Appendix 23
NSTM2: Reference Case Forecast Report

ADC Infrastructures Ltd

NORTHAMPTON GATEWAY SRFI

Reference Case Forecast Report

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ADC Infrastructures Ltd

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Reference Case Forecast Report

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1 INTRODUCTION

1.1 BACKGROUND

1.1.1. WSP have been commissioned by ADC Infrastructure Ltd, on behalf of Roxhill Junction 15 Ltd, to undertake transport modelling for the Northampton Gateway SRFI (Strategic Rail Freight Interchange) development adjacent to M1 Junction 15 in Northamptonshire using the Northamptonshire Strategic Traffic Model (NSTM). It is Northampton County Council's strategic model that is maintained and operated by WSP.

1.1.2. The original NSTM had been through an update and validation process as part of NCC's major model update (referred to as NSTM2). WSP have undertaken further validation work as part of the Northampton Gateway project to ensure that the model is fit for the purposes of examining the transport impact of the Northampton Gateway development (as explained in the LMVR dated April 2017). The conclusion of this, as reported in the LMVR, is that the model is fit for the purposes of examining the transport impacts associated with the Northampton Gateway scheme. However ADC Infrastructure Ltd consultant agreed with the Transport Working Group not to use the modal choice/public transport components of the model.

1.1.3. The SATURN (Simulation and Assignment of Traffic in Urban Road Networks) suite of programs was used to build the highway model, while EMME4 has been used to build the Demand Model and the Public Transport Model. The strategic model developed by WSP offers an integrated system for a range of transport modes, representing private and public transport as well as modal interchange behaviour such as walking. NSTM2 is a four-stage transport model and four stages are:

- Trip Generation
- Mode Choice
- Trip Distribution
- Assignment.

1.1.4. The model specification was developed in accordance with current Department for Transport (DfT) guidelines detailed in DfT Transport Analysis Guidance (TAG)1. The TAG website provides information on the role of transport modelling and appraisal to assist in the provision of a consistent and reputable approach for the development of transport models.

1.1.5. The Northampton Gateway SRFI development would consist of a number of large scale warehousing and distribution units and an inter-modal rail freight terminal. The site would include provision for rail sidings to serve individual buildings. The proposed warehousing and distribution area comprises approximately 5.0 million sqft of B8 use with an ancillary B1 (office) use and an allowance for mezzanine floor space.

The information contained within this report only considers the results of the modelling exercise. It does not provide any comments on the actual impact of the development outside of the transport modelling scope, nor does it suggest any mitigation to offset any transport impacts.

1.2 NSTM2

1.2.1. Northamptonshire's location in the centre of England has long made it an important focus for the nation's transport system. In the west of the county, between the villages of Norton and Whilton, four historic transport corridors run in close proximity:

- The A5, originally a Roman road linking London and Chester, known to the Saxons as Watling Street and later a major turnpike between London and Holyhead
- The Grand Union Canal opened on 21 June 1796 as part of the Grand Junction linking Braunston in Northamptonshire with the River Thames at Brentford
- The West Coast Main line railway, opened in 1838 by the London & Birmingham Railway as part of the first line linking London with the Midlands and the north

[1] https://www.gov.uk/guidance/transport-analysis-guidance-webtag

- The M1, the first substantial piece of motorway opened in England on 2 November 1959.

1.2.2. The national focus on town planning and urban redevelopment following World War 2, led to a number of towns in the county being designated as new or expanding towns:

- Corby, designated as a new town in 1950, largely to accommodate the growing steel industry
- Daventry, designated as an expanding town in 1962 to cope with overspill from Birmingham
- Wellingborough, designated an expanding town in 1964, to cope with overspill from London
- Northampton designated as a new town in 1968, to cope with overspill from London.

1.2.3. In addition, the designation of the new city of Milton Keynes, which borders the county, in 1969, has had a major impact on areas of Northamptonshire. Most of the county remains rural in nature; although only a relatively small percentage of workers, even in the rural areas, now work in agriculture.

1.2.4. Many of the people who live in the county's villages, commute to work either in the larger towns within or just outside the county, or to London. Figure 1 is a key diagram showing the strategic transport network within the county and the major towns.

