

Naas - Manual Traffic Survey, Tuesday 7th February 2012

Produced by Streetwise Ser



Junction: (1) A - N7 Off Slip

Approach: A - N7 Off Slip (One-Way Southbound)

TIME	Left to B - Main Street			S/B to C - Johnston			Right to D - N7 On Slip			Last Right to E - Link Road			Turns to A - N7 Off Slip (BANK)		
	LIGHT	HEAVY	TOTAL	LIGHT	HEAVY	TOTAL	LIGHT	HEAVY	TOTAL	LIGHT	HEAVY	TOTAL	LIGHT	HEAVY	TOTAL
0700 - 0715	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0
0715 - 0730	0	0	0	2	0	2	0	0	0	5	0	5	0	0	0
0730 - 0745	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0745 - 0800	1	0	1	10	2	12	0	0	0	4	1	5	0	0	0
Hourly Total	1	0	1	14	2	16	0	0	0	9	1	10	0	0	0
0800 - 0815	0	0	0	14	0	14	0	0	0	1	0	1	0	0	0
0815 - 0830	2	0	2	19	0	19	0	0	0	0	0	0	0	0	0
0830 - 0845	2	0	2	15	0	15	0	0	0	6	0	6	0	0	0
0845 - 0900	1	0	1	19	11	30	0	0	0	12	0	12	0	0	0
Hourly Total	5	0	5	67	11	78	0	0	0	19	0	19	0	0	0
0900 - 0915	4	0	4	14	0	14	0	0	0	7	0	7	0	0	0
0915 - 0930	4	0	4	12	2	14	0	0	0	4	1	5	0	0	0
0930 - 0945	5	0	5	6	0	6	0	0	0	4	0	4	0	0	0
0945 - 1000	2	0	2	9	2	11	0	0	0	4	2	6	0	0	0
Hourly Total	15	0	15	43	4	47	0	0	0	19	3	22	0	0	0
1000 - 1015	2	0	2	7	1	8	0	0	0	9	0	9	0	0	0
1015 - 1030	1	0	1	8	2	10	0	0	0	3	0	3	0	0	0
1030 - 1045	2	0	2	10	0	10	1	0	1	7	0	7	0	0	0
1045 - 1100	1	0	1	4	1	5	0	0	0	3	0	3	0	0	0
Hourly Total	6	0	6	29	4	33	1	0	1	22	0	22	0	0	0
1100 - 1115	0	0	0	7	1	8	0	0	0	5	1	6	0	0	0
1115 - 1130	2	0	2	4	1	5	0	1	1	2	0	2	0	0	0
1130 - 1145	2	0	2	8	0	8	0	0	0	4	0	4	0	0	0
1145 - 1200	1	0	1	9	0	9	0	0	0	9	0	9	0	0	0
Hourly Total	5	0	5	28	2	30	0	1	1	20	1	21	0	0	0
1200 - 1215	2	0	2	6	1	7	0	0	0	8	0	8	0	0	0
1215 - 1230	2	0	2	10	0	10	0	0	0	3	1	4	0	0	0
1230 - 1245	1	0	1	12	0	12	0	0	0	7	0	7	0	0	0
1245 - 1300	2	0	2	8	0	8	0	0	0	5	0	5	0	0	0
Hourly Total	7	0	7	36	1	37	0	0	0	23	1	24	0	0	0
1300 - 1315	1	0	1	14	0	14	0	0	0	6	0	6	0	0	0
1315 - 1330	5	0	5	13	0	13	0	0	0	7	0	7	0	0	0
1330 - 1345	3	0	3	15	1	16	0	0	0	8	1	9	0	0	0
1345 - 1400	4	0	4	12	1	13	0	0	0	7	1	8	0	0	0
Hourly Total	13	0	13	54	2	56	0	0	0	30	2	32	0	0	0
1400 - 1415	5	0	5	17	0	17	1	0	1	9	0	9	0	0	0
1415 - 1430	6	0	6	12	3	15	0	0	0	7	3	10	0	0	0
1430 - 1445	3	0	3	14	1	15	0	0	0	8	1	9	0	0	0
1445 - 1500	5	0	5	18	0	18	0	0	0	10	0	10	0	0	0
Hourly Total	19	0	19	61	4	65	1	0	1	34	4	38	0	0	0
1500 - 1515	5	0	5	12	0	12	0	0	0	7	0	7	0	0	0
1515 - 1530	5	0	5	14	0	14	0	0	0	8	0	8	0	0	0
1530 - 1545	6	0	6	9	1	10	0	0	0	7	1	8	0	0	0
1545 - 1600	9	0	9	19	1	20	1	0	1	10	1	11	0	0	0
Hourly Total	25	0	25	54	2	56	1	0	1	32	2	34	0	0	0
1600 - 1615	2	0	2	24	1	25	0	0	0	10	1	11	0	0	0
1615 - 1630	3	1	4	20	1	21	0	0	0	13	1	14	0	0	0
1630 - 1645	1	0	1	26	0	26	0	0	0	14	0	14	0	0	0
1645 - 1700	3	0	3	37	1	38	0	0	0	19	1	20	0	0	0
Hourly Total	9	1	10	109	3	112	0	0	0	56	3	59	0	0	0
1700 - 1715	5	1	6	38	0	38	0	0	0	20	0	20	0	0	0
1715 - 1730	2	0	2	40	0	40	0	0	0	20	0	20	0	0	0
1730 - 1745	3	0	3	42	0	42	0	0	0	22	0	22	0	0	0
1745 - 1800	9	0	9	47	0	47	1	0	1	21	0	21	0	0	0
Hourly Total	19	1	20	167	0	167	1	0	1	83	0	83	0	0	0
1800 - 1815	4	0	4	40	0	40	0	0	0	21	1	22	0	0	0
1815 - 1830	4	0	4	23	0	23	0	0	0	20	0	20	0	0	0
1830 - 1845	7	0	7	43	0	43	0	0	0	15	0	15	0	0	0
1845 - 1900	6	0	6	38	0	38	0	0	0	11	0	11	0	0	0
Hourly Total	21	0	21	144	0	144	0	0	0	67	1	68	0	0	0
TOTAL	145	2	147	806	35	841	4	1	5	414	18	432	0	0	0

Appendix A
MCC Junction Counts

Naas - Manual Traffic Survey, Tuesday 7th February 2012

Produced by Streetwise Sens



Junction: (A) A - At/ Off Slip 15 : Merewell Road / F - At/ On Slip

Approach: A - AT/ Off Slip (One-Way Southbound)

Table with 17 columns: TIME, LIGHT, HEAVY, TRUCK, TOTAL, SOUTH (A, B, C, D), MEDIUM (A, B, C, D), LIGHT, HEAVY, TRUCK, TOTAL, NORTH (A, B, C, D), MEDIUM (A, B, C, D), LIGHT, HEAVY, TRUCK, TOTAL, URBAN (A, B, C, D), HEAVY, TRUCK, TOTAL.

Naas - Manual Traffic Survey, Tuesday 7th February 2012

Produced by Streetwise Sens



Junction: (A) A - At/ Off Slip 15 : Merewell Road / F - At/ On Slip

Approach: B - Unnamed Road East

Table with 17 columns: TIME, LIGHT, HEAVY, TRUCK, TOTAL, SOUTH (A, B, C, D), MEDIUM (A, B, C, D), LIGHT, HEAVY, TRUCK, TOTAL, NORTH (A, B, C, D), MEDIUM (A, B, C, D), LIGHT, HEAVY, TRUCK, TOTAL, URBAN (A, B, C, D), HEAVY, TRUCK, TOTAL.

Neas - Manual Traffic Survey, Tuesday 17th April 2012

Produced by Streetwise Services Ltd.



January (7) A - M 01 Sep - R- R45 Bar / C - M7 Access

Approach: C - M7 Access Road

Table with 12 columns: REF ID, CAR, LCV, CSO, CRY, BUS, TOTAL, FILL LANE TO E, R45 WAYS, SMOOTH LANE TO E, R45 WAYS, NEBS A, M7 OF BR, BARRED, FILL LANE TO E, R45 WAYS, SMOOTH LANE TO E, R45 WAYS, NEBS A, M7 OF BR, BARRED, R45 TO B, R45 Bar, CAR, LCV, CSO, CRY, BUS, TOTAL, U-Lane to B, R45 WAYS, NEBS A, M7 OF BR, BARRED, FILL LANE TO E, R45 WAYS, SMOOTH LANE TO E, R45 WAYS, NEBS A, M7 OF BR, BARRED, R45 TO B, R45 Bar, CAR, LCV, CSO, CRY, BUS, TOTAL. Rows include various REF IDs and a final TOTAL row.

Neas - Manual Traffic Survey, Tuesday 17th April 2012

Produced by Streetwise Services Ltd.



January (7) A - M 01 Sep - R- R45 Bar / C - M7 Access

Approach: D - R445 West

Table with 12 columns: REF ID, CAR, LCV, CSO, CRY, BUS, TOTAL, FILL LANE TO E, R445 WEST, SMOOTH LANE TO A, M7 OF BR, BARRED, FILL LANE TO E, R445 WEST, SMOOTH LANE TO A, M7 OF BR, BARRED, R445 TO B, R445 West, CAR, LCV, CSO, CRY, BUS, TOTAL, U-Lane to B, R445 West, NEBS A, M7 OF BR, BARRED, FILL LANE TO E, R445 WEST, SMOOTH LANE TO A, M7 OF BR, BARRED, R445 TO B, R445 West, CAR, LCV, CSO, CRY, BUS, TOTAL. Rows include various REF IDs and a final TOTAL row.

Naas - Manual Traffic Survey, Tuesday 17th April 2012

Produced by Streetwise Services Ltd.

Approach: A - N7 Bluetooth location 1

Table with columns: TIME, LANE, LNW, LWD, LCRW, LCRWR, BUS, TOTAL, CWS, LW, OCLR, OCLRW, BUS, TOTAL. Data rows include hourly totals and detailed lane counts for various times from 0000-0015 to 2355-2400.

Naas - Manual Traffic Survey, Tuesday 17th April 2012

Produced by Streetwise Services Ltd.

Approach: A - M7 (Bluetooth location 2)

Table with columns: TIME, LANE, LNW, LWD, LCRW, LCRWR, BUS, TOTAL, CWS, LW, OCLR, OCLRW, BUS, TOTAL. Data rows include hourly totals and detailed lane counts for various times from 0000-0015 to 2355-2400.

