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Norwich to Tilbury

Volume 7: Other Documents

Document: 7.11 Transport Assessment - Appendix F - Junction
Capacity Assessment

Final Issue A

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nationalgrid

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Appendix F

Junction Capacity Assessment

F.1 Introduction

- F.1.1 This document has been produced as an appendix to the Transport Assessment (TA) (document reference 7.11) for Norwich to Tilbury (the 'Project'), submitted as part of the Development Consent Order (DCO) application.

F.2 Roundabouts

- F.2.1 The calculation of the volume to capacity (V/C) ratio for roundabouts is based on the formula defined in the Design Manual for Roads and Bridges (DMRB) CD 116 Geometric Design of Roundabouts Appendix B: Roundabout Capacity Formula (National Highways, 2023), that estimates the capacity of the roundabout entries. This formula depends on the entry and circulating flows and roundabout geometry parameters.

- F.2.2 The capacity of each entry is calculated as:

$$Q_E = k(F - f_c Q_c)$$

- F.2.3 Where:

- Q_E is the entry flow in PCU/h
- Q_c is the circulating flow across the entry in PCU/h
- k is calculated as $k = 1 - 0.00347(\phi - 30) - 0.978\left\{\left(\frac{1}{r}\right) - 0.05\right\}$
- ϕ is the entry angle in degrees
- r is the entry radius in metres
- F is calculated as $F = 303x^2$
- x^2 is calculated as $x^2 = v + \frac{e-v}{1+2s}$
- e is the entry width in metres
- v is the approach half width in metres
- S is the sharpness of flares and it is calculated as $S = 1.6 \frac{e-v}{l'}$
- l' is the average effective flare length in metres
- f_c is calculated as $f_c = 0.210t_D(1 + 0.2x^2)$
- t_D is calculated as $t_D = 1 + \frac{0.5}{1+M}$
- M is calculated as $M = e^{\frac{D-60}{10}}$
- D is the roundabout inscribed circle diameter in metres.

F.3 Priority Junctions

F.3.1 The estimation of the V/C ratio for priority junctions is based on gap acceptance that considers how drivers at minor or side roads accept gaps in traffic flows on major roads to execute manoeuvres such as entering, crossing, or merging into the major road.

F.3.2 The gap acceptance assumes that the arrival of vehicles on the major road follows an exponential distribution (Poisson), that is, arrivals are random. It then calculates the probability that a driver on the minor road finds an acceptable gap to merge or cross.

F.3.3 The capacity of the movements with opposing traffic, such as major right turns, as well as all the movements from the minor arms, is calculated as:

$$c = \frac{3600}{t_f} e^{-\frac{q_m t_c}{3600}}$$

F.3.4 Where:

- q_m is the opposing traffic in PCU/h
- t_c is the critical gap in seconds. The critical gap is the time gap between two vehicles circulating on the major road that a driver on the minor road is willing to accept to safely complete their turning or crossing manoeuvre
- t_f is the follow-up time in seconds. The follow-up time is the additional time needed for a second car on the minor road to also take the gap and started moving.

F.3.5 Default values for the critical gap and follow-up times are considered for each movement. These default values have been obtained from default values for critical gap and follow-up time used in strategic model software:

- Major right turn, critical gap of 4s and follow-up time of 2s
- Minor left turn, critical gap of 6s and follow-up time of 3s
- Minor ahead, critical gap of 6s and follow-up time of 4s
- Minor right turn, critical gap of 7s and follow-up time of 4s.

F.4 Norfolk

Table F.1 Norfolk capacity preliminary assessment

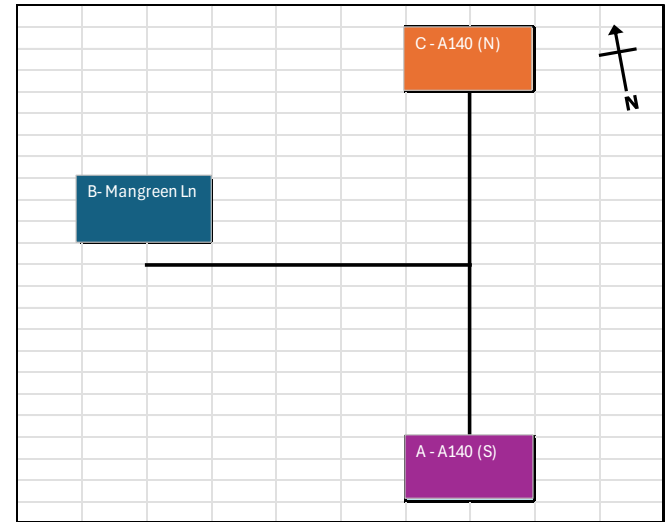
Junction ID	Location	Junction type	Preliminary Assessment	Comments	Modelled
Site 1	A47 Norwich Southern Bypass/ A140 Ipswich Rd	Grade Separated Roundabout	No	Grade separated roundabouts need to be modelled to estimate queues and if these queues impact the mainline traffic	Yes
Site 2	A140 Ipswich Rd / Mangreen Lane	Priority T-junction	Yes	Model required, capacity issues identified	Yes
Site 3	B1113/ Wymondham Rd	Priority T-junction	Yes	No issues identified. Previous Project trip generation triggered the need for a model	Yes
Site 4	A140 Ipswich Rd / B1134 Station Road	Roundabout	Yes	No issues identified	No
Site 5	A140 Ipswich Rd / A1066 Diss Road	Roundabout	Yes	No issues identified	No
Site 6	A1066 Victoria Rd / B1077 Stunston Rd	Priority T-junction	No	Modelling required as part of the Diss strategy	Yes
Site 7	A1066 Victoria Rd / Tesco access	Mini-roundabout	No	Modelling required as part of the Diss strategy	Yes
Site 8	A1066 Victoria Rd / Morrisons access	Roundabout	No	Modelling required as part of the Diss strategy	Yes
Site 9	A1066 Park Rd / Denmark St	Mini-roundabout	No	Modelling required as part of the Diss strategy	Yes
Site 10	A1066 Park Rd / Denmark St	Priority Crossroad	No	Modelling required as part of the Diss strategy	Yes
Site 11	A1066 High Road / Old High Road	Priority T-junction	Yes	No issues identified	No

Junction ID	Location	Junction type	Preliminary Assessment	Comments	Modelled
Site 12	A11 Thetford Bypass / A1066 Mundford Road	Roundabout	No	Modelling required as part of the Diss strategy	Yes
Site 13	A1066 Mundford Road / Wyatt Way	Roundabout	No	Modelling required as part of the Diss strategy	Yes
Site 14	A1066 Mundford Road / A1075 Norwich Road	Roundabout	No	Modelling required as part of the Diss strategy	Yes
Site 15	A1066 Hurth Way / A1066 Thetford Road	Roundabout	No	Modelling required as part of the Diss strategy	Yes

Site 2 - A140 Ipswich Road / Mangreen Lane

Site 2
A140 Ipswich Road / Mangreen Lane

Site 2 - A140 Ipswich Road / Mangreen Lane



Peak year 2028

AM		07:15		
	A	B	C	Total
A	0	5	1427	1432
B	1	0	125	126
C	1077	311	0	1388
Total	1078	317	1552	2947

PM		16:30		
	A	B	C	Total
A	0	5	1099	1104
B	4	0	324	328
C	1348	130	0	1478
Total	1353	135	1423	2911

Follow-up and critical gap times

	tc	tf
Major RT	4	2
Minor LT	6	3
Minor Straight	6	4
Minor RT	7	4

Major 1 C
Major 2 A
Minor B

	Main movement		Opposing	
	Origin	Destination	Origin	Destination
Major 1 RT	C	B	A	C
Minor LT	B	C	A	C
Minor Straight	-	-	-	-
Minor RT	B	A	C	A
			C	B
			A	C
Major 2 LT	A	B		
Major 2 Straight	A	C		
Major 1 Straight	C	A		

Capacity estimation

	Main flow	Opposing	Estimated Capacity AM
Major 1 RT	311	1427	369
Minor LT	125	1427	111
Minor Straight	-	-	
Minor RT	1	2815	4
Major 2 LT	5	-	
Major 2 Straight	1427	-	
Major 1 Straight	1077	-	

	Main flow	Opposing	Estimated Capacity PM
Major 1 RT	130	1099	531
Minor LT	324	1099	192
Minor Straight	-	-	
Minor RT	4	2577	6
Major 2 LT	5	-	
Major 2 Straight	1099	-	
Major 1 Straight	1348	-	

Detailed Early Junction Performance Assessment

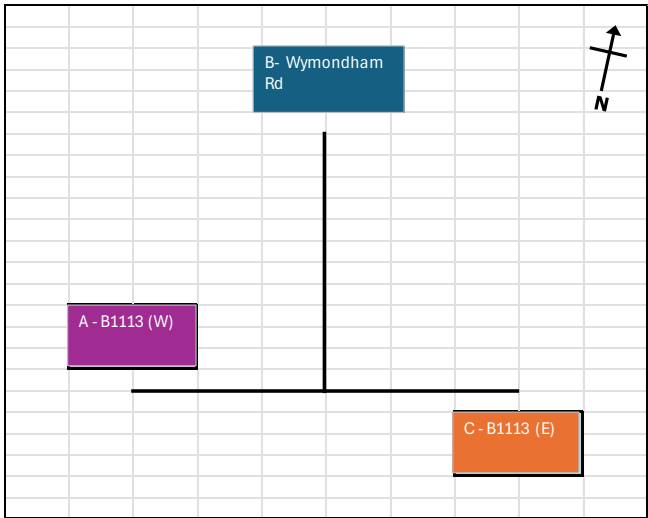
Site 2 - A140 Ipswich Road / Mangreen Lane

Approach/Movement		Entry/	Opposing	Lanes	Dedicated RT lane	No. Lanes Crossing	AM		PM	
							Flow (PCU/h)	RFC	Flow (PCU/h)	RFC
Major 2-Ahead	Opposing			1		0	-		-	
	Entry			1		-	1427	0.79	1099	0.61
Major 2-Left Turn	Opposing			1		0	-		-	
	Entry			1		-	5		5	
Minor-Left Turn	Opposing			1		1	1427		1099	
	Entry			1		-	125	1.13	324	1.69
Minor-Right Turn	Opposing			2		3	2815		2577	
	Entry			1		-	1	0.27	4	0.69
Major 1 - Ahead	Opposing			1		0	-		-	
	Entry			1	1.0	-	1077	0.60	1348	0.75
Major 1 - Right Turn	Opposing			1		1	1427		1099	
	Entry			1		-	311	0.84	130	0.24

Site 3 - B1113/ Wymondham Road

Site 3
B1135 Wymondham Road / B1113

Site 3 - B1135 Wymondham Road / B1113



Peak year 2027

AM 07:45				
	A	B	C	Total
A	0	133	300	433
B	84	0	192	276
C	140	351	0	491
Total	224	484	493	1200

PM 16:00				
	A	B	C	Total
A	0	74	161	235
B	107	0	385	492
C	179	145	0	324
Total	286	220	545	1051

Follow-up and critical gap times

	tc	tf
Major RT	4	2
Minor LT	6	3
Minor Straight	6	4
Minor RT	7	4

Major 1 C
Major 2 A
Minor B

	Main movement			Opposing
	Origin	Destination	Origin	Destination
Major 1 RT	C	B	A	C
Minor LT	B	C	A	C
Minor Straight	-	-	-	-
Minor RT	B	A	C	A
			C	B
			A	C
Major 2 LT	A	B		
Major 2 Straight	A	C		
Major 1 Straight	C	A		

Capacity estimation

	Main flow	Opposing	Estimated Capacity AM
Major 1 RT	351	300	1289
Minor LT	192	300	727
Minor Straight	-	-	
Minor RT	84	792	193
Major 2 LT	133	-	
Major 2 Straight	300	-	
Major 1 Straight	140	-	

	Main flow	Opposing	Estimated Capacity PM
Major 1 RT	145	161	1506
Minor LT	385	161	918
Minor Straight	-	-	
Minor RT	107	485	350
Major 2 LT	74	-	
Major 2 Straight	161	-	
Major 1 Straight	179	-	

Detailed Early Junction Performance Assessment

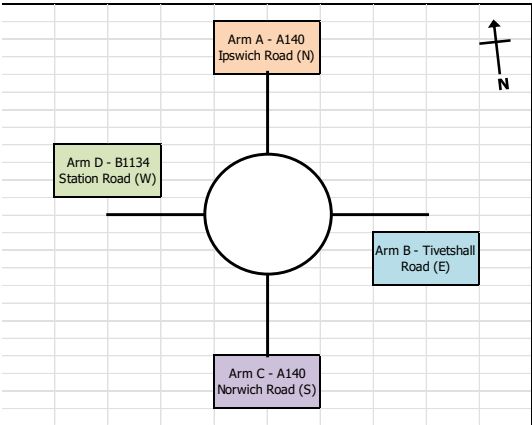
Site 3 - B1135 Wymondham Road / B1113

Approach/Movement		Entry/Opposing	Lanes	Dedicated RT lane	No. Lanes Crossing	AM Flow (PCU/h)	AM RFC	PM Flow (PCU/h)	PM RFC
Major 2-Ahead	Opposing	1			0	-		-	
	Entry	1			-	300	0.17	161	0.09
Major 2-Left Turn	Opposing	1			0	-		-	
	Entry	1			-	133		74	
Minor-Left Turn	Opposing	1			1	300		161	
	Entry	1			-	192	0.26	385	0.42
Minor-Right Turn	Opposing	2			2	792		485	
	Entry	1			-	84	0.43	107	0.31
Major 1 - Ahead	Opposing	1			0	-		-	
	Entry	1		0.0	-	140	0.10	179	0.11
Major 1 - Right Turn	Opposing	1			1	300		161	
	Entry	1			-	351	0.27	145	0.10

Site 4 - A140 Ipswich Road / B1134 Station Road

Site 4
A140 Ipswich Road / Tivetshall Road / A140 Norwich Road / B1134 Station Road

Site 4 - A140 Ipswich Road / Tivetshall Road / A140 Norwich Road / B1134 Station Road



Peak year 2028

AM 07:15					
	A	B	C	D	Total
A	1	80	802	56	938
B	81	0	59	79	218
C	777	25	3	75	881
D	45	59	101	0	204
Total	904	163	965	210	2242

Opposing traffic					
Arm					
A	B-B	C-B	C-C	D-B	D-C
B	A-A	A-C	A-D	C-C	D-C
C	A-A	A-D	B-A	B-B	B-D
D	A-A	B-A	B-B	C-A	C-B

PM 16:30					
	A	B	C	D	Total
A	4	85	675	41	805
B	86	0	26	65	177
C	827	52	0	94	974
D	132	47	58	0	237
Total	1049	185	759	201	2193

Total	Opposing
938	188
218	963
881	216
204	887

Detailed Early Roundabout Performance Assessment

Site 4 - A140 Ipswich Road / Tivetshall Road / A140 Norwich Road / B1134 Station Road

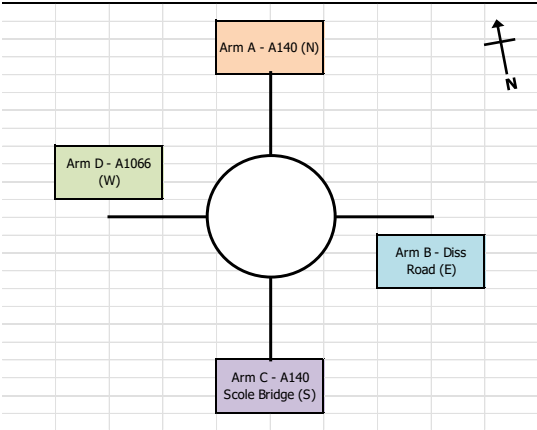
ARM	Entry/Circulating	Lanes	AM				PM			
			Flow (PCU/h)	Capacity	RFC	Flow (PCU/h)	Capacity	RFC		
Arm A	Circulating	2	188			157				
	Entry	3	938	1408	0.67	805	1422	0.57		
Arm B	Circulating	2	963			778				
	Entry	2	218	922	0.24	177	1002	0.18		
Arm C	Circulating	2	216			196				
	Entry	2	881	1395	0.63	974	1404	0.69		
Arm D	Circulating	2	887			970				
	Entry	2	204	873	0.23	237	639	0.28		

	Geometry						DMRB Parameters							
	v	e	l'	r	D	φ	k	F	fc	td	M	x2	S	k
Arm A	3	7.5	40	6	61	60.00	0.782	1911.574	0.588	1.238	1.105	6.309	0.180	0.782
Arm B	3	6.5	35	6	61	60.00	0.782	1712.409	0.554	1.238	1.105	5.652	0.160	0.782
Arm C	3	7.5	40	6	61	60.00	0.782	1911.574	0.588	1.238	1.105	6.309	0.180	0.782
Arm D	3	6.5	20	6	61	60.00	0.782	1588.808	0.532	1.238	1.105	5.244	0.280	0.782

Site 5 - A140 Ipswich Road / A1066 Diss Road

Site 5
A140 / Diss Road / A140 Scale Bridge / A1066

Site 5 - A140 / Diss Road / A140 Scale Bridge / A1066



Peak year 2028

AM					
	A	B	C	D	Total
A	0	9	765	247	1022
B	23	0	78	210	310
C	589	26	4	188	807
D	175	71	168	2	416
Total	787	107	1014	647	2555

Opposing traffic

Arm						
A	B-B	C-B	C-C	D-B	D-C	D-D
B	A-A	A-C	A-D	C-C	D-C	D-D
C	A-A	A-D	B-A	B-B	B-D	D-D
D	A-A	B-A	B-B	C-A	C-B	C-C

PM 16:15					
	A	B	C	D	Total
A	3	40	621	148	812
B	1	1	30	97	129
C	742	45	0	227	1014
D	291	167	252	1	710
Total	1037	253	903	472	2666

Total	Opposing
1022	271
310	1186
807	482
416	642

Total	Opposing
812	466
129	1025
1014	251
710	793
5331	1503

Detailed Early Roundabout Performance Assessment

Site 5 - A140 / Diss Road / A140 Scale Bridge / A1066

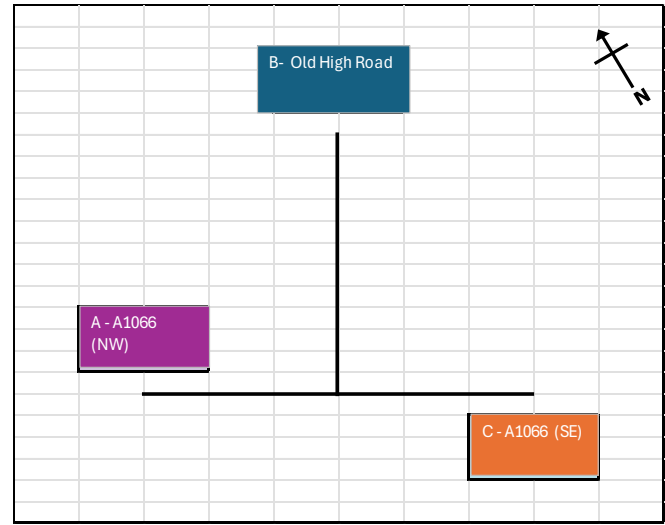
ARM	Entry/Circulating	Lanes	AM			PM		
			Flow (PCU/h)	Capacity	RFC	Flow (PCU/h)	Capacity	RFC
Arm A	Circulating	2	271			466		
	Entry	3	1022	2257	0.45	812	2152	0.38
Arm B	Circulating	2	1186			1025		
	Entry	2	310	911	0.34	129	973	0.13
Arm C	Circulating	2	482			251		
	Entry	2	807	1919	0.42	1014	2036	0.50
Arm D	Circulating	2	642			793		
	Entry	2	416	1048	0.40	710	992	0.72

	Geometry						DMRB Parameters							
	v	e	l'	r	D	ϕ	k	F	fc	td	M	x2	S	k
Arm A	7.5	11	35	6	75	60.00	0.782	3075.909	0.694	1.091	4.482	10.152	0.160	0.782
Arm B	3	8	20	6	75	60.00	0.782	1750.667	0.494	1.091	4.482	5.778	0.400	0.782
Arm C	7.5	10	15	6	75	60.00	0.782	2766.522	0.648	1.091	4.482	9.130	0.267	0.782
Arm D	3	7	20	6	75	60.00	0.782	1648.024	0.478	1.091	4.482	5.439	0.320	0.782

Site 11 - A1066 High Road / Old High Road

Site 11
A1066 High Road / Old High Road

Site 11 - A1066 High Road / Old High Road



Peak year 2028

AM		08:15		
	A	B	C	Total
A	0	124	539	663
B	75	0	74	150
C	460	68	0	528
Total	535	192	613	1341

PM		16:30		
	A	B	C	Total
A	0	111	444	555
B	60	0	38	98
C	493	45	0	538
Total	553	156	482	1191

Follow-up and critical gap times

	tc	tf
Major RT	4	2
Minor LT	6	3
Minor Straight	6	4
Minor RT	7	4

Major 1 C
Major 2 A
Minor B

	Main movement		Opposing	
	Origin	Destination	Origin	Destination
Major 1 RT	C	B	A	C
Minor LT	B	C	A	C
Minor Straight	-	-	-	-
Minor RT	B	A	C	A
			C	B
			A	C
Major 2 LT	A	B		
Major 2 Straight	A	C		
Major 1 Straight	C	A		

Capacity estimation

	Main flow	Opposing	Estimated Capacity AM
Major 1 RT	68	539	989
Minor LT	74	539	489
Minor Straight	-	-	
Minor RT	75	1067	113
Major 2 LT	124	-	
Major 2 Straight	539	-	
Major 1 Straight	460	-	

	Main flow	Opposing	Estimated Capacity PM
Major 1 RT	45	444	1099
Minor LT	38	444	572
Minor Straight	-	-	
Minor RT	60	983	133
Major 2 LT	111	-	
Major 2 Straight	444	-	
Major 1 Straight	493	-	

Detailed Early Junction Performance Assessment

Site 11 - A1066 High Road / Old High Road

Approach/Movement		Entry/Opposing	Lanes	Dedicated RT lane	No. Lanes Crossing	AM		PM	
						Flow (PCU/h)	RFC	Flow (PCU/h)	RFC
Major 2-Ahead	Opposing	1			0	-		-	
	Entry	1			-	539	0.30	444	0.25
Major 2-Left Turn	Opposing	1			0	-		-	
	Entry	1			-	124		111	
Minor-Left Turn	Opposing	1			1	539		444	
	Entry	1			-	74	0.15	38	0.07
Minor-Right Turn	Opposing	2			2	1067		983	
	Entry	1			-	75	0.67	60	0.45
Major 1 - Ahead	Opposing	1			0	-		-	
	Entry	1		0.0	-	460	0.50	493	0.43
Major 1 -Right Turn	Opposing	1			1	539		444	
	Entry	1			-	68	0.07	45	0.04