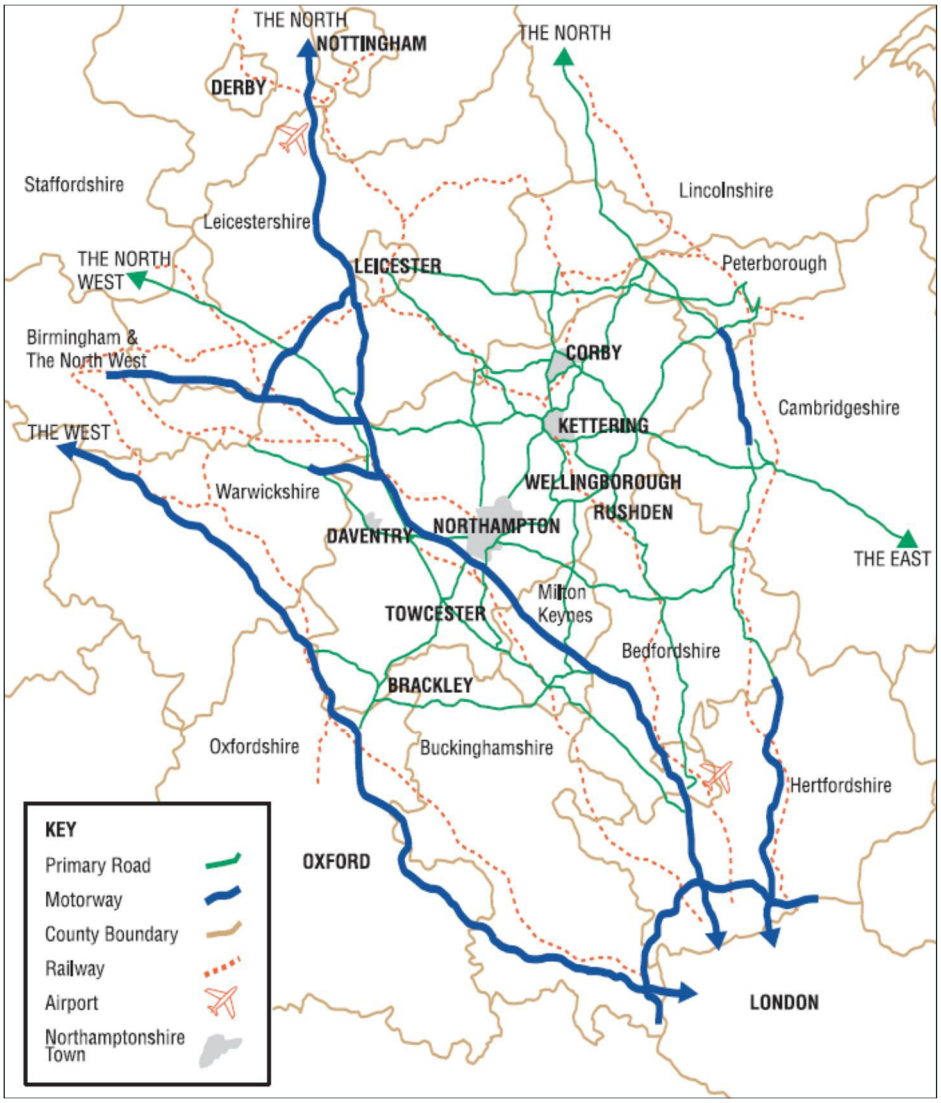

Figure 1 - Strategic Transport Network within Northamptonshire

Source: Northamptonshire County Council Local Transport Plan 2006 - 2011

1.2.5. In 2008, as part of the sustainable transport highway services contract for Northamptonshire County Council (NCC), the MGWSP joint venture was commissioned by NCC to combine and update the two existing strategic transportation models:

- North Northamptonshire Highway Model (SATURN)
- West Northamptonshire Multi-Modal Model (SATURN and EMME/2)

1.2.6. It was originally validated to a base year of 2008, with validation exercises undertaken for the highway, public transport and demand models. Significantly, though, much of the origin and destination demand data originated from 2005 and 2002, so the data was on the cusp of TAG acceptability at the time of the original model build. Since the original validation in 2008, the model has been updated and the validation improved for key areas in the highway model.

1.2.7. A revalidation exercise was undertaken for the NSTM in 2015. The validation base year was set to 2014 as most of the survey data was collected for that exercise in 2014. This took account of significant changes to the highway network around Northampton and to incorporate count data. The public transport and demand models were updated accordingly, but their validation has not been reviewed.

1.2.8. In addition to the above, there are a number of areas of improvements that have been incorporated to the recent updated NSTM2 to become a fully WebTAG-compliant model. Key areas that were improved are:

- Base Year– most of the data was collected for major model update in 2015, hence base year is set to 2015.
- Time period – interpeak represented in the updated NSTM2
- Highway model – model fully reviewed
- Public transport model – model updated as it has not been reviewed since 2008
- Demand model – DfT have a preference for a fully incremental structure
- Data - interview survey data across model and count data in some areas is too old, and smaller towns and rural areas not well represented. For the updated NSTM2 development, WSP | Parsons Brinkerhoff requested Citi Logik to capture Vodafone MND data and prepare initial OD matrices for the NSTM2 Fully Modelled Area. This MND supplemented with the existing data sources such as 2011 Census Data, TrafficMaster data, etc. has been used as the basis for the trip matrix development to match the NSTM2 specification

1.2.9. The associated Local Model Validation Report (LMVR) is available dated April 2017.

1.2.10. The model now has the ability to quantify the benefits of a policy change or new transport infrastructure in Northamptonshire, enabling the testing of future transport proposals and developments (including developer led) in an efficient, consistent and evidentially based manner.

1.2.11. The model specification was developed in accordance with current Department for Transport guidelines detailed in the Department for Transport (DfT) Transport Analysis Guidance (TAG), which is aimed at ensuring a consistent and reputable basis for forecasting.

