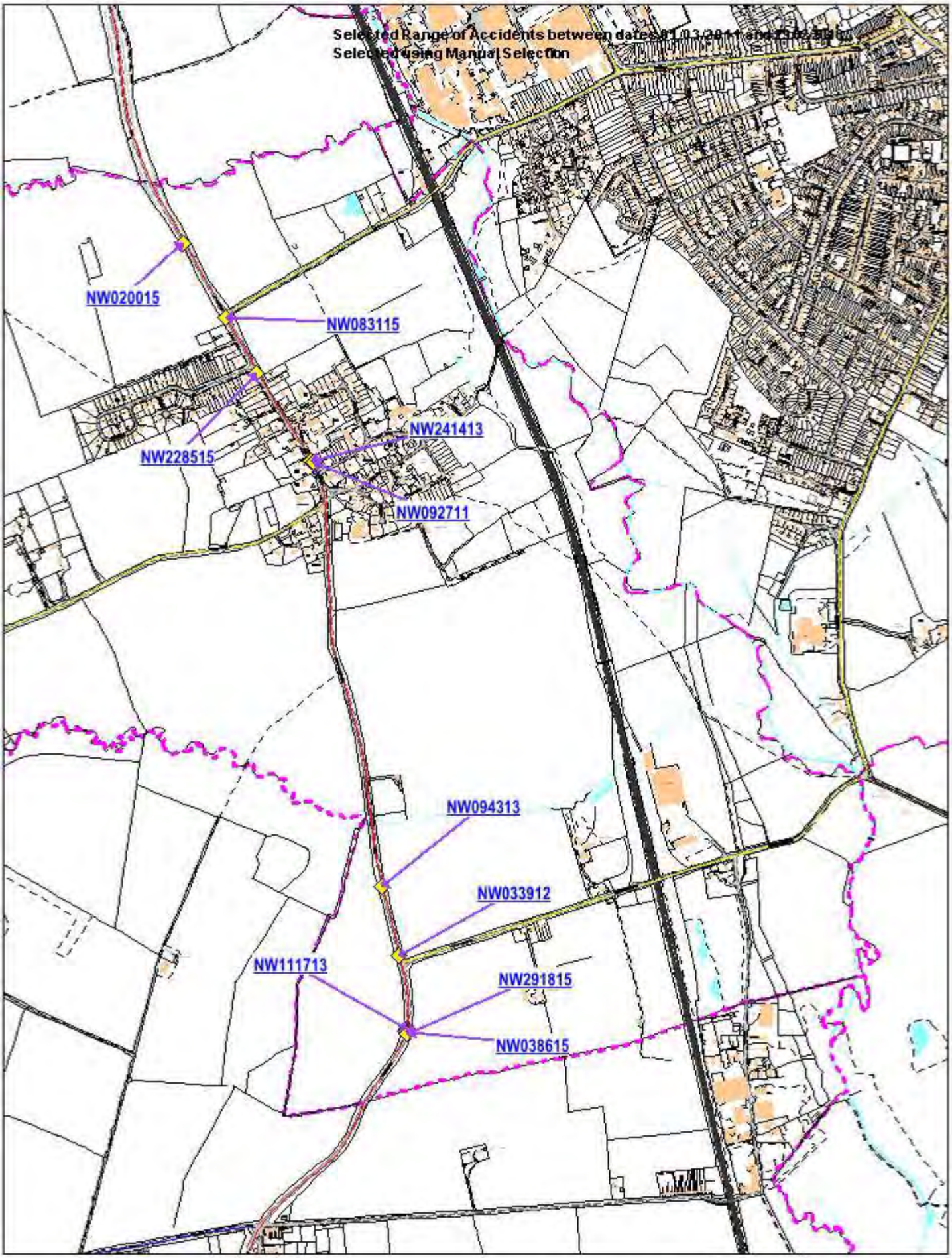


Northamptonshire County Council

Selected map area

A14 - Kettering and Surrounds. 5 years collision data up to and including the 29th February 2016. Part Map 6

SCALE	1 : 6240
DATE	05/04/2016
DRAWING No.	
DRAWN BY	S Barber.

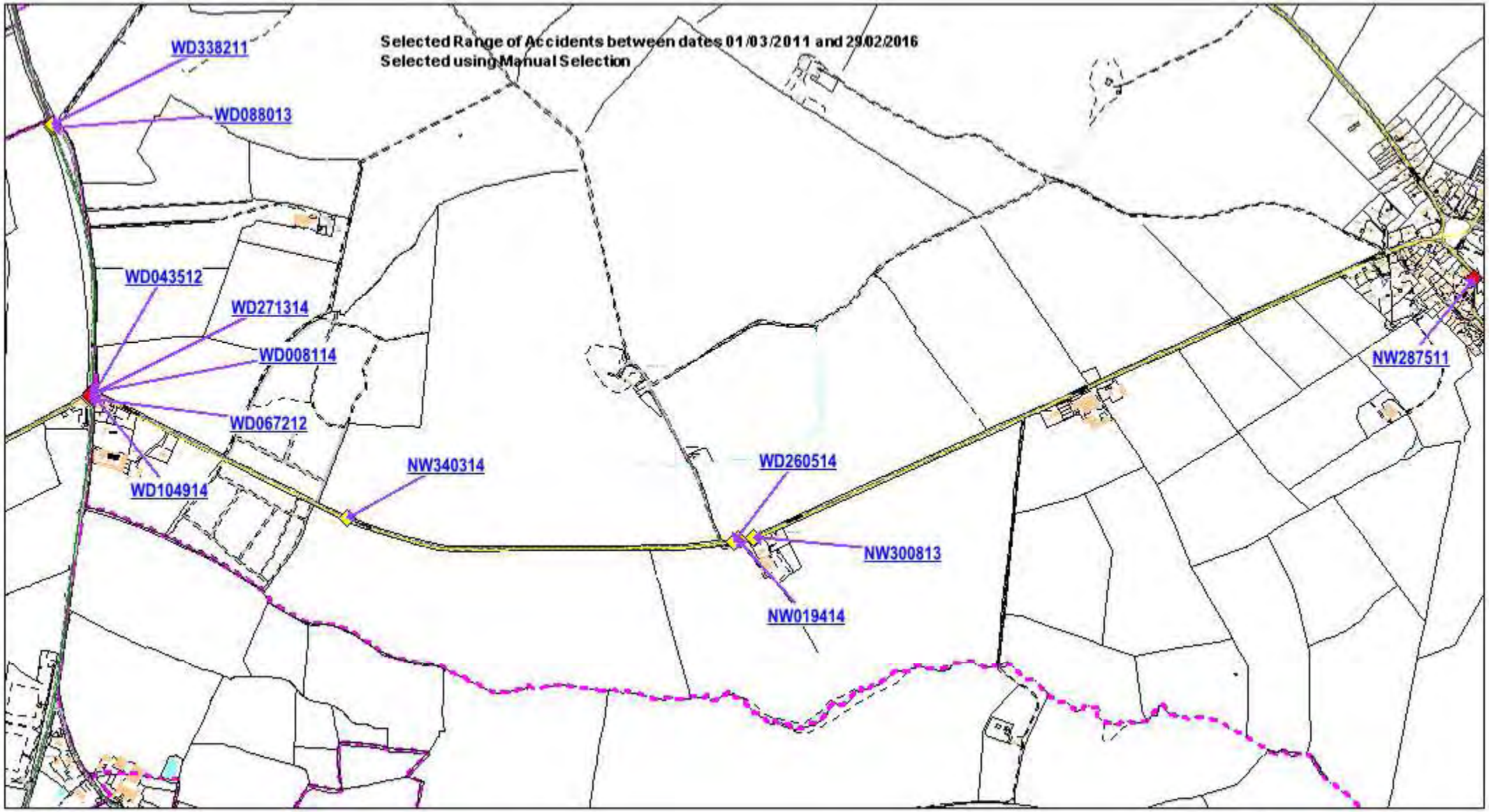


Northamptonshire County Council

Selected map area

A14 - Kettering and Surrounds. 5 years collision data up to and including the 29th February 2016. Part Map 7

SCALE	1 : 12480
DATE	05/04/2016
DRAWING No.	
DRAWN BY	S Barber.

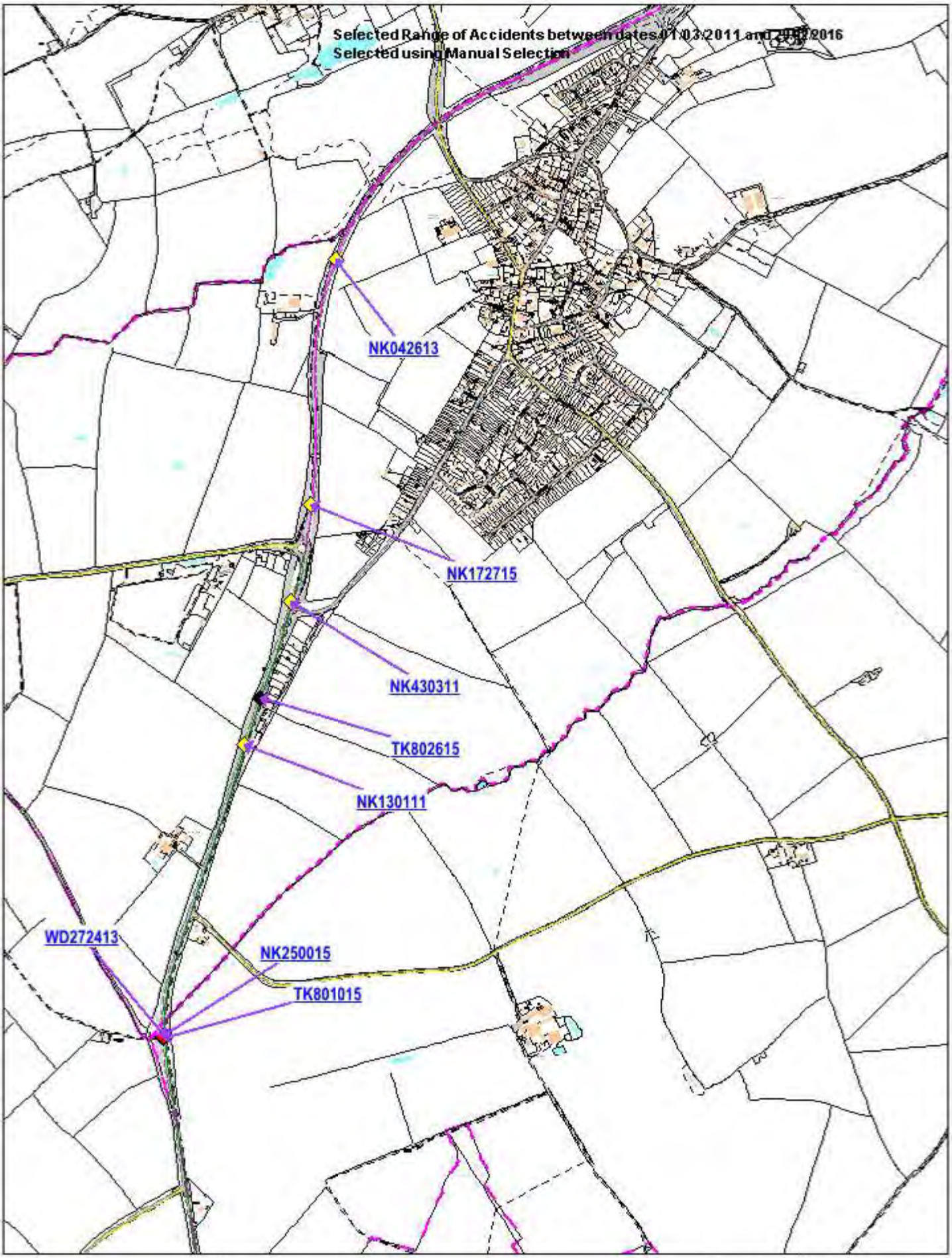


Northamptonshire County Council

Selected map area

A14 - Kettering and Surrounds. 5 years collision data up to and including the 29th February 2016. Part Map 8.

SCALE	1 : 12480
DATE	05/04/2016
DRAWING No.	
DRAWN BY	S Barber.

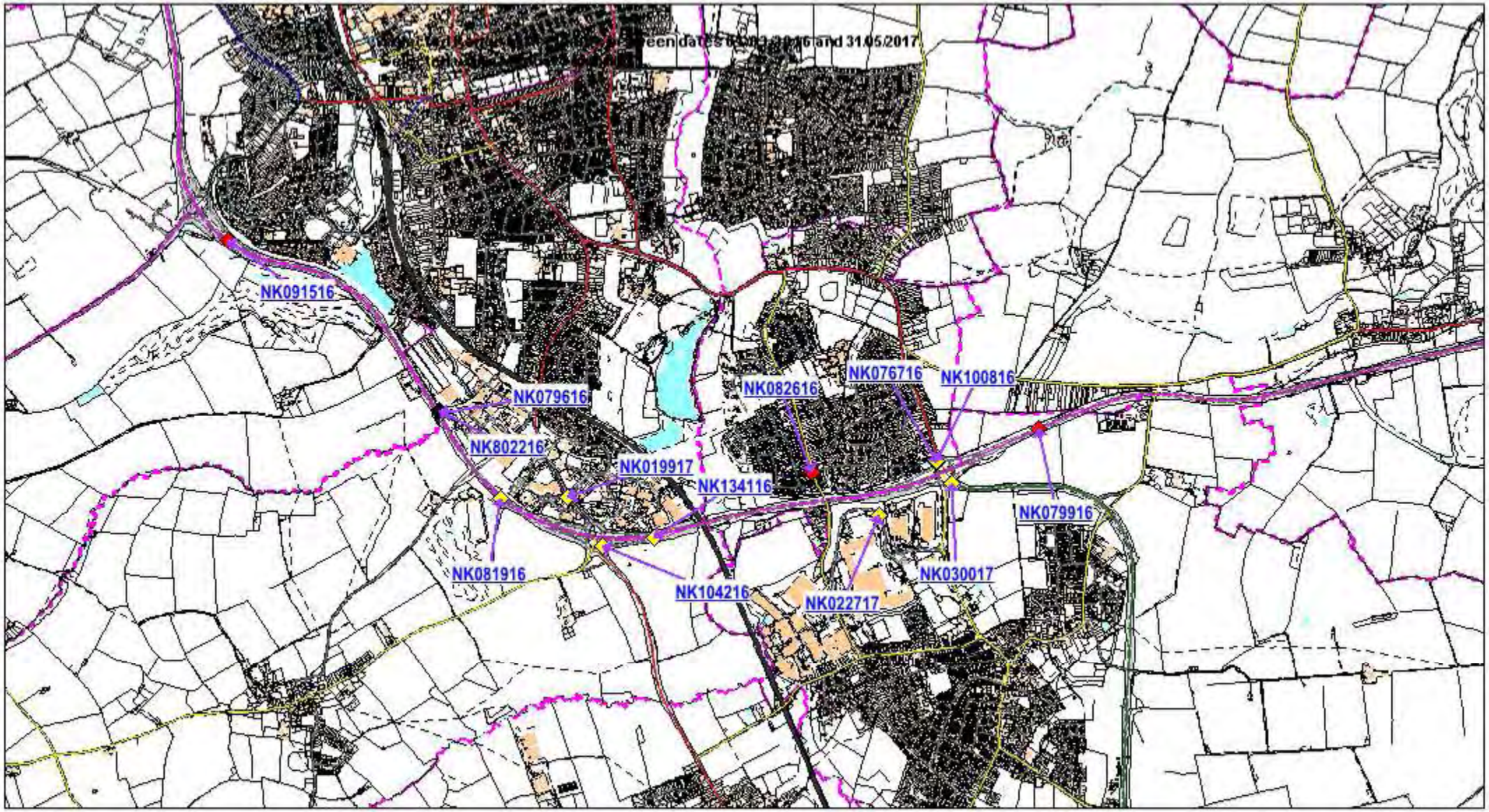


Northamptonshire County Council

Selected map area

A14 - Kettering and Surrounds. 5 years collision data up to and including the 29th February 2016. Part Map 9

SCALE	1 : 13460
DATE	05/04/2016
DRAWING No.	
DRAWN BY	S Barber,

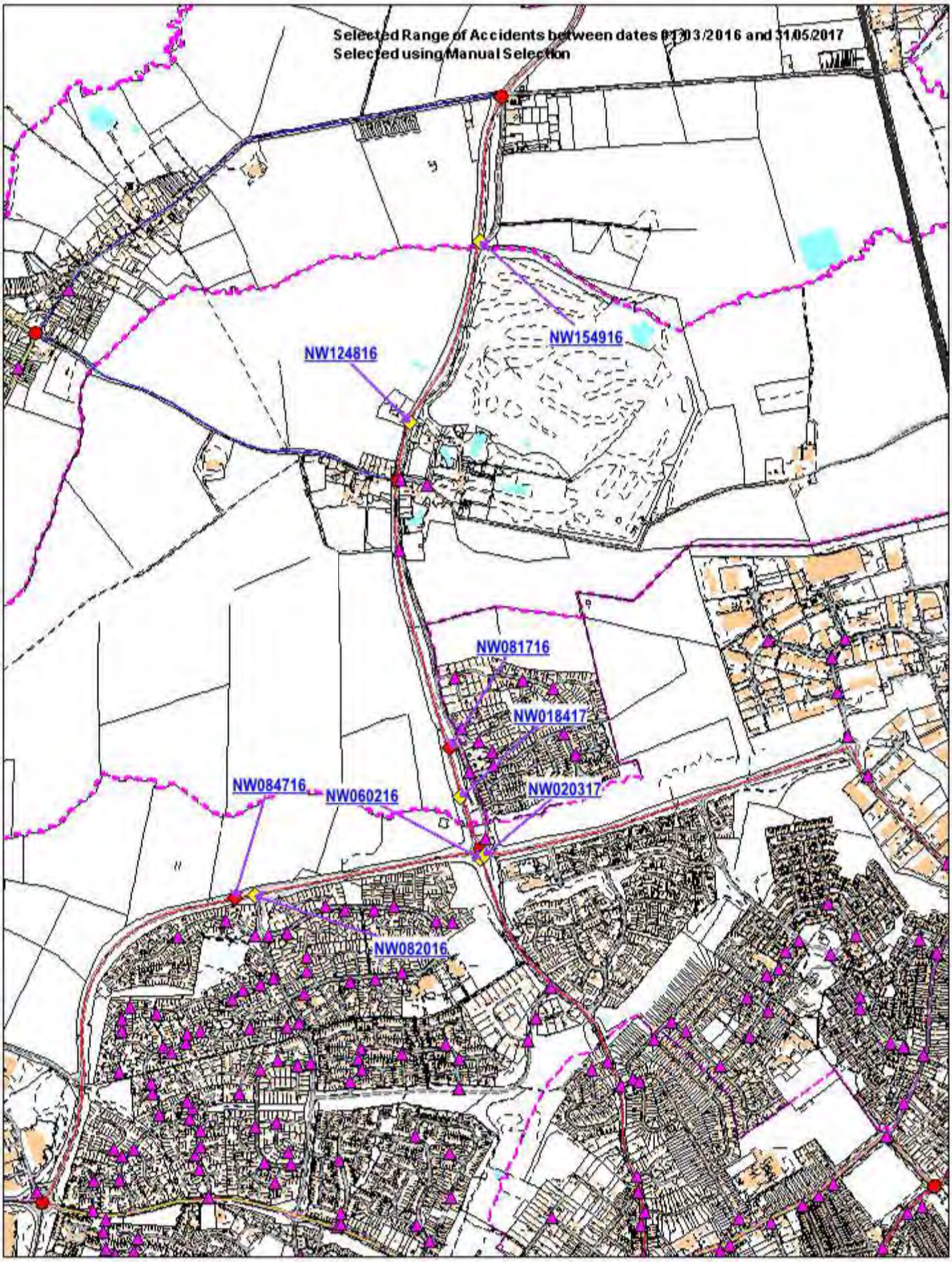


Northamptonshire County Council

Selected map area

Kettering Business Park and Surrounds. Collision data from the 1st March 2016 to the 31st May 2017.

SCALE	1 : 31500
DATE	25/07/2017
DRAWING No.	
DRAWN BY	S.B.



Northamptonshire County Council

Selected map area

Great Harrowden and surrounds . Collision data for the time period the 1st March 2016 to the 31st May 2017.

SCALE	1 : 15750
DATE	25/07/2017
DRAWING No.	
DRAWN BY	S B.

Appendix 3.5 – 2017 VISSIM Information

Modelled (average, 5 runs)							
Peak	Route	Observed	Modelled	trips recorded	Difference	within 15%	within 60 seconds
AM	ANPR Cam 48- ANPR Cam 24	00:02:53	00:02:46	15	-00:00:07	yes	yes
AM	ANPR Cam 48- ANPR Cam 28	00:03:16	00:03:23	102	00:00:07	yes	yes
AM	ANPR Cam 27- ANPR Cam 47	00:06:21	00:05:29	89	-00:00:52	yes	yes
AM	ANPR Cam 3- ANPR Cam 24	00:03:55	00:04:15	16	00:00:20	yes	yes
AM	ANPR Cam 3- ANPR Cam 28	00:04:24	00:04:31	32	00:00:07	yes	yes
AM	ANPR Cam 3- ANPR Cam 47	00:08:48	00:07:49	99	-00:00:59	yes	yes
AM	ANPR Cam 35- ANPR Cam 47	00:06:19	00:06:06	17	-00:00:13	yes	yes
AM	ANPR Cam 35- ANPR Cam 24	00:04:16	00:03:45	16	-00:00:31	yes	yes
PM	ANPR Cam 48- ANPR Cam 24	00:02:52	00:02:35	35	-00:00:17	yes	yes
PM	ANPR Cam 48- ANPR Cam 28	00:03:05	00:03:21	96	00:00:16	yes	yes
PM	ANPR Cam 27- ANPR Cam 47	00:05:13	00:05:32	74	00:00:19	yes	yes
PM	ANPR Cam 3- ANPR Cam 24	00:03:59	00:04:22	44	00:00:23	yes	yes
AM	ANPR Cam 3- ANPR Cam 28	00:04:18	00:04:30	16	00:00:12	yes	yes
PM	ANPR Cam 3- ANPR Cam 47	00:06:46	00:07:34	98	00:00:48	yes	yes
PM	ANPR Cam 35- ANPR Cam 47	00:05:32	00:06:04	24	00:00:32	yes	yes
PM	ANPR Cam 35- ANPR Cam 24	00:04:48	00:04:16	26	-00:00:32	yes	yes

Data collection point	AM	PM	AM	PM	AM Total Difference	AM Percentage Difference	PM Total Difference	PM Percentage Difference	AM GEH	PM GEH
A509 S NB	1153	1101	1155	1102	-2	-0.2%	-1	-0.1%	0.06	0.03
Isham N	140	194	140	195	0	0.0%	-1	-0.5%	0.00	0.07
A14 W off	1319	1025	1321	1018	-2	-0.2%	7	0.7%	0.06	0.22
A509 N SB	687	1406	672	1391	15	2.2%	15	1.1%	0.02	0.40
Boughton south	87	258	86	257	1	1.1%	1	0.4%	0.11	0.06
A14 E off	693	358	691	356	2	0.3%	2	0.6%	0.00	0.11
A509 NB (between northern rbts)	1043	1052	1039	1063	4	0.4%	-11	-1.0%	0.12	0.34
A509 SB (between northern rbts)	733	1102	755	1107	-22	-3.0%	-5	-0.5%	0.03	0.15

Appendix 3.6 – 2017 Junction Capacity Assessment Outputs

Junctions 9

ARCADY 9 - Roundabout Module

Filename: 170410 - A509 Station Road 2017 Observed - Roundabout - DIRECT.j9
Path: J:\30062 Land South of Kettering\Junctions 9\A509 Station Road\2017 Observed
Report generation date: 11/04/2017 12:56:10

Summary of junction performance

	AM							PM						
	Queue (PCU)	95% Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity	Queue (PCU)	95% Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity
	2017 Observed - DIRECT													
Arm 1	3.6	?	11.98	0.78	B	17.46	2 % [Arm 2]	5.6	?	16.79	0.86	C	19.71	2 % [Arm 2]
Arm 2	2.7	?	29.95	0.74	D			3.0	?	29.98	0.77	D		
Arm 3	6.0	?	18.81	0.86	C			6.3	?	20.16	0.87	C		

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. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	A509 / Station Road Mini Roundabout
Location	South Kettering
Site number	
Date	10/04/2017
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	30062
Enumerator	PBA\mbolshaw
Description	2017 Observed

Units

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

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75	✓	✓	✓	Delay	0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D1	2017 Observed - DIRECT	AM	DIRECT	08:00	09:00	60	15	✓
D2	2017 Observed - DIRECT	PM	DIRECT	17:00	18:00	60	15	✓

Analysis Set Details

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

2017 Observed - DIRECT, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Flow Arm 1	Analysis Options	Queue Variations cannot be calculated for the selected traffic profile type.
Warning	Flow Arm 2	Analysis Options	Queue Variations cannot be calculated for the selected traffic profile type.
Warning	Flow Arm 3	Analysis Options	Queue Variations cannot be calculated for the selected traffic profile type.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	1,2,3	17.46	C

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	2	Arm 2

Arms

Arms

Arm	Name	Description
1	A509 (N)	
2	Station Road (E)	
3	A509 (S)	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1	3.50	6.00	5.5	12.5	18.0	0.0	
2	3.00	3.00	0.0	13.0	18.0	0.0	
3	3.50	6.50	6.0	7.5	18.0	0.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/TS)
1	0.641	367.866
2	0.541	244.923
3	0.619	360.496

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 period length (min)	Time segment length (min)	Run automatically
D1	2017 Observed - DIRECT	AM	DIRECT	08:00	09:00	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
1		DIRECT	✓	100.000
2		DIRECT	✓	100.000
3		DIRECT	✓	100.000

Origin-Destination Data

08:00 - 08:15

Demand (PCU/TS)

		To		
		1	2	3
From	1	0.00	14.00	223.00
	2	36.00	0.00	56.00
	3	256.00	36.00	1.00

08:15 - 08:30

Demand (PCU/TS)

		To		
		1	2	3
From	1	0.00	26.00	249.00
	2	39.00	0.00	39.00
	3	262.00	23.00	0.00

08:30 - 08:45

Demand (PCU/TS)

		To		
		1	2	3
From	1	0.00	24.00	238.00
	2	40.00	0.00	46.00
	3	241.00	29.00	1.00

08:45 - 09:00

Demand (PCU/TS)

		To		
		1	2	3
From	1	0.00	29.00	214.00
	2	33.00	0.00	35.00
	3	251.00	30.00	2.00

Vehicle Mix

Heavy Vehicle Percentages

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

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS	Average Demand (PCU/TS)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	0.78	11.98	3.6	?	B	254.25	1017.00	173.79	10.25	2.90	173.93	10.26
2	0.74	29.95	2.7	?	D	81.00	324.00	129.25	23.94	2.15	129.34	23.95
3	0.86	18.81	6.0	?	C	283.00	1132.00	315.05	16.70	5.25	315.62	16.73

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1	237.00	237.00	36.25	344.62	0.688	234.70	285.80	0.0	2.3	8.637	A
2	92.00	92.00	221.82	125.03	0.736	89.46	49.13	0.0	2.5	24.109	C
3	293.00	293.00	35.01	338.83	0.865	287.04	276.27	0.0	6.0	17.099	C

08:15 - 08:30

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1	275.00	275.00	23.27	352.94	0.779	273.71	300.47	2.3	3.6	11.980	B
2	78.00	78.00	247.94	110.91	0.703	78.05	49.05	2.5	2.5	27.828	D
3	285.00	285.00	38.75	336.51	0.847	284.99	287.24	6.0	6.0	18.813	C

08:30 - 08:45

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1	262.00	262.00	29.95	348.66	0.751	262.23	282.19	3.6	3.4	11.225	B
2	86.00	86.00	239.18	115.64	0.744	85.76	53.00	2.5	2.7	29.953	D
3	271.00	271.00	39.98	335.76	0.807	272.16	284.97	6.0	4.8	15.541	C

08:45 - 09:00

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1	243.00	243.00	31.96	347.37	0.700	243.78	284.46	3.4	2.6	9.382	A
2	68.00	68.00	216.76	127.76	0.532	69.53	58.98	2.7	1.2	15.996	C
3	283.00	283.00	33.69	339.65	0.833	282.73	252.61	4.8	5.1	16.804	C

Queueing Delay Results for each time segment

08:00 - 08:15

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
1	31.95	2.13	8.637	A	A
2	32.59	2.17	24.109	C	C
3	74.60	4.97	17.099	C	B

08:15 - 08:30

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
1	49.96	3.33	11.980	B	B
2	37.63	2.51	27.828	D	C
3	89.43	5.96	18.813	C	B

08:30 - 08:45

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
1	51.41	3.43	11.225	B	B
2	39.52	2.63	29.953	D	C
3	76.48	5.10	15.541	C	B

08:45 - 09:00

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
1	40.47	2.70	9.382	A	A
2	19.51	1.30	15.996	C	B
3	74.54	4.97	16.804	C	B

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
1	2.30	?	?	?	?			N/A	N/A
2	2.54	?	?	?	?			N/A	N/A
3	5.96	?	?	?	?			N/A	N/A

08:15 - 08:30

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
1	3.59	?	?	?	?			N/A	N/A
2	2.49	?	?	?	?			N/A	N/A
3	5.97	?	?	?	?			N/A	N/A

08:30 - 08:45

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
1	3.35	?	?	?	?			N/A	N/A
2	2.72	?	?	?	?			N/A	N/A
3	4.80	?	?	?	?			N/A	N/A

08:45 - 09:00

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
1	2.57	?	?	?	?			N/A	N/A
2	1.19	?	?	?	?			N/A	N/A
3	5.08	?	?	?	?			N/A	N/A

2017 Observed - DIRECT, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Flow Arm 1	Analysis Options	Queue Variations cannot be calculated for the selected traffic profile type.
Warning	Flow Arm 2	Analysis Options	Queue Variations cannot be calculated for the selected traffic profile type.
Warning	Flow Arm 3	Analysis Options	Queue Variations cannot be calculated for the selected traffic profile type.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	1,2,3	19.71	C

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	2	Arm 2

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D2	2017 Observed - DIRECT	PM	DIRECT	17:00	18:00	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
1		DIRECT	✓	100.000
2		DIRECT	✓	100.000
3		DIRECT	✓	100.000

Origin-Destination Data

Demand (PCU/TS)

17:00 - 17:15

		To		
		1	2	3
From	1	1.00	42.00	250.00
	2	32.00	0.00	37.00
	3	251.00	40.00	2.00

Demand (PCU/TS)

17:15 - 17:30

		To		
		1	2	3
From	1	0.00	46.00	230.00
	2	52.00	0.00	40.00
	3	223.00	54.00	1.00

Demand (PCU/TS)

17:30 - 17:45

		To		
		1	2	3
From	1	0.00	38.00	228.00
	2	30.00	0.00	23.00
	3	248.00	49.00	0.00

Demand (PCU/TS)

17:45 - 18:00

		To		
		1	2	3
From	1	0.00	39.00	248.00
	2	29.00	0.00	24.00
	3	253.00	38.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

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

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS	Average Demand (PCU/TS)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	0.86	16.79	5.6	?	C	280.50	1122.00	288.68	15.44	4.81	289.21	15.47
2	0.77	29.98	3.0	?	D	66.75	267.00	87.46	19.65	1.46	87.52	19.67
3	0.87	20.16	6.3	?	C	289.75	1159.00	338.42	17.52	5.64	339.24	17.56

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1	293.00	293.00	41.20	341.45	0.858	287.44	278.45	0.0	5.6	16.071	C
2	69.00	69.00	248.20	110.77	0.623	67.42	80.44	0.0	1.6	20.486	C
3	293.00	293.00	32.25	340.54	0.860	287.40	283.36	0.0	5.6	16.153	C

17:15 - 17:30

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1	276.00	276.00	54.70	332.79	0.829	276.23	274.38	5.6	5.3	16.794	C
2	92.00	92.00	231.34	119.88	0.767	90.61	99.59	1.6	3.0	29.983	D
3	278.00	278.00	51.07	328.89	0.845	278.00	270.88	5.6	5.6	18.256	C

17:30 - 17:45

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1	266.00	266.00	49.07	336.40	0.791	267.15	278.44	5.3	4.2	13.843	B
2	53.00	53.00	228.88	121.21	0.437	55.16	87.34	3.0	0.8	14.345	B
3	297.00	297.00	31.22	341.17	0.871	296.29	252.82	5.6	6.3	20.163	C

17:45 - 18:00

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1	287.00	287.00	38.24	343.34	0.836	286.24	281.90	4.2	4.9	16.166	C
2	53.00	53.00	247.32	111.24	0.476	52.91	77.17	0.8	0.9	15.717	C
3	291.00	291.00	28.97	342.57	0.849	291.17	271.26	6.3	6.1	18.340	C

Queueing Delay Results for each time segment

17:00 - 17:15

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
1	70.36	4.69	16.071	C	B
2	21.13	1.41	20.486	C	C
3	70.70	4.71	16.153	C	B

17:15 - 17:30

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
1	81.38	5.43	16.794	C	B
2	39.30	2.62	29.983	D	C
3	83.97	5.60	18.256	C	B

17:30 - 17:45

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
1	66.59	4.44	13.843	B	B
2	13.81	0.92	14.345	B	B
3	90.60	6.04	20.163	C	C

17:45 - 18:00

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
1	70.35	4.69	16.166	C	B
2	13.22	0.88	15.717	C	B
3	93.15	6.21	18.340	C	B

Queue Variation Results for each time segment

17:00 - 17:15

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
1	5.56	?	?	?	?			N/A	N/A
2	1.58	?	?	?	?			N/A	N/A
3	5.60	?	?	?	?			N/A	N/A

17:15 - 17:30

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
1	5.33	?	?	?	?			N/A	N/A
2	2.98	?	?	?	?			N/A	N/A
3	5.60	?	?	?	?			N/A	N/A

17:30 - 17:45

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
1	4.18	?	?	?	?			N/A	N/A
2	0.81	~1	~1	~1	~1			N/A	N/A
3	6.31	?	?	?	?			N/A	N/A

17:45 - 18:00

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
1	4.94	?	?	?	?			N/A	N/A
2	0.90	~1	~1	~1	~1			N/A	N/A
3	6.14	?	?	?	?			N/A	N/A

Junctions 9

ARCADY 9 - Roundabout Module

Filename: 170410 - A509 Orlingbury Road 2017 Observed - Roundabout - DIRECT.j9
Path: J:\30062 Land South of Kettering\Junctions 9\A509 Orlingbury Road\2017 Observed
Report generation date: 11/04/2017 14:26:00

Summary of junction performance

	AM							PM						
	Queue (PCU)	95% Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity	Queue (PCU)	95% Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity
	2017 Observed - DIRECT													
Arm A	4.1	?	12.79	0.80	B	14.56	13 % [Arm B]	4.1	?	11.88	0.81	B	13.83	12 % [Arm B]
Arm B	5.0	?	16.92	0.84	C			4.8	?	16.23	0.83	C		
Arm C	0.3	~1	9.55	0.25	A			0.3	~1	10.00	0.25	B		

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. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	A509 / Orlingbury Road Roundabout
Location	Isham
Site number	
Date	06/06/2016
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	30062
Enumerator	PBA\mbolshaw
Description	2017 Observed Flows

Units

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

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75	✓	✓	✓	Delay	0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D1	2017 Observed - DIRECT	AM	DIRECT	08:00	09:00	60	15	✓
D2	2017 Observed - DIRECT	PM	DIRECT	17:00	18:00	60	15	✓

Analysis Set Details

ID	Description	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	2031 Do Minimum and Do Something Scenarios	✓	100.000	100.000

2017 Observed - DIRECT, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Flow Arm A	Analysis Options	Queue Variations cannot be calculated for the selected traffic profile type.
Warning	Flow Arm B	Analysis Options	Queue Variations cannot be calculated for the selected traffic profile type.
Warning	Flow Arm C	Analysis Options	Queue Variations cannot be calculated for the selected traffic profile type.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	A,B,C	14.56	B

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	13	Arm B

Arms

Arms

Arm	Name	Description
A	A509 (N)	
B	A509 (S)	
C	Orlingbury Road (W)	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
A	3.75	4.50	6.0	150.0	19.0	0.0	
B	3.75	4.75	2.0	15.0	19.0	0.0	
C	2.00	4.50	8.5	17.5	19.0	0.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/TS)
A	0.667	372.197
B	0.623	340.696
C	0.570	273.244

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 period length (min)	Time segment length (min)	Run automatically
D1	2017 Observed - DIRECT	AM	DIRECT	08:00	09:00	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A		DIRECT	✓	100.000
B		DIRECT	✓	100.000
C		DIRECT	✓	100.000

Origin-Destination Data

08:00 - 08:15

Demand (PCU/TS)

		To		
		A	B	C
From	A	14.00	261.00	17.00
	B	243.00	0.00	2.00
	C	22.00	10.00	0.00

08:15 - 08:30

Demand (PCU/TS)

		To		
		A	B	C
From	A	5.00	276.00	14.00
	B	275.00	0.00	0.00
	C	14.00	4.00	0.00

08:30 - 08:45

Demand (PCU/TS)

		To		
		A	B	C
From	A	9.25	258.50	15.00
	B	255.00	0.00	1.50
	C	16.75	6.25	0.00

08:45 - 09:00

Demand (PCU/TS)

		To		
		A	B	C
From	A	12.00	241.00	13.00
	B	257.00	0.00	4.00
	C	11.00	3.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	7	0
	B	8	0	50
	C	3	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS	Average Demand (PCU/TS)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
A	0.80	12.79	4.1	?	B	283.94	1135.75	213.85	11.30	3.56	214.01	11.31
B	0.84	16.92	5.0	?	C	259.38	1037.50	243.30	14.07	4.05	243.73	14.09
C	0.25	9.55	0.3	~1	A	21.75	87.00	13.31	9.18	0.22	13.31	9.18

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	292.00	292.00	9.90	365.60	0.799	288.05	275.34	0.0	3.9	11.792	B
B	245.00	245.00	30.58	321.66	0.762	241.73	267.37	0.0	3.3	11.752	B
C	32.00	32.00	253.56	128.78	0.248	31.67	18.74	0.0	0.3	9.425	A

08:15 - 08:30

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	295.00	295.00	4.06	369.49	0.798	294.87	292.43	3.9	4.1	12.789	B
B	275.00	275.00	19.16	328.77	0.836	273.26	279.77	3.3	5.0	16.925	C
C	18.00	18.00	278.35	114.66	0.157	18.14	14.06	0.3	0.2	9.553	A

08:30 - 08:45

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	282.75	282.75	6.23	368.04	0.768	283.16	281.73	4.1	3.7	11.354	B
B	256.50	256.50	24.20	325.63	0.788	257.28	265.19	5.0	4.2	14.447	B
C	23.00	23.00	265.00	122.27	0.188	22.96	16.47	0.2	0.2	9.255	A

08:45 - 09:00

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	266.00	266.00	3.03	370.17	0.719	266.86	280.04	3.7	2.8	9.342	A
B	261.00	261.00	25.05	325.10	0.803	260.94	244.85	4.2	4.3	15.159	C
C	14.00	14.00	268.97	120.00	0.117	14.10	17.02	0.2	0.1	8.704	A

Queueing Delay Results for each time segment

08:00 - 08:15

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A	52.54	3.50	11.792	B	B
B	44.07	2.94	11.752	B	B
C	4.77	0.32	9.425	A	A

08:15 - 08:30

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A	60.37	4.02	12.789	B	B
B	68.46	4.56	16.925	C	B
C	3.00	0.20	9.553	A	A

08:30 - 08:45

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A	56.78	3.79	11.354	B	B
B	66.67	4.44	14.447	B	B
C	3.43	0.23	9.255	A	A

08:45 - 09:00

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A	44.17	2.94	9.342	A	A
B	64.10	4.27	15.159	C	B
C	2.12	0.14	8.704	A	A

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	3.95	?	?	?	?			N/A	N/A
B	3.27	?	?	?	?			N/A	N/A
C	0.33	~1	~1	~1	~1			N/A	N/A

08:15 - 08:30

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	4.08	?	?	?	?			N/A	N/A
B	5.02	?	?	?	?			N/A	N/A
C	0.19	~1	~1	~1	~1			N/A	N/A

08:30 - 08:45

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	3.67	?	?	?	?			N/A	N/A
B	4.24	?	?	?	?			N/A	N/A
C	0.23	~1	~1	~1	~1			N/A	N/A

08:45 - 09:00

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.80	?	?	?	?			N/A	N/A
B	4.30	?	?	?	?			N/A	N/A
C	0.14	~1	~1	~1	~1			N/A	N/A

2017 Observed - DIRECT, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Flow Arm A	Analysis Options	Queue Variations cannot be calculated for the selected traffic profile type.
Warning	Flow Arm B	Analysis Options	Queue Variations cannot be calculated for the selected traffic profile type.
Warning	Flow Arm C	Analysis Options	Queue Variations cannot be calculated for the selected traffic profile type.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	A,B,C	13.83	B

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	12	Arm B

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D2	2017 Observed - DIRECT	PM	DIRECT	17:00	18:00	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A		DIRECT	✓	100.000
B		DIRECT	✓	100.000
C		DIRECT	✓	100.000

Origin-Destination Data

17:00 - 17:15

Demand (PCU/TS)

		To		
		A	B	C
From	A	5.00	274.00	19.00
	B	255.00	0.00	2.00
	C	25.00	4.00	0.00

17:15 - 17:30

Demand (PCU/TS)

		To		
		A	B	C
From	A	7.00	242.00	17.00
	B	244.00	0.00	2.00
	C	25.00	3.00	0.00

Demand (PCU/TS)

17:30 - 17:45

		To		
		A	B	C
From	A	5.00	233.00	11.00
	B	265.00	0.00	3.00
	C	28.00	2.00	0.00

Demand (PCU/TS)

17:45 - 18:00

		To		
		A	B	C
From	A	1.00	249.00	8.00
	B	276.00	0.00	3.00
	C	22.00	1.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	5	0
	B	4	0	11
	C	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS	Average Demand (PCU/TS)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
A	0.81	11.88	4.1	?	B	267.75	1071.00	166.24	9.31	2.77	166.35	9.32
B	0.83	16.23	4.8	?	C	262.50	1050.00	227.62	13.01	3.79	228.14	13.04
C	0.25	10.00	0.3	~1	B	27.50	110.00	17.09	9.32	0.28	17.09	9.32

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	298.00	298.00	3.96	369.56	0.806	293.94	281.08	0.0	4.1	11.881	B
B	257.00	257.00	23.67	325.96	0.788	253.37	274.22	0.0	3.6	12.351	B
C	29.00	29.00	256.33	127.21	0.228	28.71	20.71	0.0	0.3	9.112	A

17:15 - 17:30

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	266.00	266.00	3.01	370.19	0.719	267.31	276.30	4.1	2.8	9.260	A
B	246.00	246.00	24.08	325.70	0.755	246.30	246.24	3.6	3.3	11.861	B
C	28.00	28.00	251.29	130.07	0.215	28.01	19.08	0.3	0.3	8.821	A

17:30 - 17:45

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	249.00	249.00	2.01	370.86	0.671	249.57	297.16	2.8	2.2	7.806	A
B	268.00	268.00	16.11	330.67	0.810	267.17	235.47	3.3	4.2	14.504	B
C	30.00	30.00	269.22	119.86	0.250	29.95	14.06	0.3	0.3	10.003	B

17:45 - 18:00

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	258.00	258.00	1.01	371.52	0.694	257.86	298.46	2.2	2.3	8.283	A
B	279.00	279.00	9.06	335.06	0.833	278.35	249.81	4.2	4.8	16.225	C
C	23.00	23.00	276.39	115.78	0.199	23.08	11.02	0.3	0.3	9.718	A

Queueing Delay Results for each time segment

17:00 - 17:15

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A	53.95	3.60	11.881	B	B
B	48.36	3.22	12.351	B	B
C	4.18	0.28	9.112	A	A

17:15 - 17:30

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A	43.84	2.92	9.260	A	A
B	51.35	3.42	11.861	B	B
C	4.21	0.28	8.821	A	A

17:30 - 17:45

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A	34.13	2.28	7.806	A	A
B	58.93	3.93	14.504	B	B
C	4.82	0.32	10.003	B	B

17:45 - 18:00

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A	34.32	2.29	8.283	A	A
B	68.98	4.60	16.225	C	B
C	3.88	0.26	9.718	A	A

Queue Variation Results for each time segment

17:00 - 17:15

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	4.06	?	?	?	?			N/A	N/A
B	3.63	?	?	?	?			N/A	N/A
C	0.29	~1	~1	~1	~1			N/A	N/A

17:15 - 17:30

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.76	?	?	?	?			N/A	N/A
B	3.33	?	?	?	?			N/A	N/A
C	0.28	~1	~1	~1	~1			N/A	N/A

17:30 - 17:45

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.19	?	?	?	?			N/A	N/A
B	4.16	?	?	?	?			N/A	N/A
C	0.33	~1	~1	~1	~1			N/A	N/A

17:45 - 18:00

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.33	?	?	?	?			N/A	N/A
B	4.82	?	?	?	?			N/A	N/A
C	0.25	~1	~1	~1	~1			N/A	N/A

Junctions 9

PICADY 9 - Priority Intersection Module

Version: 9.0.1.4646 []

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Filename: 170410 - A509 Finedon Station Road - 2017 Observed - DIRECT Capacity Changes.j9
Path: J:\30062 Land South of Kettering\Junctions 9\A509 Finedon Station Road\2017 Observed
Report generation date: 04/07/2017 15:38:04

Summary of junction performance

	AM						PM					
	Q (PCU)	Q95 (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Q (PCU)	Q95 (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)
	2017 Observed - DIRECT											
Stream B-C	24.2	?	227.03	1.17	F	33.97	7.7	?	200.64	1.10	F	19.21
Stream B-A	3.6	?	506.24	1.04	F		1.8	?	766.86	0.94	F	
Stream C-B	0.6	~1	14.02	0.35	B		4.7	?	46.94	0.87	E	

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 Av. delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted Av.s.

File summary

File Description

Title	A509 Finedon Station Road - Priority Junction
Location	Kettering
Site number	
Date	10/04/2017
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	30062
Enumerator	PBA\mbolshaw
Description	2017 Observed

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Av. delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perTimeSegment	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Q Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Av. Delay threshold (s)	Q threshold (PCU)
5.75	✓	✓		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D1	2017 Observed - DIRECT	AM	DIRECT	08:00	09:00	60	15	✓
D2	2017 Observed - DIRECT	PM	DIRECT	17:00	18:00	60	15	✓

Analysis Set Details

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

2017 Observed - DIRECT, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Flow Arm A	Analysis Options	Q Variations cannot be calculated for the selected traffic profile type.
Warning	Flow Arm B	Analysis Options	Q Variations cannot be calculated for the selected traffic profile type.
Warning	Flow Arm C	Analysis Options	Q Variations cannot be calculated for the selected traffic profile type.
Warning	Queue variations	Analysis Options	Q percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	33.97	D

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	A509 Kettering Road (N)		Major
B	Finedon Station Road (E)		Minor
C	A509 Ketterin Road (S)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Width for right turn (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	6.60		✓	3.00	103.0		-

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

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B	One lane plus flare	10.00	6.00	5.00	4.50	3.75		1.00	98	33

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/TS)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	114.877	0.082	0.206	0.130	0.294
1	B-C	184.668	0.110	0.279	-	-
1	C-B	172.195	0.260	0.260	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D1	2017 Observed - DIRECT	AM	DIRECT	08:00	09:00	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A		DIRECT	✓	100.000
B		DIRECT	✓	100.000
C		DIRECT	✓	100.000

Origin-Destination Data

08:00 - 08:15

Demand (PCU/TS)

		To		
		A	B	C
From	A	0.00	5.00	271.00
	B	9.00	0.00	79.00
	C	261.00	25.00	0.00

08:15 - 08:30

Demand (PCU/TS)

		To		
		A	B	C
From	A	0.00	7.00	278.00
	B	7.00	0.00	90.00
	C	237.00	31.00	0.00

08:30 - 08:45

Demand (PCU/TS)

		To		
		A	B	C
From	A	0.00	20.00	249.00
	B	8.00	0.00	54.00
	C	247.00	22.00	0.00

08:45 - 09:00

Demand (PCU/TS)

		To		
		A	B	C
From	A	0.00	16.00	230.00
	B	11.00	0.00	63.00
	C	223.00	38.00	0.00

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	2	8
	B	25	0	2
	C	9	5	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Q (PCU)	Max Q95 (PCU)	Max LOS	Av. Demand (PCU/TS)	Total Junction Arrivals (PCU)	Total Qing Delay (PCU-min)	Av. Qing Delay (s)	Rate of Qing Delay (PCU-min/min)	Inclusive Total Qing Delay (PCU-min)	Inclusive Av. Qing Delay (s)
B-C	1.17	227.03	24.2	?	F	71.50	286.00	589.16	123.60	9.82	589.99	123.77
B-A	1.04	506.24	3.6	?	F	8.75	35.00	161.00	276.00	2.68	162.66	278.85
C-A						242.00	968.00					
C-B	0.35	14.02	0.6	~1	B	29.00	116.00	24.18	12.51	0.40	24.20	12.52
A-B						12.00	48.00					
A-C						257.00	1028.00					

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	79.00	79.00	76.32	1.035	69.15	0.0	9.8	88.771	F
B-A	9.00	9.00	8.69	1.035	6.08	0.0	2.9	333.929	F
C-A	261.00	261.00			261.00				
C-B	25.00	25.00	100.46	0.249	24.66	0.0	0.3	12.412	B
A-B	5.00	5.00			5.00				
A-C	271.00	271.00			271.00				

08:15 - 08:30

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	90.00	90.00	76.72	1.173	75.60	9.8	24.2	227.032	F
B-A	7.00	7.00	7.62	0.919	6.27	2.9	3.6	506.243	F
C-A	237.00	237.00			237.00				
C-B	31.00	31.00	98.12	0.316	30.87	0.3	0.5	14.022	B
A-B	7.00	7.00			7.00				
A-C	278.00	278.00			278.00				

08:30 - 08:45

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	54.00	54.00	80.00	0.675	75.25	24.2	3.0	168.611	F
B-A	8.00	8.00	12.24	0.654	8.54	3.6	3.1	314.791	F
C-A	247.00	247.00			247.00				
C-B	22.00	22.00	102.28	0.215	22.18	0.5	0.3	11.826	B
A-B	20.00	20.00			20.00				
A-C	249.00	249.00			249.00				

08:45 - 09:00

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	63.00	63.00	83.30	0.756	62.97	3.0	3.0	44.717	E
B-A	11.00	11.00	19.21	0.573	12.04	3.1	2.1	168.368	F
C-A	223.00	223.00			223.00				
C-B	38.00	38.00	108.26	0.351	37.74	0.3	0.6	13.349	B
A-B	16.00	16.00			16.00				
A-C	230.00	230.00			230.00				

Qing Delay Results for each time segment

08:00 - 08:15

Stream	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
B-C	92.44	6.16	88.771	F	F
B-A	26.60	1.77	333.929	F	F
C-B	4.84	0.32	12.412	B	B

08:15 - 08:30

Stream	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
B-C	257.58	17.17	227.032	F	F
B-A	49.47	3.30	506.243	F	F
C-B	6.84	0.46	14.022	B	B

08:30 - 08:45

Stream	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
B-C	193.85	12.92	168.611	F	F
B-A	49.80	3.32	314.791	F	F
C-B	4.58	0.31	11.826	B	B

08:45 - 09:00

Stream	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
B-C	45.29	3.02	44.717	E	D
B-A	35.12	2.34	168.368	F	F
C-B	7.92	0.53	13.349	B	B

Q Variation Results for each time segment

08:00 - 08:15

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	9.85	?	?	?	?			N/A	N/A
B-A	2.92	?	?	?	?			N/A	N/A
C-B	0.34	~1	~1	~1	~1			N/A	N/A

08:15 - 08:30

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	24.25	?	?	?	?			N/A	N/A
B-A	3.65	?	?	?	?			N/A	N/A
C-B	0.47	~1	~1	~1	~1			N/A	N/A

08:30 - 08:45

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	3.00	?	?	?	?			N/A	N/A
B-A	3.10	?	?	?	?			N/A	N/A
C-B	0.29	~1	~1	~1	~1			N/A	N/A

08:45 - 09:00

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	3.03	?	?	?	?			N/A	N/A
B-A	2.06	?	?	?	?			N/A	N/A
C-B	0.56	~1	~1	~1	~1			N/A	N/A

2017 Observed - DIRECT, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Flow Arm A	Analysis Options	Q Variations cannot be calculated for the selected traffic profile type.
Warning	Flow Arm B	Analysis Options	Q Variations cannot be calculated for the selected traffic profile type.
Warning	Flow Arm C	Analysis Options	Q Variations cannot be calculated for the selected traffic profile type.
Warning	Queue variations	Analysis Options	Q percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	19.21	C

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D2	2017 Observed - DIRECT	PM	DIRECT	17:00	18:00	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A		DIRECT	✓	100.000
B		DIRECT	✓	100.000
C		DIRECT	✓	100.000

Origin-Destination Data

Demand (PCU/TS)

17:00 - 17:15

		To		
		A	B	C
From	A	0.00	14.00	264.00
	B	4.00	0.00	23.00
	C	251.00	69.00	0.00

Demand (PCU/TS)

17:15 - 17:30

		To		
		A	B	C
From	A	0.00	10.00	233.00
	B	4.00	0.00	38.00
	C	262.00	90.00	0.00

17:30 - 17:45

Demand (PCU/TS)

		To		
		A	B	C
From	A	0.00	11.00	215.00
	B	3.00	0.00	30.00
	C	248.00	72.00	0.00

17:45 - 18:00

Demand (PCU/TS)

		To		
		A	B	C
From	A	0.00	5.00	253.00
	B	2.00	0.00	20.00
	C	253.00	91.00	0.00

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	3	5
	B	0	0	2
	C	3	1	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Q (PCU)	Max Q95 (PCU)	Max LOS	Av. Demand (PCU/TS)	Total Junction Arrivals (PCU)	Total Qing Delay (PCU-min)	Av. Qing Delay (s)	Rate of Qing Delay (PCU-min/min)	Inclusive Total Qing Delay (PCU-min)	Inclusive Av. Qing Delay (s)
B-C	1.10	200.64	7.7	?	F	27.75	111.00	132.32	71.53	2.21	140.72	76.06
B-A	0.94	766.86	1.8	?	F	3.25	13.00	48.66	224.59	0.81	52.70	243.25
C-A						253.50	1014.00					
C-B	0.87	46.94	4.7	?	E	80.50	322.00	165.03	30.75	2.75	166.63	31.05
A-B						10.00	40.00					
A-C						241.25	965.00					

Main Results for each time segment

17:00 - 17:15

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	23.00	23.00	73.57	0.313	22.55	0.0	0.5	17.845	C
B-A	4.00	4.00	6.36	0.629	3.07	0.0	0.9	240.027	F
C-A	251.00	251.00			251.00				
C-B	69.00	69.00	99.94	0.690	66.95	0.0	2.0	26.168	D
A-B	14.00	14.00			14.00				
A-C	264.00	264.00			264.00				

17:15 - 17:30

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	38.00	38.00	34.47	1.102	30.76	0.5	7.7	142.319	F
B-A	4.00	4.00	4.42	0.905	3.17	0.9	1.8	415.253	F
C-A	262.00	262.00			262.00				
C-B	90.00	90.00	109.04	0.825	88.17	2.0	3.9	40.140	E
A-B	10.00	10.00			10.00				
A-C	233.00	233.00			233.00				

17:30 - 17:45

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	30.00	30.00	109.54	0.274	37.30	7.7	0.4	14.009	B
B-A	3.00	3.00	14.62	0.205	4.48	1.8	0.3	97.264	F
C-A	248.00	248.00			248.00				
C-B	72.00	72.00	113.46	0.635	74.02	3.9	1.9	24.084	C
A-B	11.00	11.00			11.00				
A-C	215.00	215.00			215.00				

17:45 - 18:00

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	20.00	20.00	18.95	1.055	15.79	0.4	4.6	200.642	F
B-A	2.00	2.00	2.13	0.941	1.22	0.3	1.1	766.856	F
C-A	253.00	253.00			253.00				
C-B	91.00	91.00	105.14	0.866	88.13	1.9	4.7	46.943	E
A-B	5.00	5.00			5.00				
A-C	253.00	253.00			253.00				

Qing Delay Results for each time segment

17:00 - 17:15

Stream	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
B-C	6.26	0.42	17.845	C	B
B-A	9.53	0.64	240.027	F	F
C-B	26.43	1.76	26.168	D	C

17:15 - 17:30

Stream	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
B-C	70.33	4.69	142.319	F	F
B-A	20.87	1.39	415.253	F	F
C-B	49.90	3.33	40.140	E	D

17:30 - 17:45

Stream	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
B-C	12.15	0.81	14.009	B	B
B-A	7.34	0.49	97.264	F	F
C-B	31.26	2.08	24.084	C	C

17:45 - 18:00

Stream	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
B-C	43.59	2.91	200.642	F	F
B-A	10.92	0.73	766.856	F	F
C-B	57.45	3.83	46.943	E	D

Q Variation Results for each time segment

17:00 - 17:15

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.45	~1	~1	~1	~1			N/A	N/A
B-A	0.93	~1	~1	~1	~1			N/A	N/A
C-B	2.05	?	?	?	?			N/A	N/A

17:15 - 17:30

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	7.69	?	?	?	?			N/A	N/A
B-A	1.77	?	?	?	?			N/A	N/A
C-B	3.88	?	?	?	?			N/A	N/A

17:30 - 17:45

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	0.39	~1	~1	~1	~1			N/A	N/A
B-A	0.29	~1	~1	~1	~1			N/A	N/A
C-B	1.86	?	?	?	?			N/A	N/A

17:45 - 18:00

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	4.61	?	?	?	?			N/A	N/A
B-A	1.07	?	?	?	?			N/A	N/A
C-B	4.73	?	?	?	?			N/A	N/A

Junctions 9

ARCADY 9 - Roundabout Module

Filename: 170406 A509 A510 Rbt - 2017 Observed Existing Layout AM&PM Peak - DIRECT.j9
Path: J:\30062 Land South of Kettering\Junctions 9\A509_A510_Harowden Rd\2017 Observed
Report generation date: 08/05/2017 16:55:27

»(Default Analysis Set) - A509 / A510 Rbt - 2017 Observed - DIRECT, AM
»(Default Analysis Set) - A509 / A510 Rbt - 2017 Observed - DIRECT, PM

Summary of junction performance

	AM					PM				
	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)
	A1 - A509 / A510 Rbt - 2017 Observed - DIRECT									
Arm A	9.0	25.20	0.91	D	17.32	2.4	8.48	0.70	A	11.37
Arm B	1.2	16.28	0.54	C		0.3	6.65	0.20	A	
Arm C	2.2	11.53	0.68	B		3.2	12.07	0.77	B	
Arm D	2.9	16.79	0.76	C		2.4	14.69	0.71	B	
Arm E	2.3	9.77	0.69	A		3.1	12.38	0.75	B	

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages.

