



Norwich - Northern Distributor Road

Major Scheme Business Case
Sensitivity Tests for DfT

Tests 2 to 6

Volume 2 – Appendices for Test 2
(Appendices A, B, C, D, E & F)

December 2009
Norfolk County Council

Norwich - Northern Distributor Road

Major Scheme Business Case
Sensitivity Tests for DfT

Tests 2 to 6

Volume 2 – Appendices for Test 2
(Appendices A, B, C, D, E & F)

December 2009

Norfolk County Council

Issue and revision record

Revision	Date	Originator	Checker	Approver	Description
01	03/12/2009	Mo Shahkarami	Brian Witten Chris White	Gerry Kelly	Final

This document is issued for the party which commissioned it and for specific purposes connected with the above-captioned project only. It should not be relied upon by any other party or used for any other purpose.

We accept no responsibility for the consequences of this document being relied upon by any other party, or being used for any other purpose, or containing any error or omission which is due to an error or omission in data supplied to us by other parties

This document contains confidential information and proprietary intellectual property. It should not be shown to other parties without consent from us and from the party which commissioned it.

Content

Chapter	Title	Page
Appendix A.	List of All Housing Development Locations _____	1
Appendix B.	Traffic Flows, Sensitivity Test 2 _____	6
Appendix C.	Trip Totals (PCUs) by Sector, Sensitivity Test 2 _____	11
Appendix D.	PCU Kilometres by Sector, Sensitivity Test 2 _____	29
Appendix E.	TUBA Results, Sensitivity Test 2 _____	56
Appendix F.	TUBA Warnings, Sensitivity Test 2 _____	60
Appendices	Sensitivity Test 3 – See Volume 3 _____	
Appendices	Sensitivity Test 4 – See Volume 4 _____	
Appendices	Sensitivity Test 5 – See Volume 5 _____	
Appendices	Sensitivity Test 6 – See Volume 6 _____	

Tables

Table A.1:	2006-2016 Housing Development Forecasts in Norwich, Broadland and South Norfolk _____	1
Table A.2:	2006-2016 Business Development Forecasts in Norwich, Broadland and South Norfolk _____	4
Table B.1:	2006 and 2016 Key Road Flows - Base year, Core Scenario, Test 2 DM and Test 2 DS _____	7
Table B.2:	2006 and 2031 Key Road Flows - Base year, Core Scenario, Test 2 DM and Test 2 DS _____	9
Table C.1:	2006 Base Year Trip Totals, AM Peak _____	12
Table C.2:	2006 Base Year Trip Totals, IP _____	12
Table C.3:	2006 Base Year Trip Totals, PM Peak _____	13
Table C.4:	2016 Reference Case Pessimistic Local Development Trip Totals, AM Peak _____	13
Table C.5:	2016 Reference Case Pessimistic Local Development Trip Totals, IP _____	14
Table C.6:	2016 Reference Case Pessimistic Local Development Trip Totals, PM Peak _____	14
Table C.7:	2016 DM Pessimistic Local Development Trip Totals, AM Peak _____	15
Table C.8:	2016 DM Pessimistic Local Development Trip Totals, IP _____	15
Table C.9:	2016 DM Pessimistic Local Development Trip Totals, PM Peak _____	16
Table C.10:	2016 DM Difference in Trip Totals Between Pessimistic Local Development and Reference Case, AM Peak _____	16
Table C.11:	2016 DM Difference in Trip Totals Between Pessimistic Local Development and Reference Case, IP _____	17
Table C.12:	2016 DM Difference in Trip Totals Between Pessimistic Local Development and Reference Case, PM Peak _____	17
Table C.13:	2031 DM Pessimistic Local Development Reference Case Trip Totals, AM Peak _____	18
Table C.14:	2031 Pessimistic Local Development Reference Case Trip Totals, IP _____	18
Table C.15:	2031 Pessimistic Local Development Reference Case Trip Totals, PM Peak _____	19
Table C.16:	2031 DM Pessimistic Local Development Trip Totals, AM Peak _____	19
Table C.17:	2031 DM Pessimistic Local Development Trip Totals, IP _____	20
Table C.18:	2031 DM Pessimistic Local Development Trip Totals, PM Peak _____	20
Table C.19:	2031 DM Difference in Trip Totals Between Pessimistic Local Development and Reference Case, AM Peak _____	21
Table C.20:	2031 DM Difference in Trip Totals Between Pessimistic Local Development and Reference Case, IP _____	21
Table C.21:	2031 DM Difference in Trip Totals Between Pessimistic Local Development and Reference Case, PM Peak _____	22
Table C.22:	2016 DS Pessimistic Local Development Trip Totals, AM Peak _____	22
Table C.23:	2016 DS Pessimistic Local Development Trip Totals, IP _____	23
Table C.24:	2016 DS Pessimistic Local Development Trip Totals, PM Peak _____	23

Table C.25: 2016 DS Difference in Trip Totals Between Pessimistic Local Development and Reference Case, AM Peak	24
Table C.26: 2016 DS Difference in Trip Totals Between Pessimistic Local Development and Reference Case, IP	24
Table C.27: 2016 DS Difference in Trip Totals Between Pessimistic Local Development and Reference Case, PM Peak	25
Table C.28: 2031 DS Pessimistic Local Development Trip Totals, PM Peak	25
Table C.29: 2031 DS Pessimistic Local Development Trip Totals, IP	26
Table C.30: 2031 DS Pessimistic Local Development Trip Totals, PM Peak	26
Table C.31: 2031 DS Difference in Trip Totals Between Pessimistic Local Development and Reference Case, AM Peak	27
Table C.32: 2031 DS Difference in Trip Totals Between Pessimistic Local Development and Reference Case, IP	27
Table C.33: 2031 DS Difference in Trip Totals Between Pessimistic Local Development and Reference Case, PM Peak	28
Table D.1: 2006 Base Year PCU Kilometres, AM Peak	29
Table D.2: 2006 Base Year PCU Kilometres, IP	30
Table D.3: 2006 Base Year PCU Kilometres, PM Peak	31
Table D.4: 2016 DM Pessimistic Local Development PCU Kilometres, AM Peak	32
Table D.5: 2016 DM Pessimistic Local Development PCU Kilometres, IP	33
Table D.6: 2016 DM Pessimistic Local Development PCU Kilometres, PM Peak	34
Table D.7: 2016 DM Difference in PCU Kilometres Between Pessimistic Local Development and Base Year, AM Peak	35
Table D.8: 2016 DM Difference in PCU Kilometres Between Pessimistic Local Development and Base Year, IP	36
Table D.9: 2016 DM Difference in PCU Kilometres Between Pessimistic Local Development and Base Year, PM Peak	37
Table D.10: 2031 DM Pessimistic Local Development PCU Kilometres, AM Peak	38
Table D.11: 2031 DM Pessimistic Local Development PCU Kilometres, IP	39
Table D.12: 2031 DM Pessimistic Local Development PCU Kilometres, PM Peak	40
Table D.13: 2031 DM Difference in PCU Kilometres Between Pessimistic Local Development and Base Year, AM Peak	41
Table D.14: 2031 DM Difference in PCU Kilometres Between Pessimistic Local Development and Base Year, IP	42
Table D.15: 2031 DM Difference in PCU Kilometres Between Pessimistic Local Development and Base Year, PM Peak	43
Table D.16: 2016 DS Pessimistic Local Development PCU Kilometres, AM Peak	44
Table D.17: 2016 DS Pessimistic Local Development PCU Kilometres, IP	45
Table D.18: 2016 DS Pessimistic Local Development PCU Kilometres, PM Peak	46
Table D.19: 2016 DS Difference in PCU Kilometres Between Pessimistic Local Development and Base Year, AM Peak	47
Table D.20: 2016 DS Difference in PCU Kilometres Between Pessimistic Local Development and Base Year, IP	48
Table D.21: 2016 DS Difference in PCU Kilometres Between Pessimistic Local Development and Base Year, PM Peak	49
Table D.22: 2031 DS Pessimistic Local Development PCU Kilometres, AM Peak	50
Table D.23: 2031 DS Pessimistic Local Development PCU Kilometres, IP	51
Table D.24: 2031 DS Pessimistic Local Development PCU Kilometres, PM Peak	52
Table D.25: 2031 DS Difference in PCU Kilometres Between Pessimistic Local Development and Base Year, AM Peak	53
Table D.26: 2031 DS Difference in PCU Kilometres Between Pessimistic Local Development and Base Year, IP	54
Table D.27: 2031 DS Difference in PCU Kilometres Between Pessimistic Local Development and Base Year, PM Peak	55

Table E.1: TUBA Sector Benefits	59
Table E.2: TUBA Sector Benefits as a Percentage	59
Table F.1: Summary of TUBA Warnings	60

Figures

Figure B.1: Traffic Flow Locations	6
Figure C.1: NATS Model Sectors	11
Figure E.1: Economic Efficiency of the Transport System (TEE)	56
Figure E.2: Sectors for TUBA Analysis	58

Appendix A. List of All Housing Development Locations

Housing and business developments built, consented or applied for are shown in grey

Table A.1: 2006-2016 Housing Development Forecasts in Norwich, Broadland and South Norfolk

Local Plan Development	District	Units	Model Zone
Hellesdon	Broadland	38	119
Hellesdon, Golf Course	Broadland	102	121
Hellesdon Hospital	Broadland	34	122
Hellesdon, A140 corridor	Broadland	34	123
Drayton	Broadland	54	127
Spixworth	Broadland	17	154
Rackheath Eco-Community	Broadland	1,035	157
Blofield	Broadland	33	163
Thorpe St Andrew	Broadland	71	166
Sprowston	Broadland	317	11402
Old Catton	Broadland	75	11702
Taverham	Broadland	41	15101
Blue Boar Lane	Broadland	882	15602
Great and Little Plumstead	Broadland	283	15801
SPROWSTON FRINGE			
	Broadland		
South of Plumstead Road	Broadland	31	84
Between Wroxham and North Walsham Road	Broadland	91	155
Between Salhouse and Wroxham Road	Broadland	114	15602
Between Plumstead and Salhouse Road	Broadland	114	15801
Sprowston Fringe Total	Broadland	350	
BROADLAND TOTAL		3,366	
St. Andrews Street, Rumsey Wells Court	Norwich	12	8
Castle Meadow, 7-7a (Castle House)	Norwich	22	10
Tombland, Samson and Hercules House	Norwich	17	11
Cathedral Street, 16	Norwich	14	13
Greyfriars Road / Rose Lane	Norwich	130	14
Mountergate, Baltic Wharf	Norwich	11	14
Mountergate / Rose Lane	Norwich	80	14
Surrey Street, 29-35	Norwich	12	19
Bethel Street, 59 (Labour Club)	Norwich	14	25
Pottergate, 34 (Pottergate / Fishers Lane)	Norwich	50	27
Pottergate, Thorndick and Dawson	Norwich	18	27
St Giles Street, rear 29	Norwich	17	27
Duke Street, Dukes Palace Wharf*	Norwich	35	33
Duke Street, Dukes Wharf [70]	Norwich	16	33
Duke Street, St Mary's Works	Norwich	50	33
Duke Street, Start Rite Site (adj hotel) [21]	Norwich	40	33
Mary Chapman Court	Norwich	40	33
Muspole Street	Norwich	40	33
Fishergate, 17-27	Norwich	13	36

Fishergate, Bulsare Warehouse	Norwich	10	36
Fishergate, Old Millers Wharf	Norwich	31	36
Magdalen Street, Zipfels Court	Norwich	10	36
Quayside / Bedding Lane / Palace Street*	Norwich	25	36
Quayside / Pigg Lane*	Norwich	15	36
St Saviours Lane, Hi Tech House	Norwich	40	36
Whitefriars, Smurfitt Kappa	Norwich	90	36
King Street, 131-133 (King St / Hobrough Lane)	Norwich	35	41
King Street, 148-162	Norwich	22	41
King Street, Paper Mill Yard	Norwich	180	41
King Street, Reads Mill and Cannon Wharf	Norwich	160	41
King Street, St Anne's Wharf [437]	Norwich	200	41
Music House Lane, 1-4	Norwich	40	41
Ber Street, 10-34	Norwich	30	43
Ber Street, 84-104 [25]	Norwich	25	43
Ber Street, 93-101	Norwich	18	43
Foulgers Opening, Foulgers House	Norwich	58	43
Oak Street, L C Jay and Son	Norwich	12	47
Oak Street, Spring Grove Laundry	Norwich	21	47
Oak Street, The Talk / 114	Norwich	40	47
Oak Street / New Mills Yard*	Norwich	38	47
St Crispins Road / Pitt Street	Norwich	25	47
St Martins Road, The Watering	Norwich	21	47
Sussex Street, Sussex House	Norwich	15	47
Edward Street, Hunters Squash Club	Norwich	24	49
St Stephens Road, 54-78	Norwich	18	56
St Stephens Road, Needham Place (Courts)	Norwich	24	56
St Stephens Road, N and N Hospital Site*	Norwich	504	57
Chapelfield	Norwich	116	58
Unthank Road, 124-126	Norwich	10	58
Greyhound Opening	Norwich	25	60
Haslips Close / Devonshire Street	Norwich	20	60
Aylsham Road, 2-6	Norwich	13	61
Aylsham Road, St Lukes Court	Norwich	20	61
Waterloo Road / Magpie Road	Norwich	10	61
Silver Road / Mousehold Avenue	Norwich	14	62
Crome Road, Start-Rite (Cobblers Mews)	Norwich	151	63
Pearcefield, 17	Norwich	10	63
Bishop Bridge Road, 27 (Box and Barrel Site)	Norwich	24	64
Bishop Bridge Road, Gas Works	Norwich	15	64
Egyptian Road / Bishop Bridge Road	Norwich	30	64
Rosary Road, Bertram Books	Norwich	113	65
Thorpe Road, 1-5 (Great Eastern Court)*	Norwich	33	65
Thorpe Road, 244 (Cavalier Hotel)	Norwich	10	65
Hall Road, 138	Norwich	10	69
Bowthorpe Road, Norwich Community Hospl.	Norwich	75	75
Earlham Road, Duff Morgan Garage Site	Norwich	53	75
Armes Street, Little John PH	Norwich	10	76

Nelson Street / Armes Street	Norwich	30	76
Northumberland Street, 120-130	Norwich	30	76
Turner Road, Youth Hostel site	Norwich	15	76
Bowers Avenue	Norwich	10	78
Drayton Road, 81-93	Norwich	10	78
Drayton Road, Lime Kiln Mews	Norwich	33	78
Havers Road / Mile Cross Road, Harmers*	Norwich	39	78
Lefroy Road	Norwich	17	78
Old Grove Court	Norwich	24	79
Philadelphia Lane, Crawshay Arms PH	Norwich	13	79
Woodcock Road, Highwayman PH*	Norwich	14	79
Catton Grove Road, Crown and Magpie PH	Norwich	22	80
Aylsham Road, 70	Norwich	14	81
Anthony Drive / Sprowston Road	Norwich	40	83
Wentworth Green, Civil Service Sports Ground	Norwich	78	93
Elizabeth Fry Road / Bacon Road*	Norwich	73	98
Elizabeth Fry Road / Gould Road	Norwich	81	98
Earlham Road, rear 523-527	Norwich	41	99
Dereham Road, The Loke	Norwich	103	100
Barrack Street / Whitefriars	Norwich	200	106
City Road, Corton House	Norwich	34	107
Munnings Road, Heartsease House	Norwich	17	113
Paine Road, garages rear 34-88	Norwich	27	113
Sale Road, adjacent 274-282	Norwich	10	113
Mousehold Lane, 28 (Start Rite Site)	Norwich	35	115
Ives Road / Bussey Road	Norwich	34	118
Harvey Lane, Morrison Lodge	Norwich	15	166
Rose Lane, 26-36 (Gerald Giles)	Norwich	24	1003
Rose Lane, Tudor Hall	Norwich	10	1003
All Saints Green / Queens Road (Bus Station)	Norwich	104	1903
Theatre Street, Chantry Car Park	Norwich	25	2101
Friars Quay, Colegate	Norwich	20	3601
Anglia Square	Norwich	250	4901
Beckham Place	Norwich	20	4902
Agricultural Hall Plain, Hardwick House	Norwich	24	6701
Wherry Road	Norwich	72	6703
Carrow Road, Riverside Heights*	Norwich	281	6705
Carrow Road / Kerrison Road (HOU9 A42)	Norwich	121	6705
Kerrison Road, Centenary House	Norwich	24	6705
Kerrison Road / Hardy Road (EMP15)	Norwich	52	6705
Kerrison Road / Hardy Road (HOU12 B48)	Norwich	200	6705
Bracondale, Deal Ground	Norwich	40	6803
Bowthorpe Road, Bowthorpe School Site*	Norwich	110	12801
Bowthorpe, Site TS2B Three Score*	Norwich	18	12802
Bowthorpe, Three Score Village	Norwich	750	12802
Bowthorpe, Tolye Road (Old Barn site)	Norwich	24	12802
Dereham Road, 238a (Earl of Leicester PH)	Norwich	12	12803

Dereham Road, 557	Norwich	21	12803
NORWICH (to be distributed over each NATS Zone)	Norwich	500	
TOTAL NORWICH		6,885	
Costessey	South Norfolk	2,271	125
Framingham Earl	South Norfolk	22	136
Poringland	South Norfolk	759	137
A140 corridor sites (Stoke Holy Cross, Swainsthorpe, Newton Flotman, Tasburgh)	South Norfolk	25	138
Mulbarton	South Norfolk	280	140
Swardeston	South Norfolk	18	141
Hethersett	South Norfolk	283	145
Little Melton	South Norfolk	17	146
Easton	South Norfolk	189	149
Long Stratton	South Norfolk	79	193
Wymondham	South Norfolk	1,003	520
Cringleford	South Norfolk	1,162	13003
Trowse	South Norfolk	25	6802
SOUTH NORFOLK TOTAL		6,133	
Windfall	Other	1,680	
Sites under 10 dwellings	Other	1,038	
Total Other		2,718	
Grand Total Housing Development for 2006-2016		19,102	
Total houses built, consented or applied for		12,131	

