



**MULTI-MODAL STUDY
A453 NOTTINGHAM TO M1 JUNCTION 24
MODEL DEVELOPMENT & VALIDATION REPORT : FINAL**

APPENDICES



APPENDIX A

SUMMARY SURVEY STATISTICS

Table A1: Summary of Survey Statistics – A453 MMS Roadside Interviews

Site	Location	Sample Size	AAWT	Sample- Population- Ratio	Census Point in the Transport Model
1	A 609 (Ilkeston Rd) Trowell, towards Nottingham	1318	10151	13,0%	1/66
2	B 5010 (Station Rd) Sandiacre, towards Nottingham	976	7317	13,3%	2/67
3	A 52(T), West of B6003 (Toton Ln), Sandiacre, towards Nottingham	2864	22135	12,9%	3/68
4	A 6005 River Erewash Bridge (Nottingham Rd), West of B6003, Long Eaton, towards Nottingham	1178	15203	7,7%	4/69
5	A 453 Thrumpton, towards Nottingham	1341	13888	9,7%	5/70
6	Nottingham Rd, North of Gotham, towards Nottingham	1341	3893	34,4%	6/71
7	Green Lane, Clifton, near A 453, towards Nottingham	597	2526	23,6%	7
8	Farnboro Road North, Clifton, near A 453, towards Nottingham	1049	7365	14,2%	8
9	Green Lane, Clifton, South East towards Ruddington	1264	4404	28,7%	9
10	A 60 (Loughborough Rd) between Bradmore and Bunny, towards Nottingham	1877	7689	24,4%	10/72
11	A 46 (T), Broughton Farm, South of A606, towards Nottingham	1113	13164	8,5%	25
12	A 606, Hickling Pastures, East of A46, towards Nottingham	884	3658	24,2%	12
13	A 52 (T), Gamston, Lings Bar Rd, southbound between A 6011 and A 606(T)	1232	13243	9,3%	13
14	Middleton Blvd (A 6514), Nottingham, southbound, North of Derby Road	1228	28478	4,3%	14

The AAWT is the mean of the days from Monday to Friday during the counting period modified with a correction factor for the month of counting to obtain annual average values.

Table A2: Summary of Survey Statistics – M1 MMS Roadside Interviews

Site	Location / Interview Direction	Survey Date	Sample Size	AAWT	Sample-Population-Ratio	Census Point in the Transport Model
1	A5460 (East of M1 J21) Westbound	24.05.2000	628	30559	2,1%	
2	MSA Leicester Forest East Northbound	25.05.2000	339	4566	7,4%	
3	A46 (Leicester Western Bypass) Southbound	24.05.2000	703	18667	3,8%	15/16
4	A50 (East of M1 J22) Northwestbound			14981		
5	A50 (West of M1 J22) Eastbound			16058		
6	A512 (East of M1 J23) Westbound	16.05.2000	1406	13132	10,7%	17/18
7	A512 (West of M1 J23) Eastbound-?	16.05.2000	703	11977	5,9%	19/20
8	A42 (Southwest of M1 J23A)			30506		
9	A6 (JCT 24 M1 North of Kegworth) Northbound	18.05.2000	872	9758	8,9%	21/22
10	A50 (North of M1 J24) Southbound		1384	29357	4,7%	23
10A	A50 Slip (M1 J24A) Northbound	06.06.2000		3616		24
11	A52 (West of M1 J25 slip to roundabout) Eastbound off-slip	05.06.2000	959	21399	4,5%	26/27
12	A610 (East of M1 J26) Westbound	22.05.2000	2030	28615	7,1%	28/29
13	A610 (West of M1 J26) Eastbound	22.05.2000	1304	16709	7,8%	30/31
14	A608 (East of M1 J27) Westbound	10.05.2000	1368	12162	11,2%	32/33
15	A608 (West of M1 J27) Eastbound	10.05.2000	995	4949	20,1%	34/35
16	A38 (East of M1 J28) Southwestbound	15.05.2000	1341	19553	6,9%	36/37
17	A38 (West of M1 J28) Northeastbound	15.05.2000	2000	26301	7,6%	38/39
18	A61 (North of Clay Cross) Northbound			7647		
19	A617 (East of M1 J29) Westbound			7811		