F.5 Suffolk

Table F.2 Suffolk capacity preliminary assessment

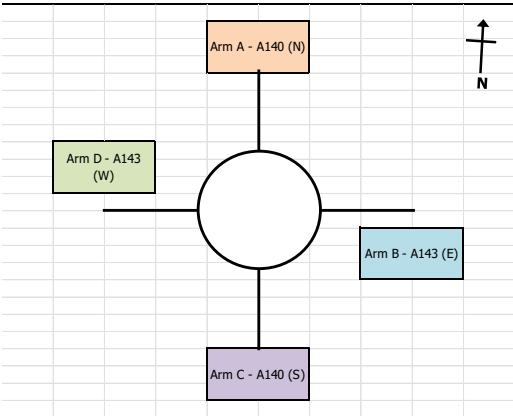
Junction ID	Location	Junction type	Preliminary Assessment	Comments	Modelled
Site 16	A140 Ipswich Rd / A143 Old Bury Rd	Roundabout	Yes	No issues identified. Previous Project trip generation triggered the need for a model	Yes
Site 17	A143 Old Bury Rd / B1077 Stunston Rd	Roundabout	Yes	No issues identified. Previous Project trip generation triggered the need for a model	Yes
Site 18	A143 Old Bury Rd / Lion Rd	Priority T-junction	Yes	Model required, identified arm with v/c > 0.8	Yes
Site 19	A143 / B1113 Finningham Rd	Priority T-junction	Yes	No issues identified	No
Site 20	B1113 Walsham Rd / Wickham Rd	Priority crossroad	Yes	No issues identified	No
Site 21	A14 J50 Cedars Interchange	Grade separated Roundabout	No	Grade separated roundabouts need to be modelled to estimate queues and if these queues impact the mainline traffic	Yes
Site 22	A1120 Church Rd / B1115 Stowmarket Rd	Priority T-junction	Yes	Model required, capacity issues identified	Yes
Site 23	A1120 Church Rd / Thorney Green	Priority Crossroad	No	Staggered junction need to be modelled	Yes
Site 24	A1120 / Gun Cotton Way	Roundabout	Yes	No issues identified. Previous Project trip generation triggered the need for a model	Yes
Site 25	A1120 / B1113 Needham Rd	Signalised roundabout	No	Signalised or partially signalised junctions need to be modelled to test any potential optimisation	Yes

Junction ID	Location	Junction type	Preliminary Assessment	Comments	Modelled
Site 26	A14 J52 Claydon Roundabout	Grade separated Roundabout	No	Grade separated roundabouts need to be modelled to estimate queues and if these queues impact the mainline traffic	Yes
Site 27	B1113 Bramford Rd / Bramford Rd	Partially signalised	No	Signalised or partially signalised junctions need to be modelled to test any potential optimisation	Yes
Site 28	B1113 Loraine Way / B1067 The Street	Priority T-junction	Yes	No issues identified	No
Site 29	A14 J55 Copdock Interchange	Signalised roundabout	No	Signalised or partially signalised junctions need to be modelled to test any potential optimisation	Yes
Site 30	A1214 London Rd / Scrivener Dr	Partially Signalised Roundabout	No	Signalised or partially signalised junctions need to be modelled to test any potential optimisation	Yes
Site 31	A1214 London Rd / A1071	Signalised	No	Signalised or partially signalised junctions need to be modelled to test any potential optimisation	Yes
Site 32	A1071 / B1113 Swan Hill	Roundabout	Yes	Model required, capacity issues identified	Yes
Site 33	A12 / B1070	Priority T-junction	Yes	Only B1070 left turn onto A12 has been analysed. No issues detected	No
Site 35	A140 Stoke Ash	Priority crossroad	Yes	No issues identified. Previous Project trip generation triggered the need for a model	Yes

Site 16 - A140 Ipswich Road / A143 Old Bury Road

Site 16
A140 / A143

Site 16 - A140 / A143



Peak year 2028

AM 07:30

	A	B	C	D	Total
A	17	105	707	152	982
B	170	0	265	306	741
C	677	156	8	126	967
D	181	350	423	18	973
Total	1046	611	1404	602	3662

Total	Opposing
982	956
741	1326
967	664
973	1029

PM 16:15

	A	B	C	D	Total
A	24	156	579	100	859
B	124	3	181	276	584
C	719	241	11	90	1061
D	214	391	279	11	895
Total	1081	791	1050	477	3399

Total	Opposing
859	936
584	1004
1061	539
895	1122
6798	2017

Detailed Early Roundabout Performance Assessment

Site 16 - A140 / A143

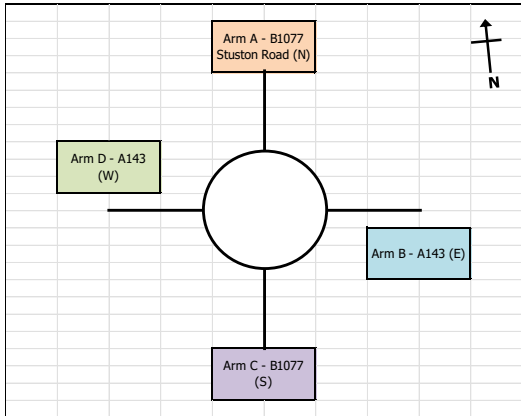
ARM	Entry/Circulating	Lanes	AM			PM		
			Flow (PCU/h)	Capacity	RFC	Flow (PCU/h)	Capacity	RFC
Arm A	Circulating	2	956			936		
	Entry	3	982	2022	0.49	859	2036	0.42
Arm B	Circulating	2	1326			1004		
	Entry	2	741	1155	0.64	584	1343	0.44
Arm C	Circulating	2	664			539		
	Entry	2	967	1808	0.53	1061	1889	0.56
Arm D	Circulating	2	1029			1122		
	Entry	2	973	1330	0.73	895	1275	0.70

	Geometry						DMRB Parameters							
	v	e	l'	r	D	ϕ	k	F	fc	td	M	x2	S	k
Arm A	8.64	8.64	1	20.66	62.6	20.00	1.036	2617.920	0.698	1.218	1.297	8.640	0.000	1.036
Arm B	3.89	7.55	23.17	27.63	62.6	32.00	1.007	1915.298	0.579	1.218	1.297	6.321	0.253	1.007
Arm C	5.36	7.6	21.15	22.92	62.6	17.50	1.050	2130.999	0.615	1.218	1.297	7.033	0.169	1.050
Arm D	3.56	8.01	20.77	18.76	62.6	20.00	1.031	1878.601	0.573	1.218	1.297	6.200	0.343	1.031

Site 17 - A143 Old Bury Road / B1077 Stunston Road

Site 17
A143 Old Bury Rd / B1077 Stunston Rd

Site 17 - A143 Old Bury Rd / B1077 Stunston Rd



Peak year 2028

AM 07:45

	A	B	C	D	Total
A	0	356	64	27	447
B	124	4	20	496	644
C	216	27	1	51	294
D	47	468	13	0	528
Total	387	854	98	574	1913

Total	Opposing
447	513
644	105
294	651
528	372

PM 16:15

	A	B	C	D	Total
A	0	255	89	54	398
B	120	1	12	337	470
C	261	10	0	51	323
D	56	550	9	1	616
Total	437	817	111	443	1808

Total	Opposing
398	572
470	154
323	513
616	392
3616	1009

Detailed Early Roundabout Performance Assessment

Site 17 - A143 Old Bury Rd / B1077 Stunston Rd

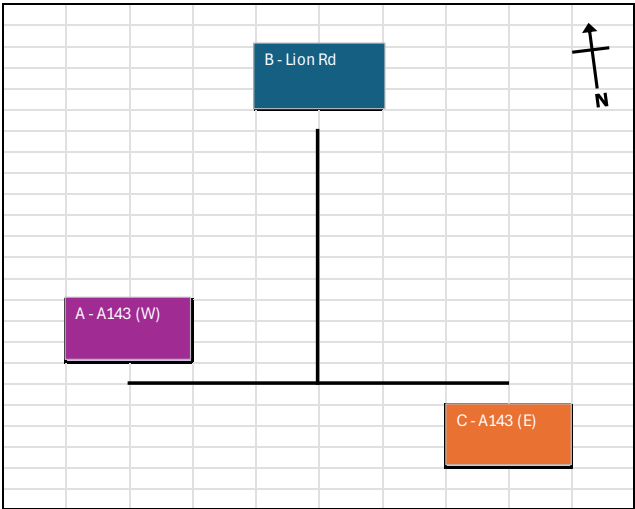
ARM	Entry/Circulating	Lanes	AM			PM		
			Flow (PCU/h)	Capacity	RFC	Flow (PCU/h)	Capacity	RFC
Arm A	Circulating	2	513			572		
	Entry	3	447	1249	0.36	398	1213	0.33
Arm B	Circulating	2	105			154		
	Entry	2	644	1957	0.33	470	1923	0.24
Arm C	Circulating	2	651			513		
	Entry	2	294	1165	0.25	323	1248	0.26
Arm D	Circulating	2	372			392		
	Entry	2	528	1807	0.29	616	1792	0.34

	Geometry						DMRB Parameters							
	v	e	l'	r	D	φ	k	F	fc	td	M	x2	S	k
Arm A	3.21	6.87	10.07	24.51	47.2	18.00	1.051	1485.321	0.579	1.391	0.278	4.902	0.582	1.051
Arm B	4.27	8	14.99	28.24	47.2	18.00	1.056	1922.999	0.663	1.391	0.278	6.347	0.398	1.056
Arm C	3.15	6.82	11.87	25.34	47.2	25.00	1.028	1513.422	0.584	1.391	0.278	4.995	0.495	1.028
Arm D	4.36	8.01	17.2	25.32	47.2	20.00	1.045	1979.748	0.674	1.391	0.278	6.534	0.340	1.045

Site 18 - A143 Old Bury Road / Lion Road

Site 18
Lion Road / A143 Old Bury Road / A143 Bury Road

Site 18 - Lion Road / A143 Old Bury Road / A143 Bury Road



Peak year 2028

AM 08:00				
	A	B	C	Total
A	0	188	344	531
B	163	0	25	187
C	409	26	0	435
Total	572	213	369	1154

PM 16:00				
	A	B	C	Total
A	0	178	441	619
B	135	0	26	161
C	324	27	0	351
Total	460	205	466	1131

Follow-up and critical gap times

	tc	tf
Major RT	4	2
Minor LT	6	3
Minor Straight	6	4
Minor RT	7	4

Major 1 C
Major 2 A
Minor B

	Main movement		Opposing	
	Origin	Destination	Origin	Destination
Major 1 RT	C	B	A	C
Minor LT	B	C	A	C
Minor Straight	-	-	-	-
Minor RT	B	A	C	A
			C	B
			A	C
Major 2 LT	A	B		
Major 2 Straight	A	C		
Major 1 Straight	C	A		

Capacity estimation

	Main flow	Opposing	Estimated Capacity AM
Major 1 RT	26	344	1228
Minor LT	25	344	677
Minor Straight	-	-	-
Minor RT	163	779	198
Major 2 LT	188	-	-
Major 2 Straight	344	-	-
Major 1 Straight	409	-	-

	Main flow	Opposing	Estimated Capacity PM
Major 1 RT	27	441	1103
Minor LT	26	441	576
Minor Straight	-	-	-
Minor RT	135	792	193
Major 2 LT	178	-	-
Major 2 Straight	441	-	-
Major 1 Straight	324	-	-

Detailed Early Junction Performance Assessment

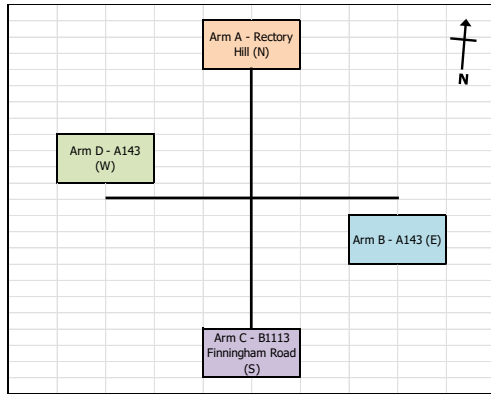
Site 18 - Lion Road / A143 Old Bury Road / A143 Bury Road

Approach/Movement		Entry/Opposing	Lanes	Dedicated RT lane	No. Lanes Crossing	AM		PM	
						Flow (PCU/h)	RFC	Flow (PCU/h)	RFC
Major 2-Ahead	Opposing	1	1		0	-		-	
	Entry	1	1		-	344	0.19	441	0.24
Major 2-Left Turn	Opposing	1	1		0	-		-	
	Entry	1	1		-	188		178	
Minor-Left Turn	Opposing	1	1		1	344		441	
	Entry	1	1		-	25	0.04	26	0.04
Minor-Right Turn	Opposing	2	2		3	779		792	
	Entry	1	1		-	163	0.82	135	0.70
Major 1 - Ahead	Opposing	1	1		0	-		-	
	Entry	1	1	1.0	-	409	0.23	324	0.18
Major 1-Right Turn	Opposing	1	1		1	344		441	
	Entry	1	1		-	26	0.02	27	0.02

Site 19 - A143 / B1113 Finningham Road

Site 19
Rectory Hill / A143 / B1113 Finningham Road

Site 19 - Rectory Hill / A143 / B1113 Finningham Road



Peak year 2028

AM 07:30						
	A	B	c	D	Total	
A	0	22	32	3	57	
B	5	0	91	435	532	
C	29	66	0	79	174	
D	2	369	82	0	454	
Total	36	457	206	518	1217	

PM 16:15						
	A	B	C	D	Total	
A	0	11	35	2	49	
B	8	0	59	293	360	
C	54	66	0	74	194	
D	4	445	88	0	537	
Total	66	523	182	369	1140	

Follow-up and critical gap times

	tc	tf
Major RT	4	2
Minor LT	6	3
Minor Straight	6	4
Minor RT	7	4

		Main movement		Opposing	
		Origin	Destination	Origin	Destination
Major 1 RT	B	A	D	D	B
Major 1 Straight	B	D	C		
Major 1 LT	B	C			
Minor 1 LT	A	B	D	D	B
Minor 1 Straight	A	C	B	D	D
Minor 1 RT	A	D	B	D	B
			D	C	A
			C	D	
Major 2 RT	D	C	B	D	
Major 2 Straight	D	B			
Major 2 LT	D	A			
Minor 2 LT	C	D	B	D	D
Minor 2 Straight	C	A	B	D	B
Minor 2 RT	C	D	B	D	B
			D	A	C
			A	B	

Capacity estimation

	Main flow	Opposing	Estimated Capacity AM
Major 1 RT	5	369	1790
Major 1 Straight	435 -		
Major 1 LT	91 -		
Minor 1 LT	22	369	1157
Minor 1 Straight	32	805	853
Minor 1 RT	3	913	895
Major 2 RT	82	435	1642
Major 2 Straight	369 -		
Major 2 LT	2 -		
Minor 2 LT	79	435	1051
Minor 2 Straight	29	805	858
Minor 2 RT	66	858	791

	Main flow	Opposing	Estimated Capacity PM
Major 1 RT	8	445	1784
Major 1 Straight	293 -		
Major 1 LT	59 -		
Minor 1 LT	11	445	1177
Minor 1 Straight	35	738	849
Minor 1 RT	2	866	896
Major 2 RT	88	293	1633
Major 2 Straight	445 -		
Major 2 LT	4 -		
Minor 2 LT	74	293	1060
Minor 2 Straight	54	738	823
Minor 2 RT	66	785	791

Detailed Early Junction Performance Assessment

Site 19 - Rectory Hill / A143 / B1113 Finningham Road

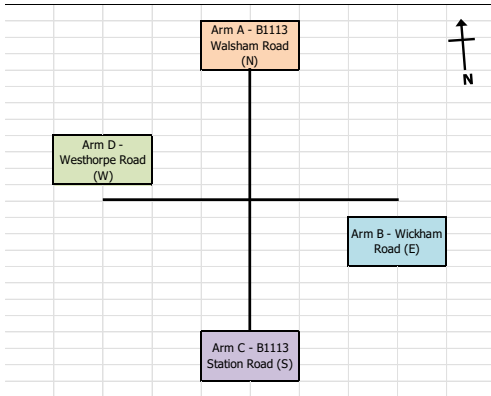
Approach/Movement	Entry/Opposing	Lanes	Dedicated Lanes		AM		PM	
			RT lane	Crossing	Flow (PCU/h)	RFC	Flow (PCU/h)	RFC
Major 1 - Right turn	Opposing	1		2	369		445	
	Entry	1		-	5	0.00	8	0.00
Major 1 - Ahead	Opposing	1		0	-		-	
	Entry	1	0	-	435	0.24	293	0.16
Major 1 - Left Turn	Opposing	1		0	-		-	
	Entry	1		-	91		59	
Minor 1 - Left Turn	Opposing	1		1	369		445	
	Entry	1		-	22	0.02	11	0.01
Minor 1 - Ahead	Opposing	2		2	805		738	
	Entry	1		-	32	0.04	35	0.04
Minor 1 - Right Turn	Opposing	1		2	913		866	
	Entry	1		-	3	0.00	2	0.00
Major 2 - Right turn	Opposing	1		1	435		293	
	Entry	1		-	82	0.05	88	0.05
Major 2 - Ahead	Opposing	1		0	-		-	
	Entry	1	0	-	369	0.21	445	0.25
Major 2 - Left Turn	Opposing	1		0	-		-	
	Entry	1		-	2		4	
Minor 2 - Left Turn	Opposing	1		1	435		293	
	Entry	1		-	79	0.08	74	0.07
Minor 2 - Ahead	Opposing	2		2	805		738	
	Entry	1		-	29	0.03	54	0.07
Minor 2 - Right Turn	Opposing	1		2	858		785	
	Entry	1		-	66	0.08	66	0.08

Site 20 - B1113 Walsham Road / Wickham Road

Site 20

B1113 Walsham Road / Wickham Road / B1113 Station Road / Westhorpe Road

Site 20 - B1113 Walsham Road / Wickham Road / B1113 Station Road / Westhorpe Road



Peak year 2028

AM 07:45

	A	B	C	D	Total
A	0	62	134	14	211
B	50	0	72	9	132
C	120	84	0	13	217
D	12	26	16	0	54
Total	183	171	222	37	613

PM 16:15

	A	B	C	D	Total
A	0	56	138	17	210
B	49	0	62	14	126
C	153	64	0	12	230
D	18	11	7	0	36
Total	220	131	207	43	602

Follow-up and critical gap times

	tc	tf
Major RT	4	2
Minor LT	6	3
Minor Straight	6	4
Minor RT	7	4

Major 1 A
Major 2 C
Minor 1 D
Minor 2 B

	Main movement		Opposing	
	Origin	Destination	Origin	Destination
Major 1 RT	A	D	C	A
Major 1 Straight	A	C		
Major 1 LT	A	B		
Minor 1 LT	D	A	C	A
Minor 1 Straight	D	B	A	C
			C	A
Minor 1 RT	D	C	A	C
			C	A
			B	D
			B	C
Major 2 RT	C	B	A	C
Major 2 Straight	C	A		
Major 2 LT	C	D		
Minor 2 LT	B	C	A	C
Minor 2 Straight	B	D	A	C
			C	A
			C	A
			D	B
			D	A

Capacity estimation

	Main flow	Opposing	Estimated Capacity AM
Major 1 RT	14	120	1771
Major 1 Straight	134	-	
Major 1 LT	62	-	
Minor 1 LT	12	120	1175
Minor 1 Straight	26	254	862
Minor 1 RT	16	336	873
Major 2 RT	84	134	1640
Major 2 Straight	120	-	
Major 2 LT	13	-	
Minor 2 LT	72	134	1064
Minor 2 Straight	9	254	886
Minor 2 RT	50	293	816

	Main flow	Opposing	Estimated Capacity PM
Major 1 RT	17	153	1767
Major 1 Straight	138	-	
Major 1 LT	56	-	
Minor 1 LT	18	153	1165
Minor 1 Straight	11	291	883
Minor 1 RT	7	367	887
Major 2 RT	64	138	1676
Major 2 Straight	153	-	
Major 2 LT	12	-	
Minor 2 LT	62	138	1082
Minor 2 Straight	14	291	879
Minor 2 RT	49	320	818

Detailed Early Junction Performance Assessment

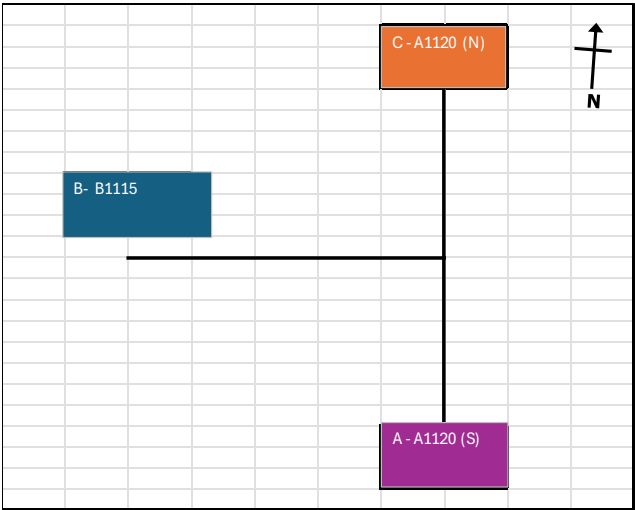
Site 20 - B1113 Walsham Road / Wickham Road / B1113 Station Road / Westhorpe Road

Approach/Movement	Entry/Opposing	Lanes	Dedicated RT lane	Crossing Lanes	AM		PM	
					Flow (PCU/h)	RFC	Flow (PCU/h)	RFC
Major 1 - Right turn	Opposing	1		2	120		153	
	Entry	1		-	14	0.01	17	0.01
Major 1 - Ahead	Opposing	1		0	-		-	
	Entry	1	0	-	134	0.07	138	0.08
Major 1 - Left Turn	Opposing	1		0	-		-	
	Entry	1		-	62		56	
Minor 1 - Left Turn	Opposing	1		1	120		153	
	Entry	1		-	12	0.01	18	0.02
Minor 1 - Ahead	Opposing	2		2	254		291	
	Entry	1		-	26	0.03	11	0.01
Minor 1 - Right Turn	Opposing	1		2	336		367	
	Entry	1		-	16	0.02	7	0.01
Major 2 - Right turn	Opposing	1		1	134		138	
	Entry	1		-	84	0.05	64	0.04
Major 2 - Ahead	Opposing	1		0	-		-	
	Entry	1	0	-	120	0.07	153	0.09
Major 2 - Left Turn	Opposing	1		0	-		-	
	Entry	1		-	13		12	
Minor 2 - Left Turn	Opposing	1		1	134		138	
	Entry	1		-	72	0.07	62	0.06
Minor 2 - Ahead	Opposing	2		2	254		291	
	Entry	1		-	9	0.01	14	0.02
Minor 2 - Right Turn	Opposing	1		2	293		320	
	Entry	1		-	50	0.06	49	0.06