Table A.2: 2006-2016 Business Development Forecasts in Norwich, Broadland and South Norfolk

Local Plan Development	District	Land Use	Site Area (m ²)	Model Zone
Hellesdon	Broadland	B1 / B2 / B8	1,155	119
Sprowston	Broadland	B1 / B2 / B8	15,715	11402
Horsford	Broadland	B1 / B2 / B8	3,010	15201
Broadland Business Park, Green Lane	Broadland	B1 / B2 / B8	151,305	15901
Broadland Business Park, north	Broadland	B1 / B2 / B8	2,030	15901
BROADLAND TOTAL	Broadland		173,215	
Old Hall Road	Norwich	B1 / B2 / B8	5,740	91
Site at Kerrison Road	Norwich	B1	3,500	6705
Deal Ground, Trowse	Norwich	B1	15,190	6803
Cremorne Road	Norwich	B1 / B2 / B8	12,075	6804
Livestock Market, Hall Road	Norwich	A1 / B1 / B2 / B8	22,295	9102
Airport	Norwich	B1 / B2 / B8	7,245	12002

TOTAL NORWICH	Norwich		66,045	
Wymondham	South Norfolk	B1 / B2 / B8	53,795	520
Longwater (Costessey)	South Norfolk	B1 / B2 / B8	55,265	12601
NRP	South Norfolk	Research	28,000	12902
Colney Conting. (research)	South Norfolk	B1	24,500	12905
Colney Hall	South Norfolk	B1	26,250	12908
SOUTH NORFOLK TOTAL			187,810	
Grand Total Business Development for 2006-2016			427,070	
Total business development built, consented or applied for			396,305	

Appendix B. Traffic Flows, Sensitivity Test 2

Figure B.1: Traffic Flow Locations

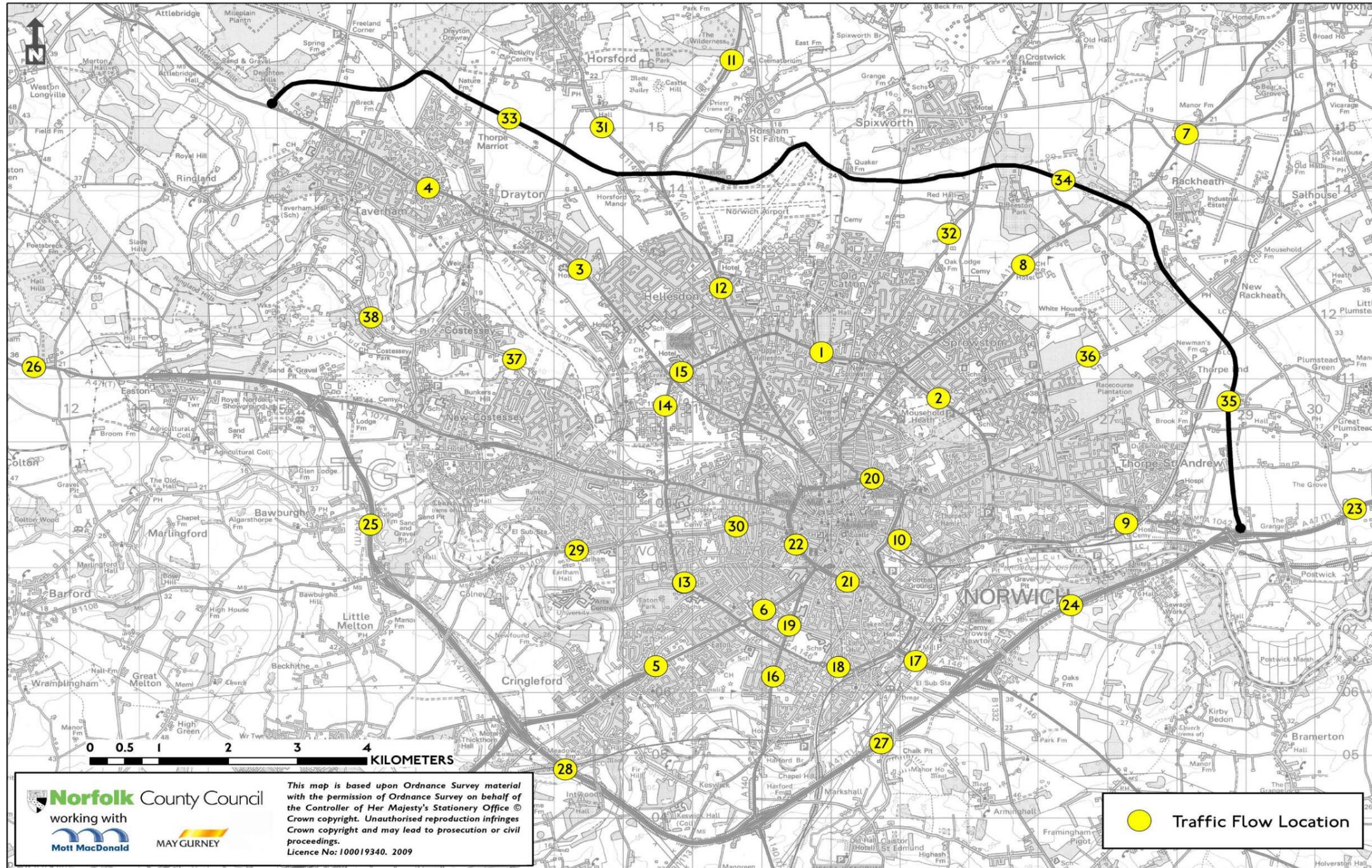


Table B.1: 2006 and 2016 Key Road Flows - Base year, Core Scenario, Test 2 DM and Test 2 DS

Ref	Road	BASE YEAR			CORE SCENARIO									SENSITIVITY TEST 2								
		2006 Flow			2016 DM Flows			2016 DS Flows			2016 DS - DM Flows			2016 DM Flows			2016 DS Flows			2016 DS - DM Flows		
		AM	IP	PM	AM	IP	PM	AM	IP	PM	AM	IP	PM	AM	IP	PM	AM	IP	PM	AM	IP	PM
1	A1042	1938	2218	2332	2080	2306	2340	2034	2065	2347	-47	-241	7	2058	2312	2320	2051	2074	2382	-7	-239	62
2	A1042	2022	1995	2151	2081	2071	2109	1798	1796	2215	-283	-275	106	2082	2099	2125	1814	1830	2222	-268	-269	97
3	A1067	1072	965	1227	1090	1142	1410	978	907	1153	-111	-234	-258	1091	1146	1417	975	913	1165	-116	-233	-252
4	A1067	1042	967	1334	1079	1129	1507	520	655	837	-559	-474	-669	1080	1136	1528	524	664	857	-556	-472	-671
5	A11	2421	1705	2330	2603	2193	2419	2543	2112	2404	-60	-81	-15	2587	2152	2415	2540	2038	2399	-48	-114	-16
6	A11	932	702	811	1005	863	926	928	805	794	-76	-58	-132	999	854	920	956	791	809	-43	-63	-110
7	A1151	1257	855	1377	1453	1069	1451	1268	1081	1423	-185	12	-27	1442	1064	1483	1292	1100	1445	-150	36	-38
8	A1151	896	856	1001	1007	1018	1202	1047	1184	1589	40	166	388	958	982	1141	1015	1165	1581	57	183	440
9	A1242	997	647	1236	877	665	1341	781	537	949	-95	-127	-392	874	655	1342	774	529	941	-99	-126	-401
10	A1242	764	447	586	761	489	626	570	407	435	-191	-83	-191	747	498	607	569	408	421	-178	-89	-186
11	A140	1144	894	1270	1252	1013	1349	1267	1029	1384	15	16	35	1266	1033	1372	1282	1045	1409	16	12	37
12	A140	1590	1151	1522	1506	1153	1717	1365	1087	1678	-141	-66	-38	1519	1177	1730	1379	1101	1698	-140	-76	-32
13	A140	1331	1374	1644	1252	1244	1236	1279	1249	1206	27	5	-30	1256	1261	1243	1280	1253	1210	24	-7	-33
14	A140	2529	2281	2380	2648	2492	2644	2628	2424	2663	-21	-67	19	2657	2500	2618	2637	2431	2678	-20	-69	60
15	A140	2189	2022	2019	2284	2199	2422	2228	2050	2295	-56	-149	-127	2290	2213	2411	2230	2061	2300	-59	-152	-111
16	A140	1666	1263	1509	1498	1295	1562	1522	1270	1480	23	-25	-82	1503	1314	1579	1525	1286	1497	21	-28	-82
17	A146	3405	2218	3397	3460	2558	3305	3525	2679	3434	65	122	129	3480	2571	3312	3528	2682	3424	48	111	112
18	A146	1472	987	1467	1085	843	1200	1063	902	1194	-22	59	-6	1098	846	1217	1067	896	1188	-30	49	-29
19	A146	719	469	525	703	572	737	719	561	659	15	-11	-78	700	577	748	706	567	676	7	-11	-73
20	A147	2080	1781	1898	2548	2470	2620	2566	2530	2565	18	59	-55	2556	2467	2614	2574	2508	2568	18	41	-47
21	A147	1490	1062	1530	1626	1339	1552	2037	1959	2196	410	620	644	1615	1329	1546	2021	1934	2170	407	605	624
22	A147	2423	1740	2096	2492	1962	2504	2511	2297	2508	19	335	4	2488	1962	2498	2527	2301	2525	40	339	27
23	A47	3689	2630	3752	3685	2958	3854	3464	2929	3572	-221	-29	-282	3709	2989	3868	3508	2962	3591	-201	-27	-277
24	A47	4128	2429	4111	5499	3340	5296	5326	3808	5729	-172	468	433	5517	3388	5322	5343	3856	5758	-174	468	435
25	A47	4311	2438	3900	5271	3384	5022	4772	3029	4533	-499	-355	-489	5323	3424	5040	4822	3060	4565	-501	-364	-475

Norwich - Northern Distributor Road
Volume 2 – Appendices for Test 2



26	A47	2399	1541	2129	2600	1928	2226	2398	1771	2122	-202	-158	-104	2603	1958	2233	2424	1798	2137	-179	-160	-96
27	A47	4332	2575	4206	5785	3635	5545	5488	3663	5473	-297	28	-72	5772	3660	5529	5484	3680	5442	-288	20	-87
28	A47	5055	2904	4853	6585	4117	6401	6272	4019	5971	-312	-98	-429	6558	4126	6338	6237	4021	5887	-321	-105	-451
29	B1108	2127	1641	2168	2471	1854	2283	2462	1750	2319	-10	-104	36	2459	1847	2295	2453	1752	2346	-6	-95	51
30	B1108	1003	844	824	1096	857	982	960	791	956	-136	-66	-26	1085	846	941	946	794	937	-139	-52	-4
31	B1149	933	564	932	1013	649	992	1174	715	1187	162	65	195	1033	657	1008	1176	725	1206	143	69	198
32	B1150	951	635	1029	897	740	951	846	531	714	-50	-209	-237	896	744	942	837	532	720	-60	-212	-221
33	NDR	N/A	N/A	N/A	N/A	N/A	N/A	2752	1491	2746	N/A	N/A	N/A	N/A	N/A	N/A	2780	1508	2773	N/A	N/A	N/A
34	NDR	N/A	N/A	N/A	N/A	N/A	N/A	4852	2532	4811	N/A	N/A	N/A	N/A	N/A	N/A	4853	2538	4851	N/A	N/A	N/A
35	NDR	N/A	N/A	N/A	N/A	N/A	N/A	3568	2169	3765	N/A	N/A	N/A	N/A	N/A	N/A	3554	2175	3756	N/A	N/A	N/A
36	Salhous Rd	984	620	916	1095	788	868	1099	734	1093	4	-54	225	1088	763	866	1113	731	1099	25	-32	233
37	Town House Rd	471	84	248	553	99	246	507	109	244	-46	11	-2	565	101	247	516	107	249	-49	7	1
38	West End	489	329	592	370	249	454	304	209	340	-66	-40	-114	376	254	452	308	213	342	-68	-41	-110

Table B.2: 2006 and 2031 Key Road Flows - Base year, Core Scenario, Test 2 DM and Test 2 DS

Ref	Road	BASE YEAR			CORE SCENARIO									SENSITIVITY TEST 2								
		2006 Flow			2031 DM Flows			2031 DS Flows			2031 DS - DM Flows			2031 DM Flows			2031 DS Flows			2031 DS - DM Flows		
		AM	IP	PM	AM	IP	PM	AM	IP	PM	AM	IP	PM	AM	IP	PM	AM	IP	PM	AM	IP	PM
1	A1042	1938	2218	2332	2077	2378	2362	2098	2199	2375	21	-179	14	2083	2375	2378	2115	2205	2380	32	-170	2
2	A1042	2022	1995	2151	2194	2147	2141	1933	2036	2203	-262	-111	62	2184	2181	2151	1917	2056	2189	-267	-125	38
3	A1067	1072	965	1227	1139	1221	1384	1024	968	1197	-116	-253	-187	1141	1230	1387	1018	976	1244	-124	-255	-144
4	A1067	1042	967	1334	1001	1279	1590	525	729	898	-477	-550	-692	1006	1290	1603	534	741	933	-472	-549	-670
5	A11	2421	1705	2330	2714	2329	2517	2688	2243	2498	-26	-86	-20	2706	2296	2510	2675	2214	2491	-31	-82	-19
6	A11	932	702	811	1019	903	1104	1026	839	923	7	-64	-181	1028	893	1118	1045	839	922	17	-54	-196
7	A1151	1257	855	1377	1528	1208	1456	1347	1282	1523	-180	73	68	1539	1210	1450	1386	1302	1549	-153	92	99
8	A1151	896	856	1001	1121	1100	1413	1360	1451	1788	239	351	375	1014	1061	1347	1330	1426	1798	315	365	451
9	A1242	997	647	1236	1209	794	1691	945	590	1161	-264	-204	-530	1198	782	1674	938	583	1149	-260	-199	-526
10	A1242	764	447	586	814	634	718	594	425	466	-220	-209	-252	801	633	713	592	425	466	-209	-208	-247
11	A140	1144	894	1270	1397	1198	1477	1415	1232	1513	18	35	35	1417	1212	1497	1436	1249	1534	19	37	36
12	A140	1590	1151	1522	1620	1354	1847	1521	1248	1806	-100	-106	-41	1629	1377	1873	1537	1262	1834	-92	-116	-39
13	A140	1331	1374	1644	1242	1384	1356	1266	1385	1280	24	1	-76	1248	1410	1353	1281	1402	1269	33	-8	-84
14	A140	2529	2281	2380	2833	2736	2690	2759	2675	2774	-73	-61	84	2847	2739	2688	2748	2687	2759	-99	-51	71
15	A140	2189	2022	2019	2367	2391	2482	2316	2293	2456	-51	-98	-26	2364	2402	2483	2316	2304	2448	-48	-98	-34
16	A140	1666	1263	1509	1528	1417	1527	1516	1410	1540	-12	-7	12	1539	1431	1513	1524	1424	1545	-15	-7	32
17	A146	3405	2218	3397	3307	2984	3627	3420	3050	3748	113	67	121	3311	2984	3656	3391	3046	3743	80	62	87
18	A146	1472	987	1467	1116	1034	1414	1134	1066	1290	18	32	-124	1139	1032	1404	1164	1061	1247	25	29	-157
19	A146	719	469	525	721	604	798	741	609	772	20	4	-25	711	611	805	737	610	771	26	-1	-34
20	A147	2080	1781	1898	2534	2505	2617	2562	2503	2654	29	-3	37	2543	2506	2646	2567	2509	2656	24	2	11
21	A147	1490	1062	1530	1884	1542	1659	2102	2018	2282	218	476	623	1881	1528	1651	2092	2011	2271	211	483	620
22	A147	2423	1740	2096	2445	2104	2432	2571	2378	2430	126	274	-2	2460	2101	2434	2578	2378	2421	118	277	-13
23	A47	3689	2630	3752	4186	3456	4134	3602	3422	3788	-584	-34	-346	4216	3495	4139	3633	3461	3808	-583	-34	-331
24	A47	4128	2429	4111	5875	4191	5815	5774	4714	6372	-101	523	557	5889	4239	5842	5786	4752	6381	-103	513	539