File summary

File Description

Title	A509 / A510 / A5193 Rbt - 2014 Observed AM & PM
Location	Park Farm Way, Wellingborough
Site number	J1
Date	03/12/2014
Version	
Status	Preliminary
Identifier	
Client	
Jobnumber	31867
Enumerator	PBA\ktaylor
Description	2014 Observed Flows

Units

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

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75		✓		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D1	A509 / A510 Rbt - 2017 Observed - DIRECT	AM	DIRECT	08:00	09:00	60	15	✓
D2	A509 / A510 Rbt - 2017 Observed - DIRECT	PM	DIRECT	17:00	18:00	60	15	✓

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	(Default Analysis Set)	✓	100.000	100.000

(Default Analysis Set) - A509 / A510 Rbt - 2017 Observed - DIRECT, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	A,B,C,D,E	17.32	C

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
A	A509 (NW)	
B	Wellingborough Road (NE)	
C	A510 (E)	
D	A5193 (S)	
E	A509 (W)	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
A	4.00	7.00	24.5	17.0	56.0	38.0	
B	3.40	6.00	9.5	27.5	56.0	28.0	
C	3.65	7.50	20.5	17.5	56.0	42.0	
D	3.75	5.75	5.0	35.0	56.0	0.0	
E	3.65	7.75	14.5	30.0	56.0	32.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/TS)
A	0.587	449.306
B	0.545	369.897
C	0.574	436.348
D	0.591	394.344
E	0.595	443.648

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 period length (min)	Time segment length (min)	Run automatically
D1	A509 / A510 Rbt - 2017 Observed - DIRECT	AM	DIRECT	08:00	09:00	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A		DIRECT	✓	100.000
B		DIRECT	✓	100.000
C		DIRECT	✓	100.000
D		DIRECT	✓	100.000
E		DIRECT	✓	100.000

Origin-Destination Data

08:00 - 08:15

Demand (PCU/TS)

		To				
		A	B	C	D	E
From	A	0.00	0.00	59.00	119.00	170.00
	B	13.00	0.00	16.00	21.00	9.00
	C	59.00	1.00	0.00	9.00	78.00
	D	119.00	0.00	23.00	0.00	11.00
	E	132.00	1.00	65.00	15.00	0.00

08:15 - 08:30

Demand (PCU/TS)

		To				
		A	B	C	D	E
From	A	0.00	0.00	90.00	90.00	163.00
	B	12.00	0.00	20.00	23.00	11.00
	C	65.00	4.00	0.00	6.00	83.00
	D	110.00	2.00	18.00	0.00	8.00
	E	119.00	2.00	87.00	10.00	0.00

08:30 - 08:45

Demand (PCU/TS)

		To				
		A	B	C	D	E
From	A	0.00	0.00	66.00	97.00	160.00
	B	13.00	0.00	7.00	15.00	20.00
	C	62.00	4.00	0.00	10.00	101.00
	D	103.00	4.00	10.00	0.00	8.00
	E	128.00	3.00	75.00	1.00	0.00

08:45 - 09:00

Demand (PCU/TS)

		To				
		A	B	C	D	E
From	A	0.00	0.00	71.00	94.00	140.00
	B	2.00	0.00	11.00	12.00	6.00
	C	40.00	7.00	1.00	8.00	74.00
	D	106.00	3.00	32.00	0.00	10.00
	E	119.00	2.00	72.00	6.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To				
		A	B	C	D	E
From	A	0	0	8	2	9
	B	0	0	4	0	0
	C	6	0	0	3	8
	D	3	0	1	0	3
	E	12	0	6	3	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/TS)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
A	0.91	25.20	9.0	D	329.75	1319.00	381.11	17.34	6.35	381.55	17.36
B	0.54	16.28	1.2	C	52.75	211.00	42.49	12.08	0.71	42.49	12.08
C	0.68	11.53	2.2	B	153.00	612.00	92.83	9.10	1.55	92.85	9.10
D	0.76	16.79	2.9	C	141.75	567.00	146.16	15.47	2.44	146.28	15.48
E	0.69	9.77	2.3	A	209.25	837.00	120.15	8.61	2.00	120.22	8.62

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	348.00	348.00	103.73	388.46	0.896	340.46	318.55	0.0	7.5	17.817	C
B	59.00	59.00	442.21	128.95	0.458	58.17	1.98	0.0	0.8	12.709	B
C	147.00	147.00	339.98	241.22	0.609	145.38	160.40	0.0	1.6	9.874	A
D	153.00	153.00	324.48	202.55	0.755	150.06	160.87	0.0	2.9	16.789	C
E	213.00	213.00	211.43	317.84	0.670	210.84	263.12	0.0	2.2	9.029	A

08:15 - 08:30

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	343.00	343.00	122.80	377.27	0.909	341.51	306.23	7.5	9.0	25.201	D
B	66.00	66.00	456.39	121.22	0.544	65.66	7.92	0.8	1.2	16.283	C
C	158.00	158.00	308.44	259.32	0.609	157.98	213.62	1.6	1.6	9.475	A
D	138.00	138.00	337.24	195.01	0.708	138.34	129.18	2.9	2.6	16.443	C
E	218.00	218.00	211.19	317.98	0.686	217.84	264.38	2.2	2.3	9.770	A

08:30 - 08:45

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	323.00	323.00	97.41	392.16	0.824	326.68	306.13	9.0	5.4	15.380	C
B	55.00	55.00	413.15	144.78	0.380	55.54	10.95	1.2	0.6	10.196	B
C	177.00	177.00	308.77	259.13	0.683	176.42	159.92	1.6	2.2	11.534	B
D	125.00	125.00	361.16	180.87	0.691	125.21	124.03	2.6	2.4	16.710	C
E	207.00	207.00	196.16	326.92	0.633	207.38	290.20	2.3	1.9	8.276	A

08:45 - 09:00

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	305.00	305.00	122.87	377.23	0.809	305.61	268.42	5.4	4.7	13.552	B
B	31.00	31.00	416.43	142.99	0.217	31.34	12.05	0.6	0.3	8.197	A
C	130.00	130.00	260.94	286.58	0.454	131.32	186.83	2.2	0.9	6.226	A
D	151.00	151.00	272.03	233.55	0.647	151.46	120.24	2.4	1.9	11.307	B
E	199.00	199.00	192.06	329.37	0.604	199.23	231.43	1.9	1.7	7.579	A

Queueing Delay Results for each time segment

08:00 - 08:15

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A	91.96	6.13	17.817	C	B
B	11.62	0.77	12.709	B	B
C	22.62	1.51	9.874	A	A
D	38.59	2.57	16.789	C	B
E	29.99	2.00	9.029	A	A

08:15 - 08:30

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A	126.66	8.44	25.201	D	C
B	16.56	1.10	16.283	C	B
C	24.51	1.63	9.475	A	A
D	40.42	2.69	16.443	C	B
E	34.07	2.27	9.770	A	A

08:30 - 08:45

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A	88.56	5.90	15.380	C	B
B	9.90	0.66	10.196	B	B
C	31.61	2.11	11.534	B	B
D	36.86	2.46	16.710	C	B
E	29.91	1.99	8.276	A	A

08:45 - 09:00

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A	73.92	4.93	13.552	B	B
B	4.42	0.29	8.197	A	A
C	14.09	0.94	6.226	A	A
D	30.29	2.02	11.307	B	B
E	26.18	1.75	7.579	A	A

(Default Analysis Set) - A509 / A510 Rbt - 2017 Observed - DIRECT, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	A,B,C,D,E	11.37	B

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D2	A509 / A510 Rbt - 2017 Observed - DIRECT	PM	DIRECT	17:00	18:00	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A		DIRECT	✓	100.000
B		DIRECT	✓	100.000
C		DIRECT	✓	100.000
D		DIRECT	✓	100.000
E		DIRECT	✓	100.000

Origin-Destination Data

Demand (PCU/TS)

17:00 - 17:15

		To				
		A	B	C	D	E
From	A	0.00	0.00	52.00	103.00	106.00
	B	6.00	0.00	11.00	4.00	3.00
	C	90.00	10.00	0.00	2.00	133.00
	D	94.00	16.00	14.00	0.00	6.00
	E	163.00	13.00	47.00	9.00	0.00

17:15 - 17:30

Demand (PCU/TS)

		To				
		A	B	C	D	E
From	A	0.00	0.00	38.00	101.00	116.00
	B	4.00	0.00	9.00	9.00	7.00
	C	86.00	11.00	0.00	20.00	87.00
	D	111.00	10.00	19.00	0.00	9.00
	E	142.00	5.00	48.00	12.00	0.00

17:30 - 17:45

Demand (PCU/TS)

		To				
		A	B	C	D	E
From	A	0.00	0.00	53.00	85.00	85.00
	B	5.00	0.00	8.00	6.00	6.00
	C	84.00	8.00	1.00	21.00	102.00
	D	112.00	15.00	19.00	0.00	6.00
	E	150.00	10.00	46.00	12.00	0.00

17:45 - 18:00

Demand (PCU/TS)

		To				
		A	B	C	D	E
From	A	1.00	0.00	34.00	104.00	122.00
	B	4.00	0.00	7.00	16.00	8.00
	C	62.00	10.00	0.00	19.00	62.00
	D	110.00	17.00	27.00	0.00	8.00
	E	151.00	9.00	62.00	9.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To				
		A	B	C	D	E
From	A	0	0	7	1	9
	B	0	0	0	6	4
	C	2	0	0	0	2
	D	1	0	0	0	0
	E	5	0	4	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/TS)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
A	0.70	8.48	2.4	A	250.00	1000.00	118.72	7.12	1.98	118.83	7.13
B	0.20	6.65	0.3	A	28.25	113.00	10.74	5.70	0.18	10.74	5.70
C	0.77	12.07	3.2	B	202.00	808.00	132.77	9.86	2.21	132.80	9.86
D	0.71	14.69	2.4	B	148.25	593.00	129.73	13.13	2.16	129.89	13.14
E	0.75	12.38	3.1	B	222.00	888.00	162.15	10.96	2.70	162.39	10.97

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	261.00	261.00	107.50	386.24	0.676	258.86	348.15	0.0	2.1	7.324	A
B	24.00	24.00	327.92	191.22	0.126	23.86	38.44	0.0	0.1	5.450	A
C	235.00	235.00	229.09	304.86	0.771	231.77	122.68	0.0	3.2	12.067	B
D	130.00	130.00	343.87	191.09	0.680	127.96	116.99	0.0	2.0	13.948	B
E	232.00	232.00	226.64	308.79	0.751	229.01	245.19	0.0	3.0	11.378	B

17:15 - 17:30

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	255.00	255.00	105.16	387.62	0.658	255.08	343.42	2.1	2.1	7.163	A
B	29.00	29.00	334.03	187.89	0.154	28.96	26.21	0.1	0.2	5.817	A
C	204.00	204.00	248.89	293.50	0.695	204.83	114.10	3.2	2.4	10.424	B
D	149.00	149.00	311.96	209.95	0.710	148.68	141.77	2.0	2.4	14.694	B
E	207.00	207.00	240.98	300.26	0.689	207.60	219.66	3.0	2.4	10.209	B

17:30 - 17:45

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	223.00	223.00	110.90	384.25	0.580	223.58	351.04	2.1	1.5	5.924	A
B	25.00	25.00	301.56	205.58	0.122	25.04	32.92	0.2	0.1	5.102	A
C	216.00	216.00	199.65	321.76	0.671	216.27	126.96	2.4	2.1	8.706	A
D	152.00	152.00	291.62	221.97	0.685	152.11	124.29	2.4	2.3	13.013	B
E	218.00	218.00	244.27	298.30	0.731	217.66	199.45	2.4	2.7	11.569	B

17:45 - 18:00

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	261.00	261.00	133.69	370.88	0.704	260.05	328.33	1.5	2.4	8.482	A
B	35.00	35.00	357.75	174.97	0.200	34.89	35.99	0.1	0.3	6.649	A
C	153.00	153.00	262.94	285.44	0.536	153.94	129.69	2.1	1.2	7.005	A
D	162.00	162.00	269.27	235.18	0.689	162.01	147.60	2.3	2.2	12.387	B
E	231.00	231.00	231.37	305.97	0.755	230.64	199.90	2.7	3.1	12.380	B

Queueing Delay Results for each time segment

17:00 - 17:15

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A	30.06	2.00	7.324	A	A
B	2.11	0.14	5.450	A	A
C	43.32	2.89	12.067	B	B
D	27.66	1.84	13.948	B	B
E	40.50	2.70	11.378	B	B

17:15 - 17:30

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A	31.26	2.08	7.163	A	A
B	2.72	0.18	5.817	A	A
C	37.92	2.53	10.424	B	B
D	34.03	2.27	14.694	B	B
E	37.47	2.50	10.209	B	B

17:30 - 17:45

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A	22.97	1.53	5.924	A	A
B	2.18	0.15	5.102	A	A
C	32.82	2.19	8.706	A	A
D	34.31	2.29	13.013	B	B
E	39.53	2.64	11.569	B	B

17:45 - 18:00

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A	34.43	2.30	8.482	A	A
B	3.72	0.25	6.649	A	A
C	18.71	1.25	7.005	A	A
D	33.73	2.25	12.387	B	B
E	44.66	2.98	12.380	B	B

Junctions 9

ARCADY 9 - Roundabout Module

Filename: 170410 - A509_Carina Road_Orion Way 2017 Observed - DIRECT.j9
Path: J:\30062 Land South of Kettering\Junctions 9\A509_Carina Road_Orion Way\2017 Observed
Report generation date: 08/05/2017 16:49:23

Summary of junction performance

	AM					PM				
	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)
	2017 Observed									
A - A509 Pytchley Rd (N)	0.8	3.22	0.44	A	3.65	0.8	3.42	0.43	A	4.92
B - Holdenby (NE)	0.2	5.87	0.18	A		0.6	9.08	0.37	A	
C - A509 (SE)	1.0	3.65	0.49	A		1.6	4.75	0.62	A	
D - Carina Road (SW)	0.4	4.23	0.30	A		0.9	5.38	0.46	A	
E - Orion Way (NW	0.3	3.42	0.22	A		1.1	5.82	0.51	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. Junction LOS and Junction Delay are demand-weighted averages.

File summary

File Description

Title	A509/Carina Road / Orion Way Roundabout
Location	Kettering
Site number	
Date	10/04/2017
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	30062
Enumerator	PBA\talthorpe
Description	2017 Observed

Units

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

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75		✓		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D1	2017 Observed	AM	DIRECT	08:00	09:00	60	15	✓
D2	2017 Observed	PM	DIRECT	17:00	18:00	60	15	✓

Analysis Set Details

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

2017 Observed, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	A - A509 Pytchley Rd (N) - 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	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	A,B,C,D,E	3.65	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
A	A509 Pytchley Rd (N)	
B	Holdenby (NE)	
C	A509 (SE)	
D	Carina Road (SW)	
E	Orion Way (NW	

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
A - A509 Pytchley Rd (N)	3.65	10.00	57.5	18.0	63.0	50.0	
B - Holdenby (NE)	3.00	7.00	9.5	10.0	63.0	47.0	
C - A509 (SE)	7.50	7.50	0.0	37.5	63.0	32.0	
D - Carina Road (SW)	3.65	9.00	12.0	47.5	63.0	34.0	
E - Orion Way (NW	5.00	9.00	7.0	20.0	63.0	43.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/TS)
A - A509 Pytchley Rd (N)	0.629	584.613
B - Holdenby (NE)	0.441	317.886
C - A509 (SE)	0.647	577.147
D - Carina Road (SW)	0.561	449.891
E - Orion Way (NW	0.555	463.954

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 period length (min)	Time segment length (min)	Run automatically
D1	2017 Observed	AM	DIRECT	08:00	09:00	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A - A509 Pytchley Rd (N)		DIRECT	✓	100.000
B - Holdenby (NE)		DIRECT	✓	100.000
C - A509 (SE)		DIRECT	✓	100.000
D - Carina Road (SW)		DIRECT	✓	100.000
E - Orion Way (NW		DIRECT	✓	100.000

Origin-Destination Data

08:00 - 08:15

Demand (PCU/TS)

		To				
		A - A509 Pytchley Rd (N)	B - Holdenby (NE)	C - A509 (SE)	D - Carina Road (SW)	E - Orion Way (NW
From	A - A509 Pytchley Rd (N)	0.00	11.00	108.00	36.00	60.00
	B - Holdenby (NE)	12.00	0.25	12.00	6.00	4.00
	C - A509 (SE)	115.00	0.00	0.00	57.00	67.00
	D - Carina Road (SW)	23.00	10.00	36.00	0.00	24.00
	E - Orion Way (NW	6.00	5.00	36.00	13.00	0.00

08:15 - 08:30

Demand (PCU/TS)

		To				
		A - A509 Pytchley Rd (N)	B - Holdenby (NE)	C - A509 (SE)	D - Carina Road (SW)	E - Orion Way (NW
From	A - A509 Pytchley Rd (N)	1.00	17.00	120.00	30.00	50.00
	B - Holdenby (NE)	11.00	1.00	3.00	1.00	7.00
	C - A509 (SE)	92.00	0.00	1.00	46.00	60.00
	D - Carina Road (SW)	22.00	7.00	36.00	0.00	16.00
	E - Orion Way (NW	12.00	6.00	40.00	13.00	0.00

08:30 - 08:45

Demand (PCU/TS)

		To				
		A - A509 Pytchley Rd (N)	B - Holdenby (NE)	C - A509 (SE)	D - Carina Road (SW)	E - Orion Way (NW
From	A - A509 Pytchley Rd (N)	0.00	11.00	120.00	36.00	31.00
	B - Holdenby (NE)	20.00	0.00	3.00	2.00	7.00
	C - A509 (SE)	74.00	2.00	0.00	58.00	69.00
	D - Carina Road (SW)	19.00	10.00	49.00	0.00	14.00
	E - Orion Way (NW	9.00	6.00	41.00	9.00	0.00

08:45 - 09:00

Demand (PCU/TS)

		To				
		A - A509 Pytchley Rd (N)	B - Holdenby (NE)	C - A509 (SE)	D - Carina Road (SW)	E - Orion Way (NW
From	A - A509 Pytchley Rd (N)	0.00	26.00	104.00	49.00	45.00
	B - Holdenby (NE)	5.00	0.00	4.00	3.00	4.00
	C - A509 (SE)	74.00	5.00	0.00	34.00	68.00
	D - Carina Road (SW)	20.00	8.00	40.00	0.00	11.00
	E - Orion Way (NW	19.00	13.00	33.00	18.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To				
		A - A509 Pytchley Rd (N)	B - Holdenby (NE)	C - A509 (SE)	D - Carina Road (SW)	E - Orion Way (NW
From	A - A509 Pytchley Rd (N)	0	5	4	0	2
	B - Holdenby (NE)	2	0	5	0	0
	C - A509 (SE)	3	0	0	1	7
	D - Carina Road (SW)	0	0	1	0	0
	E - Orion Way (NW	5	3	21	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/TS)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
A - A509 Pytchley Rd (N)	0.44	3.22	0.8	A	213.75	855.00	43.27	3.04	0.72	43.28	3.04
B - Holdenby (NE)	0.18	5.87	0.2	A	26.31	105.25	9.82	5.60	0.16	9.82	5.60
C - A509 (SE)	0.49	3.65	1.0	A	205.50	822.00	43.86	3.20	0.73	43.87	3.20
D - Carina Road (SW)	0.30	4.23	0.4	A	86.25	345.00	21.78	3.79	0.36	21.78	3.79
E - Orion Way (NW	0.22	3.42	0.3	A	69.75	279.00	15.57	3.35	0.26	15.57	3.35

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - A509 Pytchley Rd (N)	215.00	215.00	99.83	521.85	0.412	214.28	155.33	0.0	0.7	3.002	A
B - Holdenby (NE)	34.25	34.25	287.97	190.90	0.179	34.03	26.15	0.0	0.2	5.866	A
C - A509 (SE)	239.00	239.00	130.74	492.58	0.485	238.03	191.26	0.0	1.0	3.649	A
D - Carina Road (SW)	93.00	93.00	257.21	305.63	0.304	92.56	111.56	0.0	0.4	4.232	A
E - Orion Way (NW	60.00	60.00	195.38	355.48	0.169	59.77	154.39	0.0	0.2	3.423	A

08:15 - 08:30

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - A509 Pytchley Rd (N)	218.00	218.00	104.01	519.22	0.420	217.97	138.15	0.7	0.7	3.077	A
B - Holdenby (NE)	23.00	23.00	291.00	189.57	0.121	23.08	30.99	0.2	0.1	5.496	A
C - A509 (SE)	199.00	199.00	114.07	503.37	0.395	199.29	200.01	1.0	0.7	3.073	A
D - Carina Road (SW)	81.00	81.00	223.23	324.69	0.249	81.10	90.12	0.4	0.3	3.711	A
E - Orion Way (NW	71.00	71.00	171.20	368.91	0.192	70.96	133.12	0.2	0.3	3.387	A

08:30 - 08:45

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - A509 Pytchley Rd (N)	198.00	198.00	116.95	511.08	0.387	198.09	122.03	0.7	0.7	2.963	A
B - Holdenby (NE)	32.00	32.00	286.03	191.76	0.167	31.94	29.01	0.1	0.2	5.727	A
C - A509 (SE)	203.00	203.00	105.01	509.23	0.399	203.00	212.96	0.7	0.7	3.047	A
D - Carina Road (SW)	92.00	92.00	203.05	336.00	0.274	91.96	104.95	0.3	0.4	3.707	A
E - Orion Way (NW	65.00	65.00	173.96	367.37	0.177	65.02	121.05	0.3	0.2	3.377	A

08:45 - 09:00

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - A509 Pytchley Rd (N)	224.00	224.00	117.02	511.04	0.438	223.86	118.07	0.7	0.8	3.220	A
B - Holdenby (NE)	16.00	16.00	288.96	190.47	0.084	16.11	51.92	0.2	0.1	5.261	A
C - A509 (SE)	181.00	181.00	123.97	496.96	0.364	181.09	181.10	0.7	0.6	2.963	A
D - Carina Road (SW)	79.00	79.00	201.06	337.12	0.234	79.07	103.99	0.4	0.3	3.508	A
E - Orion Way (NW	83.00	83.00	152.15	379.49	0.219	82.94	127.99	0.2	0.3	3.315	A

Queueing Delay Results for each time segment

08:00 - 08:15

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A - A509 Pytchley Rd (N)	10.50	0.70	3.002	A	A
B - Holdenby (NE)	3.23	0.22	5.866	A	A
C - A509 (SE)	14.11	0.94	3.649	A	A
D - Carina Road (SW)	6.37	0.42	4.232	A	A
E - Orion Way (NW	3.34	0.22	3.423	A	A

08:15 - 08:30

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A - A509 Pytchley Rd (N)	11.04	0.74	3.077	A	A
B - Holdenby (NE)	2.18	0.15	5.496	A	A
C - A509 (SE)	10.41	0.69	3.073	A	A
D - Carina Road (SW)	5.12	0.34	3.711	A	A
E - Orion Way (NW	3.95	0.26	3.387	A	A

08:30 - 08:45

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A - A509 Pytchley Rd (N)	9.94	0.66	2.963	A	A
B - Holdenby (NE)	2.97	0.20	5.727	A	A
C - A509 (SE)	10.26	0.68	3.047	A	A
D - Carina Road (SW)	5.58	0.37	3.707	A	A
E - Orion Way (NW	3.69	0.25	3.377	A	A

08:45 - 09:00

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A - A509 Pytchley Rd (N)	11.78	0.79	3.220	A	A
B - Holdenby (NE)	1.45	0.10	5.261	A	A
C - A509 (SE)	9.08	0.61	2.963	A	A
D - Carina Road (SW)	4.70	0.31	3.508	A	A
E - Orion Way (NW	4.59	0.31	3.315	A	A

2017 Observed, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	A - A509 Pytchley Rd (N) - 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	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	A,B,C,D,E	4.92	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D2	2017 Observed	PM	DIRECT	17:00	18:00	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A - A509 Pytchley Rd (N)		DIRECT	✓	100.000
B - Holdenby (NE)		DIRECT	✓	100.000
C - A509 (SE)		DIRECT	✓	100.000
D - Carina Road (SW)		DIRECT	✓	100.000
E - Orion Way (NW		DIRECT	✓	100.000

Origin-Destination Data

Demand (PCU/TS)

17:00 - 17:15

		To				
		A - A509 Pytchley Rd (N)	B - Holdenby (NE)	C - A509 (SE)	D - Carina Road (SW)	E - Orion Way (NW
From	A - A509 Pytchley Rd (N)	0.00	13.00	78.00	47.00	26.00
	B - Holdenby (NE)	26.00	0.00	15.00	10.00	7.00
	C - A509 (SE)	103.00	10.00	0.00	115.00	38.00
	D - Carina Road (SW)	55.00	0.00	70.00	0.00	18.00
	E - Orion Way (NW	10.00	5.00	119.00	29.00	0.00

17:15 - 17:30

Demand (PCU/TS)

		To				
		A - A509 Pytchley Rd (N)	B - Holdenby (NE)	C - A509 (SE)	D - Carina Road (SW)	E - Orion Way (NW
From	A - A509 Pytchley Rd (N)	0.00	15.00	104.00	57.00	37.00
	B - Holdenby (NE)	13.00	0.00	12.00	4.00	5.00
	C - A509 (SE)	117.00	6.00	2.00	117.00	38.00
	D - Carina Road (SW)	34.00	0.00	51.00	0.00	27.00
	E - Orion Way (NW	16.00	2.00	67.00	9.00	0.00

17:30 - 17:45

Demand (PCU/TS)

		To				
		A - A509 Pytchley Rd (N)	B - Holdenby (NE)	C - A509 (SE)	D - Carina Road (SW)	E - Orion Way (NW
From	A - A509 Pytchley Rd (N)	0.00	17.00	90.00	57.00	22.00
	B - Holdenby (NE)	8.00	0.00	5.00	8.00	2.00
	C - A509 (SE)	106.00	3.00	0.00	112.00	52.00
	D - Carina Road (SW)	25.00	0.00	76.00	0.00	16.00
	E - Orion Way (NW	12.00	1.00	109.00	22.00	0.00

17:45 - 18:00

Demand (PCU/TS)

		To				
		A - A509 Pytchley Rd (N)	B - Holdenby (NE)	C - A509 (SE)	D - Carina Road (SW)	E - Orion Way (NW
From	A - A509 Pytchley Rd (N)	0.00	14.00	88.00	44.00	35.00
	B - Holdenby (NE)	16.00	0.00	8.00	6.00	7.00
	C - A509 (SE)	137.00	7.00	0.00	123.00	40.00
	D - Carina Road (SW)	55.00	0.00	64.00	0.00	27.00
	E - Orion Way (NW	12.00	8.00	50.00	15.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To				
		A - A509 Pytchley Rd (N)	B - Holdenby (NE)	C - A509 (SE)	D - Carina Road (SW)	E - Orion Way (NW
From	A - A509 Pytchley Rd (N)	0	5	1	0	2
	B - Holdenby (NE)	0	0	0	0	0
	C - A509 (SE)	1	0	0	0	5
	D - Carina Road (SW)	1	0	1	0	1
	E - Orion Way (NW	0	7	2	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/TS)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
A - A509 Pytchley Rd (N)	0.43	3.42	0.8	A	186.00	744.00	39.60	3.19	0.66	39.60	3.19
B - Holdenby (NE)	0.37	9.08	0.6	A	38.00	152.00	18.48	7.29	0.31	18.48	7.30
C - A509 (SE)	0.62	4.75	1.6	A	281.50	1126.00	78.98	4.21	1.32	79.02	4.21
D - Carina Road (SW)	0.46	5.38	0.9	A	129.50	518.00	39.58	4.58	0.66	39.59	4.59
E - Orion Way (NW	0.51	5.82	1.1	A	121.50	486.00	37.76	4.66	0.63	37.76	4.66

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - A509 Pytchley Rd (N)	164.00	164.00	231.60	439.00	0.374	163.40	192.91	0.0	0.6	3.297	A
B - Holdenby (NE)	58.00	58.00	367.12	156.00	0.372	57.42	27.87	0.0	0.6	9.077	A
C - A509 (SE)	266.00	266.00	144.11	483.93	0.550	264.78	280.43	0.0	1.2	4.128	A
D - Carina Road (SW)	143.00	143.00	208.88	332.73	0.430	142.25	200.01	0.0	0.8	4.750	A
E - Orion Way (NW	163.00	163.00	262.56	318.19	0.512	161.95	88.57	0.0	1.1	5.819	A

17:15 - 17:30

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - A509 Pytchley Rd (N)	213.00	213.00	137.80	497.97	0.428	212.85	180.23	0.6	0.8	3.192	A
B - Holdenby (NE)	34.00	34.00	327.61	173.42	0.196	34.34	23.04	0.6	0.2	6.485	A
C - A509 (SE)	280.00	280.00	125.36	496.06	0.564	279.92	236.59	1.2	1.3	4.206	A
D - Carina Road (SW)	112.00	112.00	218.10	327.56	0.342	112.23	187.18	0.8	0.5	4.225	A
E - Orion Way (NW	94.00	94.00	223.36	339.95	0.277	94.66	106.96	1.1	0.4	3.738	A

17:30 - 17:45

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - A509 Pytchley Rd (N)	186.00	186.00	210.58	452.21	0.411	186.04	151.15	0.8	0.7	3.422	A
B - Holdenby (NE)	23.00	23.00	375.61	152.26	0.151	23.07	21.01	0.2	0.2	6.969	A
C - A509 (SE)	273.00	273.00	118.97	500.19	0.546	273.07	279.70	1.3	1.2	4.017	A
D - Carina Road (SW)	117.00	117.00	193.13	341.57	0.343	117.00	198.91	0.5	0.5	4.047	A
E - Orion Way (NW	144.00	144.00	218.07	342.89	0.420	143.66	92.06	0.4	0.7	4.580	A

17:45 - 18:00

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - A509 Pytchley Rd (N)	181.00	181.00	144.27	493.90	0.366	181.12	219.51	0.7	0.6	2.916	A
B - Holdenby (NE)	37.00	37.00	296.43	187.17	0.198	36.94	28.96	0.2	0.2	5.987	A
C - A509 (SE)	307.00	307.00	123.04	497.56	0.617	306.62	210.33	1.2	1.6	4.754	A
D - Carina Road (SW)	146.00	146.00	241.66	314.35	0.464	145.66	188.00	0.5	0.9	5.377	A
E - Orion Way (NW	85.00	85.00	278.44	309.37	0.275	85.34	108.88	0.7	0.4	4.097	A

Queueing Delay Results for each time segment

17:00 - 17:15

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A - A509 Pytchley Rd (N)	8.79	0.59	3.297	A	A
B - Holdenby (NE)	8.31	0.55	9.077	A	A
C - A509 (SE)	17.68	1.18	4.128	A	A
D - Carina Road (SW)	10.94	0.73	4.750	A	A
E - Orion Way (NW	15.14	1.01	5.819	A	A

17:15 - 17:30

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A - A509 Pytchley Rd (N)	11.09	0.74	3.192	A	A
B - Holdenby (NE)	3.82	0.25	6.485	A	A
C - A509 (SE)	19.23	1.28	4.206	A	A
D - Carina Road (SW)	8.10	0.54	4.225	A	A
E - Orion Way (NW	6.02	0.40	3.738	A	A

17:30 - 17:45

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A - A509 Pytchley Rd (N)	10.77	0.72	3.422	A	A
B - Holdenby (NE)	2.76	0.18	6.969	A	A
C - A509 (SE)	18.61	1.24	4.017	A	A
D - Carina Road (SW)	7.92	0.53	4.047	A	A
E - Orion Way (NW	10.65	0.71	4.580	A	A

17:45 - 18:00

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A - A509 Pytchley Rd (N)	8.95	0.60	2.916	A	A
B - Holdenby (NE)	3.59	0.24	5.987	A	A
C - A509 (SE)	23.46	1.56	4.754	A	A
D - Carina Road (SW)	12.61	0.84	5.377	A	A
E - Orion Way (NW	5.95	0.40	4.097	A	A

Junctions 9

ARCADY 9 - Roundabout Module

Version: 9.0.1.4646 []

For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

Filename: 170410 - A509_Carina Road_Orion Way 2017 Observed - DIRECT ELS.j9
Path: J:\30062 Land South of Kettering\Junctions 9\A509_Carina Road_Orion Way\2017 Observed
Report generation date: 08/05/2017 16:48:14

Summary of junction performance

	AM					PM				
	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)
	[Lane Simulation] - 2017 Observed									
1 - A509 Pytchley Rd (N)	1.9	7.01		A	8.22	1.7	6.97		A	13.35
2 - Holdenby (NE)	0.4	13.62		B		1.2	18.93		C	
3 - A509 (SE)	1.8	7.17		A		3.6	9.69		A	
4 - Carina Rd (SW)	1.3	12.60		B		7.7	31.64		D	
5 - Orion Way (NW)	0.7	7.62		A		2.0	9.33		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. Arm and junction delays are averages for all movements, including movements with zero delay.

File summary

File Description

Title	A509 - Carina Rd - Orion Way
Location	
Site number	
Date	10/04/2017
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	PBA\pcullen
Description	

Units

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

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75		✓		0.85	36.00	20.00

Lane Simulation options

Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Individual vehicle animation number of trials	Use crossings quick response	Last run random seed	Last run number of trials	Last run time taken (s)
1.00	100000	100000	-1	3	1	✓	1818233424	101	10.50

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D1	2017 Observed	AM	DIRECT	08:00	09:00	60	15	✓
D2	2017 Observed	PM	DIRECT	17:00	18:00	60	15	✓

Analysis Set Details

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

2017 Observed, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.
Warning	Geometry	1 - A509 Pytchley Rd (N) - 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	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	1,2,3,4,5	8.22	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	A509 Pytchley Rd (N)	
2	Holdenby (NE)	
3	A509 (SE)	
4	Carina Rd (SW)	
5	Orion Way (NW)	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - A509 Pytchley Rd (N)	3.65	10.00	57.5	18.0	63.0	50.0	
2 - Holdenby (NE)	3.00	7.00	9.5	10.0	63.0	47.0	
3 - A509 (SE)	7.50	7.50	0.0	37.5	63.0	32.0	
4 - Carina Rd (SW)	3.65	9.00	12.0	47.5	63.0	34.0	
5 - Orion Way (NW)	5.00	9.00	7.0	20.0	63.0	43.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/TS)
1 - A509 Pytchley Rd (N)	0.629	584.613
2 - Holdenby (NE)	0.441	317.886
3 - A509 (SE)	0.647	577.147
4 - Carina Rd (SW)	0.561	449.891
5 - Orion Way (NW)	0.555	463.954

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

Lane Simulation: Arm options

Arm	Lane capacity source	Traffic Considering Secondary Lanes (%)
1 - A509 Pytchley Rd (N)	Evenly split	10.00
2 - Holdenby (NE)	Evenly split	10.00
3 - A509 (SE)	Evenly split	10.00
4 - Carina Rd (SW)	Evenly split	10.00
5 - Orion Way (NW)	Evenly split	10.00

Lanes

Arm	Lane level	Lane	Destination arms	Has limited storage	Storage (PCU)	Minimum capacity (PCU/TS)	Maximum capacity (PCU/TS)
1 - A509 Pytchley Rd (N)	1 [Give-way line]	1	2,3	✓	11.00	0.00	24999.75
		2	1,4,5	✓	11.00	0.00	24999.75
	2	1	(1,2,3,4,5)		Infinity		
2 - Holdenby (NE)	1 [Give-way line]	1	3,4	✓	4.00	0.00	24999.75
		2	1,2,5	✓	4.00	0.00	24999.75
	2	1	(1,2,3,4,5)		Infinity		
3 - A509 (SE)	1 [Give-way line]	1	4,5		Infinity	0.00	24999.75
		2	1,2,3		Infinity	0.00	24999.75
4 - Carina Rd (SW)	1 [Give-way line]	1	1,5	✓	4.00	0.00	24999.75
		2	1,2	✓	4.00	0.00	24999.75
		3	3,4	✓	4.00	0.00	24999.75
	2	1	(1,2,3,4,5)		Infinity		
5 - Orion Way (NW)	1 [Give-way line]	1	1,2,3	✓	2.00	0.00	24999.75
		2	3,4,5	✓	2.00	0.00	24999.75
	2	1	(1,2,3,4,5)		Infinity		

Entry Lane slope and intercept

Arm	Lane level	Lane	Final slope	Final intercept (PCU/TS)
1 - A509 Pytchley Rd (N)	1 [Give-way line]	1	0.314	292.307
		2	0.314	292.307
2 - Holdenby (NE)	1 [Give-way line]	1	0.220	158.943
		2	0.220	158.943
3 - A509 (SE)	1 [Give-way line]	1	0.323	288.573
		2	0.323	288.573
4 - Carina Rd (SW)	1 [Give-way line]	1	0.187	149.964
		2	0.187	149.964
		3	0.187	149.964
5 - Orion Way (NW)	1 [Give-way line]	1	0.278	231.977
		2	0.278	231.977

Lane Movements

Arm	Lane Level	Lane	Destination arm				
			A509 Pytchley Rd (N)	Holdenby (NE)	A509 (SE)	Carina Rd (SW)	Orion Way (NW)
1 - A509 Pytchley Rd (N)	1 [Give-way line]	1		✓	✓		
		2	✓			✓	✓
	2	1	✓	✓	✓	✓	✓
2 - Holdenby (NE)	1 [Give-way line]	1			✓	✓	
		2	✓	✓			✓
	2	1	✓	✓	✓	✓	✓
3 - A509 (SE)	1 [Give-way line]	1				✓	✓
		2	✓	✓	✓		
4 - Carina Rd (SW)	1 [Give-way line]	1	✓				✓
		2	✓	✓			
		3			✓	✓	
	2	1	✓	✓	✓	✓	✓
5 - Orion Way (NW)	1 [Give-way line]	1	✓	✓	✓		
		2			✓	✓	✓
	2	1	✓	✓	✓	✓	✓

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D1	2017 Observed	AM	DIRECT	08:00	09:00	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
1 - A509 Pytchley Rd (N)		DIRECT	✓	100.000
2 - Holdenby (NE)		DIRECT	✓	100.000
3 - A509 (SE)		DIRECT	✓	100.000
4 - Carina Rd (SW)		DIRECT	✓	100.000
5 - Orion Way (NW)		DIRECT	✓	100.000

Origin-Destination Data

Demand (PCU/TS)

08:00 - 08:15

		To				
		1 - A509 Pytchley Rd (N)	2 - Holdenby (NE)	3 - A509 (SE)	4 - Carina Rd (SW)	5 - Orion Way (NW)
From	1 - A509 Pytchley Rd (N)	0.00	11.00	108.00	36.00	60.00
	2 - Holdenby (NE)	12.00	0.00	12.00	6.00	4.00
	3 - A509 (SE)	115.00	0.00	0.00	57.00	67.00
	4 - Carina Rd (SW)	23.00	10.00	36.00	0.00	24.00
	5 - Orion Way (NW)	6.00	5.00	36.00	13.00	0.00

08:15 - 08:30

Demand (PCU/TS)

		To				
		1 - A509 Pytchley Rd (N)	2 - Holdenby (NE)	3 - A509 (SE)	4 - Carina Rd (SW)	5 - Orion Way (NW)
From	1 - A509 Pytchley Rd (N)	1.00	17.00	120.00	30.00	50.00
	2 - Holdenby (NE)	11.00	1.00	3.00	1.00	7.00
	3 - A509 (SE)	92.00	0.00	1.00	46.00	60.00
	4 - Carina Rd (SW)	22.00	7.00	36.00	0.00	16.00
	5 - Orion Way (NW)	12.00	6.00	40.00	13.00	0.00

08:30 - 08:45

Demand (PCU/TS)

		To				
		1 - A509 Pytchley Rd (N)	2 - Holdenby (NE)	3 - A509 (SE)	4 - Carina Rd (SW)	5 - Orion Way (NW)
From	1 - A509 Pytchley Rd (N)	0.00	11.00	120.00	36.00	31.00
	2 - Holdenby (NE)	20.00	0.00	3.00	2.00	7.00
	3 - A509 (SE)	74.00	2.00	0.00	58.00	69.00
	4 - Carina Rd (SW)	19.00	10.00	49.00	0.00	14.00
	5 - Orion Way (NW)	9.00	6.00	41.00	9.00	0.00

08:45 - 09:00

Demand (PCU/TS)

		To				
		1 - A509 Pytchley Rd (N)	2 - Holdenby (NE)	3 - A509 (SE)	4 - Carina Rd (SW)	5 - Orion Way (NW)
From	1 - A509 Pytchley Rd (N)	0.00	26.00	104.00	49.00	45.00
	2 - Holdenby (NE)	5.00	0.00	4.00	3.00	4.00
	3 - A509 (SE)	74.00	5.00	0.00	34.00	68.00
	4 - Carina Rd (SW)	20.00	8.00	40.00	0.00	11.00
	5 - Orion Way (NW)	19.00	13.00	33.00	18.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - A509 Pytchley Rd (N)	2 - Holdenby (NE)	3 - A509 (SE)	4 - Carina Rd (SW)	5 - Orion Way (NW)
From	1 - A509 Pytchley Rd (N)	0	5	4	0	2
	2 - Holdenby (NE)	2	0	5	0	0
	3 - A509 (SE)	3	0	0	1	7
	4 - Carina Rd (SW)	0	0	1	0	0
	5 - Orion Way (NW)	55	33	21	0	0

Results

Results Summary for whole modelled period

Arm	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/TS)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate of Queueing Delay (PCU-min/min)
1 - A509 Pytchley Rd (N)	7.01	1.9	A	215.36	861.46	96.23	6.70	1.60
2 - Holdenby (NE)	13.62	0.4	B	26.14	104.56	20.72	11.89	0.35
3 - A509 (SE)	7.17	1.8	A	205.25	820.99	91.09	6.66	1.52
4 - Carina Rd (SW)	12.60	1.3	B	85.52	342.06	66.33	11.63	1.11
5 - Orion Way (NW)	7.62	0.7	A	69.04	276.15	36.22	7.87	0.60

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - A509 Pytchley Rd (N)	219.24	219.24	97.31	219.48	160.01	0.0	1.4	5.987	A
2 - Holdenby (NE)	32.08	32.08	290.35	31.96	26.51	0.0	0.4	10.891	B
3 - A509 (SE)	241.07	241.07	130.87	242.14	191.47	0.0	1.8	7.167	A
4 - Carina Rd (SW)	93.68	93.68	261.39	93.65	111.63	0.0	1.3	11.379	B
5 - Orion Way (NW)	56.97	56.97	199.57	57.74	155.47	0.0	0.4	6.588	A

08:15 - 08:30

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - A509 Pytchley Rd (N)	219.99	219.99	104.05	220.10	135.12	1.4	1.9	6.743	A
2 - Holdenby (NE)	23.74	23.74	294.30	23.55	29.85	0.4	0.4	10.844	B
3 - A509 (SE)	192.98	192.98	114.92	193.40	203.03	1.8	1.2	6.305	A
4 - Carina Rd (SW)	80.02	80.02	218.52	80.79	89.79	1.3	0.8	11.091	B
5 - Orion Way (NW)	70.43	70.43	167.50	71.80	131.82	0.4	0.4	6.998	A

08:30 - 08:45

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - A509 Pytchley Rd (N)	196.75	196.75	116.67	196.22	119.82	1.9	1.6	6.797	A
2 - Holdenby (NE)	33.09	33.09	283.64	33.39	29.32	0.4	0.4	13.616	B
3 - A509 (SE)	205.57	205.57	104.58	204.77	212.35	1.2	1.8	6.630	A
4 - Carina Rd (SW)	89.88	89.88	204.12	90.06	105.24	0.8	1.2	12.605	B
5 - Orion Way (NW)	64.04	64.04	172.63	63.83	121.54	0.4	0.6	7.028	A

08:45 - 09:00

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - A509 Pytchley Rd (N)	225.48	225.48	118.16	226.46	119.08	1.6	1.8	7.007	A
2 - Holdenby (NE)	15.65	15.65	290.67	15.74	53.87	0.4	0.2	10.136	B
3 - A509 (SE)	181.37	181.37	127.07	182.26	179.35	1.8	1.1	5.909	A
4 - Carina Rd (SW)	78.48	78.48	204.92	78.91	104.41	1.2	1.0	10.887	B
5 - Orion Way (NW)	84.71	84.71	152.22	85.01	131.58	0.6	0.7	7.624	A

Queueing Delay Results for each time segment

08:00 - 08:15

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
1 - A509 Pytchley Rd (N)	21.74	1.45	5.987	A	A
2 - Holdenby (NE)	6.01	0.40	10.891	B	B
3 - A509 (SE)	28.76	1.92	7.167	A	A
4 - Carina Rd (SW)	17.76	1.18	11.379	B	B
5 - Orion Way (NW)	7.12	0.47	6.588	A	A

08:15 - 08:30

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
1 - A509 Pytchley Rd (N)	24.85	1.66	6.743	A	A
2 - Holdenby (NE)	4.30	0.29	10.844	B	B
3 - A509 (SE)	21.16	1.41	6.305	A	A
4 - Carina Rd (SW)	15.08	1.01	11.091	B	B
5 - Orion Way (NW)	8.96	0.60	6.998	A	A

08:30 - 08:45

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
1 - A509 Pytchley Rd (N)	22.86	1.52	6.797	A	A
2 - Holdenby (NE)	7.49	0.50	13.616	B	B
3 - A509 (SE)	22.73	1.52	6.630	A	A
4 - Carina Rd (SW)	19.23	1.28	12.605	B	B
5 - Orion Way (NW)	8.48	0.57	7.028	A	A

08:45 - 09:00

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
1 - A509 Pytchley Rd (N)	26.78	1.79	7.007	A	A
2 - Holdenby (NE)	2.92	0.19	10.136	B	B
3 - A509 (SE)	18.43	1.23	5.909	A	A
4 - Carina Rd (SW)	14.27	0.95	10.887	B	B
5 - Orion Way (NW)	11.67	0.78	7.624	A	A

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

08:00 - 08:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - A509 Pytchley Rd (N)	Entry	1	1	2,3	121.87	261.72	0.466	121.65	0.0	0.8	6.483	A
			2	1,4,5	97.37	261.72	0.372	97.85	0.0	0.6	5.395	A
		2	1	(1,2,3,4,5)	219.24			219.24	0.0	0.0	0.000	A
	Exit	1	1		160.01			160.01	0.0	0.0	0.000	A
2 - Holdenby (NE)	Entry	1	1	3,4	16.77	94.94	0.177	16.66	0.0	0.2	11.001	B
			2	1,2,5	15.33	94.94	0.161	15.30	0.0	0.2	10.760	B
		2	1	(1,2,3,4,5)	32.08			32.08	0.0	0.0	0.002	A
	Exit	1	1		26.51			26.51	0.0	0.0	0.000	A
3 - A509 (SE)	Entry	1	1	4,5	121.60	246.25	0.494	123.24	0.0	0.8	7.348	A
			2	1,2,3	119.47	246.25	0.485	118.90	0.0	1.0	6.982	A
	Exit	1	1		191.47			191.47	0.0	0.0	0.000	A
4 - Carina Rd (SW)	Entry	1	1	1,5	34.43	101.09	0.341	34.31	0.0	0.5	11.406	B
			2	1,2	24.45	101.09	0.242	24.39	0.0	0.3	9.306	A
			3	3,4	34.69	101.09	0.343	34.96	0.0	0.4	12.397	B
		2	1	(1,2,3,4,5)	93.68			93.56	0.0	0.0	0.103	A
	Exit	1	1		111.63			111.63	0.0	0.0	0.000	A
5 - Orion Way (NW)	Entry	1	1	1,2,3	28.63	176.58	0.162	29.18	0.0	0.2	6.477	A
			2	3,4,5	28.54	176.58	0.162	28.57	0.0	0.2	5.857	A
		2	1	(1,2,3,4,5)	56.97			57.18	0.0	0.0	0.446	A
	Exit	1	1		155.47			155.47	0.0	0.0	0.000	A

08:15 - 08:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - A509 Pytchley Rd (N)	Entry	1	1	2,3	138.53	259.60	0.534	139.01	0.8	1.3	7.744	A
			2	1,4,5	81.42	259.60	0.314	81.09	0.6	0.5	5.047	A
		2	1	(1,2,3,4,5)	219.99			219.99	0.0	0.0	0.005	A
	Exit	1	1		135.12			135.12	0.0	0.0	0.000	A
2 - Holdenby (NE)	Entry	1	1	3,4	4.37	94.06	0.046	4.31	0.2	0.0	10.106	B
			2	1,2,5	19.40	94.06	0.206	19.25	0.2	0.3	11.003	B
		2	1	(1,2,3,4,5)	23.74			23.74	0.0	0.0	0.022	A
	Exit	1	1		29.85			29.85	0.0	0.0	0.000	A
3 - A509 (SE)	Entry	1	1	4,5	103.31	251.41	0.411	103.07	0.8	0.7	6.539	A
			2	1,2,3	89.67	251.41	0.357	90.33	1.0	0.4	6.044	A
	Exit	1	1		203.03			203.03	0.0	0.0	0.000	A
4 - Carina Rd (SW)	Entry	1	1	1,5	25.93	109.11	0.238	26.02	0.5	0.2	9.297	A
			2	1,2	18.33	109.11	0.168	18.27	0.3	0.2	9.130	A
			3	3,4	35.79	109.11	0.328	36.50	0.4	0.4	13.060	B
		2	1	(1,2,3,4,5)	80.02			80.05	0.0	0.0	0.155	A
	Exit	1	1		89.79			89.79	0.0	0.0	0.000	A
5 - Orion Way (NW)	Entry	1	1	1,2,3	36.69	185.48	0.198	37.04	0.2	0.2	6.407	A
			2	3,4,5	34.19	185.48	0.184	34.63	0.2	0.2	5.886	A
		2	1	(1,2,3,4,5)	70.43			70.90	0.0	0.0	0.851	A
	Exit	1	1		131.82			131.82	0.0	0.0	0.000	A

08:30 - 08:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - A509 Pytchley Rd (N)	Entry	1	1	2,3	130.38	255.64	0.510	129.58	1.3	1.2	7.837	A
			2	1,4,5	66.33	255.64	0.259	66.59	0.5	0.4	4.810	A
		2	1	(1,2,3,4,5)	196.75			196.75	0.0	0.0	0.001	A
	Exit	1	1		119.82			119.82	0.0	0.0	0.000	A
2 - Holdenby (NE)	Entry	1	1	3,4	5.52	96.43	0.057	5.44	0.0	0.1	10.065	B
			2	1,2,5	27.59	96.43	0.286	27.92	0.3	0.4	14.019	B
		2	1	(1,2,3,4,5)	33.09			33.12	0.0	0.0	0.217	A
	Exit	1	1		29.32			29.32	0.0	0.0	0.000	A
3 - A509 (SE)	Entry	1	1	4,5	129.86	254.75	0.510	129.98	0.7	1.1	7.571	A
			2	1,2,3	75.76	254.75	0.297	74.81	0.4	0.7	5.076	A
	Exit	1	1		212.35			212.35	0.0	0.0	0.000	A
4 - Carina Rd (SW)	Entry	1	1	1,5	21.27	111.80	0.190	21.27	0.2	0.2	9.632	A
			2	1,2	20.14	111.80	0.180	20.11	0.2	0.2	9.067	A
			3	3,4	48.42	111.80	0.433	48.68	0.4	0.8	14.431	B
		2	1	(1,2,3,4,5)	89.88			89.82	0.0	0.0	0.553	A
	Exit	1	1		105.24			105.24	0.0	0.0	0.000	A
5 - Orion Way (NW)	Entry	1	1	1,2,3	34.04	184.06	0.185	33.94	0.2	0.3	6.851	A
			2	3,4,5	29.88	184.06	0.162	29.75	0.2	0.2	5.829	A
		2	1	(1,2,3,4,5)	64.04			63.92	0.0	0.2	0.671	A
	Exit	1	1		121.54			121.54	0.0	0.0	0.000	A

08:45 - 09:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - A509 Pytchley Rd (N)	Entry	1	1	2,3	128.91	255.16	0.505	129.06	1.2	1.3	7.914	A
			2	1,4,5	96.53	255.16	0.378	97.40	0.4	0.5	5.769	A
		2	1	(1,2,3,4,5)	225.48			225.45	0.0	0.0	0.015	A
	Exit	1	1		119.08			119.08	0.0	0.0	0.000	A
2 - Holdenby (NE)	Entry	1	1	3,4	6.00	94.86	0.063	6.12	0.1	0.1	9.813	A
			2	1,2,5	9.65	94.86	0.102	9.62	0.4	0.1	10.338	B
		2	1	(1,2,3,4,5)	15.65			15.65	0.0	0.0	0.005	A
	Exit	1	1		53.87			53.87	0.0	0.0	0.000	A
3 - A509 (SE)	Entry	1	1	4,5	103.49	247.48	0.418	103.90	1.1	0.7	6.378	A
			2	1,2,3	77.88	247.48	0.315	78.34	0.7	0.4	5.302	A
	Exit	1	1		179.35			179.35	0.0	0.0	0.000	A
4 - Carina Rd (SW)	Entry	1	1	1,5	20.82	111.65	0.186	20.76	0.2	0.3	8.755	A
			2	1,2	18.86	111.65	0.169	18.48	0.2	0.3	8.627	A
			3	3,4	38.91	111.65	0.349	39.66	0.8	0.5	12.769	B
		2	1	(1,2,3,4,5)	78.48			78.63	0.0	0.0	0.155	A
	Exit	1	1		104.41			104.41	0.0	0.0	0.000	A
5 - Orion Way (NW)	Entry	1	1	1,2,3	49.41	189.72	0.260	49.87	0.3	0.4	6.745	A
			2	3,4,5	35.08	189.72	0.185	35.11	0.2	0.1	5.751	A
		2	1	(1,2,3,4,5)	84.71			84.53	0.2	0.2	1.371	A
	Exit	1	1		131.58			131.58	0.0	0.0	0.000	A

Lanes: Queueing Delay Results for each time segment

08:00 - 08:15

Arm	Side	Lane level	Lane	Destination arms	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
1 - A509 Pytchley Rd (N)	Entry	1	1	2,3	13.01	0.87	6.483	A	A
			2	1,4,5	8.73	0.58	5.395	A	A
		2	1	(1,2,3,4,5)	0.00	0.00	0.000	A	A
	Exit	1	1		0.00	0.00	0.000	A	A
2 - Holdenby (NE)	Entry	1	1	3,4	3.28	0.22	11.001	B	B
			2	1,2,5	2.72	0.18	10.760	B	B
		2	1	(1,2,3,4,5)	0.00	0.00	0.002	A	A
	Exit	1	1		0.00	0.00	0.000	A	A
3 - A509 (SE)	Entry	1	1	4,5	15.06	1.00	7.348	A	A
			2	1,2,3	13.70	0.91	6.982	A	A
	Exit	1	1		0.00	0.00	0.000	A	A
4 - Carina Rd (SW)	Entry	1	1	1,5	6.45	0.43	11.406	B	B
			2	1,2	3.59	0.24	9.306	A	A
			3	3,4	7.57	0.50	12.397	B	B
		2	1	(1,2,3,4,5)	0.16	0.01	0.103	A	A
	Exit	1	1		0.00	0.00	0.000	A	A
5 - Orion Way (NW)	Entry	1	1	1,2,3	3.54	0.24	6.477	A	A
			2	3,4,5	3.10	0.21	5.857	A	A
		2	1	(1,2,3,4,5)	0.47	0.03	0.446	A	A
	Exit	1	1		0.00	0.00	0.000	A	A

08:15 - 08:30

Arm	Side	Lane level	Lane	Destination arms	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
1 - A509 Pytchley Rd (N)	Entry	1	1	2,3	18.04	1.20	7.744	A	A
			2	1,4,5	6.79	0.45	5.047	A	A
		2	1	(1,2,3,4,5)	0.02	0.00	0.005	A	A
	Exit	1	1		0.00	0.00	0.000	A	A
2 - Holdenby (NE)	Entry	1	1	3,4	0.90	0.06	10.106	B	B
			2	1,2,5	3.39	0.23	11.003	B	B
		2	1	(1,2,3,4,5)	0.01	0.00	0.022	A	A
	Exit	1	1		0.00	0.00	0.000	A	A
3 - A509 (SE)	Entry	1	1	4,5	11.65	0.78	6.539	A	A
			2	1,2,3	9.52	0.63	6.044	A	A
	Exit	1	1		0.00	0.00	0.000	A	A
4 - Carina Rd (SW)	Entry	1	1	1,5	4.12	0.27	9.297	A	A
			2	1,2	2.80	0.19	9.130	A	A
			3	3,4	7.93	0.53	13.060	B	B
		2	1	(1,2,3,4,5)	0.22	0.01	0.155	A	A
	Exit	1	1		0.00	0.00	0.000	A	A
5 - Orion Way (NW)	Entry	1	1	1,2,3	4.43	0.30	6.407	A	A
			2	3,4,5	3.48	0.23	5.886	A	A
		2	1	(1,2,3,4,5)	1.05	0.07	0.851	A	A
	Exit	1	1		0.00	0.00	0.000	A	A

08:30 - 08:45

Arm	Side	Lane level	Lane	Destination arms	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
1 - A509 Pytchley Rd (N)	Entry	1	1	2,3	17.48	1.17	7.837	A	A
			2	1,4,5	5.37	0.36	4.810	A	A
		2	1	(1,2,3,4,5)	0.00	0.00	0.001	A	A
	Exit	1	1		0.00	0.00	0.000	A	A
2 - Holdenby (NE)	Entry	1	1	3,4	0.87	0.06	10.065	B	B
			2	1,2,5	6.51	0.43	14.019	B	B
		2	1	(1,2,3,4,5)	0.12	0.01	0.217	A	A
	Exit	1	1		0.00	0.00	0.000	A	A
3 - A509 (SE)	Entry	1	1	4,5	16.24	1.08	7.571	A	A
			2	1,2,3	6.49	0.43	5.076	A	A
	Exit	1	1		0.00	0.00	0.000	A	A
4 - Carina Rd (SW)	Entry	1	1	1,5	3.61	0.24	9.632	A	A
			2	1,2	3.04	0.20	9.067	A	A
			3	3,4	11.72	0.78	14.431	B	B
		2	1	(1,2,3,4,5)	0.85	0.06	0.553	A	A
	Exit	1	1		0.00	0.00	0.000	A	A
5 - Orion Way (NW)	Entry	1	1	1,2,3	4.58	0.31	6.851	A	A
			2	3,4,5	3.11	0.21	5.829	A	A
		2	1	(1,2,3,4,5)	0.79	0.05	0.671	A	A
	Exit	1	1		0.00	0.00	0.000	A	A