1.3 REPORT STRUCTURE

1.3.1. The report includes the following sections:

- Forecasting (Section 2)
- Development Overview (Section 3)
- Model Assessments (Section 4)
- Conclusion (Section 5).

2 FORECASTING

2.1 INTRODUCTION

2.1.1. The updated Demand Model was developed following the DfT's recommended use of an incremental model formulation, in which each stage of the model is forecast based on the relative cost changes compared to the validated base model.

2.1.2. A forecast report has been produced in November 2017 for NCC that outlines NSTM2 model structure and the proposed methodology to update the four-stage Transport Demand Model (TDM).

2.2 FORECAST YEARS

2.2.1. The forecast years for the NSTM2 are 2021 and 2031.

2.2.2. Generalised cost parameters for each forecast year were calculated from the TAG data book (December 2015).

2.3 FORECAST SCENARIOS

2.3.1. ADC Infrastructure provided WSP with a:

→ **Brief:** *Technical Note 1: Transport modelling methodology; Report Reference: ADC1475 TN1 (22 August 2016*) which details the scope of modelling methodology

2.3.2. This report presents the results from Reference Case models. For both periods (AM peak and PM peak), three reference case models have been prepared:

- B1 2021 Opening Year Reference Case: all committed and allocated development and infrastructure in place by 2021
- C1 2021 Circular Compliant Reference Case: all committed development and infrastructure compliant with the DfT 02/2013 Circular.
- D1 2031 Future Assessment Year Reference Case: all committed and allocated development and infrastructure in place by 2031.

2.4 BACKGROUND GROWTH

2.4.1. Background car growth was obtained through the use of TEMPRO. Outputs from the National Trip End Model (NTEM) are supplied by the DfT via TEMPRO to provide projections of future planning data, changes in socio-economic characteristics of the population and changes in car ownership. This provides a basis for construction of future year travel demand. The growth factors from the NTEM for the 2015-2021 and for 2015-2031 can be seen in Table 1 and Table 2 respectively.

Table 1 - 2015-2021 Production Growth Factor (Car)

District	2015-2021 Production Growth Factors (Car)								
	AM Peak			IP			PM Peak		
	Commute	Employer's Business	Other	Commute	Employer's Business	Other	Commute	Employer's Business	Other
Corby	1.08	1.06	1.10	1.04	1.04	1.09	1.02	1.04	1.07
Daventry	1.03	1.05	1.09	1.04	1.05	1.08	1.04	1.05	1.07
East Northants	1.01	1.03	1.07	1.02	1.03	1.07	1.02	1.04	1.05
Kettering	1.05	1.06	1.09	1.04	1.06	1.08	1.04	1.06	1.07
Northampton	1.06	1.06	1.08	1.05	1.06	1.08	1.04	1.06	1.07
South Northants	1.01	1.04	1.08	1.03	1.04	1.08	1.04	1.05	1.06
Wellingborough	1.07	1.06	1.10	1.05	1.05	1.08	1.03	1.05	1.07
Rest of UK	1.04	1.05	1.08	1.04	1.05	1.07	1.04	1.06	1.06

Table 2 - 2015-2031 Production Growth Factors (Car)

District	2015-2031 Production Growth Factors (Car)								
	AM Peak			IP			PM Peak		
	Commute	Employer's Business	Other	Commute	Employer's Business	Other	Commute	Employer's Business	Other
Corby	1.25	1.17	1.32	1.14	1.12	1.26	1.09	1.11	1.22
Daventry	1.10	1.12	1.22	1.10	1.11	1.20	1.09	1.12	1.17
East Northants	1.02	1.07	1.17	1.05	1.08	1.17	1.06	1.09	1.13
Kettering	1.12	1.13	1.21	1.10	1.12	1.19	1.09	1.12	1.16
Northampton	1.15	1.14	1.21	1.11	1.12	1.20	1.10	1.12	1.17
South Northants	1.07	1.10	1.21	1.09	1.10	1.19	1.09	1.11	1.16
Wellingborough	1.11	1.12	1.20	1.10	1.10	1.19	1.08	1.10	1.16
Rest of UK	1.10	1.12	1.19	1.10	1.11	1.18	1.09	1.12	1.15

2.4.2. Background growth for LGV and HGV was obtained from the Regional Traffic Forecasts published by the DfT. The growth factors for LGV and HGV are shown in Table 3.

Table 3 - Production Growth Factors (LGV and HGV)

Vehicle	Production Growth Factors	
	2015-2021	2015-2031
LGV	1.17	1.43
HGV	1.05	1.12

2.5 NORTHAMPTONSHIRE PLANNING DATA

2.5.1. Forecast planning data was obtained from the relevant planning authorities for the following developments:

- Outstanding planning permissions, not yet completed
- Known proposed developments, thought to be likely to go ahead, even though planning application may not yet have been submitted.

2.5.2. Data was also provided regarding the development sites allocated in the Core Spatial Strategies for the county. Data provided came from the following sources:

- North Northamptonshire Joint Planning Unit (NNJPU) consistent with NNJPU Forecasting Report data for Scenario 2 - August 2013.
- West Northamptonshire Joint Core Strategy Local Plan (Part 1) – December 2014.