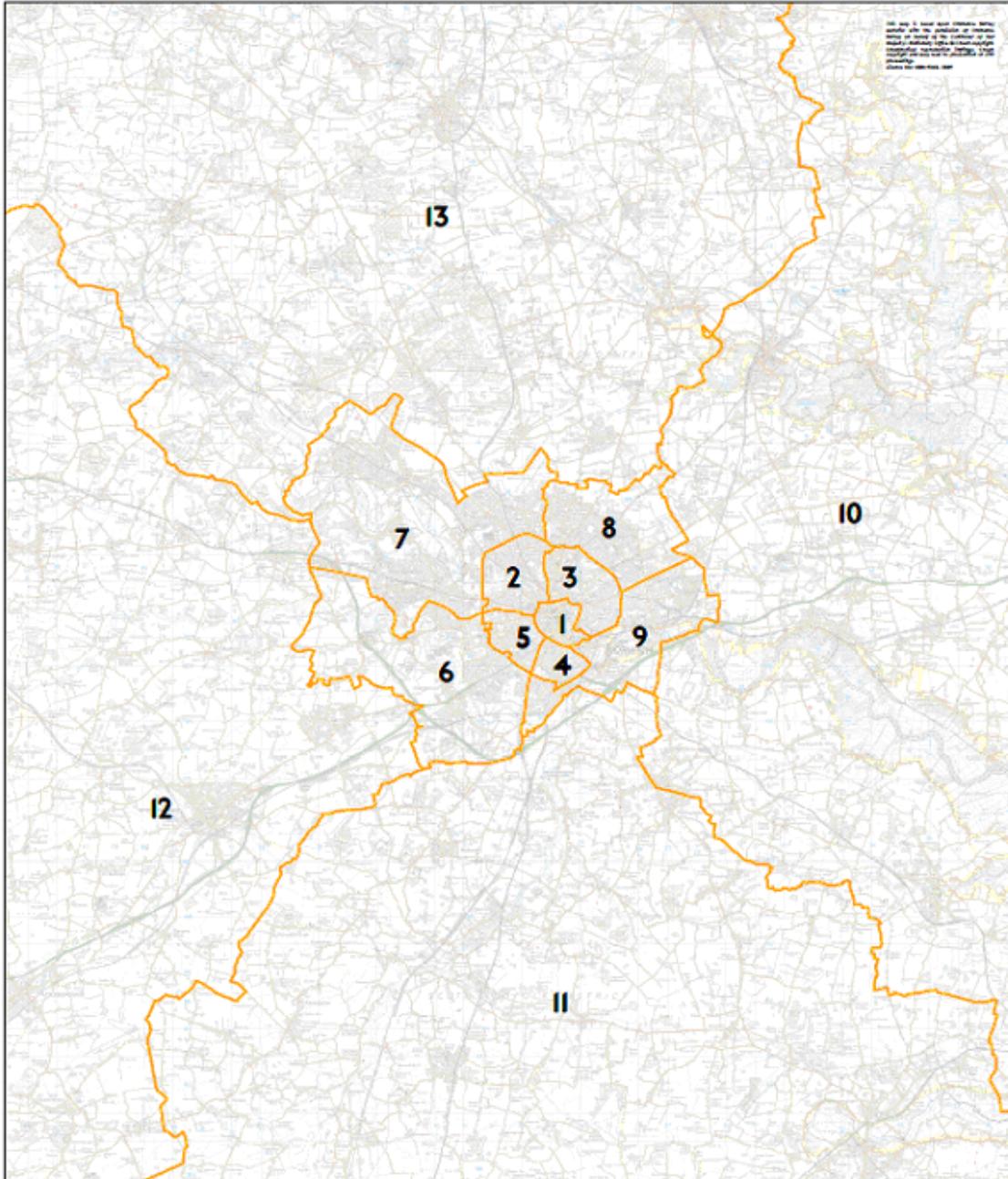
Norwich - Northern Distributor Road
Volume 2 – Appendices for Test 2



25	A47	4311	2438	3900	5856	4158	5667	5484	3707	5258	-372	-451	-409	5892	4203	5671	5527	3735	5276	-365	-468	-395
26	A47	2399	1541	2129	2594	2124	2308	2532	2013	2193	-62	-111	-115	2593	2140	2314	2530	2028	2208	-63	-112	-106
27	A47	4332	2575	4206	6078	4630	6235	5926	4603	6217	-152	-27	-18	6040	4644	6210	5910	4610	6212	-130	-34	2
28	A47	5055	2904	4853	7290	5252	7542	7001	5043	7258	-290	-208	-284	7268	5245	7467	6969	5029	7161	-299	-216	-306
29	B1108	2127	1641	2168	2628	2187	2515	2580	2031	2561	-48	-156	46	2632	2172	2531	2576	2024	2559	-56	-149	28
30	B1108	1003	844	824	1194	884	985	1054	823	960	-140	-60	-25	1194	884	965	1045	825	958	-149	-59	-7
31	B1149	933	564	932	1139	736	1146	1095	843	1307	-44	108	161	1164	744	1165	1093	855	1325	-71	111	160
32	B1150	951	635	1029	1057	836	990	1070	682	924	12	-154	-67	1076	840	1024	1071	680	929	-5	-160	-95
33	NDR	N/A	N/A	N/A	N/A	N/A	N/A	3687	1970	3655	N/A	N/A	N/A	N/A	N/A	N/A	3678	1988	3650	N/A	N/A	N/A
34	NDR	N/A	N/A	N/A	N/A	N/A	N/A	5350	3332	5566	N/A	N/A	N/A	N/A	N/A	N/A	5340	3327	5572	N/A	N/A	N/A
35	NDR	N/A	N/A	N/A	N/A	N/A	N/A	3407	2823	4001	N/A	N/A	N/A	N/A	N/A	N/A	3365	2813	3967	N/A	N/A	N/A
36	Salhouse Rd	984	620	916	1141	940	897	1150	878	1290	10	-63	394	1153	920	888	1165	879	1296	12	-40	408
37	Town House Rd	471	84	248	651	113	272	579	127	284	-72	14	12	672	115	276	595	124	296	-77	9	20
38	West End	489	329	592	462	303	477	349	251	387	-113	-52	-90	469	310	458	358	257	390	-111	-53	-68

Appendix C. Trip Totals (PCUs) by Sector, Sensitivity Test 2

Figure C.1: NATS Model Sectors



This document should not be relied on or used in circumstances other than those for which it was originally prepared and for which Mott MacDonald Ltd was commissioned.
 Mott MacDonald Ltd accepts no responsibility for this document to any other party other than the person by whom it was commissioned.

<p>Norfolk County Council working with </p>	<p>Mike Jackson Director of Planning and Transportation Norfolk County Council County Hall Martinsau Lane Norwich NR1 2SG</p>	<p>DRAWING TITLE</p> <p>NORFOLK NDR NATS Sector Zones</p>																																																
<p>Mott MacDonald County Hall Martinsau Lane Norwich NR1 2US Tel: 01603 767530 Fax: 01603 767460 Web: www.mottmac.com</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>REV.</th> <th>DESCRIPTION</th> <th>CHECKED</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>Draw for Publication</td> <td>SS</td> <td>08/07/09</td> </tr> <tr> <td>B</td> <td>---</td> <td>---</td> <td>---</td> </tr> <tr> <td>C</td> <td>---</td> <td>---</td> <td>---</td> </tr> <tr> <td>D</td> <td>---</td> <td>---</td> <td>---</td> </tr> </tbody> </table>	REV.	DESCRIPTION	CHECKED	DATE	A	Draw for Publication	SS	08/07/09	B	---	---	---	C	---	---	---	D	---	---	---	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>DRAWN BY</th> <th>INT.</th> <th>DATE</th> <th>GIS FILE REF:</th> </tr> </thead> <tbody> <tr> <td>DWV</td> <td>---</td> <td>08/07/09</td> <td>NATL_Doned4.mxd</td> </tr> <tr> <th>CHECKED BY</th> <th>---</th> <th>---</th> <th>PROJECT TITLE</th> </tr> <tr> <td>---</td> <td>---</td> <td>---</td> <td>Norfolk Northern Distributor Route - HSC</td> </tr> <tr> <th>APPROVED BY</th> <th>---</th> <th>---</th> <th>SCALE</th> </tr> <tr> <td>---</td> <td>---</td> <td>---</td> <td>Not to Scale</td> </tr> <tr> <td colspan="3"></td> <td>FILE No. 02906</td> </tr> </tbody> </table>	DRAWN BY	INT.	DATE	GIS FILE REF:	DWV	---	08/07/09	NATL_Doned4.mxd	CHECKED BY	---	---	PROJECT TITLE	---	---	---	Norfolk Northern Distributor Route - HSC	APPROVED BY	---	---	SCALE	---	---	---	Not to Scale				FILE No. 02906
REV.	DESCRIPTION	CHECKED	DATE																																															
A	Draw for Publication	SS	08/07/09																																															
B	---	---	---																																															
C	---	---	---																																															
D	---	---	---																																															
DRAWN BY	INT.	DATE	GIS FILE REF:																																															
DWV	---	08/07/09	NATL_Doned4.mxd																																															
CHECKED BY	---	---	PROJECT TITLE																																															
---	---	---	Norfolk Northern Distributor Route - HSC																																															
APPROVED BY	---	---	SCALE																																															
---	---	---	Not to Scale																																															
			FILE No. 02906																																															

Table C.1: 2006 Base Year Trip Totals, AM Peak

AM	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	1917	355	757	318	337	252	229	151	386	102	41	91	34	4970
2	429	1095	637	256	167	390	924	295	65	175	99	140	103	4775
3	803	471	753	70	81	83	222	383	459	320	128	100	116	3989
4	464	15	44	192	203	263	117	4	211	69	63	55	37	1737
5	429	184	126	344	461	489	233	20	131	142	116	220	78	2973
6	361	296	43	833	418	1566	644	10	558	231	202	355	110	5627
7	631	1157	381	213	323	925	3412	684	345	672	337	505	1005	10590
8	507	583	1187	38	32	37	735	722	470	348	126	161	219	5165
9	924	103	486	505	326	774	705	261	1221	364	197	142	133	6141
10	662	243	292	283	125	583	623	481	750	182	323	391	117	5055
11	575	242	155	300	137	463	360	176	526	270	94	407	410	4115
12	751	240	175	341	207	764	540	109	356	755	514	208	244	5204
13	344	279	159	207	89	363	991	242	235	178	319	291	488	4185
SUM	8797	5263	5195	3900	2906	6952	9735	3538	5713	3808	2559	3066	3094	64526

Table C.2: 2006 Base Year Trip Totals, IP

IP	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	2672	183	157	72	86	190	320	259	312	302	280	274	132	5239
2	88	657	460	113	279	296	893	222	159	148	71	135	99	3620
3	156	409	599	131	174	66	350	366	381	185	72	59	73	3021
4	78	55	92	147	174	239	106	42	221	87	82	101	32	1456
5	84	485	129	238	374	228	165	43	127	60	57	80	41	2111
6	198	341	66	426	348	1011	593	15	430	251	231	353	171	4434
7	281	738	270	130	222	623	2489	484	244	349	199	339	564	6932
8	213	265	293	27	26	49	507	783	557	361	54	91	147	3373
9	335	161	383	189	155	407	551	467	807	459	244	133	80	4371
10	330	153	181	87	42	242	326	346	447	111	251	455	109	3080
11	307	72	80	84	58	235	199	60	251	194	105	246	167	2058
12	269	132	62	94	79	356	358	100	141	459	254	125	174	2603
13	187	108	74	26	43	190	646	168	115	109	184	147	385	2382
SUM	5198	3759	2846	1764	2060	4132	7503	3355	4192	3075	2084	2538	2174	44680

Table C.3: 2006 Base Year Trip Totals, PM Peak

PM	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	1684	177	474	145	178	301	550	458	455	694	528	623	455	6722
2	393	798	470	170	213	304	1326	266	113	218	203	202	230	4906
3	506	408	854	136	85	115	506	639	274	271	140	141	172	4247
4	407	17	63	118	156	252	177	28	436	208	242	248	171	2523
5	541	184	131	288	384	463	329	34	71	102	106	165	82	2880
6	158	133	97	452	483	1249	661	51	484	422	427	583	296	5496
7	169	651	413	145	159	761	2677	1013	454	537	296	450	1150	8875
8	141	217	626	20	17	39	831	903	757	564	182	102	268	4667
9	346	73	497	322	197	430	617	691	1111	732	401	245	205	5867
10	152	142	291	48	138	236	507	471	390	270	429	566	129	3769
11	63	110	145	68	141	229	394	133	216	362	185	476	254	2776
12	107	158	148	60	235	393	513	190	153	621	542	187	351	3658
13	101	148	139	43	83	104	892	270	109	239	325	209	453	3115
SUM	4768	3216	4348	2015	2469	4876	9980	5147	5023	5240	4006	4197	4216	59501

Table C.4: 2016 Reference Case Pessimistic Local Development Trip Totals, AM Peak

AM	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	2048	365	794	330	377	285	256	176	427	125	50	116	41	5390
2	438	1092	642	262	175	408	969	394	68	187	112	164	113	5024
3	837	505	775	72	92	94	241	500	492	355	145	118	134	4360
4	462	14	48	189	213	277	127	4	226	73	68	60	38	1799
5	476	193	140	353	529	553	268	24	145	165	134	251	80	3311
6	398	295	45	869	448	1764	805	11	737	254	234	428	119	6407
7	719	1216	416	249	354	1163	3996	876	448	791	405	664	1156	12453
8	610	790	1503	44	39	43	849	920	695	399	157	193	275	6517
9	950	109	537	509	338	925	831	384	1420	416	243	166	160	6988
10	704	257	314	292	133	672	701	664	958	218	375	476	132	5896
11	644	264	173	343	165	547	426	298	700	335	121	515	479	5010
12	845	267	189	373	241	898	647	141	485	870	633	239	305	6133
13	366	299	170	223	102	442	1124	295	307	205	379	369	557	4838
SUM	9497	5666	5746	4108	3206	8071	11240	4687	7108	4393	3056	3759	3589	74126

Table C.5: 2016 Reference Case Pessimistic Local Development Trip Totals, IP

IP	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	2788	184	155	70	85	200	343	316	332	327	321	321	143	5585
2	88	653	467	110	287	294	944	276	169	161	80	156	110	3795
3	153	415	614	128	189	70	379	465	418	202	85	70	81	3269
4	75	52	90	139	176	255	114	47	223	91	99	117	34	1512
5	83	498	142	242	419	258	191	48	137	67	66	96	45	2292
6	206	338	69	456	371	1176	743	17	534	293	278	434	202	5117
7	311	791	295	140	264	734	2913	600	287	398	256	417	654	8060
8	270	335	387	32	30	55	629	1067	724	482	83	110	191	4395
9	357	170	413	189	164	520	634	620	969	575	321	167	96	5195
10	354	166	204	91	46	288	377	479	554	131	282	522	130	3624
11	348	82	94	100	67	276	251	92	329	219	124	293	198	2473
12	318	150	73	110	97	437	439	122	179	531	306	161	220	3143
13	207	121	84	28	48	221	744	220	146	130	220	186	442	2797
SUM	5558	3955	3087	1835	2243	4784	8701	4369	5001	3607	2521	3050	2546	51257

Table C.6: 2016 Reference Case Pessimistic Local Development Trip Totals, PM Peak

PM	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	1759	169	465	139	176	314	585	505	480	733	577	689	483	7074
2	399	782	481	163	228	297	1373	302	117	231	220	220	248	5061
3	504	408	854	135	97	121	534	805	302	288	153	152	184	4537
4	434	16	61	108	157	308	176	32	414	202	257	256	170	2591
5	559	185	136	284	429	505	393	35	69	103	121	182	87	3088
6	176	135	106	484	554	1406	862	59	595	471	493	673	341	6355
7	182	678	454	165	185	842	3221	1151	514	583	332	551	1288	10146
8	166	243	783	22	22	45	930	1133	1022	771	275	128	319	5859
9	398	77	522	344	221	626	742	864	1266	865	515	305	240	6985
10	173	146	309	49	146	259	590	568	443	295	513	646	148	4285
11	78	126	158	74	161	265	457	158	290	420	224	584	301	3296
12	119	175	164	62	256	442	626	225	169	764	682	213	437	4334
13	122	152	154	44	88	113	1016	324	130	268	386	253	527	3577
SUM	5069	3292	4647	2073	2720	5543	11505	6161	5811	5994	4748	4852	4773	67188

Table C.7: 2016 DM Pessimistic Local Development Trip Totals, AM Peak

AM	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	2491	444	970	397	455	343	311	212	518	151	60	139	49	6540
2	534	1330	781	318	213	494	1172	473	82	226	136	197	137	6093
3	1014	614	948	88	110	113	292	606	595	429	176	141	161	5287
4	562	17	58	231	260	335	155	5	275	90	83	73	46	2190
5	580	236	170	429	639	665	324	28	175	196	164	301	96	4003
6	474	362	54	1035	530	2076	942	13	856	299	277	504	140	7562
7	838	1420	484	288	415	1354	4685	1020	521	905	473	766	1343	14512
8	703	918	1758	51	44	49	979	1076	810	462	184	218	315	7567
9	1140	130	633	614	409	1087	974	448	1666	482	289	191	188	8251
10	814	296	361	337	153	760	802	749	1099	251	433	539	152	6746
11	765	310	206	402	191	640	505	347	814	389	141	595	555	5860
12	990	313	221	437	277	1040	752	162	561	988	736	269	350	7096
13	421	342	195	256	116	503	1289	338	349	236	443	419	637	5544
SUM	11326	6732	6839	4883	3812	9459	13182	5477	8321	5104	3595	4352	4169	87251

Table C.8: 2016 DM Pessimistic Local Development Trip Totals, IP

IP	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	3339	220	187	83	103	241	411	375	398	389	383	382	170	6681
2	106	790	561	133	346	354	1119	328	202	190	95	184	131	4539
3	184	498	737	153	227	83	449	549	500	239	101	84	95	3899
4	89	63	108	168	212	306	136	55	267	107	118	139	40	1808
5	100	596	171	290	503	306	227	56	163	78	77	113	54	2734
6	248	405	82	546	445	1382	872	20	629	344	328	510	237	6048
7	374	942	350	167	315	868	3435	700	338	467	303	490	771	9520
8	323	398	457	38	36	63	734	1247	846	566	97	127	223	5155
9	429	204	495	226	197	612	738	730	1146	676	377	196	112	6138
10	423	198	244	109	54	340	444	567	653	155	327	599	151	4264
11	417	97	112	119	78	327	298	108	387	251	145	342	232	2913
12	380	178	88	131	115	516	517	141	211	612	357	187	258	3691
13	247	145	100	33	58	260	881	258	171	151	258	220	509	3291
SUM	6659	4734	3692	2196	2689	5658	10261	5134	5911	4225	2966	3573	2983	60681

Table C.9: 2016 DM Pessimistic Local Development Trip Totals, PM Peak

PM	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	2096	205	554	167	214	374	686	589	566	842	683	803	549	8328
2	477	938	576	196	274	356	1602	348	136	264	255	253	282	5957
3	604	488	1025	162	116	143	614	935	355	329	177	175	209	5332
4	519	19	73	130	188	357	202	36	492	230	299	296	191	3032
5	663	222	162	339	514	597	457	40	81	117	140	210	98	3640
6	210	160	125	570	658	1629	988	67	681	531	570	775	384	7348
7	216	799	539	196	219	991	3731	1324	597	656	388	630	1467	11753
8	196	286	929	25	27	53	1063	1306	1175	869	314	146	360	6749
9	474	91	618	405	261	722	849	992	1474	984	592	346	272	8080
10	204	171	365	58	171	299	669	653	511	337	588	739	166	4931
11	91	149	187	87	191	308	528	181	333	477	260	671	348	3811
12	139	205	190	73	300	510	715	254	192	860	788	240	490	4956
13	144	180	181	52	104	129	1177	371	150	304	450	290	602	4134
SUM	6033	3913	5524	2460	3237	6468	13281	7096	6743	6800	5504	5574	5418	78051