Site 22 - A1120 Church Road / B1115 Stowmarket Road

Site 22
A1120 Church Road / B1115

Site 22 - A1120 Church Road / B1115



Follow-up and critical gap times

	tc	tf
Major RT	4	2
Minor LT	6	3
Minor Straight	6	4
Minor RT	7	4

Major 1 C
Major 2 A
Minor B

	Main movement		Opposing	
	Origin	Destination	Origin	Destination
Major 1 RT	C	B	A	C
Minor LT	B	C	A	C
Minor Straight	-	-	-	-
Minor RT	B	A	C	A
			C	B
			A	C
Major 2 LT	A	B		
Major 2 Straight	A	C		
Major 1 Straight	C	A		

Peak year 2028

Capacity estimation

AM 08:00

	A	B	C	Total
A	0	160	499	659
B	279	0	251	530
C	586	244	0	830
Total	865	404	750	2019

	Main flow	Opposing	Estimated Capacity AM
Major 1 RT	244	499	1034
Minor LT	251	499	523
Minor Straight	-	-	-
Minor RT	279	1329	68
Major 2 LT	160	-	-
Major 2 Straight	499	-	-
Major 1 Straight	586	-	-

PM 16:15

	A	B	C	Total
A	0	292	501	793
B	177	0	210	387
C	434	253	0	687
Total	611	546	711	1867

	Main flow	Opposing	Estimated Capacity PM
Major 1 RT	253	501	1031
Minor LT	210	501	520
Minor Straight	-	-	-
Minor RT	177	1189	89
Major 2 LT	292	-	-
Major 2 Straight	501	-	-
Major 1 Straight	434	-	-

Detailed Early Junction Performance Assessment

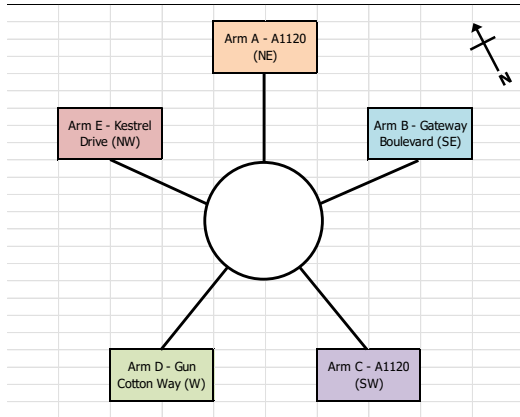
Site 22 - A1120 Church Road / B1115

Approach/Movement		Entry/Opposing	Lanes	Dedicated RT lane	No. Lanes Crossing	Flow (PCU/h)	AM RFC	PM Flow (PCU/h)	PM RFC
Major 2-Ahead	Opposing	1			0	-		-	
	Entry	1			-	499	0.28	501	0.28
Major 2-Left Turn	Opposing	1			0	-		-	
	Entry	1			-	160		292	
Minor-Left Turn	Opposing	1			1	499		501	
	Entry	1			-	251	0.48	210	0.40
Minor-Right Turn	Opposing	2			2	1329		1189	
	Entry	1			-	279	4.10	177	1.98
Major 1 - Ahead	Opposing	1			0	-		-	
	Entry	1		0.0	-	586	0.59	434	0.51
Major 1 -Right Turn	Opposing	1			1	499		501	
	Entry	1			-	244	0.24	253	0.25

Site 24 - A1120 / Gun Cotton Way

Site 24
A1120 / Gateway Boulevard / Gun Cotton Way / Kestrel Drive

Site 24 - A1120 / Gateway Boulevard / Gun Cotton Way / Kestrel Drive



Opposing traffic

Arm										
A	B-B	C-B	C-C	D-B	D-C	D-D	E-B	E-C	E-D	E-E
B	A-A	A-C	A-D	A-E	C-C	D-C	D-D	E-C	E-D	E-E
C	A-A	A-D	A-E	B-A	B-B	B-D	B-E	D-D	E-D	E-E
D	A-A	A-E	B-A	B-B	B-E	C-A	C-B	C-C	C-E	E-E
E	A-A	B-A	B-B	C-A	C-B	C-C	D-A	D-B	D-C	D-D

Peak year 2028

AM 08:00

	A	B	C	D	E	Total	Opposing
A	1	59	532	374	37	1003	253
B	43	0	19	19	2	82	1164
C	611	10	0	230	23	875	497
D	418	17	155	0	12	603	728
E	65	5	43	22	0	135	1256
Total	1138	92	749	644	75	2697	

PM 16:45

	A	B	C	D	E	Total	Opposing
A	0	50	517	616	41	1224	288
B	33	0	9	18	1	61	1419
C	423	17	0	217	29	686	743
D	364	26	179	0	30	600	545
E	48	1	32	33	0	114	1043
Total	869	93	737	883	102	2689	

Detailed Early Roundabout Performance Assessment

Site 24 - A1120 / Gateway Boulevard / Gun Cotton Way / Kestrel Drive

ARM	Entry/Circulating	Lanes	Flow (PCU/h)	AM			PM		
				Capacity	RFC	Flow (PCL)	Capacity	RFC	
Arm A	Circulating	2	253			288			
	Entry	3	1003	2529	0.40	1224	2506	0.49	
Arm B	Circulating	2	1164			1419			
	Entry	2	82	1117	0.07	61	957	0.06	
Arm C	Circulating	2	497			743			
	Entry	2	875	2388	0.37	686	2182	0.31	
Arm D	Circulating	2	728			545			
	Entry	2	603	960	0.63	600	1059	0.57	
Arm E	Circulating	2	1256			1043			
	Entry	2	135	582	0.23	114	691	0.16	

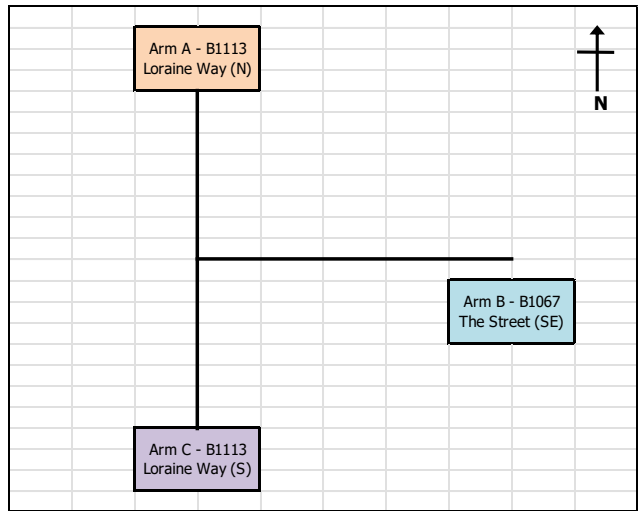
Geometry

	Geometry						DMRB Parameters							
	v	e	l'	r	D	φ	k	F	fc	td	M	x2	S	k
Arm A	8.33	11.35	23.1	64.98	79.99	39.00	0.850	3169.146	0.772	1.189	1.645	10.459	0.209	0.850
Arm B	4.19	9.38	27.7	34.27	79.99	17.50	0.820	2252.692	0.765	1.465	0.076	7.435	0.300	0.820
Arm C	11.17	11.17	1	20.09	79.99	21.00	0.829	3384.510	1.013	1.491	0.018	11.170	0.000	0.829
Arm D	4.05	7.12	7.2	24.36	79.99	24.00	0.835	1620.566	0.646	1.486	0.028	5.348	0.682	0.835
Arm E	3.66	5.67	9.7	25.01	79.99	21.00	0.829	1475.183	0.616	1.485	0.030	4.869	0.332	0.829

Site 28 - B1113 Loraine Way / B1067 The Street

Site 28
B1113 Loraine Way / B1067 The Street

Site 28 - B1113 Loraine Way / B1067 The Street



Peak year 2028

AM 07:45				
	A	B	C	Total
A	0	99	389	489
B	132	0	44	176
C	330	17	0	346
Total	461	116	433	1011

PM 16:30				
	A	B	C	Total
A	0	155	339	494
B	111	0	18	129
C	364	46	0	410
Total	475	201	356	1033

Follow-up and critical gap times

	tc	tf
Major RT	4	2
Minor LT	6	3
Minor Straight	6	4
Minor RT	7	4

Major 1 C
Major 2 A
Minor B

Main movement			Opposing	
	Origin	Destination	Origin	Destination
Major 1 RT	C	B	A	C
Minor LT	B	C	A	C
Minor Straight	-	-	-	-
Minor RT	B	A	C	A
			C	B
			A	C
Major 2 LT	A	B		
Major 2 Straight	A	C		
Major 1 Straight	C	A		

Capacity estimation

	Main flow	Opposing	Estimated Capacity AM
Major 1 RT	17	389	1168
Minor LT	44	389	627
Minor Straight	-	-	
Minor RT	132	736	215
Major 2 LT	99	-	
Major 2 Straight	389	-	
Major 1 Straight	330	-	

	Main flow	Opposing	Estimated Capacity PM
Major 1 RT	46	339	1236
Minor LT	18	339	683
Minor Straight	-	-	
Minor RT	111	749	210
Major 2 LT	155	-	
Major 2 Straight	339	-	
Major 1 Straight	364	-	

Detailed Early Junction Performance Assessment

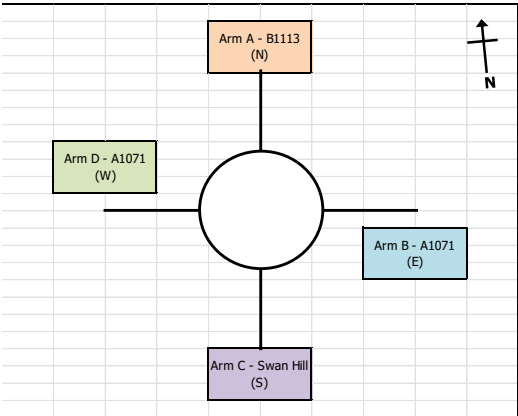
Site 28 - B1113 Loraine Way / B1067 The Street

Approach/Movement		Entry/Opposing		Lanes		Dedicated RT lane		No. Lanes Crossing		AM		PM	
										Flow (PCU/h)		Flow (PCU/h)	
										RFC			
Major 2-Ahead	Opposing	1						0	-			-	
	Entry	1						-	389	0.22		339	0.19
Major 2-Left Turn	Opposing	1						0	-			-	
	Entry	1						-	99			155	
Minor-Left Turn	Opposing	1						1	389			339	
	Entry	1						-	44	0.07		18	0.03
Minor-Right Turn	Opposing	2						3	736			749	
	Entry	1						-	132	0.61		111	0.53
Major 1 - Ahead	Opposing	1						0	-			-	
	Entry	1				1.0		-	330	0.18		364	0.20
Major 1-Right Turn	Opposing	1						1	389			339	
	Entry	1						-	17	0.01		46	0.04

Site 32 - A1071 / B1113 Swan Hill

Site 32
B1113 / A1071 / Swan Hill

Site 32 - B1113 / A1071 / Swan Hill



Peak year 2028

AM 07:15

	A	B	C	D	Total
A	0	204	100	144	448
B	141	3	82	593	819
C	193	358	0	25	576
D	126	508	17	1	653
Total	460	1073	200	762	2496

Total	Opposing
448	888
819	263
576	882
653	695

PM 16:30

	A	B	C	D	Total
A	0	234	121	122	476
B	173	0	173	563	910
C	152	134	0	47	333
D	95	482	34	0	611
Total	421	850	328	731	2330

Total	Opposing
476	650
910	277
333	858
611	460
4660	1071

Detailed Early Roundabout Performance Assessment

Site 32 - B1113 / A1071 / Swan Hill

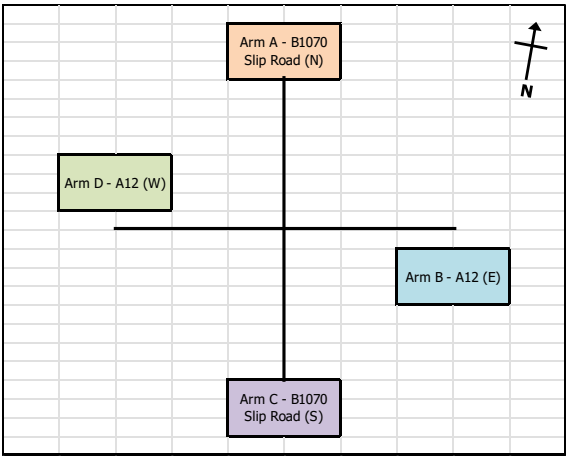
ARM	Entry/Circulating	Lanes	AM				PM			
			Flow (PCU/h)	Capacity	RFC	Flow (PCU/h)	Capacity	RFC	Flow (PCU/h)	RFC
Arm A	Circulating	2	888			650				
	Entry	3	448	700	0.64	476	829	0.57		
Arm B	Circulating	2	263			277				
	Entry	2	819	1039	0.79	910	1031	0.88		
Arm C	Circulating	2	882			858				
	Entry	2	576	514	1.12	333	526	0.63		
Arm D	Circulating	2	695			460				
	Entry	2	653	893	0.73	611	1031	0.59		

	Geometry						DMRB Parameters							
	v	e	l'	r	D	ϕ	k	F	fc	td	M	x2	S	k
Arm A	2.93	5.75	5.75	13.77	28.06	32.50	0.969	1220.343	0.561	1.480	0.041	4.028	0.785	0.969
Arm B	3.27	5.34	2.67	22.42	28.06	28.00	1.012	1170.996	0.551	1.480	0.041	3.865	1.240	1.012
Arm C	3.09	3.3	0.62	23.75	28.06	34.50	0.992	966.805	0.509	1.480	0.041	3.191	0.542	0.992
Arm D	3.41	6.2	3.55	32.09	28.06	29.50	1.020	1273.738	0.572	1.480	0.041	4.204	1.257	1.020

Site 33 – A12 / B1070

Site 33
A12 / B1070

Site 33 - A12 / B1070



Peak year 2028

AM	07:45				
	A	B	c	D	Total
A	0	203		0	203
B		0		2418	2418
C					0
D	348	3342		0	3690
Total	348	3544	0	2418	6310

PM	16:15				
	A	B	C	D	Total
A	0	204		0	204
B		0		2701	2701
C					0
D	312	2818		0	3129
Total	312	3021	0	2701	6034

Follow-up and critical gap times

	tc	tf
Major RT	4	2
Minor LT	6	3
Minor Straight	6	4
Minor RT	7	4

Major 1	B				
Major 2	D				
Minor 1	A				
Minor 2	C				
	Origin	Main movement	Destination	Origin	Opposing
					Destination
Major 1 RT					
Major 1 Straight	B		D		
Major 1 LT					
Minor 1 LT	A		B	D	B
Minor 1 Straight					
Minor 1 RT					
Major 2 RT					
Major 2 Straight	D		B		
Major 2 LT					
Minor 2 LT					
Minor 2 Straight					
Minor 2 RT					

Capacity estimation

	Main flow	Opposing	Estimated Capacity AM
Major 1 RT			
Major 1 Straight	2418	-	
Major 1 LT			
Minor 1 LT	203	3342	856
Minor 1 Straight			
Minor 1 RT			
Major 2 RT			
Major 2 Straight	3342	-	
Major 2 LT	348	-	
Minor 2 LT			
Minor 2 Straight			
Minor 2 RT			

	Main flow	Opposing	Estimated Capacity PM
Major 1 RT			
Major 1 Straight	2701	-	
Major 1 LT			
Minor 1 LT	204	2818	854
Minor 1 Straight			
Minor 1 RT			
Major 2 RT			
Major 2 Straight	2818	-	
Major 2 LT	312	-	
Minor 2 LT			
Minor 2 Straight			
Minor 2 RT			

Detailed Early Junction Performance Assessment

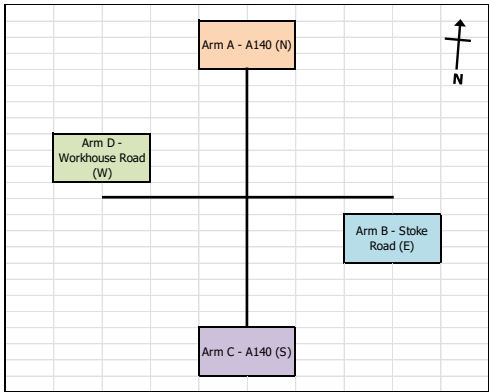
Site 33 - A12 / B1070

Approach/Movement	Entry/Opposing	Lanes	Dedicated RT lane	No. Lanes	Flow (PCU/h)	AM RFC	PM Flow (PCU/h)	PM RFC
Major 1 -Ahead	Opposing	1	0	0	-	0.67	-	0.75
	Entry	2		-	2418		2701	
Minor 1 -Left Turn	Opposing	1		1	3342	0.24	2818	0.24
	Entry	1		-	203		204	
Major 2 -Ahead	Opposing	1	0	0	-	0.93	-	0.78
	Entry	2		-	3342		2818	
Major 2 -Left Turn	Opposing	1		0	-		-	
	Entry	1		-	348		312	

Site 35 - A140 Stoke Ash

Site 35
A140 / Stoke Road / Workhouse Road

Site 35 - A140 / Stoke Road / Workhouse Road



Peak year 2028

AM 07:30					
	A	B	c	D	Total
A	0	20	972	59	1052
B	10	0	15	20	45
C	930	11	0	21	962
D	108	25	30	0	163
Total	1049	56	1017	100	2222

PM 16:00					
	A	B	C	D	Total
A	0	22	915	72	1009
B	12	0	18	28	58
C	856	9	0	32	897
D	76	24	25	0	125
Total	944	55	958	133	2090

Follow-up and critical gap times

	tc	tf
Major RT	4	2
Minor LT	6	3
Minor Straight	6	4
Minor RT	7	4

Major 1	A			
Major 2	C			
Minor 1	D			
Minor 2	B			
		Main movement		Opposing
	Origin	Destination	Origin	Destination
Major 1 RT	A	D	C	A
Major 1 Straight	A	C		
Major 1 LT	A	B		
Minor 1 LT	D	A	C	A
Minor 1 Straight	D	B	A	C
			C	A
Minor 1 RT	D	C	A	C
			C	A
			B	D
			B	C
				C
Major 2 RT	C	B	A	C
Major 2 Straight	C	A		
Major 2 LT	C	D		
Minor 2 LT	B	C	A	C
Minor 2 Straight	B	D	A	C
			C	A
Minor 2 RT	B	A	A	C
			C	A
			D	B
			D	A

Capacity estimation

	Main flow	Opposing	Estimated Capacity AM
Major 1 RT	59	930	1685
Major 1 Straight	972	-	-
Major 1 LT	20	-	-
Minor 1 LT	108	930	1002
Minor 1 Straight	25	1902	864
Minor 1 RT	30	1937	849
Major 2 RT	11	972	1779
Major 2 Straight	930	-	-
Major 2 LT	21	-	-
Minor 2 LT	15	972	1170
Minor 2 Straight	20	1902	871
Minor 2 RT	10	2035	882

	Main flow	Opposing	Estimated Capacity PM
Major 1 RT	72	856	1661
Major 1 Straight	915	-	-
Major 1 LT	22	-	-
Minor 1 LT	76	856	1057
Minor 1 Straight	24	1771	864
Minor 1 RT	25	1817	858
Major 2 RT	9	915	1782
Major 2 Straight	856	-	-
Major 2 LT	32	-	-
Minor 2 LT	18	915	1164
Minor 2 Straight	28	1771	859
Minor 2 RT	12	1871	879

Detailed Early Junction Performance Assessment

Site 35 - A140 / Stoke Road / Workhouse Road

Approach/Movement	Entry/Opposing	Lanes	Dedicated RT lane	No. Lanes	AM		PM	
					Crossing Flow (PCU/h)	RFC	Flow (PCU/h)	RFC
Major 1 - Right turn	Opposing	1		2	930		856	
	Entry	1		-	59	0.04	72	0.04
Major 1 - Ahead	Opposing	1		0	-		-	
	Entry	1	0	-	972	0.54	915	0.51
Major 1 - Left Turn	Opposing	1		0	-		-	
	Entry	1		-	20		22	
Minor 1 - Left Turn	Opposing	1		1	930		856	
	Entry	1		-	108	0.11	76	0.07
Minor 1 - Ahead	Opposing	2		2	1902		1771	
	Entry	1		-	25	0.03	24	0.03
Minor 1 - Right Turn	Opposing	1		2	1937		1817	
	Entry	1		-	30	0.04	25	0.03
Major 2 - Right turn	Opposing	1		1	972		915	
	Entry	1		-	11	0.01	9	0.01
Major 2 - Ahead	Opposing	1		0	-		-	
	Entry	1	0	-	930	0.52	856	0.48
Major 2 - Left Turn	Opposing	1		0	-		-	
	Entry	1		-	21		32	
Minor 2 - Left Turn	Opposing	1		1	972		915	
	Entry	1		-	15	0.01	18	0.02
Minor 2 - Ahead	Opposing	2		2	1902		1771	
	Entry	1		-	20	0.02	28	0.03
Minor 2 - Right Turn	Opposing	1		2	2035		1871	
	Entry	1		-	10	0.01	12	0.01

F.6 Essex

Table F.3 Essex capacity preliminary assessment

Junction ID	Location	Junction type	Preliminary Assessment	Comments	Modelled
Site 36	A12 / Birchwood Road	Mini-roundabout	No	Mini roundabouts need to be modelled, DMRB formulae does not apply to this type of roundabouts	Yes
Site 37	Wick Rd / St. Margaret's Cross	Priority T-junction	Yes	No issues identified	No
Site 38	A120 Ardleigh Crown Interchange	Partially Signalised Roundabout	No	Signalised or partially signalised junctions need to be modelled to test any potential optimisation	Yes
Site 39	A120 Harwick Road / Bentley Road	Offslip and onslip road	No	High number of construction vehicles. Needs to be modelled to estimate if length of slip road sufficient	Yes
Site 40	A12 Severalls Interchange	Grade separated Roundabout	No	Grade separated roundabouts need to be modelled to estimate queues and if these queues impact the mainline traffic	Yes
Site 41	Via Urbis Romanae / United Way	Roundabout	Yes	Model required, various arms v/c > 0.8	Yes
Site 42	Via Urbis Romanae / Olympic Blv	Signalised	No	Signalised or partially signalised junctions need to be modelled to test any potential optimisation	Yes
Site 43	Via Urbis Romanae / Whitmore Dr	Signalised	No	Signalised or partially signalised junctions need to be modelled to test any potential optimisation	Yes
Site 44	Via Urbis Romanae / A134	Signalised	No	Signalised or partially signalised junctions	Yes