2.6 DEVELOPMENTS

2.6.1. The data inputs required by the NSTM2 demand model in relation to developments are the numbers of households, jobs and school pupils as well as retail space values for retail developments. The information for these data inputs was provided to WSP by NCC in terms of committed, proposed and potential developments for forecast years of 2021 and 2031.

2.6.2. There is no guidance on what size of development should be modelled explicitly therefore so developments were reviewed on a case by case basis to determine their likely impact.

2.7 HOUSING DEVELOPMENTS

2.7.1. Residential developments with a household size lower than 10 were included in the total number of houses for small scale developments within their respective district, with this total then spread proportionally across all the zones within the district. Residential developments which comprised between 10 and 400 households were allocated to an existing zone within the NSTM2.

2.7.2. Developments greater than 400 households (i.e. strategic sites) were modelled explicitly in the sense they were given their own zone(s). The internal road network and mitigation for these explicitly modelled developments were also included within the NSTM2. Coding of the internal road network for explicitly modelled developments was taken from the respective masterplan for the development if it was available. In

the absence of this information assumptions were made in terms of how traffic for these major developments would load onto the road network.

2.7.1. Appendix A shows development quantum, zone numbers and locations of all of the committed/allocated developments that have been included within the 2021 and 2031 Reference Case scenarios.

2.7.2. The total housing numbers for each district are detailed in Table 4.

Table 4 - Household Totals by District (2021 and 2031)

District	B1 Scenario	C1 Scenario	D1 Scenario
Corby	4,743	7727	13,904
Daventry	2,930	2697	5,985
East Northants	4,584	3826	10,049
Kettering	5,931	9186	9,960
Northampton	9,276	8893	25,205
South Northants	2,751	5389	6,026
Wellingborough	5,239	5958	7,798
Total	35,454	43,675	78,927

2.7.3. Table 5 shows the residential dwellings from large committed and/or allocated developments that have been input into the Northampton gateway Reference Case scenarios in Northampton and near the Northampton Gateway site.

Table 5 - Forecast Committed/allocated Developments (Dwellings)

Development	B1 Scenario	C1 Scenario	D1 Scenario
Northampton North SUE (Policy N3) 1	150	0	150
Northampton West SUE (Policy N4)	300	0	2500
Northampton South SUE (Policy N5) 1	350	1000	1000
Northampton South of Brackmills SUE (Policy N6)	400	1300	1300
Northampton North SUE (Policy N3) 2	675	0	1850
The Waterside: St Peter's Way	0	0	270
Northampton North of Whitehills	250	0	1050
Upton Park (Policy N9)	350	1000	1000
Dallington Grange (Policies H1, H5 - Policy N8)	350	0	3000
Upton Lodge (excluding Norwood Farm) (Policy H4)	500	0	1801
Upton Lodge (Norwood Farm)	500	0	1699
Ransome Road	200	0	400
Princess Marina Hospital	550	550	550
Pineham (Policy D13,14)	0	646	646
Northampton South SUE (Policy N5) 2	250	1000	1000
Northampton North SUE (Policy N3) 3	250	0	1500

Castle Station	0	0	270
Bridge St/St John/Angel St Masterplan	561	561	561
University of Northampton, Park Campus	250	750	750
Towcester South SUE	340	2310	2310
South Northants - Roade Masterplan 1	250	0	307
South Northants - Roade Masterplan 2	75	0	125

2.8 EMPLOYMENT SITES

2.8.1. Employment spaces were split into three different categories:

- B1: Business
- B2: General Industry
- B8: Storage and Distribution

2.8.2. Information has generally been provided in terms of site area, but these needed to be converted into job totals for input into the demand model. Assumptions on employment density as used by the North Northamptonshire Joint Planning Unit were adopted for this purpose. These can be seen in Table 6.

Table 6 - Employment Density Assumptions

Planning Class	sqm per Job
B1	18
B2	35
B8	88

2.8.3. Employment sites providing fewer than 10 jobs were included in the total number of jobs for small scale developments within their respective district, with this total then spread proportionally across all the zones within the district.

2.8.4. Employment sites comprising between 10 and 400 jobs were allocated to an existing zone within the NSTM2.

2.8.5. Developments greater than 400 jobs (i.e. strategic sites) were modelled explicitly in the sense they were given their own zone(s). The internal road network and mitigation for these explicitly modelled developments was also included within NSTM2. Coding of the internal road network for explicitly modelled developments was taken from the respective masterplan for the development if it was available. In absence of this information assumptions were made in terms of how traffic for these major developments would load onto the road network.

2.8.6. Table 7 shows the employee numbers from large committed and/or allocated developments input into the Reference Case scenarios in Northampton and near the Northampton Gateway site.