Table C.10: 2016 DM Difference in Trip Totals Between Pessimistic Local Development and Reference Case, AM Peak

AM	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	1935	356	792	333	375	281	256	179	429	135	53	146	42	5312
2	411	1071	631	249	171	393	973	401	67	189	116	189	119	4980
3	776	499	765	70	91	95	244	492	502	346	158	120	139	4297
4	434	13	46	193	211	270	125	4	228	78	69	61	41	1773
5	447	195	138	344	519	541	276	24	139	166	129	261	86	3265
6	407	282	41	838	429	1738	805	10	741	251	256	434	123	6355
7	672	1182	396	243	340	1081	3857	869	442	809	441	664	1136	12132
8	595	761	1478	42	37	40	857	923	684	409	158	197	276	6457
9	912	113	524	509	331	910	855	378	1388	412	261	191	167	6951
10	701	237	273	281	127	672	712	654	870	217	417	551	153	5865
11	637	253	165	334	158	527	418	287	660	325	125	540	521	4950
12	889	250	182	356	226	852	628	145	483	881	662	247	315	6116
13	355	288	167	221	96	421	1103	294	302	219	421	384	546	4817
SUM	9171	5500	5598	4013	3111	7821	11109	4660	6935	4437	3266	3985	3664	73270

Table C.11: 2016 DM Difference in Trip Totals Between Pessimistic Local Development and Reference Case, IP

IP	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	2708	174	148	66	79	189	327	306	320	337	375	365	151	5545
2	84	639	467	108	283	290	926	275	170	164	89	171	114	3780
3	146	409	611	127	185	68	371	446	420	203	98	80	87	3251
4	70	50	89	137	171	250	113	46	216	95	103	129	35	1504
5	78	492	143	237	406	251	189	47	135	68	73	110	48	2277
6	191	329	68	451	359	1135	738	16	536	305	303	453	212	5096
7	301	773	294	142	259	729	2813	595	299	413	297	459	670	8044
8	263	332	388	32	30	55	617	1044	719	491	94	118	196	4379
9	342	168	410	184	161	522	650	606	944	568	333	194	103	5185
10	338	162	199	88	44	284	375	461	523	126	312	570	139	3621
11	335	81	93	97	65	267	248	91	313	219	121	310	215	2455
12	311	146	72	110	95	422	423	120	182	554	326	157	222	3140
13	214	119	85	28	48	215	725	206	147	134	249	198	427	2795
SUM	5381	3874	3067	1807	2185	4677	8515	4259	4924	3677	2773	3314	2619	51072

Table C.12: 2016 DM Difference in Trip Totals Between Pessimistic Local Development and Reference Case, PM
Peak

PM	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	1658	149	431	129	157	298	542	475	446	736	611	780	487	6899
2	393	782	493	163	228	293	1352	306	113	222	209	217	256	5027
3	495	420	862	136	97	120	529	769	300	259	140	167	194	4488
4	422	16	61	107	160	300	178	31	400	206	242	261	169	2553
5	558	183	138	276	423	495	379	34	65	95	125	183	90	3044
6	161	129	104	480	531	1394	824	55	604	473	483	678	340	6256
7	180	681	457	168	187	856	3132	1105	533	596	345	579	1283	10102
8	171	253	788	22	23	46	857	1107	1043	779	268	144	329	5830
9	393	81	534	345	221	633	765	843	1256	822	505	313	245	6956
10	170	145	289	49	146	256	594	534	416	279	542	702	152	4274
11	77	125	154	72	160	257	441	157	290	402	222	591	310	3258
12	115	169	152	64	250	444	597	217	186	782	703	217	439	4335
13	115	147	153	42	83	113	995	308	127	279	428	273	502	3565
SUM	4908	3280	4616	2053	2666	5505	11185	5941	5779	5930	4823	5105	4796	66587

Table C.13: 2031 DM Pessimistic Local Development Reference Case Trip Totals, AM Peak

AM	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	-113	-9	-2	3	-2	-4	0	3	2	10	3	30	1	-78
2	-27	-21	-11	-13	-4	-15	4	7	-1	2	4	25	6	-44
3	-61	-6	-10	-2	-1	1	3	-8	10	-9	13	2	5	-63
4	-28	-1	-2	4	-2	-7	-2	0	2	5	1	1	3	-26
5	-29	2	-2	-9	-10	-12	8	0	-6	1	-5	10	6	-46
6	9	-13	-4	-31	-19	-26	0	-1	4	-3	22	6	4	-52
7	-47	-34	-20	-6	-14	-82	-139	-7	-6	18	36	0	-20	-321
8	-15	-29	-25	-2	-2	-3	8	3	-11	10	1	4	1	-60
9	-38	4	-13	0	-7	-15	24	-6	-32	-4	18	25	7	-37
10	-3	-20	-41	-11	-6	0	11	-10	-88	-1	42	75	21	-31
11	-7	-11	-8	-9	-7	-20	-8	-11	-40	-10	4	25	42	-60
12	44	-17	-7	-17	-15	-46	-19	4	-2	11	29	8	10	-17
13	-11	-11	-3	-2	-6	-21	-21	-1	-5	14	42	15	-11	-21
SUM	-326	-166	-148	-95	-95	-250	-131	-27	-173	44	210	226	75	-856

Table C.14: 2031 Pessimistic Local Development Reference Case Trip Totals, IP

IP	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	-80	-10	-7	-4	-6	-11	-16	-10	-12	10	54	44	8	-40
2	-4	-14	0	-2	-4	-4	-18	-1	1	3	9	15	4	-15
3	-7	-6	-3	-1	-4	-2	-8	-19	2	1	13	10	6	-18
4	-5	-2	-1	-2	-5	-5	-1	-1	-7	4	4	12	1	-8
5	-5	-6	1	-5	-13	-7	-2	-1	-2	1	7	14	3	-15
6	-15	-9	-1	-5	-12	-41	-5	-1	2	12	25	19	10	-21
7	-10	-18	-1	2	-5	-5	-100	-5	12	15	41	42	16	-16
8	-7	-3	1	0	0	0	-12	-23	-5	9	11	8	5	-16
9	-15	-2	-3	-5	-3	2	16	-14	-25	-7	12	27	7	-10
10	-16	-4	-5	-3	-2	-4	-2	-18	-31	-5	30	48	9	-3
11	-13	-1	-1	-3	-2	-9	-3	-1	-16	0	-3	17	17	-18
12	-7	-4	-1	0	-2	-15	-16	-2	3	23	20	-4	2	-3
13	7	-2	1	0	0	-6	-19	-14	1	4	29	12	-15	-2
SUM	-177	-81	-20	-28	-58	-107	-186	-110	-77	70	252	264	73	-185

Table C.15: 2031 Pessimistic Local Development Reference Case Trip Totals, PM Peak

PM	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	-101	-20	-34	-10	-19	-16	-43	-30	-34	3	34	91	4	-175
2	-6	0	12	0	0	-4	-21	4	-4	-9	-11	-3	8	-34
3	-9	12	8	1	0	-1	-5	-36	-2	-29	-13	15	10	-49
4	-12	0	0	-1	3	-8	2	-1	-14	4	-15	5	-1	-38
5	-1	-2	2	-8	-6	-10	-14	-1	-4	-8	4	1	3	-44
6	-15	-6	-2	-4	-23	-12	-38	-4	9	2	-10	5	-1	-99
7	-2	3	3	3	2	14	-89	-46	19	13	13	28	-5	-44
8	5	10	5	0	1	1	-73	-26	21	8	-7	16	10	-29
9	-5	4	12	1	0	7	23	-21	-10	-43	-10	8	5	-29
10	-3	-1	-20	0	0	-3	4	-34	-27	-16	29	56	4	-11
11	-1	-1	-4	-2	-1	-8	-16	-1	0	-18	-2	7	9	-38
12	-4	-6	-12	2	-6	2	-29	-8	17	18	21	4	2	1
13	-7	-5	-1	-2	-5	0	-21	-16	-3	11	42	20	-25	-12
SUM	-161	-12	-31	-20	-54	-38	-320	-220	-32	-64	75	253	23	-601

Table C.16: 2031 DM Pessimistic Local Development Trip Totals, AM Peak

AM	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	2325	435	977	411	456	338	303	219	529	169	69	181	53	6465
2	473	1330	773	297	205	462	1171	486	79	227	146	248	150	6047
3	894	620	964	83	105	107	294	613	628	433	193	130	176	5240
4	501	15	52	258	268	316	144	5	285	99	102	76	48	2169
5	521	239	164	440	654	655	326	28	164	192	169	313	108	3973
6	480	343	48	991	505	2092	951	11	821	282	331	521	143	7519
7	732	1358	439	255	377	1209	4604	991	475	943	544	800	1332	14059
8	714	846	1733	46	38	40	965	1088	792	498	186	219	348	7513
9	1081	133	624	635	395	1041	982	442	1641	488	332	223	200	8217
10	820	254	293	303	134	718	812	762	976	255	534	666	205	6732
11	798	277	173	392	179	610	474	294	738	410	158	661	659	5823
12	1053	280	189	390	256	981	744	152	520	1029	813	314	382	7103
13	392	320	189	236	101	438	1294	338	322	266	528	469	641	5534
SUM	10784	6450	6618	4737	3673	9007	13064	5429	7970	5291	4105	4821	4445	86394

Table C.17: 2031 DM Pessimistic Local Development Trip Totals, IP

IP	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	3181	204	171	74	92	220	389	360	366	408	508	479	194	6646
2	97	772	561	129	335	346	1095	329	202	191	117	215	137	4526
3	169	496	733	148	215	81	446	531	498	234	131	102	106	3890
4	79	56	98	168	204	297	134	50	258	119	131	161	46	1801
5	88	578	166	289	488	297	224	54	161	80	98	144	58	2725
6	219	386	79	541	425	1329	863	19	624	376	383	536	256	6036
7	351	900	341	167	299	853	3176	696	383	571	394	573	805	9509
8	308	403	459	37	34	63	731	1168	829	588	126	150	251	5147
9	399	202	489	221	189	605	770	700	1096	654	403	249	154	6131
10	387	177	215	105	47	328	484	502	556	140	423	699	202	4265
11	396	93	106	116	74	309	291	109	356	246	158	376	289	2919
12	372	167	84	131	110	482	484	144	210	662	402	178	271	3697
13	247	131	95	30	54	233	811	240	208	201	338	242	461	3291
SUM	6293	4565	3597	2156	2566	5443	9898	4902	5747	4470	3612	4104	3230	60583

Table C.18: 2031 DM Pessimistic Local Development Trip Totals, PM Peak

PM	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	1905	175	469	136	177	350	635	637	497	817	787	1030	588	8203
2	437	972	608	189	276	359	1585	374	134	228	231	260	277	5930
3	572	521	1071	151	113	138	615	926	364	265	152	199	212	5299
4	499	18	66	137	199	348	198	33	485	225	269	314	214	3005
5	670	219	162	340	521	586	431	40	77	102	153	221	90	3612
6	193	156	118	576	638	1648	950	64	646	517	535	824	379	7244
7	195	798	537	197	217	1017	3454	1307	665	906	390	679	1349	11711
8	190	307	941	25	25	52	1039	1235	1191	809	299	219	401	6733
9	459	95	631	412	261	672	915	964	1466	837	520	381	447	8060
10	172	145	271	58	163	289	821	542	420	285	652	918	201	4937
11	88	146	174	91	191	300	501	180	314	455	256	693	433	3822
12	124	196	168	77	290	510	664	283	206	893	789	241	534	4975
13	124	160	176	40	84	117	1067	373	195	422	542	328	507	4135
SUM	5628	3908	5392	2429	3155	6386	12875	6958	6660	6761	5575	6307	5632	77666

Table C.19: 2031 DM Difference in Trip Totals Between Pessimistic Local Development and Reference Case, AM Peak

AM	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	-166	-9	7	14	1	-5	-8	7	11	18	9	42	4	-75
2	-61	0	-8	-21	-8	-32	-1	13	-3	1	10	51	13	-46
3	-120	6	16	-5	-5	-6	2	7	33	4	17	-11	15	-47
4	-61	-2	-6	27	8	-19	-11	0	10	9	19	3	2	-21
5	-59	3	-6	11	15	-10	2	0	-11	-4	5	12	12	-30
6	6	-19	-6	-44	-25	16	9	-2	-35	-17	54	17	3	-43
7	-106	-62	-45	-33	-38	-145	-81	-29	-46	38	71	34	-11	-453
8	11	-72	-25	-5	-6	-9	-14	12	-18	36	2	1	33	-54
9	-59	3	-9	21	-14	-46	8	-6	-25	6	43	32	12	-34
10	6	-42	-68	-34	-19	-42	10	13	-123	4	101	127	53	-14
11	33	-33	-33	-10	-12	-30	-31	-53	-76	21	17	66	104	-37
12	63	-33	-32	-47	-21	-59	-8	-10	-41	41	77	45	32	7
13	-29	-22	-6	-20	-15	-65	5	0	-27	30	85	50	4	-10
SUM	-542	-282	-221	-146	-139	-452	-118	-48	-351	187	510	469	276	-857

Table C.20: 2031 DM Difference in Trip Totals Between Pessimistic Local Development and Reference Case, IP

IP	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	-158	-16	-16	-9	-11	-21	-22	-15	-32	19	125	97	24	-35
2	-9	-18	0	-4	-11	-8	-24	1	0	1	22	31	6	-13
3	-15	-2	-4	-5	-12	-2	-3	-18	-2	-5	30	18	11	-9
4	-10	-7	-10	0	-8	-9	-2	-5	-9	12	13	22	6	-7
5	-12	-18	-5	-1	-15	-9	-3	-2	-2	2	21	31	4	-9
6	-29	-19	-3	-5	-20	-53	-9	-1	-5	32	55	26	19	-12
7	-23	-42	-9	0	-16	-15	-259	-4	45	104	91	83	34	-11
8	-15	5	2	-1	-2	0	-3	-79	-17	22	29	23	28	-8
9	-30	-2	-6	-5	-8	-7	32	-30	-50	-22	26	53	42	-7
10	-36	-21	-29	-4	-7	-12	40	-65	-97	-15	96	100	51	1
11	-21	-4	-6	-3	-4	-18	-7	1	-31	-5	13	34	57	6
12	-8	-11	-4	0	-5	-34	-33	3	-1	50	45	-9	13	6
13	0	-14	-5	-3	-4	-27	-70	-18	37	50	80	22	-48	0
SUM	-366	-169	-95	-40	-123	-215	-363	-232	-164	245	646	531	247	-98

Table C.21: 2031 DM Difference in Trip Totals Between Pessimistic Local Development and Reference Case, PM Peak

PM	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	-191	-30	-85	-31	-37	-24	-51	48	-69	-25	104	227	39	-125
2	-40	34	32	-7	2	3	-17	26	-2	-36	-24	7	-5	-27
3	-32	33	46	-11	-3	-5	1	-9	9	-64	-25	24	3	-33
4	-20	-1	-7	7	11	-9	-4	-3	-7	-5	-30	18	23	-27
5	7	-3	0	1	7	-11	-26	0	-4	-15	13	11	-8	-28
6	-17	-4	-7	6	-20	19	-38	-3	-35	-14	-35	49	-5	-104
7	-21	-1	-2	1	-2	26	-277	-17	68	250	2	49	-118	-42
8	-6	21	12	0	-2	-1	-24	-71	16	-60	-15	73	41	-16
9	-15	4	13	7	0	-50	66	-28	-8	-147	-72	35	175	-20
10	-32	-26	-94	0	-8	-10	152	-111	-91	-52	64	179	35	6
11	-3	-3	-13	4	0	-8	-27	-1	-19	-22	-4	22	85	11
12	-15	-9	-22	4	-10	0	-51	29	14	33	1	1	44	19
13	-20	-20	-5	-12	-20	-12	-110	2	45	118	92	38	-95	1
SUM	-405	-5	-132	-31	-82	-82	-406	-138	-83	-39	71	733	214	-385

Table C.22: 2016 DS Pessimistic Local Development Trip Totals, AM Peak

AM	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	1949	363	794	323	372	284	262	176	415	107	53	152	41	5291
2	412	1082	642	245	171	406	973	404	67	164	114	189	111	4980
3	770	519	791	65	87	99	254	504	514	281	154	121	133	4292
4	439	12	44	195	209	274	124	3	228	76	69	61	39	1773
5	459	192	138	350	521	548	271	23	138	151	131	264	80	3266
6	426	289	42	861	434	1752	815	10	686	243	261	428	111	6358
7	685	1180	401	225	339	1077	3711	876	502	1063	432	629	1043	12163
8	578	800	1510	41	36	43	881	868	668	363	154	232	309	6483
9	915	118	539	507	323	876	880	373	1385	370	236	187	244	6953
10	680	225	260	276	122	661	898	570	789	198	408	566	220	5873
11	652	250	161	342	158	536	415	289	606	319	126	539	555	4948
12	919	249	175	356	226	820	605	163	471	945	650	234	306	6119
13	322	257	152	190	87	398	999	290	517	258	480	370	505	4825
SUM	9206	5536	5649	3976	3085	7774	11088	4549	6986	4538	3268	3972	3697	73324