Junction ID	Location	Junction type	Preliminary Assessment	Comments	Modelled
	Northern Approach Rd			need to be modelled to test any potential optimisation	
Site 45	A134 Northern Approach Rd / Boxted Rd	Mini-roundabout	No	Mini roundabouts need to be modelled, DMRB formulae does not apply to this type of roundabouts	Yes
Site 46	A12 Eight Ash Green Interchange	Signalised Roundabout	No	Signalised or partially signalised junctions need to be modelled to test any potential optimisation	Yes
Site 47	A120 Coggeshall Rd / Great Tey Rd	Priority T-junction	Yes	No issues identified. Previous Project trip generation triggered the need for a model	Yes
Site 48	A120 Braintree Bypass / B1018 Braintree Rd	Roundabout	Yes	Model required, capacity issues identified	Yes
Site 49	B1018 Braintree Rd / Millenium Way	Roundabout	Yes	No issues identified	No
Site 50	B1389 Hatfield Road / Spinks Lane	Signalised	No	Signalised or partially signalised junctions need to be modelled to test any potential optimisation	Yes
Site 51	Spinks Ln / Highfields Rd	Priority T-junction	Yes	No issues identified	No
Site 52	Highfields Rd / Guithavon Rd	Priority T-junction	Yes	Model required, capacity issues identified	Yes
Site 53	Spa Rd / Highfields Rd	Priority crossroad	Yes	No issues identified	No
Site 54	Spa Rd / Humber Rd	Priority T-junction	Yes	No issues identified	No
Site 55	Spa Rd / Powers Hall End	Roundabout	Yes	No issues identified	No

Junction ID	Location	Junction type	Preliminary Assessment	Comments	Modelled
Site 56	A120 Braintree Bypass / A131 Great Notley Bypass	Grade separated Roundabout	No	Grade separated roundabouts need to be modelled to estimate queues and if these queues impact the mainline traffic	Yes
Site 57	A131 Great Notley Bypass / London Rd	Roundabout	Yes	No issues identified	No
Site 58	A131 Great Notley Bypass / Main Rd	Roundabout	Yes	No issues identified. Previous Project trip generation triggered the need for a model	Yes
Site 59	A131 Braintree Rd/ B1008 Essex Regiment Way	Roundabout	Yes	Model required, capacity issues identified	Yes
Site 60	B1008 Main Rd/ Chatham Hall Ln	Priority T-junction	Yes	No issues identified	No
Site 61	B1008 Main Rd/ The Street / Chelmsford	Priority T-junction	Yes	Model required, capacity issues identified	Yes
Site 62	A12 J15 Webbs Farm Interchange	Grade separated Roundabout	No	Grade separated roundabouts need to be modelled to estimate queues and if these queues impact the mainline traffic	Yes
Site 63	A414 Three Mile Hill / A1114 London Rd	Roundabout	Yes	Model required, various arms v/c > 0.8	Yes
Site 64	A1114 London Rd / A1016 Westway	Roundabout	Yes	Model required, various arms v/c > 0.8	Yes
Site 65	A1016 Westway / Writtle Rd	Signalised	No	Signalised or partially signalised junctions need to be modelled to test any potential optimisation	Yes
Site 66	A1016 Waterhouse Ln / Forest Dr	Priority T-junction	Yes	Model required, capacity issues identified	Yes

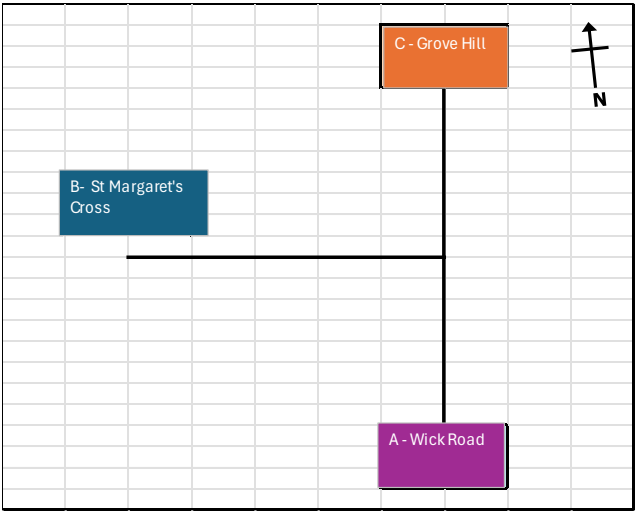
Junction ID	Location	Junction type	Preliminary Assessment	Comments	Modelled
Site 67	A1016 Waterhouse Ln / Beeches Rd	Priority T-junction	Yes	No issues identified	No
Site 68	A1016 Waterhouse Ln / A1060 Rainsford Rd	Signalised	No	Signalised or partially signalised junctions need to be modelled to test any potential optimisation	Yes
Site 69	A1060 Roxwell Rd / Lordship Rd	Roundabout	Yes	Model required, capacity issues identified	Yes
Site 70	A1060 Rainsford Rd / Park Avenue	Signalised	No	Signalised or partially signalised junctions need to be modelled to test any potential optimisation	Yes
Site 71	A414 Greenbury Way / Highwood Road	Roundabout	Yes	Model required, arm v/c > 0.8	Yes
Site 72	B1002 Main Rd / Wantz Rd	Priority crossroad	Yes	No issues identified	No
Site 73	A127 Southend Arterial Rd / A176 Noak Hill Rd	Grade separated Roundabout	No	Grade separated roundabouts need to be modelled to estimate queues and if these queues impact the mainline traffic	Yes
Site 74	A176 Noak Hill Rd / Wash Rd	Priority T-junction	No	Staggered junction need to be modelled	Yes
Site 75	A176 Noak Hill Rd / Church St	Priority T-junction	Yes	No issues identified. Previous Project trip generation triggered the need for a model	Yes
Site 76	A176 Noak Hill Rd / Laindon Common Rd	Priority T-junction	Yes	Model required, capacity issues identified	Yes
Site 77	A176 Noak Hill Rd / A176 Laindon Rd	Roundabout	Yes	No issues identified. Previous Project trip generation triggered the need for a model	Yes

Junction ID	Location	Junction type	Preliminary Assessment	Comments	Modelled
Site 78	A176 / A129 Southend Rd	Roundabout	Yes	No issues identified	No
Site 79	A129 Southend Rd / A129 Sun St	Roundabout	Yes	No issues identified. Previous Project trip generation triggered the need for a model	Yes
Site 80	A129 Sun St / A176 Laindon Rd	Roundabout	Yes	No issues identified	No
Site 81	A129 London Rd / Western Rd	Signalised	No	Signalised or partially signalised junctions need to be modelled to test any potential optimisation	Yes
Site 82	A129 London Rd / Mountessing Rd	Priority T-junction	Yes	Model required, capacity issues identified	Yes
Site 83	A127 Southend Arterial Rd / B148 West Mayne	Grade separated Roundabout	No	Grade separated roundabouts need to be modelled to estimate queues and if these queues impact the mainline traffic	Yes
Site 84	A127 Southend Arterial Rd / A128 Tilbury Road	Grade separated Roundabout	No	Grade separated roundabouts need to be modelled to estimate queues and if these queues impact the mainline traffic	Yes

Site 37 - Wick Road / St. Margaret's Cross

Site 37
Grove Hill / Wick Road / St Margaret's Cross

Site 37 - Grove Hill / Wick Road / St Margaret's Cross



Peak year 2029

AM 08:00				
	A	B	C	Total
A	0	133	78	212
B	101	0	0	101
C	56	1	0	57
Total	157	134	78	369

PM 16:00				
	A	B	C	Total
A	0	46	49	95
B	83	0	6	90
C	71	4	0	75
Total	155	50	56	260

Follow-up and critical gap times

	tc	tf
Major RT	4	2
Minor LT	6	3
Minor Straight	6	4
Minor RT	7	4

Major 1 C
Major 2 A
Minor B

Main movement				Opposing
	Origin	Destination	Origin	Destination
Major 1 RT	C	B	A	C
Minor LT	B	C	A	C
Minor Straight	-	-	-	-
Minor RT	B	A	C	A
			C	B
			A	C
Major 2 LT	A	B		
Major 2 Straight	A	C		
Major 1 Straight	C	A		

Capacity estimation

	Main flow	Opposing	Estimated Capacity AM
Major 1 RT	1	78	1650
Minor LT	0	78	1053
Minor Straight	-	-	
Minor RT	101	135	692
Major 2 LT	133	-	
Major 2 Straight	78	-	
Major 1 Straight	56	-	

	Main flow	Opposing	Estimated Capacity PM
Major 1 RT	4	49	1704
Minor LT	6	49	1105
Minor Straight	-	-	
Minor RT	83	125	706
Major 2 LT	46	-	
Major 2 Straight	49	-	
Major 1 Straight	71	-	

Detailed Early Junction Performance Assessment

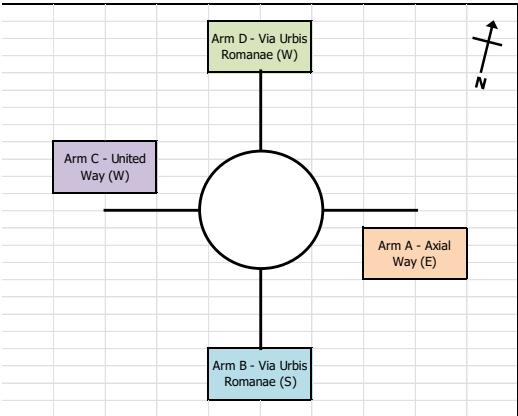
Site 37 - Grove Hill / Wick Road / St Margaret's Cross

Approach/Movement		Entry/Opposing	Lanes	Dedicated RT lane	No. Lanes Crossing	Flow (PCU/h)	AM RFC	Flow (PCU/h)	PM RFC
Major 2-Ahead	Opposing	1			0	-		-	
	Entry	1			-	78	0.04	49	0.03
Major 2-Left Turn	Opposing	1			0	-		-	
	Entry	1			-	133		46	
Minor-Left Turn	Opposing	1			1	78		49	
	Entry	1			-	0	0.00	6	0.01
Minor-Right Turn	Opposing	2			2	135		125	
	Entry	1			-	101	0.15	83	0.12
Major 1 - Ahead	Opposing	1			0	-		-	
	Entry	1		0.0	-	56	0.03	71	0.04
Major 1 -Right Turn	Opposing	1			1	78		49	
	Entry	1			-	1	0.00	4	0.00

Site 41 - Via Urbis Romanae / United Way

Site 41
Axial Way / Via Urbis Romanae / United Way

Site 41 - Axial Way / Via Urbis Romanae / United Way



Peak year 2028

AM 07:30

	A	B	C	D	Total
A	0	96	23	415	533
B	96	2	38	688	823
C	25	36	0	54	115
D	462	794	108	2	1366
Total	583	928	169	1159	2839

Total	Opposing
533	942
823	548
115	1202
1366	159

PM 16:45

	A	B	C	D	Total
A	1	128	41	609	779
B	48	1	37	764	850
C	26	37	0	87	150
D	496	790	75	2	1364
Total	571	956	153	1462	3142

Total	Opposing
779	905
850	729
150	1425
1364	113
6285	1477

Detailed Early Roundabout Performance Assessment

Site 41 - Axial Way / Via Urbis Romanae / United Way

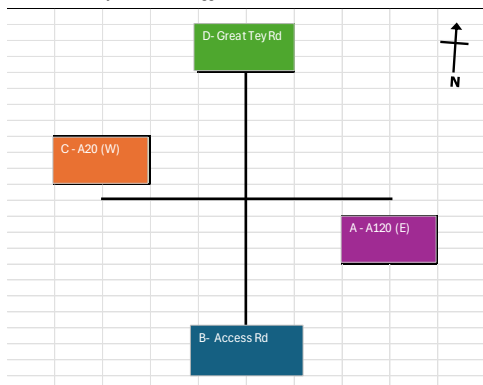
ARM	Entry/Circulating	Lanes	AM			PM		
			Flow (PCU/h)	Capacity	RFC	Flow (PCU/h)	Capacity	RFC
Arm A	Circulating	2	942			905		
	Entry	3	533	1699	0.31	779	1724	0.45
Arm B	Circulating	2	548			729		
	Entry	2	823	1403	0.59	850	1297	0.66
Arm C	Circulating	2	1202			1425		
	Entry	2	115	1476	0.08	150	1322	0.11
Arm D	Circulating	2	159			113		
	Entry	2	1366	1624	0.84	1364	1651	0.83

	Geometry						DMRB Parameters							
	v	e	l'	r	D	φ	k	F	f _c	td	M	x ₂	S	k
Arm A	6.7	7.4	11.2	34.9	58.2	16.00	1.069	2206.850	0.656	1.272	0.835	7.283	0.100	1.069
Arm B	2.8	6.7	22.9	58.6	58.2	19.00	1.070	1613.265	0.552	1.272	0.835	5.324	0.272	1.070
Arm C	7.2	7.2	1	26.8	58.2	17.50	1.056	2181.600	0.652	1.272	0.835	7.200	0.000	1.056
Arm D	3.4	6.8	15.7	24.8	58.2	19.00	1.048	1638.708	0.556	1.272	0.835	5.408	0.346	1.048

Site 47 - A120 Coggeshall Road / Great Tey Road

Site 47
Great Tey Road / A120 Coggeshall Road

Site 47 - Great Tey Road / A120 Coggeshall Road



Peak year 2030

AM 08:30

	A	B	C	D	Total
A	0	6	1323	76	1405
B	0	0	6	0	6
C	1038	0	0	68	1105
D	79	0	55	0	134
Total	1117	6	1384	144	2650

PM 16:30

	A	B	C	D	Total
A	0	0	1134	99	1233
B	3	0	0	0	3
C	1038	0	0	47	1086
D	101	0	31	0	133
Total	1143	0	1166	146	2455

Follow-up and critical gap times

	tc	tf
Major RT	4	2
Minor LT	6	3
Minor Straight	6	4
Minor RT	7	4

Major 1 A
Major 2 C
Minor 1 D
Minor 2 B

	Main movement		Opposing	
	Origin	Destination	Origin	Destination
Major 1 RT	A	D	C	A
Major 1 Straight	A	C		
Major 1 LT	A	B		
Minor 1 LT	D	A	C	A
Minor 1 Straight	D	B	A	C
			C	A
Minor 1 RT	D	C	A	C
			C	A
			B	D
			B	C
Major 2 RT	C	B	A	C
Major 2 Straight	C	A		
Major 2 LT	C	D		
Minor 2 LT	B	C	A	C
Minor 2 Straight	B	D	A	C
			C	A
Minor 2 RT	B	A	A	C
			C	A
			D	B
			D	A

Capacity estimation

	Main flow	Opposing	Estimated Capacity AM
Major 1 RT	76	1038	1655
Major 1 Straight	1323	-	
Major 1 LT	6	-	
Minor 1 LT	79	1038	1051
Minor 1 Straight	0	2361	900
Minor 1 RT	55	2367	809
Major 2 RT	0	1323	1800
Major 2 Straight	1038	-	
Major 2 LT	68	-	
Minor 2 LT	6	1323	1188
Minor 2 Straight	0	2361	900
Minor 2 RT	0	2440	900

	Main flow	Opposing	Estimated Capacity PM
Major 1 RT	99	1038	1613
Major 1 Straight	1134	-	
Major 1 LT	0	-	
Minor 1 LT	101	1038	1014
Minor 1 Straight	0	2173	900
Minor 1 RT	31	2173	847
Major 2 RT	0	1134	1800
Major 2 Straight	1038	-	
Major 2 LT	47	-	
Minor 2 LT	0	1134	1200
Minor 2 Straight	0	2173	900
Minor 2 RT	3	2274	895

Detailed Early Junction Performance Assessment

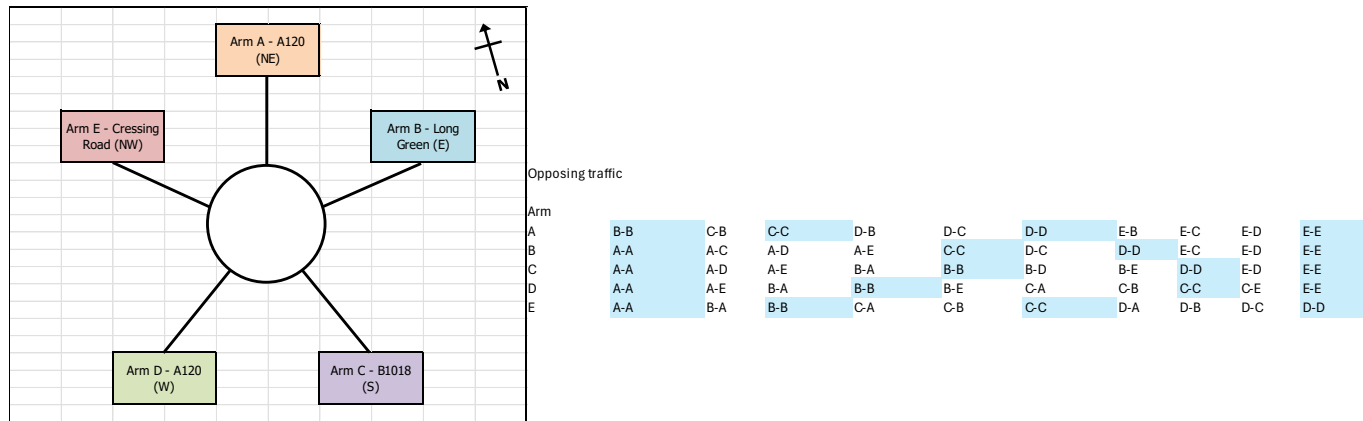
Site 47 - Great Tey Road / A120 Coggeshall Road

Approach/Movement	Entry/Opposing	Lanes	Dedicated RT lane	No. Lanes		AM		PM	
				Crossing	Flow (PCU/h)	Flow (PCU/h)	RFC	Flow (PCU/h)	RFC
Major 1 - Right turn	Opposing	1		2	1038			1038	
	Entry	1		-	76	0.05		99	0.06
Major 1 - Ahead	Opposing	1		0	-			-	
	Entry	1	0	-	1323	0.73		1134	0.63
Major 1 - Left Turn	Opposing	1		0	-			-	
	Entry	1		-	6			0	
Minor 1 - Left Turn	Opposing	1		1	1038			1038	
	Entry	1		-	79	0.08		101	0.10
Minor 1 - Ahead	Opposing	2		2	2361			2173	
	Entry	1		-	0	0.00		0	0.00
Minor 1 - Right Turn	Opposing	1		2	2367			2173	
	Entry	1		-	55	0.07		31	0.04
Major 2 - Right turn	Opposing	1		1	1323			1134	
	Entry	1		-	0	0.00		0	0.00
Major 2 - Ahead	Opposing	1		0	-			-	
	Entry	1	0	-	1038	0.58		1038	0.58
Major 2 - Left Turn	Opposing	1		0	-			-	
	Entry	1		-	68			47	
Minor 2 - Left Turn	Opposing	1		1	1323			1134	
	Entry	1		-	6	0.01		0	0.00
Minor 2 - Ahead	Opposing	2		2	2361			2173	
	Entry	1		-	0	0.00		0	0.00
Minor 2 - Right Turn	Opposing	1		2	2440			2274	
	Entry	1		-	0	0.00		3	0.00

Site 48 - A120 Braintree Bypass / B1018 Braintree Road

Site 48
Galleys Corner

Site 48 - Galleys Corner



Peak year 2028

AM	07:30						
	A	B	C	D	E	Total	Opposing
A	7	102	218	1244	17	1587	983
B	56	0	44	313	30	443	2322
C	199	14	1	290	49	554	1974
D	1142	113	468	0	123	1845	373
E	184	20	60	307	0	572	2000
Total	1589	248	791	2154	218	5000	

PM	16:00						
	A	B	C	D	E	Total	Opposing
A	7	139	429	923	37	1536	849
B	63	0	51	140	47	299	2092
C	367	28	2	463	57	918	1418
D	1160	107	439	1	93	1801	608
E	149	17	54	201	0	420	2175
Total	1746	291	974	1727	234	4973	

Detailed Early Roundabout Performance Assessment

Site 48 - Galleys Corner

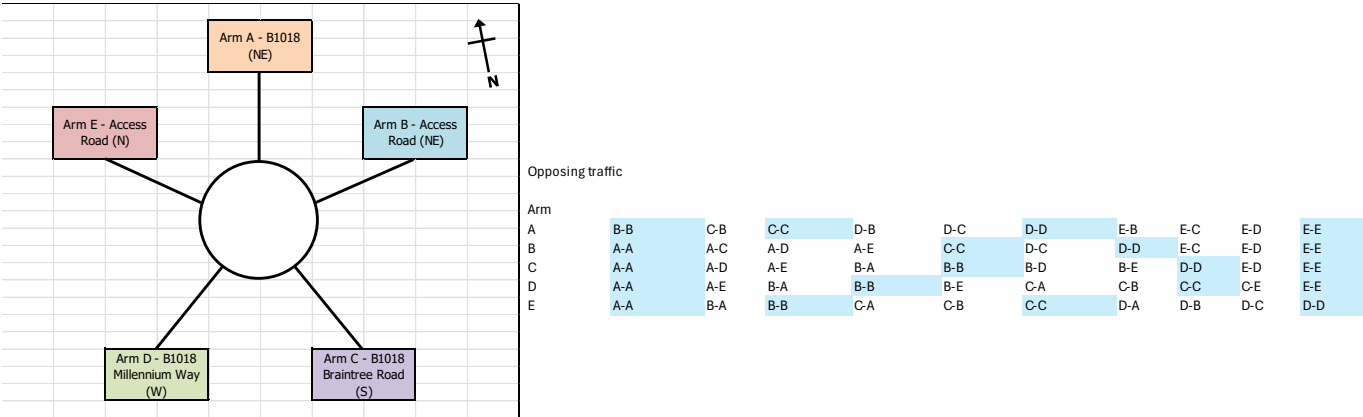
AM	ARM	Entry/Circulating	Lanes	AM			PM		
				Flow (PCU/h)	Capacity	RFC	Flow (PCL)	Capacity	RFC
	Arm A	Circulating	2	983			849		
		Entry	3	1587	1789	0.89	1535	1893	0.81
	Arm B	Circulating	2	2322			2092		
		Entry	2	443	31	14.42	299	153	1.95
	Arm C	Circulating	2	1974			1418		
		Entry	2	554	671	0.83	918	1062	0.86
	Arm D	Circulating	2	373			608		
		Entry	2	1845	2311	0.80	1801	2121	0.85
	Arm E	Circulating	2	2000			2175		
		Entry	2	572	260	2.20	420	163	2.58

	Geometry						DMRB Parameters								
	v	e	l'	r	D	φ	k	F	fc	td	M	x2	S	k	
Arm A	9.3	9.3	1	42.3	65	45.00	0.906	2817.900	0.857	1.427	0.170	9.300	0.000	0.906	
Arm B	3.7	5.9	7.2	23.9	65	17.00	0.870	1458.145	0.613	1.487	0.027	4.812	0.489	0.870	
Arm C	7.4	8.9	1.3	11.3	65	21.00	0.881	2339.061	0.799	1.496	0.008	7.720	1.846	0.881	
Arm D	9.9	9.9	1	23.2	65	17.50	0.872	2999.700	0.931	1.488	0.025	9.900	0.000	0.872	
Arm E	3.7	10.2	6.3	18	65	17.50	0.872	1578.954	0.640	1.493	0.015	5.211	1.651	0.872	

Site 49 - B1018 Braintree Road / Millenium Way

Site 49
B1018 Braintree Road / B1018 Millennium Way

Site 49 - B1018 Braintree Road / B1018 Millennium Way



Peak year 2028

AM		09:45							
	A	B	C	D	E	Total		Opposing	
A	2	63	395	527	122	1110		265	
B	17	0	10	16	0	42	1291		
C	359	1	0	133	62	555	745		
D	311	18	144	2	84	558	564		
E	164	1	39	59	1	265	853		
Total	853	83	588	737	269	2530			