Table 7 - Forecast Committed/Allocated Developments (Jobs)

Development	B1 Scenario	C1 Scenario	D1 Scenario
Northampton North SUE (Policy N3) 2	0	0	1316
The Waterside: St Peter's Way	0	0	2389
Northampton North of Whitehills	0	0	236
Dallington Grange (Policies H1, H5 - Policy N8)	0	0	1432
University Nunn Mills	1806	1806	1806
Castle Station	0	0	1663
Bridge St/St John/Angel St Masterplan	2500	2500	2500
Northampton Junction 16 Employment	4556	4556	4556
Milton Ham (land east of M1 J15a)	826	0	826
Towcester South SUE	0	1102	1102

2.8.7. Figure 2 shows the large committed developments input into the 2021 and 2031 Reference Case forecast scenarios in Northampton and near the Northampton Gateway site.

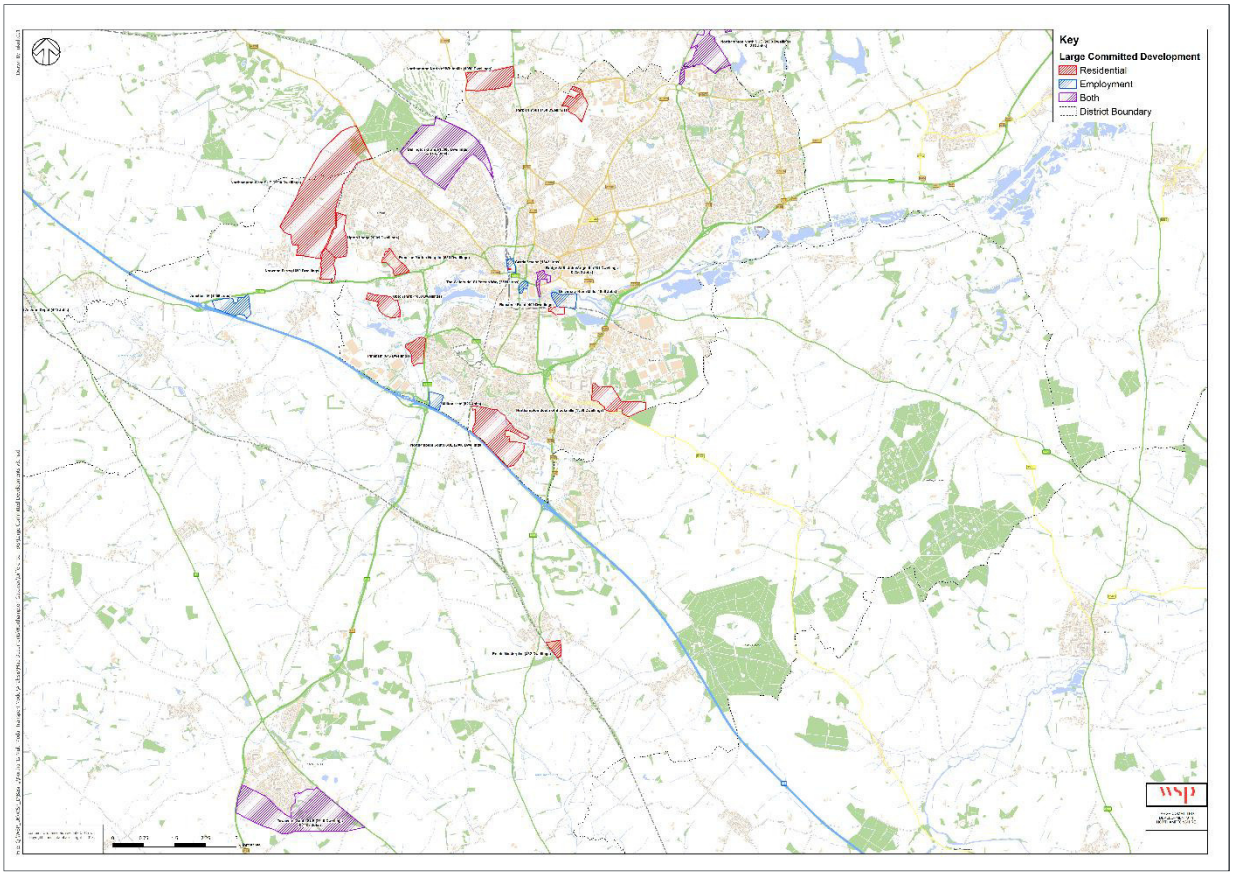

Figure 2 - Large Committed Development Locations

2.9 MAJOR INFRASTRUCTURE

2.9.1. Major infrastructure improvements were included in the 2021 and 2031 Reference Case models which were deemed to be committed or associated with a specific major development. The locations and details of the committed infrastructure schemes are shown in Appendix A.

2.9.2. Table 8 shows the major infrastructure input into the 2021 and 2031 Reference Case forecast scenarios in Northampton and near the Northampton Gateway site.

2.9.3. Figure 3 shows the major infrastructure input into the 2021 and 2031 Reference Case forecast scenarios in Northampton and near the Northampton Gateway site.