Table C.23: 2016 DS Pessimistic Local Development Trip Totals, IP

IP	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	2707	174	145	64	79	189	332	306	311	333	372	374	150	5536
2	83	640	466	109	284	293	926	279	170	158	89	171	111	3779
3	146	412	613	126	184	69	374	451	418	194	98	80	85	3250
4	69	49	85	140	171	251	112	44	217	97	103	128	36	1502
5	76	490	142	241	408	252	189	47	135	66	73	110	47	2276
6	191	328	68	455	360	1142	742	16	522	313	302	448	208	5095
7	299	768	291	142	258	730	2736	603	318	473	296	457	674	8045
8	262	336	391	32	30	55	625	1016	712	494	99	123	205	4380
9	344	170	413	186	161	514	653	602	937	556	332	192	124	5184
10	334	153	186	90	42	284	415	437	494	123	311	585	170	3624
11	337	80	93	98	65	265	245	94	307	214	121	307	232	2458
12	309	144	72	110	94	418	420	124	178	563	324	152	232	3140
13	210	112	81	26	46	203	697	208	177	172	258	195	407	2792
SUM	5367	3856	3046	1819	2182	4665	8466	4227	4896	3756	2778	3322	2681	51061

Table C.24: 2016 DS Pessimistic Local Development Trip Totals, PM Peak

PM	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	1608	149	404	116	154	302	554	531	426	737	618	839	479	6917
2	373	785	498	160	229	298	1359	329	118	208	207	223	242	5029
3	478	423	868	129	96	120	543	800	305	239	141	164	184	4490
4	415	16	57	106	160	309	179	31	391	195	235	267	195	2556
5	562	183	138	277	421	498	382	36	65	92	125	186	83	3048
6	164	130	105	488	538	1399	832	60	568	474	485	685	327	6255
7	168	670	452	167	185	854	2996	1155	566	798	338	562	1194	10105
8	161	259	778	22	22	47	930	1059	1034	723	283	173	344	5835
9	384	82	528	340	222	588	820	833	1222	747	457	325	411	6959
10	154	131	241	47	142	252	742	484	371	249	536	751	179	4279
11	74	125	151	70	159	254	443	162	269	393	216	578	370	3264
12	108	171	155	64	248	433	583	256	179	790	682	203	464	4336
13	110	139	149	35	76	103	931	326	172	374	444	259	451	3569
SUM	4759	3263	4524	2021	2652	5457	11294	6062	5686	6019	4767	5215	4923	66642

Table C.25: 2016 DS Difference in Trip Totals Between Pessimistic Local Development and Reference Case, AM Peak

AM	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	-99	-2	0	-7	-5	-1	6	0	-12	-18	3	36	0	-99
2	-26	-10	0	-17	-4	-2	4	10	-1	-23	2	25	-2	-44
3	-67	14	16	-7	-5	5	13	4	22	-74	9	3	-1	-68
4	-23	-2	-4	6	-4	-3	-3	-1	2	3	1	1	1	-26
5	-17	-1	-2	-3	-8	-5	3	-1	-7	-14	-3	13	0	-45
6	28	-6	-3	-8	-14	-12	10	-1	-51	-11	27	0	-8	-49
7	-34	-36	-15	-24	-15	-86	-285	0	54	272	27	-35	-113	-290
8	-32	10	7	-3	-3	0	32	-52	-27	-36	-3	39	34	-34
9	-35	9	2	-2	-15	-49	49	-11	-35	-46	-7	21	84	-35
10	-24	-32	-54	-16	-11	-11	197	-94	-169	-20	33	90	88	-23
11	8	-14	-12	-1	-7	-11	-11	-9	-94	-16	5	24	76	-62
12	74	-18	-14	-17	-15	-78	-42	22	-14	75	17	-5	1	-14
13	-44	-42	-18	-33	-15	-44	-125	-5	210	53	101	1	-52	-13
SUM	-291	-130	-97	-132	-121	-297	-152	-138	-122	145	212	213	108	-802

Table C.26: 2016 DS Difference in Trip Totals Between Pessimistic Local Development and Reference Case, IP

IP	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	-81	-10	-10	-6	-6	-11	-11	-10	-21	6	51	53	7	-49
2	-5	-13	-1	-1	-3	-1	-18	3	1	-3	9	15	1	-16
3	-7	-3	-1	-2	-5	-1	-5	-14	0	-8	13	10	4	-19
4	-6	-3	-5	1	-5	-4	-2	-3	-6	6	4	11	2	-10
5	-7	-8	0	-1	-11	-6	-2	-1	-2	-1	7	14	2	-16
6	-15	-10	-1	-1	-11	-34	-1	-1	-12	20	24	14	6	-22
7	-12	-23	-4	2	-6	-4	-177	3	31	75	40	40	20	-15
8	-8	1	4	0	0	0	-4	-51	-12	12	16	13	14	-15
9	-13	0	0	-3	-3	-6	19	-18	-32	-19	11	25	28	-11
10	-20	-13	-18	-1	-4	-4	38	-42	-60	-8	29	63	40	0
11	-11	-2	-1	-2	-2	-11	-6	2	-22	-5	-3	14	34	-15
12	-9	-6	-1	0	-3	-19	-19	2	-1	32	18	-9	12	-3
13	3	-9	-3	-2	-2	-18	-47	-12	31	42	38	9	-35	-5
SUM	-191	-99	-41	-16	-61	-119	-235	-142	-105	149	257	272	135	-196

Table C.27: 2016 DS Difference in Trip Totals Between Pessimistic Local Development and Reference Case, PM Peak

PM	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	-151	-20	-61	-23	-22	-12	-31	26	-54	4	41	150	-4	-157
2	-26	3	17	-3	1	1	-14	27	1	-23	-13	3	-6	-32
3	-26	15	14	-6	-1	-1	9	-5	3	-49	-12	12	0	-47
4	-19	0	-4	-2	3	1	3	-1	-23	-7	-22	11	25	-35
5	3	-2	2	-7	-8	-7	-11	1	-4	-11	4	4	-4	-40
6	-12	-5	-1	4	-16	-7	-30	1	-27	3	-8	12	-14	-100
7	-14	-8	-2	2	0	12	-225	4	52	215	6	11	-94	-41
8	-5	16	-5	0	0	2	0	-74	12	-48	8	45	25	-24
9	-14	5	6	-4	1	-38	78	-31	-44	-118	-58	20	171	-26
10	-19	-15	-68	-2	-4	-7	152	-84	-72	-46	23	105	31	-6
11	-4	-1	-7	-4	-2	-11	-14	4	-21	-27	-8	-6	69	-32
12	-11	-4	-9	2	-8	-9	-43	31	10	26	0	-10	27	2
13	-12	-13	-5	-9	-12	-10	-85	2	42	106	58	6	-76	-8
SUM	-310	-29	-123	-52	-68	-86	-211	-99	-125	25	19	363	150	-546

Table C.28: 2031 DS Pessimistic Local Development Trip Totals, PM Peak

AM	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	2353	443	982	392	447	338	313	217	509	136	69	191	52	6442
2	478	1344	790	288	204	476	1170	494	80	197	140	249	140	6050
3	897	638	999	75	98	109	306	631	647	352	184	130	172	5238
4	510	14	51	256	262	320	144	4	284	99	100	77	49	2170
5	537	235	162	442	655	662	322	27	161	177	170	322	102	3974
6	512	341	47	1003	511	2098	964	12	770	280	334	519	130	7521
7	755	1349	450	238	374	1207	4390	1021	560	1221	536	766	1229	14096
8	671	890	1753	42	36	43	1022	1034	779	424	182	280	381	7537
9	1079	138	642	622	381	997	1018	441	1629	442	295	237	304	8225
10	787	243	287	307	130	710	1045	655	867	233	522	693	265	6744
11	818	270	168	400	178	617	470	307	674	404	159	666	688	5819
12	1118	277	185	388	257	947	705	186	508	1083	789	290	373	7106
13	350	292	179	202	93	417	1166	341	568	300	598	453	584	5543
SUM	10865	6474	6695	4655	3626	8941	13035	5370	8036	5348	4078	4873	4469	86465

Table C.29: 2031 DS Pessimistic Local Development Trip Totals, IP

IP	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	3181	204	171	74	92	220	389	360	366	408	508	479	194	6646
2	97	772	561	129	335	346	1095	329	202	191	117	215	137	4526
3	169	496	733	148	215	81	446	531	498	234	131	102	106	3890
4	79	56	98	168	204	297	134	50	258	119	131	161	46	1801
5	88	578	166	289	488	297	224	54	161	80	98	144	58	2725
6	219	386	79	541	425	1329	863	19	624	376	383	536	256	6036
7	351	900	341	167	299	853	3176	696	383	571	394	573	805	9509
8	308	403	459	37	34	63	731	1168	829	588	126	150	251	5147
9	399	202	489	221	189	605	770	700	1096	654	403	249	154	6131
10	387	177	215	105	47	328	484	502	556	140	423	699	202	4265
11	396	93	106	116	74	309	291	109	356	246	158	376	289	2919
12	372	167	84	131	110	482	484	144	210	662	402	178	271	3697
13	247	131	95	30	54	233	811	240	208	201	338	242	461	3291
SUM	6293	4565	3597	2156	2566	5443	9898	4902	5747	4470	3612	4104	3230	60583

Table C.30: 2031 DS Pessimistic Local Development Trip Totals, PM Peak

PM	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	1905	175	469	136	177	350	635	637	497	817	787	1030	588	8203
2	437	972	608	189	276	359	1585	374	134	228	231	260	277	5930
3	572	521	1071	151	113	138	615	926	364	265	152	199	212	5299
4	499	18	66	137	199	348	198	33	485	225	269	314	214	3005
5	670	219	162	340	521	586	431	40	77	102	153	221	90	3612
6	193	156	118	576	638	1648	950	64	646	517	535	824	379	7244
7	195	798	537	197	217	1017	3454	1307	665	906	390	679	1349	11711
8	190	307	941	25	25	52	1039	1235	1191	809	299	219	401	6733
9	459	95	631	412	261	672	915	964	1466	837	520	381	447	8060
10	172	145	271	58	163	289	821	542	420	285	652	918	201	4937
11	88	146	174	91	191	300	501	180	314	455	256	693	433	3822
12	124	196	168	77	290	510	664	283	206	893	789	241	534	4975
13	124	160	176	40	84	117	1067	373	195	422	542	328	507	4135
SUM	5628	3908	5392	2429	3155	6386	12875	6958	6660	6761	5575	6307	5632	77666

Table C.31: 2031 DS Difference in Trip Totals Between Pessimistic Local Development and Reference Case, AM Peak

AM	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	-138	-1	12	-5	-8	-5	2	5	-9	-15	9	52	3	-98
2	-56	14	9	-30	-9	-18	-2	21	-2	-29	4	52	3	-43
3	-117	24	51	-13	-12	-4	14	25	52	-77	8	-11	11	-49
4	-52	-3	-7	25	2	-15	-11	-1	9	9	17	4	3	-20
5	-43	-1	-8	13	16	-3	-2	-1	-14	-19	6	21	6	-29
6	38	-21	-7	-32	-19	22	22	-1	-86	-19	57	15	-10	-41
7	-83	-71	-34	-50	-41	-147	-295	1	39	316	63	0	-114	-416
8	-32	-28	-5	-9	-8	-6	43	-42	-31	-38	-2	62	66	-30
9	-61	8	9	8	-28	-90	44	-7	-37	-40	6	46	116	-26
10	-27	-53	-74	-30	-23	-50	243	-94	-232	-18	89	154	113	-2
11	53	-40	-38	-2	-13	-23	-35	-40	-140	15	18	71	133	-41
12	128	-36	-36	-49	-20	-93	-47	24	-53	95	53	21	23	10
13	-71	-50	-16	-54	-23	-86	-123	3	219	64	155	34	-53	-1
SUM	-461	-258	-144	-228	-186	-518	-147	-107	-285	244	483	521	300	-786

Table C.32: 2031 DS Difference in Trip Totals Between Pessimistic Local Development and Reference Case, IP

IP	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	-158	-16	-16	-9	-11	-21	-22	-15	-32	19	125	97	24	-35
2	-9	-18	0	-4	-11	-8	-24	1	0	1	22	31	6	-13
3	-15	-2	-4	-5	-12	-2	-3	-18	-2	-5	30	18	11	-9
4	-10	-7	-10	0	-8	-9	-2	-5	-9	12	13	22	6	-7
5	-12	-18	-5	-1	-15	-9	-3	-2	-2	2	21	31	4	-9
6	-29	-19	-3	-5	-20	-53	-9	-1	-5	32	55	26	19	-12
7	-23	-42	-9	0	-16	-15	-259	-4	45	104	91	83	34	-11
8	-15	5	2	-1	-2	0	-3	-79	-17	22	29	23	28	-8
9	-30	-2	-6	-5	-8	-7	32	-30	-50	-22	26	53	42	-7
10	-36	-21	-29	-4	-7	-12	40	-65	-97	-15	96	100	51	1
11	-21	-4	-6	-3	-4	-18	-7	1	-31	-5	13	34	57	6
12	-8	-11	-4	0	-5	-34	-33	3	-1	50	45	-9	13	6
13	0	-14	-5	-3	-4	-27	-70	-18	37	50	80	22	-48	0
SUM	-366	-169	-95	-40	-123	-215	-363	-232	-164	245	646	531	247	-98

Table C.33: 2031 DS Difference in Trip Totals Between Pessimistic Local Development and Reference Case, PM Peak

PM	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	-191	-30	-85	-31	-37	-24	-51	48	-69	-25	104	227	39	-125
2	-40	34	32	-7	2	3	-17	26	-2	-36	-24	7	-5	-27
3	-32	33	46	-11	-3	-5	1	-9	9	-64	-25	24	3	-33
4	-20	-1	-7	7	11	-9	-4	-3	-7	-5	-30	18	23	-27
5	7	-3	0	1	7	-11	-26	0	-4	-15	13	11	-8	-28
6	-17	-4	-7	6	-20	19	-38	-3	-35	-14	-35	49	-5	-104
7	-21	-1	-2	1	-2	26	-277	-17	68	250	2	49	-118	-42
8	-6	21	12	0	-2	-1	-24	-71	16	-60	-15	73	41	-16
9	-15	4	13	7	0	-50	66	-28	-8	-147	-72	35	175	-20
10	-32	-26	-94	0	-8	-10	152	-111	-91	-52	64	179	35	6
11	-3	-3	-13	4	0	-8	-27	-1	-19	-22	-4	22	85	11
12	-15	-9	-22	4	-10	0	-51	29	14	33	1	1	44	19
13	-20	-20	-5	-12	-20	-12	-110	2	45	118	92	38	-95	1
SUM	-405	-5	-132	-31	-82	-82	-406	-138	-83	-39	71	733	214	-385

Appendix D. PCU Kilometres by Sector, Sensitivity Test 2

Table D.1: 2006 Base Year PCU Kilometres, AM Peak

AM	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	2754	955	1640	586	672	1091	1386	656	1204	2570	714	4198	637	19063
2	1219	2223	1702	606	519	1679	3820	1177	359	3829	5627	7387	2391	32538
3	1669	1305	1490	233	288	513	1339	1203	1904	6185	4772	4098	2384	27383
4	805	66	153	238	379	1126	1366	24	525	1444	3034	2711	1143	13014
5	950	619	429	722	540	1522	1429	117	551	3623	5605	8114	2160	26381
6	1448	1060	247	3564	1018	4331	3924	90	6401	6041	7873	11057	2925	49979
7	3939	4206	2259	2134	1582	5171	13200	3587	4064	16656	17994	21060	13528	109380
8	2285	2600	3800	234	188	332	3709	2293	2085	5942	6569	9843	4444	44324
9	3012	638	1818	1509	1091	6420	11270	1002	4918	5830	10335	7522	3422	58787
10	11069	3904	4922	4853	2147	12274	15708	7896	10718	4178	17849	24817	5746	126081
11	19231	7086	4667	7032	3750	14393	15337	4445	15793	16940	3048	22133	28034	161889
12	28684	8084	8636	11431	5593	22820	20110	4249	12425	71301	36638	15663	13314	258948
13	7027	6257	3232	5740	2315	10283	17065	4152	5134	5087	26790	15703	15700	124485
SUM	84092	39003	34995	38882	20082	81955	109663	30891	66081	149626	146848	154306	95828	1052252

Norwich - Northern Distributor Road
Volume 2 – Appendices for Test 2



Table D.2: 2006 Base Year PCU Kilometres, IP

IP	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	3930	541	329	152	220	939	2160	1116	1290	5517	14106	10772	3485	44557
2	263	1394	1243	475	861	1421	3592	878	923	2776	4078	6676	2081	26661
3	337	1164	1266	414	586	412	1993	1143	1569	2911	3112	2655	1876	19438
4	168	209	310	188	322	1062	1110	240	599	1878	2033	3426	903	12448
5	203	1624	438	456	476	815	972	247	482	1194	2587	2892	958	13344
6	985	1459	388	2205	1031	3144	3481	136	4187	6009	7675	10463	5392	46555
7	1800	3109	1580	1300	1250	3193	10622	2483	3238	8182	10167	15395	9230	71549
8	945	1166	970	154	149	391	3015	2236	2488	4555	2033	4212	2802	25116
9	1314	947	1419	522	501	3562	7400	2255	3489	6040	7252	6709	2144	43554
10	5473	2902	2764	1779	927	5831	7985	4515	6147	2252	23811	37593	4228	106207
11	15113	4107	3626	2119	2320	7703	9979	2604	7540	11190	9486	21155	14979	111921
12	10395	7229	2791	3247	2882	10512	15750	4989	7074	42060	21942	4206	8161	141238
13	4502	2046	1663	732	923	5920	10574	2941	2892	4343	15894	7938	11435	71803
SUM	45428	27897	18787	13743	12448	44905	78633	25783	41918	98907	124176	134092	67674	734391