Naas - Manual Traffic Survey, Tuesday 17th April 2012

Produced by Streetwise Services Ltd.



Approach: C - R445 East (Bluetooth location 3C)

Table with columns for Time, Lane (Left, Right), Occur, and Total counts for various road sections (e.g., 0000-0015, 0015-0030, etc.).

TOTAL: 896 1164 313 419 87 10699 8618 1077 284 432 82 10613

Naas - Manual Traffic Survey, Tuesday 17th April 2012

Produced by Streetwise Services Ltd.

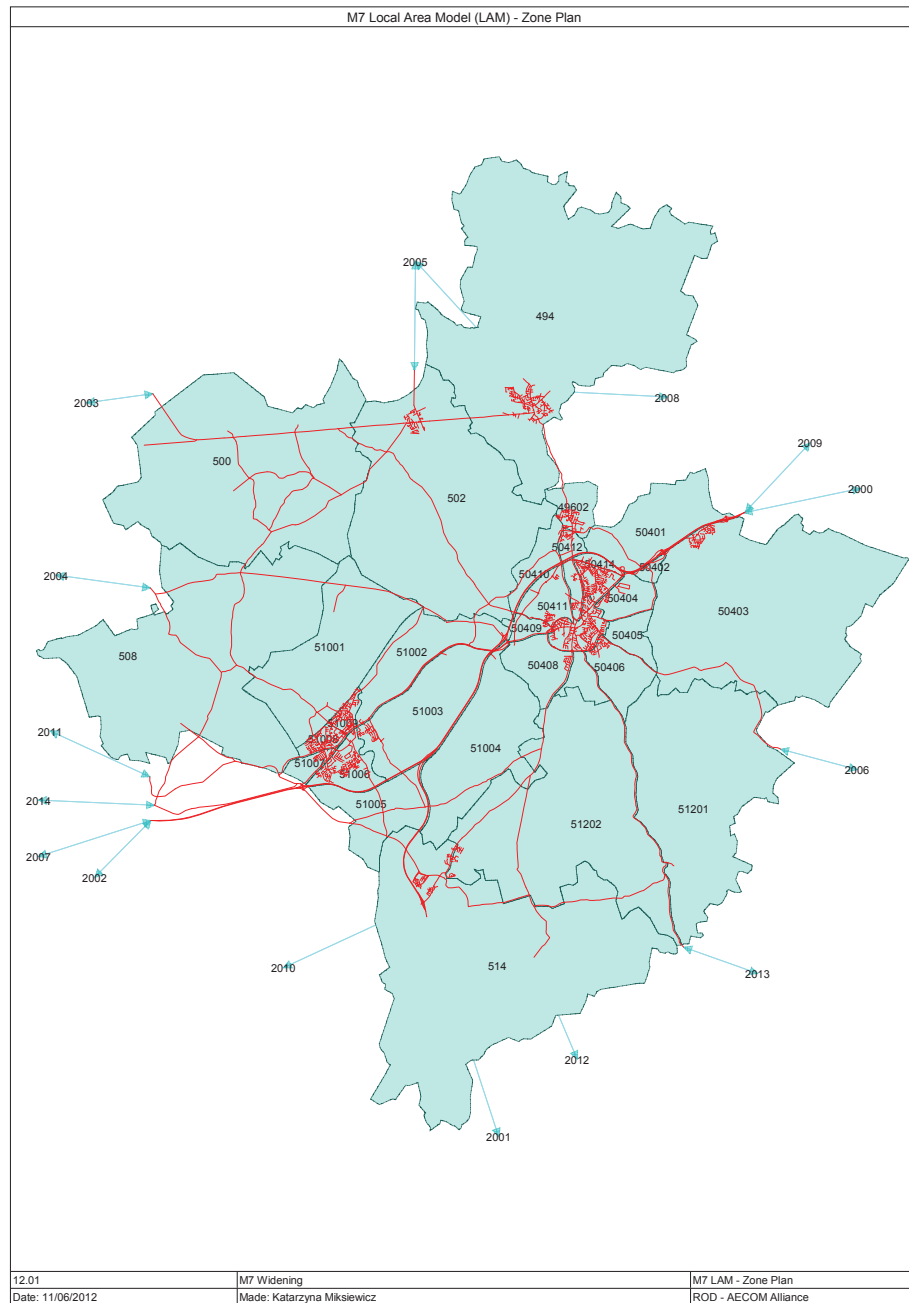


Approach: A - M7 (Bluetooth location 4)

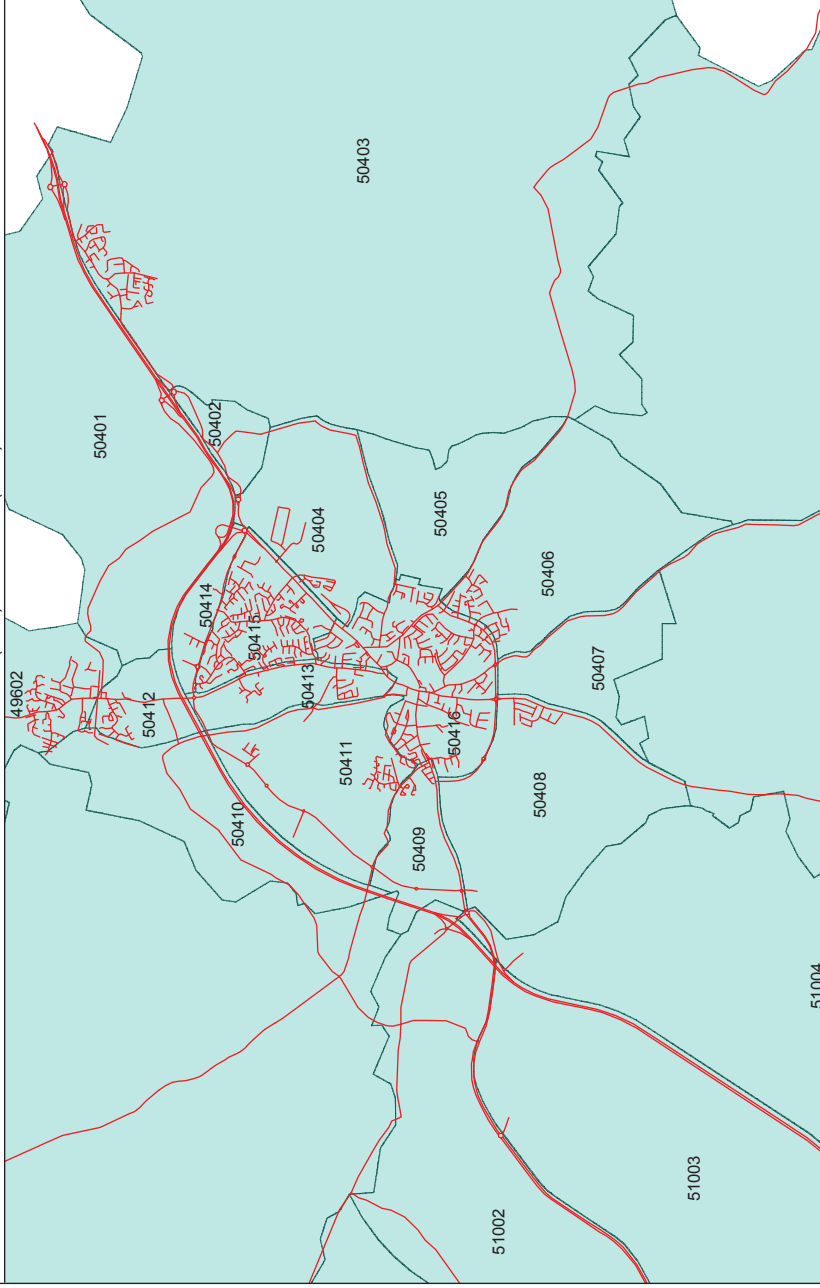
Table with columns for Time, Lane (Left, Right), Occur, and Total counts for various road sections (e.g., 0000-0015, 0015-0030, etc.).

TOTAL: 2980 2123 864 2074 122 29168 22816 2086 965 2009 130 28778

Appendix B Network Zone Plan



M7 Local Area Model (LAM) - Zone Plan (Naas)