Table 8 - Major Committed Infrastructure Schemes (2021 and 2031)

District	Ref	Description	Mitigation	B1	C1	D1
Northampton	N1	North – west bypass Phase 1	New Link between A428 to Grange Farm development	Yes	Yes	Yes
Northampton	N2	North – west bypass Phase 2	New Link between Grange Farm Development A5199	Yes	Yes	Yes
Northampton	N3	Sandy Lane Relief Road Phase 2	New Link between Weedon Road and the existing part of Sandy Lane	Yes	Yes	Yes
Northampton	N4	St Peters Way / Green Street	One signalised junction	Yes	Yes	Yes
Northampton	N7	Plough Junction Improvement	Allowing 2 way movement through Victoria Promenade and left hand filter lane onto Bridge St	Yes	Yes	Yes
Northampton	N9	Harlestone Road/Mill Lane Road Junction	Signalisation of junction	No	Yes	Yes
Northampton	N16	Moulton Bypass	Construction of the Moulton Bypass	Yes	Yes	Yes
Northampton	N17	Northampton University Bedford Road Access	New Northampton University Bedford Road site signalised access junction	Yes	Yes	Yes
Northampton	N18	Dallington Grange Roundabout	New roundabout as part of Dallington Grange	Yes	Yes	Yes
Northampton	N19	NGMS: A45 Wootton Interchange	Ramp metering as part of the Northampton Growth Management Scheme (NGMS)	No	Yes	Yes
Northampton	N20	NGMS: A45 Barnes Meadow Interchange	Ramp metering as part of the Northampton Growth Management Scheme (NGMS)	No	Yes	Yes
Northampton	N21	NGMS: A45 Brackmills Interchange	Junction upgrade as part of the Northampton Growth Management Scheme (NGMS)	Yes	Yes	Yes
Northampton	N22	NGMS: A45 Great Billing Interchange	Junction upgrade (with MOVA controlled traffic signals) as part of the Northampton Growth Management Scheme	Yes	Yes	Yes

			(NGMS)			
Northampton	N23	NGMS: A45 Lumbertubs Interchange	Ramp metering as part of the Northampton Growth Management Scheme (NGMS)	Yes	Yes	Yes
Northampton	N25	NGMS: A45 Queen Eleanor Interchange	Junction upgrade as part of the Northampton Growth Management Scheme (NGMS)	Yes	Yes	Yes
Northampton	N26	A43 Phase 2 and 3	Dualling to Holcot/Sywell	Yes	Yes	Yes
Northampton	N27	Northern Orbital		Yes	Yes	Yes
Northampton	N28	M1 Smart Motorway Junction 13 to 16	All lane running	Yes	Yes	Yes
Northampton	N29	M1 Smart Motorway Junction 16 to 19	All lane running	Yes	Yes	Yes
Daventry	D13	Daventry Development Link (Flore Bypass)	Bypass around Flore to avoid the A45/A5 junction	No	Yes	Yes
Daventry	D14	A5/B5385 Junction Improvement	Signalisation of junction	Yes	Yes	Yes
South Northants	SN16	Abthorpe Roundabout (Towcester)	Part signalisation of roundabout with widening of roundabout and approaches	Yes	Yes	Yes
South Northants	SN17	A5 Relief Road and Junction associated with SUE	New link road between A43 and A5 to the South of Towcester	Yes	Yes	Yes