Norwich - Northern Distributor Road
Volume 2 – Appendices for Test 2



Table D.3: 2006 Base Year PCU Kilometres, PM Peak

PM	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	2493	592	1416	353	479	1492	3955	2487	2229	12271	18281	25064	11755	82867
2	1430	1741	1183	704	704	1387	6208	1459	705	4000	6593	6479	5296	37889
3	1169	1222	2089	485	327	671	3587	2344	996	4644	4615	6093	4333	32575
4	691	91	235	159	305	1244	2083	180	1089	3859	6464	8479	5303	30182
5	1532	689	510	584	518	1485	2140	220	284	1868	3447	4309	2250	19836
6	829	603	664	2799	1632	3618	4016	506	5430	10154	14361	17309	8582	70503
7	1074	2989	2306	1384	1016	3892	11640	6396	5730	13389	13291	17247	17752	98106
8	652	1010	1984	126	116	326	5235	2602	3834	8538	5465	5092	5096	40076
9	1373	476	2108	884	657	4541	10273	3252	4140	11038	12082	8671	4763	64258
10	3351	3440	6403	1192	3739	6187	13035	7744	5823	5794	24134	40481	4280	125603
11	1770	5750	5004	2869	6383	9026	21403	6485	10356	23079	7729	34173	20905	154932
12	5162	7302	5752	2984	8384	12051	20576	11288	8538	43834	35892	8758	18278	188799
13	2372	3207	2940	1460	2366	2824	12716	5466	3129	9796	24295	10437	13948	94956
SUM	23898	29112	32594	15983	26626	48744	116867	50429	52283	152264	176649	192592	122541	1040582

Norwich - Northern Distributor Road
Volume 2 – Appendices for Test 2



Table D.4: 2016 DM Pessimistic Local Development PCU Kilometres, AM Peak

AM	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	2985	988	1754	606	737	1278	1698	826	1387	3475	869	7262	856	24721
2	1250	2282	1763	627	553	1759	4161	1769	390	4118	7055	11695	2878	40300
3	1732	1409	1506	230	324	602	1486	1720	2160	6845	7427	5227	2777	33445
4	781	66	173	238	396	1258	1614	24	583	1614	2770	2823	1328	13668
5	1009	658	469	745	633	1785	1797	145	595	4034	6037	10142	2488	30537
6	1437	1015	241	3761	1122	4865	5044	115	9208	6646	12328	13538	3289	62609
7	4420	4452	2442	2690	1751	6254	15480	4680	6431	22164	26843	29038	15523	142168
8	2516	3797	5230	271	231	388	4617	3049	3380	7239	8444	13066	5755	57983
9	2976	694	1967	1641	1148	8539	14356	1547	6229	6651	13676	11673	4330	75427
10	11123	3861	4464	5006	2188	14900	18984	11537	12763	5040	24164	39303	8197	161530
11	21581	7332	5058	7694	4739	16206	17825	8038	18624	20695	4235	30051	37372	199450
12	35795	8563	9298	12553	6348	26265	23449	6024	16898	81770	48180	18442	17627	311212
13	7625	6587	3416	6377	2564	12593	19300	5308	6773	6965	38752	21698	17776	155734
SUM	95230	41704	37781	42439	22734	96692	129811	44782	85421	177256	200780	213958	120196	1308784

Norwich - Northern Distributor Road
Volume 2 – Appendices for Test 2



Table D.5: 2016 DM Pessimistic Local Development PCU Kilometres, IP

IP	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	4225	519	310	135	200	938	2273	1392	1384	6404	21261	17191	4085	60317
2	258	1342	1249	452	874	1392	3814	1153	996	3053	5621	9104	2557	31865
3	320	1135	1251	395	612	433	2155	1546	1725	3248	5147	4226	2337	24530
4	158	202	308	176	320	1155	1246	264	607	2083	2616	5181	1048	15364
5	188	1558	458	446	509	928	1136	266	512	1366	3825	5293	1150	17635
6	965	1380	399	2414	1090	3614	4534	144	5725	7617	11918	14869	7051	61720
7	1936	3362	1741	1460	1489	3908	12131	3147	4160	10192	17402	23594	11524	96046
8	1175	1522	1364	193	175	441	4014	3096	3361	6405	3779	6067	3932	35524
9	1472	969	1534	524	524	5117	9301	3032	4322	7937	10708	11475	3014	59929
10	5538	3027	2987	1807	954	6806	9458	5924	7455	2590	31959	48450	5645	132600
11	16360	4489	4051	2272	2509	8980	11883	3646	9156	13039	10497	27041	19267	133190
12	11750	7744	3332	3769	3418	12091	18022	6403	9336	48564	28026	5820	10658	168933
13	4681	2250	1864	773	1040	6699	11896	3691	3675	5518	23458	12230	12622	90397
SUM	49026	29499	20848	14816	13714	52502	91863	33704	52414	118016	176217	190541	84890	928050

Norwich - Northern Distributor Road
Volume 2 – Appendices for Test 2



Table D.6: 2016 DM Pessimistic Local Development PCU Kilometres, PM Peak

PM	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	2483	490	1045	284	418	1387	3809	2532	2153	12542	24312	37513	12676	101644
2	1394	1614	1179	636	709	1294	6273	1536	620	3898	6960	7069	6033	39215
3	1145	1140	1979	453	342	662	3598	2838	1012	4338	4857	8613	5017	35994
4	822	86	223	151	304	1515	2188	201	1010	3926	6688	10396	5391	32901
5	1345	655	483	546	562	1656	2544	195	260	1709	5385	5939	2516	23795
6	912	606	731	3073	1970	4187	5369	569	7291	11957	16703	22678	10811	86857
7	1152	3246	2590	1695	1210	4517	13659	6778	7366	15746	16943	25127	20363	120392
8	838	1179	2628	146	147	386	5651	3395	5142	12408	8310	8290	6573	55093
9	1633	503	2246	993	737	7253	13541	4143	4707	12465	16645	12224	5953	83043
10	3791	3384	6292	1228	3976	6574	16206	8568	6091	6138	34510	56085	5645	158488
11	1985	5983	5246	2839	6587	9442	24658	7335	12652	25803	9893	44421	25756	182600
12	5714	7880	5983	3334	8875	13192	23027	13103	10448	55758	46937	9217	22424	225892
13	2744	3183	3104	1425	2335	3081	14035	6227	3600	12058	35925	15932	15545	119194
SUM	25958	29949	33729	16803	28172	55146	134558	57420	62352	178746	234068	263504	144703	1265108

Norwich - Northern Distributor Road
Volume 2 – Appendices for Test 2



Table D.7: 2016 DM Difference in PCU Kilometres Between Pessimistic Local Development and Base Year, AM Peak

AM	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	231	33	114	20	65	187	312	170	183	905	155	3064	219	5658
2	31	59	61	21	34	80	341	592	31	289	1428	4308	487	7762
3	63	104	16	-3	36	89	147	517	256	660	2655	1129	393	6062
4	-24	0	20	0	17	132	248	0	58	170	-264	112	185	654
5	59	39	40	23	93	263	368	28	44	411	432	2028	328	4156
6	-11	-45	-6	197	104	534	1120	25	2807	605	4455	2481	364	12630
7	481	246	183	556	169	1083	2280	1093	2367	5508	8849	7978	1995	32788
8	231	1197	1430	37	43	56	908	756	1295	1297	1875	3223	1311	13659
9	-36	56	149	132	57	2119	3086	545	1311	821	3341	4151	908	16640
10	54	-43	-458	153	41	2626	3276	3641	2045	862	6315	14486	2451	35449
11	2350	246	391	662	989	1813	2488	3593	2831	3755	1187	7918	9338	37561
12	7111	479	662	1122	755	3445	3339	1775	4473	10469	11542	2779	4313	52264
13	598	330	184	637	249	2310	2235	1156	1639	1878	11962	5995	2076	31249
SUM	11138	2701	2786	3557	2652	14737	20148	13891	19340	27630	53932	59652	24368	256532

Norwich - Northern Distributor Road
Volume 2 – Appendices for Test 2



Table D.8: 2016 DM Difference in PCU Kilometres Between Pessimistic Local Development and Base Year, IP

IP	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	295	-22	-19	-17	-20	-1	113	276	94	887	7155	6419	600	15760
2	-5	-52	6	-23	13	-29	222	275	73	277	1543	2428	476	5204
3	-17	-29	-15	-19	26	21	162	403	156	337	2035	1571	461	5092
4	-10	-7	-2	-12	-2	93	136	24	8	205	583	1755	145	2916
5	-15	-66	20	-10	33	113	164	19	30	172	1238	2401	192	4291
6	-20	-79	11	209	59	470	1053	8	1538	1608	4243	4406	1659	15165
7	136	253	161	160	239	715	1509	664	922	2010	7235	8199	2294	24497
8	230	356	394	39	26	50	999	860	873	1850	1746	1855	1130	10408
9	158	22	115	2	23	1555	1901	777	833	1897	3456	4766	870	16375
10	65	125	223	28	27	975	1473	1409	1308	338	8148	10857	1417	26393
11	1247	382	425	153	189	1277	1904	1042	1616	1849	1011	5886	4288	21269
12	1355	515	541	522	536	1579	2272	1414	2262	6504	6084	1614	2497	27695
13	179	204	201	41	117	779	1322	750	783	1175	7564	4292	1187	18594
SUM	3598	1602	2061	1073	1266	7597	13230	7921	10496	19109	52041	56449	17216	193659

Norwich - Northern Distributor Road
Volume 2 – Appendices for Test 2



Table D.9: 2016 DM Difference in PCU Kilometres Between Pessimistic Local Development and Base Year, PM Peak

PM	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	-10	-102	-371	-69	-61	-105	-146	45	-76	271	6031	12449	921	18777
2	-36	-127	-4	-68	5	-93	65	77	-85	-102	367	590	737	1326
3	-24	-82	-110	-32	15	-9	11	494	16	-306	242	2520	684	3419
4	131	-5	-12	-8	-1	271	105	21	-79	67	224	1917	88	2719
5	-187	-34	-27	-38	44	171	404	-25	-24	-159	1938	1630	266	3959
6	83	3	67	274	338	569	1353	63	1861	1803	2342	5369	2229	16354
7	78	257	284	311	194	625	2019	382	1636	2357	3652	7880	2611	22286
8	186	169	644	20	31	60	416	793	1308	3870	2845	3198	1477	15017
9	260	27	138	109	80	2712	3268	891	567	1427	4563	3553	1190	18785
10	440	-56	-111	36	237	387	3171	824	268	344	10376	15604	1365	32885
11	215	233	242	-30	204	416	3255	850	2296	2724	2164	10248	4851	27668
12	552	578	231	350	491	1141	2451	1815	1910	11924	11045	459	4146	37093
13	372	-24	164	-35	-31	257	1319	761	471	2262	11630	5495	1597	24238
SUM	2060	837	1135	820	1546	6402	17691	6991	10069	26482	57419	70912	22162	224526

Norwich - Northern Distributor Road
Volume 2 – Appendices for Test 2



Table D.10: 2031 DM Pessimistic Local Development PCU Kilometres, AM Peak

AM	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	3610	1234	2204	769	924	1529	2013	1024	1719	4343	1154	10319	1140	31982
2	1438	2884	2213	763	678	2085	5092	2212	480	5002	9451	17390	3688	53376
3	2003	1775	1979	276	380	678	1795	2172	2767	8734	10262	6351	3553	42725
4	929	78	204	318	518	1480	1889	30	728	2059	4627	4163	1633	18656
5	1218	825	566	957	821	2174	2153	171	698	4637	8559	12889	3275	38943
6	1756	1289	283	4541	1352	5918	6048	138	10178	7663	18026	17365	3861	78418
7	6291	5101	2754	2957	1978	7262	18532	5395	7153	27508	37316	38729	18647	179623
8	2804	4251	6223	300	245	407	5322	3624	3931	8954	11255	17356	7524	72196
9	3511	824	2370	1979	1367	9620	16438	1823	7227	7942	18607	15671	5271	92650
10	12445	4191	4782	5444	2298	15808	22109	13440	13936	5985	33382	53389	11871	199080
11	27183	8199	5478	9110	5534	19470	20896	8525	21190	27199	5589	40290	49895	248558
12	42429	9932	10197	14247	7416	31427	28039	6819	18743	94910	63614	23970	22032	373775
13	8469	7344	3874	6831	2694	13476	22792	6236	7275	8908	53879	28389	20864	191031
SUM	114086	47927	43127	48492	26205	111334	153118	51609	96025	213844	275721	286271	153254	1621013

Norwich - Northern Distributor Road
Volume 2 – Appendices for Test 2



Table D.11: 2031 DM Pessimistic Local Development PCU Kilometres, IP

IP	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	5076	632	373	164	240	1098	2603	1637	1625	7702	32356	24223	5021	82750
2	308	1646	1526	551	1058	1656	4530	1362	1190	3664	8172	12412	3261	41336
3	372	1385	1519	465	733	516	2566	1802	2064	3898	8110	5932	2942	32304
4	182	239	363	216	385	1396	1514	303	730	2621	3840	7309	1293	20391
5	233	1863	554	538	619	1102	1353	308	617	1678	6156	8142	1429	24592
6	1125	1658	476	2915	1312	4238	5343	172	6936	9443	17598	19446	8909	79571
7	2121	3950	2051	1773	1757	4642	14162	3600	5101	12457	26077	33168	14182	125041
8	1320	1791	1625	226	205	492	4594	3655	3941	7947	5605	7695	4924	44020
9	1660	1149	1829	624	622	6106	11153	3496	5141	9412	14961	16542	3796	76491
10	6268	3463	3425	2108	1068	7896	11048	6834	8316	2967	49588	59942	7210	170133
11	19893	5260	4820	2821	2889	10795	14299	4352	10924	15663	14956	34636	24392	165700
12	13833	8983	4022	4608	4103	14059	20812	7600	11144	56341	36048	7372	12910	201835
13	5474	2612	2172	885	1224	7701	13732	4224	4255	6717	33327	17106	14271	113700
SUM	57865	34631	24755	17894	16215	61697	107709	39345	61984	140510	256794	253925	104540	1177864

Norwich - Northern Distributor Road
Volume 2 – Appendices for Test 2



Table D.12: 2031 DM Pessimistic Local Development PCU Kilometres, PM Peak

PM	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	2945	592	1248	335	500	1692	4259	3351	2560	14816	34875	54420	14915	136508
2	1696	2044	1461	760	881	1592	7387	1809	763	4146	8272	8887	7237	46935
3	1389	1402	2478	550	416	767	4005	3372	1251	4653	5415	12673	5749	44120
4	1029	102	266	197	389	1769	2431	221	1255	4477	7769	14446	5853	40204
5	1713	815	582	683	715	2010	2935	223	307	1888	8048	8464	2845	31228
6	1106	743	825	3686	2325	4932	6299	632	8333	12811	20059	33245	12880	107876
7	1346	3875	3075	2040	1422	5407	16014	7745	8871	18041	21395	35549	23489	148269
8	996	1392	3192	166	165	427	6525	4061	6057	14260	8771	11188	8172	65372
9	1954	595	2728	1188	880	8334	15031	4821	5705	13568	21153	16085	6933	98975
10	4145	3640	7134	1460	4436	7382	18370	9542	6857	7005	46156	78150	7110	201387
11	2397	7162	6543	3757	8330	11570	28226	8672	15477	31214	12792	58506	32134	226780
12	6653	9300	6636	4036	10316	15744	26825	14883	12399	64026	57546	11152	26504	266020
13	3069	3612	3572	1559	2516	3534	15969	7037	4014	14259	48986	22728	17439	148294
SUM	30438	35274	39740	20417	33291	65160	154276	66369	73849	205164	301237	365493	171260	1561968

Norwich - Northern Distributor Road
Volume 2 – Appendices for Test 2



Table D.13: 2031 DM Difference in PCU Kilometres Between Pessimistic Local Development and Base Year, AM Peak

AM	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	856	279	564	183	252	438	627	368	515	1773	440	6121	503	12919
2	219	661	511	157	159	406	1272	1035	121	1173	3824	10003	1297	20838
3	334	470	489	43	92	165	456	969	863	2549	5490	2253	1169	15342
4	124	12	51	80	139	354	523	6	203	615	1593	1452	490	5642
5	268	206	137	235	281	652	724	54	147	1014	2954	4775	1115	12562
6	308	229	36	977	334	1587	2124	48	3777	1622	10153	6308	936	28439
7	2352	895	495	823	396	2091	5332	1808	3089	10852	19322	17669	5119	70243
8	519	1651	2423	66	57	75	1613	1331	1846	3012	4686	7513	3080	27872
9	499	186	552	470	276	3200	5168	821	2309	2112	8272	8149	1849	33863
10	1376	287	-140	591	151	3534	6401	5544	3218	1807	15533	28572	6125	72999
11	7952	1113	811	2078	1784	5077	5559	4080	5397	10259	2541	18157	21861	86669
12	13745	1848	1561	2816	1823	8607	7929	2570	6318	23609	26976	8307	8718	114827
13	1442	1087	642	1091	379	3193	5727	2084	2141	3821	27089	12686	5164	66546
SUM	29994	8924	8132	9610	6123	29379	43455	20718	29944	64218	128873	131965	57426	568761

Norwich - Northern Distributor Road
Volume 2 – Appendices for Test 2



Table D.14: 2031 DM Difference in PCU Kilometres Between Pessimistic Local Development and Base Year, IP

IP	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	1146	91	44	12	20	159	443	521	335	2185	18250	13451	1536	38193
2	45	252	283	76	197	235	938	484	267	888	4094	5736	1180	14675
3	35	221	253	51	147	104	573	659	495	987	4998	3277	1066	12866
4	14	30	53	28	63	334	404	63	131	743	1807	3883	390	7943
5	30	239	116	82	143	287	381	61	135	484	3569	5250	471	11248
6	140	199	88	710	281	1094	1862	36	2749	3434	9923	8983	3517	33016
7	321	841	471	473	507	1449	3540	1117	1863	4275	15910	17773	4952	53492
8	375	625	655	72	56	101	1579	1419	1453	3392	3572	3483	2122	18904
9	346	202	410	102	121	2544	3753	1241	1652	3372	7709	9833	1652	32937
10	795	561	661	329	141	2065	3063	2319	2169	715	25777	22349	2982	63926
11	4780	1153	1194	702	569	3092	4320	1748	3384	4473	5470	13481	9413	53779
12	3438	1754	1231	1361	1221	3547	5062	2611	4070	14281	14106	3166	4749	60597
13	972	566	509	153	301	1781	3158	1283	1363	2374	17433	9168	2836	41897
SUM	12437	6734	5968	4151	3767	16792	29076	13562	20066	41603	132618	119833	36866	443473