12.01

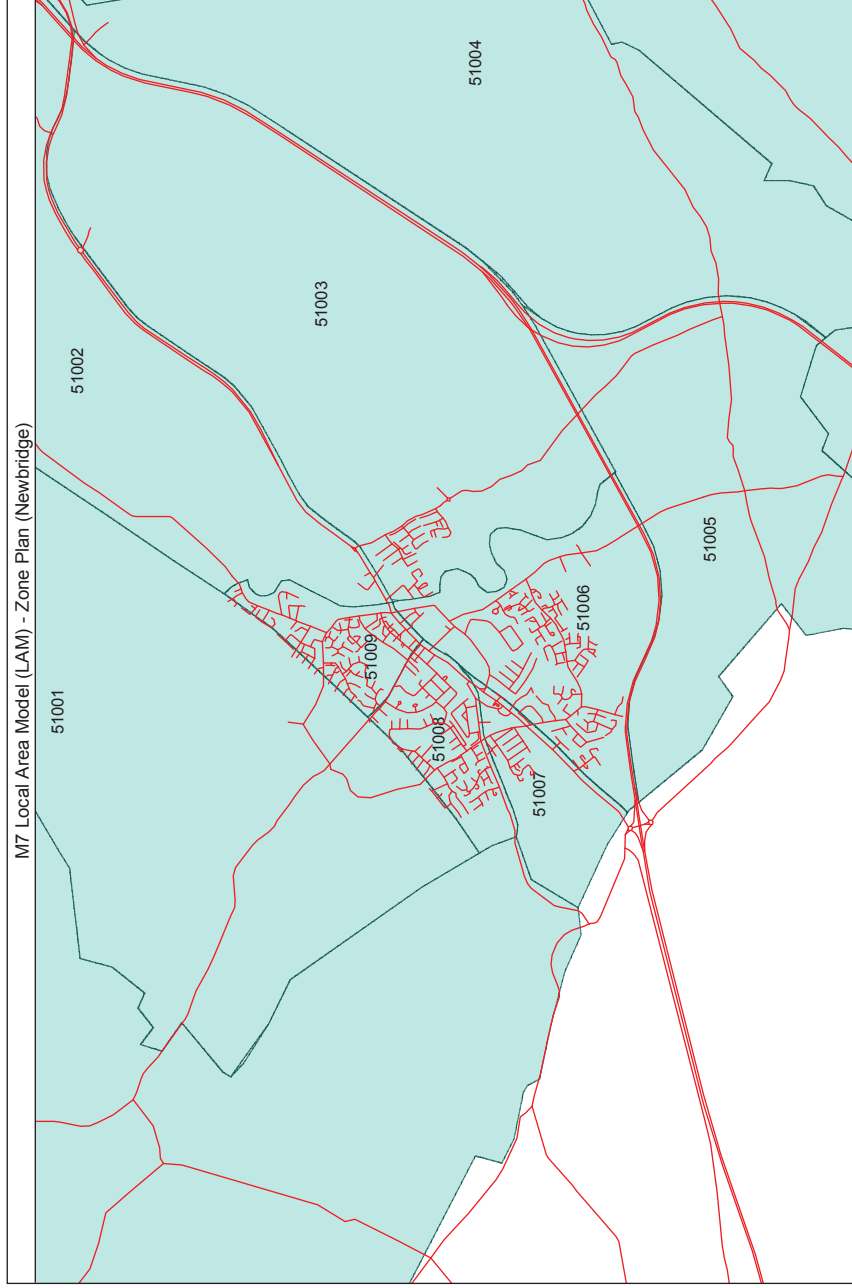
M7 Widening

Made: Katarzyna Miksiewicz

M7 LAM - Zone Plan (Naas)
ROD - AECOM Alliance

Date: 11/06/2012

M7 Local Area Model (LAM) - Zone Plan (Newbridge)



12.01

M7 Widening

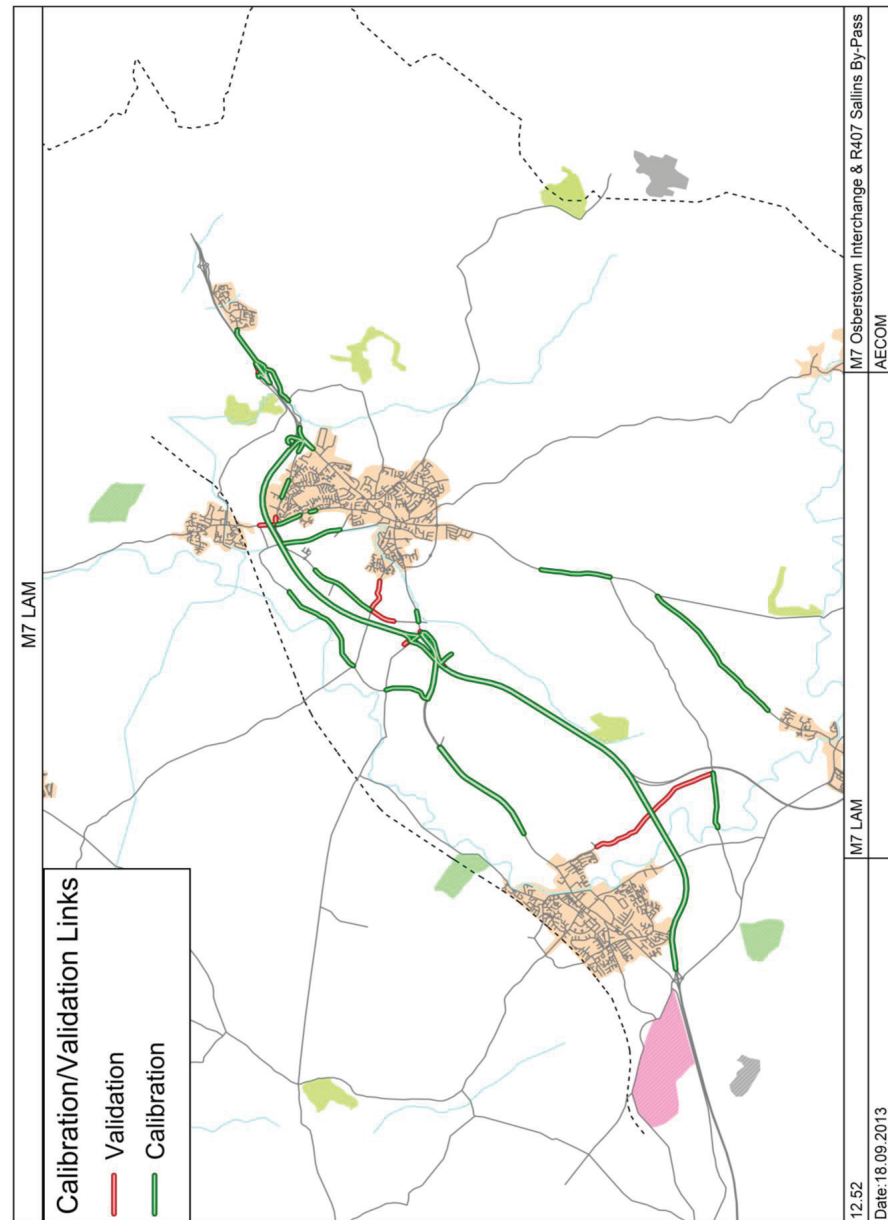
Made: Katarzyna Miksiewicz

M7 LAM - Zone Plan (Newbridge)
ROD - AECOM Alliance

Date: 11/06/2012

Appendix C

Calibration/Validation Link Locations



Appendix D Calibration Data

AM Peak Light Traffic

Link No.	Link Description	Link Capacity (PCUs)	Observed		Modelled		Difference	
			Light Traffic	Light Traffic	Light Traffic	Light Traffic	Light Traffic	Light Traffic
1	M7 WB On-Ramp	1800	71.00	81.00	10.00			
2	L2014 Kill Road WB	1000	221.00	200.00	-21.00			
3	L2014 Kill Road EB	1000	125.00	126.00	1.00			
4	R445 Dublin Road NB	2400	852.00	813.00	-39.00			
5	R445 Dublin Road SB	1200	557.00	563.00	6.00			
6	M7 SB Off-Ramp	1800	406.00	450.00	44.00			
7	M7 SB On-Ramp	1800	586.00	641.00	55.00			
8	M7 NB Off-Ramp	1800	613.00	746.00	135.00			
9	Newhall Overbridge EB	1100	620.00	609.00	-11.00			
10	Newhall Overbridge WB	1100	567.00	640.00	73.00			
11	L2031 SB	700	303.00	241.00	-62.00			
12	L2031 NB	700	76.00	56.00	-20.00			
13	Monread Rd. WB	1200	456.00	379.00	-77.00			
14	Monread Rd. EB	1200	611.00	556.00	-55.00			
15	M7 WB Off-Ramp	1800	79.00	82.00	3.00			
16	M7 WB On-Ramp	1000	37.00	44.00	7.00			
17	Kerdlifstown Rd. WB	1000	154.00	165.00	11.00			
18	Kerdlifstown Rd. EB	1200	676.00	662.00	-14.00			
19	Monread Rd. EB	1200	519.00	502.00	-17.00			
20	Monread Rd. WB	1200	135.00	157.00	22.00			
21	L2014-Johnstown WB	1200	141.00	153.00	12.00			
22	Millennium Rd. NB	1200	532.00	424.00	-108.00			
23	Millennium Rd. SB	1200	468.00	495.00	27.00			
24	Millennium Rd. EB	1200	487.00	470.00	-17.00			
25	Millennium Rd. WB	1200	622.00	506.00	-116.00			
26	R407 NB	1200	489.00	386.00	-103.00			
27	R407 SB	1200	424.00	409.00	-15.00			
28	M7 EB at Johnstown	6100	3765.00	3906.00	141.00			
29	M7 On-Ramp WB	1800	162.00	229.00	67.00			
30	M7 Naas Bypass EB	4100	3169.00	3316.00	147.00			
31	M7-On Ramp SB	1800	470.00	454.00	-16.00			
32	M7-On Ramp NB	1800	37.00	30.00	-7.00			

GEH	RESULT = 96.77%		CLASS TEST	RESULT = 91.94%		ACT DIFF	FACTOR
	COUNT	GEH TEST		Target Difference	Flow Test		
1.15	1	1	2	100	1	10	1.1408
1.45	1	1	2	100	1	-21	0.9050
0.09	1	1	2	100	1	1	1.0080
1.35	1	1	1	128	1	-39	0.9542
0.25	1	1	2	100	1	6	1.0108
2.13	1	1	2	100	1	44	1.1084
2.22	1	1	2	100	1	55	1.0939
5.18	1	0	2	100	0	135	1.2202
0.44	1	1	2	100	1	-11	0.9823
2.97	1	1	2	100	1	73	1.1287
3.76	1	1	2	100	1	-62	0.7954
2.69	1	1	2	100	1	-22	0.7179
3.77	1	1	2	100	1	-77	0.8311
2.19	1	1	2	100	1	-53	0.9133
0.33	1	1	2	100	1	3	1.0380
1.10	1	1	2	100	1	7	1.1892
0.87	1	1	2	100	1	11	1.0714
0.62	1	1	2	100	1	-16	0.9764
0.75	1	1	2	100	1	-17	0.9672
1.82	1	1	2	100	1	22	1.1630
0.99	1	1	2	100	1	12	1.0851
4.94	1	1	2	100	0	-108	0.7970
1.23	1	1	2	100	1	27	1.0577
0.78	1	1	2	100	1	-17	0.8651
4.88	1	1	2	100	0	-116	0.8135
4.82	1	1	2	100	0	-101	0.7935
0.73	1	1	2	100	1	-15	0.9646
2.28	1	1	3	800	1	141	1.0375
4.79	1	1	2	100	1	67	1.4136
2.58	1	1	3	800	1	147	1.0454
0.74	1	1	2	100	1	-16	0.9660
1.21	1	1	2	100	1	-7	0.8108

Table with columns: Link No., Link Description, Link Capacity (PCUs), Observed Light Traffic, Modelled Light Traffic, Difference, Average GEH, Count, GEH Test, Class Test, Target Difference, Flow Test, ACT Diff, Factor. Includes rows 33-62 and a summary row with 55 total.