PM		16:45							
	A	B	C	D	E	Total		Opposing	
A	2	14	490	370	67	943	449		
B	12	0	13	9	2	37	1372		
C	407	2	0	153	126	689	523		
D	225	4	319	0	46	593	619		
E	151	0	64	60	0	275	971		
Total	797	21	886	592	241	2538			

Detailed Early Roundabout Performance Assessment

Site 49 - B1018 Braintree Road / B1018 Millennium Way

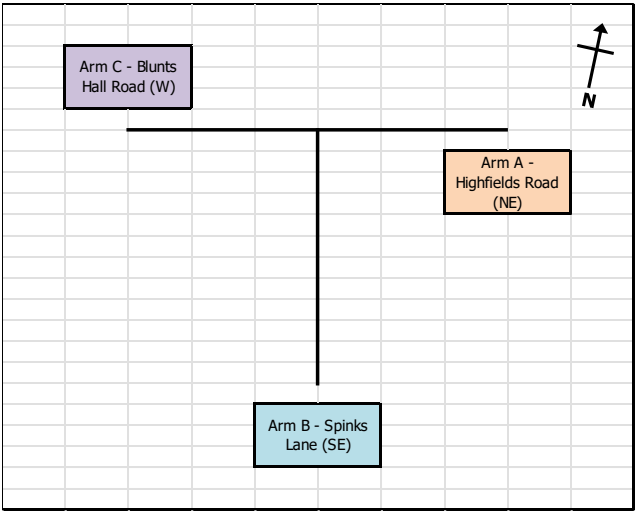
ARM	Entry/Circulating	Lanes	AM			PM		
			Flow (PCU/h)	Capacity	RFC	Flow (PCL)	Capacity	RFC
Arm A	Circulating	2	265			449		
	Entry	3	1110	2026	0.55	943	1888	0.50
Arm B	Circulating	2	1291			1372		
	Entry	2	42	593	0.07	37	548	0.07
Arm C	Circulating	2	745			523		
	Entry	2	555	931	0.60	689	1057	0.65
Arm D	Circulating	2	564			619		
	Entry	2	558	1700	0.33	593	1660	0.36
Arm E	Circulating	2	853			971		
	Entry	2	265	659	0.40	275	598	0.46

Geometry								DMRB Parameters							
	v	e	l'	r	D	φ		k	F	fc	td	M	x2	S	k
Arm A	7	10	5	6	64	60.00		0.915	2432.301	0.819	1.498	0.005	8.027	0.960	0.915
Arm B	3	7	10	6	64	60.00		0.915	1440.579	0.614	1.498	0.005	4.754	0.640	0.915
Arm C	3.5	6	10	6	64	60.00		0.915	1481.333	0.622	1.498	0.005	4.889	0.400	0.915
Arm D	7	8	5	6	64	60.00		0.915	2305.756	0.793	1.498	0.005	7.610	0.320	0.915
Arm E	3	5	6	6	64	60.00		0.915	1202.226	0.564	1.498	0.005	3.968	0.533	0.915

Site 51 - Spinks Ln / Highfields Road

Site 51
Highfields Road / Spinks Lane / Blunts Hall Road

Site 51 - Highfields Road / Spinks Lane / Blunts Hall Road



Peak year 2029

AM 07:30				
	A	B	C	Total
A	0	546	23	569
B	375	0	14	390
C	40	12	0	53
Total	416	558	37	1011

PM 16:45				
	A	B	C	Total
A	0	446	20	466
B	588	0	13	602
C	8	9	0	18
Total	596	456	33	1085

Follow-up and critical gap times

	tc	tf
Major RT	4	2
Minor LT	6	3
Minor Straight	6	4
Minor RT	7	4

Major 1 C
Major 2 A
Minor B

		Main movement		Opposing	
	Origin	Destination	Origin	Destination	
Major 1 RT	C	B	A	C	
Minor LT	B	C	A	C	
Minor Straight	-	-	-	-	
Minor RT	B	A	C	A	
			C	B	
			A	C	
Major 2 LT	A	B			
Major 2 Straight	A	C			
Major 1 Straight	C	A			

Capacity estimation

	Main flow	Opposing	Estimated Capacity AM
Major 1 RT	12	23	1755
Minor LT	14	23	1155
Minor Straight	-	-	
Minor RT	375	75	777
Major 2 LT	546	-	
Major 2 Straight	23	-	
Major 1 Straight	40	-	

	Main flow	Opposing	Estimated Capacity PM
Major 1 RT	9	20	1761
Minor LT	13	20	1161
Minor Straight	-	-	
Minor RT	588	37	837
Major 2 LT	446	-	
Major 2 Straight	20	-	
Major 1 Straight	8	-	

Detailed Early Junction Performance Assessment

Site 51 - Highfields Road / Spinks Lane / Blunts Hall Road

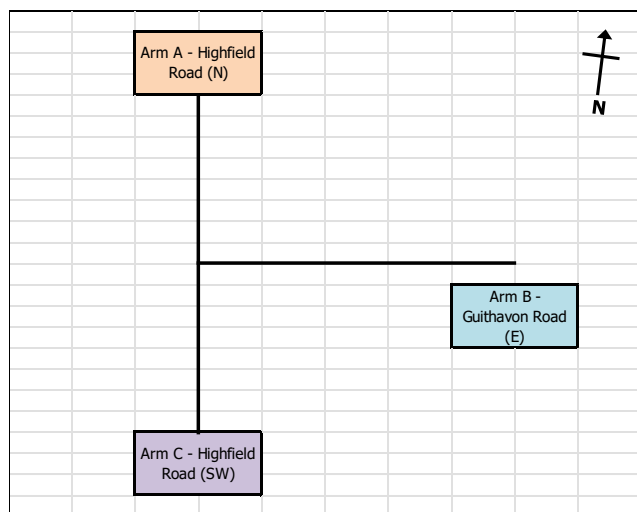
		Dedicated		No. Lanes		AM		PM	
Approach/Movement	Entry/Opposing	Lanes	RT lane	Crossing	Flow (PCU/h)	RFC	Flow (PCU/h)	RFC	
Major 2-Ahead	Opposing	1		0	-		-		
	Entry	1		-	23	0.01	20	0.01	
Major 2-Left Turn	Opposing	1		0	-		-		
	Entry	1		-	546		446		
Minor-Left Turn	Opposing	1		1	23		20		
	Entry	1		-	14	0.01	13	0.01	
Minor-Right Turn	Opposing	2		2	75		37		
	Entry	1		-	375	0.48	588	0.70	
Major 1 - Ahead	Opposing	1		0	-		-		
	Entry	1	0.0	-	40	0.02	8	0.00	
Major 1 - Right Turn	Opposing	1		1	23		20		
	Entry	1		-	12	0.01	9	0.01	

Site 52 - Highfields Road / Guithavon Road

Site 52

Highfield Road / Guithavon Road

Site 52 - Highfield Road / Guithavon Road



Peak year 2028

AM 07:30

	A	B	C	Total
A	0	98	527	624
B	31	0	57	88
C	343	76	0	419
Total	374	174	583	1131

PM 16:45

	A	B	C	Total
A	0	72	383	454
B	146	0	82	227
C	558	36	0	594
Total	704	108	464	1276

Follow-up and critical gap times

	tc	tf
Major RT	4	2
Minor LT	6	3
Minor Straight	6	4
Minor RT	7	4

Major 1 C
Major 2 A
Minor B

	Main movement		Opposing	
	Origin	Destination	Origin	Destination
Major 1 RT	C	B	A	C
Minor LT	B	C	A	C
Minor Straight	-	-	-	-
Minor RT	B	A	C	A
			C	B
			A	C
Major 2 LT	A	B		
Major 2 Straight	A	C		
Major 1 Straight	C	A		

Capacity estimation

	Main flow	Opposing	Estimated Capacity AM
Major 1 RT	76	527	1003
Minor LT	57	527	499
Minor Straight	-	-	
Minor RT	31	946	143
Major 2 LT	98	-	
Major 2 Straight	527	-	
Major 1 Straight	343	-	

	Main flow	Opposing	Estimated Capacity PM
Major 1 RT	36	383	1177
Minor LT	82	383	634
Minor Straight	-	-	
Minor RT	146	976	135
Major 2 LT	72	-	
Major 2 Straight	383	-	
Major 1 Straight	558	-	

Detailed Early Junction Performance Assessment

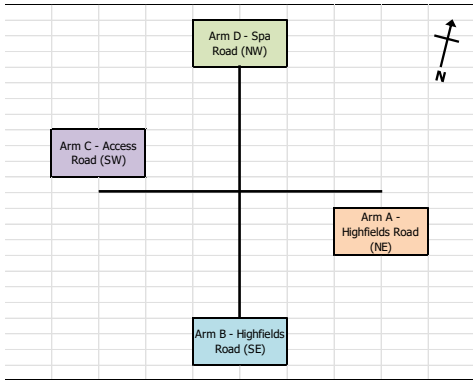
Site 52 - Highfield Road / Guithavon Road

		Dedicated		No. Lanes		AM		PM	
Approach/Movement	Entry/Opposing	Lanes	RT lane	Crossing	Flow (PCU/h)	RFC	Flow (PCU/h)	RFC	
Major 2-Ahead	Opposing	1		0	-		-		
	Entry	1		-	527	0.29	383	0.21	
Major 2-Left Turn	Opposing	1		0	-		-		
	Entry	1		-	98		72		
Minor-Left Turn	Opposing	1		1	527		383		
	Entry	1		-	57	0.11	82	0.13	
Minor-Right Turn	Opposing	2		2	946		976		
	Entry	1		-	31	0.22	146	1.08	
Major 1 - Ahead	Opposing	1		0	-		-		
	Entry	1	0.0	-	343	0.35	558	0.43	
Major 1-Right Turn	Opposing	1		1	527		383		
	Entry	1		-	76	0.08	36	0.03	

Site 53 - Spa Road / Highfields Road

Site 53
Highfields Road / Spa Road

Site 53 - Highfields Road / Spa Road



Peak year 2028

AM 07:30					
	A	B	C	D	Total
A	0	83	1	53	136
B	38	0	1	347	386
C	0	3	0	1	4
D	36	540	3	0	579
Total	74	626	5	400	1105

PM 17:00					
	A	B	C	D	Total
A	0	85	2	111	198
B	112	0	1	582	695
C	1	4	0	3	8
D	55	377	3	0	435
Total	168	466	6	696	1336

Follow-up and critical gap times

	tc	tf
Major RT	4	2
Minor LT	6	3
Minor Straight	6	4
Minor RT	7	4

	Main movement		Opposing	
	Origin	Destination	Origin	Destination
Major 1 RT	B	A	D	B
Major 1 Straight	B	D		
Major 1 LT	B	C		
Minor 1 LT	A	B	D	B
Minor 1 Straight	A	C	D	D
Minor 1 RT	A	D	B	D
			D	B
			C	A
			C	D
Major 2 RT	D	C	B	D
Major 2 Straight	D	B		
Major 2 LT	D	A		
Minor 2 LT	C	D	B	D
Minor 2 Straight	C	A	B	D
Minor 2 RT	C	B	D	B
			A	C
			A	B

Capacity estimation

	Main flow	Opposing	Estimated Capacity AM
Major 1 RT	38	540	1725
Major 1 Straight	347	-	
Major 1 LT	1	-	
Minor 1 LT	83	540	1045
Minor 1 Straight	1	886	898
Minor 1 RT	53	887	812
Major 2 RT	3	347	1794
Major 2 Straight	540	-	
Major 2 LT	36	-	
Minor 2 LT	1	347	1198
Minor 2 Straight	0	886	900
Minor 2 RT	3	970	895

	Main flow	Opposing	Estimated Capacity PM
Major 1 RT	112	377	1590
Major 1 Straight	582	-	
Major 1 LT	1	-	
Minor 1 LT	85	377	1042
Minor 1 Straight	2	959	897
Minor 1 RT	111	963	726
Major 2 RT	3	582	1794
Major 2 Straight	377	-	
Major 2 LT	55	-	
Minor 2 LT	3	582	1194
Minor 2 Straight	1	959	898
Minor 2 RT	4	1046	893

Detailed Early Junction Performance Assessment

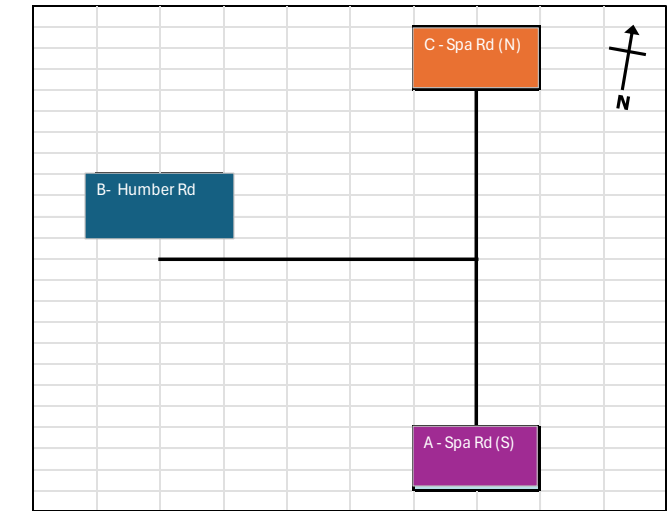
Site 53 - Highfields Road / Spa Road

Approach/Movement	Entry/Opposing	Lanes	No. Dedicated Lanes		AM		PM	
			RT lane	Crossing	Flow (PCU/h)	RFC	Flow (PCU/h)	RFC
Major 1 - Right turn	Opposing	1		2	540		377	
	Entry	1		-	38	0.02	112	0.07
Major 1 - Ahead	Opposing	1		0	-		-	
	Entry	1	0	-	347	0.19	582	0.32
Major 1 - Left Turn	Opposing	1		0	-		-	
	Entry	1		-	1		1	
Minor 1 - Left Turn	Opposing	1		1	540		377	
	Entry	1		-	83	0.08	85	0.08
Minor 1 - Ahead	Opposing	2		2	886		959	
	Entry	1		-	1	0.00	2	0.00
Minor 1 - Right Turn	Opposing	1		2	887		963	
	Entry	1		-	53	0.06	111	0.15
Major 2 - Right turn	Opposing	1		1	347		582	
	Entry	1		-	3	0.00	3	0.00
Major 2 - Ahead	Opposing	1		0	-		-	
	Entry	1	0	-	540	0.30	377	0.21
Major 2 - Left Turn	Opposing	1		0	-		-	
	Entry	1		-	36		55	
Minor 2 - Left Turn	Opposing	1		1	347		582	
	Entry	1		-	1	0.00	3	0.00
Minor 2 - Ahead	Opposing	2		2	886		959	
	Entry	1		-	0	0.00	1	0.00
Minor 2 - Right Turn	Opposing	1		2	970		1046	
	Entry	1		-	3	0.00	4	0.00

Site 54 - Spa Road / Humber Road

Site 54
Spa Road / Humber Road

Site 54 - Spa Road / Humber Road



Peak year 2028

AM 07:45

	A	B	C	Total
A	0	61	290	351
B	112	0	92	204
C	367	48	0	415
Total	479	109	382	969

PM 17:00

	A	B	C	Total
A	0	149	554	703
B	62	0	77	139
C	358	84	0	442
Total	420	233	631	1284

Follow-up and critical gap times

	tc	tf
Major RT	4	2
Minor LT	6	3
Minor Straight	6	4
Minor RT	7	4

Major 1 C
Major 2 A
Minor B

	Main movement		Opposing	
	Origin	Destination	Origin	Destination
Major 1 RT	C	B	A	C
Minor LT	B	C	A	C
Minor Straight	-	-	-	-
Minor RT	B	A	C	A
			C	B
			A	C
Major 2 LT	A	B		
Major 2 Straight	A	C		
Major 1 Straight	C	A		

Capacity estimation

	Main flow	Opposing	Estimated Capacity AM
Major 1 RT	48	290	1305
Minor LT	92	290	741
Minor Straight	-	-	-
Minor RT	112	704	229
Major 2 LT	61	-	-
Major 2 Straight	290	-	-
Major 1 Straight	367	-	-

	Main flow	Opposing	Estimated Capacity PM
Major 1 RT	84	554	973
Minor LT	77	554	477
Minor Straight	-	-	-
Minor RT	62	996	130
Major 2 LT	149	-	-
Major 2 Straight	554	-	-
Major 1 Straight	358	-	-

Detailed Early Junction Performance Assessment

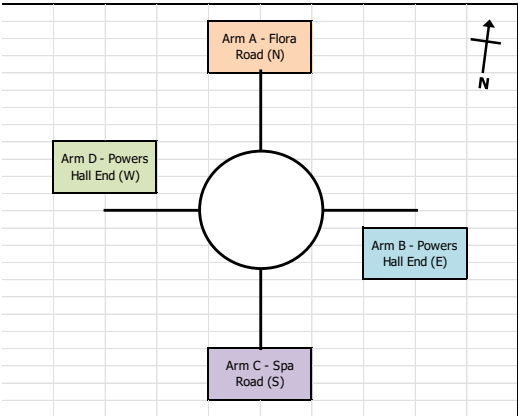
Site 54 - Spa Road / Humber Road

			Dedicated	No. Lanes	AM		PM	
Approach/Movement	Entry/Opposing	Lanes	RT lane	Crossing	Flow (PCU/h)	RFC	Flow (PCU/h)	RFC
Major 2-Ahead	Opposing	1		0	-		-	
	Entry	1		-	290	0.16	554	0.31
Major 2-Left Turn	Opposing	1		0	-		-	
	Entry	1		-	61		149	
Minor-Left Turn	Opposing	1		1	290		554	
	Entry	1		-	92	0.12	77	0.16
Minor-Right Turn	Opposing	2		2	704		996	
	Entry	1		-	112	0.49	62	0.48
Major 1 - Ahead	Opposing	1	0.0	0	-		-	
	Entry	1		-	367	0.26	358	0.41
Major 1 -Right Turn	Opposing	1		1	290		554	
	Entry	1		-	48	0.04	84	0.09

Site 55 - Spa Road / Powers Hall End

Site 55
Flora Road / Powers Hall End / Spa Road

Site 55 - Flora Road / Powers Hall End / Spa Road



Peak year 2028

AM 08:00					
	A	B	C	D	Total
A	0	252	380	11	643
B	95	1	144	56	296
C	229	160	0	31	420
D	2	37	19	0	58
Total	326	451	542	98	1417

Opposing traffic

Arm						
A	B-B	C-B	C-C	D-B	D-C	D-D
B	A-A	A-C	A-D	C-C	D-C	D-D
C	A-A	A-D	B-A	B-B	B-D	D-D
D	A-A	B-A	B-B	C-A	C-B	C-C

PM 17:00					
	A	B	C	D	Total
A	0	148	255	2	405
B	168	0	117	27	312
C	384	208	1	27	620
D	18	88	52	1	158
Total	570	444	425	57	1495

Total	Opposing
643	217
296	410
420	163
58	485

Total	Opposing
405	350
312	311
620	198
158	761
2990	919

Detailed Early Roundabout Performance Assessment

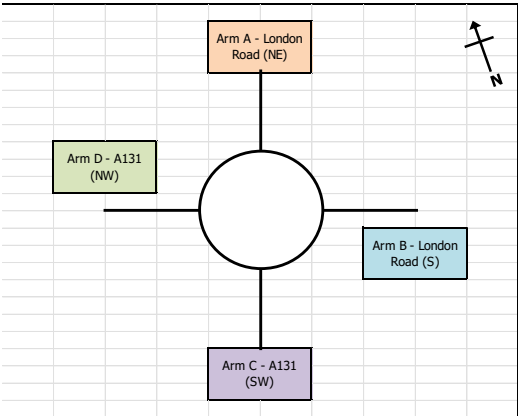
Site 55 - Flora Road / Powers Hall End / Spa Road

ARM	Entry/Circulating	Lanes	AM			PM		
			Flow (PCU/h)	Capacity	RFC	Flow (PCU/h)	Capacity	RFC
Arm A	Circulating	2	217			350		
	Entry	3	643	935	0.69	405	875	0.46
Arm B	Circulating	2	410			311		
	Entry	2	296	802	0.37	312	846	0.37
Arm C	Circulating	2	163			198		
	Entry	2	420	960	0.44	620	944	0.66
Arm D	Circulating	2	485			761		
	Entry	2	58	769	0.08	158	646	0.25

Site 57 - A131 Great Notley Bypass / London Road

Site 57
London Road / A131

Site 57 - London Road / A131



Peak year 2028

AM 07:45

	A	B	C	D	Total
A	0	75	326	58	459
B	68	1	3	113	185
C	250	1	4	806	1061
D	57	119	840	4	1020
Total	375	196	1173	981	2725

Total	Opposing
459	969
185	1232
1061	244
1020	325

PM 16:15

	A	B	C	D	Total
A	0	94	235	126	456
B	79	2	1	89	171
C	328	6	7	933	1274
D	89	189	727	1	1007
Total	496	292	971	1149	2908

Total	Opposing
456	933
171	1097
1274	297
1007	422
5816	1429

Detailed Early Roundabout Performance Assessment

Site 57 - London Road / A131

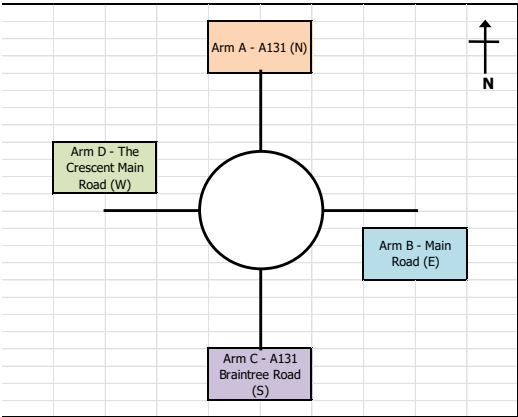
ARM	Entry/Circulating	Lanes	AM			PM		
			Flow (PCU/h)	Capacity	RFC	Flow (PCU/h)	Capacity	RFC
Arm A	Circulating	2	969			933		
	Entry	3	459	727	0.63	456	738	0.62
Arm B	Circulating	2	1232			1097		
	Entry	2	185	644	0.29	171	687	0.25
Arm C	Circulating	2	244			297		
	Entry	2	1061	1769	0.60	1274	1746	0.73
Arm D	Circulating	2	325			422		
	Entry	2	1020	1734	0.59	1007	1691	0.60

	Geometry						DMRB Parameters							
	v	e	l'	r	D	ϕ	k	F	fc	td	M	x2	S	k
Arm A	3	6	8	6	88	60.00	0.782	1322.182	0.405	1.029	16.445	4.364	0.600	0.782
Arm B	3	6	8	6	88	60.00	0.782	1322.182	0.405	1.029	16.445	4.364	0.600	0.782
Arm C	7.5	8	8	6	88	60.00	0.782	2398.750	0.558	1.029	16.445	7.917	0.100	0.782
Arm D	7.5	8	8	6	88	60.00	0.782	2398.750	0.558	1.029	16.445	7.917	0.100	0.782