08:45 - 09:00

Arm	Side	Lane level	Lane	Destination arms	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
1 - A509 Pytchley Rd (N)	Entry	1	1	2,3	17.48	1.17	7.914	A	A
			2	1,4,5	9.24	0.62	5.769	A	A
		2	1	(1,2,3,4,5)	0.06	0.00	0.015	A	A
	Exit	1	1		0.00	0.00	0.000	A	A
2 - Holdenby (NE)	Entry	1	1	3,4	1.11	0.07	9.813	A	A
			2	1,2,5	1.81	0.12	10.338	B	B
		2	1	(1,2,3,4,5)	0.00	0.00	0.005	A	A
	Exit	1	1		0.00	0.00	0.000	A	A
3 - A509 (SE)	Entry	1	1	4,5	11.34	0.76	6.378	A	A
			2	1,2,3	7.09	0.47	5.302	A	A
	Exit	1	1		0.00	0.00	0.000	A	A
4 - Carina Rd (SW)	Entry	1	1	1,5	3.08	0.21	8.755	A	A
			2	1,2	2.55	0.17	8.627	A	A
			3	3,4	8.44	0.56	12.769	B	B
		2	1	(1,2,3,4,5)	0.20	0.01	0.155	A	A
	Exit	1	1		0.00	0.00	0.000	A	A
5 - Orion Way (NW)	Entry	1	1	1,2,3	6.02	0.40	6.745	A	A
			2	3,4,5	3.59	0.24	5.751	A	A
		2	1	(1,2,3,4,5)	2.06	0.14	1.371	A	A
	Exit	1	1		0.00	0.00	0.000	A	A

2017 Observed, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.
Warning	Geometry	1 - A509 Pytchley Rd (N) - 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	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	1,2,3,4,5	13.35	B

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D2	2017 Observed	PM	DIRECT	17:00	18:00	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
1 - A509 Pytchley Rd (N)		DIRECT	✓	100.000
2 - Holdenby (NE)		DIRECT	✓	100.000
3 - A509 (SE)		DIRECT	✓	100.000
4 - Carina Rd (SW)		DIRECT	✓	100.000
5 - Orion Way (NW)		DIRECT	✓	100.000

Origin-Destination Data

Demand (PCU/TS)

17:00 - 17:15

		To				
		1 - A509 Pytchley Rd (N)	2 - Holdenby (NE)	3 - A509 (SE)	4 - Carina Rd (SW)	5 - Orion Way (NW)
From	1 - A509 Pytchley Rd (N)	0.00	13.00	78.00	47.00	26.00
	2 - Holdenby (NE)	26.00	0.00	15.00	10.00	7.00
	3 - A509 (SE)	103.00	10.00	0.00	115.00	38.00
	4 - Carina Rd (SW)	55.00	0.00	70.00	27.00	18.00
	5 - Orion Way (NW)	10.00	5.00	119.00	29.00	0.00

17:15 - 17:30

Demand (PCU/TS)

		To				
		1 - A509 Pytchley Rd (N)	2 - Holdenby (NE)	3 - A509 (SE)	4 - Carina Rd (SW)	5 - Orion Way (NW)
From	1 - A509 Pytchley Rd (N)	0.00	15.00	104.00	57.00	37.00
	2 - Holdenby (NE)	13.00	0.00	12.00	4.00	5.00
	3 - A509 (SE)	117.00	6.00	2.00	117.00	38.00
	4 - Carina Rd (SW)	34.00	0.00	51.00	0.00	27.00
	5 - Orion Way (NW)	16.00	2.00	67.00	9.00	0.00

17:30 - 17:45

Demand (PCU/TS)

		To				
		1 - A509 Pytchley Rd (N)	2 - Holdenby (NE)	3 - A509 (SE)	4 - Carina Rd (SW)	5 - Orion Way (NW)
From	1 - A509 Pytchley Rd (N)	0.00	17.00	90.00	57.00	22.00
	2 - Holdenby (NE)	8.00	0.00	5.00	8.00	2.00
	3 - A509 (SE)	106.00	3.00	0.00	112.00	52.00
	4 - Carina Rd (SW)	25.00	0.00	76.00	0.00	16.00
	5 - Orion Way (NW)	12.00	1.00	109.00	22.00	0.00

17:45 - 18:00

Demand (PCU/TS)

		To				
		1 - A509 Pytchley Rd (N)	2 - Holdenby (NE)	3 - A509 (SE)	4 - Carina Rd (SW)	5 - Orion Way (NW)
From	1 - A509 Pytchley Rd (N)	0.00	14.00	88.00	44.00	35.00
	2 - Holdenby (NE)	16.00	0.00	8.00	6.00	7.00
	3 - A509 (SE)	137.00	7.00	0.00	123.00	40.00
	4 - Carina Rd (SW)	55.00	0.00	64.00	0.00	27.00
	5 - Orion Way (NW)	12.00	8.00	50.00	15.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - A509 Pytchley Rd (N)	2 - Holdenby (NE)	3 - A509 (SE)	4 - Carina Rd (SW)	5 - Orion Way (NW)
From	1 - A509 Pytchley Rd (N)	0	5	1	0	2
	2 - Holdenby (NE)	0	0	0	0	0
	3 - A509 (SE)	1	0	0	0	5
	4 - Carina Rd (SW)	1	0	1	0	1
	5 - Orion Way (NW)	0	7	2	0	0

Results

Results Summary for whole modelled period

Arm	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/TS)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate of Queueing Delay (PCU-min/min)
1 - A509 Pytchley Rd (N)	6.97	1.7	A	186.86	747.43	83.52	6.70	1.39
2 - Holdenby (NE)	18.93	1.2	C	38.27	153.07	40.14	15.73	0.67
3 - A509 (SE)	9.69	3.6	A	280.03	1120.13	175.14	9.38	2.92
4 - Carina Rd (SW)	31.64	7.7	D	136.28	545.11	207.34	22.82	3.46
5 - Orion Way (NW)	9.33	2.0	A	121.98	487.92	65.15	8.01	1.09

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - A509 Pytchley Rd (N)	163.54	163.54	259.01	164.06	193.81	0.0	1.3	6.694	A
2 - Holdenby (NE)	58.04	58.04	395.16	59.19	27.89	0.0	1.2	18.927	C
3 - A509 (SE)	264.43	264.43	173.43	263.24	280.90	0.0	3.2	8.925	A
4 - Carina Rd (SW)	170.51	170.51	207.66	168.71	229.01	0.0	7.7	31.637	D
5 - Orion Way (NW)	163.43	163.43	289.61	163.19	86.74	0.0	2.0	9.333	A

17:15 - 17:30

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - A509 Pytchley Rd (N)	214.73	214.73	136.74	214.04	180.96	1.3	1.7	6.973	A
2 - Holdenby (NE)	34.29	34.29	327.57	34.10	23.21	1.2	0.6	14.420	B
3 - A509 (SE)	279.41	279.41	125.03	279.09	236.64	3.2	2.9	9.323	A
4 - Carina Rd (SW)	111.69	111.69	217.77	112.00	186.34	7.7	1.6	17.761	C
5 - Orion Way (NW)	94.60	94.60	223.41	94.29	106.36	2.0	0.8	6.871	A

17:30 - 17:45

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - A509 Pytchley Rd (N)	186.66	186.66	213.69	186.24	152.10	1.7	1.7	6.929	A
2 - Holdenby (NE)	23.06	23.06	378.43	23.11	21.50	0.6	0.4	14.459	B
3 - A509 (SE)	272.26	272.26	120.46	273.46	281.09	2.9	2.6	9.248	A
4 - Carina Rd (SW)	116.50	116.50	195.71	118.11	198.20	1.6	2.4	20.488	C
5 - Orion Way (NW)	145.44	145.44	219.73	146.06	94.10	0.8	1.1	7.581	A

17:45 - 18:00

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - A509 Pytchley Rd (N)	182.50	182.50	142.09	181.56	218.46	1.7	1.4	6.014	A
2 - Holdenby (NE)	37.69	37.69	295.29	37.57	28.36	0.4	0.5	12.705	B
3 - A509 (SE)	304.03	304.03	123.33	302.69	209.53	2.6	3.6	9.693	A
4 - Carina Rd (SW)	146.41	146.41	240.16	145.86	185.86	2.4	3.1	17.989	C
5 - Orion Way (NW)	84.45	84.45	276.41	84.13	109.60	1.1	0.8	7.082	A

Queueing Delay Results for each time segment

17:00 - 17:15

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
1 - A509 Pytchley Rd (N)	18.46	1.23	6.694	A	A
2 - Holdenby (NE)	18.23	1.22	18.927	C	B
3 - A509 (SE)	38.93	2.60	8.925	A	A
4 - Carina Rd (SW)	84.30	5.62	31.637	D	C
5 - Orion Way (NW)	25.11	1.67	9.333	A	A

17:15 - 17:30

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
1 - A509 Pytchley Rd (N)	24.99	1.67	6.973	A	A
2 - Holdenby (NE)	8.46	0.56	14.420	B	B
3 - A509 (SE)	43.74	2.92	9.323	A	A
4 - Carina Rd (SW)	38.86	2.59	17.761	C	B
5 - Orion Way (NW)	11.36	0.76	6.871	A	A

17:30 - 17:45

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
1 - A509 Pytchley Rd (N)	21.69	1.45	6.929	A	A
2 - Holdenby (NE)	5.60	0.37	14.459	B	B
3 - A509 (SE)	42.61	2.84	9.248	A	A
4 - Carina Rd (SW)	39.74	2.65	20.488	C	C
5 - Orion Way (NW)	18.34	1.22	7.581	A	A

17:45 - 18:00

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
1 - A509 Pytchley Rd (N)	18.37	1.22	6.014	A	A
2 - Holdenby (NE)	7.85	0.52	12.705	B	B
3 - A509 (SE)	49.86	3.32	9.693	A	A
4 - Carina Rd (SW)	44.44	2.96	17.989	C	B
5 - Orion Way (NW)	10.34	0.69	7.082	A	A

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

17:00 - 17:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - A509 Pytchley Rd (N)	Entry	1	1	2,3	90.99	210.89	0.431	91.27	0.0	0.8	7.152	A
			2	1,4,5	72.56	210.89	0.344	72.79	0.0	0.5	6.124	A
		2	1	(1,2,3,4,5)	163.54			163.54	0.0	0.0	0.001	A
	Exit	1	1		193.81			193.81	0.0	0.0	0.000	A
2 - Holdenby (NE)	Entry	1	1	3,4	25.39	71.82	0.353	25.61	0.0	0.5	16.452	C
			2	1,2,5	32.91	71.82	0.458	33.57	0.0	0.7	19.183	C
		2	1	(1,2,3,4,5)	58.04			58.30	0.0	0.0	0.900	A
	Exit	1	1		27.89			27.89	0.0	0.0	0.000	A
3 - A509 (SE)	Entry	1	1	4,5	152.14	232.48	0.654	150.84	0.0	2.2	10.425	B
			2	1,2,3	112.27	232.48	0.483	112.40	0.0	1.0	6.896	A
	Exit	1	1		280.90			280.90	0.0	0.0	0.000	A
4 - Carina Rd (SW)	Entry	1	1	1,5	41.41	111.14	0.373	41.28	0.0	0.6	10.470	B
			2	1,2	31.06	111.14	0.279	30.79	0.0	0.4	9.272	A
			3	3,4	96.60	111.14	0.869	96.64	0.0	2.7	22.627	C
		2	1	(1,2,3,4,5)	170.51			169.07	0.0	4.0	14.251	B
	Exit	1	1		229.01			229.01	0.0	0.0	0.000	A
5 - Orion Way (NW)	Entry	1	1	1,2,3	77.44	151.58	0.511	77.43	0.0	0.7	7.416	A
			2	3,4,5	85.47	151.58	0.564	85.74	0.0	0.8	7.678	A
		2	1	(1,2,3,4,5)	163.43			162.91	0.0	0.5	1.769	A
	Exit	1	1		86.74			86.74	0.0	0.0	0.000	A

17:15 - 17:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - A509 Pytchley Rd (N)	Entry	1	1	2,3	120.13	249.32	0.482	119.19	0.8	1.2	7.570	A
			2	1,4,5	94.60	249.32	0.379	94.86	0.5	0.5	6.214	A
		2	1	(1,2,3,4,5)	214.73			214.73	0.0	0.0	0.002	A
	Exit	1	1		180.96			180.96	0.0	0.0	0.000	A
2 - Holdenby (NE)	Entry	1	1	3,4	16.24	86.72	0.187	16.23	0.5	0.3	13.403	B
			2	1,2,5	18.01	86.72	0.208	17.87	0.7	0.3	15.140	C
		2	1	(1,2,3,4,5)	34.29			34.26	0.0	0.0	0.089	A
	Exit	1	1		23.21			23.21	0.0	0.0	0.000	A
3 - A509 (SE)	Entry	1	1	4,5	153.90	248.14	0.620	154.28	2.2	1.7	10.765	B
			2	1,2,3	125.51	248.14	0.506	124.80	1.0	1.2	7.555	A
	Exit	1	1		236.64			236.64	0.0	0.0	0.000	A
4 - Carina Rd (SW)	Entry	1	1	1,5	39.89	109.25	0.365	40.13	0.6	0.4	11.691	B
			2	1,2	21.01	109.25	0.192	21.03	0.4	0.2	9.675	A
			3	3,4	50.80	109.25	0.465	50.85	2.7	0.9	17.297	C
		2	1	(1,2,3,4,5)	111.69			111.70	4.0	0.1	4.213	A
	Exit	1	1		186.34			186.34	0.0	0.0	0.000	A
5 - Orion Way (NW)	Entry	1	1	1,2,3	50.51	169.96	0.297	50.11	0.7	0.4	6.776	A
			2	3,4,5	44.13	169.96	0.260	44.17	0.8	0.3	6.329	A
		2	1	(1,2,3,4,5)	94.60			94.64	0.5	0.0	0.330	A
	Exit	1	1		106.36			106.36	0.0	0.0	0.000	A

17:30 - 17:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - A509 Pytchley Rd (N)	Entry	1	1	2,3	106.63	225.13	0.474	106.73	1.2	0.9	7.469	A
			2	1,4,5	80.02	225.13	0.355	79.51	0.5	0.7	6.196	A
		2	1	(1,2,3,4,5)	186.66			186.66	0.0	0.0	0.005	A
	Exit	1	1		152.10			152.10	0.0	0.0	0.000	A
2 - Holdenby (NE)	Entry	1	1	3,4	13.49	75.51	0.179	13.47	0.3	0.2	14.595	B
			2	1,2,5	9.57	75.51	0.127	9.64	0.3	0.1	14.275	B
		2	1	(1,2,3,4,5)	23.06			23.06	0.0	0.0	0.000	A
	Exit	1	1		21.50			21.50	0.0	0.0	0.000	A
3 - A509 (SE)	Entry	1	1	4,5	162.35	249.62	0.650	163.86	1.7	1.7	10.872	B
			2	1,2,3	109.89	249.62	0.440	109.60	1.2	0.9	6.826	A
	Exit	1	1		281.09			281.09	0.0	0.0	0.000	A
4 - Carina Rd (SW)	Entry	1	1	1,5	27.07	113.37	0.239	27.13	0.4	0.3	9.582	A
			2	1,2	14.49	113.37	0.128	14.34	0.2	0.2	8.574	A
			3	3,4	75.97	113.37	0.670	76.64	0.9	1.6	19.186	C
		2	1	(1,2,3,4,5)	116.50			117.53	0.1	0.4	4.782	A
	Exit	1	1		198.20			198.20	0.0	0.0	0.000	A
5 - Orion Way (NW)	Entry	1	1	1,2,3	70.04	170.98	0.410	70.16	0.4	0.5	6.690	A
			2	3,4,5	75.71	170.98	0.443	75.89	0.3	0.6	6.877	A
		2	1	(1,2,3,4,5)	145.44			145.75	0.0	0.0	0.794	A
	Exit	1	1		94.10			94.10	0.0	0.0	0.000	A

17:45 - 18:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - A509 Pytchley Rd (N)	Entry	1	1	2,3	103.87	247.64	0.419	102.75	0.9	0.9	6.405	A
			2	1,4,5	78.64	247.64	0.318	78.79	0.7	0.5	5.507	A
		2	1	(1,2,3,4,5)	182.50			182.50	0.0	0.0	0.000	A
	Exit	1	1		218.46			218.46	0.0	0.0	0.000	A
2 - Holdenby (NE)	Entry	1	1	3,4	13.80	93.84	0.147	13.89	0.2	0.2	11.593	B
			2	1,2,5	23.89	93.84	0.255	23.69	0.1	0.4	13.311	B
		2	1	(1,2,3,4,5)	37.69			37.69	0.0	0.0	0.059	A
	Exit	1	1		28.36			28.36	0.0	0.0	0.000	A
3 - A509 (SE)	Entry	1	1	4,5	160.62	248.69	0.646	160.30	1.7	2.1	10.678	B
			2	1,2,3	143.41	248.69	0.577	142.39	0.9	1.5	8.578	A
	Exit	1	1		209.53			209.53	0.0	0.0	0.000	A
4 - Carina Rd (SW)	Entry	1	1	1,5	50.43	105.06	0.480	50.29	0.3	0.7	12.353	B
			2	1,2	32.23	105.06	0.307	32.02	0.2	0.4	10.632	B
			3	3,4	63.97	105.06	0.609	63.56	1.6	1.5	18.831	C
		2	1	(1,2,3,4,5)	146.41			146.63	0.4	0.5	3.242	A
	Exit	1	1		185.86			185.86	0.0	0.0	0.000	A
5 - Orion Way (NW)	Entry	1	1	1,2,3	44.61	155.25	0.287	44.67	0.5	0.4	6.860	A
			2	3,4,5	39.70	155.25	0.256	39.46	0.6	0.4	6.493	A
		2	1	(1,2,3,4,5)	84.45			84.30	0.0	0.1	0.400	A
	Exit	1	1		109.60			109.60	0.0	0.0	0.000	A

Lanes: Queueing Delay Results for each time segment

17:00 - 17:15

Arm	Side	Lane level	Lane	Destination arms	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
1 - A509 Pytchley Rd (N)	Entry	1	1	2,3	10.95	0.73	7.152	A	A
			2	1,4,5	7.51	0.50	6.124	A	A
		2	1	(1,2,3,4,5)	0.00	0.00	0.001	A	A
	Exit	1	1		0.00	0.00	0.000	A	A
2 - Holdenby (NE)	Entry	1	1	3,4	6.77	0.45	16.452	C	B
			2	1,2,5	10.58	0.71	19.183	C	B
		2	1	(1,2,3,4,5)	0.88	0.06	0.900	A	A
	Exit	1	1		0.00	0.00	0.000	A	A
3 - A509 (SE)	Entry	1	1	4,5	26.13	1.74	10.425	B	B
			2	1,2,3	12.80	0.85	6.896	A	A
	Exit	1	1		0.00	0.00	0.000	A	A
4 - Carina Rd (SW)	Entry	1	1	1,5	7.16	0.48	10.470	B	B
			2	1,2	4.63	0.31	9.272	A	A
			3	3,4	34.99	2.33	22.627	C	C
		2	1	(1,2,3,4,5)	37.51	2.50	14.251	B	B
	Exit	1	1		0.00	0.00	0.000	A	A
5 - Orion Way (NW)	Entry	1	1	1,2,3	9.55	0.64	7.416	A	A
			2	3,4,5	10.83	0.72	7.678	A	A
		2	1	(1,2,3,4,5)	4.73	0.32	1.769	A	A
	Exit	1	1		0.00	0.00	0.000	A	A

17:15 - 17:30

Arm	Side	Lane level	Lane	Destination arms	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
1 - A509 Pytchley Rd (N)	Entry	1	1	2,3	15.16	1.01	7.570	A	A
			2	1,4,5	9.82	0.65	6.214	A	A
		2	1	(1,2,3,4,5)	0.01	0.00	0.002	A	A
	Exit	1	1		0.00	0.00	0.000	A	A
2 - Holdenby (NE)	Entry	1	1	3,4	3.54	0.24	13.403	B	B
			2	1,2,5	4.86	0.32	15.140	C	B
		2	1	(1,2,3,4,5)	0.06	0.00	0.089	A	A
	Exit	1	1		0.00	0.00	0.000	A	A
3 - A509 (SE)	Entry	1	1	4,5	27.91	1.86	10.765	B	B
			2	1,2,3	15.84	1.06	7.555	A	A
	Exit	1	1		0.00	0.00	0.000	A	A
4 - Carina Rd (SW)	Entry	1	1	1,5	8.14	0.54	11.691	B	B
			2	1,2	3.54	0.24	9.675	A	A
			3	3,4	16.35	1.09	17.297	C	B
		2	1	(1,2,3,4,5)	10.83	0.72	4.213	A	A
	Exit	1	1		0.00	0.00	0.000	A	A
5 - Orion Way (NW)	Entry	1	1	1,2,3	5.83	0.39	6.776	A	A
			2	3,4,5	4.89	0.33	6.329	A	A
		2	1	(1,2,3,4,5)	0.65	0.04	0.330	A	A
	Exit	1	1		0.00	0.00	0.000	A	A

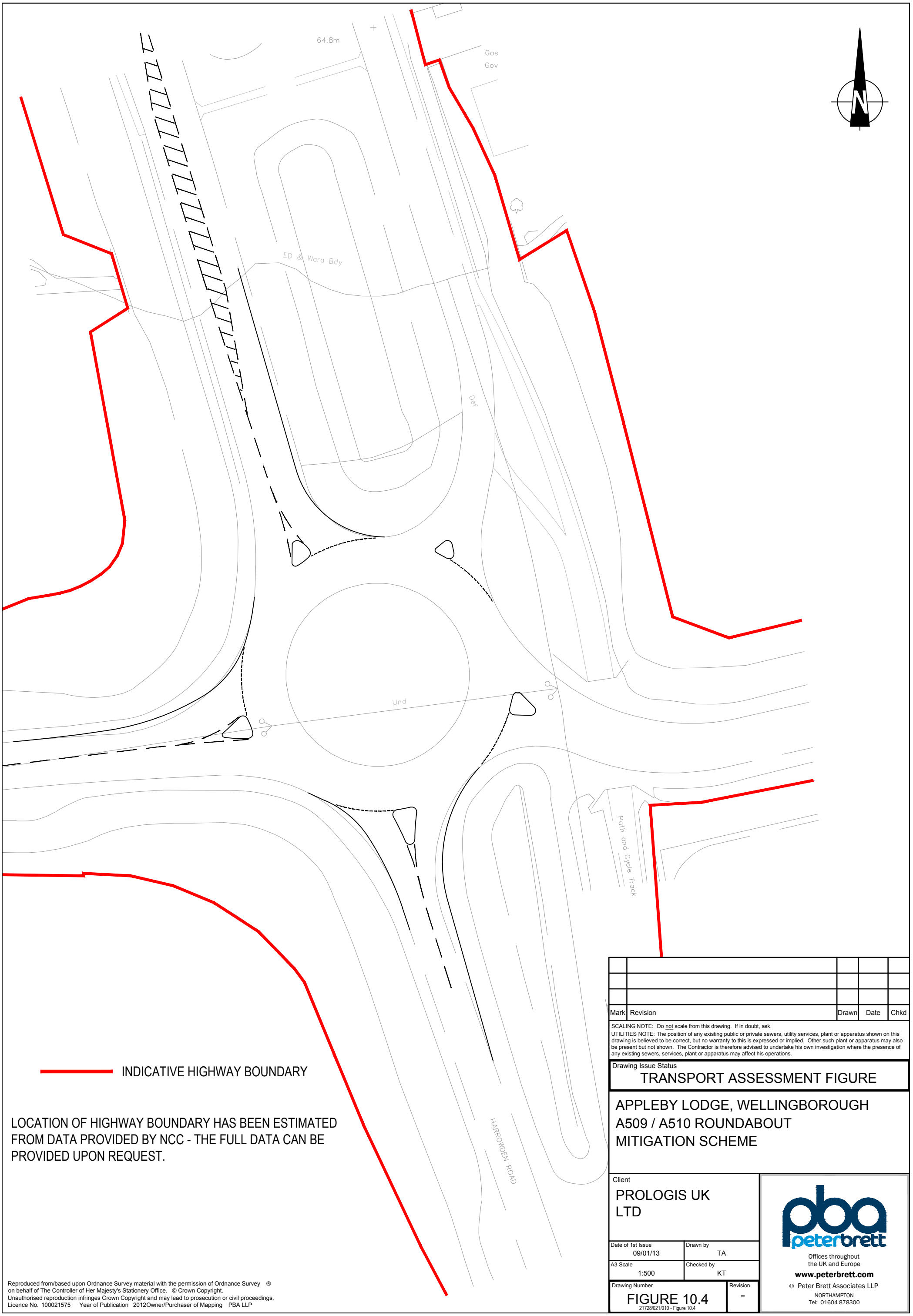
17:30 - 17:45

Arm	Side	Lane level	Lane	Destination arms	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
1 - A509 Pytchley Rd (N)	Entry	1	1	2,3	13.49	0.90	7.469	A	A
			2	1,4,5	8.19	0.55	6.196	A	A
		2	1	(1,2,3,4,5)	0.01	0.00	0.005	A	A
	Exit	1	1		0.00	0.00	0.000	A	A
2 - Holdenby (NE)	Entry	1	1	3,4	3.26	0.22	14.595	B	B
			2	1,2,5	2.34	0.16	14.275	B	B
		2	1	(1,2,3,4,5)	0.00	0.00	0.000	A	A
	Exit	1	1		0.00	0.00	0.000	A	A
3 - A509 (SE)	Entry	1	1	4,5	29.98	2.00	10.872	B	B
			2	1,2,3	12.62	0.84	6.826	A	A
	Exit	1	1		0.00	0.00	0.000	A	A
4 - Carina Rd (SW)	Entry	1	1	1,5	4.32	0.29	9.582	A	A
			2	1,2	2.10	0.14	8.574	A	A
			3	3,4	24.05	1.60	19.186	C	B
		2	1	(1,2,3,4,5)	9.27	0.62	4.782	A	A
	Exit	1	1		0.00	0.00	0.000	A	A
5 - Orion Way (NW)	Entry	1	1	1,2,3	7.82	0.52	6.690	A	A
			2	3,4,5	8.58	0.57	6.877	A	A
		2	1	(1,2,3,4,5)	1.94	0.13	0.794	A	A
	Exit	1	1		0.00	0.00	0.000	A	A

17:45 - 18:00

Arm	Side	Lane level	Lane	Destination arms	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
1 - A509 Pytchley Rd (N)	Entry	1	1	2,3	11.05	0.74	6.405	A	A
			2	1,4,5	7.32	0.49	5.507	A	A
		2	1	(1,2,3,4,5)	0.00	0.00	0.000	A	A
	Exit	1	1		0.00	0.00	0.000	A	A
2 - Holdenby (NE)	Entry	1	1	3,4	2.81	0.19	11.593	B	B
			2	1,2,5	5.01	0.33	13.311	B	B
		2	1	(1,2,3,4,5)	0.04	0.00	0.059	A	A
	Exit	1	1		0.00	0.00	0.000	A	A
3 - A509 (SE)	Entry	1	1	4,5	29.27	1.95	10.678	B	B
			2	1,2,3	20.59	1.37	8.578	A	A
	Exit	1	1		0.00	0.00	0.000	A	A
4 - Carina Rd (SW)	Entry	1	1	1,5	10.28	0.69	12.353	B	B
			2	1,2	5.81	0.39	10.632	B	B
			3	3,4	20.34	1.36	18.831	C	B
		2	1	(1,2,3,4,5)	8.01	0.53	3.242	A	A
	Exit	1	1		0.00	0.00	0.000	A	A
5 - Orion Way (NW)	Entry	1	1	1,2,3	5.27	0.35	6.860	A	A
			2	3,4,5	4.47	0.30	6.493	A	A
		2	1	(1,2,3,4,5)	0.60	0.04	0.400	A	A
	Exit	1	1		0.00	0.00	0.000	A	A

Appendix 3.7 – A509 Niort Way / A510 Roundabout - Appleby Lodge Development Mitigation Scheme



INDICATIVE HIGHWAY BOUNDARY

LOCATION OF HIGHWAY BOUNDARY HAS BEEN ESTIMATED FROM DATA PROVIDED BY NCC - THE FULL DATA CAN BE PROVIDED UPON REQUEST.

Mark	Revision	Drawn	Date	Chkd

SCALING NOTE: Do not scale from this drawing. If in doubt, ask.

UTILITIES NOTE: The position of any existing public or private sewers, utility services, plant or apparatus shown on this drawing is believed to be correct, but no warranty to this is expressed or implied. Other such plant or apparatus may also be present but not shown. The Contractor is therefore advised to undertake his own investigation where the presence of any existing sewers, services, plant or apparatus may affect his operations.

Drawing Issue Status

TRANSPORT ASSESSMENT FIGURE

APPLEBY LODGE, WELLINGBOROUGH
A509 / A510 ROUNDABOUT
MITIGATION SCHEME

Client

PROLOGIS UK LTD

Date of 1st Issue	Drawn by
09/01/13	TA
A3 Scale	**Checked by**
1:500	KT

Drawing Number	Revision
FIGURE 10.4	-

21728/021/010 - Figure 10.4

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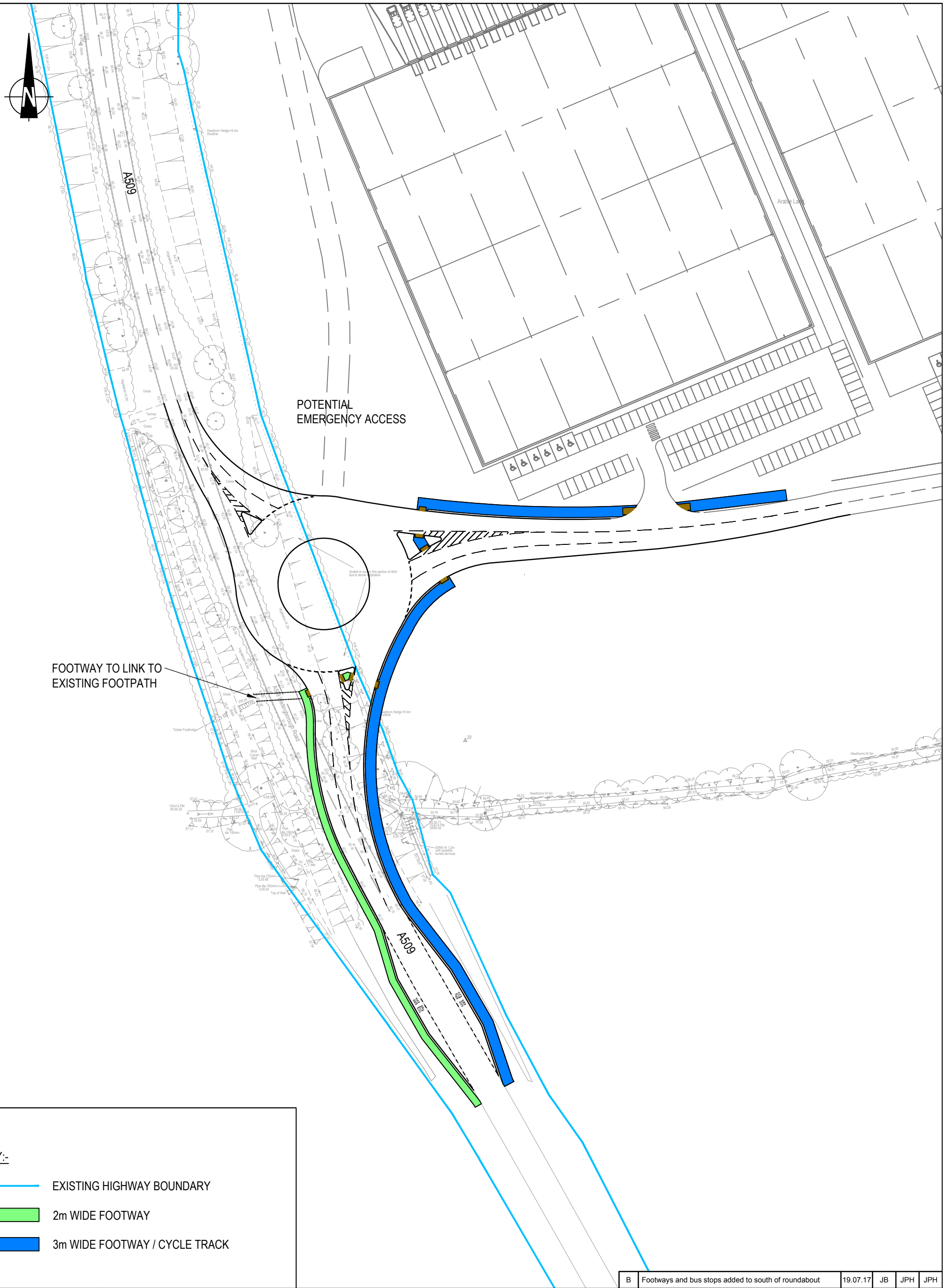
Appendix 4.1 – A509 / Site Access Roundabout Proposals



KEY:-

- EXISTING HIGHWAY BOUNDARY
- 2m WIDE FOOTWAY
- 3m WIDE FOOTWAY / CYCLE TRACK

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dbsymmetry

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SYMMETRY PARK, KETTERING

SITE ACCESS

Mark	Revision	Date	Drawn	Chkd	Appd
B	Footways and bus stops added to south of roundabout	19.07.17	JB	JPH	JPH
A	Updated drawing following comments from NCC	25.11.16	TPA	JPH	JPH

Drawing Status: FOR INFORMATION

Date of 1st Issue	08.07.16	Drawing Number	Revision
A3 Scale	1:1000	30062/5501/003	B
Design JPH	Drawn IE		
Chkd JPH	Appd JPH		

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dbsymmetry

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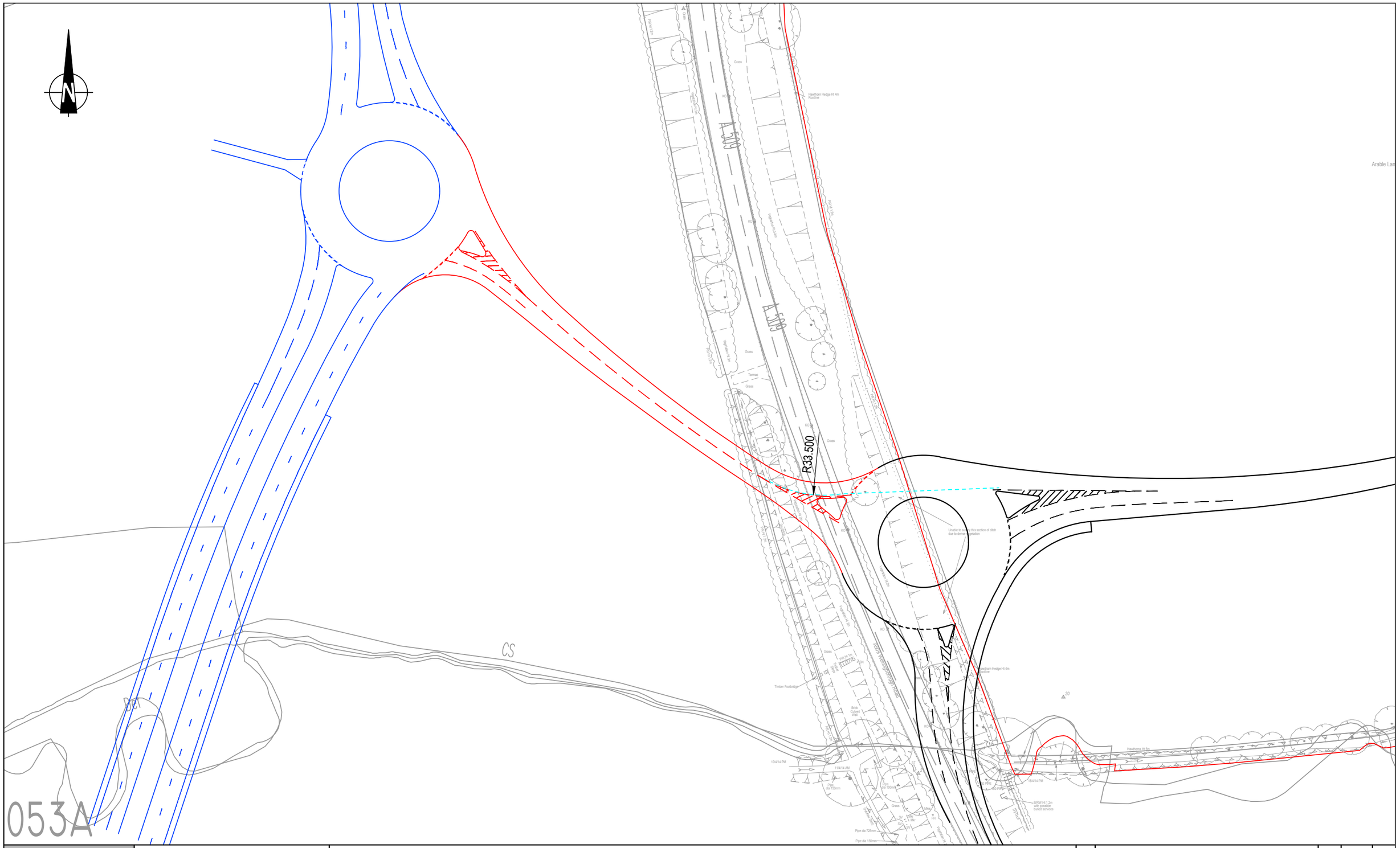
SYMMETRY PARK, KETTERING

SITE ACCESS SWEPT PATH ANALYSIS

Mark	Revision	Date	Drawn	Chkd	Appd

Drawing Status: FOR INFORMATION

Date of 1st Issue	08.07.16	Drawing Number	Revision
A3 Scale	1:1000	30062/5501/010	-
Design JPH	Drawn IE		
Chkd JPH	Appd JPH		



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dbsymmetry

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SYMMETRY PARK, KETTERING
POTENTIAL SITE ACCESS CO-ORDINATION
WITH A509 ISHAM BYPASS PROPOSALS
POSSIBLE ALIGNMENT TO CONNECT NCC & PBA SCHEMES

Mark	Revision	Drawn	Date	Chkd

Drawing Status: FOR INFORMATION

Date of 1st Issue	28.04.2016
A3 Scale	1:1000
Drawn by	IE
Checked by	JPH

Drawing Number: 30062/SK04

Revision: -

Appendix 8.1 – Potential A509 Northern Dualling

A14 JUNCTION 9

FOOTWAY / CYCLE TRACK TO
LINK TO INTERNAL NETWORK

A14 JUNCTION 9

A509

ISHAM

LOCATION PLAN - SCALE 1:10,000

A509 NORTHERN DUALLING

FOOTWAY TO LINK TO
EXISTING PUBLIC FOOTPATH

INDICATIVE ALIGNMENT TIE-IN WITH
A509 ISHAM BYPASS PROPOSALS

SITE ACCESS
ROUNDABOUT

FOOTWAY / CYCLE TRACK TO
LINK TO INTERNAL NETWORK

DEVELOPMENT ACCESS

REVISED A509 ISHAM BYPASS
ALIGNMENT AS ADVISED BY NCC

FOOTPATH LINK TO EXISTING
PUBLIC FOOTPATH

A509 KETTERING ROAD

CS
CS
CS
Def

KEY:-

EXISTING HIGHWAY BOUNDARY

2m WIDE FOOTWAY

3m WIDE FOOTWAY / CYCLE TRACK

0 50
metres

Mark	Revision	Date	Drawn	Chkd	Appd
B	EASTERN ARM DEVELOPMENT ARM ALIGNMENT REVISED	12.01.18	DL	JPH	JPH
A	REVISED TO SHOW INDICATIVE TIE-IN WITH IBP PROPOSAL	20.12.17	DL	JPH	JPH

SCALING NOTE: Do not scale from this drawing. If in doubt, ask.
UTILITIES NOTE: The position of any existing public or private sewers, utility services, plant or apparatus shown on this drawing is believed to be correct, but no warranty to this is expressed or implied. Other such plant or apparatus may also be present but not shown. The Contractor is therefore advised to undertake their own investigation where the presence of any existing sewers, services, plant or apparatus may affect their operations.

Drawing Issue Status

INFORMATION

SYMMETRY PARK, KETTERING

POTENTIAL A509 DUALLING SCHEME WITH SITE ACCESS

Client

dbsymmetry

Date of 1st Issue	Designed	Drawn
09.10.17	TPA	TPA
A0 Scale	Checked	Approved
1:1000	JPH	JPH
Drawing Number		Revision
30062/2008/007		B

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Appendix 11.1 – Assessment of Construction Movements

A.11 Summary of Assessment

A.11.1 The construction activities that would generate the highest volume of daily trips would normally relate to:

i. movement of materials – removal off-site or import onto site;

ii. the construction of carriageway bitumen surfacing; or

iii. the casting of foundations for major buildings.

A.11.2 In the case of symmetry park, a general cut-fill balance has been achieved, hence there is no requirement for a major movement of material.

A.11.3 As the majority of the other activities would generally occur during the first phase, just the peak construction movements generated during this phase have been considered.

A.11.4 It has been assumed that the following major elements of the development will be constructed in Year 1 of the first phase:

i. on-site earthworks and landscaping – including construction of balancing ponds, and plot levelling;

ii. construction of the on-site drainage;

iii. construction of the access road and at-grade car parking; and

iv. an initial construction phase of a major building.

A.11.5 The construction traffic generation arising from these activities for the remainder of the development, to be implemented in other phases, would be less.

A.11.6 As some activities, would not occur simultaneously - for example, the construction of the Site access carriageway may prevent other construction activities on site that day - this assessment considers a realistic peak construction movement.

A.11.7 The movements generated by these activities are considered individually.

Earthworks

A.11.8 As there is the requirement for plot raising and the construction of large noise bunds, material arising during excavation is assumed not to be removed off-site. Notwithstanding, operatives completing these activities would generate travel movements.

A.11.9 This operation is likely to be programmed away from the winter months, to minimise the days lost to poor weather.

A.11.10 The daily movements are assumed to include:

i. fuel deliveries, vehicle movements and maintenance - assumed to be 3 heavy vehicle trips per day;

ii. the operatives' journeys to work trips - assumed to be 20 operatives, 10 car trips per day with 2 occupants per vehicle.

On-site Drainage

A.11.11 The majority of the main on-site drainage construction works are assumed to be undertaken during the first year. As on-site storage of materials will be limited, most of the drainage construction works are unlikely to generate high volumes of light or heavy vehicle movements on the surrounding highway network.

A.11.12 The daily movements are assumed to include:

i. deliveries of aggregate, pipe materials and concrete supplies for drainage chambers – assumed to be 2 heavy vehicle trips per day;

ii. operatives' journeys to work trips - assumed to be 6 operatives, 3 car trips per day with 2 occupants per vehicle.

Carriageway Construction

A.11.13 For the purposes of deriving a reasonable worst case assessment, it is assumed that there would be a total of 12 operatives on site, with one paving machine receiving deliveries every 10 minutes through the day for ten hours. The daily movements are assumed to include:

- a total of 60 heavy vehicle trips delivering the bitumen;
- operatives' journeys to work trips - assumed to be 12 operatives, 6 car trips per day with 2 occupants per vehicle.

A.11.14 The number of days when the carriageway construction operation is on-going at full capacity and generating these higher levels of flow are anticipated to be limited due to the limited area of carriageway construction required. It is thought that these flows would be generated on carriageway construction work on around 10 days in total across the whole project.

Initial Construction Works to a Major Building

A.11.15 The main construction of the buildings is assumed to start after the first year. However, it has been assumed that initial groundworks and foundation construction could start to one of the smaller units in the first year – assumed to be Unit 7 on Illustrative Masterplan shown in Appendix 1.1, closest to the access.

A.11.16 For the purposes of deriving a reasonable worst case assessment, the works are assumed to consist of the casting of an average 750mm slab, across an area of 11,500m^2. This base is assumed to be cast in 20 days.

A.11.17 It is assumed that there would be a total of 30 operatives on site, receiving concrete deliveries every 10 minutes through the day for ten hours. The daily movements are assumed to include:

- a total of 100 heavy vehicle trips delivering the concrete (6m^3 per wagon);
- operatives' journeys to work trips (assumed to be 30 operatives, 15 car trips per day with 2 occupants per vehicle).

Total movements

A.11.18 As part of the Construction Access Strategy, a Construction Environment Management Plan (CEMP) will be prepared. The CEMP will set out symmetry park's aim to reduce the transport impacts of the construction traffic servicing the Site, and the movements associated with construction waste. This CEMP will apply to all the individual construction sites within the Development, and will manage when activities generating significant levels of movement on the network may occur.

A.11.19 As such, the peak movements associated with each of the above activities will be managed: the developer will control when the carriageway and building construction peak delivery days may occur, only one of these activities may occur on one day.

A.11.20 As such, for the purposes of this assessment it is assumed that the CEMP would programme the works so that the initial carriageway construction works would not occur at the same time as the concrete casting operation.

A.11.21 The assumed first phase peak Daily Construction traffic flows are summarised in Table 11.1:

Table 11.1 – Peak Daily Construction Movements

Activity	Max Light Vehicle Movts / day			Max Heavy Vehicle Movts / day			Max Total Vehicle Movts / day		
	In	Out	Tot	In	Out	Tot	In	Out	Tot
Earthworks	10	10	20	3	3	6	13	13	26
On-Site Drainage	3	3	6	2	2	4	5	5	10
Carriageway construction	0	0	0	0	0	0	0	0	0
Building construction	15	15	30	100	100	200	115	115	230
Total	**28**	**28**	**56**	**105**	**105**	**210**	**133**	**133**	**266**

A.11.22 These flows are used to assess the impact of the Development on the surrounding highway network.

Appendix 12.1 – TRICS Output

Calculation Reference: AUDIT-706704-160422-0408

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 02 - EMPLOYMENT
Category : F - WAREHOUSING (COMMERCIAL)
VEHICLES

Selected regions and areas:

02	SOUTH EAST		
	HF	HERTFORDSHIRE	1 days
04	EAST ANGLIA		
	SF	SUFFOLK	2 days
05	EAST MIDLANDS		
	LN	LINCOLNSHIRE	1 days
06	WEST MIDLANDS		
	WM	WEST MIDLANDS	1 days
09	NORTH		
	CB	CUMBRIA	1 days
	TV	TEES VALLEY	2 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Filtering Stage 2 selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: Gross floor area
Actual Range: 387 to 80066 (units: sqm)
Range Selected by User: 387 to 80066 (units: sqm)

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/08 to 18/09/15

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Monday	1 days
Tuesday	3 days
Wednesday	1 days
Thursday	2 days
Friday	1 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	8 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaking using machines.

Selected Locations:

Edge of Town Centre	1
Suburban Area (PPS6 Out of Centre)	2
Edge of Town	5

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

Industrial Zone	6
Commercial Zone	1
No Sub Category	1

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Filtering Stage 3 selection:

Use Class:

B8	8 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 1 mile:

1,001 to 5,000	2 days
5,001 to 10,000	2 days
10,001 to 15,000	3 days
25,001 to 50,000	1 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

5,001 to 25,000	3 days
25,001 to 50,000	1 days
100,001 to 125,000	1 days
125,001 to 250,000	1 days
250,001 to 500,000	1 days
500,001 or More	1 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.6 to 1.0	3 days
1.1 to 1.5	5 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

Yes	1 days
No	7 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

LIST OF SITES relevant to selection parameters

1 CB-02-F-01 DOMINO'S PIZZA CUMBRIA
COWPER ROAD
GILWILLY IND. ESTATE
PENRITH
Edge of Town
Industrial Zone
Total Gross floor area: 2950 sqm
Survey date: TUESDAY 10/06/14 Survey Type: MANUAL

2 HF-02-F-03 DISTRIBUTION CEN. HERTFORDSHIRE
HATFIELD BUSINESS CEN.
HATFIELD
Edge of Town
Commercial Zone
Total Gross floor area: 80000 sqm
Survey date: THURSDAY 10/07/08 Survey Type: MANUAL

3 LN-02-F-01 BOOK SERVICE LINCOLNSHIRE
TRENT ROAD
GRANTHAM
Edge of Town
No Sub Category
Total Gross floor area: 32300 sqm
Survey date: MONDAY 29/11/10 Survey Type: MANUAL

4 SF-02-F-02 WAREHOUSING SUFFOLK
WALTON ROAD
FELIXSTOWE
Suburban Area (PPS6 Out of Centre)
Industrial Zone
Total Gross floor area: 22270 sqm
Survey date: THURSDAY 11/07/13 Survey Type: MANUAL

5 SF-02-F-03 ROAD HAULAGE SUFFOLK
CENTRAL AVENUE
WARREN HEATH
IPSWICH
Edge of Town
Industrial Zone
Total Gross floor area: 4700 sqm
Survey date: FRIDAY 18/09/15 Survey Type: MANUAL

6 TV-02-F-02 ARGOS WAREHOUSE TEES VALLEY
ROUNDHOUSE ROAD
FAVERDALE
DARLINGTON
Edge of Town
Industrial Zone
Total Gross floor area: 80066 sqm
Survey date: TUESDAY 07/10/08 Survey Type: MANUAL

7 TV-02-F-03 ELECTRICAL COMPONENTS TEES VALLEY
UNIT 8,NAVIGATOR COURT
STOCKTON-ON-TEES
Suburban Area (PPS6 Out of Centre)
Industrial Zone
Total Gross floor area: 387 sqm
Survey date: TUESDAY 28/06/11 Survey Type: MANUAL

8 WM-02-F-01 LEGETT LOGIS. WEST MIDLANDS
SAMPSON ROAD NORTH
BIRMINGHAM
Edge of Town Centre
Industrial Zone
Total Gross floor area: 4000 sqm
Survey date: WEDNESDAY 17/06/09 Survey Type: MANUAL

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

TRIP RATE for Land Use 02 - EMPLOYMENT/F - WAREHOUSING (COMMERCIAL)
VEHICLES
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 00:30									
00:30 - 01:00									
01:00 - 01:30									
01:30 - 02:00									
02:00 - 02:30									
02:30 - 03:00									
03:00 - 03:30									
03:30 - 04:00									
04:00 - 04:30									
04:30 - 05:00									
05:00 - 05:30	2	12610	0.012	2	12610	0.016	2	12610	0.028
05:30 - 06:00	2	12610	0.016	2	12610	0.020	2	12610	0.036
06:00 - 06:30	2	12610	0.020	2	12610	0.020	2	12610	0.040
06:30 - 07:00	2	12610	0.048	2	12610	0.040	2	12610	0.088
07:00 - 07:30	8	28334	0.031	8	28334	0.023	8	28334	0.054
07:30 - 08:00	8	28334	0.049	8	28334	0.031	8	28334	0.080
08:00 - 08:30	8	28334	0.026	8	28334	0.019	8	28334	0.045
08:30 - 09:00	8	28334	0.036	8	28334	0.022	8	28334	0.058
09:00 - 09:30	8	28334	0.036	8	28334	0.022	8	28334	0.058
09:30 - 10:00	8	28334	0.030	8	28334	0.023	8	28334	0.053
10:00 - 10:30	8	28334	0.026	8	28334	0.028	8	28334	0.054
10:30 - 11:00	8	28334	0.027	8	28334	0.024	8	28334	0.051
11:00 - 11:30	8	28334	0.022	8	28334	0.026	8	28334	0.048
11:30 - 12:00	8	28334	0.026	8	28334	0.023	8	28334	0.049
12:00 - 12:30	8	28334	0.032	8	28334	0.027	8	28334	0.059
12:30 - 13:00	8	28334	0.023	8	28334	0.027	8	28334	0.050
13:00 - 13:30	8	28334	0.043	8	28334	0.037	8	28334	0.080
13:30 - 14:00	8	28334	0.060	8	28334	0.042	8	28334	0.102
14:00 - 14:30	8	28334	0.037	8	28334	0.055	8	28334	0.092
14:30 - 15:00	8	28334	0.041	8	28334	0.045	8	28334	0.086
15:00 - 15:30	8	28334	0.033	8	28334	0.052	8	28334	0.085
15:30 - 16:00	8	28334	0.041	8	28334	0.044	8	28334	0.085
16:00 - 16:30	8	28334	0.033	8	28334	0.043	8	28334	0.076
16:30 - 17:00	8	28334	0.026	8	28334	0.048	8	28334	0.074
17:00 - 17:30	8	28334	0.017	8	28334	0.040	8	28334	0.057
17:30 - 18:00	8	28334	0.012	8	28334	0.034	8	28334	0.046
18:00 - 18:30	8	28334	0.011	8	28334	0.026	8	28334	0.037
18:30 - 19:00	8	28334	0.008	8	28334	0.022	8	28334	0.030
19:00 - 19:30	2	12610	0.044	2	12610	0.024	2	12610	0.068
19:30 - 20:00	2	12610	0.012	2	12610	0.028	2	12610	0.040
20:00 - 20:30	2	12610	0.008	2	12610	0.020	2	12610	0.028
20:30 - 21:00	2	12610	0.016	2	12610	0.024	2	12610	0.040
21:00 - 21:30	1	22270	0.018	1	22270	0.009	1	22270	0.027
21:30 - 22:00	1	22270	0.013	1	22270	0.009	1	22270	0.022
22:00 - 22:30									
22:30 - 23:00									
23:00 - 23:30									
23:30 - 24:00									
Total Rates:			0.933			0.993			1.926

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.

Parameter summary

Trip rate parameter range selected:	387 - 80066 (units: sqm)
Survey date date range:	01/01/08 - 18/09/15
Number of weekdays (Monday-Friday):	8
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	0

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 02 - EMPLOYMENT/F - WAREHOUSING (COMMERCIAL)
TAXIS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 00:30									
00:30 - 01:00									
01:00 - 01:30									
01:30 - 02:00									
02:00 - 02:30									
02:30 - 03:00									
03:00 - 03:30									
03:30 - 04:00									
04:00 - 04:30									
04:30 - 05:00									
05:00 - 05:30	2	12610	0.000	2	12610	0.000	2	12610	0.000
05:30 - 06:00	2	12610	0.000	2	12610	0.000	2	12610	0.000
06:00 - 06:30	2	12610	0.000	2	12610	0.000	2	12610	0.000
06:30 - 07:00	2	12610	0.000	2	12610	0.000	2	12610	0.000
07:00 - 07:30	8	28334	0.000	8	28334	0.000	8	28334	0.000
07:30 - 08:00	8	28334	0.000	8	28334	0.000	8	28334	0.000
08:00 - 08:30	8	28334	0.000	8	28334	0.000	8	28334	0.000
08:30 - 09:00	8	28334	0.000	8	28334	0.000	8	28334	0.000
09:00 - 09:30	8	28334	0.000	8	28334	0.000	8	28334	0.000
09:30 - 10:00	8	28334	0.000	8	28334	0.000	8	28334	0.000
10:00 - 10:30	8	28334	0.000	8	28334	0.000	8	28334	0.000
10:30 - 11:00	8	28334	0.000	8	28334	0.000	8	28334	0.000
11:00 - 11:30	8	28334	0.000	8	28334	0.000	8	28334	0.000
11:30 - 12:00	8	28334	0.000	8	28334	0.000	8	28334	0.000
12:00 - 12:30	8	28334	0.000	8	28334	0.000	8	28334	0.000
12:30 - 13:00	8	28334	0.000	8	28334	0.000	8	28334	0.000
13:00 - 13:30	8	28334	0.000	8	28334	0.000	8	28334	0.000
13:30 - 14:00	8	28334	0.000	8	28334	0.000	8	28334	0.000
14:00 - 14:30	8	28334	0.000	8	28334	0.000	8	28334	0.000
14:30 - 15:00	8	28334	0.000	8	28334	0.000	8	28334	0.000
15:00 - 15:30	8	28334	0.000	8	28334	0.000	8	28334	0.000
15:30 - 16:00	8	28334	0.000	8	28334	0.000	8	28334	0.000
16:00 - 16:30	8	28334	0.000	8	28334	0.000	8	28334	0.000
16:30 - 17:00	8	28334	0.000	8	28334	0.000	8	28334	0.000
17:00 - 17:30	8	28334	0.000	8	28334	0.000	8	28334	0.000
17:30 - 18:00	8	28334	0.000	8	28334	0.000	8	28334	0.000
18:00 - 18:30	8	28334	0.000	8	28334	0.000	8	28334	0.000
18:30 - 19:00	8	28334	0.000	8	28334	0.000	8	28334	0.000
19:00 - 19:30	2	12610	0.000	2	12610	0.000	2	12610	0.000
19:30 - 20:00	2	12610	0.000	2	12610	0.000	2	12610	0.000
20:00 - 20:30	2	12610	0.000	2	12610	0.000	2	12610	0.000
20:30 - 21:00	2	12610	0.000	2	12610	0.000	2	12610	0.000
21:00 - 21:30	1	22270	0.000	1	22270	0.000	1	22270	0.000
21:30 - 22:00	1	22270	0.000	1	22270	0.000	1	22270	0.000
22:00 - 22:30									
22:30 - 23:00									
23:00 - 23:30									
23:30 - 24:00									
Total Rates:			0.000			0.000			0.000

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.