Norwich - Northern Distributor Road
Volume 2 – Appendices for Test 2



Table D.15: 2031 DM Difference in PCU Kilometres Between Pessimistic Local Development and Base Year, PM Peak

PM	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	452	0	-168	-18	21	200	304	864	331	2545	16594	29356	3160	53641
2	266	303	278	56	177	205	1179	350	58	146	1679	2408	1941	9046
3	220	180	389	65	89	96	418	1028	255	9	800	6580	1416	11545
4	338	11	31	38	84	525	348	41	166	618	1305	5967	550	10022
5	181	126	72	99	197	525	795	3	23	20	4601	4155	595	11392
6	277	140	161	887	693	1314	2283	126	2903	2657	5698	15936	4298	37373
7	272	886	769	656	406	1515	4374	1349	3141	4652	8104	18302	5737	50163
8	344	382	1208	40	49	101	1290	1459	2223	5722	3306	6096	3076	25296
9	581	119	620	304	223	3793	4758	1569	1565	2530	9071	7414	2170	34717
10	794	200	731	268	697	1195	5335	1798	1034	1211	22022	37669	2830	75784
11	627	1412	1539	888	1947	2544	6823	2187	5121	8135	5063	24333	11229	71848
12	1491	1998	884	1052	1932	3693	6249	3595	3861	20192	21654	2394	8226	77221
13	697	405	632	99	150	710	3253	1571	885	4463	24691	12291	3491	53338
SUM	6540	6162	7146	4434	6665	16416	37409	15940	21566	52900	124588	172901	48719	521386

Norwich - Northern Distributor Road
Volume 2 – Appendices for Test 2



Table D.16: 2016 DS Pessimistic Local Development PCU Kilometres, AM Peak

AM	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	3481	1021	1878	685	785	1320	1736	826	1394	2868	892	7669	868	25423
2	1280	2286	1781	630	553	1825	4123	1770	393	3649	7006	11673	2743	39712
3	1809	1483	1577	230	321	643	1553	1747	2230	5715	7450	5296	2853	32907
4	790	62	170	240	390	1282	1613	23	583	1573	2773	2842	1423	13764
5	1081	644	478	759	631	1821	1763	140	594	3703	6099	10339	2354	30406
6	1550	1033	247	3899	1136	4905	5137	122	8686	6627	12378	13278	2990	61988
7	5323	4375	2422	2496	1692	6134	14772	5256	7668	29211	26394	27976	15492	149211
8	2607	3931	5284	272	227	418	5238	2852	3660	6945	8511	15418	7009	62372
9	3022	723	2017	1605	1113	8010	14395	1593	6060	6129	12628	11569	7187	76051
10	10923	3776	4289	5197	2155	15146	24125	10532	11726	4645	23984	40041	10877	167416
11	21812	7222	4857	7734	4741	16384	17736	8658	17695	20811	4263	29824	39417	201154
12	37025	8537	9074	12340	6299	25132	22992	6828	16688	83327	47375	17982	17642	311241
13	7525	6165	3351	5863	2379	12197	17965	6355	11572	8195	43410	21698	16809	163484
SUM	98228	41258	37425	41950	22422	95217	133148	46702	88949	183398	203163	215605	127664	1335129

Norwich - Northern Distributor Road
Volume 2 – Appendices for Test 2



Table D.17: 2016 DS Pessimistic Local Development PCU Kilometres, IP

IP	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	4919	523	322	152	213	954	2278	1406	1360	6300	21206	17186	3981	60800
2	268	1346	1251	461	878	1407	3812	1172	1007	3080	5632	9164	2515	31993
3	333	1145	1258	419	643	446	2173	1556	1726	3258	5145	4268	2336	24706
4	163	198	313	180	320	1157	1238	282	616	2212	2622	5146	1219	15666
5	208	1546	455	456	511	930	1129	267	516	1363	3826	5325	1142	17674
6	988	1374	397	2439	1094	3642	4550	155	5660	8043	11883	14756	7174	62155
7	1921	3343	1734	1464	1481	3896	11764	3460	4610	12242	17330	23557	11799	98601
8	1170	1546	1381	199	177	444	4392	3061	3729	6908	4072	6510	4613	38202
9	1472	990	1562	526	524	4979	9353	3385	4335	7999	10643	11418	3952	61138
10	5501	2897	2833	1911	921	7227	10702	5964	7214	2536	31712	48560	6852	134830
11	16423	4440	4003	2277	2498	8903	11824	3932	9071	12669	10521	26824	20966	134351
12	12046	7681	3296	3739	3340	11960	17964	6784	9209	48323	27903	5691	11515	169451
13	4589	2130	1842	786	1006	6425	11797	4043	4787	6858	24929	12365	12236	93793
SUM	50001	29159	20647	15009	13606	52370	92976	35467	53840	121791	177424	190770	90300	943360

Norwich - Northern Distributor Road
Volume 2 – Appendices for Test 2



Table D.18: 2016 DS Pessimistic Local Development PCU Kilometres, PM Peak

PM	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	2884	541	1162	301	428	1413	3838	3073	2052	12440	24709	39949	12874	105664
2	1372	1614	1183	630	712	1321	6264	1633	659	3812	6946	7337	5895	39378
3	1188	1161	1977	457	343	673	3697	2918	1036	4051	4870	8804	4971	36146
4	839	84	216	148	297	1543	2226	211	978	3765	6503	10655	6994	34459
5	1309	648	480	549	557	1657	2555	208	254	1686	5316	6085	2302	23606
6	941	606	741	3126	1979	4228	5436	660	6955	12281	16704	23253	10756	87666
7	1123	3174	2531	1672	1180	4493	13120	7546	8259	21642	16589	24902	19557	125788
8	785	1193	2556	143	142	405	6574	3304	5617	11889	9303	10051	7885	59847
9	1587	508	2223	967	734	6576	14189	4348	4544	11586	15328	13345	10267	86202
10	3613	3171	5281	1168	3868	6602	20453	8164	5554	5576	34841	58410	6605	163306
11	1935	5896	5117	2800	6508	9225	25026	7961	11963	25197	9658	43446	30660	185392
12	5506	7959	6138	3307	8823	12742	22585	15559	10102	55825	45467	8760	24281	227054
13	2636	3066	3128	1291	2174	2771	13114	7318	5518	15736	35939	15217	14140	122048
SUM	25718	29621	32733	16559	27745	53649	139077	62903	63491	185486	232173	270214	157187	1296556

Norwich - Northern Distributor Road
Volume 2 – Appendices for Test 2



Table D.19: 2016 DS Difference in PCU Kilometres Between Pessimistic Local Development and Base Year, AM Peak

AM	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	727	66	238	99	113	229	350	170	190	298	178	3471	231	6360
2	61	63	79	24	34	146	303	593	34	-180	1379	4286	352	7174
3	140	178	87	-3	33	130	214	544	326	-470	2678	1198	469	5524
4	-15	-4	17	2	11	156	247	-1	58	129	-261	131	280	750
5	131	25	49	37	91	299	334	23	43	80	494	2225	194	4025
6	102	-27	0	335	118	574	1213	32	2285	586	4505	2221	65	12009
7	1384	169	163	362	110	963	1572	1669	3604	12555	8400	6916	1964	39831
8	322	1331	1484	38	39	86	1529	559	1575	1003	1942	5575	2565	18048
9	10	85	199	96	22	1590	3125	591	1142	299	2293	4047	3765	17264
10	-146	-128	-633	344	8	2872	8417	2636	1008	467	6135	15224	5131	41335
11	2581	136	190	702	991	1991	2399	4213	1902	3871	1215	7691	11383	39265
12	8341	453	438	909	706	2312	2882	2579	4263	12026	10737	2319	4328	52293
13	498	-92	119	123	64	1914	900	2203	6438	3108	16620	5995	1109	38999
SUM	14136	2255	2430	3068	2340	13262	23485	15811	22868	33772	56315	61299	31836	282877

Norwich - Northern Distributor Road
Volume 2 – Appendices for Test 2



Table D.20: 2016 DS Difference in PCU Kilometres Between Pessimistic Local Development and Base Year, IP

IP	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	989	-18	-7	0	-7	15	118	290	70	783	7100	6414	496	16243
2	5	-48	8	-14	17	-14	220	294	84	304	1554	2488	434	5332
3	-4	-19	-8	5	57	34	180	413	157	347	2033	1613	460	5268
4	-5	-11	3	-8	-2	95	128	42	17	334	589	1720	316	3218
5	5	-78	17	0	35	115	157	20	34	169	1239	2433	184	4330
6	3	-85	9	234	63	498	1069	19	1473	2034	4208	4293	1782	15600
7	121	234	154	164	231	703	1142	977	1372	4060	7163	8162	2569	27052
8	225	380	411	45	28	53	1377	825	1241	2353	2039	2298	1811	13086
9	158	43	143	4	23	1417	1953	1130	846	1959	3391	4709	1808	17584
10	28	-5	69	132	-6	1396	2717	1449	1067	284	7901	10967	2624	28623
11	1310	333	377	158	178	1200	1845	1328	1531	1479	1035	5669	5987	22430
12	1651	452	505	492	458	1448	2214	1795	2135	6263	5961	1485	3354	28213
13	87	84	179	54	83	505	1223	1102	1895	2515	9035	4427	801	21990
SUM	4573	1262	1860	1266	1158	7465	14343	9684	11922	22884	53248	56678	22626	208969

Norwich - Northern Distributor Road
Volume 2 – Appendices for Test 2



Table D.21: 2016 DS Difference in PCU Kilometres Between Pessimistic Local Development and Base Year, PM Peak

PM	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	391	-51	-254	-52	-51	-79	-117	586	-177	169	6428	14885	1119	22797
2	-58	-127	0	-74	8	-66	56	174	-46	-188	353	858	599	1489
3	19	-61	-112	-28	16	2	110	574	40	-593	255	2711	638	3571
4	148	-7	-19	-11	-8	299	143	31	-111	-94	39	2176	1691	4277
5	-223	-41	-30	-35	39	172	415	-12	-30	-182	1869	1776	52	3770
6	112	3	77	327	347	610	1420	154	1525	2127	2343	5944	2174	17163
7	49	185	225	288	164	601	1480	1150	2529	8253	3298	7655	1805	27682
8	133	183	572	17	26	79	1339	702	1783	3351	3838	4959	2789	19771
9	214	32	115	83	77	2035	3916	1096	404	548	3246	4674	5504	21944
10	262	-269	-1122	-24	129	415	7418	420	-269	-218	10707	17929	2325	37703
11	165	146	113	-69	125	199	3623	1476	1607	2118	1929	9273	9755	30460
12	344	657	386	323	439	691	2009	4271	1564	11991	9575	2	6003	38255
13	264	-141	188	-169	-192	-53	398	1852	2389	5940	11644	4780	192	27092
SUM	1820	509	139	576	1119	4905	22210	12474	11208	33222	55524	77622	34646	255974

Norwich - Northern Distributor Road
Volume 2 – Appendices for Test 2



Table D.22: 2031 DS Pessimistic Local Development PCU Kilometres, AM Peak

AM	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	4249	1272	2358	836	957	1551	2063	1037	1703	3616	1181	10979	1144	32946
2	1489	2894	2238	759	676	2155	5080	2225	491	4451	9228	17459	3546	52691
3	2109	1834	2038	266	368	709	1878	2203	2849	7308	10114	6439	3746	41861
4	950	73	200	317	499	1506	1920	30	724	2046	4521	4253	1910	18949
5	1284	807	561	963	806	2198	2127	167	686	4344	8632	13303	3088	38966
6	1871	1264	277	4632	1366	5931	6118	161	9836	7930	17966	17275	3628	78255
7	6755	5010	2744	2760	1889	6895	17484	6157	8805	34092	36919	37821	18591	185922
8	2851	4438	6272	285	235	432	6296	3456	4213	8171	11383	21395	8700	78127
9	3535	855	2411	1879	1301	8964	16734	1908	6978	7380	17046	16806	8973	94770
10	12308	4143	4709	5740	2288	16322	28607	12048	12458	5532	32904	54939	13481	205479
11	27532	8001	5213	9146	5504	19439	20851	9666	20055	27230	5573	39987	51050	249247
12	44472	9819	9987	14061	7408	30229	27093	8422	18618	95506	61586	23064	22149	372414
13	8191	7087	3961	6301	2590	13546	21216	7330	12718	10241	58855	27792	19372	199200
SUM	117596	47497	42969	47945	25887	109877	157467	54810	100134	217847	275908	291512	159378	1648827

Norwich - Northern Distributor Road
Volume 2 – Appendices for Test 2



Table D.23: 2031 DS Pessimistic Local Development PCU Kilometres, IP

IP	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	5724	648	390	182	254	1102	2585	1667	1578	7502	32208	24757	5166	83763
2	317	1647	1520	553	1065	1666	4531	1408	1211	3759	8188	12738	3222	41825
3	384	1400	1522	492	765	532	2611	1838	2060	3968	8030	6083	3014	32699
4	187	234	363	217	384	1402	1513	336	736	2712	3839	7459	1619	21001
5	245	1845	546	547	626	1111	1364	313	620	1703	6174	8544	1439	25077
6	1141	1644	470	2942	1307	4253	5357	189	6911	9809	17411	19807	9091	80332
7	2153	3920	2039	1780	1740	4602	13691	4068	5685	14937	26090	33682	14406	128793
8	1277	1862	1623	236	204	506	5231	3542	4474	8384	6127	8684	5765	47915
9	1662	1182	1858	627	620	5964	11262	4025	5162	9440	14648	16877	5082	78409
10	6073	3327	3237	2235	1035	8404	12516	6782	8038	2885	48741	60798	8292	172363
11	19762	5208	4710	2811	2860	10628	14519	4772	10750	15235	14901	34860	26462	167478
12	14096	8937	3978	4581	4012	13892	20893	8143	10944	56041	35676	7212	14047	202452
13	5468	2467	2218	948	1177	7463	13690	4673	5718	7992	35169	16935	13827	117745
SUM	58489	34321	24474	18151	16049	61525	109763	41756	63887	144367	257202	258436	111432	1199852

Norwich - Northern Distributor Road
Volume 2 – Appendices for Test 2



Table D.24: 2031 DS Pessimistic Local Development PCU Kilometres, PM Peak

PM	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	3439	656	1444	380	507	1726	4674	3826	2564	14068	36351	56839	16811	143285
2	1632	2052	1476	761	869	1597	7386	1950	775	4245	8361	9090	6885	47079
3	1396	1441	2482	542	416	788	4201	3435	1241	4485	5430	12912	5740	44509
4	1022	100	255	193	378	1787	2519	231	1233	4354	7593	14203	7794	41662
5	1622	797	571	686	694	1994	2924	232	299	1896	7888	8400	2552	30555
6	1132	732	839	3731	2333	5002	6260	724	7851	13596	20000	32523	13077	107800
7	1296	3791	3015	2048	1405	5370	15311	8886	10051	24930	21119	34319	22515	154056
8	892	1424	3113	166	164	452	7774	3891	6578	13196	10439	14390	9082	71561
9	1897	604	2699	1167	876	7517	15956	4996	5468	12925	19607	18020	11247	102979
10	4003	3507	5873	1441	4458	7566	22719	9082	6226	6426	46763	78900	7703	204667
11	2345	7133	6308	3737	8297	11402	28927	9403	14218	30457	12482	56129	37816	228654
12	6450	9377	6759	4031	10316	15244	26103	17808	11763	64496	55423	10497	28462	266729
13	2943	3502	3737	1549	2388	3258	15036	8358	6220	17791	48096	21862	15922	150662
SUM	30069	35116	38571	20432	33101	63703	159790	72822	74487	212865	299552	368084	185606	1594198

Norwich - Northern Distributor Road
Volume 2 – Appendices for Test 2



Table D.25: 2031 DS Difference in PCU Kilometres Between Pessimistic Local Development and Base Year, AM Peak

AM	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	1495	317	718	250	285	460	677	381	499	1046	467	6781	507	13883
2	270	671	536	153	157	476	1260	1048	132	622	3601	10072	1155	20153
3	440	529	548	33	80	196	539	1000	945	1123	5342	2341	1362	14478
4	145	7	47	79	120	380	554	6	199	602	1487	1542	767	5935
5	334	188	132	241	266	676	698	50	135	721	3027	5189	928	12585
6	423	204	30	1068	348	1600	2194	71	3435	1889	10093	6218	703	28276
7	2816	804	485	626	307	1724	4284	2570	4741	17436	18925	16761	5063	76542
8	566	1838	2472	51	47	100	2587	1163	2128	2229	4814	11552	4256	33803
9	523	217	593	370	210	2544	5464	906	2060	1550	6711	9284	5551	35983
10	1239	239	-213	887	141	4048	12899	4152	1740	1354	15055	30122	7735	79398
11	8301	915	546	2114	1754	5046	5514	5221	4262	10290	2525	17854	23016	87358
12	15788	1735	1351	2630	1815	7409	6983	4173	6193	24205	24948	7401	8835	113466
13	1164	830	729	561	275	3263	4151	3178	7584	5154	32065	12089	3672	74715
SUM	33504	8494	7974	9063	5805	27922	47804	23919	34053	68221	129060	137206	63550	596575

Norwich - Northern Distributor Road
Volume 2 – Appendices for Test 2



Table D.26: 2031 DS Difference in PCU Kilometres Between Pessimistic Local Development and Base Year, IP