Site 58 - A131 Great Notley Bypass / Main Road

Site 58
Deres Bridge Roundabout

Site 58 - Deres Bridge Roundabout



Peak year 2028

AM 07:15

	A	B	C	D	Total
A	5	37	1368	2	1412
B	17	0	260	1	277
C	901	50	5	6	962
D	18	4	7	0	30
Total	941	91	1640	9	2682

Opposing traffic

Arm						
A	B-B	C-B	C-C	D-B	D-C	D-D
B	A-A	A-C	A-D	C-C	D-C	D-D
C	A-A	A-D	B-A	B-B	B-D	D-D
D	A-A	B-A	B-B	C-A	C-B	C-C

PM 16:45

	A	B	C	D	Total
A	2	22	955	5	984
B	25	1	102	2	130
C	1407	159	6	13	1585
D	6	4	11	0	21
Total	1439	186	1075	20	2720

Total	Opposing
1412	67
277	1388
962	25
30	978

Total	Opposing
984	181
130	979
1585	35
21	1600
5440	1621

Detailed Early Roundabout Performance Assessment

Site 58 - Deres Bridge Roundabout

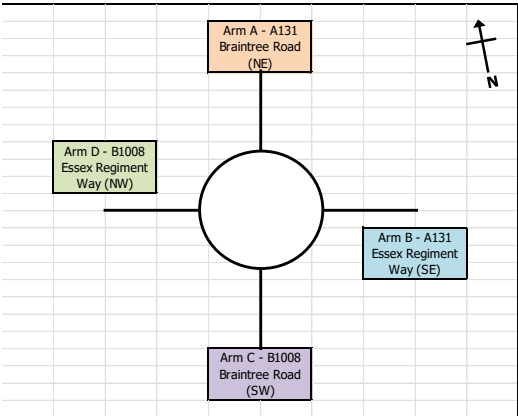
ARM	Entry/Circulating	Lanes	AM				PM			
			Flow (PCU/h)	Capacity	RFC	Flow (PCU/h)	Capacity	RFC	Flow (PCU/h)	Capacity
Arm A	Circulating	2	67			181				
	Entry	3	1412	3212	0.44	984	3133	0.31		
Arm B	Circulating	2	1388			979				
	Entry	2	277	1003	0.28	130	1185	0.11		
Arm C	Circulating	2	25			35				
	Entry	2	962	2017	0.48	1585	2012	0.79		
Arm D	Circulating	2	978			1600				
	Entry	2	30	1078	0.03	21	804	0.03		

	Geometry						DMRB Parameters							
	v	e	l'	r	D	φ	k	F	fc	td	M	x2	S	k
Arm A	8.8	11.14	14.78	25.61	89.79	22.00	1.038	3137.000	0.660	1.024	19.668	10.353	0.253	1.038
Arm B	4.72	6.32	3.09	21.2	89.79	29.00	1.006	1612.624	0.444	1.024	19.668	5.322	0.828	1.006
Arm C	5.48	7.28	7.57	22.64	89.79	23.00	1.030	1970.168	0.495	1.024	19.668	6.502	0.380	1.030
Arm D	3.05	5.08	32.69	25.59	89.79	19.00	1.049	1437.274	0.419	1.024	19.668	4.743	0.099	1.049

Site 59 - A131 Braintree Road / B1008 Essex Regiment Way

Site 59
Sheepcotes Roundabout

Site 59 - Sheepcotes Roundabout



Peak year 2028

AM 07:00

	A	B	C	D	Total
A	0	968	624	30	1622
B	651	0	207	645	1503
C	267	58	0	88	413
D	60	492	157	0	709
Total	978	1518	988	763	4247

Total	Opposing
1622	707
1503	810
413	1326
709	976

PM 15:45

	A	B	C	D	Total
A	5	732	329	19	1084
B	865	1	116	453	1435
C	564	164	1	66	795
D	87	489	43	0	619
Total	1521	1385	488	538	3933

Total	Opposing
1084	698
1435	396
795	1343
619	1600
7865	2219

Detailed Early Roundabout Performance Assessment

Site 59 - Sheepcotes Roundabout

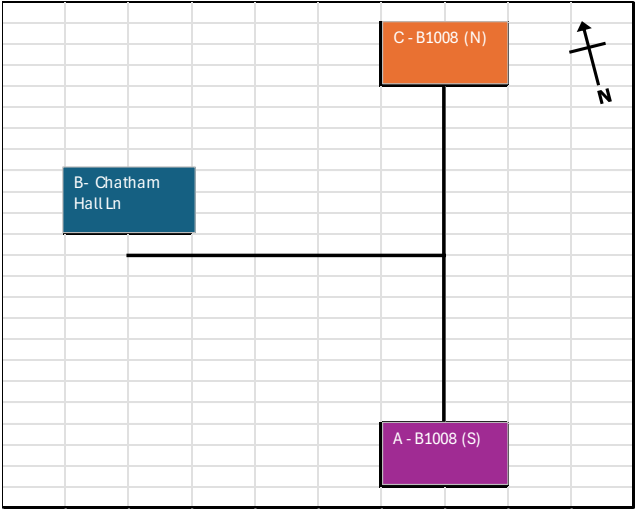
ARM	Entry/Circulating	Lanes	AM				PM			
			Flow (PCU/h)	Capacity	RFC	Flow (PCU/h)	Capacity	RFC	Flow (PCU/h)	Capacity
Arm A	Circulating	2	707			698				
	Entry	3	1622	1092	1.48	1084	1097	0.99		
Arm B	Circulating	2	810			396				
	Entry	2	1503	1638	0.92	1435	1933	0.74		
Arm C	Circulating	2	1326			1343				
	Entry	2	413	869	0.47	795	859	0.93		
Arm D	Circulating	2	976			1600				
	Entry	2	709	1048	0.68	619	676	0.92		

	Geometry							DMRB Parameters						
	v	e	l'	r	D	φ		k	F	fc	td	M	x2	S
Arm A	3.83	5.95	6.2	84.7	49.6	34.00		1.023	1467.224	0.566	1.369	0.353	4.842	0.547
Arm B	5.99	8.16	8.4	19.9	49.6	24.50		1.019	2174.921	0.700	1.369	0.353	7.178	0.413
Arm C	3.08	6.64	23.2	84.8	49.6	37.00		1.013	1656.684	0.602	1.369	0.353	5.468	0.246
Arm D	4.17	8.26	5.6	16.1	49.6	27.50		0.997	1634.867	0.598	1.369	0.353	5.396	1.169

Site 60 - B1008 Main Road/ Chatham Hall Lane

Site 60
B1008 Blasford Hill / Chatham Hall Lane

Site 60 - B1008 Blasford Hill / Chatham Hall Lane



Peak year 2028

AM		07:15		
	A	B	C	Total
A	0	13	476	490
B	19	0	39	57
C	814	39	0	853
Total	833	52	515	1400

PM		17:00		
	A	B	C	Total
A	0	10	781	792
B	29	0	43	72
C	444	28	0	472
Total	473	39	824	1336

Follow-up and critical gap times

	tc	tf
Major RT	4	2
Minor LT	6	3
Minor Straight	6	4
Minor RT	7	4

Major 1 C
Major 2 A
Minor B

Main movement			Opposing
Origin	Destination	Origin	Destination
Major 1 RT	B	A	C
Minor LT	C	A	C
Minor Straight	-	-	-
Minor RT	A	C	A
		C	B
		A	C
Major 2 LT	A	B	
Major 2 Straight	A	C	
Major 1 Straight	C	A	

Capacity estimation

	Main flow	Opposing	Estimated Capacity AM
Major 1 RT	39	476	1060
Minor LT	39	476	543
Minor Straight	-	-	
Minor RT	19	1329	68
Major 2 LT	13	-	
Major 2 Straight	476	-	
Major 1 Straight	814	-	

	Main flow	Opposing	Estimated Capacity PM
Major 1 RT	28	781	755
Minor LT	43	781	326
Minor Straight	-	-	
Minor RT	29	1254	79
Major 2 LT	10	-	
Major 2 Straight	781	-	
Major 1 Straight	444	-	

Detailed Early Junction Performance Assessment

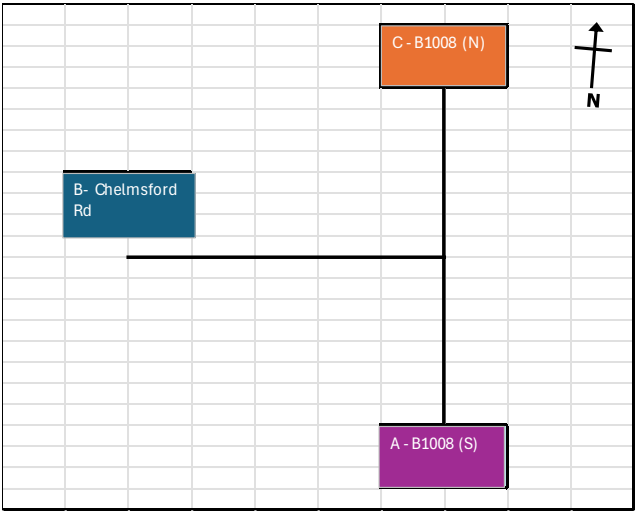
Site 60 - B1008 Blasford Hill / Chatham Hall Lane

Approach/Movement		Entry/Opposing		Lanes		Dedicated RT lane		No. Lanes Crossing		AM		PM	
										Flow (PCU/h)		Flow (PCU/h)	
										RFC			
Major 2-Ahead	Opposing	1						0	-			-	
	Entry	1						-	476	0.26		781	0.43
Major 2-Left Turn	Opposing	1						0	-			-	
	Entry	1						-	13			10	
Minor-Left Turn	Opposing	1						1	476			781	
	Entry	1						-	39	0.07		43	0.13
Minor-Right Turn	Opposing	2						3	1329			1254	
	Entry	1						-	19	0.27		29	0.37
Major 1 - Ahead	Opposing	1						0	-			-	
	Entry	1				1.0		-	814	0.45		444	0.25
Major 1 -Right Turn	Opposing	1						1	476			781	
	Entry	1						-	39	0.04		28	0.04

Site 61 - B1008 Main Road / The Street / Chelmsford Road

Site 61
B1008 Blasford Hill / Chelmsford Road

Site 61 - B1008 Blasford Hill / Chelmsford Road



Peak year 2028

AM 08:00				
	A	B	C	Total
A	0	93	473	566
B	159	0	158	317
C	779	163	0	942
Total	938	256	631	1825

PM 16:00				
	A	B	C	Total
A	0	197	818	1015
B	89	0	160	249
C	446	159	0	605
Total	535	356	978	1869

Follow-up and critical gap times

	tc	tf
Major RT	4	2
Minor LT	6	3
Minor Straight	6	4
Minor RT	7	4

Major 1 C
Major 2 A
Minor B

Main movement			Opposing
Origin	Destination	Origin	Destination
Major 1 RT	B	A	C
Minor LT	C	A	C
Minor Straight	-	-	-
Minor RT	A	C	A
		C	B
		A	C
Major 2 LT	A	B	
Major 2 Straight	A	C	
Major 1 Straight	C	A	

Capacity estimation

	Main flow	Opposing	Estimated Capacity AM
Major 1 RT	163	473	1064
Minor LT	158	473	546
Minor Straight	-	-	
Minor RT	159	1414	58
Major 2 LT	93	-	
Major 2 Straight	473	-	
Major 1 Straight	779	-	

	Main flow	Opposing	Estimated Capacity PM
Major 1 RT	159	818	726
Minor LT	160	818	307
Minor Straight	-	-	
Minor RT	89	1422	57
Major 2 LT	197	-	
Major 2 Straight	818	-	
Major 1 Straight	446	-	

Detailed Early Junction Performance Assessment

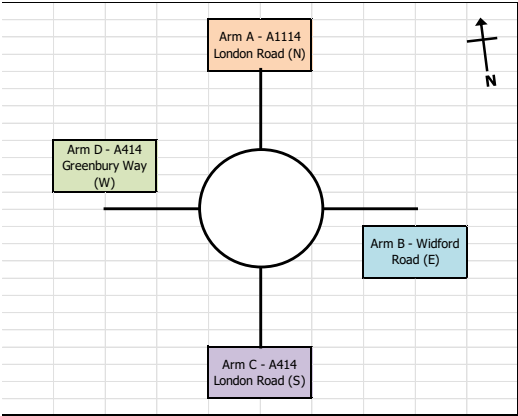
Site 61 - B1008 Blasford Hill / Chelmsford Road

Approach/Movement		Entry/Opposing	Lanes	Dedicated RT lane	No. Lanes Crossing	AM Flow (PCU/h)	AM RFC	PM Flow (PCU/h)	PM RFC
Major 2-Ahead	Opposing	1	1		0	-		-	
	Entry	1	1		-	473	0.26	818	0.45
Major 2-Left Turn	Opposing	1	1		0	-		-	
	Entry	1	1		-	93		197	
Minor-Left Turn	Opposing	1	1		1	473		818	
	Entry	1	1		-	158	0.29	160	0.52
Minor-Right Turn	Opposing	2	1		3	1414		1422	
	Entry	1	1		-	159	2.76	89	1.57
Major 1 - Ahead	Opposing	1	1		0	-		-	
	Entry	1	1	1.0	-	779	0.43	446	0.25
Major 1-Right Turn	Opposing	1	1		1	473		818	
	Entry	1	1		-	163	0.15	159	0.22

Site 63 - A414 Three Mile Hill / A1114 London Road

Site 63
Widford Roundabout

Site 63 - Widford Roundabout



Opposing traffic

Arm						
A	B-B	C-B	C-C	D-B	D-C	D-D
B	A-A	A-C	A-D	C-C	D-C	D-D
C	A-A	A-D	B-A	B-B	B-D	D-D
D	A-A	B-A	B-B	C-A	C-B	C-C

Peak year 2028

AM 07:15

	A	B	C	D	Total
A	0	103	869	654	1627
B	93	1	43	35	172
C	976	23	11	213	1223
D	502	43	203	0	749
Total	1570	170	1127	902	3769

Total	Opposing
1627	282
172	1738
1223	783
749	1103

PM 16:30

	A	B	C	D	Total
A	1	75	1193	271	1539
B	101	1	27	19	148
C	968	17	24	171	1179
D	520	14	342	0	876
Total	1590	107	1586	461	3743

Total	Opposing
1539	398
148	1830
1179	393
876	1111
7485	1987

Detailed Early Roundabout Performance Assessment

Site 63 - Widford Roundabout

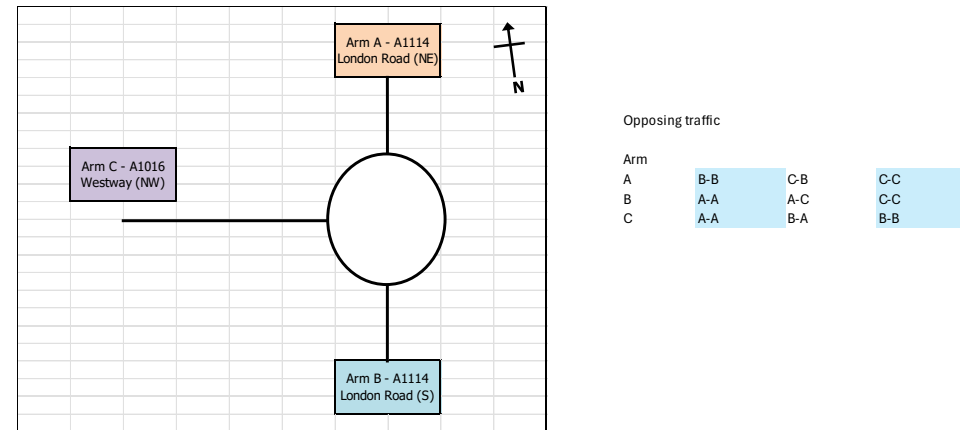
ARM	Entry/Circulating	Lanes	AM				PM			
			Flow (PCU/h)	Capacity	RFC	Flow (PCU/h)	Capacity	RFC	Flow (PCU/h)	Capacity
Arm A	Circulating	2	282			398				
	Entry	3	1627	2049	0.79	1539	1970	0.78		
Arm B	Circulating	2	1738			1830				
	Entry	2	172	1308	0.13	148	1240	0.12		
Arm C	Circulating	2	783			393				
	Entry	2	1223	1967	0.62	1179	2257	0.52		
Arm D	Circulating	2	1103			1111				
	Entry	2	749	1064	0.70	876	1059	0.83		

	Geometry							DMRB Parameters						
	v	e	l'	r	D	φ		k	F	fc	td	M	x2	S
Arm A	6.7	7.9	3.3	16.7	55.6	21.50		1.020	2198.150	0.671	1.304	0.644	7.255	0.582
Arm B	8.6	8.6	1	12.4	55.6	22.00		0.998	2605.800	0.745	1.304	0.644	8.600	0.998
Arm C	6	8.9	24.9	16.8	55.6	16.50		1.038	2458.130	0.718	1.304	0.644	8.113	1.038
Arm D	4.2	7.4	10.8	27.4	55.6	47.00		0.954	1770.303	0.594	1.304	0.644	5.843	0.954

Site 64 - A1114 London Road / A1016 Westway

Site 64
A1114 London Road / A1016 Westway

Site 64 - A1114 London Road / A1016 Westway



Peak year 2028

AM 07:15					Total	Opposing
	A	B	C	Total		
A	4	1224	461	1688	1688	285
B	733	0	896	1629	1629	468
C	619	282	3	904	904	738
Total	1356	1506	1359	4221		

PM 17:00					Total	Opposing
	A	B	C	Total		
A	4	716	302	1022	1022	572
B	871	1	619	1492	1492	311
C	616	566	5	1187	1187	876
Total	1491	1283	927	3701		

Detailed Early Roundabout Performance Assessment

Site 64 - A1114 London Road / A1016 Westway

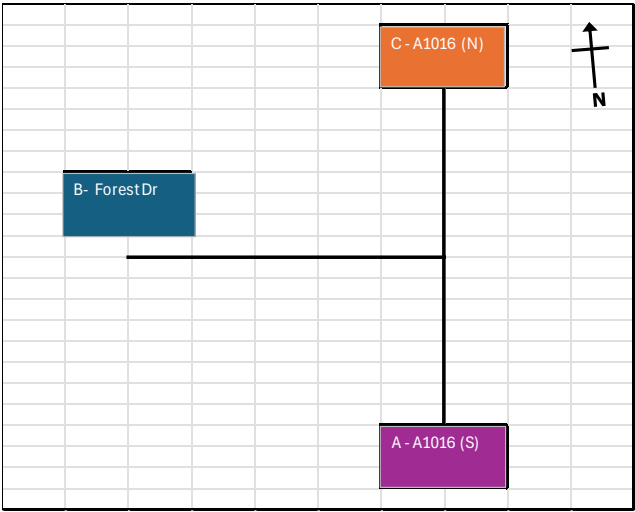
ARM	Entry/Circula	Lanes	AM			PM		
			Flow (PCU/h)	Capacity	RFC	Flow (PCU/h)	Capacity	RFC
Arm A	Circulating	2	285			572		
	Entry	3	1688	1912	0.88	1022	1752	0.58
Arm B	Circulating	2	468			311		
	Entry	2	1629	1997	0.82	1492	2087	0.71
Arm C	Circulating	2	738			876		
	Entry	2	904	1829	0.49	1187	1748	0.68

	Geometry						DMRB Parameters							
	v	e	l'	r	D	ϕ	k	F	fc	td	M	x2	S	k
Arm A	4.51	9.25	11.9	22.515	73.08	21.00	1.037	1997.940	0.539	1.106	3.699	6.594	0.637	1.037
Arm B	7.38	8.79	2.19	22.125	73.08	45.00	0.953	2375.745	0.597	1.106	3.699	7.841	1.030	0.953
Arm C	6.29	7.66	7.83	21.875	73.08	19.00	1.042	2171.984	0.565	1.106	3.699	7.168	0.280	1.042

Site 66 - A1016 Waterhouse Lane / Forest Drive

Site 66
A1016 Waterhouse Lane / Forest Drive

Site 66 - A1016 Waterhouse Lane / Forest Drive



Peak year 2028

AM 08:15				
	A	B	C	Total
A	0	78	794	872
B	75	0	134	210
C	691	63	0	754
Total	767	141	928	1836

PM 16:15				
	A	B	C	Total
A	0	67	866	933
B	39	0	80	119
C	784	64	0	847
Total	823	131	946	1900

Follow-up and critical gap times

	tc	tf
Major RT	4	2
Minor LT	6	3
Minor Straight	6	4
Minor RT	7	4

Major 1 C
Major 2 A
Minor B

Main movement			Opposing
Origin	Destination	Origin	Destination
Major 1 RT	B	A	C
Minor LT	C	A	C
Minor Straight	-	-	-
Minor RT	A	C	A
		C	B
		A	C
Major 2 LT	A	B	
Major 2 Straight	A	C	
Major 1 Straight	C	A	

Capacity estimation

	Main flow	Opposing	Estimated Capacity AM
Major 1 RT	63	794	745
Minor LT	134	794	320
Minor Straight	-	-	-
Minor RT	75	1548	44
Major 2 LT	78	-	-
Major 2 Straight	794	-	-
Major 1 Straight	691	-	-

	Main flow	Opposing	Estimated Capacity PM
Major 1 RT	64	866	688
Minor LT	80	866	284
Minor Straight	-	-	-
Minor RT	39	1713	32
Major 2 LT	67	-	-
Major 2 Straight	866	-	-
Major 1 Straight	784	-	-

Detailed Early Junction Performance Assessment

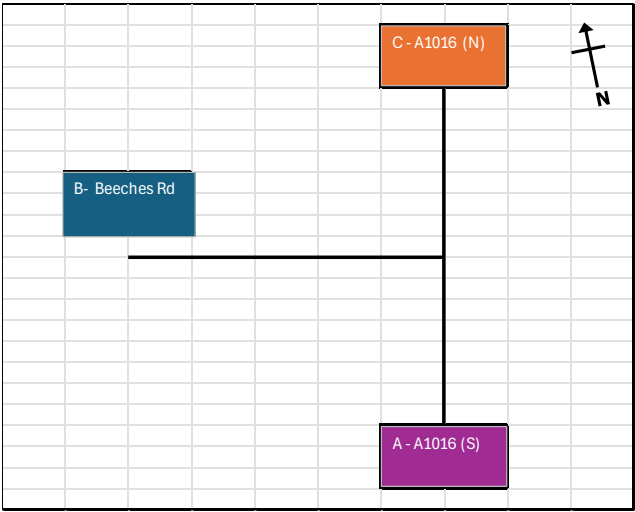
Site 66 - A1016 Waterhouse Lane / Forest Drive