Parameter summary

Trip rate parameter range selected:	387 - 80066 (units: sqm)
Survey date date range:	01/01/08 - 18/09/15
Number of weekdays (Monday-Friday):	8
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	0

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 02 - EMPLOYMENT/F - WAREHOUSING (COMMERCIAL)
OGVS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 00:30									
00:30 - 01:00									
01:00 - 01:30									
01:30 - 02:00									
02:00 - 02:30									
02:30 - 03:00									
03:00 - 03:30									
03:30 - 04:00									
04:00 - 04:30									
04:30 - 05:00									
05:00 - 05:30	2	12610	0.008	2	12610	0.016	2	12610	0.024
05:30 - 06:00	2	12610	0.004	2	12610	0.020	2	12610	0.024
06:00 - 06:30	2	12610	0.012	2	12610	0.020	2	12610	0.032
06:30 - 07:00	2	12610	0.020	2	12610	0.036	2	12610	0.056
07:00 - 07:30	8	28334	0.007	8	28334	0.007	8	28334	0.014
07:30 - 08:00	8	28334	0.009	8	28334	0.007	8	28334	0.016
08:00 - 08:30	8	28334	0.005	8	28334	0.005	8	28334	0.010
08:30 - 09:00	8	28334	0.009	8	28334	0.007	8	28334	0.016
09:00 - 09:30	8	28334	0.011	8	28334	0.009	8	28334	0.020
09:30 - 10:00	8	28334	0.007	8	28334	0.008	8	28334	0.015
10:00 - 10:30	8	28334	0.012	8	28334	0.010	8	28334	0.022
10:30 - 11:00	8	28334	0.010	8	28334	0.010	8	28334	0.020
11:00 - 11:30	8	28334	0.011	8	28334	0.013	8	28334	0.024
11:30 - 12:00	8	28334	0.007	8	28334	0.010	8	28334	0.017
12:00 - 12:30	8	28334	0.009	8	28334	0.007	8	28334	0.016
12:30 - 13:00	8	28334	0.008	8	28334	0.007	8	28334	0.015
13:00 - 13:30	8	28334	0.010	8	28334	0.008	8	28334	0.018
13:30 - 14:00	8	28334	0.012	8	28334	0.004	8	28334	0.016
14:00 - 14:30	8	28334	0.014	8	28334	0.008	8	28334	0.022
14:30 - 15:00	8	28334	0.011	8	28334	0.007	8	28334	0.018
15:00 - 15:30	8	28334	0.011	8	28334	0.010	8	28334	0.021
15:30 - 16:00	8	28334	0.011	8	28334	0.007	8	28334	0.018
16:00 - 16:30	8	28334	0.011	8	28334	0.006	8	28334	0.017
16:30 - 17:00	8	28334	0.011	8	28334	0.007	8	28334	0.018
17:00 - 17:30	8	28334	0.007	8	28334	0.006	8	28334	0.013
17:30 - 18:00	8	28334	0.003	8	28334	0.010	8	28334	0.013
18:00 - 18:30	8	28334	0.002	8	28334	0.005	8	28334	0.007
18:30 - 19:00	8	28334	0.002	8	28334	0.008	8	28334	0.010
19:00 - 19:30	2	12610	0.012	2	12610	0.024	2	12610	0.036
19:30 - 20:00	2	12610	0.004	2	12610	0.020	2	12610	0.024
20:00 - 20:30	2	12610	0.004	2	12610	0.020	2	12610	0.024
20:30 - 21:00	2	12610	0.008	2	12610	0.016	2	12610	0.024
21:00 - 21:30	1	22270	0.013	1	22270	0.004	1	22270	0.017
21:30 - 22:00	1	22270	0.013	1	22270	0.000	1	22270	0.013
22:00 - 22:30									
22:30 - 23:00									
23:00 - 23:30									
23:30 - 24:00									
Total Rates:			0.308			0.362			0.670

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.

Parameter summary

Trip rate parameter range selected:	387 - 80066 (units: sqm)
Survey date date range:	01/01/08 - 18/09/15
Number of weekdays (Monday-Friday):	8
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	0

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 02 - EMPLOYMENT/F - WAREHOUSING (COMMERCIAL)
PSVS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 00:30									
00:30 - 01:00									
01:00 - 01:30									
01:30 - 02:00									
02:00 - 02:30									
02:30 - 03:00									
03:00 - 03:30									
03:30 - 04:00									
04:00 - 04:30									
04:30 - 05:00									
05:00 - 05:30	2	12610	0.000	2	12610	0.000	2	12610	0.000
05:30 - 06:00	2	12610	0.000	2	12610	0.000	2	12610	0.000
06:00 - 06:30	2	12610	0.000	2	12610	0.000	2	12610	0.000
06:30 - 07:00	2	12610	0.000	2	12610	0.000	2	12610	0.000
07:00 - 07:30	8	28334	0.000	8	28334	0.000	8	28334	0.000
07:30 - 08:00	8	28334	0.000	8	28334	0.000	8	28334	0.000
08:00 - 08:30	8	28334	0.000	8	28334	0.000	8	28334	0.000
08:30 - 09:00	8	28334	0.000	8	28334	0.000	8	28334	0.000
09:00 - 09:30	8	28334	0.000	8	28334	0.000	8	28334	0.000
09:30 - 10:00	8	28334	0.000	8	28334	0.000	8	28334	0.000
10:00 - 10:30	8	28334	0.000	8	28334	0.000	8	28334	0.000
10:30 - 11:00	8	28334	0.000	8	28334	0.000	8	28334	0.000
11:00 - 11:30	8	28334	0.000	8	28334	0.000	8	28334	0.000
11:30 - 12:00	8	28334	0.000	8	28334	0.000	8	28334	0.000
12:00 - 12:30	8	28334	0.000	8	28334	0.000	8	28334	0.000
12:30 - 13:00	8	28334	0.000	8	28334	0.000	8	28334	0.000
13:00 - 13:30	8	28334	0.000	8	28334	0.000	8	28334	0.000
13:30 - 14:00	8	28334	0.000	8	28334	0.000	8	28334	0.000
14:00 - 14:30	8	28334	0.000	8	28334	0.000	8	28334	0.000
14:30 - 15:00	8	28334	0.000	8	28334	0.000	8	28334	0.000
15:00 - 15:30	8	28334	0.000	8	28334	0.000	8	28334	0.000
15:30 - 16:00	8	28334	0.000	8	28334	0.000	8	28334	0.000
16:00 - 16:30	8	28334	0.000	8	28334	0.000	8	28334	0.000
16:30 - 17:00	8	28334	0.000	8	28334	0.000	8	28334	0.000
17:00 - 17:30	8	28334	0.000	8	28334	0.000	8	28334	0.000
17:30 - 18:00	8	28334	0.000	8	28334	0.000	8	28334	0.000
18:00 - 18:30	8	28334	0.000	8	28334	0.000	8	28334	0.000
18:30 - 19:00	8	28334	0.000	8	28334	0.000	8	28334	0.000
19:00 - 19:30	2	12610	0.000	2	12610	0.000	2	12610	0.000
19:30 - 20:00	2	12610	0.000	2	12610	0.000	2	12610	0.000
20:00 - 20:30	2	12610	0.000	2	12610	0.000	2	12610	0.000
20:30 - 21:00	2	12610	0.000	2	12610	0.000	2	12610	0.000
21:00 - 21:30	1	22270	0.000	1	22270	0.000	1	22270	0.000
21:30 - 22:00	1	22270	0.000	1	22270	0.000	1	22270	0.000
22:00 - 22:30									
22:30 - 23:00									
23:00 - 23:30									
23:30 - 24:00									
Total Rates:			0.000			0.000			0.000

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.

Parameter summary

Trip rate parameter range selected:	387 - 80066 (units: sqm)
Survey date date range:	01/01/08 - 18/09/15
Number of weekdays (Monday-Friday):	8
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	0

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 02 - EMPLOYMENT/F - WAREHOUSING (COMMERCIAL)
CYCLISTS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 00:30									
00:30 - 01:00									
01:00 - 01:30									
01:30 - 02:00									
02:00 - 02:30									
02:30 - 03:00									
03:00 - 03:30									
03:30 - 04:00									
04:00 - 04:30									
04:30 - 05:00									
05:00 - 05:30	2	12610	0.000	2	12610	0.000	2	12610	0.000
05:30 - 06:00	2	12610	0.000	2	12610	0.000	2	12610	0.000
06:00 - 06:30	2	12610	0.000	2	12610	0.000	2	12610	0.000
06:30 - 07:00	2	12610	0.004	2	12610	0.000	2	12610	0.004
07:00 - 07:30	8	28334	0.000	8	28334	0.000	8	28334	0.000
07:30 - 08:00	8	28334	0.004	8	28334	0.000	8	28334	0.004
08:00 - 08:30	8	28334	0.000	8	28334	0.000	8	28334	0.000
08:30 - 09:00	8	28334	0.001	8	28334	0.000	8	28334	0.001
09:00 - 09:30	8	28334	0.001	8	28334	0.000	8	28334	0.001
09:30 - 10:00	8	28334	0.001	8	28334	0.000	8	28334	0.001
10:00 - 10:30	8	28334	0.000	8	28334	0.001	8	28334	0.001
10:30 - 11:00	8	28334	0.000	8	28334	0.001	8	28334	0.001
11:00 - 11:30	8	28334	0.000	8	28334	0.000	8	28334	0.000
11:30 - 12:00	8	28334	0.000	8	28334	0.002	8	28334	0.002
12:00 - 12:30	8	28334	0.000	8	28334	0.000	8	28334	0.000
12:30 - 13:00	8	28334	0.000	8	28334	0.002	8	28334	0.002
13:00 - 13:30	8	28334	0.004	8	28334	0.002	8	28334	0.006
13:30 - 14:00	8	28334	0.006	8	28334	0.008	8	28334	0.014
14:00 - 14:30	8	28334	0.001	8	28334	0.007	8	28334	0.008
14:30 - 15:00	8	28334	0.000	8	28334	0.001	8	28334	0.001
15:00 - 15:30	8	28334	0.001	8	28334	0.001	8	28334	0.002
15:30 - 16:00	8	28334	0.002	8	28334	0.003	8	28334	0.005
16:00 - 16:30	8	28334	0.000	8	28334	0.002	8	28334	0.002
16:30 - 17:00	8	28334	0.000	8	28334	0.001	8	28334	0.001
17:00 - 17:30	8	28334	0.000	8	28334	0.004	8	28334	0.004
17:30 - 18:00	8	28334	0.000	8	28334	0.000	8	28334	0.000
18:00 - 18:30	8	28334	0.000	8	28334	0.001	8	28334	0.001
18:30 - 19:00	8	28334	0.001	8	28334	0.001	8	28334	0.002
19:00 - 19:30	2	12610	0.000	2	12610	0.000	2	12610	0.000
19:30 - 20:00	2	12610	0.000	2	12610	0.000	2	12610	0.000
20:00 - 20:30	2	12610	0.000	2	12610	0.000	2	12610	0.000
20:30 - 21:00	2	12610	0.000	2	12610	0.000	2	12610	0.000
21:00 - 21:30	1	22270	0.000	1	22270	0.000	1	22270	0.000
21:30 - 22:00	1	22270	0.000	1	22270	0.000	1	22270	0.000
22:00 - 22:30									
22:30 - 23:00									
23:00 - 23:30									
23:30 - 24:00									
Total Rates:			0.026			0.037			0.063

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

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Number of Sundays:	0
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Appendix 13.1 – 2021 Test Flow Assessment

30062 - Symmetry Park, Kettering

Prepared By: T Althorpe
Checked By: M Balding

Site Access Roundabout - 2021 Flows

Taken from Tables 12.1, 12.2 and 13.1 of the Transport Assessment:

AM Peak Trip Generation	In	Out	Total
Table 12.1 - Vehs	62	41	103
Table 12.2 - HVs	14	12	26
TOTAL PCU	76	53	129

PM Peak Trip Generation	In	Out	Total
Table 12.1 - Vehs	29	74	103
Table 12.2 - HVs	10	16	26
TOTAL PCU	39	90	129

Table 13.1		
	N	83%
	S	17%

	N	65%
	S	35%

2021 Flows - PCU - from TA 48.90% Deveolopment Completed

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	63	0	63
Arm B - Site Access (E)	44	0	9	53
Arm C - A509 (S)	0	13	0	13
Total	44	76	9	129

2021 Flows - PCU - from TA

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	25	0	25
Arm B - Site Access (E)	59	0	32	90
Arm C - A509 (S)	0	14	0	14
Total	59	39	32	129

2021 DM Flows - PCU

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Total
Arm A - A509 (N)	0	92	242	229	96	196	855
Arm B - Boughton (NE)	3	0	32	27	13	20	96
Arm C - A14 (E)	432	113	0	114	87	10	757
Arm D - A509 (SE)	428	40	36	0	18	731	1252
Arm E - Isham Road (SW)	56	7	83	0	1	34	180
Arm F - A14 (W)	678	115	1	730	8	32	1565
Total	1597	367	394	1100	224	1023	4706

2021 DM Flows - PCU

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Total
Arm A - A509 (N)	0	10	584	400	65	571	1630
Arm B - Boughton (NE)	11	0	102	44	13	103	274
Arm C - A14 (E)	297	25	0	93	72	16	502
Arm D - A509 (SE)	418	7	24	0	8	772	1228
Arm E - Isham Road (SW)	54	3	72	17	0	58	204
Arm F - A14 (W)	513	28	0	714	9	28	1293
Total	1293	73	782	1268	167	1548	5132

2021 DM Flows - PCU

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	100	993	1093
Arm B - Station Road (E)	159	0	189	348
Arm C - A509 (S)	1086	127	4	1217
Total	1245	227	1187	2659

2021 DM Flows - PCU

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	1	177	1026	1204
Arm B - Station Road (E)	153	0	133	287
Arm C - A509 (S)	1046	194	3	1244
Total	1201	371	1162	2735

2021 DM Flows - PCU

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)			1100	1100
Arm B - Site Access (E)				0
Arm C - A509 (S)	1245			1245
Total	1245	0	1100	2345

2021 DM Flows - PCU

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)			1268	1268
Arm B - Site Access (E)				0
Arm C - A509 (S)	1201			1201
Total	1201	0	1268	2469

2021 DS Flows - PCU

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	63	1100	1163
Arm B - Site Access (E)	44	0	9	53
Arm C - A509 (S)	1245	13	0	1258
Total	1289	76	1109	2474

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	25	1268	1294
Arm B - Site Access (E)	59	0	32	90
Arm C - A509 (S)	1201	14	0	1215
Total	1259	39	1300	2598

2021 DS Flows - PCU - 15 Minute Period

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	16	275	291
Arm B - Site Access (E)	11	0	2	13
Arm C - A509 (S)	311	3	0	314
Total	322	19	277	619

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	6	317	323
Arm B - Site Access (E)	15	0	8	23
Arm C - A509 (S)	300	3	0	304
Total	315	10	325	650

30062 - symmetry park, Kettering

A509 / Station Road

Tempro Factor	AM Peak	PM Peak
2017 - 2021	1.0751	1.0732

Prepared By: T Althorpe
Checked By: P Cullen

2017 Observed

All Vehicles

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	92	855	947
Arm B - Station Road (E)	146	0	174	320
Arm C - A509 (S)	933	114	4	1051
Total	1079	206	1033	2318

All Vehicles

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	1	162	908	1071
Arm B - Station Road (E)	139	0	123	262
Arm C - A509 (S)	939	179	3	1121
Total	1079	341	1034	2454

HGV

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	1	69	70
Arm B - Station Road (E)	2	0	2	4
Arm C - A509 (S)	77	4	0	81
Total	79	5	71	155

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	3	48	51
Arm B - Station Road (E)	4	0	1	5
Arm C - A509 (S)	36	2	0	38
Total	40	5	49	94

HGV%

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C
Arm A - A509 (N)	#DIV/0!	1%	8%
Arm B - Station Road (E)	1%	#DIV/0!	1%
Arm C - A509 (S)	8%	4%	0%

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C
Arm A - A509 (N)	0%	2%	5%
Arm B - Station Road (E)	3%	#DIV/0!	1%
Arm C - A509 (S)	4%	1%	0%

PCU

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	93	924	1017
Arm B - Station Road (E)	148	0	176	324
Arm C - A509 (S)	1010	118	4	1132
Total	1158	211	1104	2473

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	1	165	956	1122
Arm B - Station Road (E)	143	0	124	267
Arm C - A509 (S)	975	181	3	1159
Total	1119	346	1083	2548

DIRECT

AM Peak 08:00 - 08:15	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	14	223	237
Arm B - Station Road (E)	36	0	56	92
Arm C - A509 (S)	256	36	1	293
Total	292	50	280	622

PM Peak 17:00 - 17:15	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	1	42	250	293
Arm B - Station Road (E)	32	0	37	69
Arm C - A509 (S)	251	40	2	293
Total	284	82	289	655

AM Peak 08:15 - 08:30	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	26	249	275
Arm B - Station Road (E)	39	0	39	78
Arm C - A509 (S)	262	23	0	285
Total	301	49	288	638

PM Peak 17:15 - 17:30	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	46	230	276
Arm B - Station Road (E)	52	0	40	92
Arm C - A509 (S)	223	54	1	278
Total	275	100	271	646

AM Peak 08:30 - 08:45	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	24	238	262
Arm B - Station Road (E)	40	0	46	86
Arm C - A509 (S)	241	29	1	271
Total	281	53	285	619

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	38	228	266
Arm B - Station Road (E)	30	0	23	53
Arm C - A509 (S)	248	49	0	297
Total	278	87	251	616

AM Peak 08:45 - 09:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	29	214	243
Arm B - Station Road (E)	33	0	35	68
Arm C - A509 (S)	251	30	2	283
Total	284	59	251	594

PM Peak 17:45 - 18:45	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	39	248	287
Arm B - Station Road (E)	29	0	24	53
Arm C - A509 (S)	253	38	0	291
Total	282	77	272	631

2021 Do Minimum Flows

PCU

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	100	993	1093
Arm B - Station Road (E)	159	0	189	348
Arm C - A509 (S)	1086	127	4	1217
Total	1245	227	1187	2659

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	1	177	1026	1204
Arm B - Station Road (E)	153	0	133	287
Arm C - A509 (S)	1046	194	3	1244
Total	1201	371	1162	2735

DIRECT

AM Peak 08:00 - 08:15	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	15	240	255
Arm B - Station Road (E)	39	0	60	99
Arm C - A509 (S)	275	39	1	315
Total	314	54	301	669

PM Peak 17:00 - 17:15	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	1	45	268	314
Arm B - Station Road (E)	34	0	40	74
Arm C - A509 (S)	269	43	2	314
Total	305	88	310	703

AM Peak 08:15 - 08:30	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	28	268	296
Arm B - Station Road (E)	42	0	42	84
Arm C - A509 (S)	282	25	0	306
Total	324	53	310	686

PM Peak 17:15 - 17:30	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	49	247	296
Arm B - Station Road (E)	56	0	43	99
Arm C - A509 (S)	239	58	1	298
Total	295	107	291	693

AM Peak 08:30 - 08:45	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	26	256	282
Arm B - Station Road (E)	43	0	49	92
Arm C - A509 (S)	259	31	1	291
Total	302	57	306	665

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	41	245	285
Arm B - Station Road (E)	32	0	25	57
Arm C - A509 (S)	266	53	0	319
Total	298	93	269	661

AM Peak 08:45 - 09:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	31	230	261
Arm B - Station Road (E)	35	0	38	73
Arm C - A509 (S)	270	32	2	304
Total	305	63	270	639

PM Peak 17:45 - 18:45	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	42	266	308
Arm B - Station Road (E)	31	0	26	57
Arm C - A509 (S)	272	41	0	312
Total	303	83	292	677

Development Flows

2031 Flows - PCU

AM Peak 08:45 - 09:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)		26	12	38
Arm B - Station Road (E)	19			19
Arm C - A509 (S)	27			27
Total	46	26	12	84

2031 Flows - PCU

Arm B - Station Road (E)	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)		51	40	91
Arm B - Station Road (E)	38			38
Arm C - A509 (S)	6			6
Total	44	51	40	135

2021 Flows - PCU 48.93% Completed

AM Peak 08:45 - 09:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)		13	6	19
Arm B - Station Road (E)	9			9
Arm C - A509 (S)	13			13
Total	23	13	6	41

2021 Flows - PCU

PM Peak 17:45 - 18:45	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)		25	20	45
Arm B - Station Road (E)	19			19
Arm C - A509 (S)	3			3
Total	22	25	20	66

2021 Do Something

PCU

AM Peak 08:45 - 09:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	113	999	1112
Arm B - Station Road (E)	168	0	189	358
Arm C - A509 (S)	1099	127	4	1230
Total	1267	240	1193	2700

PCU

PM Peak 17:45 - 18:45	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	1	202	1046	1249
Arm B - Station Road (E)	172	0	133	305
Arm C - A509 (S)	1049	194	3	1247
Total	1222	396	1182	2801

DIRECT

AM Peak 08:00 - 08:15	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	18	241	259
Arm B - Station Road (E)	41	0	60	101
Arm C - A509 (S)	279	39	1	318
Total	320	57	302	679

PM Peak 17:00 - 17:15	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	1	51	273	326
Arm B - Station Road (E)	39	0	40	79
Arm C - A509 (S)	270	43	2	315
Total	310	94	315	719

AM Peak 08:15 - 08:30	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	31	269	300
Arm B - Station Road (E)	44	0	42	86
Arm C - A509 (S)	285	25	0	310
Total	329	56	311	696

PM Peak 17:15 - 17:30	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	56	252	307
Arm B - Station Road (E)	60	0	43	103
Arm C - A509 (S)	240	58	1	299
Total	301	114	296	710

AM Peak 08:30 - 08:45	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	29	257	286
Arm B - Station Road (E)	45	0	49	95
Arm C - A509 (S)	262	31	1	295
Total	308	60	308	676

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	47	250	297
Arm B - Station Road (E)	37	0	25	62
Arm C - A509 (S)	267	53	0	319
Total	304	100	274	678

AM Peak 08:45 - 09:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	34	232	266
Arm B - Station Road (E)	38	0	38	75
Arm C - A509 (S)	273	32	2	308
Total	311	67	271	649

PM Peak 17:45 - 18:45	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	48	271	319
Arm B - Station Road (E)	36	0	26	62
Arm C - A509 (S)	272	41	0	313
Total	308	89	297	694

30062 - symmetry park, Kettering

A509 / Orlingbury Road

Tempro Factor	AM Peak	PM Peak
2017 - 2021	1.0751	1.0732

Prepared By: T Althorpe
Checked By: P Cullen

2017 Observed

All Vehicles

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	37	962	60	1059
Arm B - A509 (S)	941	0	4	945
Arm C - Orlingbury Road (W)	65	25	0	90
Total	1043	987	64	2094

All Vehicles

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	18	946	55	1019
Arm B - A509 (S)	1004	0	9	1013
Arm C - Orlingbury Road (W)	100	10	0	110
Total	1122	956	64	2142

HGV

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	72	0	72
Arm B - A509 (S)	79	0	2	81
Arm C - Orlingbury Road (W)	2	0	0	2
Total	81	72	2	155

HGV

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	52	0	52
Arm B - A509 (S)	36	0	1	37
Arm C - Orlingbury Road (W)	0	0	0	0
Total	36	52	1	89

HGV%

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C
Arm A - A509 (N)	0%	7%	0%
Arm B - A509 (S)	8%	#DIV/0!	50%
Arm C - Orlingbury Road (W)	3%	0%	#DIV/0!

HGV%

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C
Arm A - A509 (N)	0%	5%	0%
Arm B - A509 (S)	4%	#DIV/0!	11%
Arm C - Orlingbury Road (W)	0%	0%	#DIV/0!

PCU

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	37	1034	60	1131
Arm B - A509 (S)	1020	0	6	1026
Arm C - Orlingbury Road (W)	67	25	0	92
Total	1124	1059	66	2249

PCU

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	18	998	55	1071
Arm B - A509 (S)	1040	0	10	1050
Arm C - Orlingbury Road (W)	100	10	0	110
Total	1158	1008	65	2231

DIRECT

AM Peak 08:00 - 08:15	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	14	261	17	292
Arm B - A509 (S)	243	0	2	245
Arm C - Orlingbury Road (W)	22	10	0	32
Total	279	271	19	569

DIRECT

PM Peak 17:00 - 17:15	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	5	274	19	298
Arm B - A509 (S)	255	0	2	257
Arm C - Orlingbury Road (W)	25	4	0	29
Total	285	278	21	584

AM Peak 08:15 - 08:30	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	5	276	14	295
Arm B - A509 (S)	275	0	0	275
Arm C - Orlingbury Road (W)	14	4	0	18
Total	294	280	14	588

PM Peak 17:15 - 17:30	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	7	242	17	266
Arm B - A509 (S)	244	0	2	246
Arm C - Orlingbury Road (W)	25	3	0	28
Total	276	245	19	540

AM Peak 08:30 - 08:45	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	6	256	16	278
Arm B - A509 (S)	245	0	0	245
Arm C - Orlingbury Road (W)	20	8	0	28
Total	271	264	16	551

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	5	233	11	249
Arm B - A509 (S)	265	0	3	268
Arm C - Orlingbury Road (W)	28	2	0	30
Total	298	235	14	547

AM Peak 08:45 - 09:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	12	241	13	266
Arm B - A509 (S)	257	0	4	261
Arm C - Orlingbury Road (W)	11	3	0	14
Total	280	244	17	541

PM Peak 17:45 - 18:45	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	1	249	8	258
Arm B - A509 (S)	276	0	3	279
Arm C - Orlingbury Road (W)	22	1	0	23
Total	299	250	11	560

2021 Do Minimum Flows

PCU

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	40	1112	65	1216
Arm B - A509 (S)	1097	0	6	1103
Arm C - Orlingbury Road (W)	72	27	0	99
Total	1208	1139	71	2418

PCU

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	19	1071	59	1149
Arm B - A509 (S)	1116	0	11	1127
Arm C - Orlingbury Road (W)	107	11	0	118
Total	1243	1082	70	2394

DIRECT

AM Peak 08:00 - 08:15	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	15	281	18	314
Arm B - A509 (S)	261	0	2	263
Arm C - Orlingbury Road (W)	24	11	0	34
Total	300	291	20	612

DIRECT

PM Peak 17:00 - 17:15	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	5	294	20	320
Arm B - A509 (S)	274	0	2	276
Arm C - Orlingbury Road (W)	27	4	0	31
Total	306	298	23	627

AM Peak 08:15 - 08:30	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	5	297	15	317
Arm B - A509 (S)	296	0	0	296
Arm C - Orlingbury Road (W)	15	4	0	19
Total	316	301	15	632

PM Peak 17:15 - 17:30	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	8	260	18	285
Arm B - A509 (S)	262	0	2	264
Arm C - Orlingbury Road (W)	27	3	0	30
Total	296	263	20	580

AM Peak 08:30 - 08:45	Arm A	Arm B	Arm C	Total

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Total

Arm A - A509 (N)	6	275	17	299
Arm B - A509 (S)	263	0	0	263
Arm C - Orlingbury Road (W)	22	9	0	30
Total	291	284	17	592

Arm A - A509 (N)	5	250	12	267
Arm B - A509 (S)	284	0	3	288
Arm C - Orlingbury Road (W)	30	2	0	32
Total	320	252	15	587

AM Peak 08:45 - 09:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	13	259	14	286
Arm B - A509 (S)	276	0	4	281
Arm C - Orlingbury Road (W)	12	3	0	15
Total	301	262	18	582

PM Peak 17:45 - 18:45	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	1	267	9	277
Arm B - A509 (S)	296	0	3	299
Arm C - Orlingbury Road (W)	24	1	0	25
Total	321	268	12	601

Development Flows

2031 Flows - PCU

AM Peak 08:45 - 09:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)		10	2	12
Arm B - A509 (S)	27			27
Arm C - Orlingbury Road (W)				0
Total	27	10	2	39

2031 Flows - PCU

Arm B - A509 (S)	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)		39	1	40
Arm B - A509 (S)	6			6
Arm C - Orlingbury Road (W)				0
Total	6	39	1	46

2021 Flows - PCU 48.93% Completed

AM Peak 08:45 - 09:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)		5	1	6
Arm B - A509 (S)	13			13
Arm C - Orlingbury Road (W)				0
Total	13	5	1	19

2021 Flows - PCU

PM Peak 17:45 - 18:45	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)		19	0	20
Arm B - A509 (S)	3			3
Arm C - Orlingbury Road (W)				0
Total	3	19	0	23

2021 Do Something

PCU

AM Peak 08:45 - 09:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	40	1117	65	1222
Arm B - A509 (S)	1110	0	6	1116
Arm C - Orlingbury Road (W)	72	27	0	99
Total	1222	1143	72	2437

PCU

PM Peak 17:45 - 18:45	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	19	1090	60	1169
Arm B - A509 (S)	1119	0	11	1130
Arm C - Orlingbury Road (W)	107	11	0	118
Total	1246	1101	70	2417

DIRECT

AM Peak 08:00 - 08:15	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	15	282	19	315
Arm B - A509 (S)	265	0	2	267
Arm C - Orlingbury Road (W)	24	11	0	34
Total	303	293	21	617

DIRECT

PM Peak 17:00 - 17:15	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	5	299	21	325
Arm B - A509 (S)	274	0	2	277
Arm C - Orlingbury Road (W)	27	4	0	31
Total	307	303	23	632

AM Peak 08:15 - 08:30	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	5	298	15	319
Arm B - A509 (S)	299	0	0	299
Arm C - Orlingbury Road (W)	15	4	0	19
Total	319	302	15	637

PM Peak 17:15 - 17:30	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	8	264	18	290
Arm B - A509 (S)	263	0	2	265
Arm C - Orlingbury Road (W)	27	3	0	30
Total	297	268	21	585

AM Peak 08:30 - 08:45	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	6	276	17	300
Arm B - A509 (S)	267	0	0	267
Arm C - Orlingbury Road (W)	22	9	0	30
Total	295	285	17	597

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	5	255	12	272
Arm B - A509 (S)	285	0	3	288
Arm C - Orlingbury Road (W)	30	2	0	32
Total	321	257	15	593

AM Peak 08:45 - 09:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	13	260	14	287
Arm B - A509 (S)	280	0	4	284
Arm C - Orlingbury Road (W)	12	3	0	15
Total	304	264	19	586

PM Peak 17:45 - 18:45	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	1	272	9	282
Arm B - A509 (S)	297	0	3	300
Arm C - Orlingbury Road (W)	24	1	0	25
Total	322	273	12	607

30062 - symmetry park, Kettering

Tempro Factor	AM Peak	PM Peak
2017 - 2021	1.0751	1.0732

Prepared By: T Althorpe
Checked By: P Cullen

A509 / Finedon Station Road

2017 Observed

All Vehicles

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	47	955	1002
Arm B - Finedon Station Rd (E)	28	0	281	309
Arm C - A509 (S)	890	111	0	1001
Total	918	158	1236	2312

All Vehicles

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	39	916	955
Arm B - Finedon Station Rd (E)	13	1	109	123
Arm C - A509 (S)	981	318	0	1299
Total	994	358	1025	2377

HGV

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	1	73	74
Arm B - Finedon Station Rd (E)	7	0	5	12
Arm C - A509 (S)	78	5	0	83
Total	85	6	78	169

HGV

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	1	49	50
Arm B - Finedon Station Rd (E)	0	0	2	2
Arm C - A509 (S)	33	4	0	37
Total	33	5	51	89

HGV%

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C
Arm A - A509 (N)	#DIV/0!	2%	8%
Arm B - Finedon Station Rd (E)	25%	#DIV/0!	2%
Arm C - A509 (S)	9%	5%	#DIV/0!

HGV%

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C
Arm A - A509 (N)	#DIV/0!	3%	5%
Arm B - Finedon Station Rd (E)	0%	0%	2%
Arm C - A509 (S)	3%	1%	#DIV/0!

PCU

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	48	1028	1076
Arm B - Finedon Station Rd (E)	35	0	286	321
Arm C - A509 (S)	968	116	0	1084
Total	1003	164	1314	2481

PCU

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	40	965	1005
Arm B - Finedon Station Rd (E)	13	1	111	125
Arm C - A509 (S)	1014	322	0	1336
Total	1027	363	1076	2466

DIRECT

AM Peak 08:00 - 08:15	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	5	271	276
Arm B - Finedon Station Rd (E)	9	0	79	88
Arm C - A509 (S)	261	25	0	286
Total	270	30	350	650

DIRECT

PM Peak 17:00 - 17:15	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	14	264	278
Arm B - Finedon Station Rd (E)	4	0	23	27
Arm C - A509 (S)	251	69	0	320
Total	255	83	287	625

AM Peak 08:15 - 08:30	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	7	278	285
Arm B - Finedon Station Rd (E)	7	0	90	97
Arm C - A509 (S)	237	31	0	268
Total	244	38	368	650

PM Peak 17:15 - 17:30	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	10	233	243
Arm B - Finedon Station Rd (E)	4	1	38	43
Arm C - A509 (S)	262	90	0	352
Total	266	101	271	638

AM Peak 08:30 - 08:45	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	20	249	269
Arm B - Finedon Station Rd (E)	8	0	54	62
Arm C - A509 (S)	247	22	0	269
Total	255	42	303	600

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	11	215	226
Arm B - Finedon Station Rd (E)	3	0	30	33
Arm C - A509 (S)	248	72	0	320
Total	251	83	245	579

AM Peak 08:45 - 09:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	16	230	246
Arm B - Finedon Station Rd (E)	11	0	63	74
Arm C - A509 (S)	223	38	0	261
Total	234	54	293	581

PM Peak 17:45 - 18:45	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	5	253	258
Arm B - Finedon Station Rd (E)	2	0	20	22
Arm C - A509 (S)	253	91	0	344
Total	255	96	273	624

2021 Do Minimum Flows

PCU

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	52	1105	1157
Arm B - Finedon Station Rd (E)	38	0	307	345
Arm C - A509 (S)	1041	125	0	1165
Total	1078	176	1413	2667

PCU

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	43	1036	1079
Arm B - Finedon Station Rd (E)	14	1	119	134
Arm C - A509 (S)	1088	346	0	1434
Total	1102	390	1155	2647

DIRECT

AM Peak 08:00 - 08:15	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	5	291	297
Arm B - Finedon Station Rd (E)	10	0	85	95
Arm C - A509 (S)	281	27	0	307
Total	290	32	376	699

DIRECT

PM Peak 17:00 - 17:15	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	15	283	298
Arm B - Finedon Station Rd (E)	4	0	25	29
Arm C - A509 (S)	269	74	0	343
Total	274	89	308	671

AM Peak 08:15 - 08:30	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	8	299	306
Arm B - Finedon Station Rd (E)	8	0	97	104
Arm C - A509 (S)	255	33	0	288
Total	262	41	396	699

PM Peak 17:15 - 17:30	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	11	250	261
Arm B - Finedon Station Rd (E)	4	1	41	46
Arm C - A509 (S)	281	97	0	378
Total	285	108	291	685

AM Peak 08:30 - 08:45	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	22	268	289
Arm B - Finedon Station Rd (E)	9	0	58	67
Arm C - A509 (S)	266	24	0	289
Total	274	45	326	645

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	12	231	243
Arm B - Finedon Station Rd (E)	3	0	32	35
Arm C - A509 (S)	266	77	0	343
Total	269	89	263	621

AM Peak 08:45 - 09:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	17	247	264
Arm B - Finedon Station Rd (E)	12	0	68	80
Arm C - A509 (S)	240	41	0	281
Total	252	58	315	625

PM Peak 17:45 - 18:45	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	5	272	277
Arm B - Finedon Station Rd (E)	2	0	21	24
Arm C - A509 (S)	272	98	0	369
Total	274	103	293	670

Development Flows

2031 Flows - PCU

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)		3	7	10
Arm B - Finedon Station Rd (E)	2			2
Arm C - A509 (S)	27			27
Total	29	3	7	39

2031 Flows - PCU

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)		11	28	39
Arm B - Finedon Station Rd (E)	1			1
Arm C - A509 (S)	5			5
Total	6	11	28	45

2021 Flows - PCU 48.93% Completed

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)		1	3	5
Arm B - Finedon Station Rd (E)	1			1
Arm C - A509 (S)	13			13
Total	14	1	3	19

2021 Flows - PCU

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)		5	14	19
Arm B - Finedon Station Rd (E)	0			0
Arm C - A509 (S)	2			2
Total	3	5	14	22

2021 Do Something

PCU

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	53	1109	1162
Arm B - Finedon Station Rd (E)	39	0	307	346
Arm C - A509 (S)	1054	125	0	1179
Total	1093	178	1416	2686

PCU

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	48	1049	1098
Arm B - Finedon Station Rd (E)	14	1	119	135
Arm C - A509 (S)	1091	346	0	1436
Total	1105	395	1168	2669

DIRECT

AM Peak 08:00 - 08:15	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	6	292	298
Arm B - Finedon Station Rd (E)	10	0	85	95
Arm C - A509 (S)	284	27	0	311
Total	294	33	377	704

DIRECT

PM Peak 17:00 - 17:15	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	16	287	303
Arm B - Finedon Station Rd (E)	4	0	25	29
Arm C - A509 (S)	270	74	0	344
Total	274	90	311	676

AM Peak 08:15 - 08:30	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	8	300	308
Arm B - Finedon Station Rd (E)	8	0	97	105
Arm C - A509 (S)	258	33	0	291
Total	266	41	396	704

PM Peak 17:15 - 17:30	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	12	253	266
Arm B - Finedon Station Rd (E)	4	1	41	46
Arm C - A509 (S)	282	97	0	378
Total	286	110	294	690

AM Peak 08:30 - 08:45	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	22	269	290
Arm B - Finedon Station Rd (E)	9	0	58	67
Arm C - A509 (S)	269	24	0	293
Total	278	46	327	650

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	13	234	247
Arm B - Finedon Station Rd (E)	3	0	32	36
Arm C - A509 (S)	267	77	0	344
Total	270	90	266	627

AM Peak 08:45 - 09:00	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	18	248	266
Arm B - Finedon Station Rd (E)	12	0	68	80
Arm C - A509 (S)	243	41	0	284
Total	255	58	316	629

PM Peak 17:45 - 18:45	Arm A	Arm B	Arm C	Total
Arm A - A509 (N)	0	7	275	282
Arm B - Finedon Station Rd (E)	2	0	21	24
Arm C - A509 (S)	272	98	0	370
Total	274	104	296	675

30062 - symmetry park, Kettering

Tempro Factor	AM Peak	PM Peak
2017 - 2021	1.0751	1.0732

Prepared By: T Althorpe
Checked By: P Cullen

A509/A510

2017 Observed

All Vehicles

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	0	266	394	579	1239
Arm B - Wellingborough Rd (NE)	40	0	52	71	46	209
Arm C - A510 Northern Way (E)	214	16	1	32	311	574
Arm D - Harrowden Road (S)	424	9	82	0	36	551
Arm E - A509 Niort Way (W)	445	8	281	31	0	765
Total	1123	33	682	528	972	3338

PCU

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	1	0	165	390	392	948
Arm B - Wellingborough Rd (NE)	19	0	35	33	23	110
Arm C - A510 Northern Way (E)	317	39	1	82	375	814
Arm D - Harrowden Road (S)	422	58	79	0	29	588
Arm E - A509 Niort Way (W)	577	37	196	42	0	852
Total	1336	134	476	547	819	3312

HGV

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	0	20	6	54	80
Arm B - Wellingborough Rd (NE)	0	0	2	0	0	2
Arm C - A510 Northern Way (E)	12	0	0	1	25	38
Arm D - Harrowden Road (S)	14	0	1	0	1	16
Arm E - A509 Niort Way (W)	53	0	18	1	0	72
Total	79	0	41	8	80	208

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	0	12	3	37	52
Arm B - Wellingborough Rd (NE)	0	0	0	2	1	3
Arm C - A510 Northern Way (E)	5	0	0	0	9	14
Arm D - Harrowden Road (S)	5	0	0	0	0	5
Arm E - A509 Niort Way (W)	29	0	7	0	0	36
Total	39	0	19	5	47	110

HGV%

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Arm D	Arm E
Arm A - A509 Pytchely Road (N)	#DIV/0!	#DIV/0!	8%	2%	9%
Arm B - Wellingborough Rd (NE)	0%	#DIV/0!	4%	0%	0%
Arm C - A510 Northern Way (E)	6%	0%	0%	3%	8%
Arm D - Harrowden Road (S)	3%	0%	1%	#DIV/0!	3%
Arm E - A509 Niort Way (W)	12%	0%	6%	3%	#DIV/0!

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Arm D	Arm E
Arm A - A509 Pytchely Road (N)	0%	#DIV/0!	7%	1%	9%
Arm B - Wellingborough Rd (NE)	0%	#DIV/0!	0%	6%	4%
Arm C - A510 Northern Way (E)	2%	0%	0%	0%	2%
Arm D - Harrowden Road (S)	1%	0%	0%	#DIV/0!	0%
Arm E - A509 Niort Way (W)	5%	0%	4%	0%	#DIV/0!

PCU

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	0	286	400	633	1319
Arm B - Wellingborough Rd (NE)	40	0	54	71	46	211
Arm C - A510 Northern Way (E)	226	16	1	33	336	612
Arm D - Harrowden Road (S)	438	9	83	0	37	567
Arm E - A509 Niort Way (W)	498	8	299	32	0	837
Total	1202	33	723	536	1052	3546

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	1	0	177	393	429	1000
Arm B - Wellingborough Rd (NE)	19	0	35	35	24	113
Arm C - A510 Northern Way (E)	322	39	1	82	384	828
Arm D - Harrowden Road (S)	427	58	79	0	29	593
Arm E - A509 Niort Way (W)	606	37	203	42	0	888
Total	1375	134	495	552	866	3422

DIRECT

AM Peak 08:00 - 08:15	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	0	59	119	170	348
Arm B - Wellingborough Rd (NE)	13	0	16	21	9	59
Arm C - A510 Northern Way (E)	59	1	0	9	78	147
Arm D - Harrowden Road (S)	119	0	23	0	11	153
Arm E - A509 Niort Way (W)	132	1	65	15	0	213
Total	323	2	163	164	268	920

PM Peak 17:00 - 17:15	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	0	52	103	106	261
Arm B - Wellingborough Rd (NE)	6	0	11	4	3	24
Arm C - A510 Northern Way (E)	90	10	0	22	133	255
Arm D - Harrowden Road (S)	94	16	14	0	6	130
Arm E - A509 Niort Way (W)	163	13	47	9	0	232
Total	353	39	124	138	248	902

AM Peak 08:15 - 08:30	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	0	90	90	163	343
Arm B - Wellingborough Rd (NE)	12	0	20	23	11	66
Arm C - A510 Northern Way (E)	65	4	0	6	83	158
Arm D - Harrowden Road (S)	110	2	18	0	8	138
Arm E - A509 Niort Way (W)	119	2	87	10	0	218
Total	306	8	215	129	265	923

PM Peak 17:15 - 17:30	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	0	38	101	116	255
Arm B - Wellingborough Rd (NE)	4	0	9	9	7	29
Arm C - A510 Northern Way (E)	86	11	0	20	87	204
Arm D - Harrowden Road (S)	111	10	19	0	9	149
Arm E - A509 Niort Way (W)	142	5	48	12	0	207
Total	343	26	114	142	219	844

AM Peak 08:30 - 08:45	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	0	66	97	160	323
Arm B - Wellingborough Rd (NE)	13	0	7	15	20	55
Arm C - A510 Northern Way (E)	62	4	0	10	101	177
Arm D - Harrowden Road (S)	103	4	10	0	8	125
Arm E - A509 Niort Way (W)	128	3	75	1	0	207
Total	306	11	158	123	289	887

PM Peak 17:30 - 17:45	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	0	53	85	85	223
Arm B - Wellingborough Rd (NE)	5	0	8	6	6	25
Arm C - A510 Northern Way (E)	84	8	1	21	102	216
Arm D - Harrowden Road (S)	112	15	19	0	6	152
Arm E - A509 Niort Way (W)	150	10	46	12	0	218
Total	351	33	127	124	199	834

AM Peak 08:45 - 09:00	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	0	71	94	140	305
Arm B - Wellingborough Rd (NE)	2	0	11	12	6	31
Arm C - A510 Northern Way (E)	40	7	1	8	74	130
Arm D - Harrowden Road (S)	106	3	32	0	10	151
Arm E - A509 Niort Way (W)	119	2	72	6	0	199
Total	267	12	187	120	230	816

PM Peak 17:45 - 18:45	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	1	0	34	104	122	261
Arm B - Wellingborough Rd (NE)	4	0	7	16	8	35
Arm C - A510 Northern Way (E)	62	10	0	19	62	153
Arm D - Harrowden Road (S)	110	17	27	0	8	162
Arm E - A509 Niort Way (W)	151	9	62	9	0	231
Total	328	36	130	148	200	842

2021 Do Minimum Flows

PCU

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	0	307	430	681	1418
Arm B - Wellingborough Rd (NE)	43	0	58	76	49	227
Arm C - A510 Northern Way (E)	243	17	1	35	361	658
Arm D - Harrowden Road (S)	471	10	89	0	40	610
Arm E - A509 Niort Way (W)	535	9	321	34	0	900
Total	1292	35	777	576	1131	3812

PCU

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	1	0	190	422	460	1073
Arm B - Wellingborough Rd (NE)	20	0	38	38	26	121
Arm C - A510 Northern Way (E)	346	42	1	88	412	889
Arm D - Harrowden Road (S)	458	62	85	0	31	636
Arm E - A509 Niort Way (W)	650	40	218	45	0	953
Total	1476	144	531	592	929	3672

DIRECT

AM Peak 08:00 - 08:15	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	0	63	128	183	374
Arm B - Wellingborough Rd (NE)	14	0	17	23	10	63
Arm C - A510 Northern Way (E)	63	1	0	10	84	158
Arm D - Harrowden Road (S)	128	0	25	0	12	164
Arm E - A509 Niort Way (W)	142	1	70	16	0	229
Total	347	2	175	176	288	989

PM Peak 17:00 - 17:15	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	0	56	111	114	280
Arm B - Wellingborough Rd (NE)	6	0	12	4	3	26
Arm C - A510 Northern Way (E)	97	11	0	24	143	274
Arm D - Harrowden Road (S)	101	17	15	0	6	140
Arm E - A509 Niort Way (W)	175	14	50	10	0	249
Total	379	42	133	148	266	968

AM Peak 08:15 - 08:30	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	0	97	97	175	369
Arm B - Wellingborough Rd (NE)	13	0	22	25	12	71
Arm C - A510 Northern Way (E)	70	4	0	6	89	170
Arm D - Harrowden Road (S)	118	2	19	0	9	148
Arm E - A509 Niort Way (W)	128	2	94	11	0	234
Total	329	9	231	139	285	992

PM Peak 17:15 - 17:30	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	0	41	108	124	274
Arm B - Wellingborough Rd (NE)	4	0	10	10	8	31
Arm C - A510 Northern Way (E)	92	12	0	21	93	219
Arm D - Harrowden Road (S)	119	11	20	0	10	160
Arm E - A509 Niort Way (W)	152	5	52	13	0	222
Total	368	28	122	152	235	906

AM Peak 08:30 - 08:45	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	0	71	104	172	347
Arm B - Wellingborough Rd (NE)	14	0	8	16	22	59
Arm C - A510 Northern Way (E)	67	4	0	11	109	190
Arm D - Harrowden Road (S)	111	4	11	0	9	134
Arm E - A509 Niort Way (W)	138	3	81	1	0	223
Total	329	12	170	132	311	954

PM Peak 17:30 - 17:45	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	0	57	91	91	239
Arm B - Wellingborough Rd (NE)	5	0	9	6	6	27
Arm C - A510 Northern Way (E)	90	9	1	23	109	232
Arm D - Harrowden Road (S)	120	16	20	0	6	163
Arm E - A509 Niort Way (W)	161	11	49	13	0	234
Total	377	35	136	133	214	895

AM Peak 08:45 - 09:00	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	0	76	101	151	328

PM Peak 17:45 - 18:45	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	1	0	36	112	131	280

Arm B - Wellingborough Rd (NE)	2	0	12	13	6	33
Arm C - A510 Northern Way (E)	43	8	1	9	80	140
Arm D - Harrowden Road (S)	114	3	34	0	11	162
Arm E - A509 Niort Way (W)	128	2	77	6	0	214
Total	287	13	201	129	247	877

Arm B - Wellingborough Rd (NE)	4	0	8	17	9	38
Arm C - A510 Northern Way (E)	67	11	0	20	67	164
Arm D - Harrowden Road (S)	118	18	29	0	9	174
Arm E - A509 Niort Way (W)	162	10	67	10	0	248
Total	352	39	140	159	215	904

Development Flows

2031 Flows - PCU

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)			1	3	4	8
Arm B - Wellingborough Rd (NE)	2					2
Arm C - A510 Northern Way (E)	8					8
Arm D - Harrowden Road (S)	4					4
Arm E - A509 Niort Way (W)	13					13
Total	27	0	1	3	4	35

2031 Flows - PCU

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)			4	9	15	28
Arm B - Wellingborough Rd (NE)						0
Arm C - A510 Northern Way (E)	1					1
Arm D - Harrowden Road (S)	1					1
Arm E - A509 Niort Way (W)	3					3
Total	5	0	4	9	15	33

2021 Flows - PCU 48.93% Completed

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)			0	1	2	4
Arm B - Wellingborough Rd (NE)	1					1
Arm C - A510 Northern Way (E)	4					4
Arm D - Harrowden Road (S)	2					2
Arm E - A509 Niort Way (W)	6					6
Total	13	0	0	1	2	17

2021 Flows - PCU

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)			2	4	7	14
Arm B - Wellingborough Rd (NE)						0
Arm C - A510 Northern Way (E)	0					0
Arm D - Harrowden Road (S)	0					0
Arm E - A509 Niort Way (W)	1					1
Total	2	0	2	4	7	16

2021 Do Something Flows

PCU

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	0	308	432	682	1422
Arm B - Wellingborough Rd (NE)	44	0	58	76	49	228
Arm C - A510 Northern Way (E)	247	17	1	35	361	662
Arm D - Harrowden Road (S)	473	10	89	0	40	612
Arm E - A509 Niort Way (W)	542	9	321	34	0	906
Total	1305	35	778	578	1133	3829

PCU

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	1	0	192	426	468	1087
Arm B - Wellingborough Rd (NE)	20	0	38	38	26	121
Arm C - A510 Northern Way (E)	346	42	1	88	412	889
Arm D - Harrowden Road (S)	459	62	85	0	31	637
Arm E - A509 Niort Way (W)	652	40	218	45	0	954
Total	1478	144	533	597	937	3689

DIRECT

AM Peak 08:00 - 08:15	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	0	64	128	183	375
Arm B - Wellingborough Rd (NE)	14	0	17	23	10	64
Arm C - A510 Northern Way (E)	64	1	0	10	84	159
Arm D - Harrowden Road (S)	128	0	25	0	12	165
Arm E - A509 Niort Way (W)	144	1	70	16	0	231
Total	351	2	175	177	289	993

DIRECT

PM Peak 17:00 - 17:15	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	0	56	112	116	284
Arm B - Wellingborough Rd (NE)	6	0	12	4	3	26
Arm C - A510 Northern Way (E)	97	11	0	24	143	274
Arm D - Harrowden Road (S)	101	17	15	0	6	140
Arm E - A509 Niort Way (W)	175	14	50	10	0	249
Total	379	42	134	149	268	972

AM Peak 08:15 - 08:30	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	0	97	97	176	370
Arm B - Wellingborough Rd (NE)	13	0	22	25	12	71
Arm C - A510 Northern Way (E)	71	4	0	6	89	171
Arm D - Harrowden Road (S)	119	2	19	0	9	149
Arm E - A509 Niort Way (W)	130	2	94	11	0	236
Total	332	9	231	139	285	997

PM Peak 17:15 - 17:30	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	0	41	109	126	277
Arm B - Wellingborough Rd (NE)	4	0	10	10	8	31
Arm C - A510 Northern Way (E)	92	12	0	21	93	219
Arm D - Harrowden Road (S)	119	11	20	0	10	160
Arm E - A509 Niort Way (W)	153	5	52	13	0	223
Total	369	28	123	153	237	910

AM Peak 08:30 - 08:45	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	0	71	105	173	348
Arm B - Wellingborough Rd (NE)	14	0	8	16	22	59
Arm C - A510 Northern Way (E)	68	4	0	11	109	191
Arm D - Harrowden Road (S)	111	4	11	0	9	135
Arm E - A509 Niort Way (W)	139	3	81	1	0	224
Total	332	12	170	133	311	958

PM Peak 17:30 - 17:45	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	0	57	92	93	243
Arm B - Wellingborough Rd (NE)	5	0	9	6	6	27
Arm C - A510 Northern Way (E)	90	9	1	23	109	232
Arm D - Harrowden Road (S)	120	16	20	0	6	163
Arm E - A509 Niort Way (W)	161	11	49	13	0	234
Total	377	35	137	134	215	899

AM Peak 08:45 - 09:00	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	0	76	101	151	329
Arm B - Wellingborough Rd (NE)	2	0	12	13	6	34
Arm C - A510 Northern Way (E)	44	8	1	9	80	141
Arm D - Harrowden Road (S)	114	3	34	0	11	163
Arm E - A509 Niort Way (W)	130	2	77	6	0	216
Total	290	13	201	129	248	882

PM Peak 17:45 - 18:45	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	1	0	37	113	133	284
Arm B - Wellingborough Rd (NE)	4	0	8	17	9	38
Arm C - A510 Northern Way (E)	67	11	0	20	67	164
Arm D - Harrowden Road (S)	118	18	29	0	9	174
Arm E - A509 Niort Way (W)	162	10	67	10	0	248
Total	353	39	140	160	216	908

30062 - symmetry park, Kettering

A509 / Holdenby / Carina Road / Orion Way

Tempro Factor	AM Peak	PM Peak
2017 - 2021	1.0751	1.0732

Prepared By: T Althorpe
Checked By: P Cullen

2017 Observed

All Vehicles

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	1	62	433	151	183	830
Arm B - Holdenby	47	1	21	12	22	103
Arm C - A509 (SE)	344	7	1	194	247	793
Arm D - Carina Road	84	35	159	0	65	343
Arm E - Orion Way	44	29	124	53	0	250
Total	520	134	738	410	517	2319

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	56	357	205	118	736
Arm B - Holdenby	63	0	40	28	21	152
Arm C - A509 (SE)	458	26	2	465	160	1111
Arm D - Carina Road	168	0	259	0	87	514
Arm E - Orion Way	50	15	339	75	0	479
Total	739	97	997	773	386	2992

HGV

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	3	19	0	3	25
Arm B - Holdenby	1	0	1	0	0	2
Arm C - A509 (SE)	11	0	0	1	17	29
Arm D - Carina Road	0	0	2	0	0	2
Arm E - Orion Way	2	1	26	0	0	29
Total	14	4	48	1	20	87

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	3	3	0	2	8
Arm B - Holdenby	0	0	0	0	0	0
Arm C - A509 (SE)	5	0	0	2	8	15
Arm D - Carina Road	1	0	2	0	1	4
Arm E - Orion Way	0	1	6	0	0	7
Total	6	4	11	2	11	34

HGV%

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Arm D	Arm E
Arm A - A509 Pytchely Road (N)	0%	5%	4%	0%	2%
Arm B - Holdenby	2%	0%	5%	0%	0%
Arm C - A509 (SE)	3%	0%	0%	1%	7%
Arm D - Carina Road	0%	0%	1%	#DIV/0!	0%
Arm E - Orion Way	5%	3%	21%	0%	#DIV/0!

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Arm D	Arm E
Arm A - A509 Pytchely Road (N)	#DIV/0!	5%	1%	0%	2%
Arm B - Holdenby	0%	#DIV/0!	0%	0%	0%
Arm C - A509 (SE)	1%	0%	0%	0%	5%
Arm D - Carina Road	1%	#DIV/0!	1%	#DIV/0!	1%
Arm E - Orion Way	0%	7%	2%	0%	#DIV/0!