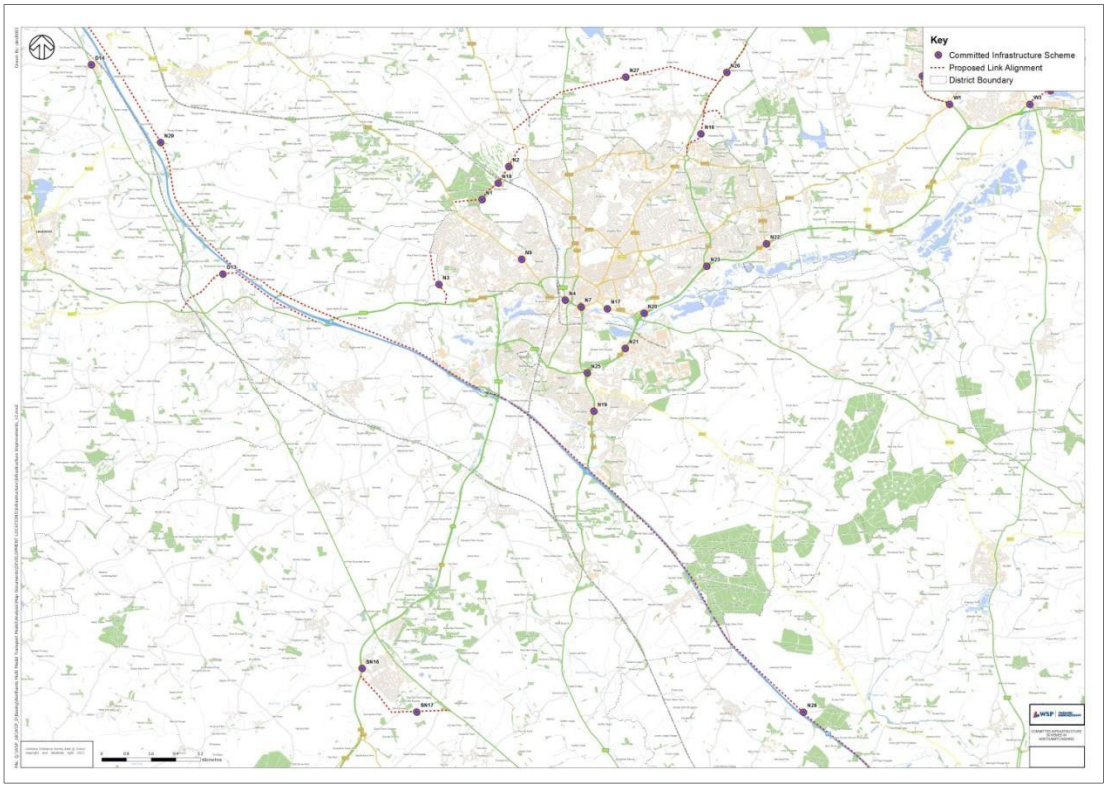

Figure 3 - Major Committed Infrastructure Schemes Locations

2.10 MATRIX GROWTH

2.10.1. Having accounted for background car growth in the NTEM and LGV and HGV growth in the Regional Traffic Forecasts published by the DfT to provide a basis for construction of future year travel demand. Table 9 and Table 10 show the matrix totals for origin trips and destination trips, respectively.

Table 9 - Matrix Totals - Origin Trips

	AM Peak							PM Peak						
	Matrix Total (PCU)				Matrix Growth(%)			Matrix Total (PCU)				Matrix Growth(%)		
District	2015 A1	2021 B1	2021 C1	2031 D1	B1 Growth	C1 Growth	D1 Growth	Base	2021 B1	2021 C1	2031 D1	B1 Growth	C1 Growth	D1 Growth
Rest of GB	69495	74880	74744	79823	8%	8%	15%	58688	61985	61644	66045	6%	5%	13%
Corby	10898	12654	13789	17764	16%	27%	63%	12135	13413	14177	17567	11%	17%	45%
Daventry	13370	14878	14659	17695	11%	10%	32%	11297	12614	12930	15267	12%	14%	35%
East Northants	13919	15166	15551	17158	9%	12%	23%	14655	16381	17142	18923	12%	17%	29%
Kettering	13746	15513	16110	17552	13%	17%	28%	11801	13162	13614	15246	12%	15%	29%
Northampton	44096	48200	49512	55903	9%	12%	27%	49183	52953	53564	59959	8%	9%	22%
South Northants	17868	19599	19939	23534	10%	12%	32%	14374	16047	16923	19310	12%	18%	34%
Wellingborough	13180	15046	15464	17272	14%	17%	31%	12903	14205	14627	16493	10%	13%	28%
Total	196571	215936	219768	246701	10%	12%	26%	185034	200759	204622	228811	8%	11%	24%

Table 10 - Matrix Totals – Destination Trips

District	AM Peak							PM Peak						
	Matrix Total (PCU)				Matrix Growth(%)			Matrix Total (PCU)				Matrix Growth(%)		
	Base	2021 B1	2021 C1	2031 D1	B1 Growth	C1 Growth	D1 Growth	Base	2021 B1	2021 C1	2031 D1	B1 Growth	C1 Growth	D1 Growth
Rest of GB	75200	83429	83073	89084	11%	10%	18%	54425	58710	58530	62801	8%	8%	15%
Corby	11144	12436	13101	16981	12%	18%	52%	12569	14082	14965	18342	12%	19%	46%
Daventry	11190	12741	13118	15714	14%	17%	40%	11655	12745	12781	15149	9%	10%	30%
East Northants	11318	12811	13393	15084	13%	18%	33%	14487	15842	16413	18061	9%	13%	25%
Kettering	12762	14027	14374	16047	10%	13%	26%	13150	14577	15049	16469	11%	14%	25%
Northampton	47572	50058	51069	57496	5%	7%	21%	46206	49070	50683	56587	6%	10%	22%
South Northants	14452	16505	17393	20283	14%	20%	40%	18585	20224	20454	23789	9%	10%	28%
Wellingborough	12933	13929	14247	16011	8%	10%	24%	13958	15508	15746	17613	11%	13%	26%
Total	196571	215936	219768	246701	10%	12%	26%	185034	200759	204622	228811	8%	11%	24%

2.10.2. Due to the fact that the NSTM2 is not constrained to the growth in the NTEM (cars) and the Regional Traffic Forecast (LGV/HGV) the growth shown between the Base and the forecast year matrices is generally higher than that in NTEM.

3 DEVELOPMENT OVERVIEW

3.1 LOCATION

3.1.1. The site is located to the west of M1 Junction 15, bounded to the east by M1 Motorway, to the south by the A508, to the north by Collingtree Road, and by the Northampton Loop line of the West Coast Mainline railway to the west. The site location is shown in Figure 4.