IP	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	1794	107	61	30	34	163	425	551	288	1985	18102	13985	1681	39206
2	54	253	277	78	204	245	939	530	288	983	4110	6062	1141	15164
3	47	236	256	78	179	120	618	695	491	1057	4918	3428	1138	13261
4	19	25	53	29	62	340	403	96	137	834	1806	4033	716	8553
5	42	221	108	91	150	296	392	66	138	509	3587	5652	481	11733
6	156	185	82	737	276	1109	1876	53	2724	3800	9736	9344	3699	33777
7	353	811	459	480	490	1409	3069	1585	2447	6755	15923	18287	5176	57244
8	332	696	653	82	55	115	2216	1306	1986	3829	4094	4472	2963	22799
9	348	235	439	105	119	2402	3862	1770	1673	3400	7396	10168	2938	34855
10	600	425	473	456	108	2573	4531	2267	1891	633	24930	23205	4064	66156
11	4649	1101	1084	692	540	2925	4540	2168	3210	4045	5415	13705	11483	55557
12	3701	1708	1187	1334	1130	3380	5143	3154	3870	13981	13734	3006	5886	61214
13	966	421	555	216	254	1543	3116	1732	2826	3649	19275	8997	2392	45942
SUM	13061	6424	5687	4408	3601	16620	31130	15973	21969	45460	133026	124344	43758	465461

Norwich - Northern Distributor Road
Volume 2 – Appendices for Test 2



Table D.27: 2031 DS Difference in PCU Kilometres Between Pessimistic Local Development and Base Year, PM Peak

PM	1	2	3	4	5	6	7	8	9	10	11	12	13	SUM
1	946	64	28	27	28	234	719	1339	335	1797	18070	31775	5056	60418
2	202	311	293	57	165	210	1178	491	70	245	1768	2611	1589	9190
3	227	219	393	57	89	117	614	1091	245	-159	815	6819	1407	11934
4	331	9	20	34	73	543	436	51	144	495	1129	5724	2491	11480
5	90	108	61	102	176	509	784	12	15	28	4441	4091	302	10719
6	303	129	175	932	701	1384	2244	218	2421	3442	5639	15214	4495	37297
7	222	802	709	664	389	1478	3671	2490	4321	11541	7828	17072	4763	55950
8	240	414	1129	40	48	126	2539	1289	2744	4658	4974	9298	3986	31485
9	524	128	591	283	219	2976	5683	1744	1328	1887	7525	9349	6484	38721
10	652	67	-530	249	719	1379	9684	1338	403	632	22629	38419	3423	79064
11	575	1383	1304	868	1914	2376	7524	2918	3862	7378	4753	21956	16911	73722
12	1288	2075	1007	1047	1932	3193	5527	6520	3225	20662	19531	1739	10184	77930
13	571	295	797	89	22	434	2320	2892	3091	7995	23801	11425	1974	55706
SUM	6171	6004	5977	4449	6475	14959	42923	22393	22204	60601	122903	175492	63065	553616

Appendix E. TUBA Results, Sensitivity Test 2

Figure E.1: Economic Efficiency of the Transport System (TEE)

Consumers	ALL MODES	Road		Bus	
User benefits	TOTAL				
Travel Time	289237	280740		8497	
Vehicle operating costs	-34725	-34725		0	
User charges	22796	22830		-33	
During Construction & Maintenance	0	0		0	
NET CONSUMER BENEFITS	277309	268845		8464	
Business					
User benefits		Personal	Freight	Personal	Freight
Travel Time	288346	212901	74514	930	0
Vehicle operating costs	-2326	728	-3054	0	0
User charges	3755	2340	1421	-5	0
During Construction & Maintenance	0	0	0	0	0
Subtotal	289775	215969	72881	925	0
Private Sector Provider Impacts					
Revenue	-36081	-24647		-11435	
Operating costs	0	0		0	
Investment costs	0	0		0	
Grant/subsidy	0	0		0	
Subtotal	-36081	-24647		-11435	
Other business Impacts					
Developer contributions	0	0		0	
NET BUSINESS IMPACT	253694				
TOTAL					
Present Value of Transport Economic Efficiency Benefits (PVB)	531003				

Note: Benefits appear as positive numbers, while costs appear as negative numbers.
Note: All entries are present values discounted to 2002, in 2002 prices

Public Accounts	ALL MODES	Road	Bus
Local Government Funding	TOTAL		
Revenue	6162	6162	0
Operating costs	4181	4181	0
Investment costs	7791	7791	0
Developer Contributions	0	0	0
Grant/Subsidy Payments	0	0	0
NET IMPACT	18134	18134	0
Central Government Funding			
Revenue	0	0	0
Operating costs	0	0	0
Investment costs	90589	90589	0
Developer Contributions	0	0	0
Grant/Subsidy Payments	0	0	0
Indirect Tax Revenues	-21924	-20079	-1845
NET IMPACT	68665	70510	-1845

TOTAL
TOTAL Present Value of Costs (PVC) 86799

Note: Costs appear as positive numbers, while revenues and developer contributions appear as negative numbers.

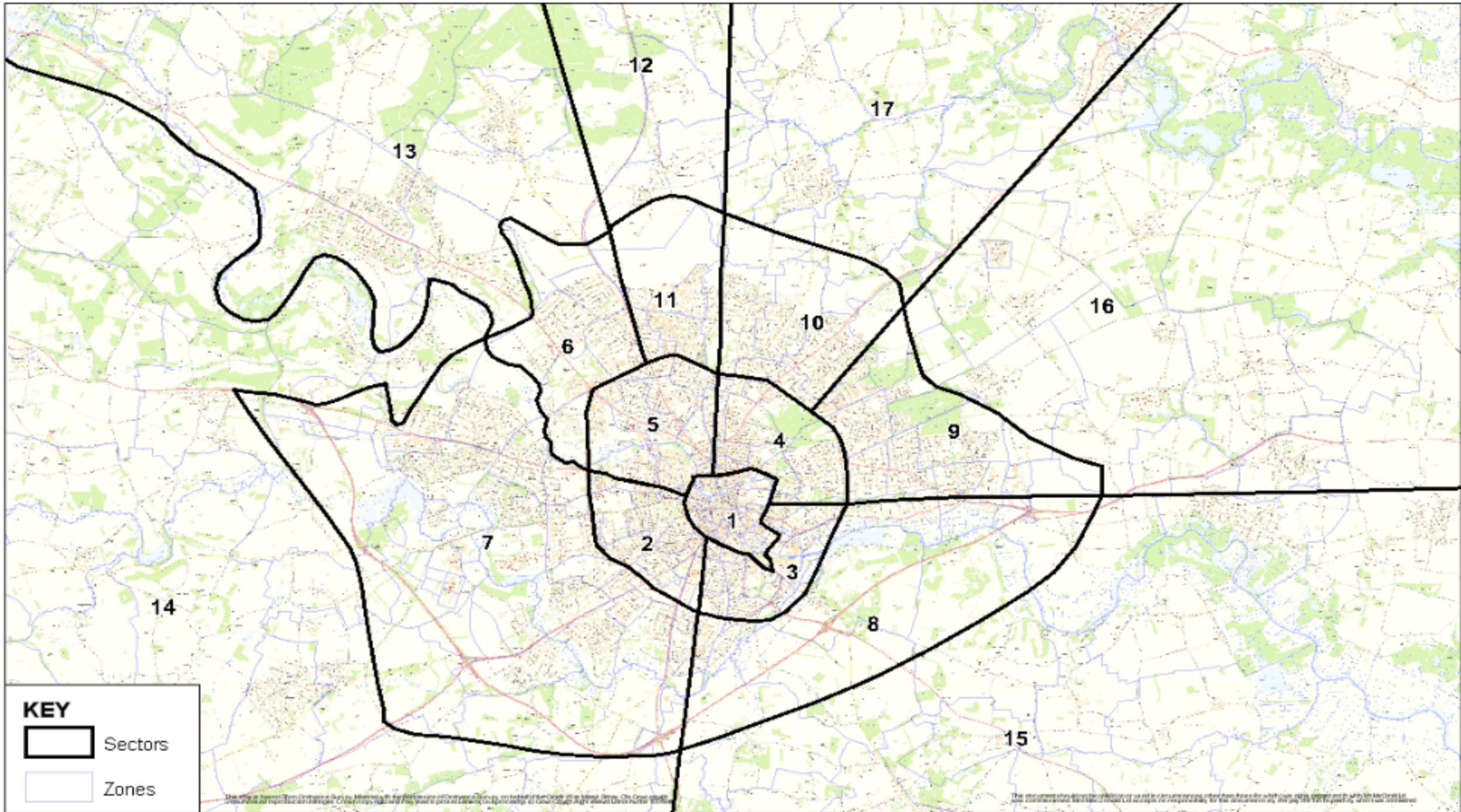
Note: All entries are present values discounted to 2002, in 2002 prices

Analysis of Monetised Costs and Benefits

Non-Exchequer Impacts	
Consumer User Benefits	277309
Business User Benefits	289775
Private Sector Provider Impacts	-36081
Other Business Impacts	0
Accident Benefits	Not assessed by TUBA
Carbon Benefits	-3779
Net present Value of Benefits (PVB)	527224
Local Government Funding	18134
Central Government Funding	68665
Net present Value Costs (PVC)	86799
Overall Impact	
Net present Value (NPV)	440425
Benefit to Cost Ratio (BCR)	6.074
Appraisal Period	2016 to 2075

Note: There may also be other significant costs and benefits, some of which cannot be presented in monetised form. Where this is the case, the analysis presented above does NOT provide a good measure of value for money and should not be used as the sole basis for decisions.

Figure E.2: Sectors for TUBA Analysis



		Drawing Title: Figure 1: Sectors for TUBA analysis		<table border="1"> <thead> <tr> <th>Rev.</th> <th>Description</th> <th>Checked</th> <th>Date</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	Rev.	Description	Checked	Date													<table border="1"> <thead> <tr> <th> </th> <th>Initials</th> <th>Date</th> </tr> </thead> <tbody> <tr> <td>Drawn By</td> <td>TA</td> <td>07/09/09</td> </tr> <tr> <td>Checked By</td> <td>TM</td> <td>07/09/09</td> </tr> <tr> <td>Approved By</td> <td>TM</td> <td>08/09/09</td> </tr> </tbody> </table>		Initials	Date	Drawn By	TA	07/09/09	Checked By	TM	07/09/09	Approved By	TM	08/09/09	Drawing No: 233906B1.01 Project Title: Norwich Northern Distributor Road MSBC Scale: NTS File No: 233906
Rev.	Description	Checked	Date																															
	Initials	Date																																
Drawn By	TA	07/09/09																																
Checked By	TM	07/09/09																																
Approved By	TM	08/09/09																																

Table E.1: TUBA Sector Benefits

Row Labels	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	Grand Total
1	-50419214	-2879186	-6015584	-2371389	-2198237	1360061	-1930207	-1346876	-1821	3215076	745606	2801706	4207738	5787420	1105972	5501065	3461700	2210540	-36765629
2	1090423	240595	-76696	644596	1356746	339634	2177853	9564	29274	450046	472867	254738	328614	1716832	-143569	791095	275917	749507	10708038
3	-3093826	-738960	-621829	1012310	482132	174617	1284854	-575623	1025031	1469925	499995	2208604	2956501	5241750	-1291763	2580052	2762776	926425	16302974
4	-1430471	-722768	-1954090	436430	1202388	453022	473476	-303316	2297662	3101638	512281	314393	997180	698024	-816065	615704	340220	417744	6633456
5	-1077673	33513	-1470551	2956680	2781637	206867	4196582	-58080	3444638	1898278	1437237	437845	960103	2382883	-484068	1853594	480351	737706	20717547
6	125728	203199	116211	1033962	1555872	320441	453986	467590	6910566	1832266	528270	169006	2533669	2128535	4426573	7076233	1117796	507592	31507501
7	838264	1977308	2280430	1030499	3981014	1110322	8692982	-1397075	-1340110	1353056	734813	2525217	682756	5953024	-501425	5645382	6010409	1629882	41206755
8	-104318	37264	-201752	30617	152704	200842	-3065739	-64830	1254874	456643	222551	988634	1699787	1015939	-1293649	437490	2245629	59264	4071958
9	473453	-108815	868393	4718261	5054529	6817476	-6606222	1558645	4121283	5828989	2558344	5376136	15767329	7793811	-1665048	2617267	4143908	1684517	61002265
10	2570268	451744	2258300	7915079	5750260	3531051	1923619	979410	10670190	1279214	3891384	912032	4686446	6020619	3911621	3418989	130461	1529292	61829989
11	116712	395497	346694	1180441	1012220	-757999	1694757	329196	4247816	327062	32664	387031	839050	3336960	6077357	5194960	126077	1579763	26466269
12	749061	77145	1372574	340997	329332	-87628	744690	1439561	6857713	1556450	1478	26310	1595435	2438023	4137482	2616286	80068	360187	24635176
13	1960881	-41893	908025	788651	1028196	690108	234837	1508766	14368238	2883344	1171746	2419281	-1079899	561629	10645697	27252260	4278562	418154	69996596
14	2351993	1007067	1750847	901855	2869987	2439984	4411623	131904	6473722	5879336	4582358	4501118	1418744	3690699	1774420	10499740	15965564	269998	70920973
15	274553	134163	-835497	-866477	-155072	3479587	-1866388	-1236660	-2401443	3317353	4951931	1748449	10090603	5959757	-1156745	-381517	3201159	2450898	26708669
16	3496494	676086	2348360	1111894	2647162	5667001	8533676	883610	382889	1399512	6221275	2291247	22554663	12592528	1560962	417585	692558	4024794	77502312
17	1851962	212783	1963202	1151878	1077443	1286262	3160204	1904865	3635842	203071	490765	70794	3479665	14230497	4954763	893644	-16763	10359454	50910348
18	194633	182692	142024	139642	369447	359208	441569	-130078	1336758	943116	662547	649196	908759	408290	376031	1094147	5147719	-55	13225663
Grand Total	-40031077	1137434	3179061	22155926	29297760	27590856	24956152	4100573	63313122	37394375	29718112	28081737	74627143	81957220	31618546	78123976	50444111	29915662	577580689

Table E.2: TUBA Sector Benefits as a Percentage

Row Labels	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	Grand Total
1	-9%	0%	-1%	0%	0%	0%	0%	0%	0%	1%	0%	0%	1%	1%	0%	1%	1%	0%	-6%
2	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%
3	-1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	0%	0%	0%	0%	3%
4	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	1%
5	0%	0%	0%	1%	0%	0%	1%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%
6	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	1%	1%	0%	0%	5%
7	0%	0%	0%	0%	1%	0%	2%	0%	0%	0%	0%	0%	0%	1%	0%	1%	1%	0%	7%
8	0%	0%	0%	0%	0%	0%	-1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
9	0%	0%	0%	1%	1%	1%	-1%	0%	1%	1%	0%	1%	3%	1%	0%	0%	1%	0%	11%
10	0%	0%	0%	1%	1%	1%	0%	0%	2%	0%	1%	0%	1%	1%	1%	1%	0%	0%	11%
11	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	1%	1%	1%	0%	0%	5%
12	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	1%	0%	0%	0%	4%
13	0%	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	0%	0%	0%	2%	5%	1%	0%	12%
14	0%	0%	0%	0%	0%	0%	1%	0%	1%	1%	1%	1%	0%	1%	0%	2%	3%	0%	12%
15	0%	0%	0%	0%	0%	1%	0%	0%	0%	1%	1%	0%	2%	1%	0%	0%	1%	0%	5%
16	1%	0%	0%	0%	0%	1%	1%	0%	0%	0%	1%	0%	4%	2%	0%	0%	0%	1%	13%
17	0%	0%	0%	0%	0%	0%	1%	0%	1%	0%	0%	0%	1%	2%	1%	0%	0%	2%	9%
18	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	2%
Grand Total	-7%	0%	1%	4%	5%	5%	4%	1%	11%	6%	5%	5%	13%	14%	5%	14%	9%	5%	100%

Appendix F. TUBA Warnings, Sensitivity Test 2

Table F.1: Summary of TUBA Warnings

Warning Type	Number of warnings
Ratio of DM to DS Journey Time too Low	64733 (8177)
Ratio of DM to DS Journey Time too High	16421 (995)
Ratio of DM to DS Distance too Low	52977 (4474)
Ratio of DM to DS Distance too High	7047 (7047)
DM Speed too Low	21541
DS Speed too Low	28834
DM Time too High	19758
DS Time too High	19764

Explanation of the serious TUBA warnings is as below:

Ratio of DM to DS Journey Time too Low

These warnings occur where there is a significant rise in journey time from Do Minimum to Do Something scenarios. The majority of the serious warnings relate to travel involving a trip end in Sector 1, which would be expected due to the traffic management measures to be implemented. The small number of serious warnings not involving a trip end in Sector 1, all have both trip ends in Sector 3 and are likely to involve trips passing through Sector 1 and would therefore the warnings would be expected due to the traffic management works highlighted above.

Ratio of DM to DS Journey Time too High

These warnings occur where there is a significant decrease in journey time from Do Minimum to Do Something scenarios. A large proportion of these serious warnings have a trip end in sectors 8 and 10 which are at either end of the proposed highway scheme and therefore significant decreases in journey time would be expected for these movements. The only other serious warnings are for trips having both trip ends in Sector 1. It is considered that these warnings occur because of local reassignment issues concerning the proposed traffic management works in Sector 1.

Ratio of DM to DS Distance too Low

These warnings occur where there is a significant rise in trip distance from Do Minimum to Do Something scenarios. All of the serious warnings have a trip end in Sector 1 and it is considered that these warnings are caused by local reassignment issues concerning the proposed traffic management works in Sector 1.

Ratio of DM to DS Distance too High

These warnings occur where there is a significant decrease in journey time from Do Minimum to Do Something scenarios. All of the serious warnings have a trip end in Sector 1 and it is considered that these warnings are caused by local reassignment issues.

DM Speed too Low & DS Speed too Low

These warnings occur where speeds are low. The majority of these warnings have a trip end in Sector 1, however there are also significant numbers of warnings in the sectors around the city centre (Sectors 2 - 5) and in Sector 11 to the north of the city centre. It is considered that these warnings relate to the congested nature of the network.

DM Time too High & DS Time too High

These warnings occur where journey times are high. All of these warnings relate to high journey times for trips with a trip end in Sector 18. This is expected as Sector 18 is an external sector comprising most of the UK.

Appendices Sensitivity Test 3 – See Volume 3
Appendices Sensitivity Test 4 – See Volume 4
Appendices Sensitivity Test 5 – See Volume 5
Appendices Sensitivity Test 6 – See Volume 6