PCU

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	1	65	452	151	186	855
Arm B - Holdenby	48	1	22	12	22	105
Arm C - A509 (SE)	355	7	1	195	264	822
Arm D - Carina Road	84	35	161	0	65	345
Arm E - Orion Way	46	30	150	53	0	279
Total	534	138	786	411	537	2406

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	59	360	205	120	744
Arm B - Holdenby	63	0	40	28	21	152
Arm C - A509 (SE)	463	26	2	467	168	1126
Arm D - Carina Road	169	0	261	0	88	518
Arm E - Orion Way	50	16	345	75	0	486
Total	745	101	1008	775	397	3026

DIRECT

AM Peak 08:00 - 08:15	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	11	108	36	60	215
Arm B - Holdenby	12	0	12	6	4	34
Arm C - A509 (SE)	115	0	0	57	67	239
Arm D - Carina Road	23	10	36	0	24	93
Arm E - Orion Way	6	5	36	13	0	60
Total	156	26	192	112	155	641

PM Peak 17:00 - 17:15	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	13	78	47	26	164
Arm B - Holdenby	26	0	15	10	7	58
Arm C - A509 (SE)	103	10	0	115	38	266
Arm D - Carina Road	55	0	70	0	18	143
Arm E - Orion Way	10	5	119	29	0	163
Total	194	28	282	201	89	794

AM Peak 08:15 - 08:30	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	1	17	120	30	50	218
Arm B - Holdenby	11	1	3	1	7	23
Arm C - A509 (SE)	92	0	1	46	60	199
Arm D - Carina Road	22	7	36	0	16	81
Arm E - Orion Way	12	6	40	13	0	71
Total	138	31	200	90	133	592

PM Peak 17:15 - 17:30	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	15	104	57	37	213
Arm B - Holdenby	13	0	12	4	5	34
Arm C - A509 (SE)	117	6	2	117	38	280
Arm D - Carina Road	34	0	51	0	27	112
Arm E - Orion Way	16	2	67	9	0	94
Total	180	23	236	187	107	733

AM Peak 08:30 - 08:45	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	11	120	36	31	198
Arm B - Holdenby	20	0	3	2	7	32
Arm C - A509 (SE)	74	2	0	58	69	203
Arm D - Carina Road	19	10	49	0	14	92
Arm E - Orion Way	9	6	41	9	0	65
Total	122	29	213	105	121	590

PM Peak 17:30 - 17:45	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	17	90	57	22	186
Arm B - Holdenby	8	0	5	8	2	23
Arm C - A509 (SE)	106	3	0	112	52	273
Arm D - Carina Road	25	0	76	0	16	117
Arm E - Orion Way	12	1	109	22	0	144
Total	151	21	280	199	92	743

AM Peak 08:45 - 09:00	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	26	104	49	45	224
Arm B - Holdenby	5	0	4	3	4	16
Arm C - A509 (SE)	74	5	0	34	68	181
Arm D - Carina Road	20	8	40	0	11	79
Arm E - Orion Way	19	13	33	18	0	83
Total	118	52	181	104	128	583

PM Peak 17:45 - 18:45	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	14	88	44	35	181
Arm B - Holdenby	16	0	8	6	7	37
Arm C - A509 (SE)	137	7	0	123	40	307
Arm D - Carina Road	55	0	64	0	27	146
Arm E - Orion Way	12	8	50	15	0	85
Total	220	29	210	188	109	756

2021 Do Minimum Flows

PCU

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	1	70	486	162	200	919
Arm B - Holdenby	52	1	24	13	24	113
Arm C - A509 (SE)	382	8	1	210	284	884
Arm D - Carina Road	90	38	173	0	70	371
Arm E - Orion Way	49	32	161	57	0	300
Total	574	148	845	442	577	2587

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	63	386	220	129	798
Arm B - Holdenby	68	0	43	30	23	163
Arm C - A509 (SE)	497	28	2	501	180	1208
Arm D - Carina Road	181	0	280	0	94	556
Arm E - Orion Way	54	17	370	80	0	522
Total	800	108	1082	832	426	3248

DIRECT

AM Peak 08:00 - 08:15	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	12	116	39	65	231
Arm B - Holdenby	13	0	13	6	4	37
Arm C - A509 (SE)	124	0	0	61	72	257
Arm D - Carina Road	25	11	39	0	26	100
Arm E - Orion Way	6	5	39	14	0	65
Total	168	28	206	120	167	689

PM Peak 17:00 - 17:15	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	14	84	50	28	176
Arm B - Holdenby	28	0	16	11	8	62
Arm C - A509 (SE)	111	11	0	123	41	285
Arm D - Carina Road	59	0	75	0	19	153
Arm E - Orion Way	11	5	128	31	0	175
Total	208	30	303	216	96	852

AM Peak 08:15 - 08:30	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	1	18	129	32	54	234
Arm B - Holdenby	12	1	3	1	8	25
Arm C - A509 (SE)	99	0	1	49	65	214
Arm D - Carina Road	24	8	39	0	17	87
Arm E - Orion Way	13	6	43	14	0	76
Total	148	33	215	97	143	636

PM Peak 17:15 - 17:30	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	16	112	61	40	229
Arm B - Holdenby	14	0	13	4	5	36
Arm C - A509 (SE)	126	6	2	126	41	300
Arm D - Carina Road	36	0	55	0	29	120
Arm E - Orion Way	17	2	72	10	0	101
Total	193	25	253	201	115	787

AM Peak 08:30 - 08:45	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	12	129	39	33	213
Arm B - Holdenby	22	0	3	2	8	34
Arm C - A509 (SE)	80	2	0	62	74	218
Arm D - Carina Road	20	11	53	0	15	99
Arm E - Orion Way	10	6	44	10	0	70
Total	131	31	229	113	130	634

PM Peak 17:30 - 17:45	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	18	97	61	24	200
Arm B - Holdenby	9	0	5	9	2	25
Arm C - A509 (SE)	114	3	0	120	56	293
Arm D - Carina Road	27	0	82	0	17	126
Arm E - Orion Way	13	1	117	24	0	155
Total	162	23	300	214	99	797

AM Peak 08:45 - 09:00	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	28	112	53	48	241
Arm B - Holdenby	5	0	4	3	4	17
Arm C - A509 (SE)	80	5	0	37	73	195
Arm D - Carina Road	22	9	43	0	12	85
Arm E - Orion Way	20	14	35	19	0	89
Total	127	56	195	112	138	627

PM Peak 17:45 - 18:45	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	15	94	47	38	194
Arm B - Holdenby	17	0	9	6	8	40
Arm C - A509 (SE)	147	8	0	132	43	329
Arm D - Carina Road	59	0	69	0	29	157
Arm E - Orion Way	13	9	54	16	0	91
Total	236	31	225	202	117	811

Development Flows

2031 Flows - PCU

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)			4		1	5
Arm B - Holdenby						0
Arm C - A509 (SE)	2				1	3
Arm D - Carina Road						0
Arm E - Orion Way						0
Total	2	0	4	0	2	8

2031 Flows - PCU

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)		1	1			2
Arm B - Holdenby						0
Arm C - A509 (SE)	4					4
Arm D - Carina Road						0
Arm E - Orion Way						0
Total	4	1	1	0	0	6

2021 Flows - PCU 48.93% Completed

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)			2		0	2
Arm B - Holdenby						0
Arm C - A509 (SE)	1				0	1
Arm D - Carina Road						0
Arm E - Orion Way						0
Total	1	0	2	0	1	4

2021 Flows - PCU

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)		0	0			1
Arm B - Holdenby						0
Arm C - A509 (SE)	2					2
Arm D - Carina Road						0
Arm E - Orion Way						0
Total	2	0	0	0	0	3

2021 Do Something Flows

PCU

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	1	70	488	162	200	922
Arm B - Holdenby	52	1	24	13	24	113
Arm C - A509 (SE)	383	8	1	210	284	885
Arm D - Carina Road	90	38	173	0	70	371
Arm E - Orion Way	49	32	161	57	0	300
Total	575	148	847	442	578	2591

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	64	387	220	129	799
Arm B - Holdenby	68	0	43	30	23	163
Arm C - A509 (SE)	499	28	2	501	180	1210
Arm D - Carina Road	181	0	280	0	94	556
Arm E - Orion Way	54	17	370	80	0	522
Total	801	109	1082	832	426	3250

DIRECT

AM Peak 08:00 - 08:15	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	12	117	39	65	232
Arm B - Holdenby	13	0	13	6	4	37
Arm C - A509 (SE)	124	0	0	61	72	257
Arm D - Carina Road	25	11	39	0	26	100
Arm E - Orion Way	6	5	39	14	0	65
Total	168	28	207	120	167	690

PM Peak 17:00 - 17:15	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	14	84	50	28	176
Arm B - Holdenby	28	0	16	11	8	62
Arm C - A509 (SE)	111	11	0	123	41	286
Arm D - Carina Road	59	0	75	0	19	153
Arm E - Orion Way	11	5	128	31	0	175
Total	209	30	303	216	96	853

AM Peak 08:15 - 08:30	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	1	18	130	32	54	235
Arm B - Holdenby	12	1	3	1	8	25
Arm C - A509 (SE)	99	0	1	49	65	214
Arm D - Carina Road	24	8	39	0	17	87
Arm E - Orion Way	13	6	43	14	0	76
Total	149	33	216	97	143	637

PM Peak 17:15 - 17:30	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	16	112	61	40	229
Arm B - Holdenby	14	0	13	4	5	36
Arm C - A509 (SE)	126	6	2	126	41	301
Arm D - Carina Road	36	0	55	0	29	120
Arm E - Orion Way	17	2	72	10	0	101
Total	194	25	253	201	115	787

AM Peak 08:30 - 08:45	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	12	130	39	33	213
Arm B - Holdenby	22	0	3	2	8	34
Arm C - A509 (SE)	80	2	0	62	74	219
Arm D - Carina Road	20	11	53	0	15	99
Arm E - Orion Way	10	6	44	10	0	70
Total	131	31	229	113	130	635

PM Peak 17:30 - 17:45	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	18	97	61	24	200
Arm B - Holdenby	9	0	5	9	2	25
Arm C - A509 (SE)	114	3	0	120	56	293
Arm D - Carina Road	27	0	82	0	17	126
Arm E - Orion Way	13	1	117	24	0	155
Total	163	23	301	214	99	798

AM Peak 08:45 - 09:00	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	28	112	53	49	241
Arm B - Holdenby	5	0	4	3	4	17
Arm C - A509 (SE)	80	5	0	37	73	195
Arm D - Carina Road	22	9	43	0	12	85
Arm E - Orion Way	20	14	35	19	0	89
Total	127	56	195	112	138	628

PM Peak 17:45 - 18:45	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A - A509 Pytchely Road (N)	0	15	95	47	38	194
Arm B - Holdenby	17	0	9	6	8	40
Arm C - A509 (SE)	148	8	0	132	43	330
Arm D - Carina Road	59	0	69	0	29	157
Arm E - Orion Way	13	9	54	16	0	91
Total	237	31	225	202	117	812

30062 - symmetry park, Kettering

Assessment of 2021 Do Minimum and Do Something Test 2 (C2/13 Test)

A14 Junction 9 Roundabout

Tempro Factor	AM Peak	PM Peak
2017 - 2021	1.0738	1.0734
2017 - 2031	1.2233	1.2248

Prepared By: M Balding

Checked By: J Hopkins

2021 Do Minimum Flows 2017 Flows * TEMPRO

Lights

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Total
Arm A - A509 (N)	0	11	148	176	60	287	682
Arm B - Boughton (NE)	8	0	30	26	9	18	90
Arm C - A14 (E)	372	194	1	73	70	1	711
Arm D - A509 (SE)	445	112	63	0	8	523	1150
Arm E - Isham Road (SW)	25	18	58	6	0	38	145
Arm F - A14 (W)	619	79	0	594	70	0	1362
Total	1467	414	301	875	216	867	4139

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Total
Arm A - A509 (N)	0	6	441	391	25	628	1491
Arm B - Boughton (NE)	19	0	116	53	21	67	276
Arm C - A14 (E)	240	23	0	53	49	0	365
Arm D - A509 (SE)	411	26	65	0	8	644	1154
Arm E - Isham Road (SW)	28	15	78	10	0	76	207
Arm F - A14 (W)	400	25	1	573	49	0	1049
Total	1099	94	702	1079	152	1415	4542

All Vehicles

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Total
Arm A - A509 (N)	0	11	163	184	66	311	734
Arm B - Boughton (NE)	8	0	32	27	9	18	93
Arm C - A14 (E)	387	194	1	91	70	1	744
Arm D - A509 (SE)	461	114	83	0	8	573	1238
Arm E - Isham Road (SW)	27	18	59	8	0	39	150
Arm F - A14 (W)	636	79	0	631	70	0	1416
Total	1517	417	338	941	221	943	4377

All Vehicles

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Total
Arm A - A509 (N)	0	6	443	395	26	638	1508
Arm B - Boughton (NE)	19	0	117	53	21	67	277
Arm C - A14 (E)	249	23	0	62	50	0	384
Arm D - A509 (SE)	415	26	69	0	8	664	1182
Arm E - Isham Road (SW)	28	15	78	10	0	77	208
Arm F - A14 (W)	416	25	1	608	50	0	1100
Total	1128	94	708	1127	156	1446	4660

HGV

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Total
Arm A - A509 (N)	0	0	15	8	5	25	53
Arm B - Boughton (NE)	0	0	2	1	0	0	3
Arm C - A14 (E)	15	0	0	18	0	0	33
Arm D - A509 (SE)	16	2	19	0	0	50	88
Arm E - Isham Road (SW)	2	0	1	1	0	1	5
Arm F - A14 (W)	17	0	0	38	0	0	55
Total	50	2	38	66	5	76	237

HGV

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Total
Arm A - A509 (N)	0	0	2	4	1	10	17
Arm B - Boughton (NE)	0	0	1	0	0	0	1
Arm C - A14 (E)	9	0	0	10	1	0	19
Arm D - A509 (SE)	4	0	3	0	0	20	28
Arm E - Isham Road (SW)	0	0	0	0	0	1	1
Arm F - A14 (W)	16	0	0	34	1	0	52
Total	29	0	6	48	3	31	118

PCU

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Total
Arm A - A509 (N)	0	11	178	191	71	336	787
Arm B - Boughton (NE)	8	0	34	28	9	18	97
Arm C - A14 (E)	402	194	1	110	70	1	777
Arm D - A509 (SE)	477	116	102	0	8	624	1326
Arm E - Isham Road (SW)	29	18	60	9	0	40	156
Arm F - A14 (W)	653	79	0	669	70	0	1471
Total	1568	419	376	1006	227	1019	4614

PCU

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Total
Arm A - A509 (N)	0	6	445	399	27	647	1525
Arm B - Boughton (NE)	19	0	118	53	21	67	278
Arm C - A14 (E)	258	23	0	72	52	0	404
Arm D - A509 (SE)	420	26	72	0	8	685	1210
Arm E - Isham Road (SW)	28	15	78	10	0	78	209
Arm F - A14 (W)	433	25	1	642	52	0	1152
Total	1157	94	715	1175	159	1477	4778

2021 Do Something with Full Devt

Lights

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Total
Arm A - A509 (N)	0	11	148	179	60	287	685
Arm B - Boughton (NE)	8	0	30	28	9	18	92
Arm C - A14 (E)	372	194	1	96	70	1	734
Arm D - A509 (SE)	446	112	64	0	8	565	1194
Arm E - Isham Road (SW)	25	18	58	7	0	38	146
Arm F - A14 (W)	619	79	0	649	70	0	1417
Total	1468	415	301	959	216	909	4268

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Total
Arm A - A509 (N)	0	6	441	392	25	628	1492
Arm B - Boughton (NE)	19	0	116	54	21	67	277
Arm C - A14 (E)	240	23	0	62	49	0	375
Arm D - A509 (SE)	414	26	67	0	8	713	1228
Arm E - Isham Road (SW)	28	15	78	10	0	76	207
Arm F - A14 (W)	400	25	1	585	49	0	1061
Total	1102	95	703	1103	153	1484	4640

All Vehicles

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Total
Arm A - A509 (N)	0	11	163	188	66	311	739
Arm B - Boughton (NE)	8	0	32	29	9	18	96
Arm C - A14 (E)	387	194	1	121	70	1	774
Arm D - A509 (SE)	462	115	83	0	8	633	1301
Arm E - Isham Road (SW)	27	18	59	8	0	39	151
Arm F - A14 (W)	636	79	0	703	70	0	1488
Total	1519	417	339	1050	221	1002	4549

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Total
Arm A - A509 (N)	0	6	443	396	26	638	1510
Arm B - Boughton (NE)	19	0	117	55	21	67	279
Arm C - A14 (E)	249	23	0	77	50	0	399
Arm D - A509 (SE)	419	27	70	0	8	752	1276
Arm E - Isham Road (SW)	28	15	78	10	0	77	208
Arm F - A14 (W)	416	25	1	626	50	0	1119
Total	1131	95	710	1164	156	1534	4791

HGV

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Total
Arm A - A509 (N)	0	0	15	8	5	25	54
Arm B - Boughton (NE)	0	0	2	2	0	0	4
Arm C - A14 (E)	15	0	0	25	0	0	40
Arm D - A509 (SE)	17	2	20	0	0	68	106
Arm E - Isham Road (SW)	2	0	1	1	0	1	6
Arm F - A14 (W)	17	0	0	54	0	0	71
Total	51	2	38	90	5	94	281

HGV

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Total
Arm A - A509 (N)	0	0	2	5	1	10	18
Arm B - Boughton (NE)	0	0	1	1	0	0	2
Arm C - A14 (E)	9	0	0	15	1	0	25
Arm D - A509 (SE)	5	0	4	0	0	39	48
Arm E - Isham Road (SW)	0	0	0	0	0	1	1
Arm F - A14 (W)	16	0	0	41	1	0	58
Total	30	0	7	61	3	50	152

PCU

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Total
Arm A - A509 (N)	0	11	178	196	71	336	792
Arm B - Boughton (NE)	8	0	34	31	9	18	100
Arm C - A14 (E)	402	194	1	147	70	1	814
Arm D - A509 (SE)	479	117	103	0	8	701	1407
Arm E - Isham Road (SW)	29	18	60	10	0	40	157
Arm F - A14 (W)	653	79	0	757	70	0	1559
Total	1570	420	377	1140	227	1096	4829

PCU

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Total
Arm A - A509 (N)	0	6	445	401	27	647	1527
Arm B - Boughton (NE)	19	0	118	56	21	67	281
Arm C - A14 (E)	258	23	0	92	52	0	424
Arm D - A509 (SE)	424	27	74	0	9	792	1325
Arm E - Isham Road (SW)	28	15	78	10	0	78	209
Arm F - A14 (W)	433	25	1	667	52	0	1177
Total	1161	95	717	1225	160	1584	4943

30062 - symmetry park, Kettering

Assessment of 2021 Do Minimum and Do Something Test 3

A14 Junction 9 Roundabout

Tempro Factor	AM Peak	PM Peak
2017 - 2021	1.0738	1.0734
2017 - 2031	1.2233	1.2248

Prepared By: M Balding

Checked By: J Hopkins
P Cullen
E Moran

2021 Do Minimum Flows — 2017 Flows * TEMPRO + Test 3 Additional

Lights

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Total
Arm A - A509 (N)	0	11	148	237	60	287	743
Arm B - Boughton (NE)	8	0	30	35	9	18	99
Arm C - A14 (E)	372	194	1	98	70	1	736
Arm D - A509 (SE)	579	145	83	0	10	681	1498
Arm E - Isham Road (SW)	25	18	58	9	0	38	147
Arm F - A14 (W)	619	79	0	800	70	0	1568
Total	1601	448	320	1180	218	1025	4792

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Total
Arm A - A509 (N)	0	6	441	537	25	628	1637
Arm B - Boughton (NE)	19	0	116	72	21	67	296
Arm C - A14 (E)	240	23	0	72	49	0	385
Arm D - A509 (SE)	528	33	84	0	10	828	1483
Arm E - Isham Road (SW)	28	15	78	13	0	76	211
Arm F - A14 (W)	400	25	1	787	49	0	1263
Total	1216	102	721	1482	155	1598	5274

All Vehicles

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Total
Arm A - A509 (N)	0	11	163	248	66	311	798
Arm B - Boughton (NE)	8	0	32	36	9	18	103
Arm C - A14 (E)	387	194	1	123	70	1	776
Arm D - A509 (SE)	600	148	108	0	10	747	1612
Arm E - Isham Road (SW)	27	18	59	10	0	39	153
Arm F - A14 (W)	636	79	0	851	70	0	1636
Total	1657	451	363	1268	223	1116	5078

All Vehicles

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Total
Arm A - A509 (N)	0	6	443	543	26	638	1656
Arm B - Boughton (NE)	19	0	117	72	21	67	297
Arm C - A14 (E)	249	23	0	86	50	0	408
Arm D - A509 (SE)	534	33	88	0	10	854	1519
Arm E - Isham Road (SW)	28	15	78	13	0	77	212
Arm F - A14 (W)	416	25	1	835	50	0	1327
Total	1247	102	728	1548	158	1635	5418

HGV

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Total
Arm A - A509 (N)	0	0	15	10	5	25	55
Arm B - Boughton (NE)	0	0	2	1	0	0	4
Arm C - A14 (E)	15	0	0	25	0	0	40
Arm D - A509 (SE)	21	3	25	0	0	66	115
Arm E - Isham Road (SW)	2	0	1	1	0	1	6
Arm F - A14 (W)	17	0	0	51	0	0	68
Total	55	3	43	88	5	91	287

HGV

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Total
Arm A - A509 (N)	0	0	2	6	1	10	19
Arm B - Boughton (NE)	0	0	1	0	0	0	1
Arm C - A14 (E)	9	0	0	13	1	0	23
Arm D - A509 (SE)	6	0	4	0	0	26	36
Arm E - Isham Road (SW)	0	0	0	0	0	1	1
Arm F - A14 (W)	16	0	0	47	1	0	64
Total	30	0	7	66	3	37	144

PCU

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Total
Arm A - A509 (N)	0	11	178	258	71	336	854
Arm B - Boughton (NE)	8	0	34	38	9	18	106
Arm C - A14 (E)	402	194	1	148	70	1	816
Arm D - A509 (SE)	621	151	133	0	10	812	1727
Arm E - Isham Road (SW)	29	18	60	12	0	40	159
Arm F - A14 (W)	653	79	0	902	70	0	1704
Total	1712	454	407	1356	229	1208	5365

PCU

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Total
Arm A - A509 (N)	0	6	445	549	27	647	1675
Arm B - Boughton (NE)	19	0	118	72	21	67	298
Arm C - A14 (E)	258	23	0	99	52	0	430
Arm D - A509 (SE)	539	33	92	0	10	880	1555
Arm E - Isham Road (SW)	28	15	78	13	0	78	213
Arm F - A14 (W)	433	25	1	882	52	0	1392
Total	1277	102	735	1615	161	1672	5562

2021 Do Something with Full Devt

Lights

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Total
Arm A - A509 (N)	0	12	169	260	69	327	836
Arm B - Boughton (NE)	9	0	34	40	10	21	113
Arm C - A14 (E)	423	221	1	136	80	1	863
Arm D - A509 (SE)	636	160	91	0	11	800	1699
Arm E - Isham Road (SW)	28	21	66	10	0	43	168
Arm F - A14 (W)	705	91	0	935	80	0	1809
Total	1801	505	362	1381	248	1191	5488

Lights

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Total
Arm A - A509 (N)	0	7	503	589	28	717	1844
Arm B - Boughton (NE)	22	0	132	81	24	76	336
Arm C - A14 (E)	274	26	0	92	56	0	448
Arm D - A509 (SE)	582	37	94	0	11	992	1716
Arm E - Isham Road (SW)	32	17	89	15	0	87	240
Arm F - A14 (W)	457	28	1	878	56	0	1421
Total	1367	115	820	1654	177	1871	6005

All Vehicles

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Total
Arm A - A509 (N)	0	12	186	272	75	355	900
Arm B - Boughton (NE)	9	0	37	42	10	21	118
Arm C - A14 (E)	440	221	1	171	80	1	915
Arm D - A509 (SE)	660	164	119	0	11	894	1847
Arm E - Isham Road (SW)	31	21	67	12	0	44	175
Arm F - A14 (W)	724	91	0	1010	80	0	1904
Total	1864	509	410	1508	254	1315	5859

All Vehicles

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Total
Arm A - A509 (N)	0	7	506	596	29	728	1866
Arm B - Boughton (NE)	22	0	134	82	24	76	338
Arm C - A14 (E)	284	26	0	113	58	0	481
Arm D - A509 (SE)	589	37	99	0	12	1044	1780
Arm E - Isham Road (SW)	32	17	89	15	0	88	241
Arm F - A14 (W)	475	28	1	938	58	0	1501
Total	1402	116	829	1744	181	1935	6207

HGV

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Total
Arm A - A509 (N)	0	0	17	12	6	28	64
Arm B - Boughton (NE)	0	0	2	2	0	0	5
Arm C - A14 (E)	17	0	0	35	0	0	52
Arm D - A509 (SE)	24	3	28	0	0	94	149
Arm E - Isham Road (SW)	2	0	1	2	0	1	7
Arm F - A14 (W)	20	0	0	76	0	0	95
Total	63	3	49	127	6	123	371

HGV

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Total
Arm A - A509 (N)	0	0	2	7	1	11	22
Arm B - Boughton (NE)	0	0	1	1	0	0	2
Arm C - A14 (E)	10	0	0	21	1	0	32
Arm D - A509 (SE)	7	0	5	0	0	52	64
Arm E - Isham Road (SW)	0	0	0	0	0	1	1
Arm F - A14 (W)	18	0	0	60	1	0	80
Total	35	0	9	90	4	64	202

PCU

AM Peak 08:00 - 09:00	Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Total
Arm A - A509 (N)	0	12	203	285	81	383	963
Arm B - Boughton (NE)	9	0	39	44	10	21	123
Arm C - A14 (E)	458	221	1	207	80	1	968
Arm D - A509 (SE)	684	167	147	0	11	988	1996
Arm E - Isham Road (SW)	33	21	69	14	0	45	181
Arm F - A14 (W)	744	91	0	1086	80	0	2000
Total	1927	512	459	1635	260	1438	6231

PCU

PM Peak 17:00 - 18:00	Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Total
Arm A - A509 (N)	0	7	508	603	31	739	1888
Arm B - Boughton (NE)	22	0	135	83	24	76	340
Arm C - A14 (E)	294	26	0	135	59	0	513
Arm D - A509 (SE)	596	37	104	0	12	1096	1845
Arm E - Isham Road (SW)	32	17	89	15	0	89	242
Arm F - A14 (W)	494	28	1	999	59	0	1580
Total	1437	116	837	1834	185	2000	6409

Appendix 13.2 – 2021 Plus Phase 1 Development (Test 1) Junction Capacity Assessment Output Files

Junctions 9

ARCADY 9 - Roundabout Module

Filename: 170124 - Site Access Roundabout.j9
Path: J:\30062 Land South of Kettering\Junctions 9\Site Access Roundabout\2021
Report generation date: 05/07/2017 15:15:23

Summary of junction performance

	AM					PM				
	Q (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Q (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)
	Site Access Roundabout - 2021 DS									
Arm A	3.1	9.54	0.76	A	12.45	5.1	14.38	0.84	B	13.76
Arm B	0.0	2.53	0.04	A		0.1	2.84	0.07	A	
Arm C	5.4	15.51	0.85	C		4.7	13.91	0.83	B	

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 Av. delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted Av.s.

File summary

File Description

Title	Site Access Roundabout
Location	
Site number	
Date	24/01/2017
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	PBA\mbalding
Description	2021 DS

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Av. delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perTimeSegment	s	-Min	perMin

Analysis Options

Calculate Q Percentiles	Calculate residual capacity	RFC Threshold	Av. Delay threshold (s)	Q threshold (PCU)
		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D1	2021 DS	AM	DIRECT	08:00	09:00	60	15
D2	2021 DS	PM	DIRECT	17:00	18:00	60	15

Analysis Set Details

ID	Name	Network flow scaling factor (%)
A1	Site Access Roundabout	100.000

Site Access Roundabout - 2021 DS, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm B - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs.

Junction Network

Junctions

Junction	Name	Junction Type	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	12.45	B

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
A	A509 (N)	
B	Site Access	
C	A509 (S)	

Roundabout Geometry

Arm	V (m)	E (m)	l' (m)	R (m)	D (m)	PHI (deg)	Exit only
A	3.50	6.25	15.5	40.0	50.0	45.0	
B	3.65	9.50	44.0	31.0	50.0	48.0	
C	3.65	6.25	19.0	20.0	50.0	50.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/TS)
A	0.572	387.014
B	0.698	560.867
C	0.558	384.765

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 period length (min)	Time segment length (min)
D1	2021 DS	AM	DIRECT	08:00	09:00	60	15

Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
A		✓	100.000
B		✓	100.000
C		✓	100.000

Origin-Destination Data

08:00 - 08:15

Demand (PCU/TS)

		To		
		A	B	C
From	A	0.00	16.00	275.00
	B	11.00	0.00	2.00
	C	311.00	3.00	0.00

08:15 - 08:30

Demand (PCU/TS)

		To		
		A	B	C
From	A	0.00	16.00	275.00
	B	11.00	0.00	2.00
	C	318.00	3.00	0.00

08:30 - 08:45

Demand (PCU/TS)

		To		
		A	B	C
From	A	0.00	16.00	275.00
	B	11.00	0.00	2.00
	C	318.00	3.00	0.00

08:45 - 09:00

Demand (PCU/TS)

		To		
		A	B	C
From	A	0.00	16.00	275.00
	B	11.00	0.00	2.00
	C	318.00	3.00	0.00

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS
A	0.76	9.54	3.1	A
B	0.04	2.53	0.0	A
C	0.85	15.51	5.4	C

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/TS)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
A	291.00	2.96	385.32	0.755	288.04	3.0	9.001	A
B	13.00	272.20	370.74	0.035	12.96	0.0	2.515	A
C	314.00	10.97	378.64	0.829	309.52	4.5	12.325	B

08:15 - 08:30

Arm	Total Demand (PCU/TS)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
A	291.00	2.99	385.30	0.755	290.94	3.0	9.521	A
B	13.00	274.94	368.83	0.035	13.00	0.0	2.528	A
C	321.00	11.00	378.62	0.848	320.31	5.2	15.148	C

08:30 - 08:45

Arm	Total Demand (PCU/TS)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
A	291.00	3.00	385.30	0.755	290.98	3.0	9.532	A
B	13.00	274.98	368.80	0.035	13.00	0.0	2.529	A
C	321.00	11.00	378.62	0.848	320.85	5.3	15.444	C

08:45 - 09:00

Arm	Total Demand (PCU/TS)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
A	291.00	3.00	385.30	0.755	290.99	3.1	9.536	A
B	13.00	274.99	368.79	0.035	13.00	0.0	2.529	A
C	321.00	11.00	378.62	0.848	320.93	5.4	15.511	C

Site Access Roundabout - 2021 DS, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm B - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs.

Junction Network

Junctions

Junction	Name	Junction Type	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	13.76	B

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D2	2021 DS	PM	DIRECT	17:00	18:00	60	15

Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
A		✓	100.000
B		✓	100.000
C		✓	100.000

Origin-Destination Data

17:00 - 17:15

Demand (PCU/TS)

		To		
		A	B	C
From	A	0.00	6.00	317.00
	B	15.00	0.00	8.00
	C	300.00	3.00	0.00

17:15 - 17:30

Demand (PCU/TS)

		To		
		A	B	C
From	A	0.00	6.00	317.00
	B	15.00	0.00	8.00
	C	309.00	3.00	0.00

17:30 - 17:45

Demand (PCU/TS)

		To		
		A	B	C
From	A	0.00	6.00	317.00
	B	15.00	0.00	8.00
	C	309.00	3.00	0.00

17:45 - 18:00

Demand (PCU/TS)

		To		
		A	B	C
From	A	0.00	6.00	317.00
	B	15.00	0.00	8.00
	C	309.00	3.00	0.00

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS
A	0.84	14.38	5.1	B
B	0.07	2.84	0.1	A
C	0.83	13.91	4.7	B

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (PCU/TS)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
A	323.00	2.96	385.32	0.838	318.25	4.7	12.649	B
B	23.00	312.34	342.71	0.067	22.93	0.1	2.814	A
C	303.00	14.95	376.42	0.805	299.13	3.9	11.146	B

17:15 - 17:30

Arm	Total Demand (PCU/TS)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
A	323.00	2.99	385.30	0.838	322.80	4.9	14.278	B
B	23.00	316.80	339.59	0.068	23.00	0.1	2.842	A
C	312.00	15.00	376.39	0.829	311.33	4.5	13.626	B

17:30 - 17:45

Arm	Total Demand (PCU/TS)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
A	323.00	3.00	385.30	0.838	322.93	5.0	14.355	B
B	23.00	316.93	339.50	0.068	23.00	0.1	2.842	A
C	312.00	15.00	376.39	0.829	311.88	4.7	13.866	B

17:45 - 18:00

Arm	Total Demand (PCU/TS)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
A	323.00	3.00	385.30	0.838	322.96	5.1	14.383	B
B	23.00	316.96	339.48	0.068	23.00	0.1	2.843	A
C	312.00	15.00	376.39	0.829	311.95	4.7	13.913	B

Junctions 9

ARCADY 9 - Roundabout Module

Filename: 170410 - A509 Station Road 2021 DM - Roundabout - DIRECT.j9
Path: J:\30062 Land South of Kettering\Junctions 9\A509 Station Road\2021\170623 2021 DM
Report generation date: 23/06/2017 14:23:44

Summary of junction performance

	AM							PM						
	Queue (PCU)	95% Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity	Queue (PCU)	95% Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity
	2021 DM - DIRECT													
Arm 1	5.2	?	16.09	0.84	C	28.93	-5 % [Arm 2]	9.1	?	27.47	0.92	D	33.81	-5 % [Arm 2]
Arm 2	5.4	?	56.59	0.87	F			5.7	?	51.80	0.89	F		
Arm 3	10.5	?	32.57	0.93	D			11.9	?	35.80	0.94	E		

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. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	A509 / Station Road Mini Roundabout
Location	South Kettering
Site number	
Date	10/04/2017
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	30062
Enumerator	PBA\mbolshaw
Description	2017 Observed

Units

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

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75	✓	✓	✓	Delay	0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D1	2021 DM - DIRECT	AM	DIRECT	08:00	09:00	60	15	✓
D2	2021 DM - DIRECT	PM	DIRECT	17:00	18:00	60	15	✓

Analysis Set Details

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

2021 DM - DIRECT, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Flow Arm 1	Analysis Options	Queue Variations cannot be calculated for the selected traffic profile type.
Warning	Flow Arm 2	Analysis Options	Queue Variations cannot be calculated for the selected traffic profile type.
Warning	Flow Arm 3	Analysis Options	Queue Variations cannot be calculated for the selected traffic profile type.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	1,2,3	28.93	D

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	-5	Arm 2

Arms

Arms

Arm	Name	Description
1	A509 (N)	
2	Station Road (E)	
3	A509 (S)	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1	3.50	6.00	5.5	12.5	18.0	0.0	
2	3.00	3.00	0.0	13.0	18.0	0.0	
3	3.50	6.50	6.0	7.5	18.0	0.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/TS)
1	0.641	367.866
2	0.541	244.923
3	0.619	360.496

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 period length (min)	Time segment length (min)	Run automatically
D1	2021 DM - DIRECT	AM	DIRECT	08:00	09:00	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
1		DIRECT	✓	100.000
2		DIRECT	✓	100.000
3		DIRECT	✓	100.000

Origin-Destination Data

08:00 - 08:15

Demand (PCU/TS)

		To		
		1	2	3
From	1	0.00	15.00	240.00
	2	39.00	0.00	60.00
	3	275.00	39.00	1.00

08:15 - 08:30

Demand (PCU/TS)

		To		
		1	2	3
From	1	0.00	28.00	268.00
	2	42.00	0.00	42.00
	3	282.00	25.00	0.00

08:30 - 08:45

Demand (PCU/TS)

		To		
		1	2	3
From	1	0.00	26.00	256.00
	2	43.00	0.00	49.00
	3	259.00	31.00	1.00

08:45 - 09:00

Demand (PCU/TS)

		To		
		1	2	3
From	1	0.00	31.00	230.00
	2	35.00	0.00	38.00
	3	270.00	32.00	2.00

Vehicle Mix

Heavy Vehicle Percentages

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

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS	Average Demand (PCU/TS)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	0.84	16.09	5.2	?	C	273.50	1094.00	240.04	13.17	4.00	240.30	13.18
2	0.87	56.59	5.4	?	F	87.00	348.00	225.42	38.87	3.76	225.61	38.90
3	0.93	32.57	10.5	?	D	304.25	1217.00	530.04	26.13	8.83	531.72	26.21

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1	255.00	255.00	38.72	343.03	0.743	252.02	303.46	0.0	3.0	10.325	B
2	99.00	99.00	238.16	116.19	0.852	94.58	52.58	0.0	4.4	36.831	E
3	315.00	315.00	37.26	337.44	0.934	304.92	295.49	0.0	10.1	24.849	C

08:15 - 08:30

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1	296.00	296.00	25.42	351.56	0.842	293.80	322.59	3.0	5.2	16.086	C
2	84.00	84.00	266.15	101.06	0.831	83.87	53.08	4.4	4.6	51.290	F
3	307.00	307.00	41.46	334.83	0.917	306.55	308.55	10.1	10.5	32.573	D

08:30 - 08:45

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1	282.00	282.00	31.95	347.37	0.812	282.32	304.12	5.2	4.9	14.986	B
2	92.00	92.00	257.25	105.88	0.869	91.19	57.02	4.6	5.4	56.589	F
3	291.00	291.00	42.77	334.03	0.871	293.31	305.67	10.5	8.2	25.145	D

08:45 - 09:00

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1	261.00	261.00	33.93	346.11	0.754	262.43	306.29	4.9	3.4	11.719	B
2	73.00	73.00	233.36	118.79	0.615	76.66	63.00	5.4	1.7	23.211	C
3	304.00	304.00	36.69	337.79	0.900	303.53	273.33	8.2	8.7	27.182	D

Queueing Delay Results for each time segment

08:00 - 08:15

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
1	40.61	2.71	10.325	B	B
2	51.72	3.45	36.831	E	D
3	114.27	7.62	24.849	C	C

08:15 - 08:30

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
1	69.77	4.65	16.086	C	B
2	67.40	4.49	51.290	F	D
3	154.87	10.32	32.573	D	C

08:30 - 08:45

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
1	74.62	4.97	14.986	B	B
2	75.41	5.03	56.589	F	E
3	133.57	8.90	25.145	D	C

08:45 - 09:00

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
1	55.04	3.67	11.719	B	B
2	30.90	2.06	23.211	C	C
3	127.32	8.49	27.182	D	C

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
1	2.98	?	?	?	?			N/A	N/A
2	4.42	?	?	?	?			N/A	N/A
3	10.08	?	?	?	?			N/A	N/A

08:15 - 08:30

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
1	5.18	?	?	?	?			N/A	N/A
2	4.55	?	?	?	?			N/A	N/A
3	10.53	?	?	?	?			N/A	N/A

08:30 - 08:45

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
1	4.86	?	?	?	?			N/A	N/A
2	5.37	?	?	?	?			N/A	N/A
3	8.22	?	?	?	?			N/A	N/A

08:45 - 09:00

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
1	3.44	?	?	?	?			N/A	N/A
2	1.70	?	?	?	?			N/A	N/A
3	8.69	?	?	?	?			N/A	N/A

2021 DM - DIRECT, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Flow Arm 1	Analysis Options	Queue Variations cannot be calculated for the selected traffic profile type.
Warning	Flow Arm 2	Analysis Options	Queue Variations cannot be calculated for the selected traffic profile type.
Warning	Flow Arm 3	Analysis Options	Queue Variations cannot be calculated for the selected traffic profile type.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	1,2,3	33.81	D

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	-5	Arm 2

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D2	2021 DM - DIRECT	PM	DIRECT	17:00	18:00	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
1		DIRECT	✓	100.000
2		DIRECT	✓	100.000
3		DIRECT	✓	100.000

Origin-Destination Data

17:00 - 17:15

Demand (PCU/TS)

		To		
		1	2	3
From	1	1.00	45.00	268.00
	2	34.00	0.00	40.00
	3	269.00	43.00	2.00

17:15 - 17:30

Demand (PCU/TS)

		To		
		1	2	3
From	1	0.00	49.00	247.00
	2	56.00	0.00	43.00
	3	239.00	58.00	1.00

17:30 - 17:45

Demand (PCU/TS)

		To		
		1	2	3
From	1	0.00	41.00	245.00
	2	32.00	0.00	25.00
	3	266.00	53.00	0.00

17:45 - 18:00

Demand (PCU/TS)

		To		
		1	2	3
From	1	0.00	42.00	266.00
	2	31.00	0.00	26.00
	3	272.00	41.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

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

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS	Average Demand (PCU/TS)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	0.92	27.47	9.1	?	D	301.00	1204.00	470.61	23.45	7.84	472.10	23.53
2	0.89	51.80	5.7	?	F	71.75	287.00	138.05	28.86	2.30	138.16	28.88
3	0.94	35.80	11.9	?	E	311.00	1244.00	587.58	28.34	9.79	590.70	28.49

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1	314.00	314.00	43.69	339.84	0.924	304.88	295.08	0.0	9.1	22.916	C
2	74.00	74.00	263.13	102.70	0.721	71.65	85.45	0.0	2.4	27.794	D
3	314.00	314.00	33.89	339.52	0.925	304.89	300.89	0.0	9.1	22.888	C

17:15 - 17:30

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1	296.00	296.00	58.43	330.40	0.896	296.01	293.10	9.1	9.1	27.466	D
2	99.00	99.00	248.24	110.75	0.894	95.67	106.20	2.4	5.7	51.797	F
3	298.00	298.00	53.90	327.14	0.911	297.63	290.01	9.1	9.5	30.200	D

17:30 - 17:45

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1	286.00	286.00	52.89	333.94	0.856	288.18	298.24	9.1	6.9	21.566	C
2	57.00	57.00	246.70	111.58	0.511	61.57	94.38	5.7	1.1	19.928	C
3	319.00	319.00	34.59	339.09	0.941	316.55	273.68	9.5	11.9	35.803	E

17:45 - 18:00

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1	308.00	308.00	41.42	341.30	0.902	306.69	302.55	6.9	8.2	25.596	D
2	57.00	57.00	264.82	101.78	0.560	56.86	83.29	1.1	1.2	20.357	C
3	313.00	313.00	30.94	341.35	0.917	313.04	290.73	11.9	11.9	33.522	D

Queueing Delay Results for each time segment

17:00 - 17:15

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
1	105.41	7.03	22.916	C	C
2	29.92	1.99	27.794	D	C
3	105.29	7.02	22.888	C	C

17:15 - 17:30

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
1	136.68	9.11	27.466	D	C
2	68.15	4.54	51.797	F	D
3	139.82	9.32	30.200	D	C

17:30 - 17:45

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
1	112.59	7.51	21.566	C	C
2	21.84	1.46	19.928	C	B
3	163.65	10.91	35.803	E	D

17:45 - 18:00

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
1	115.93	7.73	25.596	D	C
2	18.14	1.21	20.357	C	C
3	178.81	11.92	33.522	D	C

Queue Variation Results for each time segment

17:00 - 17:15

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
1	9.12	?	?	?	?			N/A	N/A
2	2.35	?	?	?	?			N/A	N/A
3	9.11	?	?	?	?			N/A	N/A

17:15 - 17:30

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
1	9.11	?	?	?	?			N/A	N/A
2	5.68	?	?	?	?			N/A	N/A
3	9.49	?	?	?	?			N/A	N/A

17:30 - 17:45

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
1	6.93	?	?	?	?			N/A	N/A
2	1.11	?	?	?	?			N/A	N/A
3	11.94	?	?	?	?			N/A	N/A

17:45 - 18:00

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
1	8.24	?	?	?	?			N/A	N/A
2	1.25	?	?	?	?			N/A	N/A
3	11.90	?	?	?	?			N/A	N/A

Junctions 9

ARCADY 9 - Roundabout Module

Filename: 170410 - A509 Station Road 2021 DS - Roundabout - DIRECT.j9
Path: J:\30062 Land South of Kettering\Junctions 9\A509 Station Road\2021 DS
Report generation date: 28/06/2017 11:12:52

Summary of junction performance

	AM							PM						
	Queue (PCU)	95% Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity	Queue (PCU)	95% Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity
	2021 DS - DIRECT													
Arm 1	5.6	?	17.10	0.85	C	32.52	-6 % [Arm 2]	12.5	?	38.50	0.96	E	42.81	-8 % [Arm 2]
Arm 2	6.3	?	64.68	0.89	F			8.0	?	68.35	0.95	F		
Arm 3	12.1	?	37.13	0.95	E			13.8	?	40.85	0.95	E		

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. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	A509 / Station Road Mini Roundabout
Location	South Kettering
Site number	
Date	10/04/2017
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	30062
Enumerator	PBA\mbolshaw
Description	2017 Observed

Units

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

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75	✓	✓	✓	Delay	0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D1	2021 DS - DIRECT	AM	DIRECT	08:00	09:00	60	15	✓
D2	2021 DS - DIRECT	PM	DIRECT	17:00	18:00	60	15	✓

Analysis Set Details

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

2021 DS - DIRECT, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Flow Arm 1	Analysis Options	Queue Variations cannot be calculated for the selected traffic profile type.
Warning	Flow Arm 2	Analysis Options	Queue Variations cannot be calculated for the selected traffic profile type.
Warning	Flow Arm 3	Analysis Options	Queue Variations cannot be calculated for the selected traffic profile type.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	1,2,3	32.52	D

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	-6	Arm 2

Arms

Arms

Arm	Name	Description
1	A509 (N)	
2	Station Road (E)	
3	A509 (S)	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1	3.50	6.00	5.5	12.5	18.0	0.0	
2	3.00	3.00	0.0	13.0	18.0	0.0	
3	3.50	6.50	6.0	7.5	18.0	0.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/TS)
1	0.641	367.866
2	0.541	244.923
3	0.619	360.496

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 period length (min)	Time segment length (min)	Run automatically
D1	2021 DS - DIRECT	AM	DIRECT	08:00	09:00	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
1		DIRECT	✓	100.000
2		DIRECT	✓	100.000
3		DIRECT	✓	100.000

Origin-Destination Data

08:00 - 08:15

Demand (PCU/TS)

		To		
		1	2	3
From	1	0.00	18.00	241.00
	2	41.00	0.00	60.00
	3	279.00	39.00	1.00

08:15 - 08:30

Demand (PCU/TS)

		To		
		1	2	3
From	1	0.00	31.00	269.00
	2	44.00	0.00	42.00
	3	285.00	25.00	0.00

08:30 - 08:45

Demand (PCU/TS)

		To		
		1	2	3
From	1	0.00	29.00	257.00
	2	45.00	0.00	49.00
	3	262.00	31.00	1.00

08:45 - 09:00

Demand (PCU/TS)

		To		
		1	2	3
From	1	0.00	34.00	232.00
	2	38.00	0.00	38.00
	3	273.00	32.00	2.00

Vehicle Mix

Heavy Vehicle Percentages

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

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS	Average Demand (PCU/TS)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	0.85	17.10	5.6	?	C	277.75	1111.00	258.07	13.94	4.30	258.38	13.95
2	0.89	64.68	6.3	?	F	89.25	357.00	256.82	43.16	4.28	257.06	43.20
3	0.95	37.13	12.1	?	E	307.50	1230.00	602.25	29.38	10.04	604.49	29.49

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1	259.00	259.00	38.56	343.14	0.755	255.85	307.97	0.0	3.2	10.728	B
2	101.00	101.00	239.03	115.72	0.873	96.06	55.38	0.0	4.9	39.683	E
3	319.00	319.00	39.00	336.36	0.948	307.54	296.10	0.0	11.5	27.208	D

08:15 - 08:30

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1	300.00	300.00	25.46	351.54	0.853	297.57	327.26	3.2	5.6	17.095	C
2	86.00	86.00	266.97	100.62	0.855	85.73	56.07	4.9	5.2	57.943	F
3	310.00	310.00	43.34	333.67	0.929	309.39	309.36	11.5	12.1	37.125	E

08:30 - 08:45

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1	286.00	286.00	31.95	347.37	0.823	286.31	309.41	5.6	5.3	15.978	C
2	94.00	94.00	258.24	105.34	0.892	92.94	60.03	5.2	6.3	64.678	F
3	294.00	294.00	44.67	332.85	0.883	296.70	306.52	12.1	9.4	28.668	D

08:45 - 09:00

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1	266.00	266.00	33.91	346.12	0.769	267.53	312.47	5.3	3.7	12.502	B
2	76.00	76.00	235.44	117.66	0.646	80.29	66.00	6.3	2.0	26.662	D
3	307.00	307.00	40.01	335.73	0.914	306.37	275.72	9.4	10.0	31.147	D

Queueing Delay Results for each time segment

08:00 - 08:15

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
1	42.74	2.85	10.728	B	B
2	56.54	3.77	39.683	E	D
3	126.33	8.42	27.208	D	C

08:15 - 08:30

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
1	74.60	4.97	17.095	C	B
2	76.25	5.08	57.943	F	E
3	176.97	11.80	37.125	E	D

08:30 - 08:45

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
1	80.71	5.38	15.978	C	B
2	87.13	5.81	64.678	F	E
3	152.97	10.20	28.668	D	C

08:45 - 09:00

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
1	60.02	4.00	12.502	B	B
2	36.89	2.46	26.662	D	C
3	145.99	9.73	31.147	D	C

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
1	3.15	?	?	?	?			N/A	N/A
2	4.94	?	?	?	?			N/A	N/A
3	11.46	?	?	?	?			N/A	N/A

08:15 - 08:30

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
1	5.58	?	?	?	?			N/A	N/A
2	5.20	?	?	?	?			N/A	N/A
3	12.08	?	?	?	?			N/A	N/A

08:30 - 08:45

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
1	5.26	?	?	?	?			N/A	N/A
2	6.26	?	?	?	?			N/A	N/A
3	9.38	?	?	?	?			N/A	N/A

08:45 - 09:00

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
1	3.73	?	?	?	?			N/A	N/A
2	1.97	?	?	?	?			N/A	N/A
3	10.01	?	?	?	?			N/A	N/A

2021 DS - DIRECT, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Flow Arm 1	Analysis Options	Queue Variations cannot be calculated for the selected traffic profile type.
Warning	Flow Arm 2	Analysis Options	Queue Variations cannot be calculated for the selected traffic profile type.
Warning	Flow Arm 3	Analysis Options	Queue Variations cannot be calculated for the selected traffic profile type.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	1,2,3	42.81	E

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	-8	Arm 2

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D2	2021 DS - DIRECT	PM	DIRECT	17:00	18:00	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
1		DIRECT	✓	100.000
2		DIRECT	✓	100.000
3		DIRECT	✓	100.000

Origin-Destination Data

Demand (PCU/TS)

17:00 - 17:15

		To		
		1	2	3
From	1	1.00	51.00	273.00
	2	39.00	0.00	40.00
	3	270.00	43.00	2.00

Demand (PCU/TS)

17:15 - 17:30

		To		
		1	2	3
From	1	0.00	56.00	252.00
	2	60.00	0.00	43.00
	3	240.00	58.00	1.00

17:30 - 17:45

Demand (PCU/TS)

		To		
		1	2	3
From	1	0.00	47.00	250.00
	2	37.00	0.00	25.00
	3	267.00	53.00	0.00

17:45 - 18:00

Demand (PCU/TS)

		To		
		1	2	3
From	1	0.00	48.00	271.00
	2	36.00	0.00	26.00
	3	272.00	41.00	1.00

Vehicle Mix

Heavy Vehicle Percentages

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

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS	Average Demand (PCU/TS)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	0.96	38.50	12.5	?	E	312.25	1249.00	637.93	30.64	10.63	640.93	30.79
2	0.95	68.35	8.0	?	F	76.50	306.00	184.60	36.20	3.08	184.80	36.23
3	0.95	40.85	13.8	?	E	312.00	1248.00	657.80	31.63	10.96	662.01	31.83

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1	325.00	325.00	43.58	339.92	0.956	312.90	299.91	0.0	12.1	27.801	D
2	79.00	79.00	265.73	101.29	0.780	75.94	90.74	0.0	3.1	33.127	D
3	315.00	315.00	38.45	336.70	0.936	305.03	303.22	0.0	10.0	24.535	C

17:15 - 17:30

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1	308.00	308.00	58.37	330.43	0.932	307.58	297.08	12.1	12.5	38.499	E
2	103.00	103.00	252.99	108.18	0.952	98.03	112.97	3.1	8.0	68.350	F
3	299.00	299.00	56.87	325.30	0.919	298.58	294.15	10.0	10.4	33.029	D

17:30 - 17:45

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1	297.00	297.00	52.77	334.03	0.889	299.80	304.66	12.5	9.7	29.556	D
2	62.00	62.00	252.09	108.66	0.571	68.59	100.47	8.0	1.4	26.329	D
3	320.00	320.00	40.82	335.24	0.955	316.61	279.86	10.4	13.8	40.853	E

17:45 - 18:00

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1	319.00	319.00	42.44	340.65	0.936	317.03	307.48	9.7	11.7	35.181	E
2	62.00	62.00	270.21	98.87	0.627	61.80	89.26	1.4	1.6	24.604	C
3	314.00	314.00	35.91	338.27	0.928	314.01	296.10	13.8	13.8	38.980	E

Queueing Delay Results for each time segment

17:00 - 17:15

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
1	131.53	8.77	27.801	D	C
2	37.46	2.50	33.127	D	C
3	112.93	7.53	24.535	C	C

17:15 - 17:30

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
1	184.88	12.33	38.499	E	D
2	91.24	6.08	68.350	F	E
3	153.08	10.21	33.029	D	C

17:30 - 17:45

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
1	158.66	10.58	29.556	D	C
2	32.36	2.16	26.329	D	C
3	185.02	12.33	40.853	E	D

17:45 - 18:00

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
1	162.86	10.86	35.181	E	D
2	23.53	1.57	24.604	C	C
3	206.77	13.78	38.980	E	D

Queue Variation Results for each time segment

17:00 - 17:15

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
1	12.10	?	?	?	?			N/A	N/A
2	3.06	?	?	?	?			N/A	N/A
3	9.97	?	?	?	?			N/A	N/A

17:15 - 17:30

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
1	12.52	?	?	?	?			N/A	N/A
2	8.02	?	?	?	?			N/A	N/A
3	10.40	?	?	?	?			N/A	N/A

17:30 - 17:45

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
1	9.72	?	?	?	?			N/A	N/A
2	1.43	?	?	?	?			N/A	N/A
3	13.79	?	?	?	?			N/A	N/A

17:45 - 18:00

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
1	11.69	?	?	?	?			N/A	N/A
2	1.63	?	?	?	?			N/A	N/A
3	13.78	?	?	?	?			N/A	N/A

Junctions 9

ARCADY 9 - Roundabout Module

Filename: 170410 - A509 Orlingbury Road 2021 DM - Roundabout - DIRECT.j9
Path: J:\30062 Land South of Kettering\Junctions 9\A509 Orlingbury Road\2021\2021 DM
Report generation date: 28/06/2017 09:20:46

Summary of junction performance

	AM							PM						
	Queue (PCU)	95% Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity	Queue (PCU)	95% Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity
	2021 DM - DIRECT													
Arm A	6.1	?	17.92	0.86	C	20.80	5 % [Arm B]	5.8	?	15.40	0.86	C	19.29	5 % [Arm B]
Arm B	8.0	?	24.88	0.90	C			7.5	?	24.06	0.89	C		
Arm C	0.4	~1	10.93	0.29	B			0.4	~1	11.62	0.29	B		

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. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	A509 / Orlingbury Road Roundabout
Location	Isham
Site number	
Date	06/06/2016
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	30062
Enumerator	PBA\mbolshaw
Description	2017 Observed Flows

Units

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

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75	✓	✓	✓	Delay	0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D1	2021 DM - DIRECT	AM	DIRECT	08:00	09:00	60	15	✓
D2	2021 DM - DIRECT	PM	DIRECT	17:00	18:00	60	15	✓

Analysis Set Details

ID	Description	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	2031 Do Minimum and Do Something Scenarios	✓	100.000	100.000

2021 DM - DIRECT, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Flow Arm A	Analysis Options	Queue Variations cannot be calculated for the selected traffic profile type.
Warning	Flow Arm B	Analysis Options	Queue Variations cannot be calculated for the selected traffic profile type.
Warning	Flow Arm C	Analysis Options	Queue Variations cannot be calculated for the selected traffic profile type.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	A,B,C	20.80	C

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	5	Arm B

Arms

Arms

Arm	Name	Description
A	A509 (N)	
B	A509 (S)	
C	Orlingbury Road (W)	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
A	3.75	4.50	6.0	150.0	19.0	0.0	
B	3.75	4.75	2.0	15.0	19.0	0.0	
C	2.00	4.50	8.5	17.5	19.0	0.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/TS)
A	0.667	372.197
B	0.623	340.696
C	0.570	273.244

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 period length (min)	Time segment length (min)	Run automatically
D1	2021 DM - DIRECT	AM	DIRECT	08:00	09:00	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A		DIRECT	✓	100.000
B		DIRECT	✓	100.000
C		DIRECT	✓	100.000

Origin-Destination Data

08:00 - 08:15

Demand (PCU/TS)

		To		
		A	B	C
From	A	15.00	281.00	18.00
	B	261.00	0.00	2.00
	C	24.00	11.00	0.00

08:15 - 08:30

Demand (PCU/TS)

		To		
		A	B	C
From	A	5.00	297.00	15.00
	B	296.00	0.00	0.00
	C	15.00	4.00	0.00

08:30 - 08:45

Demand (PCU/TS)

		To		
		A	B	C
From	A	6.00	275.00	17.00
	B	263.00	0.00	0.00
	C	22.00	9.00	0.00

08:45 - 09:00

Demand (PCU/TS)

		To		
		A	B	C
From	A	13.00	259.00	14.00
	B	276.00	0.00	4.00
	C	12.00	3.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	7	0
	B	8	0	50
	C	3	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS	Average Demand (PCU/TS)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
A	0.86	17.92	6.1	?	C	303.75	1215.00	300.95	14.86	5.02	301.24	14.88
B	0.90	24.88	8.0	?	C	275.50	1102.00	326.84	17.80	5.45	327.72	17.84
C	0.29	10.93	0.4	~1	B	25.00	100.00	17.37	10.42	0.29	17.37	10.42

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	314.00	314.00	10.87	364.95	0.860	308.23	294.96	0.0	5.8	15.560	C
B	263.00	263.00	32.39	320.53	0.821	258.49	286.70	0.0	4.5	14.784	B
C	35.00	35.00	271.25	118.71	0.295	34.58	19.63	0.0	0.4	10.866	B

08:15 - 08:30

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	317.00	317.00	4.08	369.47	0.858	316.72	312.77	5.8	6.1	17.921	C
B	296.00	296.00	20.22	328.10	0.902	292.52	300.58	4.5	8.0	24.879	C
C	19.00	19.00	297.67	103.65	0.183	19.19	15.08	0.4	0.2	10.928	B

08:30 - 08:45

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	298.00	298.00	8.95	366.23	0.814	299.11	294.09	6.1	4.9	14.547	B
B	263.00	263.00	23.00	326.38	0.806	266.17	285.05	8.0	4.8	16.905	C
C	31.00	31.00	272.16	118.18	0.262	30.88	17.00	0.2	0.4	10.511	B

08:45 - 09:00

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	286.00	286.00	3.07	370.15	0.773	287.16	299.81	4.9	3.8	11.703	B
B	280.00	280.00	27.02	323.87	0.865	278.67	263.21	4.8	6.1	20.767	C
C	15.00	15.00	287.69	109.34	0.137	15.19	18.01	0.4	0.2	9.806	A

Queueing Delay Results for each time segment

08:00 - 08:15

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A	73.11	4.87	15.560	C	B
B	58.53	3.90	14.784	B	B
C	5.96	0.40	10.866	B	B

08:15 - 08:30

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A	89.06	5.94	17.921	C	B
B	103.27	6.88	24.879	C	C
C	3.64	0.24	10.928	B	B

08:30 - 08:45

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A	78.55	5.24	14.547	B	B
B	79.58	5.31	16.905	C	B
C	5.18	0.35	10.511	B	B

08:45 - 09:00

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A	60.23	4.02	11.703	B	B
B	85.46	5.70	20.767	C	C
C	2.58	0.17	9.806	A	A

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	5.77	?	?	?	?			N/A	N/A
B	4.51	?	?	?	?			N/A	N/A
C	0.42	~1	~1	~1	~1			N/A	N/A

08:15 - 08:30

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	6.06	?	?	?	?			N/A	N/A
B	7.99	?	?	?	?			N/A	N/A
C	0.23	~1	~1	~1	~1			N/A	N/A

08:30 - 08:45

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	4.95	?	?	?	?			N/A	N/A
B	4.82	?	?	?	?			N/A	N/A
C	0.36	~1	~1	~1	~1			N/A	N/A

08:45 - 09:00

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	3.79	?	?	?	?			N/A	N/A
B	6.15	?	?	?	?			N/A	N/A
C	0.16	~1	~1	~1	~1			N/A	N/A

2021 DM - DIRECT, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Flow Arm A	Analysis Options	Queue Variations cannot be calculated for the selected traffic profile type.
Warning	Flow Arm B	Analysis Options	Queue Variations cannot be calculated for the selected traffic profile type.
Warning	Flow Arm C	Analysis Options	Queue Variations cannot be calculated for the selected traffic profile type.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	A,B,C	19.29	C

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	5	Arm B

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D2	2021 DM - DIRECT	PM	DIRECT	17:00	18:00	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A		DIRECT	✓	100.000
B		DIRECT	✓	100.000
C		DIRECT	✓	100.000

Origin-Destination Data

Demand (PCU/TS)

17:00 - 17:15

		To		
		A	B	C
From	A	5.00	294.00	20.00
	B	274.00	0.00	2.00
	C	27.00	4.00	0.00

Demand (PCU/TS)