Approach/Movement		Entry/Opposing	Lanes	Dedicated RT lane	No. Lanes Crossing	Flow (PCU/h)	AM RFC	Flow (PCU/h)	PM RFC
Major 2-Ahead	Opposing	1	1		0	-		-	
	Entry	1	1		-	794	0.44	866	0.48
Major 2-Left Turn	Opposing	1	1		0	-		-	
	Entry	1	1		-	78		67	
Minor-Left Turn	Opposing	1	1		1	794		866	
	Entry	1	1		-	134	0.42	80	0.28
Minor-Right Turn	Opposing	2	1		3	1548		1713	
	Entry	1	1		-	75	1.70	39	1.22
Major 1 - Ahead	Opposing	1	1		0	-		-	
	Entry	1	1	1.0	-	691	0.38	784	0.44
Major 1 -Right Turn	Opposing	1	1		1	794		866	
	Entry	1	1		-	63	0.08	64	0.09

Site 67 - A1016 Waterhouse Lane / Beeches Road

Site 67
A1016 Waterhouse Lane / Beeches Road

Site 67 - A1016 Waterhouse Lane / Beeches Road



Peak year 2028

AM 07:45				
	A	B	C	Total
A	0	18	865	883
B	6	0	178	184
C	846	205	0	1051
Total	853	222	1043	2118

PM				
	A	B	C	Total
A	0	16	980	996
B	7	0	148	155
C	787	152	0	940
Total	795	168	1128	2091

Follow-up and critical gap times

	tc	tf
Major RT	4	2
Minor LT	6	3
Minor Straight	6	4
Minor RT	7	4

Major 1 C
Major 2 A
Minor B

	Main movement		Opposing	
	Origin	Destination	Origin	Destination
Major 1 RT	C	B	A	C
Minor LT	B	C	A	C
Minor Straight	-	-	-	-
Minor RT	B	A	C	A
			C	B
			A	C
Major 2 LT	A	B		
Major 2 Straight	A	C		
Major 1 Straight	C	A		

Capacity estimation

	Main flow	Opposing	Estimated Capacity AM
Major 1 RT	205	865	688
Minor LT	178	865	284
Minor Straight	-	-	
Minor RT	6	1916	22
Major 2 LT	18	-	
Major 2 Straight	865	-	
Major 1 Straight	846	-	

	Main flow	Opposing	Estimated Capacity PM
Major 1 RT	152	980	606
Minor LT	148	980	234
Minor Straight	-	-	
Minor RT	7	1920	22
Major 2 LT	16	-	
Major 2 Straight	980	-	
Major 1 Straight	787	-	

Detailed Early Junction Performance Assessment

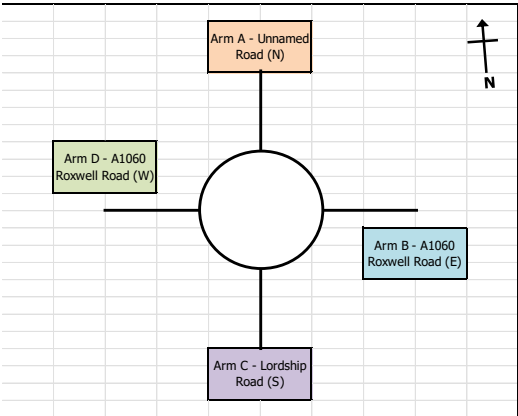
Site 67 - A1016 Waterhouse Lane / Beeches Road

			Dedicated	No. Lanes	AM		PM	
Approach/Movement	Entry/Opposing	Lanes	RT lane	Crossing	Flow (PCU/h)	RFC	Flow (PCU/h)	RFC
Major 2-Ahead	Opposing	1		0	-		-	
	Entry	1		-	865	0.48	980	0.54
Major 2-Left Turn	Opposing	1		0	-		-	
	Entry	1		-	18		16	
Minor-Left Turn	Opposing	1		1	865		980	
	Entry	1		-	178	0.63	148	0.63
Minor-Right Turn	Opposing	2		3	1916		1920	
	Entry	1		-	6	0.29	7	0.34
Major 1 - Ahead	Opposing	1	1.0	0	-		-	
	Entry	1		-	846	0.47	787	0.44
Major 1 -Right Turn	Opposing	1		1	865		980	
	Entry	1		-	205	0.30	152	0.25

Site 69 - A1060 Roxwell Road / Lordship Road

Site 69
A1060 Roxwell Road / Lordship Road

Site 69 - A1060 Roxwell Road / Lordship Road



Peak year 2028

AM 07:45

	A	B	C	D	Total
A	0	0	0	0	0
B	0	0	742	352	1093
C	1	477	1	210	688
D	0	348	217	0	565
Total	1	824	960	561	2346

Total	Opposing
0	1043
1093	218
688	352
565	479

PM 16:45

	A	B	C	D	Total
A	0	0	1	0	1
B	0	1	428	290	719
C	2	667	2	168	839
D	0	393	205	0	598
Total	2	1061	637	457	2157

Total	Opposing
1	1268
719	208
839	291
598	672
4314	1270

Detailed Early Roundabout Performance Assessment

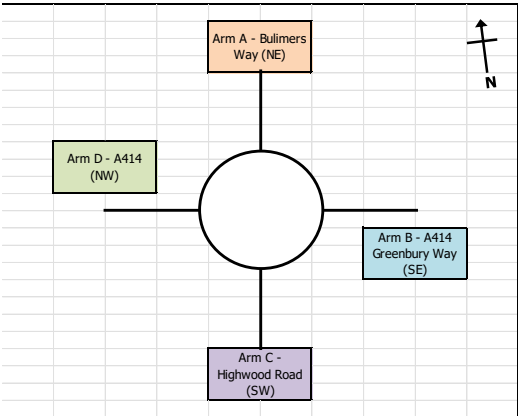
Site 69 - A1060 Roxwell Road / Lordship Road

ARM	Entry/Circulating	Lanes	AM			PM		
			Flow (PCU/h)	Capacity	RFC	Flow (PCU/h)	Capacity	RFC
Arm A	Circulating	2	1043			1268		
	Entry	3	0	86	0.00	1	8	0.13
Arm B	Circulating	2	218			208		
	Entry	2	1093	1261	0.87	719	1267	0.57
Arm C	Circulating	2	352			291		
	Entry	2	688	837	0.82	839	868	0.97
Arm D	Circulating	2	479			672		
	Entry	2	565	524	1.08	598	464	1.29

	Geometry						DMRB Parameters							
	v	e	l'	r	D	φ	k	F	fc	td	M	x2	S	k
Arm A	1.45	2.6	1.7	11.1	24.3	73.00	0.812	549.455	0.425	1.486	0.028	1.813	1.082	0.812
Arm B	3.5	4.6	11.9	30	24.3	17.50	1.060	1317.716	0.584	1.486	0.028	4.349	0.148	1.060
Arm C	2.8	5.9	2.2	14.7	24.3	24.50	1.001	1018.900	0.522	1.486	0.028	3.363	2.255	1.001
Arm D	3.2	5.6	4	2.1	24.3	39.00	0.552	1218.641	0.563	1.486	0.028	4.022	0.960	0.552

Site 71 - A414 Greenbury Way / Highwood Road

Site 71
Bulimers Way / A414 Greenbury Way / Highwood Road / A414
Site 71 - Bulimers Way / A414 Greenbury Way / Highwood Road / A414



Peak year 2028

AM08:00					
	A	B	C	D	Total
A	0	165	78	197	440
B	362	2	70	576	1010
C	85	60	0	9	154
D	194	410	6	0	610
Total	641	637	154	782	2215

Opposing traffic						
Arm						
A	B-B	C-B	C-C	D-B	D-C	D-D
B	A-A	A-C	A-D	C-C	D-C	D-D
C	A-A	A-D	B-A	B-B	B-D	D-D
D	A-A	B-A	B-B	C-A	C-B	C-C

PM16:30							
	A	B	C	D	Total	Total	Opposing
A	0	145	77	161	383	383	655
B	144	4	50	461	659	659	249
C	70	54	1	6	131	131	772
D	203	587	8	1	799	799	274
Total	418	790	136	630	1973	3947	1073

Detailed Early Roundabout Performance Assessment

Site 71 - Bulimers Way / A414 Greenbury Way / Highwood Road / A414

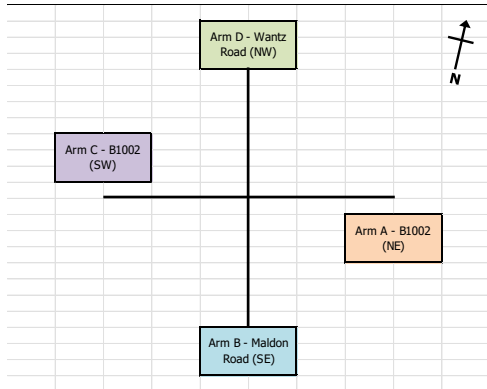
ARM	Entry/Circulating	Lanes	AM				PM			
			Flow (PCU/h)	Capacity	RFC	Flow (PCU/h)	Capacity	RFC		
Arm A	Circulating	2	478			655				
	Entry	3	440	1324	0.33	383	1210	0.32		
Arm B	Circulating	2	281			249				
	Entry	2	1010	1154	0.88	659	1172	0.56		
Arm C	Circulating	2	1137			772				
	Entry	2	154	519	0.30	131	713	0.18		
Arm D	Circulating	2	509			274				
	Entry	2	610	989	0.62	799	1122	0.71		

	Geometry						DMRB Parameters							
	v	e	l'	r	D	φ	k	F	f _c	t _d	M	x ₂	S	k
Arm A	3.47	5.92	15.5	23.51	41.41	16.00	1.056	1544.402	0.608	1.433	0.156	5.097	0.253	1.056
Arm B	3.68	4.64	3.3	20.31	41.41	19.00	1.039	1265.684	0.552	1.433	0.156	4.177	0.465	1.039
Arm C	2.31	5.6	6.8	20.23	41.41	21.00	1.032	1091.130	0.518	1.433	0.156	3.601	0.774	1.032
Arm D	2.48	4.79	16	23.02	41.41	21.00	1.038	1230.188	0.545	1.433	0.156	4.060	0.231	1.038

Site 72 - B1002 Main Road / Wantz Road

Site 72
B1002 / Maldon Road / Wantz Road

Site 72 - B1002 / Maldon Road / Wantz Road



Peak year 2028

AM 08:15					
	A	B	c	D	Total
A	0	21	213	239	473
B	23	0	47	70	140
C	178	24	0	60	262
D	109	35	43	0	188
Total	310	80	303	369	1062

PM 16:15					
	A	B	C	D	Total
A	0	20	165	72	256
B	9	0	31	25	65
C	191	60	0	50	301
D	86	70	36	0	193
Total	286	150	232	146	815

Follow-up and critical gap times

	tc	tf
Major RT	4	2
Minor LT	6	3
Minor Straight	6	4
Minor RT	7	4

Major 1 A
Major 2 C
Minor 1 D
Minor 2 B

Main movement			Opposing	
	Origin	Destination	Origin	Destination
Major 1 RT	A	D	C	A
Major 1 Straight	A	C		
Major 1 LT	A	B		
Minor 1 LT	D	A	C	A
Minor 1 Straight	D	B	A	C
			C	A
Minor 1 RT	D	C	A	C
			C	A
			B	D
			B	C
Major 2 RT	C	B	A	C
Major 2 Straight	C	A		
Major 2 LT	C	D		
Minor 2 LT	B	C	A	C
Minor 2 Straight	B	D	A	C
			C	A
Minor 2 RT	B	A	A	C
			C	A
			D	B
			D	A

Capacity estimation

	Main flow	Opposing	Estimated Capacity AM
Major 1 RT	239	178	1380
Major 1 Straight	213 -		
Major 1 LT	21 -		
Minor 1 LT	109	178	1001
Minor 1 Straight	35	392	849
Minor 1 RT	43	508	827
Major 2 RT	24	213	1753
Major 2 Straight	178 -		
Major 2 LT	60 -		
Minor 2 LT	47	213	1110
Minor 2 Straight	70	392	800
Minor 2 RT	23	536	861

	Main flow	Opposing	Estimated Capacity PM
Major 1 RT	72	191	1662
Major 1 Straight	165 -		
Major 1 LT	20 -		
Minor 1 LT	86	191	1039
Minor 1 Straight	70	356	800
Minor 1 RT	36	412	839
Major 2 RT	60	165	1684
Major 2 Straight	191 -		
Major 2 LT	50 -		
Minor 2 LT	31	165	1139
Minor 2 Straight	25	356	863
Minor 2 RT	9	513	884

Detailed Early Junction Performance Assessment

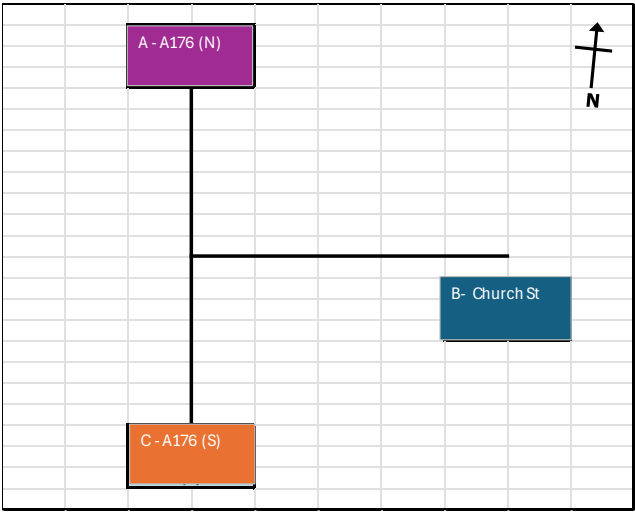
Site 72 - B1002 / Maldon Road / Wantz Road

			No. Lanes		AM		PM	
Approach/Movement	Entry/Opposing	Lanes	RT lane	Crossing	Flow (PCU/h)	RFC	Flow (PCU/h)	RFC
Major 1 - Right turn	Opposing	1	0	2	178		191	
	Entry	1		-	239	0.17	72	0.04
Major 1 - Ahead	Opposing	1		0	-		-	
	Entry	1		-	213	0.12	165	0.09
Major 1 - Left Turn	Opposing	1		0	-		-	
	Entry	1		-	21		20	
Minor 1 - Left Turn	Opposing	1		1	178		191	
	Entry	1		-	109	0.11	86	0.08
Minor 1 - Ahead	Opposing	2		2	392		356	
	Entry	1		-	35	0.04	70	0.09
Minor 1 - Right Turn	Opposing	1	2	508		412		
	Entry	1	-	43	0.05	36	0.04	
Major 2 - Right turn	Opposing	1	1	213		165		
	Entry	1	-	24	0.01	60	0.04	
Major 2 - Ahead	Opposing	1	0	-		-		
	Entry	1	-	178	0.10	191	0.11	
Major 2 - Left Turn	Opposing	1	0	-		-		
	Entry	1	-	60		50		
Minor 2 - Left Turn	Opposing	1	1	213		165		
	Entry	1	-	47	0.04	31	0.03	
Minor 2 - Ahead	Opposing	2	2	392		356		
	Entry	1	-	70	0.09	25	0.03	
Minor 2 - Right Turn	Opposing	1	2	536		513		
	Entry	1	-	23	0.03	9	0.01	

Site 75 - A176 Noak Hill Road / Church Street

Site 75
Church Street / A176 Noak Hill Road

Site 75 - Church Street / A176 Noak Hill Road



Peak year 2028

AM 08:00

	A	B	C	Total
A	0	37	881	918
B	14	0	204	219
C	674	276	0	951
Total	689	314	1085	2087

PM 16:30

	A	B	C	Total
A	0	49	809	858
B	2	0	157	160
C	632	297	0	929
Total	634	346	966	1946

Follow-up and critical gap times

	tc	tf
Major RT	4	2
Minor LT	6	3
Minor Straight	6	4
Minor RT	7	4

Major 1 C
Major 2 A
Minor B

	Main movement		Opposing	
	Origin	Destination	Origin	Destination
Major 1 RT	C	B	A	C
Minor LT	B	C	A	C
Minor Straight	-	-	-	-
Minor RT	B	A	C	A
			C	B
			A	C
Major 2 LT	A	B		
Major 2 Straight	A	C		
Major 1 Straight	C	A		

Capacity estimation

	Main flow	Opposing	Estimated Capacity AM
Major 1 RT	276	881	677
Minor LT	204	881	277
Minor Straight	-	-	-
Minor RT	14	1831	26
Major 2 LT	37	-	-
Major 2 Straight	881	-	-
Major 1 Straight	674	-	-

	Main flow	Opposing	Estimated Capacity PM
Major 1 RT	297	809	733
Minor LT	157	809	312
Minor Straight	-	-	-
Minor RT	2	1738	31
Major 2 LT	49	-	-
Major 2 Straight	809	-	-
Major 1 Straight	632	-	-

Detailed Early Junction Performance Assessment

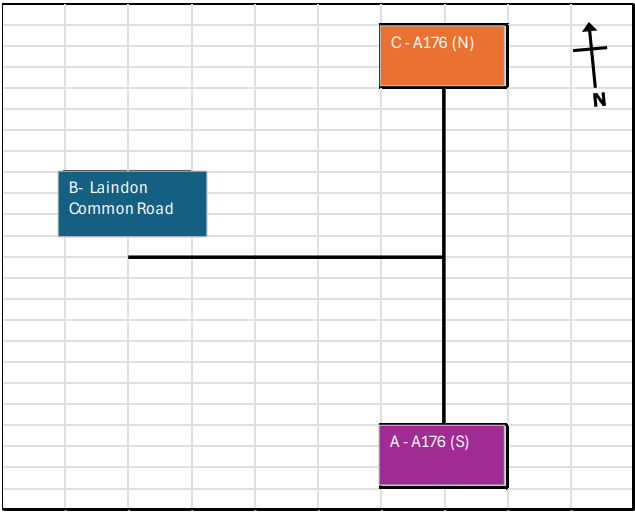
Site 75 - Church Street / A176 Noak Hill Road

Approach/Movement		Entry/Opposing	Lanes	Dedicated RT lane	No. Lanes Crossing	Flow (PCU/h)	AM RFC	Flow (PCU/h)	PM RFC
Major 2-Ahead	Opposing	1	1		0	-		-	
	Entry	1	1		-	881	0.49	809	0.45
Major 2-Left Turn	Opposing	1	1		0	-		-	
	Entry	1	1		-	37		49	
Minor-Left Turn	Opposing	1	1		1	881		809	
	Entry	1	1		-	204	0.74	157	0.51
Minor-Right Turn	Opposing	2	1		3	1831		1738	
	Entry	1	1		-	14	0.57	2	0.07
Major 1 - Ahead	Opposing	1	1		0	-		-	
	Entry	1	1	1.0	-	674	0.37	632	0.35
Major 1 -Right Turn	Opposing	1	1		1	881		809	
	Entry	1	1		-	276	0.41	297	0.41

Site 76 - A176 Noak Hill Road / Laindon Common Road

Site 76
A176 Noak Hill Road / Laindon Common Road

Site 76 - A176 Noak Hill Road / Laindon Common Road



Peak year 2028

AM 07:30				
	A	B	C	Total
A	0	83	686	769
B	12	0	61	74
C	869	207	0	1076
Total	881	290	747	1918

PM 16:45				
	A	B	C	Total
A	0	42	561	603
B	50	0	135	184
C	857	110	0	967
Total	907	152	695	1755

Follow-up and critical gap times

	tc	tf
Major RT	4	2
Minor LT	6	3
Minor Straight	6	4
Minor RT	7	4

Major 1 C
Major 2 A
Minor B

Main movement			Opposing
Origin	Destination	Origin	Destination
Major 1 RT	B	A	C
Minor LT	C	A	C
Minor Straight	-	-	-
Minor RT	A	C	A
		C	B
		A	C
Major 2 LT	A	B	
Major 2 Straight	A	C	
Major 1 Straight	C	A	

Capacity estimation

	Main flow	Opposing	Estimated Capacity AM
Major 1 RT	207	686	840
Minor LT	61	686	382
Minor Straight	-	-	
Minor RT	12	1762	29
Major 2 LT	83	-	
Major 2 Straight	686	-	
Major 1 Straight	869	-	

	Main flow	Opposing	Estimated Capacity PM
Major 1 RT	110	561	965
Minor LT	135	561	471
Minor Straight	-	-	
Minor RT	50	1528	46
Major 2 LT	42	-	
Major 2 Straight	561	-	
Major 1 Straight	857	-	

Detailed Early Junction Performance Assessment

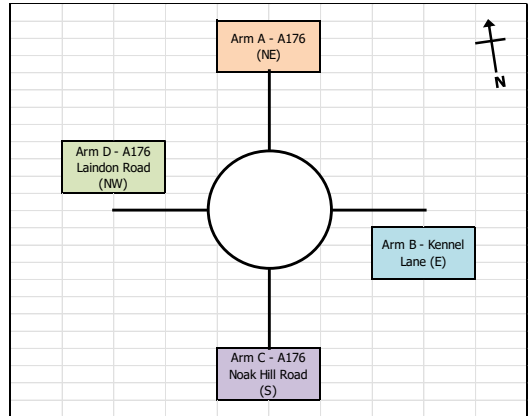
Site 76 - A176 Noak Hill Road / Laindon Common Road

Approach/Movement		Entry/Opposing	Lanes	Dedicated RT lane	No. Lanes Crossing	Flow (PCU/h)	AM RFC	PM Flow (PCU/h)	PM RFC
Major 2-Ahead	Opposing	1			0	-		-	
	Entry	1			-	686	0.38	561	0.31
Major 2-Left Turn	Opposing	1			0	-		-	
	Entry	1			-	83		42	
Minor-Left Turn	Opposing	1			1	686		561	
	Entry	1			-	61	0.16	135	0.29
Minor-Right Turn	Opposing	2			2	1762		1528	
	Entry	1			-	12	0.42	50	1.08
Major 1 - Ahead	Opposing	1			0	-		-	
	Entry	1		0.0	-	869	1.49	857	0.90
Major 1 -Right Turn	Opposing	1			1	686		561	
	Entry	1			-	207	0.25	110	0.11

Site 77 - A176 Noak Hill Road / A176 Laindon Road

Site 77
Kennel Lane / A176 Noak Hill Road / A176 Laindon Road

Site 77 - Kennel Lane / A176 Noak Hill Road / A176 Laindon Road



Opposing traffic

Arm						
A	B-B	C-B	C-C	D-B	D-C	D-D
B	A-A	A-C	A-D	C-C	D-C	D-D
C	A-A	A-D	B-A	B-B	B-D	D-D
D	A-A	B-A	B-B	C-A	C-B	C-C

Peak year 2028

AM 07:30

	A	B	C	D	Total
A	2	12	500	0	514
B	0	0	18	0	18
C	724	24	0	0	748
D	23	19	513	0	554
Total	749	55	1030	0	1833

Total	Opposing
514	555
18	1014
748	2
554	750

PM 16:00

	A	B	C	D	Total
A	2	7	306	0	315
B	0	0	16	0	16
C	715	32	1	0	748
D	51	30	614	0	695
Total	768	69	936	0	1774