Table A2: Summary of Survey Statistics – M1 MMS Roadside Interviews (Continued)

Site	Location / Interview Direction	Survey Date	Sample Size	AAWT	Sample-Population-Ratio	Census Point in the Transport Model
20	A60 (North of Warsop) Northbound			3198		
21	A614 (North of New Ollerton) Northbound			5452		
22	A1 (Markham Moor Roundabout) Northbound			24437		
23	A614 (West of Barnsfield) Northbound	08.05.2000	1184	8404	14,1%	42
24	A60 (North of B6020) Northbound	08.05.2000	981	7850	12,5%	40/41
25	MSA Woodhall Northbound	23.05.2000	665	3890	17,1%	44
26	MSA Tibshelf Northbound	23.05.2000	704	3220	21,9%	43
27	MSA Trowell Northbound	05.06.2000	1007	3844	26,2%	45
28	MSA Donington Park Northbound	18.05.2000	804	3569	22,5%	46/47

The AAWT is the mean of the days from Monday to Friday during the counting period modified with a correction factor for the month of counting to obtain annual average values.

Table A3: Summary of Survey Statistics – NCC Cordon Roadside Interviews

Site ID	Location	Survey Date	Sample Size	AAWT	Sample- Population-Ratio	Census Point in the Transport Model
1	Noel St North of A6130 Gregory Blvd Southbound	06.04.2000	178	1494	11,9%	49
2	B684 Woodborough Rd Northeast of A60 Huntingdon St Southwest bound	13.04.2000	976	6322	15,4%	53
3	A6200 Derby Rd West of A6130 Lenton Blvd Eastbound	13.06.2000	1058	10243	10,3%	61
4	A611 Hucknall Rd Northwest of A60 Mansfield Rd Southeast bound	11.04.2000	1019	5765	17,7%	51
5	A6005 Abbey Bridge Southwest of A6130 Lenton Blvd Northeast bound	13.06.2000	1416	9810	14,4%	60
6	A610 Alfreton Rd Northwest of A6130 Gregory Blvd Southeast bound	06.04.2000	789	13491	5,8%	63
7	A609 Ilkeston Rd West of A6130 Radford Blvd Eastbound	06.04.2000	747	5839	12,8%	62
8	A60 Mansfield Rd North of A611 Hucknall Rd southbound	11.04.2000	1265	8482	14,9%	52
9	Radford Rd North of A6130 Gregory Blvd Southbound	06.04.2000	775	6816	11,4%	48
10	Sheriff's Way South of Meadows Way Northbound	15.06.2000	282	2444	11,5%	58
11	B682 Sherwood Rise Northwest of A6130 Gregory Blvd Southeast bound	11.04.2000	619	7806	7,9%	50
12	St Ann's Well Rd North of Bath St Southbound	13.04.2000	640	4109	15,6%	54

Table A3: Summary of Survey Statistics – NCC Cordon Roadside Interviews (Continued)

Site ID	Location	Survey Date	Sample Size	AAWT	Sample- Population-Ratio	Census Point in the Transport Model
13	B686 Carlton Rd Northeast of Bath St Southwest bound	22.06.2000	893	9958	9,0%	55
14	A612 Daleside Rd East of A6011 Meadow La Westbound	22.06.2000	934	14178	6,6%	64
15	A6011 Lady Bay Bridge Southeast of A6011 Meadow La Northwest bound	20.06.2000	1046	10129	10,3%	65
16	A453 Queens Dr Southwest of Castle Bridge Rd Northeast bound	15.06.2000	1608	14706	10,9%	59
17	Sneinton Dale East of Sneinton Hollows Westbound	22.06.2000	491	4415	11,1%	57
18	Sneinton Hermitage East of A612 Manvers St Westbound	22.06.2000	183	3183	5,7%	56
19	A60 Trent Bridge North of Victoria Embankment Northbound	20.06.2000	2022	20300	10,0%	

The AAWT is the mean of the days from Monday to Friday during the counting period modified with a correction factor for the month of counting to obtain annual average values.