17:15 - 17:30

		To		
		A	B	C
From	A	8.00	260.00	18.00
	B	262.00	0.00	2.00
	C	27.00	3.00	0.00

17:30 - 17:45

Demand (PCU/TS)

From \ To	A	B	C
A	5.00	250.00	12.00
B	284.00	0.00	3.00
C	30.00	2.00	0.00

17:45 - 18:00

Demand (PCU/TS)

From \ To	A	B	C
A	1.00	267.00	9.00
B	296.00	0.00	3.00
C	24.00	1.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

From \ To	A	B	C
A	0	5	0
B	4	0	11
C	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS	Average Demand (PCU/TS)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
A	0.86	15.40	5.8	?	C	287.25	1149.00	221.40	11.56	3.69	221.58	11.57
B	0.89	24.06	7.5	?	C	281.50	1126.00	330.49	17.61	5.51	331.77	17.68
C	0.29	11.62	0.4	~1	B	29.50	118.00	21.07	10.71	0.35	21.08	10.72

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	319.00	319.00	3.95	369.56	0.863	313.19	300.47	0.0	5.8	15.403	C
B	276.00	276.00	24.54	325.41	0.848	270.84	292.60	0.0	5.2	15.915	C
C	31.00	31.00	273.78	117.26	0.264	30.65	21.60	0.0	0.4	10.349	B

17:15 - 17:30

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	286.00	286.00	3.01	370.19	0.773	288.09	297.36	5.8	3.7	11.740	B
B	264.00	264.00	26.12	324.44	0.814	264.37	264.98	5.2	4.8	15.766	C
C	30.00	30.00	270.35	119.21	0.252	30.01	20.13	0.4	0.3	10.093	B

17:30 - 17:45

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	267.00	267.00	2.01	370.86	0.720	267.95	317.65	3.7	2.8	9.241	A
B	287.00	287.00	17.16	330.01	0.870	285.64	252.79	4.8	6.2	20.271	C
C	32.00	32.00	287.72	109.32	0.293	31.93	15.08	0.3	0.4	11.618	B

17:45 - 18:00

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	277.00	277.00	1.01	371.52	0.746	276.80	319.74	2.8	3.0	9.924	A
B	299.00	299.00	10.07	334.43	0.894	297.61	267.74	6.2	7.5	24.064	C
C	25.00	25.00	295.66	104.80	0.239	25.09	12.02	0.4	0.3	11.303	B

Queueing Delay Results for each time segment

17:00 - 17:15

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A	73.55	4.90	15.403	C	B
B	65.72	4.38	15.915	C	B
C	5.05	0.34	10.349	B	B

17:15 - 17:30

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A	60.28	4.02	11.740	B	B
B	73.86	4.92	15.766	C	B
C	5.16	0.34	10.093	B	B

17:30 - 17:45

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A	43.84	2.92	9.241	A	A
B	85.50	5.70	20.271	C	C
C	5.94	0.40	11.618	B	B

17:45 - 18:00

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A	43.73	2.92	9.924	A	A
B	105.40	7.03	24.064	C	C
C	4.93	0.33	11.303	B	B

Queue Variation Results for each time segment

17:00 - 17:15

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	5.81	?	?	?	?			N/A	N/A
B	5.16	?	?	?	?			N/A	N/A
C	0.35	~1	~1	~1	~1			N/A	N/A

17:15 - 17:30

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	3.73	?	?	?	?			N/A	N/A
B	4.79	?	?	?	?			N/A	N/A
C	0.34	~1	~1	~1	~1			N/A	N/A

17:30 - 17:45

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.78	?	?	?	?			N/A	N/A
B	6.15	?	?	?	?			N/A	N/A
C	0.41	~1	~1	~1	~1			N/A	N/A

17:45 - 18:00

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.98	?	?	?	?			N/A	N/A
B	7.54	?	?	?	?			N/A	N/A
C	0.32	~1	~1	~1	~1			N/A	N/A

Junctions 9

ARCADY 9 - Roundabout Module

Filename: 170410 - A509 Orlingbury Road 2021 DS - Roundabout - DIRECT.j9
Path: J:\30062 Land South of Kettering\Junctions 9\A509 Orlingbury Road\2021\2021 DS
Report generation date: 28/06/2017 11:15:55

Summary of junction performance

	AM							PM						
	Queue (PCU)	95% Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity	Queue (PCU)	95% Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity
	2021 DS - DIRECT													
Arm A	6.2	?	18.31	0.87	C	21.82	4 % [Arm B]	6.5	?	16.74	0.88	C	20.18	4 % [Arm B]
Arm B	8.6	?	26.61	0.91	D			7.7	?	24.62	0.90	C		
Arm C	0.4	~1	11.14	0.30	B			0.4	~1	11.70	0.29	B		

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. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	A509 / Orlingbury Road Roundabout
Location	Isham
Site number	
Date	06/06/2016
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	30062
Enumerator	PBA\mbolshaw
Description	2017 Observed Flows

Units

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

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75	✓	✓	✓	Delay	0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D1	2021 DS - DIRECT	AM	DIRECT	08:00	09:00	60	15	✓
D2	2021 DS - DIRECT	PM	DIRECT	17:00	18:00	60	15	✓

Analysis Set Details

ID	Description	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	2031 Do Minimum and Do Something Scenarios	✓	100.000	100.000

2021 DS - DIRECT, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Flow Arm A	Analysis Options	Queue Variations cannot be calculated for the selected traffic profile type.
Warning	Flow Arm B	Analysis Options	Queue Variations cannot be calculated for the selected traffic profile type.
Warning	Flow Arm C	Analysis Options	Queue Variations cannot be calculated for the selected traffic profile type.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	A,B,C	21.82	C

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	4	Arm B

Arms

Arms

Arm	Name	Description
A	A509 (N)	
B	A509 (S)	
C	Orlingbury Road (W)	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
A	3.75	4.50	6.0	150.0	19.0	0.0	
B	3.75	4.75	2.0	15.0	19.0	0.0	
C	2.00	4.50	8.5	17.5	19.0	0.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/TS)
A	0.667	372.197
B	0.623	340.696
C	0.570	273.244

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 period length (min)	Time segment length (min)	Run automatically
D1	2021 DS - DIRECT	AM	DIRECT	08:00	09:00	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A		DIRECT	✓	100.000
B		DIRECT	✓	100.000
C		DIRECT	✓	100.000

Origin-Destination Data

08:00 - 08:15

Demand (PCU/TS)

		To		
		A	B	C
From	A	15.00	282.00	19.00
	B	265.00	0.00	2.00
	C	24.00	11.00	0.00

08:15 - 08:30

Demand (PCU/TS)

		To		
		A	B	C
From	A	5.00	298.00	15.00
	B	299.00	0.00	0.00
	C	15.00	4.00	0.00

08:30 - 08:45

Demand (PCU/TS)

		To		
		A	B	C
From	A	6.00	276.00	17.00
	B	267.00	0.00	0.00
	C	22.00	9.00	0.00

08:45 - 09:00

Demand (PCU/TS)

		To		
		A	B	C
From	A	13.00	260.00	14.00
	B	280.00	0.00	4.00
	C	12.00	3.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	7	0
	B	8	0	50
	C	3	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS	Average Demand (PCU/TS)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
A	0.87	18.31	6.2	?	C	305.00	1220.00	308.87	15.19	5.15	309.17	15.20
B	0.91	26.61	8.6	?	D	279.25	1117.00	354.44	19.04	5.91	355.49	19.10
C	0.30	11.14	0.4	~1	B	25.00	100.00	17.78	10.67	0.30	17.78	10.67

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	316.00	316.00	10.86	364.95	0.866	310.01	298.55	0.0	6.0	15.986	C
B	267.00	267.00	33.36	319.93	0.835	262.10	287.52	0.0	4.9	15.724	C
C	35.00	35.00	274.85	116.65	0.300	34.57	20.60	0.0	0.4	11.131	B

08:15 - 08:30

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	318.00	318.00	4.09	369.47	0.861	317.77	315.53	6.0	6.2	18.308	C
B	299.00	299.00	20.25	328.09	0.911	295.28	301.60	4.9	8.6	26.611	D
C	19.00	19.00	300.43	102.08	0.186	19.19	15.10	0.4	0.2	11.137	B

08:30 - 08:45

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	299.00	299.00	8.94	366.23	0.816	300.17	298.28	6.2	5.0	14.800	B
B	267.00	267.00	23.00	326.37	0.818	270.36	286.11	8.6	5.3	18.267	C
C	31.00	31.00	276.36	115.79	0.268	30.87	17.01	0.2	0.4	10.805	B

08:45 - 09:00

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	287.00	287.00	3.07	370.15	0.775	288.20	303.68	5.0	3.8	11.857	B
B	284.00	284.00	27.03	323.87	0.877	282.53	264.25	5.3	6.7	22.509	C
C	15.00	15.00	291.55	107.14	0.140	15.20	18.00	0.4	0.2	10.042	B

Queueing Delay Results for each time segment

08:00 - 08:15

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A	75.46	5.03	15.986	C	B
B	62.93	4.20	15.724	C	B
C	6.10	0.41	11.131	B	B

08:15 - 08:30

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A	91.83	6.12	18.308	C	B
B	110.94	7.40	26.611	D	C
C	3.72	0.25	11.137	B	B

08:30 - 08:45

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A	80.27	5.35	14.800	B	B
B	87.24	5.82	18.267	C	B
C	5.32	0.35	10.805	B	B

08:45 - 09:00

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A	61.30	4.09	11.857	B	B
B	93.33	6.22	22.509	C	C
C	2.64	0.18	10.042	B	B

Queue Variation Results for each time segment

08:00 - 08:15

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	5.99	?	?	?	?			N/A	N/A
B	4.90	?	?	?	?			N/A	N/A
C	0.43	~1	~1	~1	~1			N/A	N/A

08:15 - 08:30

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	6.22	?	?	?	?			N/A	N/A
B	8.63	?	?	?	?			N/A	N/A
C	0.24	~1	~1	~1	~1			N/A	N/A

08:30 - 08:45

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	5.05	?	?	?	?			N/A	N/A
B	5.27	?	?	?	?			N/A	N/A
C	0.37	~1	~1	~1	~1			N/A	N/A

08:45 - 09:00

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	3.85	?	?	?	?			N/A	N/A
B	6.74	?	?	?	?			N/A	N/A
C	0.17	~1	~1	~1	~1			N/A	N/A

2021 DS - DIRECT, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Flow Arm A	Analysis Options	Queue Variations cannot be calculated for the selected traffic profile type.
Warning	Flow Arm B	Analysis Options	Queue Variations cannot be calculated for the selected traffic profile type.
Warning	Flow Arm C	Analysis Options	Queue Variations cannot be calculated for the selected traffic profile type.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	A,B,C	20.18	C

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	4	Arm B

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D2	2021 DS - DIRECT	PM	DIRECT	17:00	18:00	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A		DIRECT	✓	100.000
B		DIRECT	✓	100.000
C		DIRECT	✓	100.000

Origin-Destination Data

17:00 - 17:15

Demand (PCU/TS)

		To		
		A	B	C
From	A	5.00	299.00	21.00
	B	274.00	0.00	2.00
	C	27.00	4.00	0.00

17:15 - 17:30

Demand (PCU/TS)

		To		
		A	B	C
From	A	8.00	264.00	18.00
	B	263.00	0.00	2.00
	C	27.00	3.00	0.00

17:30 - 17:45

Demand (PCU/TS)

		To		
		A	B	C
From	A	5.00	255.00	12.00
	B	285.00	0.00	3.00
	C	30.00	2.00	0.00

17:45 - 18:00

Demand (PCU/TS)

		To		
		A	B	C
From	A	1.00	272.00	9.00
	B	297.00	0.00	3.00
	C	24.00	1.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	5	0
	B	4	0	11
	C	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS	Average Demand (PCU/TS)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
A	0.88	16.74	6.5	?	C	292.25	1169.00	239.95	12.32	4.00	240.15	12.33
B	0.90	24.62	7.7	?	C	282.25	1129.00	336.67	17.89	5.61	338.02	17.96
C	0.29	11.70	0.4	~1	B	29.50	118.00	21.17	10.76	0.35	21.18	10.77

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	325.00	325.00	3.95	369.56	0.879	318.48	300.42	0.0	6.5	16.743	C
B	276.00	276.00	25.48	324.83	0.850	270.79	296.96	0.0	5.2	16.052	C
C	31.00	31.00	273.72	117.29	0.264	30.65	22.54	0.0	0.4	10.345	B

17:15 - 17:30

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	290.00	290.00	3.01	370.19	0.783	292.54	298.31	6.5	4.0	12.490	B
B	265.00	265.00	26.16	324.41	0.817	265.32	269.38	5.2	4.9	16.021	C
C	30.00	30.00	271.31	118.67	0.253	30.01	20.17	0.4	0.3	10.153	B

17:30 - 17:45

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	272.00	272.00	2.01	370.86	0.733	273.00	318.60	4.0	3.0	9.732	A
B	288.00	288.00	17.17	330.01	0.873	286.60	257.84	4.9	6.3	20.674	C
C	32.00	32.00	288.68	108.77	0.294	31.93	15.09	0.3	0.4	11.701	B

17:45 - 18:00

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	282.00	282.00	1.01	371.52	0.759	281.79	320.69	3.0	3.2	10.470	B
B	300.00	300.00	10.07	334.42	0.897	298.56	272.73	6.3	7.7	24.616	C
C	25.00	25.00	296.61	104.26	0.240	25.09	12.02	0.4	0.3	11.383	B

Queueing Delay Results for each time segment

17:00 - 17:15

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A	81.02	5.40	16.743	C	B
B	66.25	4.42	16.052	C	B
C	5.05	0.34	10.345	B	B

17:15 - 17:30

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A	64.89	4.33	12.490	B	B
B	75.12	5.01	16.021	C	B
C	5.18	0.35	10.153	B	B

17:30 - 17:45

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A	47.16	3.14	9.732	A	A
B	87.34	5.82	20.674	C	C
C	5.98	0.40	11.701	B	B

17:45 - 18:00

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A	46.88	3.13	10.470	B	B
B	107.97	7.20	24.616	C	C
C	4.96	0.33	11.383	B	B

Queue Variation Results for each time segment

17:00 - 17:15

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	6.52	?	?	?	?			N/A	N/A
B	5.21	?	?	?	?			N/A	N/A
C	0.35	~1	~1	~1	~1			N/A	N/A

17:15 - 17:30

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	3.98	?	?	?	?			N/A	N/A
B	4.89	?	?	?	?			N/A	N/A
C	0.34	~1	~1	~1	~1			N/A	N/A

17:30 - 17:45

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.98	?	?	?	?			N/A	N/A
B	6.29	?	?	?	?			N/A	N/A
C	0.41	~1	~1	~1	~1			N/A	N/A

17:45 - 18:00

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	3.20	?	?	?	?			N/A	N/A
B	7.74	?	?	?	?			N/A	N/A
C	0.32	~1	~1	~1	~1			N/A	N/A

Junctions 9

PICADY 9 - Priority Intersection Module

Filename: 170410 - A509 Finedon Station Road - 2021 DM - DIRECT.j9
Path: J:\30062 Land South of Kettering\Junctions 9\A509 Finedon Station Road\2021 DM
Report generation date: 06/07/2017 11:28:20

Summary of junction performance

	AM						PM					
	Q (PCU)	Q95 (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Q (PCU)	Q95 (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)
	2021 DM- DIRECT											
Stream B-C	73.2	?	992.08	1.73	F	133.43	70.9	?	0.00	9999999999.00	A	10.01
Stream B-A	11.0	?	1252.82	1.57	F		8.1	?	0.00	9999999999.00	A	
Stream C-B	0.7	~1	15.82	0.40	C		8.9	?	76.53	0.98	F	

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

Values shown are the highest values encountered over all time segments. Delay is the maximum value of Av. delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted Av.s.

File summary

File Description

Title	A509 Finedon Station Road - Priority Junction
Location	Kettering
Site number	
Date	10/04/2017
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	30062
Enumerator	PBA\mbolshaw
Description	2017 Observed

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Av. delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perTimeSegment	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Q Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Av. Delay threshold (s)	Q threshold (PCU)
5.75	✓	✓		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D1	2021 DM- DIRECT	AM	DIRECT	08:00	09:00	60	15	✓
D2	2021 DM- DIRECT	PM	DIRECT	17:00	18:00	60	15	✓

Analysis Set Details

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

2021 DM- DIRECT, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Flow Arm A	Analysis Options	Q Variations cannot be calculated for the selected traffic profile type.
Warning	Flow Arm B	Analysis Options	Q Variations cannot be calculated for the selected traffic profile type.
Warning	Flow Arm C	Analysis Options	Q Variations cannot be calculated for the selected traffic profile type.
Warning	Queue variations	Analysis Options	Q percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	133.43	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	A509 Kettering Road (N)		Major
B	Finedon Station Road (E)		Minor
C	A509 Ketterin Road (S)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Width for right turn (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	6.60		✓	3.00	103.0		-

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

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B	One lane plus flare	10.00	6.00	5.00	4.50	3.75		1.00	98	33

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/TS)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	114.970	0.082	0.206	0.130	0.295
1	B-C	184.576	0.110	0.279	-	-
1	C-B	172.195	0.260	0.260	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D1	2021 DM- DIRECT	AM	DIRECT	08:00	09:00	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A		DIRECT	✓	100.000
B		DIRECT	✓	100.000
C		DIRECT	✓	100.000

Origin-Destination Data

08:00 - 08:15

Demand (PCU/TS)

		To		
		A	B	C
From	A	0.00	5.00	291.00
	B	10.00	0.00	85.00
	C	281.00	27.00	0.00

08:15 - 08:30

Demand (PCU/TS)

		To		
		A	B	C
From	A	0.00	8.00	299.00
	B	8.00	0.00	97.00
	C	255.00	33.00	0.00

08:30 - 08:45

Demand (PCU/TS)

		To		
		A	B	C
From	A	0.00	22.00	268.00
	B	9.00	0.00	58.00
	C	266.00	24.00	0.00

08:45 - 09:00

Demand (PCU/TS)

		To		
		A	B	C
From	A	0.00	17.00	247.00
	B	12.00	0.00	68.00
	C	240.00	41.00	0.00

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	2	8
	B	25	0	2
	C	9	5	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Q (PCU)	Max Q95 (PCU)	Max LOS	Av. Demand (PCU/TS)	Total Junction Arrivals (PCU)	Total Qing Delay (PCU-min)	Av. Qing Delay (s)	Rate of Qing Delay (PCU-min/min)	Inclusive Total Qing Delay (PCU-min)	Inclusive Av. Qing Delay (s)
B-C	1.73	992.08	73.2	?	F	77.00	308.00	3124.98	608.76	52.08	3661.77	713.33
B-A	1.57	1252.82	11.0	?	F	9.75	39.00	407.88	627.50	6.80	496.14	763.29
C-A						260.50	1042.00					
C-B	0.40	15.82	0.7	~1	C	31.25	125.00	28.92	13.88	0.48	28.95	13.90
A-B						13.00	52.00					
A-C						276.25	1105.00					

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	85.00	85.00	54.27	1.566	52.61	0.0	32.4	293.735	F
B-A	10.00	10.00	6.38	1.566	5.09	0.0	4.9	600.447	F
C-A	281.00	281.00			281.00				
C-B	27.00	27.00	95.26	0.283	26.59	0.0	0.4	13.683	B
A-B	5.00	5.00			5.00				
A-C	291.00	291.00			291.00				

08:15 - 08:30

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	97.00	97.00	56.20	1.726	56.15	32.4	73.2	810.314	F
B-A	8.00	8.00	5.61	1.427	5.30	4.9	7.6	1252.815	F
C-A	255.00	255.00			255.00				
C-B	33.00	33.00	92.40	0.357	32.84	0.4	0.6	15.819	C
A-B	8.00	8.00			8.00				
A-C	299.00	299.00			299.00				

08:30 - 08:45

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	58.00	58.00	64.60	0.898	63.71	73.2	67.5	992.078	F
B-A	9.00	9.00	8.18	1.101	7.73	7.6	8.9	1043.207	F
C-A	266.00	266.00			266.00				
C-B	24.00	24.00	96.82	0.248	24.22	0.6	0.4	13.052	B
A-B	22.00	22.00			22.00				
A-C	268.00	268.00			268.00				

08:45 - 09:00

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	68.00	68.00	66.73	1.019	66.42	67.5	69.1	939.750	F
B-A	12.00	12.00	10.28	1.167	9.89	8.9	11.0	1010.943	F
C-A	240.00	240.00			240.00				
C-B	41.00	41.00	103.58	0.396	40.68	0.4	0.7	14.949	B
A-B	17.00	17.00			17.00				
A-C	247.00	247.00			247.00				

Qing Delay Results for each time segment

08:00 - 08:15

Stream	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
B-C	252.03	16.80	293.735	F	F
B-A	40.62	2.71	600.447	F	F
C-B	5.73	0.38	13.683	B	B

08:15 - 08:30

Stream	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
B-C	792.34	52.82	810.314	F	F
B-A	94.15	6.28	1252.815	F	F
C-B	8.15	0.54	15.819	C	B

08:30 - 08:45

Stream	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
B-C	1055.80	70.39	992.078	F	F
B-A	123.83	8.26	1043.207	F	F
C-B	5.54	0.37	13.052	B	B

08:45 - 09:00

Stream	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
B-C	1024.80	68.32	939.750	F	F
B-A	149.28	9.95	1010.943	F	F
C-B	9.49	0.63	14.949	B	B

Q Variation Results for each time segment

08:00 - 08:15

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	32.39	?	?	?	?			N/A	N/A
B-A	4.91	?	?	?	?			N/A	N/A
C-B	0.41	~1	~1	~1	~1			N/A	N/A

08:15 - 08:30

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	73.24	?	?	?	?			N/A	N/A
B-A	7.61	?	?	?	?			N/A	N/A
C-B	0.57	~1	~1	~1	~1			N/A	N/A

08:30 - 08:45

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	67.53	?	?	?	?			N/A	N/A
B-A	8.89	?	?	?	?			N/A	N/A
C-B	0.35	~1	~1	~1	~1			N/A	N/A

08:45 - 09:00

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	69.11	?	?	?	?			N/A	N/A
B-A	11.00	?	?	?	?			N/A	N/A
C-B	0.67	~1	~1	~1	~1			N/A	N/A

2021 DM- DIRECT, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Flow Arm A	Analysis Options	Q Variations cannot be calculated for the selected traffic profile type.
Warning	Flow Arm B	Analysis Options	Q Variations cannot be calculated for the selected traffic profile type.
Warning	Flow Arm C	Analysis Options	Q Variations cannot be calculated for the selected traffic profile type.
Warning	Queue variations	Analysis Options	Q percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	10.01	B

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D2	2021 DM- DIRECT	PM	DIRECT	17:00	18:00	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A		DIRECT	✓	100.000
B		DIRECT	✓	100.000
C		DIRECT	✓	100.000

Origin-Destination Data

17:00 - 17:15

Demand (PCU/TS)

		To		
		A	B	C
From	A	0.00	15.00	283.00
	B	4.00	0.00	25.00
	C	269.00	74.00	0.00

17:15 - 17:30

Demand (PCU/TS)

		To		
		A	B	C
From	A	0.00	11.00	250.00
	B	4.00	0.00	41.00
	C	281.00	97.00	0.00

17:30 - 17:45

Demand (PCU/TS)

		To		
		A	B	C
From	A	0.00	12.00	231.00
	B	3.00	0.00	32.00
	C	266.00	77.00	0.00

17:45 - 18:00

Demand (PCU/TS)

		To		
		A	B	C
From	A	0.00	5.00	272.00
	B	2.00	0.00	21.00
	C	272.00	98.00	0.00

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	3	5
	B	0	0	2
	C	3	1	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Q (PCU)	Max Q95 (PCU)	Max LOS	Av. Demand (PCU/TS)	Total Junction Arrivals (PCU)	Total Qing Delay (PCU-min)	Av. Qing Delay (s)	Rate of Qing Delay (PCU-min/min)	Inclusive Total Qing Delay (PCU-min)	Inclusive Av. Qing Delay (s)
B-C	9999999999.00	0.00	70.9	?	A	29.75	119.00	2644.55	1333.39	44.08	166666666.65	9999999999.00
B-A	9999999999.00	0.00	8.1	?	A	3.25	13.00	332.78	1535.91	5.55	166666666.65	9999999999.00
C-A						272.00	1088.00					
C-B	0.98	76.53	8.9	?	F	86.50	346.00	264.14	45.80	4.40	270.04	46.83
A-B						10.75	43.00					
A-C						259.00	1036.00					

Main Results for each time segment

17:00 - 17:15

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	25.00	25.00	0.00	9999999999.000	0.00	0.0	25.0	0.000	A
B-A	4.00	4.00	0.00	9999999999.000	0.00	0.0	4.0	0.000	A
C-A	269.00	269.00			269.00				
C-B	74.00	74.00	94.74	0.781	70.98	0.0	3.0	34.874	D
A-B	15.00	15.00			15.00				
A-C	283.00	283.00			283.00				

17:15 - 17:30

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	41.00	41.00	0.00	9999999999.000	0.00	25.0	66.0	0.000	A
B-A	4.00	4.00	0.00	9999999999.000	0.00	4.0	8.0	0.000	A
C-A	281.00	281.00			281.00				
C-B	97.00	97.00	104.36	0.929	93.11	3.0	6.9	64.122	F
A-B	11.00	11.00			11.00				
A-C	250.00	250.00			250.00				

17:30 - 17:45

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	32.00	32.00	48.87	0.655	48.13	66.0	49.9	0.000	A
B-A	3.00	3.00	5.49	0.547	4.88	8.0	6.1	0.000	A
C-A	266.00	266.00			266.00				
C-B	77.00	77.00	109.04	0.706	81.23	6.9	2.7	36.346	E
A-B	12.00	12.00			12.00				
A-C	231.00	231.00			231.00				

17:45 - 18:00

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	21.00	21.00	0.00	9999999999.000	0.00	49.9	70.9	0.000	A
B-A	2.00	2.00	0.00	9999999999.000	0.00	6.1	8.1	0.000	A
C-A	272.00	272.00			272.00				
C-B	98.00	98.00	100.20	0.978	91.79	2.7	8.9	76.532	F
A-B	5.00	5.00			5.00				
A-C	272.00	272.00			272.00				

Qing Delay Results for each time segment

17:00 - 17:15

Stream	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
B-C	187.50	12.50	0.000	A	A
B-A	30.00	2.00	0.000	A	A
C-B	36.78	2.45	34.874	D	C

17:15 - 17:30

Stream	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
B-C	682.50	45.50	0.000	A	A
B-A	90.00	6.00	0.000	A	A
C-B	81.44	5.43	64.122	F	E

17:30 - 17:45

Stream	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
B-C	869.02	57.93	0.000	A	A
B-A	105.93	7.06	0.000	A	A
C-B	49.87	3.32	36.346	E	D

17:45 - 18:00

Stream	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
B-C	905.53	60.37	0.000	A	A
B-A	106.85	7.12	0.000	A	A
C-B	96.05	6.40	76.532	F	E

Q Variation Results for each time segment

17:00 - 17:15

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	25.00	?	?	?	?			N/A	N/A
B-A	4.00	?	?	?	?			N/A	N/A
C-B	3.02	?	?	?	?			N/A	N/A

17:15 - 17:30

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	66.00	?	?	?	?			N/A	N/A
B-A	8.00	?	?	?	?			N/A	N/A
C-B	6.91	?	?	?	?			N/A	N/A

17:30 - 17:45

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	49.87	?	?	?	?			N/A	N/A
B-A	6.12	?	?	?	?			N/A	N/A
C-B	2.67	?	?	?	?			N/A	N/A

17:45 - 18:00

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	70.87	?	?	?	?			N/A	N/A
B-A	8.12	?	?	?	?			N/A	N/A
C-B	8.88	?	?	?	?			N/A	N/A

Junctions 9

PICADY 9 - Priority Intersection Module

Filename: 170410 - A509 Finedon Station Road - 2021 DS - DIRECT.j9
Path: J:\30062 Land South of Kettering\Junctions 9\A509 Finedon Station Road\2021 DS
Report generation date: 06/07/2017 12:31:31

Summary of junction performance

	AM						PM					
	Q (PCU)	Q95 (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Q (PCU)	Q95 (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)
	2021 DS- DIRECT											
Stream B-C	76.5	?	1052.48	1.77	F	140.49	75.3	?	0.00	9999999999.00	A	10.55
Stream B-A	11.6	?	1323.89	1.63	F		8.6	?	0.00	9999999999.00	A	
Stream C-B	0.7	~1	15.89	0.40	C		9.5	?	81.26	0.99	F	

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

Values shown are the highest values encountered over all time segments. Delay is the maximum value of Av. delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted Av.s.

File summary

File Description

Title	A509 Finedon Station Road - Priority Junction
Location	Kettering
Site number	
Date	10/04/2017
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	30062
Enumerator	PBA\mbolshaw
Description	2017 Observed

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Av. delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perTimeSegment	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Q Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Av. Delay threshold (s)	Q threshold (PCU)
5.75	✓	✓		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D1	2021 DS- DIRECT	AM	DIRECT	08:00	09:00	60	15	✓
D2	2021 DS- DIRECT	PM	DIRECT	17:00	18:00	60	15	✓

Analysis Set Details

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

2021 DS- DIRECT, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Flow Arm A	Analysis Options	Q Variations cannot be calculated for the selected traffic profile type.
Warning	Flow Arm B	Analysis Options	Q Variations cannot be calculated for the selected traffic profile type.
Warning	Flow Arm C	Analysis Options	Q Variations cannot be calculated for the selected traffic profile type.
Warning	Queue variations	Analysis Options	Q percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	140.49	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	A509 Kettering Road (N)		Major
B	Finedon Station Road (E)		Minor
C	A509 Ketterin Road (S)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Width for right turn (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	6.60		✓	3.00	103.0		-

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

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B	One lane plus flare	10.00	6.00	5.00	4.50	3.75		1.00	98	33

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/TS)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	114.970	0.082	0.206	0.130	0.295
1	B-C	184.576	0.110	0.279	-	-
1	C-B	172.195	0.260	0.260	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D1	2021 DS- DIRECT	AM	DIRECT	08:00	09:00	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A		DIRECT	✓	100.000
B		DIRECT	✓	100.000
C		DIRECT	✓	100.000

Origin-Destination Data

08:00 - 08:15

Demand (PCU/TS)

		To		
		A	B	C
From	A	0.00	6.00	292.00
	B	10.00	0.00	85.00
	C	284.00	27.00	0.00

08:15 - 08:30

Demand (PCU/TS)

		To		
		A	B	C
From	A	0.00	8.00	300.00
	B	8.00	0.00	97.00
	C	258.00	33.00	0.00

08:30 - 08:45

Demand (PCU/TS)

		To		
		A	B	C
From	A	0.00	22.00	269.00
	B	9.00	0.00	58.00
	C	269.00	24.00	0.00

08:45 - 09:00

Demand (PCU/TS)

		To		
		A	B	C
From	A	0.00	18.00	248.00
	B	12.00	0.00	68.00
	C	243.00	41.00	0.00

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	2	8
	B	25	0	2
	C	9	5	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Q (PCU)	Max Q95 (PCU)	Max LOS	Av. Demand (PCU/TS)	Total Junction Arrivals (PCU)	Total Qing Delay (PCU-min)	Av. Qing Delay (s)	Rate of Qing Delay (PCU-min/min)	Inclusive Total Qing Delay (PCU-min)	Inclusive Av. Qing Delay (s)
B-C	1.77	1052.48	76.5	?	F	77.00	308.00	3295.47	641.97	54.92	3913.22	762.31
B-A	1.63	1323.89	11.6	?	F	9.75	39.00	424.39	652.92	7.07	523.99	806.13
C-A						263.50	1054.00					
C-B	0.40	15.89	0.7	~1	C	31.25	125.00	29.09	13.96	0.48	29.12	13.98
A-B						13.50	54.00					
A-C						277.25	1109.00					

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	85.00	85.00	52.29	1.625	50.78	0.0	34.2	318.004	F
B-A	10.00	10.00	6.15	1.625	4.93	0.0	5.1	632.328	F
C-A	284.00	284.00			284.00				
C-B	27.00	27.00	94.74	0.285	26.59	0.0	0.4	13.792	B
A-B	6.00	6.00			6.00				
A-C	292.00	292.00			292.00				

08:15 - 08:30

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	97.00	97.00	54.73	1.772	54.68	34.2	76.5	861.232	F
B-A	8.00	8.00	5.45	1.468	5.17	5.1	7.9	1323.890	F
C-A	258.00	258.00			258.00				
C-B	33.00	33.00	92.14	0.358	32.84	0.4	0.6	15.888	C
A-B	8.00	8.00			8.00				
A-C	300.00	300.00			300.00				

08:30 - 08:45

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	58.00	58.00	63.87	0.908	63.03	76.5	71.5	1052.484	F
B-A	9.00	9.00	8.02	1.122	7.62	7.9	9.3	1090.348	F
C-A	269.00	269.00			269.00				
C-B	24.00	24.00	96.56	0.249	24.22	0.6	0.4	13.102	B
A-B	22.00	22.00			22.00				
A-C	269.00	269.00			269.00				

08:45 - 09:00

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	68.00	68.00	66.00	1.030	65.77	71.5	73.7	1008.813	F
B-A	12.00	12.00	10.07	1.192	9.72	9.3	11.6	1074.479	F
C-A	243.00	243.00			243.00				
C-B	41.00	41.00	103.06	0.398	40.68	0.4	0.7	15.071	C
A-B	18.00	18.00			18.00				
A-C	248.00	248.00			248.00				

Qing Delay Results for each time segment

08:00 - 08:15

Stream	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
B-C	265.15	17.68	318.004	F	F
B-A	41.65	2.78	632.328	F	F
C-B	5.77	0.38	13.792	B	B

08:15 - 08:30

Stream	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
B-C	830.76	55.38	861.232	F	F
B-A	97.42	6.49	1323.890	F	F
C-B	8.19	0.55	15.888	C	B

08:30 - 08:45

Stream	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
B-C	1110.30	74.02	1052.484	F	F
B-A	128.90	8.59	1090.348	F	F
C-B	5.56	0.37	13.102	B	B

08:45 - 09:00

Stream	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
B-C	1089.26	72.62	1008.813	F	F
B-A	156.43	10.43	1074.479	F	F
C-B	9.57	0.64	15.071	C	B

Q Variation Results for each time segment

08:00 - 08:15

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	34.22	?	?	?	?			N/A	N/A
B-A	5.07	?	?	?	?			N/A	N/A
C-B	0.41	~1	~1	~1	~1			N/A	N/A

08:15 - 08:30

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	76.54	?	?	?	?			N/A	N/A
B-A	7.90	?	?	?	?			N/A	N/A
C-B	0.57	~1	~1	~1	~1			N/A	N/A

08:30 - 08:45

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	71.50	?	?	?	?			N/A	N/A
B-A	9.28	?	?	?	?			N/A	N/A
C-B	0.35	~1	~1	~1	~1			N/A	N/A

08:45 - 09:00

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	73.73	?	?	?	?			N/A	N/A
B-A	11.56	?	?	?	?			N/A	N/A
C-B	0.68	~1	~1	~1	~1			N/A	N/A

2021 DS- DIRECT, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Flow Arm A	Analysis Options	Q Variations cannot be calculated for the selected traffic profile type.
Warning	Flow Arm B	Analysis Options	Q Variations cannot be calculated for the selected traffic profile type.
Warning	Flow Arm C	Analysis Options	Q Variations cannot be calculated for the selected traffic profile type.
Warning	Queue variations	Analysis Options	Q percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	10.55	B

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D2	2021 DS- DIRECT	PM	DIRECT	17:00	18:00	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A		DIRECT	✓	100.000
B		DIRECT	✓	100.000
C		DIRECT	✓	100.000

Origin-Destination Data

17:00 - 17:15

Demand (PCU/TS)

		To		
		A	B	C
From	A	0.00	16.00	287.00
	B	4.00	0.00	25.00
	C	270.00	74.00	0.00

17:15 - 17:30

Demand (PCU/TS)

		To		
		A	B	C
From	A	0.00	12.00	253.00
	B	4.00	0.00	41.00
	C	282.00	97.00	0.00

17:30 - 17:45

Demand (PCU/TS)

From \ To	A	B	C
A	0.00	13.00	234.00
B	3.00	0.00	32.00
C	267.00	77.00	0.00

17:45 - 18:00

Demand (PCU/TS)

From \ To	A	B	C
A	0.00	7.00	275.00
B	2.00	0.00	21.00
C	272.00	98.00	0.00

Vehicle Mix

HV %s

From \ To	A	B	C
A	0	3	5
B	0	0	2
C	3	1	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Q (PCU)	Max Q95 (PCU)	Max LOS	Av. Demand (PCU/TS)	Total Junction Arrivals (PCU)	Total Qing Delay (PCU-min)	Av. Qing Delay (s)	Rate of Qing Delay (PCU-min/min)	Inclusive Total Qing Delay (PCU-min)	Inclusive Av. Qing Delay (s)
B-C	9999999999.00	0.00	75.3	?	A	29.75	119.00	2744.34	1383.70	45.74	166666666.65	9999999999.00
B-A	9999999999.00	0.00	8.6	?	A	3.25	13.00	342.89	1582.57	5.71	166666666.65	9999999999.00
C-A						272.75	1091.00					
C-B	0.99	81.26	9.5	?	F	86.50	346.00	277.82	48.18	4.63	284.69	49.37
A-B						12.00	48.00					
A-C						262.25	1049.00					

Main Results for each time segment

17:00 - 17:15

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	25.00	25.00	0.00	9999999999.000	0.00	0.0	25.0	0.000	A
B-A	4.00	4.00	0.00	9999999999.000	0.00	0.0	4.0	0.000	A
C-A	270.00	270.00			270.00				
C-B	74.00	74.00	93.44	0.792	70.84	0.0	3.2	36.389	E
A-B	16.00	16.00			16.00				
A-C	287.00	287.00			287.00				

17:15 - 17:30

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	41.00	41.00	0.00	9999999999.000	0.00	25.0	66.0	0.000	A
B-A	4.00	4.00	0.00	9999999999.000	0.00	4.0	8.0	0.000	A
C-A	282.00	282.00			282.00				
C-B	97.00	97.00	103.32	0.939	92.87	3.2	7.3	67.493	F
A-B	12.00	12.00			12.00				
A-C	253.00	253.00			253.00				

17:30 - 17:45

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	32.00	32.00	44.37	0.721	43.70	66.0	54.3	0.000	A
B-A	3.00	3.00	4.98	0.602	4.43	8.0	6.6	0.000	A
C-A	267.00	267.00			267.00				
C-B	77.00	77.00	108.00	0.713	81.52	7.3	2.8	38.486	E
A-B	13.00	13.00			13.00				
A-C	234.00	234.00			234.00				

17:45 - 18:00

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	21.00	21.00	0.00	9999999999.000	0.00	54.3	75.3	0.000	A
B-A	2.00	2.00	0.00	9999999999.000	0.00	6.6	8.6	0.000	A
C-A	272.00	272.00			272.00				
C-B	98.00	98.00	98.90	0.991	91.26	2.8	9.5	81.262	F
A-B	7.00	7.00			7.00				
A-C	275.00	275.00			275.00				

Qing Delay Results for each time segment

17:00 - 17:15

Stream	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
B-C	187.50	12.50	0.000	A	A
B-A	30.00	2.00	0.000	A	A
C-B	38.23	2.55	36.389	E	D

17:15 - 17:30

Stream	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
B-C	682.50	45.50	0.000	A	A
B-A	90.00	6.00	0.000	A	A
C-B	85.40	5.69	67.493	F	E

17:30 - 17:45

Stream	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
B-C	902.28	60.15	0.000	A	A
B-A	109.30	7.29	0.000	A	A
C-B	52.65	3.51	38.486	E	D

17:45 - 18:00

Stream	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
B-C	972.06	64.80	0.000	A	A
B-A	113.59	7.57	0.000	A	A
C-B	101.54	6.77	81.262	F	F

Q Variation Results for each time segment

17:00 - 17:15

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	25.00	?	?	?	?			N/A	N/A
B-A	4.00	?	?	?	?			N/A	N/A
C-B	3.16	?	?	?	?			N/A	N/A

17:15 - 17:30

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	66.00	?	?	?	?			N/A	N/A
B-A	8.00	?	?	?	?			N/A	N/A
C-B	7.30	?	?	?	?			N/A	N/A

17:30 - 17:45

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	54.30	?	?	?	?			N/A	N/A
B-A	6.57	?	?	?	?			N/A	N/A
C-B	2.78	?	?	?	?			N/A	N/A

17:45 - 18:00

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	75.30	?	?	?	?			N/A	N/A
B-A	8.57	?	?	?	?			N/A	N/A
C-B	9.52	?	?	?	?			N/A	N/A

Junctions 9

ARCADY 9 - Roundabout Module

Filename: 170406 A509 A510 Rbt - 2021 DM AM&PM Peak - DIRECT.j9
Path: J:\30062 Land South of Kettering\Junctions 9\A509_A510_Harowden Rd\2021 DM
Report generation date: 06/07/2017 12:59:54

»(Default Analysis Set) - 2021 DM - DIRECT, AM
»(Default Analysis Set) - 2021 DM - DIRECT, PM

Summary of junction performance

	AM					PM				
	Q (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Q (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)
	A1 - 2021 DM - DIRECT									
A - A509 (NW)	7.0	17.99	0.88	C	15.35	2.2	7.10	0.68	A	13.08
B - Wellingborough Road (NE)	2.2	28.82	0.71	D		0.3	7.61	0.24	A	
C - A510 (E)	3.5	16.77	0.78	C		9.2	26.10	0.93	D	
D - A5193 (S)	2.8	15.01	0.75	C		2.3	13.09	0.70	B	
E - A509 (W)	1.8	6.95	0.63	A		2.3	8.33	0.69	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 Av. delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted Av.s.

File summary

File Description

Title	A509 / A510 / A5193 Rbt - 2014 Observed AM & PM
Location	Park Farm Way, Wellingborough
Site number	J1
Date	03/12/2014
Version	
Status	Preliminary
Identifier	
Client	
Jobnumber	31867
Enumerator	PBA\ktaylor
Description	2014 Observed Flows

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Av. delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perTimeSegment	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Q Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Av. Delay threshold (s)	Q threshold (PCU)
5.75		✓		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D1	2021 DM - DIRECT	AM	DIRECT	08:00	09:00	60	15	✓
D2	2021 DM - DIRECT	PM	DIRECT	17:00	18:00	60	15	✓

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	(Default Analysis Set)	✓	100.000	100.000

(Default Analysis Set) - 2021 DM - DIRECT, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	A - A509 (NW) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	E - A509 (W) - 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	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	A,B,C,D,E	15.35	C

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
A	A509 (NW)	
B	Wellingborough Road (NE)	
C	A510 (E)	
D	A5193 (S)	
E	A509 (W)	

Roundabout Geometry

Arm	V (m)	E (m)	l' (m)	R (m)	D (m)	PHI (deg)	Exit only
A - A509 (NW)	4.00	8.00	33.0	17.0	56.0	38.0	
B - Wellingborough Road (NE)	3.40	6.00	9.5	27.5	56.0	28.0	
C - A510 (E)	3.65	7.50	20.5	17.5	56.0	42.0	
D - A5193 (S)	3.75	5.75	15.0	35.0	56.0	0.0	
E - A509 (W)	3.65	8.00	38.5	30.0	56.0	32.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/TS)
A - A509 (NW)	0.625	502.348
B - Wellingborough Road (NE)	0.545	369.897
C - A510 (E)	0.574	436.348
D - A5193 (S)	0.623	439.058
E - A509 (W)	0.652	523.352

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 period length (min)	Time segment length (min)	Run automatically
D1	2021 DM - DIRECT	AM	DIRECT	08:00	09:00	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A - A509 (NW)		DIRECT	✓	100.000
B - Wellingborough Road (NE)		DIRECT	✓	100.000
C - A510 (E)		DIRECT	✓	100.000
D - A5193 (S)		DIRECT	✓	100.000
E - A509 (W)		DIRECT	✓	100.000

Origin-Destination Data

08:00 - 08:15

Demand (PCU/TS)

		To				
		A - A509 (NW)	B - Wellingborough Road (NE)	C - A510 (E)	D - A5193 (S)	E - A509 (W)
From	A - A509 (NW)	0.00	0.00	63.00	128.00	183.00
	B - Wellingborough Road (NE)	14.00	0.00	17.00	23.00	10.00
	C - A510 (E)	63.00	1.00	0.00	10.00	84.00
	D - A5193 (S)	128.00	0.00	25.00	0.00	12.00
	E - A509 (W)	142.00	1.00	70.00	16.00	0.00

08:15 - 08:30

Demand (PCU/TS)

		To				
		A - A509 (NW)	B - Wellingborough Road (NE)	C - A510 (E)	D - A5193 (S)	E - A509 (W)
From	A - A509 (NW)	0.00	0.00	97.00	97.00	175.00
	B - Wellingborough Road (NE)	13.00	0.00	22.00	25.00	12.00
	C - A510 (E)	70.00	4.00	0.00	6.00	89.00
	D - A5193 (S)	118.00	2.00	19.00	0.00	9.00
	E - A509 (W)	128.00	2.00	94.00	11.00	0.00

08:30 - 08:45

Demand (PCU/TS)

		To				
		A - A509 (NW)	B - Wellingborough Road (NE)	C - A510 (E)	D - A5193 (S)	E - A509 (W)
From	A - A509 (NW)	0.00	0.00	71.00	104.00	172.00
	B - Wellingborough Road (NE)	14.00	0.00	8.00	16.00	22.00
	C - A510 (E)	67.00	4.00	0.00	11.00	109.00
	D - A5193 (S)	111.00	4.00	11.00	0.00	9.00
	E - A509 (W)	138.00	3.00	81.00	1.00	0.00

08:45 - 09:00

Demand (PCU/TS)

		To				
		A - A509 (NW)	B - Wellingborough Road (NE)	C - A510 (E)	D - A5193 (S)	E - A509 (W)
From	A - A509 (NW)	0.00	0.00	76.00	101.00	151.00
	B - Wellingborough Road (NE)	2.00	0.00	12.00	13.00	6.00
	C - A510 (E)	43.00	8.00	1.00	9.00	80.00
	D - A5193 (S)	114.00	3.00	34.00	0.00	11.00
	E - A509 (W)	128.00	2.00	77.00	6.00	0.00

Vehicle Mix

HV %s

	To					
		A - A509 (NW)	B - Wellingborough Road (NE)	C - A510 (E)	D - A5193 (S)	E - A509 (W)
From	A - A509 (NW)	0	0	8	2	9
	B - Wellingborough Road (NE)	0	0	4	0	0
	C - A510 (E)	6	0	0	3	8
	D - A5193 (S)	3	0	1	0	3
	E - A509 (W)	12	0	6	3	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS	Av. Demand (PCU/TS)	Total Junction Arrivals (PCU)	Total Qing Delay (PCU-min)	Av. Qing Delay (s)	Rate of Qing Delay (PCU-min/min)	Inclusive Total Qing Delay (PCU-min)	Inclusive Av. Qing Delay (s)
A - A509 (NW)	0.88	17.99	7.0	C	354.50	1418.00	307.98	13.03	5.13	308.25	13.04
B - Wellingborough Road (NE)	0.71	28.82	2.2	D	57.25	229.00	68.79	18.02	1.15	68.79	18.02
C - A510 (E)	0.78	16.77	3.5	C	164.75	659.00	134.18	12.22	2.24	134.22	12.22
D - A5193 (S)	0.75	15.01	2.8	C	152.50	610.00	139.01	13.67	2.32	139.11	13.68
E - A509 (W)	0.63	6.95	1.8	A	225.00	900.00	94.32	6.29	1.57	94.35	6.29

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - A509 (NW)	374.00	374.00	111.92	432.42	0.865	367.93	342.53	0.0	6.1	13.766	B
B - Wellingborough Road (NE)	64.00	64.00	477.87	109.51	0.584	62.65	1.98	0.0	1.4	18.907	C
C - A510 (E)	158.00	158.00	367.85	225.22	0.702	155.61	172.68	0.0	2.4	13.391	B
D - A5193 (S)	165.00	165.00	349.29	221.35	0.745	162.18	174.17	0.0	2.8	14.987	B
E - A509 (W)	229.00	229.00	227.13	375.16	0.610	227.32	284.35	0.0	1.7	6.587	A

08:15 - 08:30

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - A509 (NW)	369.00	369.00	131.87	419.95	0.879	368.06	329.18	6.1	7.0	17.987	C
B - Wellingborough Road (NE)	72.00	72.00	492.01	101.81	0.707	71.13	7.92	1.4	2.2	28.816	D
C - A510 (E)	169.00	169.00	332.36	245.59	0.688	169.01	230.77	2.4	2.4	12.559	B
D - A5193 (S)	148.00	148.00	362.32	213.22	0.694	148.39	139.05	2.8	2.4	14.366	B
E - A509 (W)	235.00	235.00	226.15	375.80	0.625	234.89	284.56	1.7	1.8	6.954	A

08:30 - 08:45

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - A509 (NW)	347.00	347.00	104.31	437.17	0.794	349.69	330.03	7.0	4.3	11.287	B
B - Wellingborough Road (NE)	60.00	60.00	443.05	128.49	0.467	61.32	10.94	2.2	0.9	13.717	B
C - A510 (E)	191.00	191.00	331.57	246.04	0.776	189.93	172.80	2.4	3.5	16.774	C
D - A5193 (S)	135.00	135.00	388.45	196.93	0.686	135.11	133.04	2.4	2.3	15.013	C
E - A509 (W)	223.00	223.00	211.07	385.64	0.578	223.27	312.50	1.8	1.5	6.081	A

08:45 - 09:00

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - A509 (NW)	328.00	328.00	130.89	420.57	0.780	328.40	288.81	4.3	3.9	10.468	B
B - Wellingborough Road (NE)	33.00	33.00	446.23	126.75	0.260	33.54	13.05	0.9	0.4	9.847	A
C - A510 (E)	141.00	141.00	279.94	275.67	0.511	143.32	199.83	3.5	1.1	7.367	A
D - A5193 (S)	162.00	162.00	293.98	255.82	0.633	162.49	129.28	2.3	1.8	9.943	A
E - A509 (W)	213.00	213.00	206.52	388.61	0.548	213.18	249.96	1.5	1.3	5.619	A

Qing Delay Results for each time segment

08:00 - 08:15

Arm	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A - A509 (NW)	77.47	5.17	13.766	B	B
B - Wellingborough Road (NE)	18.22	1.21	18.907	C	B
C - A510 (E)	32.31	2.15	13.391	B	B
D - A5193 (S)	37.42	2.49	14.987	B	B
E - A509 (W)	23.89	1.59	6.587	A	A

08:15 - 08:30

Arm	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A - A509 (NW)	99.84	6.66	17.987	C	B
B - Wellingborough Road (NE)	30.11	2.01	28.816	D	C
C - A510 (E)	35.75	2.38	12.559	B	B
D - A5193 (S)	37.85	2.52	14.366	B	B
E - A509 (W)	26.45	1.76	6.954	A	A

08:30 - 08:45

Arm	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A - A509 (NW)	70.14	4.68	11.287	B	B
B - Wellingborough Road (NE)	14.76	0.98	13.717	B	B
C - A510 (E)	47.86	3.19	16.774	C	B
D - A5193 (S)	35.27	2.35	15.013	C	B
E - A509 (W)	23.39	1.56	6.081	A	A

08:45 - 09:00

Arm	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A - A509 (NW)	60.52	4.03	10.468	B	B
B - Wellingborough Road (NE)	5.70	0.38	9.847	A	A
C - A510 (E)	18.26	1.22	7.367	A	A
D - A5193 (S)	28.48	1.90	9.943	A	A
E - A509 (W)	20.59	1.37	5.619	A	A

(Default Analysis Set) - 2021 DM - DIRECT, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	A - A509 (NW) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	E - A509 (W) - 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	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	A,B,C,D,E	13.08	B

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D2	2021 DM - DIRECT	PM	DIRECT	17:00	18:00	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A - A509 (NW)		DIRECT	✓	100.000
B - Wellingborough Road (NE)		DIRECT	✓	100.000
C - A510 (E)		DIRECT	✓	100.000
D - A5193 (S)		DIRECT	✓	100.000
E - A509 (W)		DIRECT	✓	100.000

Origin-Destination Data

Demand (PCU/TS)

17:00 - 17:15

		To				
		A - A509 (NW)	B - Wellingborough Road (NE)	C - A510 (E)	D - A5193 (S)	E - A509 (W)
From	A - A509 (NW)	0.00	0.00	56.00	111.00	114.00
	B - Wellingborough Road (NE)	6.00	0.00	12.00	4.00	3.00
	C - A510 (E)	97.00	11.00	0.00	24.00	143.00
	D - A5193 (S)	101.00	17.00	15.00	0.00	6.00
	E - A509 (W)	175.00	14.00	50.00	10.00	0.00

Demand (PCU/TS)

17:15 - 17:30

		To				
		A - A509 (NW)	B - Wellingborough Road (NE)	C - A510 (E)	D - A5193 (S)	E - A509 (W)
From	A - A509 (NW)	0.00	0.00	41.00	108.00	124.00
	B - Wellingborough Road (NE)	4.00	0.00	10.00	10.00	8.00
	C - A510 (E)	92.00	12.00	0.00	21.00	93.00
	D - A5193 (S)	119.00	11.00	20.00	0.00	10.00
	E - A509 (W)	152.00	5.00	52.00	13.00	0.00

Demand (PCU/TS)

17:30 - 17:45

		To				
		A - A509 (NW)	B - Wellingborough Road (NE)	C - A510 (E)	D - A5193 (S)	E - A509 (W)
From	A - A509 (NW)	0.00	0.00	57.00	91.00	91.00
	B - Wellingborough Road (NE)	5.00	0.00	9.00	6.00	6.00
	C - A510 (E)	90.00	9.00	1.00	23.00	109.00
	D - A5193 (S)	120.00	16.00	20.00	0.00	6.00
	E - A509 (W)	161.00	11.00	49.00	13.00	0.00

Demand (PCU/TS)

17:45 - 18:00

		To				
		A - A509 (NW)	B - Wellingborough Road (NE)	C - A510 (E)	D - A5193 (S)	E - A509 (W)
From	A - A509 (NW)	1.00	0.00	36.00	112.00	131.00
	B - Wellingborough Road (NE)	4.00	0.00	8.00	17.00	9.00
	C - A510 (E)	67.00	11.00	0.00	20.00	67.00
	D - A5193 (S)	118.00	18.00	29.00	0.00	9.00
	E - A509 (W)	162.00	10.00	67.00	10.00	0.00

Vehicle Mix

HV %s

		To				
		A - A509 (NW)	B - Wellingborough Road (NE)	C - A510 (E)	D - A5193 (S)	E - A509 (W)
From	A - A509 (NW)	0	0	7	1	9
	B - Wellingborough Road (NE)	0	0	0	6	4
	C - A510 (E)	2	0	0	0	2
	D - A5193 (S)	1	0	0	0	0
	E - A509 (W)	5	0	4	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS	Av. Demand (PCU/TS)	Total Junction Arrivals (PCU)	Total Qing Delay (PCU-min)	Av. Qing Delay (s)	Rate of Qing Delay (PCU-min/min)	Inclusive Total Qing Delay (PCU-min)	Inclusive Av. Qing Delay (s)
A - A509 (NW)	0.68	7.10	2.2	A	268.25	1073.00	107.65	6.02	1.79	107.74	6.02
B - Wellingborough Road (NE)	0.24	7.61	0.3	A	30.25	121.00	12.77	6.33	0.21	12.78	6.34
C - A510 (E)	0.93	26.10	9.2	D	222.50	890.00	240.04	16.18	4.00	240.10	16.19
D - A5193 (S)	0.70	13.09	2.3	B	158.75	635.00	119.97	11.34	2.00	120.10	11.35
E - A509 (W)	0.69	8.33	2.3	A	238.50	954.00	120.38	7.57	2.01	120.49	7.58

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - A509 (NW)	281.00	281.00	115.56	430.14	0.653	279.05	372.83	0.0	1.9	6.197	A
B - Wellingborough Road (NE)	25.00	25.00	353.33	177.37	0.141	24.83	41.28	0.0	0.2	5.976	A
C - A510 (E)	275.00	275.00	246.27	295.00	0.932	265.75	131.90	0.0	9.2	26.104	D
D - A5193 (S)	139.00	139.00	364.71	211.73	0.656	137.15	147.31	0.0	1.9	11.881	B
E - A509 (W)	249.00	249.00	241.56	365.75	0.681	246.84	260.30	0.0	2.2	7.760	A

17:15 - 17:30

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - A509 (NW)	273.00	273.00	113.24	431.59	0.633	273.10	368.70	1.9	1.8	5.990	A
B - Wellingborough Road (NE)	32.00	32.00	358.02	174.82	0.183	31.94	28.32	0.2	0.2	6.472	A
C - A510 (E)	218.00	218.00	266.90	283.16	0.770	223.62	123.05	9.2	3.6	16.614	C
D - A5193 (S)	160.00	160.00	338.09	228.33	0.701	159.59	152.44	1.9	2.3	13.092	B
E - A509 (W)	222.00	222.00	259.56	354.00	0.627	222.38	238.12	2.2	1.8	7.155	A

17:30 - 17:45

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - A509 (NW)	239.00	239.00	118.99	428.00	0.558	239.49	376.39	1.8	1.3	5.042	A
B - Wellingborough Road (NE)	26.00	26.00	322.50	194.17	0.134	26.07	35.98	0.2	0.2	5.478	A
C - A510 (E)	232.00	232.00	212.58	314.34	0.738	232.64	135.99	3.6	3.0	11.306	B
D - A5193 (S)	162.00	162.00	311.93	244.63	0.662	162.23	133.30	2.3	2.0	11.045	B
E - A509 (W)	234.00	234.00	261.61	352.67	0.664	233.78	212.55	1.8	2.0	7.874	A

17:45 - 18:00

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - A509 (NW)	280.00	280.00	144.76	411.90	0.680	279.16	352.53	1.3	2.2	7.099	A
B - Wellingborough Road (NE)	38.00	38.00	384.92	160.16	0.237	37.84	39.00	0.2	0.3	7.610	A
C - A510 (E)	165.00	165.00	283.00	273.92	0.602	166.41	139.76	3.0	1.6	8.615	A
D - A5193 (S)	174.00	174.00	290.74	257.84	0.675	173.98	158.66	2.0	2.1	10.794	B
E - A509 (W)	249.00	249.00	248.54	361.19	0.689	248.75	216.18	2.0	2.3	8.326	A

Qing Delay Results for each time segment

17:00 - 17:15

Arm	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A - A509 (NW)	27.58	1.84	6.197	A	A
B - Wellingborough Road (NE)	2.40	0.16	5.976	A	A
C - A510 (E)	104.52	6.97	26.104	D	C
D - A5193 (S)	25.44	1.70	11.881	B	B
E - A509 (W)	30.30	2.02	7.760	A	A

17:15 - 17:30

Arm	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A - A509 (NW)	28.00	1.87	5.990	A	A
B - Wellingborough Road (NE)	3.33	0.22	6.472	A	A
C - A510 (E)	63.77	4.25	16.614	C	B
D - A5193 (S)	32.48	2.17	13.092	B	B
E - A509 (W)	27.70	1.85	7.155	A	A

17:30 - 17:45

Arm	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A - A509 (NW)	20.85	1.39	5.042	A	A
B - Wellingborough Road (NE)	2.45	0.16	5.478	A	A
C - A510 (E)	46.77	3.12	11.306	B	B
D - A5193 (S)	31.36	2.09	11.045	B	B
E - A509 (W)	29.41	1.96	7.874	A	A

17:45 - 18:00

Arm	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A - A509 (NW)	31.22	2.08	7.099	A	A
B - Wellingborough Road (NE)	4.60	0.31	7.610	A	A
C - A510 (E)	24.98	1.67	8.615	A	A
D - A5193 (S)	30.70	2.05	10.794	B	B
E - A509 (W)	32.97	2.20	8.326	A	A

Junctions 9

ARCADY 9 - Roundabout Module

Filename: 170406 A509 A510 Rbt - 2021 DS AM&PM Peak - DIRECT.j9
Path: J:\30062 Land South of Kettering\Junctions 9\A509_A510_Harowden Rd\2021 DS
Report generation date: 06/07/2017 14:11:04

Summary of junction performance

	AM					PM				
	Q (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Q (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)
	A1 - 2021 DS - DIRECT									
A - A509 (NW)	7.1	18.30	0.88	C	15.67	2.3	7.31	0.69	A	13.39
B - Wellingborough Road (NE)	2.3	29.26	0.71	D		0.3	7.75	0.24	A	
C - A510 (E)	3.6	17.37	0.78	C		9.7	27.02	0.94	D	
D - A5193 (S)	2.8	15.34	0.75	C		2.3	13.36	0.71	B	
E - A509 (W)	1.8	7.12	0.63	A		2.3	8.33	0.69	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 Av. delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted Av.s.