Inter Peak Light Traffic

Table with columns: Link No., Link Description, Link Capacity (PCUs), Observed Light Traffic, Modelled Light Traffic, Difference, Average GEH, Count, GEH Test, Class Test, Target Difference, Flow Test, ACT Diff, Factor. Includes rows 1-32 and a summary row with 85.00% total.

33	M7 NB at Newbridge	3600	1361.00	1297.00	-64.00	1.76	1	1	1	1	204	1	-64	0.9530
34	R445 Newbridge Rd NB	3400	567.00	627.00	60.00	2.46	1	1	1	2	100	1	60	1.1058
35	M7 SB at Newbridge	3600	1880.00	1948.00	68.00	1.55	1	1	1	1	282	1	68	1.0362
36	R407 SB at Sallins Jnct	1200	405.00	455.00	50.00	2.41	1	1	1	2	100	1	50	1.1235
37	R407 NB at Sallins Jnct	1200	464.00	453.00	-11.00	0.51	1	1	1	2	100	1	-11	0.9763
38	M7 NB at Lewinstown	4100	1903.00	1954.00	51.00	1.16	1	1	1	1	285	1	51	1.0268
39	M7 EB On-Ramp	1800	652.00	668.00	16.00	0.62	1	1	1	2	100	1	16	1.0245
40	M7 EB Off-Ramp	1800	171.00	174.00	3.00	0.23	1	1	1	2	100	1	3	1.0175
41	M7 Naas Bypass WB	4100	3619.00	3802.00	183.00	3.00	1	1	1	3	800	1	183	1.0506
42	R445 Newbridge Rd SB	3400	623.00	649.00	26.00	1.03	1	1	1	2	100	1	26	1.0417
43	M7 SB at Lewinstown	4100	3744.00	3726.00	-18.00	0.29	1	1	1	3	800	1	-18	0.9952
44	R445 Newbridge Rd WB	3400	683.00	613.00	-70.00	2.75	1	1	1	2	100	1	-70	0.8975
45	R445 Newbridge Rd EB	3400	829.00	823.00	-6.00	0.21	1	1	1	1	124	1	-6	0.9928
46	R445 Johnstown Rd EB	1200	183.00	194.00	11.00	0.80	1	1	1	2	100	1	11	1.0601
47	R445 Johnstown Rd WB	2400	1225.00	1171.00	-54.00	1.56	1	1	1	1	184	1	-54	0.9559
48	R448 Kilcullen Rd. SB	1200	299.00	254.00	-45.00	2.71	1	1	1	2	100	1	-45	0.8485
49	R448 Kilcullen Rd. NB	1200	154.00	133.00	-21.00	1.75	1	1	1	2	100	1	-21	0.8636
50	M7 WB at Johnstown	6100	4130.00	4239.00	109.00	1.69	1	1	1	3	800	1	109	1.0264
51	L2006 EB	700	78.00	59.00	-19.00	2.30	1	1	1	2	100	1	-19	0.7564
52	L2006 WB	700	91.00	107.00	16.00	1.61	1	1	1	2	100	1	16	1.1758
53	L2032 Alghavan Rd. WB	1000	206.00	162.00	-44.00	3.24	1	1	1	2	100	1	-44	0.7864
54	L2032 Alghavan Rd. EB	1000	94.00	87.00	-7.00	0.74	1	1	1	2	100	1	-7	0.9255
55	Canal Bank Rd. NB	700	58.00	50.00	-8.00	1.09	1	1	1	2	100	1	-8	0.8621
56	Canal Bank Rd. SB	700	24.00	30.00	6.00	1.15	1	1	1	2	100	1	6	1.2500
57	R445 Naas Rd. EB	1200	590.00	625.00	35.00	1.42	1	1	1	2	100	1	35	1.0593
58	R445 Naas Rd. WB	1200	421.00	509.00	88.00	4.08	1	1	1	2	100	1	88	1.2090
59	R448 Kilcullen Rd NB	1200	212.00	247.00	35.00	2.31	1	1	1	2	100	1	35	1.1651
60	R448 Kilcullen Rd SB	1200	454.00	351.00	-103.00	5.13	1	0	2	100	0	-103	0.7731	
61	Newtown Rd. EB	1000	26.00	21.00	-5.00	1.16	1	1	1	2	100	1	-5	1.3125
62	Newtown Rd. WB	1000	26.00	36.00	10.00	1.80	1	1	1	2	100	1	10	1.3846
			42978	42452	-526		62	55			100	55		

**Average
GEH**
2.284

Appendix E Validation Data

AM Peak Light Traffic

Link No.	Link Description	Link Capacity (PCU's)	Observed Light Traffic	Modelled Light Traffic	Difference Light Traffic	GEH	RESULT = 95.00%		CLASS TEST	Target Difference	RESULT = 85.00%		FACTO R
							COUNT	GEH TEST			Flow Test	ACT DIFF	
1	Johnstown Overbridge NB	1000	194.00	171.00	-23.00	1.70	1	1	2	100	1	-23	0.8814
2	Johnstown Overbridge SB	1000	95.00	95.00	0.00	0.00	1	1	2	100	1	0	1.0000
3	M7 SB On-Ramp	1800	411.00	444.00	33.00	1.60	1	1	2	100	1	33	1.0803
4	R445 Neas Rd. WB	1500	839.00	791.00	-48.00	1.68	1	1	1	126	1	-48	0.9428
5	R445 Neas Rd. EB	1500	804.00	799.00	-5.00	0.18	1	1	1	121	1	-5	0.9938
6	Monread Rd. WB	1200	500.00	480.00	-20.00	0.90	1	1	2	100	1	-20	0.9600
7	Monread Rd. EB	1200	630.00	658.00	28.00	1.10	1	1	2	100	1	28	1.0444
8	M7 On-ramp EB	1800	278.00	268.00	-10.00	0.61	1	1	2	100	1	-10	0.9640
9	Millennium Rd. NB	1200	368.00	333.00	-35.00	1.87	1	1	2	100	1	-35	0.9049
10	Millennium Rd. SB	1200	503.00	454.00	-49.00	2.24	1	1	2	100	1	-49	0.9026
11	R407 Sallins Rd. NB	1200	650.00	644.00	-6.00	0.24	1	1	2	100	1	-6	0.9908
12	R407 Sallins Rd. SB	1200	835.00	709.00	-126.00	4.53	1	1	1	125	0	-126	0.8491
13	M9 NB before Kiltullen	4100	852.00	942.00	90.00	3.01	1	1	1	128	1	90	1.1056
14	M9 SB before Kiltullen	4100	502.00	590.00	88.00	3.77	1	1	2	100	1	88	1.1753
15	R409 Caragh Rd. EB.	1200	324.00	423.00	99.00	5.12	1	0	2	100	1	99	1.3056
16	R409 Caragh Rd. WB.	1200	234.00	286.00	52.00	3.22	1	1	2	100	1	52	1.2222
17	Greatconnell Rd. NB	700	167.00	194.00	27.00	2.01	1	1	2	100	1	27	1.1617
18	Greatconnell Rd. SB	700	45.00	63.00	18.00	2.45	1	1	2	100	1	18	1.4000
19	M7 Business Pk. inbound	1000	213.00	213.00	0.00	0.00	1	1	2	100	1	0	1.0000
20	M7 Business Pk. outbound	1000	45.00	45.00	0.00	0.00	1	1	2	100	1	0	1.0000
			8489	8602	113		20	19			19		

Average GEH 1.811

Average GEH 1.811

AM Peak Heavy Traffic

Link No.	Link Description	Link Capacity (PCU's)	Observed Heavy Traffic	Modelled Heavy Traffic	Difference Heavy Traffic	GEH	RESULT = 95.00%		CLASS TEST	Target Difference	RESULT = 100.00%		FACTO R
							COUNT	GEH TEST			Flow Test	ACT DIFF	
1	Johnstown Overbridge NB	1000	3.00	4.00	1.00	0.535	1	1	2	100	1	1	1.3333
2	Johnstown Overbridge SB	1000	3.00	3.00	0.00	0.000	1	1	2	100	1	0	1.0000
3	M7 SB On-Ramp	1800	32.00	33.00	1.00	0.175	1	1	2	100	1	1	1.0313
4	R445 Neas Rd. WB	1500	57.00	42.00	-15.00	2.132	1	1	2	100	1	-15	0.7368
5	R445 Neas Rd. EB	1500	57.00	63.00	6.00	0.775	1	1	2	100	1	6	1.1053
6	Monread Rd. WB	1200	37.00	25.00	-11.00	1.960	1	1	2	100	1	-11	0.7027
7	Monread Rd. EB	1200	34.00	37.00	3.00	0.535	1	1	2	100	1	3	1.0882
8	M7 On-ramp EB	1800	3.00	4.00	1.00	0.000	1	1	2	100	1	0	1.3333
9	Millennium Rd. NB	1200	24.00	24.00	0.00	0.000	1	1	2	100	1	0	1.0000
10	Millennium Rd. SB	1200	35.00	9.00	-26.00	5.543	1	0	2	100	1	-26	0.2571
11	R407 Sallins Rd. NB	1200	25.00	25.00	-1.00	0.198	1	1	2	100	1	-1	0.9615
12	R407 Sallins Rd. SB	1200	39.00	30.00	-9.00	1.532	1	1	2	100	1	-9	0.7692
13	M9 NB before Kiltullen	4100	54.00	26.00	-26.00	4.061	1	1	2	100	1	-26	0.5185
14	M9 SB before Kiltullen	4100	69.00	117.00	48.00	4.977	1	1	2	100	1	48	1.6857
15	R409 Caragh Rd. EB.	1200	12.00	13.00	1.00	0.283	1	1	2	100	1	1	1.0833
16	R409 Caragh Rd. WB.	1200	4.00	9.00	5.00	1.961	1	1	2	100	1	5	2.2500
17	Greatconnell Rd. NB	700	0.00	9.00	9.00	4.243	1	1	2	100	1	9	#DIV/0!
18	Greatconnell Rd. SB	700	0.00	12.00	12.00	4.899	1	1	2	100	1	12	#DIV/0!
19	M7 Business Pk. inbound	1000	8.00	11.00	3.00	0.973	1	1	2	100	1	3	1.3750
20	M7 Business Pk. outbound	1000	3.00	6.00	3.00	2.132	1	1	2	100	1	3	2.6667
			500	507	7		20	19			20		