Table A4: Estimation of AAWT – A453 MMS Sites

Roadside Interview Site			Annual Average Working day Traffic	
Number	Location	Direction	Interview Direction	Non-Interview Direction
1	A609 Ilkeston Rd, Trowell	Southbound	10151	
		Northbound		9604
2	B5010 Station Rd, Sandiacre	Eastbound	7317	
		Westbound		6715
3	A52 West of B6003 Toton Ln	Eastbound	22135	
		Westbound		23507
4	A6005 Nottingham Rd, West of B6003	Eastbound	15203	
		Westbound		14404
5	A453 Thrumpton	Northbound	13888	
		Southbound		14309
6	Nottingham Rd, North of Gotham	Northbound	3893	
		Southbound		3307
7	Green Lane, Clifton, near A 453	Northwestbound	2526	
		Southeastbound		2374
8	Farnboro Road North, Clifton, near A 453	Northwestbound	7365	
		Southeastbound		6957
9	Green Lane, Clifton, South East towards Ruddington	Southeastbound	4404	
		Northwestbound		4518
10	A60 Loughborough Rd, North of Bradmore	Northbound	7689	
		Southbound		7798
11	A46 South of A606	Northbound	13164	
		Southbound		12545
12	A606 East of A46	Northwestbound	3658	
		Southeastbound		3608

Table A4: Estimation of AAWT – A453 MMS Sites (Continued)

Roadside Interview Site			Annual Average Working day Traffic	
13	A52 Gamston, Lings Bar Rd	Southbound	13243	
		Northbound		14327
14	A6514 Middleton Blvd	Southbound	28478	
		Northbound		28308

Source: Pell Frischmann, Fax from 15.11.2000

Table A5: Estimation of AAWT – M1 Corridor MMS Sites

Site	Location	Direction	16/24 hr expansion factor	Weekday factor	Month factor	6 - 22 (16 hrs)	0 - 24	AAWT
1	M1 Site 1	Westbound			0,981		31151	30559
		Eastbound					30721	30137
2	MSA Leicester Forest East	Northbound	1,082	0,977	0,975	4429		4566
3	A46 - Site 3 (Leicester Western Bypass)	Westbound			0,975		19145	18667
		Eastbound					19308	18825
4	A50 - Site 4 (East of M1 J22)	Westbound			0,975		15365	14981
		Eastbound					14553	14189
5	A50 - Site 5 (West of M1 J22)	Westbound			0,975		16470	16058
		Eastbound					15984	15584
6	A512 - Site 6 (East of M1 J23)	Westbound			0,975		13469	13132
		Eastbound					13885	13538
7	A512 - Site 7 (West of M1 J23)	Westbound			0,975		12284	11977
		Eastbound					10693	10426
8	A42 - Site 8 (SW of M1 J23A)	Westbound			0,975		31288	30506
		Eastbound					28991	28266
9	A6 – Site 9 (North of Kegworth)	Northbound			0,975		10008	9758
		Southbound					9409	9174
10	A50 - Site 10 (North of M1 J24)	Northbound			0,975		30110	29357
		Southbound					25958	25310
10A	A50 – Site 10 (M1 J24A Northbound On Slip)	Northbound			0,975		3709	3616
11	A52 - Site 11 (West of M1 J25)	Westbound			0,981		21813	21399
		Eastbound					22507	22079
12	A610 - Site 12 (East of M1 J26)	Westbound			0,975		29349	28615
		Eastbound					28664	27948

Table A5: Estimation of AAWT – M1 Corridor MMS Sites (Continued)