File summary

File Description

Title	A509 / A510 / A5193 Rbt
Location	
Site number	
Date	06/07/2017
Version	
Status	Preliminary
Identifier	
Client	
Jobnumber	
Enumerator	PBA\ktaylor
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Av. delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perTimeSegment	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Q Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Av. Delay threshold (s)	Q threshold (PCU)
5.75		✓		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D1	2021 DS - DIRECT	AM	DIRECT	08:00	09:00	60	15	✓
D2	2021 DS - DIRECT	PM	DIRECT	17:00	18:00	60	15	✓

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	(Default Analysis Set)	✓	100.000	100.000

(Default Analysis Set) - 2021 DS - DIRECT, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	A - A509 (NW) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	E - A509 (W) - 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	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	A,B,C,D,E	15.67	C

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
A	A509 (NW)	
B	Wellingborough Road (NE)	
C	A510 (E)	
D	A5193 (S)	
E	A509 (W)	

Roundabout Geometry

Arm	V (m)	E (m)	l' (m)	R (m)	D (m)	PHI (deg)	Exit only
A - A509 (NW)	4.00	8.00	33.0	17.0	56.0	38.0	
B - Wellingborough Road (NE)	3.40	6.00	9.5	27.5	56.0	28.0	
C - A510 (E)	3.65	7.50	20.5	17.5	56.0	42.0	
D - A5193 (S)	3.75	5.75	15.0	35.0	56.0	0.0	
E - A509 (W)	3.65	8.00	38.5	30.0	56.0	32.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/TS)
A - A509 (NW)	0.625	502.348
B - Wellingborough Road (NE)	0.545	369.897
C - A510 (E)	0.574	436.348
D - A5193 (S)	0.623	439.058
E - A509 (W)	0.652	523.352

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 period length (min)	Time segment length (min)	Run automatically
D1	2021 DS - DIRECT	AM	DIRECT	08:00	09:00	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A - A509 (NW)		DIRECT	✓	100.000
B - Wellingborough Road (NE)		DIRECT	✓	100.000
C - A510 (E)		DIRECT	✓	100.000
D - A5193 (S)		DIRECT	✓	100.000
E - A509 (W)		DIRECT	✓	100.000

Origin-Destination Data

08:00 - 08:15

Demand (PCU/TS)

		To				
		A - A509 (NW)	B - Wellingborough Road (NE)	C - A510 (E)	D - A5193 (S)	E - A509 (W)
From	A - A509 (NW)	0.00	0.00	64.00	128.00	183.00
	B - Wellingborough Road (NE)	14.00	0.00	17.00	23.00	10.00
	C - A510 (E)	64.00	1.00	0.00	10.00	84.00
	D - A5193 (S)	128.00	0.00	25.00	0.00	12.00
	E - A509 (W)	144.00	1.00	70.00	16.00	0.00

08:15 - 08:30

Demand (PCU/TS)

		To				
		A - A509 (NW)	B - Wellingborough Road (NE)	C - A510 (E)	D - A5193 (S)	E - A509 (W)
From	A - A509 (NW)	0.00	0.00	97.00	97.00	176.00
	B - Wellingborough Road (NE)	13.00	0.00	22.00	25.00	12.00
	C - A510 (E)	71.00	4.00	0.00	6.00	89.00
	D - A5193 (S)	119.00	2.00	19.00	0.00	9.00
	E - A509 (W)	130.00	2.00	94.00	11.00	0.00

08:30 - 08:45

Demand (PCU/TS)

		To				
		A - A509 (NW)	B - Wellingborough Road (NE)	C - A510 (E)	D - A5193 (S)	E - A509 (W)
From	A - A509 (NW)	0.00	0.00	71.00	105.00	173.00
	B - Wellingborough Road (NE)	14.00	0.00	8.00	16.00	22.00
	C - A510 (E)	68.00	4.00	0.00	11.00	109.00
	D - A5193 (S)	111.00	4.00	11.00	0.00	9.00
	E - A509 (W)	139.00	3.00	81.00	1.00	0.00

08:45 - 09:00

Demand (PCU/TS)

		To				
		A - A509 (NW)	B - Wellingborough Road (NE)	C - A510 (E)	D - A5193 (S)	E - A509 (W)
From	A - A509 (NW)	0.00	0.00	76.00	101.00	151.00
	B - Wellingborough Road (NE)	2.00	0.00	12.00	13.00	6.00
	C - A510 (E)	44.00	8.00	1.00	9.00	80.00
	D - A5193 (S)	114.00	3.00	34.00	0.00	11.00
	E - A509 (W)	130.00	2.00	77.00	6.00	0.00

Vehicle Mix

HV %s

		To				
		A - A509 (NW)	B - Wellingborough Road (NE)	C - A510 (E)	D - A5193 (S)	E - A509 (W)
From	A - A509 (NW)	0	0	8	2	9
	B - Wellingborough Road (NE)	0	0	4	0	0
	C - A510 (E)	6	0	0	3	8
	D - A5193 (S)	3	0	1	0	3
	E - A509 (W)	12	0	6	3	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS	Av. Demand (PCU/TS)	Total Junction Arrivals (PCU)	Total Qing Delay (PCU-min)	Av. Qing Delay (s)	Rate of Qing Delay (PCU-min/min)	Inclusive Total Qing Delay (PCU-min)	Inclusive Av. Qing Delay (s)
A - A509 (NW)	0.88	18.30	7.1	C	355.50	1422.00	313.57	13.23	5.23	313.85	13.24
B - Wellingborough Road (NE)	0.71	29.26	2.3	D	57.25	229.00	69.63	18.24	1.16	69.64	18.25
C - A510 (E)	0.78	17.37	3.6	C	165.75	663.00	137.56	12.45	2.29	137.60	12.45
D - A5193 (S)	0.75	15.34	2.8	C	152.75	611.00	142.00	13.94	2.37	142.10	13.95
E - A509 (W)	0.63	7.12	1.8	A	226.75	907.00	96.65	6.39	1.61	96.68	6.40

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - A509 (NW)	375.00	375.00	111.90	432.43	0.867	368.83	345.44	0.0	6.2	13.934	B
B - Wellingborough Road (NE)	64.00	64.00	478.76	109.03	0.587	62.64	1.98	0.0	1.4	19.089	C
C - A510 (E)	159.00	159.00	367.76	225.27	0.706	156.57	173.63	0.0	2.4	13.555	B
D - A5193 (S)	165.00	165.00	350.20	220.78	0.747	162.16	174.13	0.0	2.8	15.115	C
E - A509 (W)	231.00	231.00	228.07	374.55	0.617	229.27	284.28	0.0	1.7	6.700	A

08:15 - 08:30

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - A509 (NW)	370.00	370.00	131.85	419.96	0.881	369.03	333.10	6.2	7.1	18.297	C
B - Wellingborough Road (NE)	72.00	72.00	492.96	101.29	0.711	71.11	7.92	1.4	2.3	29.260	D
C - A510 (E)	170.00	170.00	333.32	245.04	0.694	170.00	230.75	2.4	2.4	12.812	B
D - A5193 (S)	149.00	149.00	364.28	212.00	0.703	149.31	139.04	2.8	2.5	14.847	B
E - A509 (W)	237.00	237.00	228.07	374.55	0.633	236.88	285.52	1.7	1.8	7.117	A

08:30 - 08:45

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - A509 (NW)	349.00	349.00	104.32	437.16	0.798	351.69	332.06	7.1	4.4	11.560	B
B - Wellingborough Road (NE)	60.00	60.00	445.07	127.39	0.471	61.34	10.94	2.3	0.9	13.960	B
C - A510 (E)	192.00	192.00	333.57	244.89	0.784	190.84	172.84	2.4	3.6	17.369	C
D - A5193 (S)	135.00	135.00	390.38	195.73	0.690	135.16	134.03	2.5	2.4	15.339	C
E - A509 (W)	224.00	224.00	212.09	384.98	0.582	224.30	313.46	1.8	1.5	6.149	A

08:45 - 09:00

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - A509 (NW)	328.00	328.00	130.89	420.56	0.780	328.52	291.89	4.4	3.9	10.494	B
B - Wellingborough Road (NE)	33.00	33.00	446.36	126.69	0.260	33.56	13.05	0.9	0.4	9.855	A
C - A510 (E)	142.00	142.00	280.06	275.61	0.515	144.44	199.85	3.6	1.2	7.441	A
D - A5193 (S)	162.00	162.00	295.17	255.08	0.635	162.53	129.33	2.4	1.8	10.032	B
E - A509 (W)	215.00	215.00	207.61	387.90	0.554	215.17	250.09	1.5	1.4	5.707	A

Qing Delay Results for each time segment

08:00 - 08:15

Arm	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A - A509 (NW)	78.56	5.24	13.934	B	B
B - Wellingborough Road (NE)	18.38	1.23	19.089	C	B
C - A510 (E)	32.88	2.19	13.555	B	B
D - A5193 (S)	37.72	2.51	15.115	C	B
E - A509 (W)	24.50	1.63	6.700	A	A

08:15 - 08:30

Arm	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A - A509 (NW)	101.65	6.78	18.297	C	B
B - Wellingborough Road (NE)	30.52	2.03	29.260	D	C
C - A510 (E)	36.49	2.43	12.812	B	B
D - A5193 (S)	39.23	2.62	14.847	B	B
E - A509 (W)	27.26	1.82	7.117	A	A

08:30 - 08:45

Arm	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A - A509 (NW)	72.36	4.82	11.560	B	B
B - Wellingborough Road (NE)	15.03	1.00	13.960	B	B
C - A510 (E)	49.60	3.31	17.369	C	B
D - A5193 (S)	36.28	2.42	15.339	C	B
E - A509 (W)	23.79	1.59	6.149	A	A

08:45 - 09:00

Arm	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A - A509 (NW)	61.00	4.07	10.494	B	B
B - Wellingborough Road (NE)	5.71	0.38	9.855	A	A
C - A510 (E)	18.59	1.24	7.441	A	A
D - A5193 (S)	28.76	1.92	10.032	B	B
E - A509 (W)	21.10	1.41	5.707	A	A

(Default Analysis Set) - 2021 DS - DIRECT, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	A - A509 (NW) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	E - A509 (W) - 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	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	A,B,C,D,E	13.39	B

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D2	2021 DS - DIRECT	PM	DIRECT	17:00	18:00	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A - A509 (NW)		DIRECT	✓	100.000
B - Wellingborough Road (NE)		DIRECT	✓	100.000
C - A510 (E)		DIRECT	✓	100.000
D - A5193 (S)		DIRECT	✓	100.000
E - A509 (W)		DIRECT	✓	100.000

Origin-Destination Data

Demand (PCU/TS)

17:00 - 17:15

		To				
		A - A509 (NW)	B - Wellingborough Road (NE)	C - A510 (E)	D - A5193 (S)	E - A509 (W)
From	A - A509 (NW)	0.00	0.00	56.00	112.00	116.00
	B - Wellingborough Road (NE)	6.00	0.00	12.00	4.00	3.00
	C - A510 (E)	97.00	11.00	0.00	24.00	143.00
	D - A5193 (S)	101.00	17.00	15.00	0.00	6.00
	E - A509 (W)	175.00	14.00	50.00	10.00	0.00

17:15 - 17:30

Demand (PCU/TS)

		To				
		A - A509 (NW)	B - Wellingborough Road (NE)	C - A510 (E)	D - A5193 (S)	E - A509 (W)
From	A - A509 (NW)	0.00	0.00	41.00	109.00	126.00
	B - Wellingborough Road (NE)	4.00	0.00	10.00	10.00	8.00
	C - A510 (E)	92.00	12.00	0.00	21.00	93.00
	D - A5193 (S)	119.00	11.00	20.00	0.00	10.00
	E - A509 (W)	153.00	5.00	52.00	13.00	0.00

17:30 - 17:45

Demand (PCU/TS)

		To				
		A - A509 (NW)	B - Wellingborough Road (NE)	C - A510 (E)	D - A5193 (S)	E - A509 (W)
From	A - A509 (NW)	0.00	0.00	57.00	92.00	93.00
	B - Wellingborough Road (NE)	5.00	0.00	9.00	6.00	6.00
	C - A510 (E)	90.00	9.00	1.00	23.00	109.00
	D - A5193 (S)	120.00	16.00	20.00	0.00	6.00
	E - A509 (W)	161.00	11.00	49.00	13.00	0.00

17:45 - 18:00

Demand (PCU/TS)

		To				
		A - A509 (NW)	B - Wellingborough Road (NE)	C - A510 (E)	D - A5193 (S)	E - A509 (W)
From	A - A509 (NW)	1.00	0.00	37.00	113.00	133.00
	B - Wellingborough Road (NE)	4.00	0.00	8.00	17.00	9.00
	C - A510 (E)	67.00	11.00	0.00	20.00	67.00
	D - A5193 (S)	118.00	18.00	29.00	0.00	9.00
	E - A509 (W)	162.00	10.00	67.00	10.00	0.00

Vehicle Mix

HV %s

		To				
		A - A509 (NW)	B - Wellingborough Road (NE)	C - A510 (E)	D - A5193 (S)	E - A509 (W)
From	A - A509 (NW)	0	0	7	1	9
	B - Wellingborough Road (NE)	0	0	0	6	4
	C - A510 (E)	2	0	0	0	2
	D - A5193 (S)	1	0	0	0	0
	E - A509 (W)	5	0	4	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS	Av. Demand (PCU/TS)	Total Junction Arrivals (PCU)	Total Qing Delay (PCU-min)	Av. Qing Delay (s)	Rate of Qing Delay (PCU-min/min)	Inclusive Total Qing Delay (PCU-min)	Inclusive Av. Qing Delay (s)
A - A509 (NW)	0.69	7.31	2.3	A	271.50	1086.00	111.27	6.15	1.85	111.37	6.15
B - Wellingborough Road (NE)	0.24	7.75	0.3	A	30.25	121.00	12.94	6.42	0.22	12.94	6.42
C - A510 (E)	0.94	27.02	9.7	D	222.50	890.00	247.68	16.70	4.13	247.75	16.70
D - A5193 (S)	0.71	13.36	2.3	B	158.75	635.00	121.89	11.52	2.03	122.02	11.53
E - A509 (W)	0.69	8.33	2.3	A	238.75	955.00	120.75	7.59	2.01	120.86	7.59

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - A509 (NW)	284.00	284.00	115.54	430.15	0.660	282.00	372.67	0.0	2.0	6.315	A
B - Wellingborough Road (NE)	25.00	25.00	356.27	175.77	0.142	24.83	41.26	0.0	0.2	6.039	A
C - A510 (E)	275.00	275.00	249.22	293.31	0.938	265.35	131.89	0.0	9.7	27.021	D
D - A5193 (S)	139.00	139.00	366.31	210.74	0.660	137.12	148.25	0.0	1.9	12.031	B
E - A509 (W)	249.00	249.00	241.37	365.87	0.681	246.84	262.06	0.0	2.2	7.752	A

17:15 - 17:30

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - A509 (NW)	276.00	276.00	113.24	431.59	0.639	276.11	369.76	2.0	1.9	6.109	A
B - Wellingborough Road (NE)	32.00	32.00	361.01	173.19	0.185	31.94	28.33	0.2	0.2	6.546	A
C - A510 (E)	218.00	218.00	269.90	281.44	0.775	223.92	123.05	9.7	3.7	17.297	C
D - A5193 (S)	160.00	160.00	340.37	226.91	0.705	159.57	153.46	1.9	2.3	13.359	B
E - A509 (W)	223.00	223.00	259.65	353.94	0.630	223.35	240.28	2.2	1.8	7.211	A

17:30 - 17:45

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - A509 (NW)	242.00	242.00	119.00	427.99	0.565	242.51	376.44	1.9	1.4	5.128	A
B - Wellingborough Road (NE)	26.00	26.00	325.53	192.52	0.135	26.07	35.99	0.2	0.2	5.532	A
C - A510 (E)	232.00	232.00	215.60	312.60	0.742	232.68	135.99	3.7	3.0	11.568	B
D - A5193 (S)	162.00	162.00	313.98	243.36	0.666	162.24	134.31	2.3	2.1	11.221	B
E - A509 (W)	234.00	234.00	261.64	352.64	0.664	233.80	214.58	1.8	2.0	7.877	A

17:45 - 18:00

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - A509 (NW)	284.00	284.00	144.76	411.90	0.689	283.11	352.55	1.4	2.3	7.313	A
B - Wellingborough Road (NE)	38.00	38.00	388.86	158.01	0.240	37.84	39.00	0.2	0.3	7.745	A
C - A510 (E)	165.00	165.00	285.95	272.23	0.606	166.45	140.75	3.0	1.6	8.761	A
D - A5193 (S)	174.00	174.00	292.75	256.58	0.678	173.98	159.64	2.1	2.1	10.958	B
E - A509 (W)	249.00	249.00	248.56	361.18	0.689	248.75	218.18	2.0	2.3	8.327	A

Qing Delay Results for each time segment

17:00 - 17:15

Arm	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A - A509 (NW)	28.38	1.89	6.315	A	A
B - Wellingborough Road (NE)	2.43	0.16	6.039	A	A
C - A510 (E)	108.05	7.20	27.021	D	C
D - A5193 (S)	25.74	1.72	12.031	B	B
E - A509 (W)	30.27	2.02	7.752	A	A

17:15 - 17:30

Arm	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A - A509 (NW)	28.87	1.92	6.109	A	A
B - Wellingborough Road (NE)	3.36	0.22	6.546	A	A
C - A510 (E)	66.30	4.42	17.297	C	B
D - A5193 (S)	33.07	2.20	13.359	B	B
E - A509 (W)	28.02	1.87	7.211	A	A

17:30 - 17:45

Arm	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A - A509 (NW)	21.47	1.43	5.128	A	A
B - Wellingborough Road (NE)	2.47	0.16	5.532	A	A
C - A510 (E)	47.93	3.20	11.568	B	B
D - A5193 (S)	31.90	2.13	11.221	B	B
E - A509 (W)	29.47	1.96	7.877	A	A

17:45 - 18:00

Arm	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A - A509 (NW)	32.54	2.17	7.313	A	A
B - Wellingborough Road (NE)	4.68	0.31	7.745	A	A
C - A510 (E)	25.41	1.69	8.761	A	A
D - A5193 (S)	31.18	2.08	10.958	B	B
E - A509 (W)	32.98	2.20	8.327	A	A

Junctions 9

ARCADY 9 - Roundabout Module

Filename: 170410 - A509_Carina Road_Orion Way 2021 DM - DIRECT.j9
Path: J:\30062 Land South of Kettering\Junctions 9\A509_Carina Road_Orion Way\2021 DM
Report generation date: 30/06/2017 09:09:11

Summary of junction performance

	AM					PM				
	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)
	2021 DM									
A - A509 Pytchley Rd (N)	0.9	3.49	0.48	A	3.97	0.9	3.76	0.47	A	5.69
B - Holdenby (NE)	0.3	6.35	0.20	A		0.8	10.88	0.44	B	
C - A509 (SE)	1.2	4.03	0.53	A		2.0	5.59	0.67	A	
D - Carina Road (SW)	0.5	4.64	0.34	A		1.1	6.16	0.52	A	
E - Orion Way (NW	0.3	3.58	0.24	A		1.3	6.78	0.57	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. Junction LOS and Junction Delay are demand-weighted averages.

File summary

File Description

Title	A509/Carina Road / Orion Way Roundabout
Location	Kettering
Site number	
Date	10/04/2017
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	30062
Enumerator	PBA\talthorpe
Description	2017 Observed

Units

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

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75		✓		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D1	2021 DM	AM	DIRECT	08:00	09:00	60	15	✓
D2	2021 DM	PM	DIRECT	17:00	18:00	60	15	✓

Analysis Set Details

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

2021 DM, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	A - A509 Pytchley Rd (N) - 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	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	A,B,C,D,E	3.97	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
A	A509 Pytchley Rd (N)	
B	Holdenby (NE)	
C	A509 (SE)	
D	Carina Road (SW)	
E	Orion Way (NW	

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
A - A509 Pytchley Rd (N)	3.65	10.00	57.5	18.0	63.0	50.0	
B - Holdenby (NE)	3.00	7.00	9.5	10.0	63.0	47.0	
C - A509 (SE)	7.50	7.50	0.0	37.5	63.0	32.0	
D - Carina Road (SW)	3.65	9.00	12.0	47.5	63.0	34.0	
E - Orion Way (NW	5.00	9.00	7.0	20.0	63.0	43.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/TS)
A - A509 Pytchley Rd (N)	0.629	584.613
B - Holdenby (NE)	0.441	317.886
C - A509 (SE)	0.647	577.147
D - Carina Road (SW)	0.561	449.891
E - Orion Way (NW	0.555	463.954

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 period length (min)	Time segment length (min)	Run automatically
D1	2021 DM	AM	DIRECT	08:00	09:00	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A - A509 Pytchley Rd (N)		DIRECT	✓	100.000
B - Holdenby (NE)		DIRECT	✓	100.000
C - A509 (SE)		DIRECT	✓	100.000
D - Carina Road (SW)		DIRECT	✓	100.000
E - Orion Way (NW		DIRECT	✓	100.000

Origin-Destination Data

08:00 - 08:15

Demand (PCU/TS)

		To				
		A - A509 Pytchley Rd (N)	B - Holdenby (NE)	C - A509 (SE)	D - Carina Road (SW)	E - Orion Way (NW
From	A - A509 Pytchley Rd (N)	0.00	12.00	116.00	39.00	65.00
	B - Holdenby (NE)	13.00	0.00	13.00	6.00	4.00
	C - A509 (SE)	124.00	0.00	0.00	61.00	72.00
	D - Carina Road (SW)	25.00	11.00	39.00	0.00	26.00
	E - Orion Way (NW	6.00	5.00	39.00	14.00	0.00

08:15 - 08:30

Demand (PCU/TS)

		To				
		A - A509 Pytchley Rd (N)	B - Holdenby (NE)	C - A509 (SE)	D - Carina Road (SW)	E - Orion Way (NW
From	A - A509 Pytchley Rd (N)	1.00	18.00	129.00	32.00	54.00
	B - Holdenby (NE)	12.00	1.00	3.00	1.00	8.00
	C - A509 (SE)	99.00	0.00	1.00	49.00	65.00
	D - Carina Road (SW)	24.00	8.00	39.00	0.00	17.00
	E - Orion Way (NW	13.00	6.00	43.00	14.00	0.00

08:30 - 08:45

Demand (PCU/TS)

		To				
		A - A509 Pytchley Rd (N)	B - Holdenby (NE)	C - A509 (SE)	D - Carina Road (SW)	E - Orion Way (NW
From	A - A509 Pytchley Rd (N)	0.00	12.00	129.00	39.00	33.00
	B - Holdenby (NE)	22.00	0.00	3.00	2.00	8.00
	C - A509 (SE)	80.00	2.00	0.00	62.00	74.00
	D - Carina Road (SW)	20.00	11.00	53.00	0.00	15.00
	E - Orion Way (NW	10.00	6.00	44.00	10.00	0.00

08:45 - 09:00

Demand (PCU/TS)

		To				
		A - A509 Pytchley Rd (N)	B - Holdenby (NE)	C - A509 (SE)	D - Carina Road (SW)	E - Orion Way (NW
From	A - A509 Pytchley Rd (N)	0.00	28.00	112.00	53.00	48.00
	B - Holdenby (NE)	5.00	0.00	4.00	3.00	4.00
	C - A509 (SE)	80.00	5.00	0.00	37.00	73.00
	D - Carina Road (SW)	22.00	9.00	43.00	0.00	12.00
	E - Orion Way (NW	20.00	14.00	35.00	19.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To				
		A - A509 Pytchley Rd (N)	B - Holdenby (NE)	C - A509 (SE)	D - Carina Road (SW)	E - Orion Way (NW
From	A - A509 Pytchley Rd (N)	0	5	4	0	2
	B - Holdenby (NE)	2	0	5	0	0
	C - A509 (SE)	3	0	0	1	7
	D - Carina Road (SW)	0	0	1	0	0
	E - Orion Way (NW	5	3	21	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/TS)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
A - A509 Pytchley Rd (N)	0.48	3.49	0.9	A	230.00	920.00	50.06	3.26	0.83	50.08	3.27
B - Holdenby (NE)	0.20	6.35	0.3	A	28.00	112.00	11.26	6.03	0.19	11.26	6.03
C - A509 (SE)	0.53	4.03	1.2	A	221.00	884.00	51.00	3.46	0.85	51.01	3.46
D - Carina Road (SW)	0.34	4.64	0.5	A	93.50	374.00	25.43	4.08	0.42	25.43	4.08
E - Orion Way (NW	0.24	3.58	0.3	A	74.50	298.00	17.36	3.49	0.29	17.36	3.49

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - A509 Pytchley Rd (N)	232.00	232.00	107.51	517.02	0.449	231.17	167.20	0.0	0.8	3.227	A
B - Holdenby (NE)	36.00	36.00	310.80	180.84	0.199	35.75	27.88	0.0	0.3	6.347	A
C - A509 (SE)	257.00	257.00	140.41	486.33	0.528	255.85	206.14	0.0	1.2	4.025	A
D - Carina Road (SW)	101.00	101.00	276.77	294.66	0.343	100.48	119.49	0.0	0.5	4.641	A
E - Orion Way (NW	64.00	64.00	210.97	346.83	0.185	63.75	166.28	0.0	0.3	3.578	A

08:15 - 08:30

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - A509 Pytchley Rd (N)	234.00	234.00	112.02	514.18	0.455	233.98	149.19	0.8	0.9	3.308	A
B - Holdenby (NE)	25.00	25.00	313.01	179.86	0.139	25.09	32.99	0.3	0.2	5.907	A
C - A509 (SE)	214.00	214.00	123.07	497.54	0.430	214.36	215.02	1.2	0.8	3.301	A
D - Carina Road (SW)	88.00	88.00	241.28	314.56	0.280	88.13	96.15	0.5	0.4	3.994	A
E - Orion Way (NW	76.00	76.00	185.26	361.10	0.210	75.96	144.15	0.3	0.3	3.540	A

08:30 - 08:45

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - A509 Pytchley Rd (N)	213.00	213.00	125.94	505.43	0.421	213.10	132.04	0.9	0.8	3.173	A
B - Holdenby (NE)	35.00	35.00	308.03	182.06	0.192	34.93	31.01	0.2	0.2	6.216	A
C - A509 (SE)	218.00	218.00	114.00	503.41	0.433	218.00	228.95	0.8	0.8	3.269	A
D - Carina Road (SW)	99.00	99.00	219.06	327.03	0.303	98.96	112.94	0.4	0.4	3.967	A
E - Orion Way (NW	70.00	70.00	187.96	359.60	0.195	70.02	130.06	0.3	0.3	3.524	A

08:45 - 09:00

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - A509 Pytchley Rd (N)	241.00	241.00	125.03	506.00	0.476	240.83	127.09	0.8	0.9	3.488	A
B - Holdenby (NE)	16.00	16.00	309.95	181.21	0.088	16.14	55.91	0.2	0.1	5.558	A
C - A509 (SE)	195.00	195.00	131.98	491.78	0.397	195.10	194.11	0.8	0.7	3.157	A
D - Carina Road (SW)	86.00	86.00	215.09	329.25	0.261	86.08	111.99	0.4	0.4	3.722	A
E - Orion Way (NW	88.00	88.00	164.18	372.81	0.236	87.94	136.99	0.3	0.3	3.451	A

Queueing Delay Results for each time segment

08:00 - 08:15

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A - A509 Pytchley Rd (N)	12.16	0.81	3.227	A	A
B - Holdenby (NE)	3.66	0.24	6.347	A	A
C - A509 (SE)	16.68	1.11	4.025	A	A
D - Carina Road (SW)	7.56	0.50	4.641	A	A
E - Orion Way (NW	3.73	0.25	3.578	A	A

08:15 - 08:30

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A - A509 Pytchley Rd (N)	12.74	0.85	3.308	A	A
B - Holdenby (NE)	2.55	0.17	5.907	A	A
C - A509 (SE)	12.05	0.80	3.301	A	A
D - Carina Road (SW)	5.99	0.40	3.994	A	A
E - Orion Way (NW	4.42	0.29	3.540	A	A

08:30 - 08:45

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A - A509 Pytchley Rd (N)	11.47	0.76	3.173	A	A
B - Holdenby (NE)	3.51	0.23	6.216	A	A
C - A509 (SE)	11.83	0.79	3.269	A	A
D - Carina Road (SW)	6.43	0.43	3.967	A	A
E - Orion Way (NW	4.15	0.28	3.524	A	A

08:45 - 09:00

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A - A509 Pytchley Rd (N)	13.69	0.91	3.488	A	A
B - Holdenby (NE)	1.53	0.10	5.558	A	A
C - A509 (SE)	10.43	0.70	3.157	A	A
D - Carina Road (SW)	5.44	0.36	3.722	A	A
E - Orion Way (NW	5.06	0.34	3.451	A	A

2021 DM, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	A - A509 Pytchley Rd (N) - 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	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	A,B,C,D,E	5.69	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D2	2021 DM	PM	DIRECT	17:00	18:00	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A - A509 Pytchley Rd (N)		DIRECT	✓	100.000
B - Holdenby (NE)		DIRECT	✓	100.000
C - A509 (SE)		DIRECT	✓	100.000
D - Carina Road (SW)		DIRECT	✓	100.000
E - Orion Way (NW		DIRECT	✓	100.000

Origin-Destination Data

Demand (PCU/TS)

17:00 - 17:15

		To				
		A - A509 Pytchley Rd (N)	B - Holdenby (NE)	C - A509 (SE)	D - Carina Road (SW)	E - Orion Way (NW
From	A - A509 Pytchley Rd (N)	0.00	14.00	84.00	50.00	28.00
	B - Holdenby (NE)	28.00	0.00	16.00	11.00	8.00
	C - A509 (SE)	111.00	11.00	0.00	123.00	41.00
	D - Carina Road (SW)	59.00	0.00	75.00	0.00	19.00
	E - Orion Way (NW	11.00	5.00	128.00	31.00	0.00

Demand (PCU/TS)

17:15 - 17:30

		To				
		A - A509 Pytchley Rd (N)	B - Holdenby (NE)	C - A509 (SE)	D - Carina Road (SW)	E - Orion Way (NW
From	A - A509 Pytchley Rd (N)	0.00	16.00	112.00	61.00	40.00
	B - Holdenby (NE)	14.00	0.00	13.00	4.00	5.00
	C - A509 (SE)	126.00	6.00	2.00	126.00	41.00
	D - Carina Road (SW)	36.00	0.00	55.00	0.00	29.00
	E - Orion Way (NW	17.00	2.00	72.00	10.00	0.00

Demand (PCU/TS)

17:30 - 17:45

		To				
		A - A509 Pytchley Rd (N)	B - Holdenby (NE)	C - A509 (SE)	D - Carina Road (SW)	E - Orion Way (NW
From	A - A509 Pytchley Rd (N)	0.00	18.00	97.00	61.00	24.00
	B - Holdenby (NE)	9.00	0.00	5.00	9.00	2.00
	C - A509 (SE)	114.00	3.00	0.00	120.00	56.00
	D - Carina Road (SW)	27.00	0.00	82.00	0.00	17.00
	E - Orion Way (NW	13.00	1.00	117.00	24.00	0.00

Demand (PCU/TS)

17:45 - 18:00

		To				
		A - A509 Pytchley Rd (N)	B - Holdenby (NE)	C - A509 (SE)	D - Carina Road (SW)	E - Orion Way (NW
From	A - A509 Pytchley Rd (N)	0.00	15.00	94.00	47.00	38.00
	B - Holdenby (NE)	17.00	0.00	9.00	6.00	8.00
	C - A509 (SE)	147.00	8.00	0.00	132.00	43.00
	D - Carina Road (SW)	59.00	0.00	69.00	0.00	29.00
	E - Orion Way (NW	13.00	9.00	54.00	16.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To				
		A - A509 Pytchley Rd (N)	B - Holdenby (NE)	C - A509 (SE)	D - Carina Road (SW)	E - Orion Way (NW
From	A - A509 Pytchley Rd (N)	0	5	1	0	2
	B - Holdenby (NE)	0	0	0	0	0
	C - A509 (SE)	1	0	0	0	5
	D - Carina Road (SW)	1	0	1	0	1
	E - Orion Way (NW	0	7	2	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/TS)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
A - A509 Pytchley Rd (N)	0.47	3.76	0.9	A	199.75	799.00	46.16	3.47	0.77	46.17	3.47
B - Holdenby (NE)	0.44	10.88	0.8	B	41.00	164.00	22.83	8.35	0.38	22.83	8.35
C - A509 (SE)	0.67	5.59	2.0	A	302.50	1210.00	97.08	4.81	1.62	97.15	4.82
D - Carina Road (SW)	0.52	6.16	1.1	A	139.00	556.00	47.06	5.08	0.78	47.09	5.08
E - Orion Way (NW	0.57	6.78	1.3	A	130.75	523.00	45.51	5.22	0.76	45.52	5.22

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - A509 Pytchley Rd (N)	176.00	176.00	248.26	428.52	0.411	175.30	207.65	0.0	0.7	3.585	A
B - Holdenby (NE)	63.00	63.00	393.71	144.27	0.437	62.24	29.85	0.0	0.8	10.879	B
C - A509 (SE)	286.00	286.00	154.89	476.96	0.600	284.51	301.07	0.0	1.5	4.692	A
D - Carina Road (SW)	153.00	153.00	225.60	323.35	0.473	152.10	213.79	0.0	0.9	5.281	A
E - Orion Way (NW	175.00	175.00	282.24	307.26	0.570	173.68	95.47	0.0	1.3	6.783	A

17:15 - 17:30

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - A509 Pytchley Rd (N)	229.00	229.00	148.04	491.54	0.466	228.82	193.31	0.7	0.9	3.464	A
B - Holdenby (NE)	36.00	36.00	352.81	162.31	0.222	36.47	24.05	0.8	0.3	7.177	A
C - A509 (SE)	301.00	301.00	134.50	490.15	0.614	300.90	254.79	1.5	1.6	4.803	A
D - Carina Road (SW)	120.00	120.00	234.17	318.55	0.377	120.28	201.23	0.9	0.6	4.592	A
E - Orion Way (NW	101.00	101.00	239.47	331.00	0.305	101.87	114.98	1.3	0.4	4.005	A

17:30 - 17:45

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - A509 Pytchley Rd (N)	200.00	200.00	226.48	442.21	0.452	200.04	163.17	0.9	0.8	3.759	A
B - Holdenby (NE)	25.00	25.00	404.51	139.51	0.179	25.07	22.01	0.3	0.2	7.870	A
C - A509 (SE)	293.00	293.00	128.95	493.74	0.593	293.10	300.63	1.6	1.5	4.546	A
D - Carina Road (SW)	126.00	126.00	208.15	333.14	0.378	126.00	213.89	0.6	0.6	4.387	A
E - Orion Way (NW	155.00	155.00	235.08	333.45	0.465	154.58	99.07	0.4	0.9	5.097	A

17:45 - 18:00

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - A509 Pytchley Rd (N)	194.00	194.00	156.30	486.34	0.399	194.17	235.38	0.8	0.7	3.122	A
B - Holdenby (NE)	40.00	40.00	318.52	177.43	0.225	39.93	31.95	0.2	0.3	6.542	A
C - A509 (SE)	330.00	330.00	132.07	491.72	0.671	329.47	226.38	1.5	2.0	5.587	A
D - Carina Road (SW)	157.00	157.00	260.55	303.75	0.517	156.55	200.99	0.6	1.1	6.157	A
E - Orion Way (NW	92.00	92.00	299.27	297.81	0.309	92.41	117.84	0.9	0.5	4.471	A

Queueing Delay Results for each time segment

17:00 - 17:15

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A - A509 Pytchley Rd (N)	10.23	0.68	3.585	A	A
B - Holdenby (NE)	10.70	0.71	10.879	B	B
C - A509 (SE)	21.49	1.43	4.692	A	A
D - Carina Road (SW)	12.95	0.86	5.281	A	A
E - Orion Way (NW	18.82	1.25	6.783	A	A

17:15 - 17:30

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A - A509 Pytchley Rd (N)	12.92	0.86	3.464	A	A
B - Holdenby (NE)	4.50	0.30	7.177	A	A
C - A509 (SE)	23.52	1.57	4.803	A	A
D - Carina Road (SW)	9.46	0.63	4.592	A	A
E - Orion Way (NW	6.95	0.46	4.005	A	A

17:30 - 17:45

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A - A509 Pytchley Rd (N)	12.72	0.85	3.759	A	A
B - Holdenby (NE)	3.39	0.23	7.870	A	A
C - A509 (SE)	22.70	1.51	4.546	A	A
D - Carina Road (SW)	9.23	0.62	4.387	A	A
E - Orion Way (NW	12.70	0.85	5.097	A	A

17:45 - 18:00

Arm	Queueing total delay (PCU-min)	Queueing rate of delay (PCU-min/min)	Average delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A - A509 Pytchley Rd (N)	10.29	0.69	3.122	A	A
B - Holdenby (NE)	4.23	0.28	6.542	A	A
C - A509 (SE)	29.37	1.96	5.587	A	A
D - Carina Road (SW)	15.42	1.03	6.157	A	A
E - Orion Way (NW	7.05	0.47	4.471	A	A

Junctions 9

ARCADY 9 - Roundabout Module

Filename: 170410 - A509_Carina Road_Orion Way 2021 DS - DIRECT.j9
Path: J:\30062 Land South of Kettering\Junctions 9\A509_Carina Road_Orion Way\2021 DS
Report generation date: 06/07/2017 15:36:18

Summary of junction performance

	AM					PM				
	Q (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Q (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)
	2021 DS									
A - A509 Pytchley Rd (N)	0.9	3.50	0.48	A		0.9	3.76	0.47	A	
B - Holdenby (NE)	0.3	6.37	0.20	A		0.8	10.88	0.44	B	
C - A509 (SE)	1.2	4.03	0.53	A	3.98	2.0	5.62	0.67	A	5.71
D - Carina Road (SW)	0.5	4.64	0.34	A		1.1	6.18	0.52	A	
E - Orion Way (NW	0.3	3.58	0.24	A		1.3	6.78	0.57	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 Av. delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted Av.s.

File summary

File Description

Title	A509/Carina Road / Orion Way Roundabout
Location	Kettering
Site number	
Date	10/04/2017
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	30062
Enumerator	PBA\talthorpe
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Av. delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perTimeSegment	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Q Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Av. Delay threshold (s)	Q threshold (PCU)
5.75		✓		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D1	2021 DS	AM	DIRECT	08:00	09:00	60	15	✓
D2	2021 DS	PM	DIRECT	17:00	18:00	60	15	✓

Analysis Set Details

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

2021 DS, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	A - A509 Pytchley Rd (N) - 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	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	A,B,C,D,E	3.98	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
A	A509 Pytchley Rd (N)	
B	Holdenby (NE)	
C	A509 (SE)	
D	Carina Road (SW)	
E	Orion Way (NW	

Roundabout Geometry

Arm	V (m)	E (m)	l' (m)	R (m)	D (m)	PHI (deg)	Exit only
A - A509 Pytchley Rd (N)	3.65	10.00	57.5	18.0	63.0	50.0	
B - Holdenby (NE)	3.00	7.00	9.5	10.0	63.0	47.0	
C - A509 (SE)	7.50	7.50	0.0	37.5	63.0	32.0	
D - Carina Road (SW)	3.65	9.00	12.0	47.5	63.0	34.0	
E - Orion Way (NW	5.00	9.00	7.0	20.0	63.0	43.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/TS)
A - A509 Pytchley Rd (N)	0.629	584.613
B - Holdenby (NE)	0.441	317.886
C - A509 (SE)	0.647	577.147
D - Carina Road (SW)	0.561	449.891
E - Orion Way (NW	0.555	463.954

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 period length (min)	Time segment length (min)	Run automatically
D1	2021 DS	AM	DIRECT	08:00	09:00	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A - A509 Pytchley Rd (N)		DIRECT	✓	100.000
B - Holdenby (NE)		DIRECT	✓	100.000
C - A509 (SE)		DIRECT	✓	100.000
D - Carina Road (SW)		DIRECT	✓	100.000
E - Orion Way (NW		DIRECT	✓	100.000

Origin-Destination Data

08:00 - 08:15

Demand (PCU/TS)

		To				
		A - A509 Pytchley Rd (N)	B - Holdenby (NE)	C - A509 (SE)	D - Carina Road (SW)	E - Orion Way (NW
From	A - A509 Pytchley Rd (N)	0.00	12.00	117.00	39.00	65.00
	B - Holdenby (NE)	13.00	0.00	13.00	6.00	4.00
	C - A509 (SE)	124.00	0.00	0.00	61.00	72.00
	D - Carina Road (SW)	25.00	11.00	39.00	0.00	26.00
	E - Orion Way (NW	6.00	5.00	39.00	14.00	0.00

08:15 - 08:30

Demand (PCU/TS)

		To				
		A - A509 Pytchley Rd (N)	B - Holdenby (NE)	C - A509 (SE)	D - Carina Road (SW)	E - Orion Way (NW
From	A - A509 Pytchley Rd (N)	1.00	18.00	130.00	32.00	54.00
	B - Holdenby (NE)	12.00	1.00	3.00	1.00	8.00
	C - A509 (SE)	99.00	0.00	1.00	49.00	65.00
	D - Carina Road (SW)	24.00	8.00	39.00	0.00	17.00
	E - Orion Way (NW	13.00	6.00	43.00	14.00	0.00

08:30 - 08:45

Demand (PCU/TS)

		To				
		A - A509 Pytchley Rd (N)	B - Holdenby (NE)	C - A509 (SE)	D - Carina Road (SW)	E - Orion Way (NW
From	A - A509 Pytchley Rd (N)	0.00	12.00	130.00	39.00	33.00
	B - Holdenby (NE)	22.00	0.00	3.00	2.00	8.00
	C - A509 (SE)	80.00	2.00	0.00	62.00	74.00
	D - Carina Road (SW)	20.00	11.00	53.00	0.00	15.00
	E - Orion Way (NW	10.00	6.00	44.00	10.00	0.00

08:45 - 09:00

Demand (PCU/TS)

		To				
		A - A509 Pytchley Rd (N)	B - Holdenby (NE)	C - A509 (SE)	D - Carina Road (SW)	E - Orion Way (NW
From	A - A509 Pytchley Rd (N)	0.00	28.00	112.00	53.00	49.00
	B - Holdenby (NE)	5.00	0.00	4.00	3.00	4.00
	C - A509 (SE)	80.00	5.00	0.00	37.00	73.00
	D - Carina Road (SW)	22.00	9.00	43.00	0.00	12.00
	E - Orion Way (NW	20.00	14.00	35.00	19.00	0.00

Vehicle Mix

HV %s

		To				
		A - A509 Pytchley Rd (N)	B - Holdenby (NE)	C - A509 (SE)	D - Carina Road (SW)	E - Orion Way (NW
From	A - A509 Pytchley Rd (N)	0	5	4	0	2
	B - Holdenby (NE)	2	0	5	0	0
	C - A509 (SE)	3	0	0	1	7
	D - Carina Road (SW)	0	0	1	0	0
	E - Orion Way (NW	5	3	21	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS	Av. Demand (PCU/TS)	Total Junction Arrivals (PCU)	Total Qing Delay (PCU-min)	Av. Qing Delay (s)	Rate of Qing Delay (PCU-min/min)	Inclusive Total Qing Delay (PCU-min)	Inclusive Av. Qing Delay (s)
A - A509 Pytchley Rd (N)	0.48	3.50	0.9	A	231.00	924.00	50.46	3.28	0.84	50.47	3.28
B - Holdenby (NE)	0.20	6.37	0.3	A	28.00	112.00	11.29	6.05	0.19	11.29	6.05
C - A509 (SE)	0.53	4.03	1.2	A	221.00	884.00	51.02	3.46	0.85	51.03	3.46
D - Carina Road (SW)	0.34	4.64	0.5	A	93.50	374.00	25.44	4.08	0.42	25.44	4.08
E - Orion Way (NW	0.24	3.58	0.3	A	74.50	298.00	17.36	3.49	0.29	17.36	3.49

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - A509 Pytchley Rd (N)	233.00	233.00	107.51	517.02	0.451	232.16	167.20	0.0	0.8	3.238	A
B - Holdenby (NE)	36.00	36.00	311.79	180.40	0.200	35.75	27.88	0.0	0.3	6.367	A
C - A509 (SE)	257.00	257.00	140.41	486.33	0.528	255.85	207.13	0.0	1.2	4.025	A
D - Carina Road (SW)	101.00	101.00	276.77	294.66	0.343	100.48	119.49	0.0	0.5	4.641	A
E - Orion Way (NW	64.00	64.00	210.97	346.83	0.185	63.75	166.28	0.0	0.3	3.578	A

08:15 - 08:30

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - A509 Pytchley Rd (N)	235.00	235.00	112.02	514.18	0.457	234.98	149.19	0.8	0.9	3.320	A
B - Holdenby (NE)	25.00	25.00	314.01	179.42	0.139	25.09	32.99	0.3	0.2	5.924	A
C - A509 (SE)	214.00	214.00	123.07	497.54	0.430	214.36	216.02	1.2	0.8	3.301	A
D - Carina Road (SW)	88.00	88.00	241.28	314.56	0.280	88.13	96.15	0.5	0.4	3.995	A
E - Orion Way (NW	76.00	76.00	185.26	361.10	0.210	75.96	144.15	0.3	0.3	3.540	A

08:30 - 08:45

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - A509 Pytchley Rd (N)	214.00	214.00	125.94	505.43	0.423	214.10	132.04	0.9	0.8	3.182	A
B - Holdenby (NE)	35.00	35.00	309.03	181.61	0.193	34.92	31.01	0.2	0.2	6.235	A
C - A509 (SE)	218.00	218.00	114.00	503.41	0.433	218.00	229.95	0.8	0.8	3.269	A
D - Carina Road (SW)	99.00	99.00	219.06	327.03	0.303	98.96	112.94	0.4	0.4	3.967	A
E - Orion Way (NW	70.00	70.00	187.96	359.60	0.195	70.02	130.06	0.3	0.3	3.527	A

08:45 - 09:00

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - A509 Pytchley Rd (N)	242.00	242.00	125.03	506.00	0.478	241.83	127.09	0.8	0.9	3.501	A
B - Holdenby (NE)	16.00	16.00	310.95	180.77	0.089	16.14	55.90	0.2	0.1	5.573	A
C - A509 (SE)	195.00	195.00	132.97	491.14	0.397	195.10	194.12	0.8	0.7	3.161	A
D - Carina Road (SW)	86.00	86.00	216.09	328.69	0.262	86.08	111.99	0.4	0.4	3.731	A
E - Orion Way (NW	88.00	88.00	164.18	372.81	0.236	87.94	137.98	0.3	0.3	3.451	A

Qing Delay Results for each time segment

08:00 - 08:15

Arm	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A - A509 Pytchley Rd (N)	12.25	0.82	3.238	A	A
B - Holdenby (NE)	3.68	0.25	6.367	A	A
C - A509 (SE)	16.68	1.11	4.025	A	A
D - Carina Road (SW)	7.56	0.50	4.641	A	A
E - Orion Way (NW	3.73	0.25	3.578	A	A

08:15 - 08:30

Arm	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A - A509 Pytchley Rd (N)	12.84	0.86	3.320	A	A
B - Holdenby (NE)	2.56	0.17	5.924	A	A
C - A509 (SE)	12.05	0.80	3.301	A	A
D - Carina Road (SW)	5.99	0.40	3.995	A	A
E - Orion Way (NW	4.42	0.29	3.540	A	A

08:30 - 08:45

Arm	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A - A509 Pytchley Rd (N)	11.57	0.77	3.182	A	A
B - Holdenby (NE)	3.52	0.23	6.235	A	A
C - A509 (SE)	11.83	0.79	3.269	A	A
D - Carina Road (SW)	6.43	0.43	3.967	A	A
E - Orion Way (NW	4.15	0.28	3.527	A	A

08:45 - 09:00

Arm	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A - A509 Pytchley Rd (N)	13.80	0.92	3.501	A	A
B - Holdenby (NE)	1.54	0.10	5.573	A	A
C - A509 (SE)	10.46	0.70	3.161	A	A
D - Carina Road (SW)	5.45	0.36	3.731	A	A
E - Orion Way (NW	5.06	0.34	3.451	A	A

2021 DS, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	A - A509 Pytchley Rd (N) - 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	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	A,B,C,D,E	5.71	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D2	2021 DS	PM	DIRECT	17:00	18:00	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A - A509 Pytchley Rd (N)		DIRECT	✓	100.000
B - Holdenby (NE)		DIRECT	✓	100.000
C - A509 (SE)		DIRECT	✓	100.000
D - Carina Road (SW)		DIRECT	✓	100.000
E - Orion Way (NW		DIRECT	✓	100.000

Origin-Destination Data

Demand (PCU/TS)

17:00 - 17:15

		To				
		A - A509 Pytchley Rd (N)	B - Holdenby (NE)	C - A509 (SE)	D - Carina Road (SW)	E - Orion Way (NW
From	A - A509 Pytchley Rd (N)	0.00	14.00	84.00	50.00	28.00
	B - Holdenby (NE)	28.00	0.00	16.00	11.00	8.00
	C - A509 (SE)	111.00	11.00	0.00	123.00	41.00
	D - Carina Road (SW)	59.00	0.00	75.00	0.00	19.00
	E - Orion Way (NW	11.00	5.00	128.00	31.00	0.00

17:15 - 17:30

Demand (PCU/TS)

		To				
		A - A509 Pytchley Rd (N)	B - Holdenby (NE)	C - A509 (SE)	D - Carina Road (SW)	E - Orion Way (NW
From	A - A509 Pytchley Rd (N)	0.00	16.00	112.00	61.00	40.00
	B - Holdenby (NE)	14.00	0.00	13.00	4.00	5.00
	C - A509 (SE)	126.00	6.00	2.00	126.00	41.00
	D - Carina Road (SW)	36.00	0.00	55.00	0.00	29.00
	E - Orion Way (NW	17.00	2.00	72.00	10.00	0.00

17:30 - 17:45

Demand (PCU/TS)

		To				
		A - A509 Pytchley Rd (N)	B - Holdenby (NE)	C - A509 (SE)	D - Carina Road (SW)	E - Orion Way (NW
From	A - A509 Pytchley Rd (N)	0.00	18.00	97.00	61.00	24.00
	B - Holdenby (NE)	9.00	0.00	5.00	9.00	2.00
	C - A509 (SE)	114.00	3.00	0.00	120.00	56.00
	D - Carina Road (SW)	27.00	0.00	82.00	0.00	17.00
	E - Orion Way (NW	13.00	1.00	117.00	24.00	0.00

17:45 - 18:00

Demand (PCU/TS)

		To				
		A - A509 Pytchley Rd (N)	B - Holdenby (NE)	C - A509 (SE)	D - Carina Road (SW)	E - Orion Way (NW
From	A - A509 Pytchley Rd (N)	0.00	15.00	95.00	47.00	38.00
	B - Holdenby (NE)	17.00	0.00	9.00	6.00	8.00
	C - A509 (SE)	148.00	8.00	0.00	132.00	43.00
	D - Carina Road (SW)	59.00	0.00	69.00	0.00	29.00
	E - Orion Way (NW	13.00	9.00	54.00	16.00	0.00

Vehicle Mix

HV %s

		To				
		A - A509 Pytchley Rd (N)	B - Holdenby (NE)	C - A509 (SE)	D - Carina Road (SW)	E - Orion Way (NW
From	A - A509 Pytchley Rd (N)	0	5	1	0	2
	B - Holdenby (NE)	0	0	0	0	0
	C - A509 (SE)	1	0	0	0	5
	D - Carina Road (SW)	1	0	1	0	1
	E - Orion Way (NW	0	7	2	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS	Av. Demand (PCU/TS)	Total Junction Arrivals (PCU)	Total Qing Delay (PCU-min)	Av. Qing Delay (s)	Rate of Qing Delay (PCU-min/min)	Inclusive Total Qing Delay (PCU-min)	Inclusive Av. Qing Delay (s)
A - A509 Pytchley Rd (N)	0.47	3.76	0.9	A	200.00	800.00	46.25	3.47	0.77	46.26	3.47
B - Holdenby (NE)	0.44	10.88	0.8	B	41.00	164.00	22.84	8.36	0.38	22.85	8.36
C - A509 (SE)	0.67	5.62	2.0	A	302.75	1211.00	97.33	4.82	1.62	97.39	4.83
D - Carina Road (SW)	0.52	6.18	1.1	A	139.00	556.00	47.12	5.08	0.79	47.15	5.09
E - Orion Way (NW	0.57	6.78	1.3	A	130.75	523.00	45.53	5.22	0.76	45.54	5.22

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - A509 Pytchley Rd (N)	176.00	176.00	248.26	428.52	0.411	175.30	207.65	0.0	0.7	3.585	A
B - Holdenby (NE)	63.00	63.00	393.71	144.27	0.437	62.24	29.85	0.0	0.8	10.879	B
C - A509 (SE)	286.00	286.00	154.89	476.96	0.600	284.51	301.07	0.0	1.5	4.692	A
D - Carina Road (SW)	153.00	153.00	225.60	323.35	0.473	152.10	213.79	0.0	0.9	5.281	A
E - Orion Way (NW	175.00	175.00	282.24	307.26	0.570	173.68	95.47	0.0	1.3	6.783	A

17:15 - 17:30

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - A509 Pytchley Rd (N)	229.00	229.00	148.04	491.54	0.466	228.82	193.31	0.7	0.9	3.464	A
B - Holdenby (NE)	36.00	36.00	352.81	162.31	0.222	36.47	24.05	0.8	0.3	7.177	A
C - A509 (SE)	301.00	301.00	134.50	490.15	0.614	300.90	254.79	1.5	1.6	4.803	A
D - Carina Road (SW)	120.00	120.00	234.17	318.55	0.377	120.28	201.23	0.9	0.6	4.592	A
E - Orion Way (NW	101.00	101.00	239.47	331.00	0.305	101.87	114.98	1.3	0.4	4.005	A

17:30 - 17:45

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - A509 Pytchley Rd (N)	200.00	200.00	226.48	442.21	0.452	200.04	163.17	0.9	0.8	3.759	A
B - Holdenby (NE)	25.00	25.00	404.51	139.51	0.179	25.07	22.01	0.3	0.2	7.870	A
C - A509 (SE)	293.00	293.00	128.95	493.74	0.593	293.10	300.63	1.6	1.5	4.546	A
D - Carina Road (SW)	126.00	126.00	208.15	333.14	0.378	126.00	213.89	0.6	0.6	4.387	A
E - Orion Way (NW	155.00	155.00	235.08	333.45	0.465	154.58	99.07	0.4	0.9	5.097	A

17:45 - 18:00

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - A509 Pytchley Rd (N)	195.00	195.00	156.30	486.34	0.401	195.16	236.36	0.8	0.7	3.132	A
B - Holdenby (NE)	40.00	40.00	319.51	176.99	0.226	39.93	31.95	0.2	0.3	6.563	A
C - A509 (SE)	331.00	331.00	132.07	491.72	0.673	330.45	227.37	1.5	2.0	5.622	A
D - Carina Road (SW)	157.00	157.00	261.54	303.20	0.518	156.55	200.98	0.6	1.1	6.180	A
E - Orion Way (NW	92.00	92.00	300.25	297.26	0.309	92.41	117.83	0.9	0.5	4.483	A

Qing Delay Results for each time segment

17:00 - 17:15

Arm	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A - A509 Pytchley Rd (N)	10.23	0.68	3.585	A	A
B - Holdenby (NE)	10.70	0.71	10.879	B	B
C - A509 (SE)	21.49	1.43	4.692	A	A
D - Carina Road (SW)	12.95	0.86	5.281	A	A
E - Orion Way (NW	18.82	1.25	6.783	A	A

17:15 - 17:30

Arm	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A - A509 Pytchley Rd (N)	12.92	0.86	3.464	A	A
B - Holdenby (NE)	4.50	0.30	7.177	A	A
C - A509 (SE)	23.52	1.57	4.803	A	A
D - Carina Road (SW)	9.46	0.63	4.592	A	A
E - Orion Way (NW	6.95	0.46	4.005	A	A