Average GEH 1.871

Average GEH 1.871

AM Peak Total Traffic

Link No.	Link Description	Link Capacity (PCU's)	Observed Total Traffic	Modellied Total Traffic	Difference Total Traffic	GEH	90.00%		85.00%		FACTO R		
							COUNT	GEH TEST	CLASS TEST	Target Difference		Flow Test	ACT DIFF
1	Johnstown Overbridge NB	1000	197.00	175.00	-22.00	1.61	1	1	2	100	1	-22	0.8883
2	Johnstown Overbridge SB	1000	96.00	96.00	0.00	0.00	1	1	2	100	1	0	1.0000
3	M7 SB On-Ramp	1800	443.00	477.00	34.00	1.59	1	1	2	100	1	34	1.0767
4	R445 Neas Rd. WB	1500	896.00	833.00	-63.00	2.14	1	1	1	134	1	-63	0.9297
5	R445 Neas Rd. EB	1500	861.00	862.00	1.00	0.03	1	1	1	129	1	1	1.0012
6	Monread Rd. WB	1200	537.00	506.00	-31.00	1.36	1	1	2	100	1	-31	0.9423
7	Monread Rd. EB	1200	664.00	695.00	31.00	1.19	1	1	2	100	1	31	1.0467
8	M7 On-ramp EB	1800	281.00	273.00	-8.00	0.48	1	1	2	100	1	-8	0.9715
9	Millennium Rd. NB	1200	392.00	358.00	-34.00	1.76	1	1	2	100	1	-34	0.9133
10	Millennium Rd. SB	1200	538.00	463.00	-75.00	3.35	1	1	2	100	1	-75	0.8606
11	R407 Sallins Rd. NB	1200	676.00	669.00	-7.00	0.27	1	1	2	100	1	-7	0.9896
12	R407 Sallins Rd. SB	1200	874.00	740.00	-134.00	4.72	1	1	1	131	0	-134	0.8467
13	M9 NB before Kildullen	4100	906.00	970.00	64.00	2.09	1	1	1	136	1	64	1.0706
14	M9 SB before Kildullen	4100	571.00	708.00	137.00	5.42	1	0	2	100	0	137	1.2399
15	R409 Caragh Rd. EB	1200	336.00	437.00	101.00	5.14	1	0	2	100	0	101	1.3006
16	R409 Caragh Rd. WB	1200	238.00	294.00	56.00	3.43	1	1	2	100	1	56	1.2353
17	Greatconnell Rd. NB	700	167.00	202.00	35.00	2.58	1	1	2	100	1	35	1.2096
18	Greatconnell Rd. SB	700	45.00	75.00	30.00	3.87	1	1	2	100	1	30	1.6667
19	M7 Business Pk. inbound	1000	221.00	224.00	3.00	0.20	1	1	2	100	1	3	1.0136
20	M7 Business Pk. outbound	1000	48.00	53.00	5.00	0.70	1	1	2	100	1	5	1.1042
							20	18			17		

Average GEH
2.097

Inter Peak Light Traffic

Link No.	Link Description	Link Capacity (PCU's)	Observed Light Traffic	Modellied Light Traffic	Difference Light Traffic	GEH	100.00%		85.00%		FACTO R		
							COUNT	GEH TEST	CLASS TEST	Target Difference		Flow Test	ACT DIFF
1	Johnstown Overbridge NB	1000	94.00	76.00	-16	1.73	1	1	2	100	1	-16	0.8298
2	Johnstown Overbridge SB	1000	94.00	102.00	8	0.81	1	1	2	100	1	8	1.0851
3	M7 SB On-Ramp	1800	246.00	270.00	24	1.49	1	1	2	100	1	24	1.0976
4	R445 Neas Rd. WB	1500	703.00	710.00	7	0.26	1	1	1	105	1	7	1.0100
5	R445 Neas Rd. EB	1500	629.00	637.00	8	0.32	1	1	2	100	1	8	1.0127
6	Monread Rd. WB	1200	564.00	575.00	11	0.46	1	1	2	100	1	11	1.0195
7	Monread Rd. EB	1200	529.00	558.00	29	1.24	1	1	2	100	1	29	1.0548
8	M7 On-ramp EB	1800	80.00	113.00	33	3.36	1	1	2	100	1	33	1.4125
9	Millennium Rd. NB	1200	267.00	265.00	-2	0.12	1	1	2	100	1	-2	0.9925
10	Millennium Rd. SB	1200	279.00	349.00	70	3.95	1	1	2	100	1	70	1.2509
11	R407 Sallins Rd. NB	1200	647.00	634.00	-13	0.51	1	1	2	100	1	-13	0.9799
12	R407 Sallins Rd. SB	1200	588.00	644.00	56	2.26	1	1	2	100	1	56	1.0952
13	R409 Caragh Rd. EB	1200	184.00	192.00	8	0.56	1	1	2	100	1	8	1.0435
14	R409 Caragh Rd. WB	1200	165.00	215.00	50	3.63	1	1	2	100	1	50	1.3030
15	Greatconnell Rd. NB	700	45.00	36.00	-7	1.09	1	1	2	100	1	-7	0.8444
16	Greatconnell Rd. SB	700	35.00	29.00	-6	1.06	1	1	2	100	1	-6	0.8286
17	M7 Business Pk. inbound	1000	91.00	92.00	1	0.10	1	1	2	100	1	1	1.0110
18	M7 Business Pk. outbound	1000	128.00	130.00	2	0.18	1	1	2	100	1	2	1.0156
							18	18			18		

Average GEH
1.286

Inter Peak Heavy Traffic

Link No.	Link Description	Link Capacity (PCU's)	Observed Heavy Traffic	Modellied		Difference Heavy Traffic	GEH	COUNT	100.00%		CLASS TEST	Target Difference	100.00%		FACTO R
				Heavy Traffic	Total Traffic				RECD =	Flow Test			RECD =	Flow Test	
1	Johnstown Overbridge NB	1000	4.00	3.00	-1.00	0.535	1	1	2	100	1	1	1	0.7500	
2	Johnstown Overbridge SB	1000	3.00	3.00	0.00	0.000	1	1	2	100	1	0	1	1.0000	
3	M7 SB On-Ramp	1800	37.00	36.00	-1.00	0.166	1	1	2	100	1	1	1	1.0278	
4	R445 Naas Rd. WB	1500	48.00	43.00	-5.00	0.741	1	1	2	100	1	1	1	0.8958	
5	R445 Naas Rd. EB	1500	44.00	48.00	4.00	0.590	1	1	2	100	1	1	1	1.0909	
6	Monread Rd. WB	1200	28.00	47.00	19.00	3.103	1	1	2	100	1	1	1	1.6786	
7	Monread Rd. EB	1200	24.00	45.00	21.00	3.575	1	1	2	100	1	1	1	1.8750	
8	M7 On-ramp EB	1800	4.00	4.00	0.00	0.000	1	1	2	100	1	0	1	1.0000	
9	Millennium Rd. NB	1200	33.00	39.00	6.00	1.000	1	1	2	100	1	1	1	1.1818	
10	Millennium Rd. SB	1200	27.00	35.00	8.00	1.437	1	1	2	100	1	1	1	1.2963	
11	R407 Sallins Rd. NB	1200	31.00	45.00	14.00	2.271	1	1	2	100	1	1	1	1.4516	
12	R407 Sallins Rd. SB	1200	29.00	44.00	15.00	2.483	1	1	2	100	1	1	1	1.5172	
13	R409 Caragh Rd. EB	1200	4.00	20.00	16.00	4.619	1	1	2	100	1	1	1	5.0000	
14	R409 Caragh Rd. WB	1200	4.00	11.00	7.00	2.556	1	1	2	100	1	1	1	2.7500	
15	Greatconnell Rd. NB	700	4.00	1.00	-3.00	1.897	1	1	2	100	1	-3	0	0.2500	
16	Greatconnell Rd. SB	700	3.00	2.00	-1.00	0.632	1	1	2	100	1	1	1	0.6667	
17	M7 Business Pk. inbound	1000	8.00	3.00	-5.00	2.132	1	1	2	100	1	1	1	0.3750	
18	M7 Business Pk. outbound	1000	9.00	5.00	-4.00	1.512	1	1	2	100	1	1	1	0.5556	
			343	435	92		18	18					18		

Average GEH
1.625

Inter Peak Total Traffic

Link No.	Link Description	Link Capacity (PCU's)	Observed Total Traffic	Modellied		Difference Total Traffic	GEH	COUNT	100.00%		CLASS TEST	Target Difference	100.00%		FACTO R
				Total Traffic	Total Traffic				RECD =	Flow Test			RECD =	Flow Test	
1	Johnstown Overbridge NB	1000	98.00	81.00	-17.00	1.80	1	1	2	100	1	1	1	0.8265	
2	Johnstown Overbridge SB	1000	97.00	105.00	8.00	0.80	1	1	2	100	1	1	1	1.0625	
3	M7 SB On-Ramp	1800	282.00	307.00	25.00	1.46	1	1	2	100	1	25	1	1.0887	
4	R445 Naas Rd. WB	1500	751.00	752.00	1.00	0.04	1	1	1	113	1	1	1	1.0013	
5	R445 Naas Rd. EB	1500	673.00	685.00	12.00	0.46	1	1	2	100	1	1	1	1.0178	
6	Monread Rd. WB	1200	592.00	622.00	30.00	1.22	1	1	2	100	1	1	1	1.0507	
7	Monread Rd. EB	1200	553.00	603.00	50.00	2.08	1	1	2	100	1	1	1	1.0904	
8	M7 On-ramp EB	1800	84.00	117.00	33.00	3.29	1	1	2	100	1	1	1	1.3929	
9	Millennium Rd. NB	1200	300.00	305.00	5.00	0.29	1	1	2	100	1	1	1	1.0167	
10	Millennium Rd. SB	1200	306.00	384.00	78.00	4.20	1	1	2	100	1	1	1	1.2549	
11	R407 Sallins Rd. NB	1200	678.00	679.00	1.00	0.04	1	1	2	100	1	1	1	1.0015	
12	R407 Sallins Rd. SB	1200	617.00	689.00	72.00	2.82	1	1	2	100	1	1	1	1.1167	
13	R409 Caragh Rd. EB	1200	188.00	212.00	24.00	1.70	1	1	2	100	1	1	1	1.1277	
14	R409 Caragh Rd. WB	1200	169.00	226.00	57.00	4.06	1	1	2	100	1	1	1	1.3373	
15	Greatconnell Rd. NB	700	49.00	40.00	-9.00	1.35	1	1	2	100	1	1	1	0.8163	
16	Greatconnell Rd. SB	700	38.00	31.00	-7.00	1.19	1	1	2	100	1	1	1	0.8158	
17	M7 Business Pk. inbound	1000	99.00	94.00	-5.00	0.51	1	1	2	100	1	1	1	0.9495	
18	M7 Business Pk. outbound	1000	137.00	135.00	-2.00	0.17	1	1	2	100	1	1	1	0.9854	
			5711	6067	356		18	18					18		