Site	Location	Direction	16/24 hr expansion factor	Weekday factor	Month factor	6 - 22 (16 hrs)	0 - 24	AAWT
13	A610 - Site 13 (West of M1 J26)	Westbound			0,975		17138	16709
		Eastbound					17091	16664
14	A617 - Site 14 (East of M1 J27)	Westbound			0,975		12474	12162
		Eastbound					11037	10761
15	A617 - Site 15 (West of M1 J27)	Westbound			0,975		5076	4949
		Eastbound					5391	5256
16	A38 - Site 16 (East of M1 J28)	Westbound			0,975		20055	19553
		Eastbound					20237	19731
17	A38 - Site 17 (West of M1 J28)	Westbound			0,975		26975	26301
		Eastbound					27155	26476
18	A61 - Site 18 (North of Clay Cross)	Westbound			0,975		7843	7647
		Eastbound					8598	8383
19	A617 - Site 19 (East of M1 J29)	Westbound			0,975		8012	7811
		Eastbound					8319	8111
20	A60 - Site 20 (North of Warsop)	Northbound			0,975		3280	3198
		Southbound					3350	3267
21	A614 - Site 21 (A614 (North of Ollerton))	Northbound			0,975		5592	5452
		Southbound					5587	5448
22	A1 – Site 22 (Markham Moor Rbt)	Northbound			0,975		25064	24437
		Southbound					26786	26116
23	A614 - Site 23 (West of Farnsfield)	Northbound			0,975		8619	8404
		Southbound					8863	8641
24	A60 - Site 24 (North of B6020)	Northbound			0,975		8052	7850
		Southbound					8395	8185



Table A5: Estimation of AAWT – M1 Corridor MMS Sites (Continued)

Site	Location	Direction	16/24 hr expansion factor	Weekday factor	Month factor	6 - 22 (16 hrs)	0 - 24	AAWT
25	MSA Woodhall Northbound	Northbound	1,082	1,024	0,975	3600		3890
26	MSA Tibshelf Northbound	Northbound	1,082	1,024	0,975	2980		3220
27	MSA Trowell Northbound	Northbound	1,082	1,06	0,981	3416		3844
28	MSA Donington Park Northbound	Northbound	1,082	0,977	0,975	3462		3569
		Southbound				3471		3578

Table A6: Estimation of AAWT – Nottingham City Council Sites

Site	Location	Direction (Interview / Non- Interview)	12/24 hr expansion factor	Weekday factor	Month factor	7 – 19 (12 hrs)	AAWT
1	Noel St North of A6130 Gregory Blvd	Southbound	1,236	0,977	0,967	1279	1494
		Northbound				751	877
2	B684 Woodborough Rd Northeast of A60 Huntingdon St	Southwestbound	1,236	0,977	0,967	5414	6322
		Northeastbound				5132	5993
3	A6200 Derby Rd West of A6130 Lenton Blvd	Eastbound	1,236	1,024	0,981	8250	10243
		Westbound				10378	12885
4	A611 Hucknall Rd Northwest of A60 Mansfield Rd	Southeastbound	1,236	1,024	0,967	4710	5765
		Northwestbound				6268	7671
5	A6005 Abbey Bridge South- west of A6130 Lenton Blvd	Northeastbound	1,236	1,024	0,981	7901	9810
		Southwestbound				8893	11042
6	A610 Alfreton Rd Northwest of A6130 Gregory Blvd	Southeastbound	1,236	0,977	0,967	11553	13491
		Northwestbound				12012	14027
7	A609 Ilkeston Rd West of A6130 Radford Blvd	Eastbound	1,236	0,977	0,967	5000	5839
		Westbound				5516	6441
8	A60 Mansfield Rd North of A611 Hucknall Rd	Southbound	1,236	1,024	0,967	6930	8482
		Northbound				8451	10343
9	Radford Rd North of A6130 Gregory Blvd	Southbound	1,236	0,977	0,967	5837	6816
		Northbound				6990	8162
10	Sheriff's Way South of Meadows Way	Northbound	1,236	0,977	0,981	2063	2444
		Southbound				1524	1805
11	B682 Sherwood Rise North- west of A6130 Gregory Blvd	Southeastbound	1,236	1,024	0,967	6378	7806
		Northwestbound				5841	7149
12	St Ann's Well Rd North of Bath St	Southbound	1,236	0,977	0,967	3519	4109
		Northbound				5199	6071

Table A6: Estimation of AAWT – Nottingham City Council Sites (Continued)