Total	Opposing
315	677
16	923
748	2
695	750
3548	1446

Detailed Early Roundabout Performance Assessment

Site 77 - Kennel Lane / A176 Noak Hill Road / A176 Laindon Road

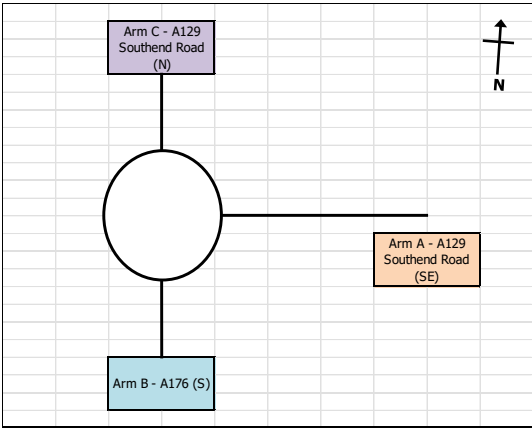
ARM	Entry/Circulating	Lanes	AM				PM			
			Flow (PCU/h)	Capacity	RFC	Flow (PCU/h)	Capacity	RFC	Flow (PCU/h)	Capacity
Arm A	Circulating	2	555			677				
	Entry	3	514	1472	0.35	315	1402	0.22		
Arm B	Circulating	2	1014			923				
	Entry	2	18	602	0.03	16	643	0.02		
Arm C	Circulating	2	2			2				
	Entry	2	748	2114	0.35	748	2114	0.35		
Arm D	Circulating	2	750			750				
	Entry	2	554	1491	0.37	695	1490	0.47		

	Geometry							DMRB Parameters						
	v	e	l'	r	D	φ		k	F	fc	td	M	x2	S
Arm A	3.6	7.63	15.28	22.2	61.86	26.00		1.019	1753.004	0.556	1.227	1.204	5.785	0.422
Arm B	2.29	5.49	5.08	19.06	61.86	18.00		1.039	1015.382	0.430	1.227	1.204	3.351	1.008
Arm C	5.58	7.75	11.53	27.8	61.86	32.00		1.007	2101.105	0.615	1.227	1.204	6.934	0.301
Arm D	6.52	6.52	1	11.48	61.86	27.00		0.974	1975.560	0.594	1.227	1.204	6.520	0.000

Site 78 - A176 / A129 Southend Road

Site 78
A129 Southend Road / A176

Site 78 - A129 Southend Road / A176



Opposing traffic

Arm			
A	B-B	C-B	C-C
B	A-A	A-C	C-C
C	A-A	B-A	B-B

Peak year 2028

AM	07:15					
	A	B	C	Total	Total	Opposing
A	1	84	359	443	443	225
B	22	0	717	739	739	360
C	174	225	0	399	399	23
Total	196	309	1076	1581		

PM	16:45					
	A	B	C	Total	Total	Opposing
A	1	32	265	298	298	255
B	88	0	601	689	689	267
C	287	254	1	541	541	89
Total	376	286	867	1529		

Detailed Early Roundabout Performance Assessment

Site 78 - A129 Southend Road / A176

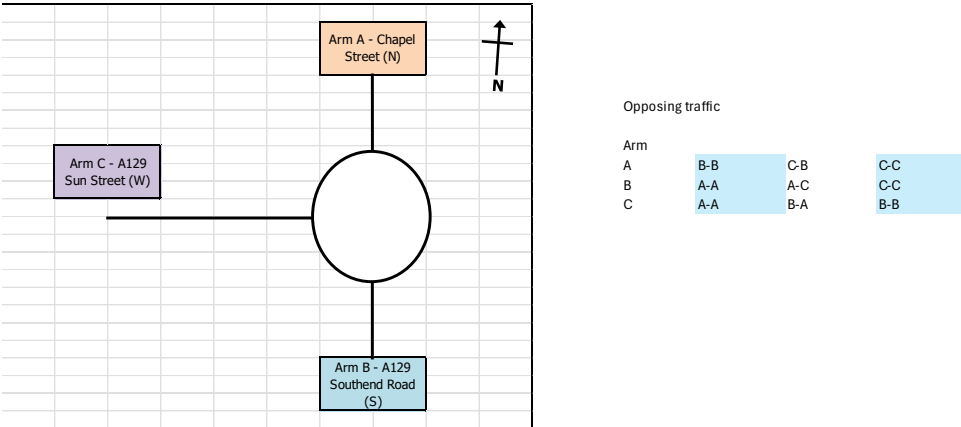
ARM	Entry/Circula	Lanes	AM			PM		
			Flow (PCU/h)	Capacity	RFC	Flow (PCU/h)	Capacity	RFC
Arm A	Circulating	2	225			255		
	Entry	3	443	884	0.50	298	871	0.34
Arm B	Circulating	2	360			267		
	Entry	2	739	1354	0.55	689	1406	0.49
Arm C	Circulating	2	23			89		
	Entry	2	399	1421	0.28	541	1385	0.39

	Geometry						DMRB Parameters							
	v	e	l'	r	D	ϕ	k	F	fc	td	M	x2	S	k
Arm A	3	6	6	6	28	60.00	0.782	1258.615	0.569	1.480	0.041	4.154	0.800	0.782
Arm B	3.5	7	80	6	28	60.00	0.782	1990.763	0.719	1.480	0.041	6.570	0.070	0.782
Arm C	3.5	7	30	6	28	60.00	0.782	1832.709	0.687	1.480	0.041	6.049	0.187	0.782

Site 79 - A129 Southend Road / A129 Sun Street

Site 79
Chapel Street / A129 Southend Road / A129 Sun Street

Site 79 - Chapel Street / A129 Southend Road / A129 Sun Street



Peak year 2028

AM 07:15						
	A	B	C	Total	Total	Opposing
A	2	477	149	629	629	2
B	104	2	916	1022	1022	151
C	0	0	0	0	0	108
Total	106	479	1065	1650		

PM 16:15						
	A	B	C	Total	Total	Opposing
A	1	552	160	713	713	1
B	177	1	707	885	885	161
C	0	0	0	0	0	179
Total	178	553	866	1598		

Detailed Early Roundabout Performance Assessment

Site 79 - Chapel Street / A129 Southend Road / A129 Sun Street

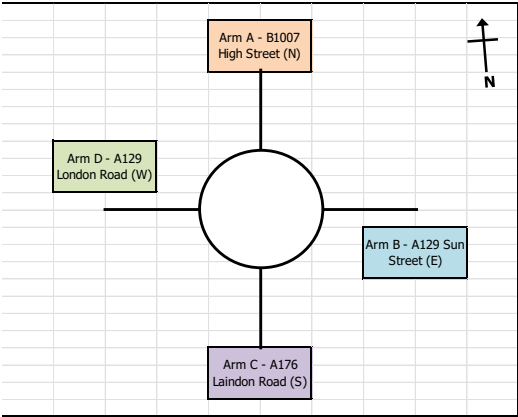
ARM	Entry/Circula	Lanes	AM			PM		
			Flow (PCU/h)	Capacity	RFC	Flow (PCU/h)	Capacity	RFC
Arm A	Circulating	2	2			1		
	Entry	3	629	1089	0.58	713	1090	0.65
Arm B	Circulating	2	151			161		
	Entry	2	1022	1525	0.67	885	1519	0.58
Arm C	Circulating	2	108			179		
	Entry	2	0	-	-	0	-	-

	Geometry						DMRB Parameters							
	v	e	l'	r	D	ϕ	k	F	fc	td	M	x2	S	k
Arm A	3.05	3.64	32.73	97.88	27.9	42.00	0.997	1093.170	0.535	1.481	0.040	3.608	0.029	0.997
Arm B	3.7	6.4	16.83	28.16	27.9	41.00	0.976	1661.682	0.652	1.481	0.040	5.484	0.257	0.976
Arm C	Exit-Only	Exit-Only	Exit-Only	Exit-Only	Exit-Only	Exit-Only	-	-	-	-	-	-	-	-

Site 80 - A129 Sun Street / A176 Laindon Road

Site 80
B1007 High Street / A129 Sun Street / A176 Laindon Road / A129 London Road

Site 80 - B1007 High Street / A129 Sun Street / A176 Laindon Road / A129 London Road



Peak year 2028

AM		07:15				
	A	B	C	D	Total	
A	11	0	214	62	287	
B	426	0	123	515	1064	
C	58	0	62	120	240	
D	146	0	433	0	579	
Total	641	0	770	639	2051	

Opposing traffic						
Arm						
A	B-B	C-B	C-C	D-B	D-C	D-D
B	A-A	A-C	A-D	C-C	D-C	D-D
C	A-A	A-D	B-A	B-B	B-D	D-D
D	A-A	B-A	B-B	C-A	C-B	C-C

PM		17:30				
	A	B	C	D	Total	
A	19	0	210	59	288	
B	353	0	62	398	813	
C	95	0	0	100	196	
D	204	0	534	0	738	
Total	671	0	807	557	2035	

Total	287	433
Opposing	1064	721
	120	1014
	579	495

Total	288	534
Opposing	813	822
	196	828
	738	467
	4070	1205

Detailed Early Roundabout Performance Assessment

Site 80 - B1007 High Street / A129 Sun Street / A176 Laindon Road / A129 London Road

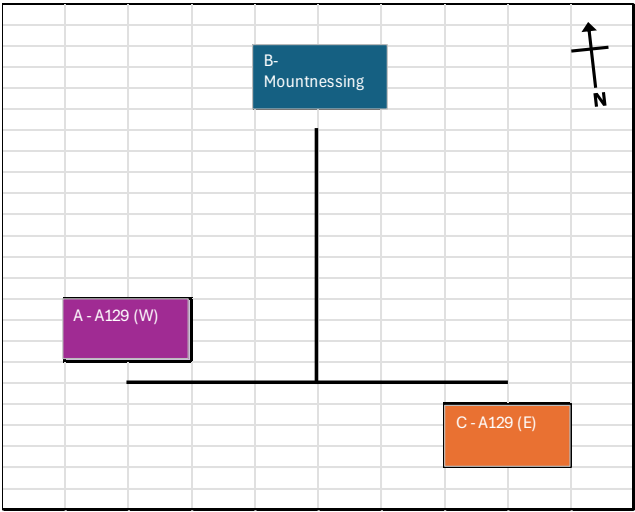
ARM	Entry/Circulating	Lanes	AM			PM		
			Flow (PCU/h)	Capacity	RFC	Flow (PCU/h)	Capacity	RFC
Arm A	Circulating	2	433			534		
	Entry	3	287	1179	0.24	288	1126	0.26
Arm B	Circulating	2	721			822		
	Entry	2	1064	1369	0.78	813	1307	0.62
Arm C	Circulating	2	1014			828		
	Entry	2	120	592	0.20	196	677	0.29
Arm D	Circulating	2	495			467		
	Entry	2	579	918	0.63	738	931	0.79

	Geometry						DMRB Parameters							
	v	e	l'	r	D	ϕ	k	F	fc	td	M	x2	S	k
Arm A	3.3	7	30	6	28	60.00	0.782	1803.748	0.681	1.480	0.041	5.953	0.197	0.782
Arm B	7	8	6	6	28	60.00	0.782	2318.609	0.787	1.480	0.041	7.652	0.267	0.782
Arm C	3.3	5	12	6	28	60.00	0.782	1354.327	0.589	1.480	0.041	4.470	0.227	0.782
Arm D	3.3	5	70	6	28	60.00	0.782	1477.856	0.614	1.480	0.041	4.877	0.039	0.782

Site 82 - A129 London Road / Mountessing Road

Site 82
Mountessing Road / A129 London Road

Site 82 - Mountessing Road / A129 London Road



Peak year 2028

AM 07:45				
	A	B	C	Total
A	0	282	365	647
B	116	0	370	486
C	560	395	0	954
Total	676	677	735	2087

PM 17:15				
	A	B	C	Total
A	0	172	523	695
B	107	0	352	458
C	399	389	0	788
Total	506	561	875	1942

Follow-up and critical gap times

	tc	tf
Major RT	4	2
Minor LT	6	3
Minor Straight	6	4
Minor RT	7	4

Major 1 C
Major 2 A
Minor B

Main movement		Opposing	
Origin	Destination	Origin	Destination
Major 1 RT	B	A	C
Minor LT	C	A	C
Minor Straight	-	-	-
Minor RT	A	C	A
		C	B
		A	C
Major 2 LT	A	B	
Major 2 Straight	A	C	
Major 1 Straight	C	A	

Capacity estimation

	Main flow	Opposing	Estimated Capacity AM
Major 1 RT	395	365	1199
Minor LT	370	365	653
Minor Straight	-	-	-
Minor RT	116	1320	69
Major 2 LT	282	-	-
Major 2 Straight	365	-	-
Major 1 Straight	560	-	-

	Main flow	Opposing	Estimated Capacity PM
Major 1 RT	389	523	1006
Minor LT	352	523	502
Minor Straight	-	-	-
Minor RT	107	1312	70
Major 2 LT	172	-	-
Major 2 Straight	523	-	-
Major 1 Straight	399	-	-

Detailed Early Junction Performance Assessment

Site 82 - Mountessing Road / A129 London Road

			Dedicated	No. Lanes	AM		PM	
Approach/Movement	Entry/Opposing	Lanes	RT lane	Crossing	Flow (PCU/h)	RFC	Flow (PCU/h)	RFC
Major 2-Ahead	Opposing	1		0	-	0.20	-	0.29
	Entry	1		-	365		523	
Major 2-Left Turn	Opposing	1		0	-		-	
	Entry	1		-	282		172	
Minor-Left Turn	Opposing	1		1	365	0.57	523	0.70
	Entry	1		-	370		352	
Minor-Right Turn	Opposing	2		3	1320	1.68	1312	1.52
	Entry	1		-	116		107	
Major 1 - Ahead	Opposing	1	1.0	0	-	0.31	-	0.22
	Entry	1		-	560		399	
Major 1-Right Turn	Opposing	1		1	365	0.33	523	0.39
	Entry	1		-	395		389	

F.7 Thurrock

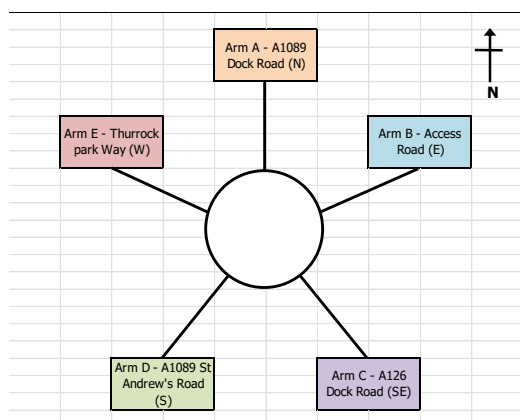
Table F.4 Thurrock capacity preliminary assessment

Junction ID	Location	Junction type	Preliminary Assessment	Comments	Modelled
Site 85	A13 Stanford le Hope Bypass / A1013 Stanford Rd	Grade separated Roundabout	No	Grade separated roundabouts need to be modelled to estimate queues and if these queues impact the mainline traffic	Yes
Site 88	A1013 Stanford Road / Buckingham Hill Road	Signalised	No	Signalised or partially signalised junctions need to be modelled to test any potential optimisation	Yes
Site 89	A1089 Dock Approach Road / Thurrock Parkway	Roundabout	Yes	Model required, capacity issues identified	Yes
Site 90	M25 J30	Signalised Roundabout	No	Signalised or partially signalised junctions need to be modelled to test any potential optimisation	Yes

Site 89 -A1089 Dock Approach Road / Thurrock Parkway – Multi-modal Scenario 1

Site 89
A1089 Asda Roundabout Multimodal Scenario 1

Site 89 - A1089 Asda Roundabout Multimodal Scenario 1



Opposing traffic

Arm										
A	B-B	C-B	C-C	D-B	D-C	D-D	E-B	E-C	E-D	E-E
B	A-A	A-C	A-D	A-E	C-C	D-C	D-D	E-C	E-D	E-E
C	A-A	A-D	A-E	B-A	B-B	B-D	B-E	D-D	E-D	E-E
D	A-A	A-E	B-A	B-B	B-E	C-A	C-B	C-C	C-E	E-E
E	A-A	B-A	B-B	C-A	C-B	C-C	D-A	D-B	D-C	D-D

Peak year 2028

AM	07:15						Opposing
	A	B	C	D	E	Total	
A	3	43	483	1488	365	2382	238
B	52	0	2	6	2	62	2574
C	400	2	0	35	127	565	2057
D	1534	0	17	28	51	1630	958
E	215	1	77	106	7	406	2036
Total	2204	46	579	1664	553	5046	

PM	15:15						Opposing
	A	B	C	D	E	Total	
A	8	73	420	1428	373	2303	355
B	65	0	4	9	5	83	2565
C	389	2	0	16	134	541	2018
D	1621	16	45	53	101	1837	990
E	355	1	161	63	14	596	2199
Total	2439	93	630	1570	628	5359	

Detailed Early Roundabout Performance Assessment

Site 89 - A1089 Asda Roundabout Multimodal Scenario 1

ARM	Entry/Circulating	Lanes	Flow (PCU/h)	AM			Flow (PCL)	PM		
				Capacity	RFC			Capacity	RFC	
Arm A	Circulating	2	238				355			
	Entry	3	2382	1424	1.67		2303	1382	1.67	
Arm B	Circulating	2	2574				2565			
	Entry	2	62	120	0.52		83	124	0.67	
Arm C	Circulating	2	2057				2018			
	Entry	2	565	274	2.07		541	293	1.85	
Arm D	Circulating	2	958				990			
	Entry	2	1630	1316	1.24		1837	1298	1.42	
Arm E	Circulating	2	2036				2199			
	Entry	2	406	393	1.03		596	321	1.85	

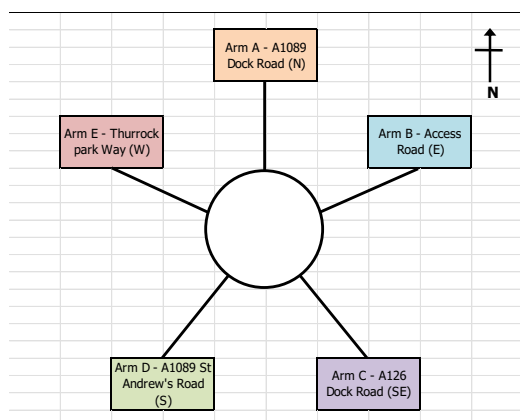
Geometry

	Geometry						DMRB Parameters							
	v	e	l'	r	D	φ	k	F	fc	td	M	x2	S	k
Arm A	7	7	0.0000001	138	112	18.50	0.711	2121.000	0.504	1.000	2440.602	7.000	0.000	0.711
Arm B	3.8	8.7	13.9	46	112	20.00	0.715	1849.078	0.653	1.401	0.247	6.103	0.564	0.715
Arm C	3.2	7.2	25.7	20	112	23.50	0.723	1778.649	0.681	1.491	0.018	5.870	0.249	0.723
Arm D	7	9.5	9.5	47	112	37.00	0.738	2532.214	0.781	1.393	0.273	8.357	0.421	0.738
Arm E	3.5	8.5	14.7	53	112	24.50	0.724	1785.923	0.610	1.334	0.497	5.894	0.544	0.724

Site 89 -A1089 Dock Approach Road / Thurrock Parkway – Multi-modal Scenario 2

Site 89
A1089 Asda Roundabout Multimodal Scenario 2

Site 89 - A1089 Asda Roundabout Multimodal Scenario 2



Opposing traffic

Arm										
A	B-B	C-B	C-C	D-B	D-C	D-D	E-B	E-C	E-D	E-E
B	A-A	A-C	A-D	A-E	C-C	D-C	D-D	E-C	E-D	E-E
C	A-A	A-D	A-E	B-A	B-B	B-D	B-E	D-D	E-D	E-E
D	A-A	A-E	B-A	B-B	B-E	C-A	C-B	C-C	C-E	E-E
E	A-A	B-A	B-B	C-A	C-B	C-C	D-A	D-B	D-C	D-D

Peak year 2028

AM 07:15							Opposing
	A	B	C	D	E	Total	
A	3	43	483	1528	365	2422	238
B	52	0	2	6	2	62	2614
C	400	2	0	35	127	565	2097
D	1574	0	17	28	51	1670	958
E	215	1	77	106	7	406	2076
Total	2244	46	579	1704	553	5125	

PM 15:15							Opposing
	A	B	C	D	E	Total	
A	8	73	420	1408	373	2342	355
B	65	0	4	9	5	83	2605
C	389	2	0	16	134	541	2058
D	1661	16	45	53	101	1877	990
E	355	1	161	63	14	596	2239
Total	2479	93	630	1610	628	5439	

Detailed Early Roundabout Performance Assessment

Site 89 - A1089 Asda Roundabout Multimodal Scenario 2

ARM	Entry/Circulating	Lanes	Flow (PCU/h)	AM		Flow (PCL)	PM	
				Capacity	RFC		Capacity	RFC
Arm A	Circulating	2	238			355		
	Entry	3	2422	1424	1.70	2342	1382	1.69
Arm B	Circulating	2	2614			2605		
	Entry	2	62	101	0.61	83	105	0.79
Arm C	Circulating	2	2097			2058		
	Entry	2	565	254	2.23	541	273	1.98
Arm D	Circulating	2	958			990		
	Entry	2	1670	1316	1.27	1877	1298	1.45
Arm E	Circulating	2	2076			2239		
	Entry	2	406	376	1.08	596	304	1.96

Geometry

	Geometry						DMRB Parameters							
	v	e	l'	r	D	φ	k	F	fc	td	M	x2	S	k
Arm A	7	7	0.0000001	138	112	18.50	0.711	2121.000	0.504	1.000	2440.602	7.000	0.000	0.711
Arm B	3.8	8.7	13.9	46	112	20.00	0.715	1849.078	0.653	1.401	0.247	6.103	0.564	0.715
Arm C	3.2	7.2	25.7	20	112	23.50	0.723	1778.649	0.681	1.491	0.018	5.870	0.249	0.723
Arm D	7	9.5	9.5	47	112	37.00	0.738	2532.214	0.781	1.393	0.273	8.357	0.421	0.738
Arm E	3.5	8.5	14.7	53	112	24.50	0.724	1785.923	0.610	1.334	0.497	5.894	0.544	0.724

Abbreviations

Abbreviation	Full Reference
DCO	Development Consent Order
DMRB	Design Manual for Roads and Bridges
TA	Transport Assessment
V/C	Volume to capacity

Glossary

Term	Definition
Development Consent Order	A statutory instrument which grants consents and other rights to build a Nationally Significant Infrastructure Project, as defined by the Planning Act 2008.
Priority junction	Intersection where vehicles in one road (major road) have the priority over the vehicles in the other (side road), i.e. vehicles on the side road need to yield to traffic on the major road.
Transport Assessment	Transport Assessment is a comprehensive and systematic process that sets out transport issues relating to a proposed development. It identifies what measures will be taken to deal with the anticipated transport effects of the Project. It is separate to Chapter 16: Traffic and Transport (document reference 6.16).

Bibliography

National Highways (2023) *Design Manual for Roads and Bridges (DMRB) CD 116 Geometric Design of Roundabouts*

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