Average GEH
1.525

PM Peak Light Traffic

Link No.	Link Description	Link Capacity (PCU's)	Observed Light Traffic	Modelled Light Traffic	Difference Light Traffic	GEH	95.00%		90.00%		FACTO R	
							COUNT	GEH TEST	CLASS TEST	Target Difference		Flow Test
1	Johnstown Overbridge NB	1000	233.00	197.00	-36.00	2.46	1	2	100	1	-36	0.8455
2	Johnstown Overbridge SB	1000	137.00	131.00	-6.00	0.52	1	2	100	1	-6	0.9562
3	M7 SB On-Ramp	1800	710.00	758.00	48.00	1.77	1	1	107	1	48	1.0676
4	R445 Naas Rd. WB	1500	921.00	853.00	-68.00	2.28	1	1	138	1	-68	0.9262
5	R445 Naas Rd. EB	1500	829.00	853.00	124.00	4.15	1	1	124	1	124	1.1486
6	Monread Rd. WB	1200	689.00	628.00	-61.00	2.38	1	2	100	1	-61	0.9115
7	Monread Rd. EB	1200	593.00	601.00	8.00	0.33	1	2	100	1	8	1.0135
8	M7 On-ramp EB	1800	108.00	91.00	-17.00	1.70	1	2	100	1	-17	0.8426
9	Millennium Rd. NB	1200	441.00	421.00	-20.00	0.96	1	2	100	1	-20	0.9546
10	Millennium Rd. SB	1200	433.00	440.00	7.00	0.34	1	2	100	1	7	1.0162
11	R407 Sallins Rd. NB	1200	918.00	731.00	-187.00	6.51	1	0	138	0	-187	0.7963
12	R407 Sallins Rd. SB	1200	671.00	677.00	6.00	0.23	1	2	100	1	6	1.0089
13	M9 NB before Kiltullen	4100	596.00	483.00	-113.00	4.86	1	2	100	0	-113	0.8104
14	M9 SB before Kiltullen	4100	1071.00	1067.00	-4.00	0.12	1	1	161	1	-4	0.9963
15	R409 Caragh Rd. EB	1200	310.00	330.00	20.00	1.12	1	2	100	1	20	1.0645
16	R409 Caragh Rd. WB	1200	395.00	376.00	-19.00	0.97	1	2	100	1	-19	0.9519
17	Greatconnell Rd. NB	700	65.00	70.00	5.00	0.61	1	2	100	1	5	1.0769
18	Greatconnell Rd. SB	700	109.00	141.00	32.00	2.86	1	2	100	1	32	1.2936
19	M7 Business Pk. inbound	1000	45.00	45.00	0.00	0.00	1	2	100	1	0	1.0000
20	M7 Business Pk. outbound	1000	235.00	242.00	7.00	0.45	1	2	100	1	7	1.0298
			9509	9235	-274		20	19			18	

Average GEH
1.732

PM Peak Heavy Traffic

Link No.	Link Description	Link Capacity (PCU's)	Observed Heavy Traffic	Modelled Heavy Traffic	Difference Heavy Traffic	GEH	95.00%		100.00%		FACTO R	
							COUNT	GEH TEST	CLASS TEST	Target Difference		Flow Test
1	Johnstown Overbridge NB	1000	2.00	2.00	0.00	0.000	1	2	100	1	0	1.0000
2	Johnstown Overbridge SB	1000	5.00	3.00	-2.00	1.000	1	2	100	1	-2	0.6000
3	M7 SB On-Ramp	1800	20.00	19.00	-1.00	0.226	1	2	100	1	-1	0.9500
4	R445 Naas Rd. WB	1500	36.00	35.00	-1.00	0.168	1	2	100	1	-1	0.9722
5	R445 Naas Rd. EB	1500	34.00	50.00	16.00	2.469	1	2	100	1	16	1.4706
6	Monread Rd. WB	1200	12.00	25.00	13.00	3.022	1	2	100	1	13	2.0633
7	Monread Rd. EB	1200	14.00	31.00	17.00	3.584	1	2	100	1	17	2.2143
8	M7 On-ramp EB	1800	3.00	2.00	-1.00	0.632	1	2	100	1	-1	0.6667
9	Millennium Rd. NB	1200	35.00	19.00	-16.00	3.079	1	2	100	1	-16	0.5429
10	Millennium Rd. SB	1200	18.00	10.00	-8.00	2.138	1	2	100	1	-8	0.5556
11	R407 Sallins Rd. NB	1200	19.00	23.00	4.00	0.873	1	2	100	1	4	1.2105
12	R407 Sallins Rd. SB	1200	19.00	17.00	-2.00	0.471	1	2	100	1	-2	0.8947
13	M9 NB before Kiltullen	4100	52.00	72.00	20.00	2.540	1	2	100	1	20	1.3846
14	M9 SB before Kiltullen	4100	56.00	19.00	-37.00	6.042	1	0	100	1	-37	0.3393
15	R409 Caragh Rd. EB	1200	1.00	9.00	8.00	3.578	1	2	100	1	8	9.0000
16	R409 Caragh Rd. WB	1200	3.00	17.00	14.00	4.427	1	2	100	1	14	5.6667
17	Greatconnell Rd. NB	700	0.00	8.00	8.00	4.000	1	2	100	1	8	-
18	Greatconnell Rd. SB	700	2.00	3.00	1.00	0.632	1	2	100	1	1	1.5000
19	M7 Business Pk. inbound	1000	7.00	7.00	0.00	0.000	1	2	100	1	0	1.0000
20	M7 Business Pk. outbound	1000	5.00	6.00	3.00	1.177	1	2	100	1	3	1.6000
			343	379	36		20	19			20	

Average GEH
2.003

PM Peak Total Traffic

Link No.	Link Description	Link Capacity (PCU's)	Observed		Modelled		Difference	GEH	RESULT = 95.00%		RESULT = 90.00%		FACTO R	
			Total Traffic	Total Traffic	Total Traffic	Total Traffic			COUNT	GEH TEST	CLASS TEST	Target Difference		Flow Test
1	Johnstown Overbridge NB	1000	235.00	199.00	199.00	-36.00	2.44	1	1	2	100	1	-36	0.8468
2	Johnstown Overbridge SB	1000	142.00	134.00	134.00	-8.00	0.88	1	1	2	100	1	-8	0.9437
3	M7 SB On-Ramp	1800	730.00	777.00	777.00	47.00	1.71	1	1	1	110	1	47	1.0644
4	R445 Naas Rd. WB	1500	957.00	888.00	888.00	-69.00	2.27	1	1	1	144	1	-69	0.9279
5	R445 Naas Rd. EB	1500	863.00	1003.00	1003.00	140.00	4.58	1	1	1	129	0	140	1.1622
6	Monread Rd. WB	1200	701.00	653.00	653.00	-48.00	1.84	1	1	1	105	1	-48	0.9315
7	Monread Rd. EB	1200	607.00	633.00	633.00	26.00	1.04	1	1	2	100	1	26	1.0428
8	M7 On-ramp EB	1800	111.00	93.00	93.00	-18.00	1.78	1	1	2	100	1	-18	0.8378
9	Millennium Rd. NB	1200	476.00	440.00	440.00	-36.00	1.88	1	1	2	100	1	-36	0.9244
10	Millennium Rd. SB	1200	451.00	449.00	449.00	-2.00	0.09	1	1	2	100	1	-2	0.9956
11	R407 Sallins Rd. NB	1200	937.00	754.00	754.00	-183.00	6.29	1	0	1	141	0	-183	0.8047
12	R407 Sallins Rd. SB	1200	690.00	694.00	694.00	4.00	0.15	1	1	2	100	1	4	1.0058
13	M9 NB before Kilcullen	4100	648.00	555.00	555.00	-93.00	3.79	1	1	2	100	1	-93	0.8565
14	M9 SB before Kilcullen	4100	1127.00	1086.00	1086.00	-41.00	1.23	1	1	1	169	1	-41	0.9636
15	R409 Caragh Rd. EB	1200	311.00	339.00	339.00	28.00	1.55	1	1	2	100	1	28	1.0900
16	R409 Caragh Rd. WB	1200	398.00	393.00	393.00	-5.00	0.25	1	1	2	100	1	-5	0.9874
17	Greatconnell Rd. NB	700	65.00	78.00	78.00	13.00	1.54	1	1	2	100	1	13	1.2000
18	Greatconnell Rd. SB	700	111.00	144.00	144.00	33.00	2.92	1	1	2	100	1	33	1.2973
19	M7 Business Pk. inbound	1000	52.00	52.00	52.00	0.00	0.00	1	1	2	100	1	0	1.0000
20	M7 Business Pk. outbound	1000	240.00	251.00	251.00	11.00	0.70	1	1	2	100	1	11	1.0458
								20	19			18		

Average GEH
1.829

Appendix F

Internal Zone Trip End Growth Factors

Table F-7: PM Peak Internal Growth Factors – Low Growth

NTM Zone	Opening Year (2015)				Design Year (2030)				Forecast Year (2045)			
	LV		HV		LV		HV		LV		HV	
	2012 - 2015		2012 - 2015		2012 - 2030		2012 - 2030		2012 - 2045		2012 - 2045	
	O	D	O	D	O	D	O	D	O	D	O	D
494	1.032	1.032	1.014	1.011	1.193	1.193	1.062	1.049	1.293	1.293	1.065	1.051
496	1.035	1.028	1.005	1.008	1.211	1.167	1.022	1.035	1.322	1.253	1.023	1.037
500	1.035	1.028	1.005	1.008	1.211	1.167	1.022	1.035	1.322	1.253	1.023	1.037
502	1.047	1.040	1.000	1.009	1.298	1.246	1.000	1.042	1.465	1.379	1.000	1.044
504	1.029	1.065	1.020	1.021	1.175	1.429	1.090	1.096	1.265	1.691	1.094	1.100
508	1.041	1.026	1.000	1.006	1.254	1.157	1.000	1.028	1.392	1.237	1.000	1.029
510	1.026	1.053	1.017	1.015	1.157	1.343	1.076	1.069	1.237	1.541	1.079	1.072
512	1.048	1.029	1.008	1.018	1.304	1.175	1.035	1.083	1.475	1.265	1.037	1.087
514	1.029	1.065	1.020	1.021	1.175	1.429	1.090	1.096	1.265	1.691	1.094	1.100