Site	Location	Direction (Interview / Non- Interview)	12/24 hr expansion factor	Weekday factor	Month factor	7 – 19 (12 hrs)	AAWT
13	B686 Carlton Rd Northeast of Bath St	Southwestbound	1,236	0,977	0,981	8406	9958
		Northeastbound				7703	9125
14	A612 Daleside Rd East of A6011 Meadow La	Westbound	1,236	0,977	0,981	11968	14178
		Eastbound				12476	14779
15	A6011 Lady Bay Bridge Southeast of A6011 Meadow La	Northwestbound	1,236	1,024	0,981	8158	10129
		Southeastbound				7025	8722
16	A453 Queens Dr Southwest of Castle Bridge Rd	Northeastbound	1,236	0,977	0,981	12414	14706
		Southwestbound				12090	14322
17	Sneinton Dale East of Sneinton Hollows	Westbound	1,236	0,977	0,981	3727	4415
		Eastbound				3854	4566
18	Sneinton Hermitage East of A612 Manvers St	Westbound	1,236	0,977	0,981	2687	3183
		Eastbound				2275	2695
19	A60 Trent Bridge North of Victoria Embankment	Northbound	1,236	1,024	0,981	16350	20300
		Southbound				20244	25135

Table A7: Pedestrian and Cycle Interview Sites

No	Interview Site	Date	Remark
1	From A52 Clifton Bridge to B679 Clifton Lane	03/07/00	From B679 Clifton Lane to A52 Clifton Bridge
2	Silverdale Walk Westbound	03/07/00	Silverdale Walk Eastbound
3	A6005 University Blvrd North side Westbound	04/07/00	A6005 University Blvrd Eastbound North side
4	A6005 University Blvrd South side Westbound	04/07/00	A6005 University Blvrd Eastbound South side
5	Thane Road Westbound	05/07/00	Thane Road Eastbound
6	Beeston Canal Westbound	05/07/00	Beeston Canal Eastbound



APPENDIX B

MODEL DEVELOPMENT SUPPLEMENTARIES

Table B1: Schedule of Link Types

Nr	NAME	Classification	Transport Systems	Initial speed	Capacity		
					24 hours	1 hour	Hour/day
11	Motorway 4	Motorway, dual carriageway, 4 or more lanes/direction	PFTB	109	105000	7600	7%
12	Motorway 3	Motorway, dual carriageway, 3 lanes/direction	PFTB	109	78750	5700	7%
13	Motorway 2	Motorway, dual carriageway, 2 lanes/direction	PFTB	104	52500	3700	7%
21	Rural d 3	Rural, dual carriageway, 3 lanes/direction	PFTB	99	75000	5000	7%
22	Rural d 2	Rural, dual carriageway, 2 lanes/direction	PFTB	99	50000	3600	7%
23	Rural wide TD9	Rural, 1 wide lane/direction, TD9 standard	PFTB	92	18750	1730	9%
24	Rural TD9	Rural, 1 lane/direction, TD9 standard	PFTB	88	18125	1460	8%
31	Rural g	Rural, 1 lane/direction, good conditions	PFTB	77	15625	1580	10%
32	Rural t	Rural, 1 lane/direction, typical conditions	PFTB	77	12250	1240	10%
33	Rural p f	Rural, 1 lane/direction, poor conditions, fast	PFTB	64	7875	800	10%
34	Rural p s	Rural, 1 lane/direction, poor conditions, slow	PFTB	50	6000	610	10%
41	Suburban d 3	Suburban, dual carriageway, 3 lanes/direction	PFTBL	64	50000	4500	9%
42	Suburban d 2 g	Suburban, dual carriageway, 2 lanes/direction, good conditions	PFTBL	64	37500	3000	8%
43	Suburban d 2 p	Suburban, dual carriageway, 2 lanes/direction, poor conditions	PFTBL	64	26000	2040	8%
44	Suburban g f	Suburban, 1 lane/direction, good conditions, fast	PFTBL	64	25000	1500	6%
45	Suburban t f	Suburban, 1 lane/direction, typical conditions, fast	PFTBL	64	18750	1260	7%
46	Suburban p f	Suburban, 1 lane/direction, poor conditions, fast	PFTBL	64	12750	1020	8%
47	Suburban g s	Suburban, 1 lane/direction, good conditions, slow	PFTBL	56	18750	1260	7%
48	Suburban t s	Suburban, 1 lane/direction, typical conditions, slow	PFTBL	56	12750	1020	8%
49	Suburban p s	Suburban, 1 lane/direction, poor conditions, slow	PFTBL	56	9625	710	7%
51	Urban nc g	Urban, non-central, 1 lane/direction, good conditions	PFTBL	47	12250	970	8%
52	Urban nc t	Urban, non-central, 1 lane/direction, typical conditions	PFTBL	47	9625	770	8%
53	Urban nc p f	Urban, non-central, 1 lane/direction, poor conditions, fast	PFTBL	38	9000	700	8%
54	Urban nc p s	Urban, non-central, 1 lane/direction, poor conditions, slow	PFTBL	30	7750	600	8%
55	Urban nc vg	Urban, non-central, 2 lanes/direction, very good conditions	PFTBL	47	18750	1480	8%
59	Bus link	Dedicated Bus link	BL	47	9625	770	8%
61	Urban c 4	Urban, central, 4 lanes/direction	PFTBL	50	36000	2880	8%