17:30 - 17:45

Arm	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A - A509 Pytchley Rd (N)	12.72	0.85	3.759	A	A
B - Holdenby (NE)	3.39	0.23	7.870	A	A
C - A509 (SE)	22.70	1.51	4.546	A	A
D - Carina Road (SW)	9.23	0.62	4.387	A	A
E - Orion Way (NW	12.70	0.85	5.097	A	A

17:45 - 18:00

Arm	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A - A509 Pytchley Rd (N)	10.38	0.69	3.132	A	A
B - Holdenby (NE)	4.24	0.28	6.563	A	A
C - A509 (SE)	29.62	1.97	5.622	A	A
D - Carina Road (SW)	15.48	1.03	6.180	A	A
E - Orion Way (NW	7.07	0.47	4.483	A	A

Junctions 9

ARCADY 9 - Roundabout Module

Filename: 170410 - A509 Station Road 2021 DS - Roundabout - DIRECT + Mitigation.j9
Path: J:\30062 Land South of Kettering\Junctions 9\A509 Station Road\2021 DS
Report generation date: 06/07/2017 16:19:16

Summary of junction performance

	AM							PM						
	Q (PCU)	Q95 (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Res Cap	Q (PCU)	Q95 (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Res Cap
	2021 DS - DIRECT													
1 - A509 (N)	4.6	?	14.01	0.82	B	25.74	-1 % [2 - Station Road (E)]	8.9	?	26.27	0.92	D	32.05	-2 % [2 - Station Road (E)]
2 - Station Road (E)	3.6	?	36.71	0.80	E			4.7	?	41.60	0.86	E		
3 - A509 (S)	10.9	?	33.14	0.94	D			11.9	?	35.50	0.94	E		

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 Av. delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted Av.s. Res Cap indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	A509 / Station Road Mini Roundabout
Location	South Kettering
Site number	
Date	10/04/2017
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	30062
Enumerator	PBA\mbolshaw
Description	2017 Observed

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Av. delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perTimeSegment	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Q Percentiles	Calculate detailed queueing delay	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Av. Delay threshold (s)	Q threshold (PCU)
5.75	✓	✓	✓	Delay	0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D1	2021 DS - DIRECT	AM	DIRECT	08:00	09:00	60	15	✓
D2	2021 DS - DIRECT	PM	DIRECT	17:00	18:00	60	15	✓

Analysis Set Details

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

2021 DS - DIRECT, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Flow Arm 1	Analysis Options	Q Variations cannot be calculated for the selected traffic profile type.
Warning	Flow Arm 2	Analysis Options	Q Variations cannot be calculated for the selected traffic profile type.
Warning	Flow Arm 3	Analysis Options	Q Variations cannot be calculated for the selected traffic profile type.
Warning	Queue variations	Analysis Options	Q percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	1,2,3	25.74	D

Junction Network Options

Driving side	Lighting	Res Cap (%)	First arm reaching threshold
Left	Normal/unknown	-1	2 - Station Road (E)

Arms

Arms

Arm	Name	Description
1	A509 (N)	
2	Station Road (E)	
3	A509 (S)	

Roundabout Geometry

Arm	V (m)	E (m)	l' (m)	R (m)	D (m)	PHI (deg)	Exit only
1 - A509 (N)	3.50	6.75	6.0	12.5	18.0	0.0	
2 - Station Road (E)	3.00	3.50	1.0	13.0	18.0	0.0	
3 - A509 (S)	3.50	6.90	6.0	7.5	18.0	0.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/TS)
1 - A509 (N)	0.653	381.748
2 - Station Road (E)	0.554	260.623
3 - A509 (S)	0.622	364.732

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 period length (min)	Time segment length (min)	Run automatically
D1	2021 DS - DIRECT	AM	DIRECT	08:00	09:00	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
1 - A509 (N)		DIRECT	✓	100.000
2 - Station Road (E)		DIRECT	✓	100.000
3 - A509 (S)		DIRECT	✓	100.000

Origin-Destination Data

08:00 - 08:15

Demand (PCU/TS)

		To		
		1 - A509 (N)	2 - Station Road (E)	3 - A509 (S)
From	1 - A509 (N)	0.00	18.00	241.00
	2 - Station Road (E)	41.00	0.00	60.00
	3 - A509 (S)	279.00	39.00	1.00

08:15 - 08:30

Demand (PCU/TS)

		To		
		1 - A509 (N)	2 - Station Road (E)	3 - A509 (S)
From	1 - A509 (N)	0.00	31.00	269.00
	2 - Station Road (E)	44.00	0.00	42.00
	3 - A509 (S)	285.00	25.00	0.00

08:30 - 08:45

Demand (PCU/TS)

		To		
		1 - A509 (N)	2 - Station Road (E)	3 - A509 (S)
From	1 - A509 (N)	0.00	29.00	257.00
	2 - Station Road (E)	45.00	0.00	49.00
	3 - A509 (S)	262.00	31.00	1.00

08:45 - 09:00

Demand (PCU/TS)

		To		
		1 - A509 (N)	2 - Station Road (E)	3 - A509 (S)
From	1 - A509 (N)	0.00	34.00	232.00
	2 - Station Road (E)	38.00	0.00	38.00
	3 - A509 (S)	273.00	32.00	2.00

Vehicle Mix

HV %s

		To		
		1 - A509 (N)	2 - Station Road (E)	3 - A509 (S)
From	1 - A509 (N)	0	1	8
	2 - Station Road (E)	1	0	1
	3 - A509 (S)	8	4	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Q (PCU)	Max Q95 (PCU)	Max LOS	Av. Demand (PCU/TS)	Total Junction Arrivals (PCU)	Total Qing Delay (PCU-min)	Av. Qing Delay (s)	Rate of Qing Delay (PCU-min/min)	Inclusive Total Qing Delay (PCU-min)	Inclusive Av. Qing Delay (s)
1 - A509 (N)	0.82	14.01	4.6	?	B	277.75	1111.00	216.14	11.67	3.60	216.35	11.68
2 - Station Road (E)	0.80	36.71	3.6	?	E	89.25	357.00	165.92	27.89	2.77	166.04	27.91
3 - A509 (S)	0.94	33.14	10.9	?	D	307.50	1230.00	545.09	26.59	9.08	546.82	26.67

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - A509 (N)	259.00	259.00	38.68	356.50	0.727	256.25	309.49	0.0	2.7	9.409	A
2 - Station Road (E)	101.00	101.00	239.41	128.11	0.788	97.75	55.52	0.0	3.3	27.594	D
3 - A509 (S)	319.00	319.00	39.68	340.04	0.938	308.49	297.48	0.0	10.5	25.399	D

08:15 - 08:30

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - A509 (N)	300.00	300.00	25.44	365.14	0.822	298.18	327.86	2.7	4.6	14.012	B
2 - Station Road (E)	86.00	86.00	267.49	112.56	0.764	86.00	56.13	3.3	3.3	34.185	D
3 - A509 (S)	310.00	310.00	43.66	337.56	0.918	309.64	309.84	10.5	10.9	33.144	D

08:30 - 08:45

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - A509 (N)	286.00	286.00	31.96	360.88	0.793	286.30	309.46	4.6	4.3	13.036	B
2 - Station Road (E)	94.00	94.00	258.23	117.69	0.799	93.64	60.03	3.3	3.6	36.705	E
3 - A509 (S)	294.00	294.00	44.94	336.77	0.873	296.48	306.94	10.9	8.4	25.493	D

08:45 - 09:00

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - A509 (N)	266.00	266.00	33.93	359.60	0.740	267.11	311.59	4.3	3.2	10.549	B
2 - Station Road (E)	76.00	76.00	235.05	130.52	0.582	78.14	65.99	3.6	1.5	18.001	C
3 - A509 (S)	307.00	307.00	38.99	340.46	0.902	306.53	274.20	8.4	8.9	27.420	D

Qing Delay Results for each time segment

08:00 - 08:15

Arm	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
1 - A509 (N)	37.80	2.52	9.409	A	A
2 - Station Road (E)	40.45	2.70	27.594	D	C
3 - A509 (S)	118.21	7.88	25.399	D	C

08:15 - 08:30

Arm	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
1 - A509 (N)	62.50	4.17	14.012	B	B
2 - Station Road (E)	48.78	3.25	34.185	D	C
3 - A509 (S)	160.54	10.70	33.144	D	C

08:30 - 08:45

Arm	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
1 - A509 (N)	65.61	4.37	13.036	B	B
2 - Station Road (E)	52.05	3.47	36.705	E	D
3 - A509 (S)	136.60	9.11	25.493	D	C

08:45 - 09:00

Arm	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
1 - A509 (N)	50.24	3.35	10.549	B	B
2 - Station Road (E)	24.63	1.64	18.001	C	B
3 - A509 (S)	129.74	8.65	27.420	D	C

Q Variation Results for each time segment

08:00 - 08:15

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
1 - A509 (N)	2.75	?	?	?	?			N/A	N/A
2 - Station Road (E)	3.25	?	?	?	?			N/A	N/A
3 - A509 (S)	10.51	?	?	?	?			N/A	N/A

08:15 - 08:30

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
1 - A509 (N)	4.57	?	?	?	?			N/A	N/A
2 - Station Road (E)	3.25	?	?	?	?			N/A	N/A
3 - A509 (S)	10.87	?	?	?	?			N/A	N/A

08:30 - 08:45

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
1 - A509 (N)	4.27	?	?	?	?			N/A	N/A
2 - Station Road (E)	3.61	?	?	?	?			N/A	N/A
3 - A509 (S)	8.38	?	?	?	?			N/A	N/A

08:45 - 09:00

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
1 - A509 (N)	3.16	?	?	?	?			N/A	N/A
2 - Station Road (E)	1.47	?	?	?	?			N/A	N/A
3 - A509 (S)	8.85	?	?	?	?			N/A	N/A

2021 DS - DIRECT, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Flow Arm 1	Analysis Options	Q Variations cannot be calculated for the selected traffic profile type.
Warning	Flow Arm 2	Analysis Options	Q Variations cannot be calculated for the selected traffic profile type.
Warning	Flow Arm 3	Analysis Options	Q Variations cannot be calculated for the selected traffic profile type.
Warning	Queue variations	Analysis Options	Q percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	1,2,3	32.05	D

Junction Network Options

Driving side	Lighting	Res Cap (%)	First arm reaching threshold
Left	Normal/unknown	-2	2 - Station Road (E)

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D2	2021 DS - DIRECT	PM	DIRECT	17:00	18:00	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
1 - A509 (N)		DIRECT	✓	100.000
2 - Station Road (E)		DIRECT	✓	100.000
3 - A509 (S)		DIRECT	✓	100.000

Origin-Destination Data

17:00 - 17:15

Demand (PCU/TS)

		To		
		1 - A509 (N)	2 - Station Road (E)	3 - A509 (S)
From	1 - A509 (N)	1.00	51.00	273.00
	2 - Station Road (E)	39.00	0.00	40.00
	3 - A509 (S)	270.00	43.00	2.00

17:15 - 17:30

Demand (PCU/TS)

		To		
		1 - A509 (N)	2 - Station Road (E)	3 - A509 (S)
From	1 - A509 (N)	0.00	56.00	252.00
	2 - Station Road (E)	60.00	0.00	43.00
	3 - A509 (S)	240.00	58.00	1.00

17:30 - 17:45

Demand (PCU/TS)

		To		
		1 - A509 (N)	2 - Station Road (E)	3 - A509 (S)
From	1 - A509 (N)	0.00	47.00	250.00
	2 - Station Road (E)	37.00	0.00	25.00
	3 - A509 (S)	267.00	53.00	0.00

17:45 - 18:00

Demand (PCU/TS)

		To		
		1 - A509 (N)	2 - Station Road (E)	3 - A509 (S)
From	1 - A509 (N)	0.00	48.00	271.00
	2 - Station Road (E)	36.00	0.00	26.00
	3 - A509 (S)	272.00	41.00	1.00

Vehicle Mix

HV %s

		To		
		1 - A509 (N)	2 - Station Road (E)	3 - A509 (S)
From	1 - A509 (N)	0	2	5
	2 - Station Road (E)	3	0	1
	3 - A509 (S)	4	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Q (PCU)	Max Q95 (PCU)	Max LOS	Av. Demand (PCU/TS)	Total Junction Arrivals (PCU)	Total Qing Delay (PCU-min)	Av. Qing Delay (s)	Rate of Qing Delay (PCU-min/min)	Inclusive Total Qing Delay (PCU-min)	Inclusive Av. Qing Delay (s)
1 - A509 (N)	0.92	26.27	8.9	?	D	312.25	1249.00	462.75	22.23	7.71	464.15	22.30
2 - Station Road (E)	0.86	41.60	4.7	?	E	76.50	306.00	125.37	24.58	2.09	125.48	24.60
3 - A509 (S)	0.94	35.50	11.9	?	E	312.00	1248.00	586.27	28.19	9.77	589.34	28.33

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - A509 (N)	325.00	325.00	43.69	353.22	0.920	316.10	301.05	0.0	8.9	21.762	C
2 - Station Road (E)	79.00	79.00	268.44	112.04	0.705	76.78	91.36	0.0	2.2	24.704	C
3 - A509 (S)	315.00	315.00	38.88	340.54	0.925	305.86	306.34	0.0	9.1	22.861	C

17:15 - 17:30

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - A509 (N)	308.00	308.00	58.43	343.60	0.896	308.00	298.63	8.9	8.9	26.272	D
2 - Station Road (E)	103.00	103.00	253.25	120.45	0.855	100.56	113.19	2.2	4.7	41.605	E
3 - A509 (S)	299.00	299.00	58.41	328.38	0.911	298.65	295.40	9.1	9.5	30.041	D

17:30 - 17:45

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - A509 (N)	297.00	297.00	52.91	347.21	0.855	299.07	303.76	8.9	6.8	20.417	C
2 - Station Road (E)	62.00	62.00	251.56	121.38	0.511	65.56	100.41	4.7	1.1	17.445	C
3 - A509 (S)	320.00	320.00	39.06	340.42	0.940	317.61	278.06	9.5	11.9	35.496	E

17:45 - 18:00

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - A509 (N)	319.00	319.00	42.38	354.08	0.901	317.68	307.57	6.8	8.1	24.415	C
2 - Station Road (E)	62.00	62.00	270.79	110.74	0.560	61.85	89.27	1.1	1.3	18.726	C
3 - A509 (S)	314.00	314.00	35.93	342.37	0.917	314.02	296.71	11.9	11.8	33.370	D

Qing Delay Results for each time segment

17:00 - 17:15

Arm	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
1 - A509 (N)	103.87	6.92	21.762	C	C
2 - Station Road (E)	28.67	1.91	24.704	C	C
3 - A509 (S)	105.52	7.03	22.861	C	C

17:15 - 17:30

Arm	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
1 - A509 (N)	133.50	8.90	26.272	D	C
2 - Station Road (E)	58.44	3.90	41.605	E	D
3 - A509 (S)	139.89	9.33	30.041	D	C

17:30 - 17:45

Arm	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
1 - A509 (N)	110.75	7.38	20.417	C	C
2 - Station Road (E)	20.09	1.34	17.445	C	B
3 - A509 (S)	162.99	10.87	35.496	E	D

17:45 - 18:00

Arm	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
1 - A509 (N)	114.63	7.64	24.415	C	C
2 - Station Road (E)	18.18	1.21	18.726	C	B
3 - A509 (S)	177.86	11.86	33.370	D	C

Q Variation Results for each time segment

17:00 - 17:15

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
1 - A509 (N)	8.90	?	?	?	?			N/A	N/A
2 - Station Road (E)	2.22	?	?	?	?			N/A	N/A
3 - A509 (S)	9.14	?	?	?	?			N/A	N/A

17:15 - 17:30

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
1 - A509 (N)	8.90	?	?	?	?			N/A	N/A
2 - Station Road (E)	4.66	?	?	?	?			N/A	N/A
3 - A509 (S)	9.48	?	?	?	?			N/A	N/A

17:30 - 17:45

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
1 - A509 (N)	6.83	?	?	?	?			N/A	N/A
2 - Station Road (E)	1.10	?	?	?	?			N/A	N/A
3 - A509 (S)	11.87	?	?	?	?			N/A	N/A

17:45 - 18:00

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
1 - A509 (N)	8.15	?	?	?	?			N/A	N/A
2 - Station Road (E)	1.25	?	?	?	?			N/A	N/A
3 - A509 (S)	11.85	?	?	?	?			N/A	N/A

Junctions 9

ARCADY 9 - Roundabout Module

Filename: 170410 - A509 Orlingbury Road 2021 DS - Roundabout - DIRECT + Mitigation.j9
Path: J:\30062 Land South of Kettering\Junctions 9\A509 Orlingbury Road\2021\2021 DS
Report generation date: 06/07/2017 16:22:03

Summary of junction performance

	AM							PM						
	Q (PCU)	Q95 (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Res Cap	Q (PCU)	Q95 (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Res Cap
	2021 DS - DIRECT													
A - A509 (N)	5.4	?	15.90	0.85	C	19.96	5 % [B - A509 (S)]	5.7	?	14.90	0.86	B	18.62	5 % [B - A509 (S)]
B - A509 (S)	8.1	?	25.17	0.90	D			7.3	?	23.20	0.89	C		
C - Orlingbury Road (W)	0.4	~1	11.16	0.30	B			0.4	~1	11.71	0.29	B		

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 Av. delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted Av.s. Res Cap indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	A509 / Orlingbury Road Roundabout
Location	Isham
Site number	
Date	06/06/2016
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	30062
Enumerator	PBA\mbolshaw
Description	2017 Observed Flows

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Av. delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perTimeSegment	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Q Percentiles	Calculate detailed queueing delay	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Av. Delay threshold (s)	Q threshold (PCU)
5.75	✓	✓	✓	Delay	0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D1	2021 DS - DIRECT	AM	DIRECT	08:00	09:00	60	15	✓
D2	2021 DS - DIRECT	PM	DIRECT	17:00	18:00	60	15	✓

Analysis Set Details

ID	Description	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	2031 Do Minimum and Do Something Scenarios	✓	100.000	100.000

2021 DS - DIRECT, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Flow Arm A	Analysis Options	Q Variations cannot be calculated for the selected traffic profile type.
Warning	Flow Arm B	Analysis Options	Q Variations cannot be calculated for the selected traffic profile type.
Warning	Flow Arm C	Analysis Options	Q Variations cannot be calculated for the selected traffic profile type.
Warning	Queue variations	Analysis Options	Q percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	A,B,C	19.96	C

Junction Network Options

Driving side	Lighting	Res Cap (%)	First arm reaching threshold
Left	Normal/unknown	5	B - A509 (S)

Arms

Arms

Arm	Name	Description
A	A509 (N)	
B	A509 (S)	
C	Orlingbury Road (W)	

Roundabout Geometry

Arm	V (m)	E (m)	I' (m)	R (m)	D (m)	PHI (deg)	Exit only
A - A509 (N)	3.75	4.70	6.0	150.0	19.0	0.0	
B - A509 (S)	3.75	5.00	2.0	15.0	19.0	0.0	
C - Orlingbury Road (W)	2.00	4.50	8.5	17.5	19.0	0.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/TS)
A - A509 (N)	0.674	380.431
B - A509 (S)	0.625	343.337
C - Orlingbury Road (W)	0.570	273.244

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 period length (min)	Time segment length (min)	Run automatically
D1	2021 DS - DIRECT	AM	DIRECT	08:00	09:00	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A - A509 (N)		DIRECT	✓	100.000
B - A509 (S)		DIRECT	✓	100.000
C - Orlingbury Road (W)		DIRECT	✓	100.000

Origin-Destination Data

08:00 - 08:15

Demand (PCU/TS)

		To		
		A - A509 (N)	B - A509 (S)	C - Orlingbury Road (W)
From	A - A509 (N)	15.00	282.00	19.00
	B - A509 (S)	265.00	0.00	2.00
	C - Orlingbury Road (W)	24.00	11.00	0.00

08:15 - 08:30

Demand (PCU/TS)

		To		
		A - A509 (N)	B - A509 (S)	C - Orlingbury Road (W)
From	A - A509 (N)	5.00	298.00	15.00
	B - A509 (S)	299.00	0.00	0.00
	C - Orlingbury Road (W)	15.00	4.00	0.00

08:30 - 08:45

Demand (PCU/TS)

		To		
		A - A509 (N)	B - A509 (S)	C - Orlingbury Road (W)
From	A - A509 (N)	6.00	276.00	17.00
	B - A509 (S)	267.00	0.00	0.00
	C - Orlingbury Road (W)	22.00	9.00	0.00

08:45 - 09:00

Demand (PCU/TS)

		To		
		A - A509 (N)	B - A509 (S)	C - Orlingbury Road (W)
From	A - A509 (N)	13.00	260.00	14.00
	B - A509 (S)	280.00	0.00	4.00
	C - Orlingbury Road (W)	12.00	3.00	0.00

Vehicle Mix

HV %s

		To		
		A - A509 (N)	B - A509 (S)	C - Orlingbury Road (W)
From	A - A509 (N)	0	7	0
	B - A509 (S)	8	0	50
	C - Orlingbury Road (W)	3	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Q (PCU)	Max Q95 (PCU)	Max LOS	Av. Demand (PCU/TS)	Total Junction Arrivals (PCU)	Total Qing Delay (PCU-min)	Av. Qing Delay (s)	Rate of Qing Delay (PCU-min/min)	Inclusive Total Qing Delay (PCU-min)	Inclusive Av. Qing Delay (s)
A - A509 (N)	0.85	15.90	5.4	?	C	305.00	1220.00	274.12	13.48	4.57	274.36	13.49
B - A509 (S)	0.90	25.17	8.1	?	D	279.25	1117.00	338.24	18.17	5.64	339.18	18.22
C - Orlingbury Road (W)	0.30	11.16	0.4	~1	B	25.00	100.00	17.79	10.67	0.30	17.79	10.68

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - A509 (N)	316.00	316.00	10.86	373.11	0.847	310.71	298.77	0.0	5.3	14.300	B
B - A509 (S)	267.00	267.00	33.43	322.45	0.828	262.28	288.15	0.0	4.7	15.181	C
C - Orlingbury Road (W)	35.00	35.00	275.07	116.53	0.300	34.57	20.65	0.0	0.4	11.148	B

08:15 - 08:30

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - A509 (N)	318.00	318.00	4.09	377.68	0.842	317.85	315.81	5.3	5.4	15.900	C
B - A509 (S)	299.00	299.00	20.23	330.70	0.904	295.58	301.71	4.7	8.1	25.173	D
C - Orlingbury Road (W)	19.00	19.00	300.71	101.92	0.186	19.19	15.10	0.4	0.2	11.158	B

08:30 - 08:45

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - A509 (N)	299.00	299.00	8.94	374.40	0.799	299.98	298.05	5.4	4.5	13.071	B
B - A509 (S)	267.00	267.00	23.00	328.97	0.812	270.12	285.93	8.1	5.0	17.303	C
C - Orlingbury Road (W)	31.00	31.00	276.12	115.93	0.267	30.87	17.00	0.2	0.4	10.788	B

08:45 - 09:00

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - A509 (N)	287.00	287.00	3.07	378.36	0.759	287.98	303.77	4.5	3.5	10.709	B
B - A509 (S)	284.00	284.00	27.02	326.46	0.870	282.62	264.03	5.0	6.4	21.344	C
C - Orlingbury Road (W)	15.00	15.00	291.64	107.09	0.140	15.20	17.99	0.4	0.2	10.050	B

Qing Delay Results for each time segment

08:00 - 08:15

Arm	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A - A509 (N)	67.98	4.53	14.300	B	B
B - A509 (S)	60.90	4.06	15.181	C	B
C - Orlingbury Road (W)	6.11	0.41	11.148	B	B

08:15 - 08:30

Arm	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A - A509 (N)	80.62	5.37	15.900	C	B
B - A509 (S)	105.56	7.04	25.173	D	C
C - Orlingbury Road (W)	3.72	0.25	11.158	B	B

08:30 - 08:45

Arm	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A - A509 (N)	70.48	4.70	13.071	B	B
B - A509 (S)	82.89	5.53	17.303	C	B
C - Orlingbury Road (W)	5.31	0.35	10.788	B	B

08:45 - 09:00

Arm	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A - A509 (N)	55.04	3.67	10.709	B	B
B - A509 (S)	88.89	5.93	21.344	C	C
C - Orlingbury Road (W)	2.64	0.18	10.050	B	B

Q Variation Results for each time segment

08:00 - 08:15

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A - A509 (N)	5.29	?	?	?	?			N/A	N/A
B - A509 (S)	4.72	?	?	?	?			N/A	N/A
C - Orlingbury Road (W)	0.43	~1	~1	~1	~1			N/A	N/A

08:15 - 08:30

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A - A509 (N)	5.44	?	?	?	?			N/A	N/A
B - A509 (S)	8.14	?	?	?	?			N/A	N/A
C - Orlingbury Road (W)	0.24	~1	~1	~1	~1			N/A	N/A

08:30 - 08:45

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A - A509 (N)	4.46	?	?	?	?			N/A	N/A
B - A509 (S)	5.02	?	?	?	?			N/A	N/A
C - Orlingbury Road (W)	0.37	~1	~1	~1	~1			N/A	N/A

08:45 - 09:00

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A - A509 (N)	3.48	?	?	?	?			N/A	N/A
B - A509 (S)	6.40	?	?	?	?			N/A	N/A
C - Orlingbury Road (W)	0.17	~1	~1	~1	~1			N/A	N/A

2021 DS - DIRECT, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Flow Arm A	Analysis Options	Q Variations cannot be calculated for the selected traffic profile type.
Warning	Flow Arm B	Analysis Options	Q Variations cannot be calculated for the selected traffic profile type.
Warning	Flow Arm C	Analysis Options	Q Variations cannot be calculated for the selected traffic profile type.
Warning	Queue variations	Analysis Options	Q percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	A,B,C	18.62	C

Junction Network Options

Driving side	Lighting	Res Cap (%)	First arm reaching threshold
Left	Normal/unknown	5	B - A509 (S)

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D2	2021 DS - DIRECT	PM	DIRECT	17:00	18:00	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A - A509 (N)		DIRECT	✓	100.000
B - A509 (S)		DIRECT	✓	100.000
C - Orlingbury Road (W)		DIRECT	✓	100.000

Origin-Destination Data

17:00 - 17:15

Demand (PCU/TS)

		To		
		A - A509 (N)	B - A509 (S)	C - Orlingbury Road (W)
From	A - A509 (N)	5.00	299.00	21.00
	B - A509 (S)	274.00	0.00	2.00
	C - Orlingbury Road (W)	27.00	4.00	0.00

17:15 - 17:30

Demand (PCU/TS)

		To		
		A - A509 (N)	B - A509 (S)	C - Orlingbury Road (W)
From	A - A509 (N)	8.00	264.00	18.00
	B - A509 (S)	263.00	0.00	2.00
	C - Orlingbury Road (W)	27.00	3.00	0.00

17:30 - 17:45

Demand (PCU/TS)

		To		
		A - A509 (N)	B - A509 (S)	C - Orlingbury Road (W)
From	A - A509 (N)	5.00	255.00	12.00
	B - A509 (S)	285.00	0.00	3.00
	C - Orlingbury Road (W)	30.00	2.00	0.00

17:45 - 18:00

Demand (PCU/TS)

		To		
		A - A509 (N)	B - A509 (S)	C - Orlingbury Road (W)
From	A - A509 (N)	1.00	272.00	9.00
	B - A509 (S)	297.00	0.00	3.00
	C - Orlingbury Road (W)	24.00	1.00	0.00

Vehicle Mix

HV %s

		To		
		A - A509 (N)	B - A509 (S)	C - Orlingbury Road (W)
From	A - A509 (N)	0	5	0
	B - A509 (S)	4	0	11
	C - Orlingbury Road (W)	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Q (PCU)	Max Q95 (PCU)	Max LOS	Av. Demand (PCU/TS)	Total Junction Arrivals (PCU)	Total Qing Delay (PCU-min)	Av. Qing Delay (s)	Rate of Qing Delay (PCU-min/min)	Inclusive Total Qing Delay (PCU-min)	Inclusive Av. Qing Delay (s)
A - A509 (N)	0.86	14.90	5.7	?	B	292.25	1169.00	216.83	11.13	3.61	217.00	11.14
B - A509 (S)	0.89	23.20	7.3	?	C	282.25	1129.00	321.49	17.09	5.36	322.67	17.15
C - Orlingbury Road (W)	0.29	11.71	0.4	~1	B	29.50	118.00	21.18	10.77	0.35	21.19	10.78

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - A509 (N)	325.00	325.00	3.95	377.77	0.860	319.29	300.64	0.0	5.7	14.898	B
B - A509 (S)	276.00	276.00	25.54	327.38	0.843	271.00	297.70	0.0	5.0	15.467	C
C - Orlingbury Road (W)	31.00	31.00	273.95	117.17	0.265	30.65	22.59	0.0	0.4	10.360	B

17:15 - 17:30

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - A509 (N)	290.00	290.00	3.01	378.40	0.766	292.12	298.31	5.7	3.6	11.162	B
B - A509 (S)	265.00	265.00	26.14	327.01	0.810	265.33	269.00	5.0	4.7	15.333	C
C - Orlingbury Road (W)	30.00	30.00	271.31	118.67	0.253	30.01	20.15	0.4	0.3	10.153	B

17:30 - 17:45

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - A509 (N)	272.00	272.00	2.01	379.08	0.718	272.85	318.69	3.6	2.7	8.942	A
B - A509 (S)	288.00	288.00	17.15	332.62	0.866	286.69	257.70	4.7	6.0	19.636	C
C - Orlingbury Road (W)	32.00	32.00	288.76	108.73	0.294	31.93	15.07	0.3	0.4	11.708	B

17:45 - 18:00

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - A509 (N)	282.00	282.00	1.01	379.75	0.743	281.80	320.81	2.7	2.9	9.600	A
B - A509 (S)	300.00	300.00	10.07	337.05	0.890	298.68	272.75	6.0	7.3	23.201	C
C - Orlingbury Road (W)	25.00	25.00	296.73	104.19	0.240	25.09	12.02	0.4	0.3	11.391	B

Qing Delay Results for each time segment

17:00 - 17:15

Arm	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A - A509 (N)	72.61	4.84	14.898	B	B
B - A509 (S)	63.99	4.27	15.467	C	B
C - Orlingbury Road (W)	5.05	0.34	10.360	B	B

17:15 - 17:30

Arm	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A - A509 (N)	57.97	3.86	11.162	B	B
B - A509 (S)	71.88	4.79	15.333	C	B
C - Orlingbury Road (W)	5.18	0.35	10.153	B	B

17:30 - 17:45

Arm	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A - A509 (N)	43.13	2.88	8.942	A	A
B - A509 (S)	83.33	5.56	19.636	C	B
C - Orlingbury Road (W)	5.98	0.40	11.708	B	B

17:45 - 18:00

Arm	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
A - A509 (N)	43.13	2.88	9.600	A	A
B - A509 (S)	102.29	6.82	23.201	C	C
C - Orlingbury Road (W)	4.97	0.33	11.391	B	B

Q Variation Results for each time segment

17:00 - 17:15

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A - A509 (N)	5.71	?	?	?	?			N/A	N/A
B - A509 (S)	5.00	?	?	?	?			N/A	N/A
C - Orlingbury Road (W)	0.35	~1	~1	~1	~1			N/A	N/A

17:15 - 17:30

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A - A509 (N)	3.59	?	?	?	?			N/A	N/A
B - A509 (S)	4.68	?	?	?	?			N/A	N/A
C - Orlingbury Road (W)	0.34	~1	~1	~1	~1			N/A	N/A

17:30 - 17:45

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A - A509 (N)	2.74	?	?	?	?			N/A	N/A
B - A509 (S)	5.99	?	?	?	?			N/A	N/A
C - Orlingbury Road (W)	0.41	~1	~1	~1	~1			N/A	N/A

17:45 - 18:00

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A - A509 (N)	2.94	?	?	?	?			N/A	N/A
B - A509 (S)	7.30	?	?	?	?			N/A	N/A
C - Orlingbury Road (W)	0.32	~1	~1	~1	~1			N/A	N/A

Junctions 9

PICADY 9 - Priority Intersection Module

Filename: 170410 - A509 Finedon Station Road - 2021 DS - DIRECT + Mitigation.j9
Path: J:\30062 Land South of Kettering\Junctions 9\A509 Finedon Station Road\2021 DS
Report generation date: 06/07/2017 16:34:32

Summary of junction performance

	AM						PM					
	Q (PCU)	Q95 (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Q (PCU)	Q95 (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)
	2021 DS- DIRECT											
Stream B-C	56.7	?	591.48	1.50	F	79.78	66.0	?	0.00	9999999999.00	A	10.55
Stream B-A	6.8	?	778.97	1.34	F		8.0	?	0.00	9999999999.00	A	
Stream C-B	0.7	~1	15.89	0.40	C		9.5	?	81.26	0.99	F	

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

Values shown are the highest values encountered over all time segments. Delay is the maximum value of Av. delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted Av.s.

File summary

File Description

Title	A509 Finedon Station Road - Priority Junction
Location	Kettering
Site number	
Date	10/04/2017
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	30062
Enumerator	PBA\mbolshaw
Description	2017 Observed

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Av. delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perTimeSegment	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Q Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Av. Delay threshold (s)	Q threshold (PCU)
5.75	✓	✓		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D1	2021 DS- DIRECT	AM	DIRECT	08:00	09:00	60	15	✓
D2	2021 DS- DIRECT	PM	DIRECT	17:00	18:00	60	15	✓

Analysis Set Details

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

2021 DS- DIRECT, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Flow Arm A	Analysis Options	Q Variations cannot be calculated for the selected traffic profile type.
Warning	Flow Arm B	Analysis Options	Q Variations cannot be calculated for the selected traffic profile type.
Warning	Flow Arm C	Analysis Options	Q Variations cannot be calculated for the selected traffic profile type.
Warning	Queue variations	Analysis Options	Q percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	79.78	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	A509 Kettering Road (N)		Major
B	Finedon Station Road (E)		Minor
C	A509 Ketterin Road (S)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Width for right turn (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C - A509 Ketterin Road (S)	6.60		✓	3.00	103.0		-

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

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B - Finedon Station Road (E)	One lane plus flare	10.00	10.00	6.00	5.00	3.75		2.00	98	33

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/TS)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	129.859	0.092	0.233	0.147	0.333
1	B-C	187.718	0.112	0.283	-	-
1	C-B	172.195	0.260	0.260	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D1	2021 DS- DIRECT	AM	DIRECT	08:00	09:00	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A - A509 Kettering Road (N)		DIRECT	✓	100.000
B - Finedon Station Road (E)		DIRECT	✓	100.000
C - A509 Ketterin Road (S)		DIRECT	✓	100.000

Origin-Destination Data

08:00 - 08:15

Demand (PCU/TS)

		To		
		A - A509 Kettering Road (N)	B - Finedon Station Road (E)	C - A509 Ketterin Road (S)
From	A - A509 Kettering Road (N)	0.00	6.00	292.00
	B - Finedon Station Road (E)	10.00	0.00	85.00
	C - A509 Ketterin Road (S)	284.00	27.00	0.00

08:15 - 08:30

Demand (PCU/TS)

		To		
		A - A509 Kettering Road (N)	B - Finedon Station Road (E)	C - A509 Ketterin Road (S)
From	A - A509 Kettering Road (N)	0.00	8.00	300.00
	B - Finedon Station Road (E)	8.00	0.00	97.00
	C - A509 Ketterin Road (S)	258.00	33.00	0.00

08:30 - 08:45

Demand (PCU/TS)

		To		
		A - A509 Kettering Road (N)	B - Finedon Station Road (E)	C - A509 Ketterin Road (S)
From	A - A509 Kettering Road (N)	0.00	22.00	269.00
	B - Finedon Station Road (E)	9.00	0.00	58.00
	C - A509 Ketterin Road (S)	269.00	24.00	0.00

08:45 - 09:00

Demand (PCU/TS)

		To		
		A - A509 Kettering Road (N)	B - Finedon Station Road (E)	C - A509 Ketterin Road (S)
From	A - A509 Kettering Road (N)	0.00	18.00	248.00
	B - Finedon Station Road (E)	12.00	0.00	68.00
	C - A509 Ketterin Road (S)	243.00	41.00	0.00

Vehicle Mix

HV %s

		To		
		A - A509 Kettering Road (N)	B - Finedon Station Road (E)	C - A509 Ketterin Road (S)
From	A - A509 Kettering Road (N)	0	2	8
	B - Finedon Station Road (E)	25	0	2
	C - A509 Ketterin Road (S)	9	5	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Q (PCU)	Max Q95 (PCU)	Max LOS	Av. Demand (PCU/TS)	Total Junction Arrivals (PCU)	Total Qing Delay (PCU-min)	Av. Qing Delay (s)	Rate of Qing Delay (PCU-min/min)	Inclusive Total Qing Delay (PCU-min)	Inclusive Av. Qing Delay (s)
B-C	1.50	591.48	56.7	?	F	77.00	308.00	2087.85	406.72	34.80	2198.40	428.26
B-A	1.34	778.97	6.8	?	F	9.75	39.00	309.57	476.27	5.16	336.30	517.38
C-A						263.50	1054.00					
C-B	0.40	15.89	0.7	~1	C	31.25	125.00	29.09	13.96	0.48	29.12	13.98
A-B						13.50	54.00					
A-C						277.25	1109.00					

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	85.00	85.00	63.47	1.339	60.89	0.0	24.1	198.927	F
B-A	10.00	10.00	7.47	1.339	5.76	0.0	4.2	473.480	F
C-A	284.00	284.00			284.00				
C-B	27.00	27.00	94.74	0.285	26.59	0.0	0.4	13.792	B
A-B	6.00	6.00			6.00				
A-C	292.00	292.00			292.00				

08:15 - 08:30

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	97.00	97.00	64.51	1.504	64.39	24.1	56.7	552.994	F
B-A	8.00	8.00	6.52	1.228	6.00	4.2	6.2	778.970	F
C-A	258.00	258.00			258.00				
C-B	33.00	33.00	92.14	0.358	32.84	0.4	0.6	15.888	C
A-B	8.00	8.00			8.00				
A-C	300.00	300.00			300.00				

08:30 - 08:45

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	58.00	58.00	75.38	0.769	74.05	56.7	40.7	591.480	F
B-A	9.00	9.00	10.01	0.899	8.80	6.2	6.4	640.683	F
C-A	269.00	269.00			269.00				
C-B	24.00	24.00	96.56	0.249	24.22	0.6	0.4	13.102	B
A-B	22.00	22.00			22.00				
A-C	269.00	269.00			269.00				

08:45 - 09:00

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	68.00	68.00	76.89	0.884	75.01	40.7	33.7	448.010	F
B-A	12.00	12.00	13.05	0.920	11.62	6.4	6.8	563.267	F
C-A	243.00	243.00			243.00				
C-B	41.00	41.00	103.06	0.398	40.68	0.4	0.7	15.071	C
A-B	18.00	18.00			18.00				
A-C	248.00	248.00			248.00				

Qing Delay Results for each time segment

08:00 - 08:15

Stream	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
B-C	193.29	12.89	198.927	F	F
B-A	36.11	2.41	473.480	F	F
C-B	5.77	0.38	13.792	B	B

08:15 - 08:30

Stream	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
B-C	606.50	40.43	552.994	F	F
B-A	78.85	5.26	778.970	F	F
C-B	8.19	0.55	15.888	C	B

08:30 - 08:45

Stream	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
B-C	730.50	48.70	591.480	F	F
B-A	95.11	6.34	640.683	F	F
C-B	5.56	0.37	13.102	B	B

08:45 - 09:00

Stream	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
B-C	557.56	37.17	448.010	F	F
B-A	99.50	6.63	563.267	F	F
C-B	9.57	0.64	15.071	C	B

Q Variation Results for each time segment

08:00 - 08:15

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	24.11	?	?	?	?			N/A	N/A
B-A	4.24	?	?	?	?			N/A	N/A
C-B	0.41	~1	~1	~1	~1			N/A	N/A

08:15 - 08:30

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	56.72	?	?	?	?			N/A	N/A
B-A	6.24	?	?	?	?			N/A	N/A
C-B	0.57	~1	~1	~1	~1			N/A	N/A

08:30 - 08:45

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	40.67	?	?	?	?			N/A	N/A
B-A	6.44	?	?	?	?			N/A	N/A
C-B	0.35	~1	~1	~1	~1			N/A	N/A

08:45 - 09:00

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	33.67	?	?	?	?			N/A	N/A
B-A	6.82	?	?	?	?			N/A	N/A
C-B	0.68	~1	~1	~1	~1			N/A	N/A

2021 DS- DIRECT, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Flow Arm A	Analysis Options	Q Variations cannot be calculated for the selected traffic profile type.
Warning	Flow Arm B	Analysis Options	Q Variations cannot be calculated for the selected traffic profile type.
Warning	Flow Arm C	Analysis Options	Q Variations cannot be calculated for the selected traffic profile type.
Warning	Queue variations	Analysis Options	Q percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	10.55	B

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D2	2021 DS- DIRECT	PM	DIRECT	17:00	18:00	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A - A509 Kettering Road (N)		DIRECT	✓	100.000
B - Finedon Station Road (E)		DIRECT	✓	100.000
C - A509 Ketterin Road (S)		DIRECT	✓	100.000

Origin-Destination Data

17:00 - 17:15

Demand (PCU/TS)

		To		
		A - A509 Kettering Road (N)	B - Finedon Station Road (E)	C - A509 Ketterin Road (S)
From	A - A509 Kettering Road (N)	0.00	16.00	287.00
	B - Finedon Station Road (E)	4.00	0.00	25.00
	C - A509 Ketterin Road (S)	270.00	74.00	0.00

17:15 - 17:30

Demand (PCU/TS)

		To		
		A - A509 Kettering Road (N)	B - Finedon Station Road (E)	C - A509 Ketterin Road (S)
From	A - A509 Kettering Road (N)	0.00	12.00	253.00
	B - Finedon Station Road (E)	4.00	0.00	41.00
	C - A509 Ketterin Road (S)	282.00	97.00	0.00

Demand (PCU/TS)

17:30 - 17:45

From \ To	A - A509 Kettering Road (N)	B - Finedon Station Road (E)	C - A509 Ketterin Road (S)
A - A509 Kettering Road (N)	0.00	13.00	234.00
B - Finedon Station Road (E)	3.00	0.00	32.00
C - A509 Ketterin Road (S)	267.00	77.00	0.00

Demand (PCU/TS)

17:45 - 18:00

From \ To	A - A509 Kettering Road (N)	B - Finedon Station Road (E)	C - A509 Ketterin Road (S)
A - A509 Kettering Road (N)	0.00	7.00	275.00
B - Finedon Station Road (E)	2.00	0.00	21.00
C - A509 Ketterin Road (S)	272.00	98.00	0.00

Vehicle Mix

HV %s

From \ To	A - A509 Kettering Road (N)	B - Finedon Station Road (E)	C - A509 Ketterin Road (S)
A - A509 Kettering Road (N)	0	3	5
B - Finedon Station Road (E)	0	0	2
C - A509 Ketterin Road (S)	3	1	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Q (PCU)	Max Q95 (PCU)	Max LOS	Av. Demand (PCU/TS)	Total Junction Arrivals (PCU)	Total Qing Delay (PCU-min)	Av. Qing Delay (s)	Rate of Qing Delay (PCU-min/min)	Inclusive Total Qing Delay (PCU-min)	Inclusive Av. Qing Delay (s)
B-C	9999999999.00	0.00	66.0	?	A	29.75	119.00	2533.17	1277.23	42.22	166666666.65	9999999999.00
B-A	9999999999.00	0.00	8.0	?	A	3.25	13.00	321.50	1483.83	5.36	166666666.65	9999999999.00
C-A						272.75	1091.00					
C-B	0.99	81.26	9.5	?	F	86.50	346.00	277.82	48.18	4.63	284.69	49.37
A-B						12.00	48.00					
A-C						262.25	1049.00					

Main Results for each time segment

17:00 - 17:15

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	25.00	25.00	0.00	9999999999.000	0.00	0.0	25.0	0.000	A
B-A	4.00	4.00	0.00	9999999999.000	0.00	0.0	4.0	0.000	A
C-A	270.00	270.00			270.00				
C-B	74.00	74.00	93.44	0.792	70.84	0.0	3.2	36.389	E
A-B	16.00	16.00			16.00				
A-C	287.00	287.00			287.00				

17:15 - 17:30

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	41.00	41.00	0.00	9999999999.000	0.00	25.0	66.0	0.000	A
B-A	4.00	4.00	0.00	9999999999.000	0.00	4.0	8.0	0.000	A
C-A	282.00	282.00			282.00				
C-B	97.00	97.00	103.32	0.939	92.87	3.2	7.3	67.493	F
A-B	12.00	12.00			12.00				
A-C	253.00	253.00			253.00				

17:30 - 17:45

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	32.00	32.00	53.90	0.594	53.08	66.0	44.9	0.000	A
B-A	3.00	3.00	6.05	0.496	5.38	8.0	5.6	0.000	A
C-A	267.00	267.00			267.00				
C-B	77.00	77.00	108.00	0.713	81.52	7.3	2.8	38.486	E
A-B	13.00	13.00			13.00				
A-C	234.00	234.00			234.00				

17:45 - 18:00

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	21.00	21.00	0.00	9999999999.000	0.00	44.9	65.9	0.000	A
B-A	2.00	2.00	0.00	9999999999.000	0.00	5.6	7.6	0.000	A
C-A	272.00	272.00			272.00				
C-B	98.00	98.00	98.90	0.991	91.26	2.8	9.5	81.262	F
A-B	7.00	7.00			7.00				
A-C	275.00	275.00			275.00				

Qing Delay Results for each time segment

17:00 - 17:15

Stream	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
B-C	187.50	12.50	0.000	A	A
B-A	30.00	2.00	0.000	A	A
C-B	38.23	2.55	36.389	E	D

17:15 - 17:30

Stream	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
B-C	682.50	45.50	0.000	A	A
B-A	90.00	6.00	0.000	A	A
C-B	85.40	5.69	67.493	F	E

17:30 - 17:45

Stream	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
B-C	831.89	55.46	0.000	A	A
B-A	102.17	6.81	0.000	A	A
C-B	52.65	3.51	38.486	E	D

17:45 - 18:00

Stream	Qing total delay (PCU-min)	Qing rate of delay (PCU-min/min)	Av. delay per arriving vehicle (s)	Unsignalised level of service	Signalised level of service
B-C	831.28	55.42	0.000	A	A
B-A	99.33	6.62	0.000	A	A
C-B	101.54	6.77	81.262	F	F

Q Variation Results for each time segment

17:00 - 17:15

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	25.00	?	?	?	?			N/A	N/A
B-A	4.00	?	?	?	?			N/A	N/A
C-B	3.16	?	?	?	?			N/A	N/A

17:15 - 17:30

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	66.00	?	?	?	?			N/A	N/A
B-A	8.00	?	?	?	?			N/A	N/A
C-B	7.30	?	?	?	?			N/A	N/A

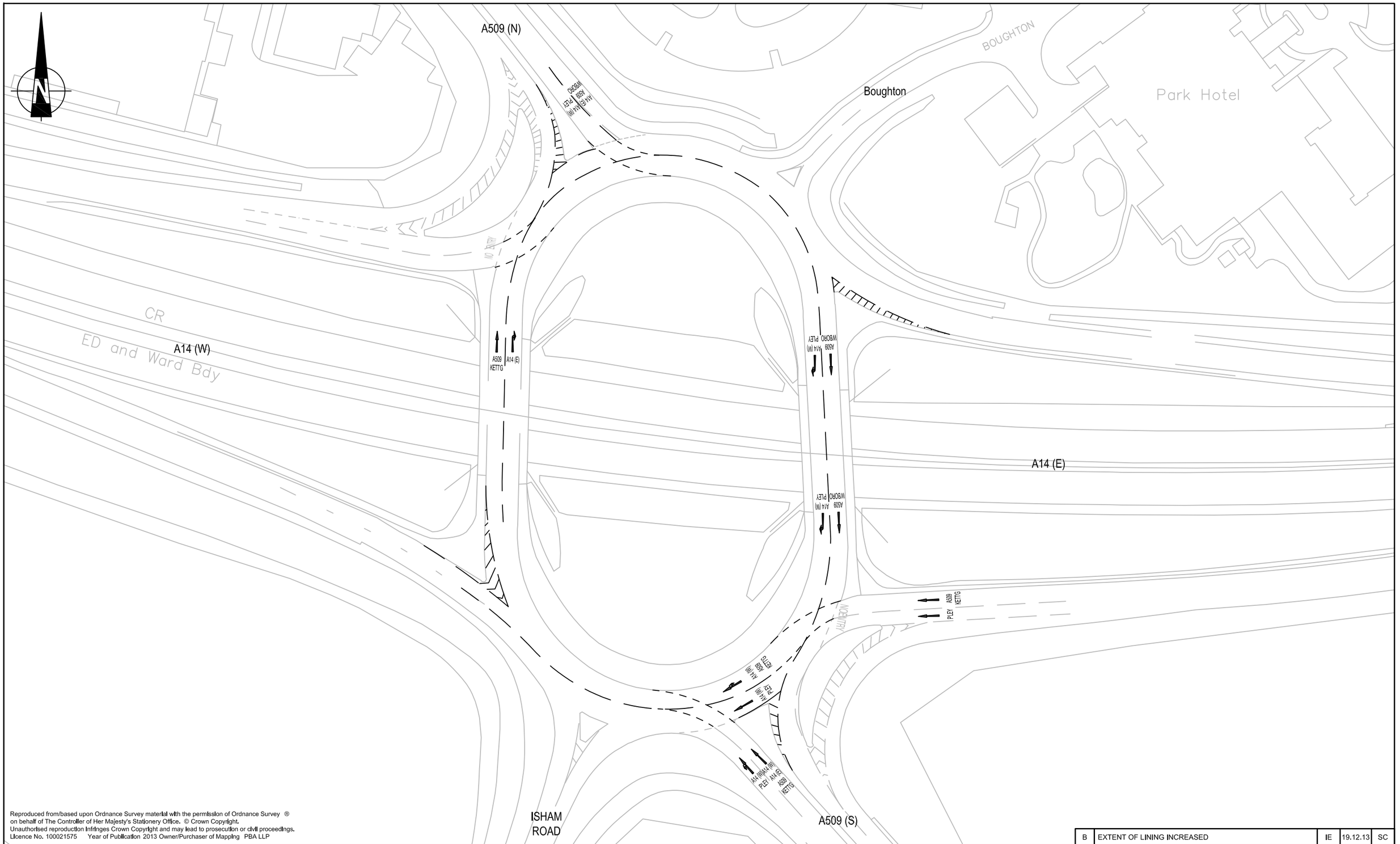
17:30 - 17:45

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	44.92	?	?	?	?			N/A	N/A
B-A	5.62	?	?	?	?			N/A	N/A
C-B	2.78	?	?	?	?			N/A	N/A

17:45 - 18:00

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-C	65.92	?	?	?	?			N/A	N/A
B-A	7.62	?	?	?	?			N/A	N/A
C-B	9.52	?	?	?	?			N/A	N/A

Appendix 13.3 – A14 Junction 9 Mitigation Scheme for East Kettering



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SCALING NOTE: Do not scale from this drawing. If in doubt, ask.
UTILITIES NOTE: The position of any existing public or private sewers, utility services, plant or apparatus shown on this drawing is believed to be correct, but no warranty to this is expressed or implied. Other such plant or apparatus may also be present but not shown. The Contractor is therefore advised to undertake his own investigation where the presence of any existing sewers, services, plant or apparatus may affect his operations.

EAST KETTERING
A14 JUNCTION 9 - PROPOSED LINING WORKS

Mark	Revision	Drawn	Date	Chkd
B	EXTENT OF LINING INCREASED	IE	19.12.13	SC
A	ISHAM ROAD CHANGED TO P'LEY	DS	04.09.13	

Drawing Status: Technical Note 19

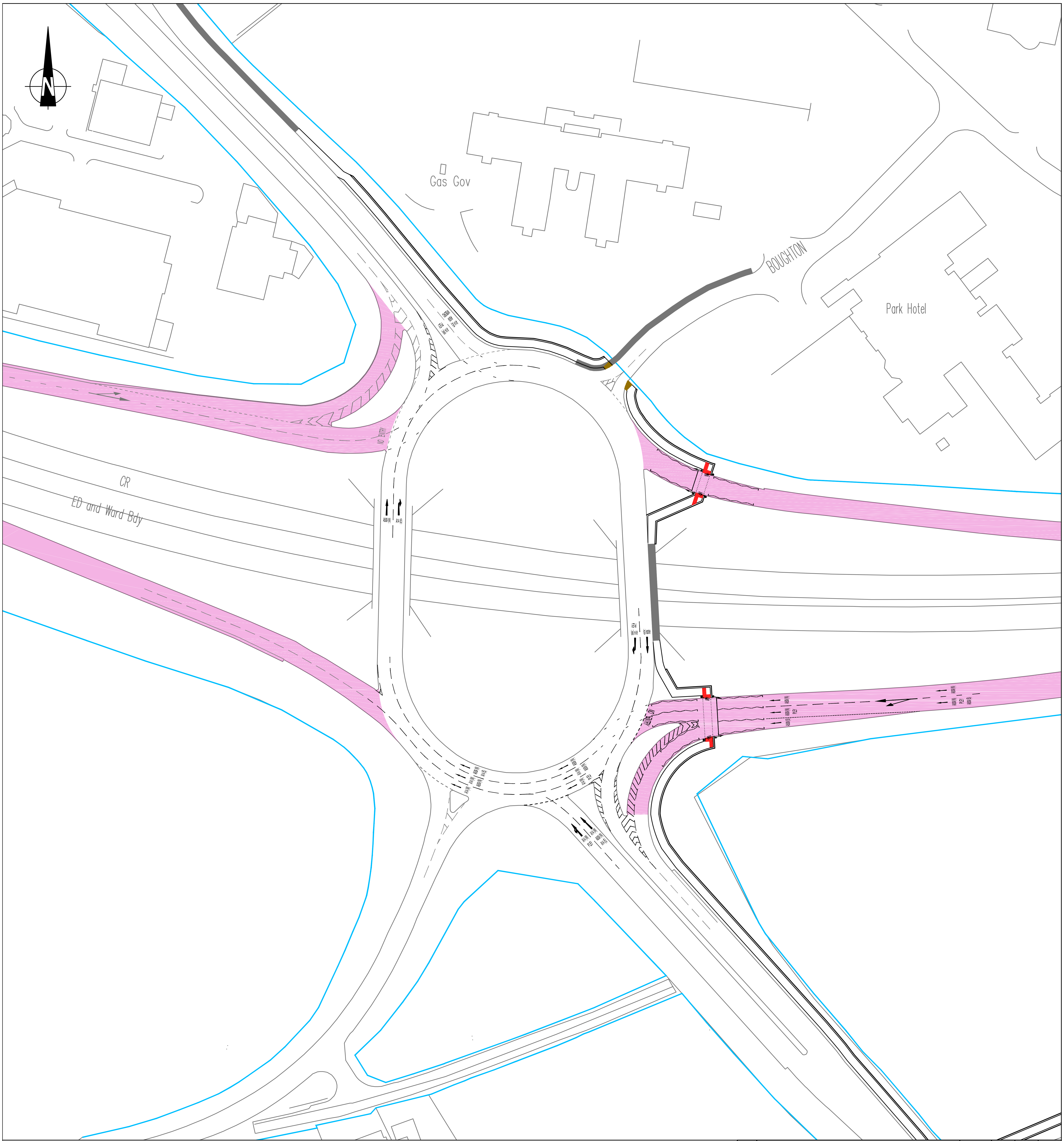
Date of 1st Issue	30.08.13
A3 Scale	1:1000
Drawn by	DS
Checked by	SC

Drawing Number: 25134/001/051
Revision: B

user name: scott cooper

File Location: J:\25134 - east kettering\technical\pba drawings\temp drawings\25134-001-051 - standard\25134-001-051.dwg

Appendix 13.4 - A14 Mitigation Scheme for symmetry park Kettering



KEY

HIGHWAY BOUNDARY

ASSUMED HIGHWAYS ENGLAND MAINTENANCE BOUNDARY

PROPOSED TRAFFIC SIGNAL HEAD

EXISTING 2m FOOTWAY WITH NO BUFFER

PROPOSED 3m SHARED FOOTWAY / CYCLEWAY WITH 1m BUFFER

NOTES

1 - THE DESIGN HAS BEEN BASED ON OS DATA, THEREFORE WILL REQUIRE CONFIRMATION WITH A TOPOGRAPHICAL SURVEY.

2 - THE DETAILED FOOTWAY / CYCLEWAY LAYOUT WILL BE DESIGNED IN ACCORDANCE WITH ALL RELEVANT DESIGN GUIDE AND STANDARDS INCLUDING DEPARTMENT FOR TRANSPORT'S LOCAL TRANSPORT NOTE 1/12 - SHARED USE ROUTES FOR PEDESTRIANS AND CYCLISTS, BASED ON THE EXISTING 40 mph ON A14 JUNCTION 9 AND NATIONAL SPEED LIMIT ALONG THE A509.

3 - THE SHARED FOOTWAY / CYCLEWAY WILL BE CONSTRUCTED IN ACCORDANCE WITH THE DETAILS CONTAINED IN NORTHAMPTONSHIRE COUNTY COUNCIL'S ESTATE ROAD CONSTRUCTION SPECIFICATION 1999.

4 - THE PROPOSALS AS SHOWN ARE SUBJECT TO THE REVIEW AND COMMENTS FROM THE LOCAL HIGHWAY AUTHORITY.

5 - ADVANCED DIRECTIONAL SIGNS NOT SHOWN FOR CLARITY.

Mark	Revision	Date	Drawn	Chkd	Appd

SCALING NOTE: Do not scale from this drawing. If in doubt, ask.
UTILITIES NOTE: The position of any existing public or private sewers, utility services, plant or apparatus shown on this drawing is believed to be correct, but no warranty to this is expressed or implied. Other such plant or apparatus may also be present but not shown. The Contractor is therefore advised to undertake their own investigation where the presence of any existing sewers, services, plant or apparatus may affect their operations.

Drawing Issue Status
TRANSPORT ASSESSMENT

SYMMETRY PARK, KETTERING

A14 JUNCTION 9 MITIGATION SCHEME

Client
dbsymmetry

Date of 1st Issue	Designed	Drawn
09.10.17	TPA	TPA
A2 Scale	Checked	Approved
1:1000	JPH	JPH

Drawing Number: 30062/5501/017
Revision: -

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