Table F-8: PM Peak Internal Growth Factors – Medium Growth

NTM Zone	Opening Year (2015)				Design Year (2030)				Forecast Year (2045)			
	LV		HV		LV		HV		LV		HV	
	2012 - 2015		2012 - 2015		2012 - 2030		2012 - 2030		2012 - 2045		2012 - 2045	
	O	D	O	D	O	D	O	D	O	D	O	D
494	1.040	1.040	1.021	1.020	1.237	1.237	1.095	1.090	1.349	1.349	1.098	1.093
496	1.050	1.035	1.012	1.015	1.303	1.203	1.056	1.068	1.454	1.296	1.058	1.070
500	1.050	1.035	1.012	1.015	1.303	1.203	1.056	1.068	1.454	1.296	1.058	1.070
502	1.056	1.047	1.000	1.018	1.345	1.286	1.000	1.082	1.521	1.426	1.000	1.086
504	1.037	1.072	1.028	1.029	1.219	1.462	1.129	1.135	1.321	1.717	1.135	1.141
508	1.050	1.033	1.000	1.014	1.303	1.195	1.000	1.061	1.454	1.284	1.000	1.063
510	1.035	1.059	1.024	1.022	1.203	1.371	1.108	1.103	1.296	1.563	1.113	1.107
512	1.057	1.036	1.015	1.025	1.355	1.215	1.068	1.116	1.537	1.314	1.070	1.120
514	1.037	1.072	1.028	1.029	1.219	1.462	1.129	1.135	1.321	1.717	1.135	1.141

Table F-9: PM Peak Internal Growth Factors – High Growth

NTM Zone	Opening Year (2015)				Design Year (2030)				Forecast Year (2045)			
	LV		HV		LV		HV		LV		HV	
	2012 - 2015		2012 - 2015		2012 - 2030		2012 - 2030		2012 - 2045		2012 - 2045	
	O	D	O	D	O	D	O	D	O	D	O	D
494	1.069	1.065	1.052	1.050	1.410	1.380	1.264	1.250	1.569	1.523	1.300	1.283
496	1.081	1.062	1.044	1.046	1.495	1.357	1.217	1.230	1.696	1.490	1.245	1.260
500	1.081	1.062	1.044	1.046	1.495	1.357	1.217	1.230	1.696	1.490	1.245	1.260
502	1.083	1.075	1.000	1.048	1.509	1.449	1.000	1.244	1.719	1.626	1.000	1.276
504	1.069	1.094	1.059	1.060	1.410	1.593	1.304	1.310	1.569	1.850	1.347	1.354
508	1.078	1.059	1.000	1.045	1.472	1.343	1.000	1.223	1.662	1.468	1.000	1.253
510	1.066	1.082	1.056	1.053	1.388	1.502	1.283	1.271	1.535	1.707	1.322	1.309
512	1.085	1.064	1.046	1.057	1.523	1.376	1.230	1.291	1.740	1.517	1.260	1.331
514	1.069	1.094	1.059	1.060	1.410	1.593	1.304	1.310	1.569	1.850	1.347	1.354

Appendix G

Allocation of Future Growth in Naas and Environs

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Project:	M7 Naas Newbridge Bypass Upgrade Scheme	Job No:	60241946
Subject:	Future Year Forecasting & Demand Allocation		
Prepared by:	Declan Keenan	Date:	29th April 2013
Checked by:	Philip Shiels	Date:	29th April 2013
Approved by:	Dan Brennan	Date:	29th April 2013

1.0 Overview

The function of this Technical Note is to assess the future land use zonings within the key urban areas of Naas, Sallins, Johnstown and Kill. This assessment will inform the allocation of future growth in the traffic model used as part of the design and appraisal of the following schemes:

- M7 Naas Newbridge Bypass Upgrade Scheme (Sanctioning Authority - NRA); and
- M7 Osberstown Interchange and Sallins Bypass (Sanctioning Authority - DTTAS).

The urban areas outlined above are all contained within the NRA National Traffic Model (NTM) zone 504, which is illustrated in Figure 1.1. Data on the land use zonings in NTM zone 504 are based on data from the following publications:

- Naas Local Area Plan (LAP) 2011 – 2017;
- Kildare County Development Plan (CDP) 2011 – 2017;
- Kildare County Development Plan 2011 – 2017 Variation No.1 (To Incorporate Small Towns) June 2012 (Kill); and
- Sallins Local Area Plan (LAP) 2009.

Both schemes are being appraised in accordance with the NRA Project Appraisal Guidelines (PAG).

2.0 Background

The NTM is a strategic traffic model of the national and regional road network and is used in the appraisal of national road schemes. The NTM consists of 874 zones, one of which covers the Naas area and its environs (Zone 504).

To inform the design and appraisal of a national road scheme the NRA provide growth factors for each zone in the NTM up to 2040 for three future growth scenarios, namely Low, Medium and High. Each scheme must be appraised based on the growth factors supplied by the NRA which are specified in the PAG.

3.0 Assessment

This Technical Note will focus on the following 3 key process:

- (1) Assess the quantum of additional traffic generated by the expected build out of the zoned lands in the 2011 – 2017 Naas LAP and 2011 – 2017 Kildare County Development Plan that are located within the NTM Zone 504;

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- (2) Compare the additional traffic in NTM Zone 504 generated by the zoned lands from (1) against the additional traffic estimated by the growth factors outlined in the PAG for NTM Zone 504;
- (3) Use the zoning of lands in the Naas LAP and Kildare County Development Plan to distribute the additional demand for NTM zone 504, for each NRA growth scenario.

The proposed design year for both schemes is 2030; therefore the NRA growth scenarios have been developed to represent the demand for this year. Although the land-use zonings for the Naas LAP and Kildare CDP cover the period 2011 -2017, the actual full build of both plans will be at a point well beyond the horizon of the current plans, and for the purpose of this exercise, has been assumed to be in line with the scheme design year.

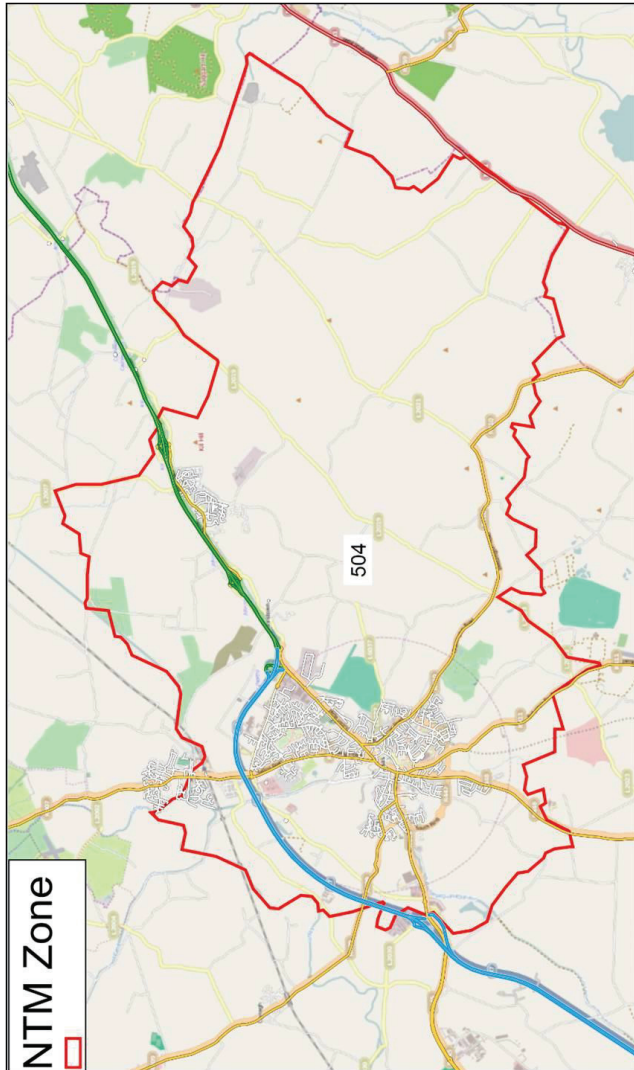


Figure 1.1 – NTM Zone 504 Area

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4.0 Naas Local Area Plan 2011 – 2017

The zoning objectives of the Naas Local Area Plan (LAP) 2011 – 2017 and the quantum of zoned lands (Hectares) are presented in Table 4.1. The zoning map for the Naas LAP is illustrated in Figure 4.1

The table also illustrates the zoned lanes of the key development area in the Naas LAP known as the North Western Quadrant (NWQ). The NWQ is illustrated in Figure 4.2

Table 4.1 - Naas LAP Zoning Objectives

Ref	Naas LAP Specific Zoning Objective	Hectares (incl. NWQ)			North West Quadrant (Ha)
		Total	Existing	New	
A	Town Centre	47	47	-	-
B	Existing/Infill Residential	388	388	-	-
C	New Residential	136	-	136	25
E	Community and Education	56	29	27	21
F	Open Space and Amenity	177	177	-	-
G	Urban Village	5	-	5	5
H	Industry and Warehousing	70	60	10	2
I	Agriculture	577	577	-	-
J	Transport and Utilities	2	2	-	-
K	Commercial and Residential	5	5	-	-
L	Leisure and Amenity	4	2	2	-
M	Future Park/Green Belt	87	87	-	-
N	Neighbourhood Centre	4	3	1	-
Q	Enterprise and Employment	119	46	73	69
R	Retail/Commercial	9	3	2	-
U	Utilities/Services	2	2	-	-
W	White Land*	37	-	37	37
Total (Ha)		1725	1428	293	159

* Zoning Objective of White Land is to 'ensure the consolidation of future development outside the period of this plan'. Therefore it is not considered as part of this assessment.