Table B1: Schedule of Link Types (Continued)

Nr	NAME	Classification	Transport Systems	Initial speed	Capacity		
					24 hours	1 hour	Hour/day
62	Urban c 3 g	Urban, central, 3 lanes/direction, good conditions	PFTBL	50	27000	2160	8%
63	Urban c 3 t	Urban, central, 3 lanes/direction, typical conditions	PFTBL	50	24000	1860	8%
64	Urban c 2 g	Urban, central, 2 lanes/direction, good conditions	PFTBL	50	18000	1440	8%
65	Urban c 2 t	Urban, central, 2 lanes/direction, typical conditions	PFTBL	50	16000	1240	8%
66	Urban c g	Urban, central, 1 lane/direction, good conditions	PFTBL	38	9000	720	8%
67	Urban c t	Urban, central, 1 lane/direction, typical conditions	PFTBL	34	7875	620	8%
68	Urban c p	Urban, central, 1 lane/direction, poor conditions	PFTBL	27	5375	430	8%
69	Traffic calming	Traffic Calming Area	PFTBLW	27	4000	320	8%
71	Small town g	Small town, low development areas	PFTBLW	63	15875	1250	8%
72	Small town t	Small town, typical development areas	PFTBLW	56	13750	1080	8%
73	Small town p	Small town, dense development areas	PFTBLW	46	10750	850	8%
78	Ferry	Ferry	PFTB	15	5000	400	8%
79	Car Park	Parking Facility	PFTBW	15	2000	160	8%
81	Ramp 110	Motorway ramp, 1 lane, initial speed 110 km/h	PFTB	110	16000	1280	8%
82	Ramp 95	Motorway ramp, 1 lane, initial speed 95 km/h	PFTB	95	15000	1200	8%
83	Ramp 80	Motorway ramp, 1 lane, initial speed 80 km/h	PFTB	80	14000	1120	8%
84	Ramp 65	Motorway ramp, 1 lane, initial speed 65 km/h	PFTB	65	13000	1040	8%
85	Ramp 50	Motorway ramp, 1 lane, initial speed 50 km/h	PFTB	50	13000	1040	8%
86	Roundabout 3	Roundabout, 3 lanes	PFTB	50	50000	4000	8%
87	Roundabout 2	Roundabout, 2 lanes	PFTB	50	37500	3000	8%
88	Roundabout 1	Roundabout, 1 lane	PFTB	50	18750	1500	8%
92	Railway	Rail track	LR	80	0	0	
99	Pedestrian Walkway	Pedestrian Connection	W	4	0	0	

Table B2: Node Type Dependent Turning Penalties

Node type	Priority situation	Right turn	Straight	Left turn
10 Urban with traffic signals	--	25	15	15
	+-	25	15	15
	+-	20	10	10
	++	20	10	10
20 Urban without traffic signals	--	15	10	5
	+-	15	5	5
	+-	5	0	0
	++	0	0	0
30 rural	--	0	0	0
	+-	0	0	0
	+-	0	0	0
	++	0	0	0
40 motorway	--	0	0	0
	+-	0	0	0
	+-	0	0	0
	++	0	0	0

Priority situation: + road with priority / - road without priority
Penalties in seconds

Figure B3

Example of Detailed Roundabout Coding