In order to estimate the potential impact of the zoning objectives of the LAP in terms of the generation of additional traffic the following methodology was applied:

- Trip rates for each land use in the Naas LAP were established using the TRICS database;
- These trips rates were then applied to the quantum of undeveloped lands in the Naas LAP;
- A number of assumptions were then applied to the zones lands, these include:
 - Plot Ratios per m² of GFA;
 - Housing Density per Hectare;
 - 80% full build out of zoned lands; and
 - Impact of shared and/or linked trips (22.5%)

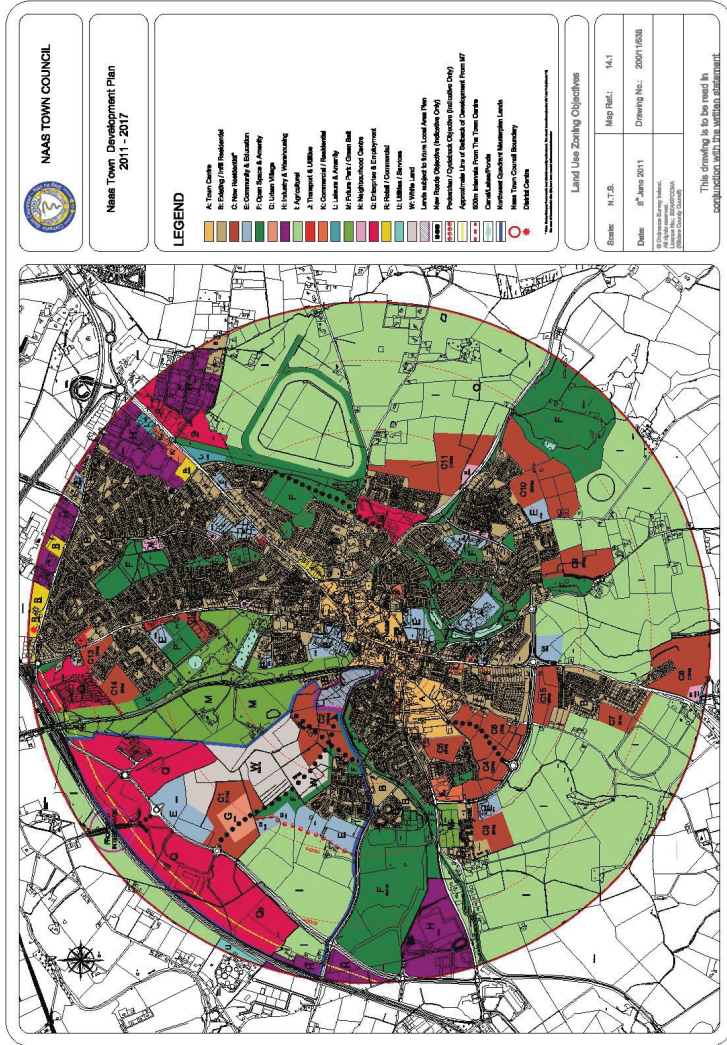


Figure 4.1: Naas LAP 2011 - 2017 Zoning Objectives

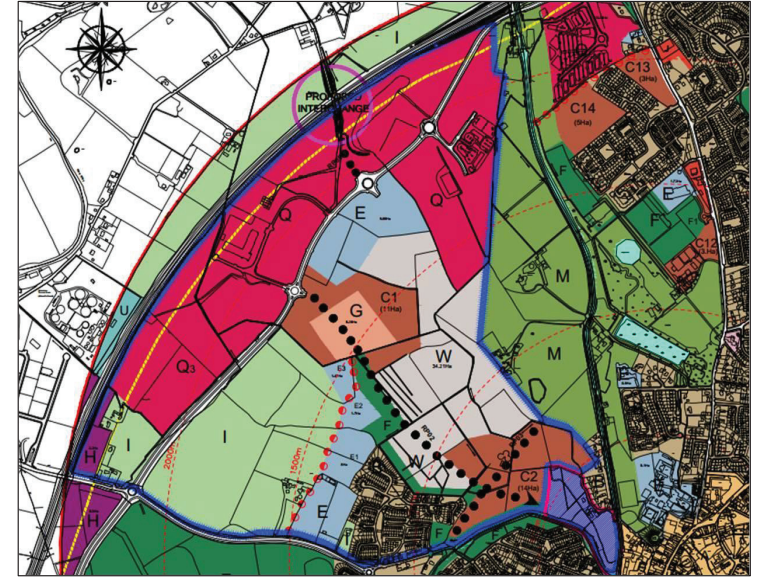


Figure 2.2 - Naas LAP 'North Western Quadrant' Zoning Objectives

4.1 Trip Rates

Trip rates for each land use objective of the LAP are provided in Table 4.2. Details of the generation of these trip rates are provided in Appendix A of this Technical Note.

Table 4.2 - Naas LAP Land Use Vehicular Trip Rates

Ref	Naas LAP Land Use	AM Peak (08:00 - 09:00)			Inter Peak (13:00 - 14:00)			PM Peak (17:00 - 18:00)		
		IN	Out	Total	IN	Out	Total	IN	Out	Total
C	New Residential	0.19	0.41	0.61	0.22	0.22	0.44	0.43	0.27	0.70
Q	Enterprise and Employment	0.99	0.16	1.15	0.42	0.46	0.88	0.20	0.94	1.14
E	Community & Education	2.91	1.97	4.88	0.65	0.38	1.03	0.20	0.94	1.14
H	Industrial/Warehousing	0.37	0.17	0.54	0.27	0.27	0.53	0.09	0.32	0.41
G	Urban Village	1.57	1.10	2.66	1.16	1.05	2.21	1.50	1.83	3.33
R	Retail Commercial	1.99	1.52	3.51	4.74	4.87	9.61	3.92	4.30	8.23

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4.3 Naas Local Area Plan Additional Traffic

The additional traffic generated as a result of the zoning objectives of the Naas LAP are presented in Table 4.3.

Table 4.3 – Naas LAP Additional Traffic

Zoning Objectives	Naas Local Area Plan			Development Schedule (Units or Ha)	Trips								
	Area (Ha)	Plot Ratio/House Density (Units or m ² GFA/Ha)	Development Schedule (Units or Ha)		AM Peak			Inter Peak			PM Peak		
					IN	Out	Total	IN	Out	Total	IN	Out	Total
New Residential	136	25	2,720	520	1,126	1,646	611	588	1,198	1,164	737	1,901	
Enterprise and Employment	73	0.25	16	1,448	229	1,678	619	672	1,291	298	1,369	1,667	
Community & Education	27	0.10	2	629	426	1,055	140	82	223	44	203	247	
Industrial/Warehousing	10	0.25	2	74	33	107	54	53	107	18	63	82	
Urban Village	5	0.25	1	157	110	266	116	105	221	150	183	333	
Retail Commercial	2	0.25		80	61	140	190	195	384	157	172	329	
Total	253			2,907	1,985	4,892	1,729	1,695	3,424	1,832	2,727	4,559	
				2,253	1,538	3,791	1,340	1,314	2,654	1,419	2,113	3,533	

*Takes into account the assumption of 22.5% shared or linked trips.

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4.4 North Western Quadrant Additional Traffic

The additional traffic generated as a result of the zoning objectives of the North Western Quadrant are presented in Table 4.4.

Table 4.4 – North Western Quadrant Additional Traffic

Zoning Objectives	North Western Quadrant			Development Schedule (Units or Ha)	Trips								
	Area (Ha)	Plot Ratio/House Density (Units or m ² GFA/Ha)	Development Schedule (Units or Ha)		AM Peak			Inter Peak			PM Peak		
					IN	Out	Total	IN	Out	Total	IN	Out	Total
New Residential	25	25	2,720	96	207	303	112	108	220	214	136	350	
Enterprise and Employment	69	0.25	16	1,369	217	1,586	585	635	1,221	282	1,294	1,576	
Community & Education	21	0.10	2	489	332	821	109	64	173	34	158	192	
Industrial/Warehousing	2	0.25	2	16	7	24	12	12	23	4	14	18	
Urban Village	5	0.25	1	157	110	266	116	105	221	150	183	333	
Total	122			2,126	872	2,998	934	924	1,859	684	1,784	2,468	
				1,648	676	2,324	724	716	1,440	530	1,383	1,913	
				73%	44%	61%	54%	55%	54%	37%	65%	54%	

*Takes into account the assumption of 22.5% shared or linked trips.

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4.5 Kildare County Development Plan 2011 - 2017

There are 4 other urban areas that are also included in Zone 504, Kill, Johnstown, Naas Environs and Sallins (part of). The future land use objectives of these areas are outlined in the Kildare County Development Plan 2011 – 2017 and Sallins Local Area Plan 2009. These areas and their land uses are illustrated in Appendix B.

4.5.1 Naas Environs

The environs of Naas are illustrated in Figures A, B and C in Appendix B. There are 3 distinct areas as follows:

- Naas North;
- Naas South; and
- Naas West – (located outside of zone 504, therefore not included in this assessment)

Although zoning objectives are illustrated on each of the figures for the 3 areas which cover the 'Naas Environs' the actual quantum of development in terms of area is not provided. Therefore a number of assumptions have been made as to the likely quantum of development that may generate traffic for each area:

- Naas North
 - Industry & Warehousing – 3Ha
- Naas South
 - Low Density Residential – 5Ha (40 units)
 - Community and Education – 4Ha

4.5.2 Johnstown

The zoning objectives of Johnstown village are illustrated in Figure D in Appendix B. The following land uses are taken into consideration:

- Johnstown
 - New Residential – 4.1Ha (82 units)

4.5.3 Kill

The level of development in Kill is outlined in the following variation to the County Development Plan:

- Kildare County Development Plan 2011 – 2017 Variation No.1 (To Incorporate Small Towns) June 2012 (Kill).

It indicates that there will be an additional 149 residential units provided by 2017 under the existing plan.

4.5.4 Sallins (part of)

An area of Sallins to the south of the rail line is included in NTM Zone 504 and is taken into consideration in this assessment. There is an area of land zoned new residential to the south of the rail line and it is estimated that there will be approximately 75 units in this area.

The additional trips generated by these areas are presented in Table 4.5. The total number of additional trips generated in zone 504 is illustrated in Table 4.6