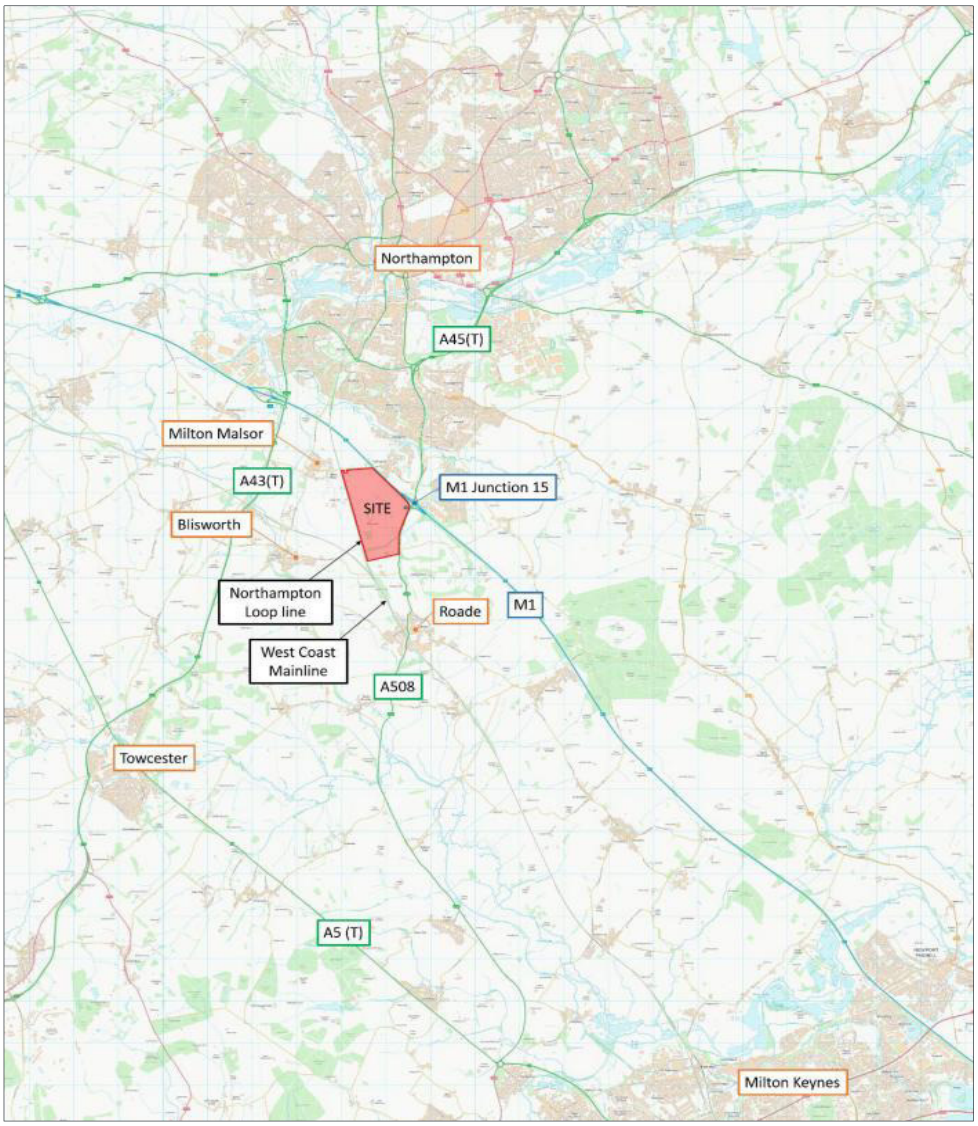

Figure 4 - Northampton Gateway SRFI location

3.2 DEVELOPMENT PROPOSALS

3.2.1. The development would be comprised of a large scale SRFI. The SRFI would have two principle development areas, consisting of the 'warehousing and distribution' area on the eastern part of the site, and the 'intermodal rail freight terminal' on the western part of the site, which would also include provision of a Rapid Rail Freight (RRF) facility.

3.2.2. The proposed warehousing and distribution area comprises approximately 5.0 million sqft of B8 use with ancillary B1 office use and an allowance for mezzanine floor space.

3.2.3. The masterplan illustrated in Figure 5 shows the proposed units and Table 11 summarises the gross internal area of each unit and the development as whole. As shown, B8 office use would be predominant in the SRFI development.

Figure 5 - Northampton Gateway SRFI masterplan

Table 11 - Northampton Gateway SRFI gross internal floor area

unit number	warehouse	offices	total
unit 1	500,000sqft	30,000sqft	530,000sqft
unit 2	515,000sqft	30,000sqft	545,000sqft
unit 3	653,000sqft	30,000sqft	683,000sqft
unit 4	790,000sqft	40,000sqft	830,000sqft
unit 5	657,000sqft	37,000sqft	694,000sqft
unit 6	513,000sqft	35,000sqft	548,000sqft
unit 7	1,150000sqft	41,000sqft	1,191000sqft
total	4,778,000sqft	243,000sqft	5,021,000sqft
%	95.16%	4.84%	100%

Source: *Technical Note 2: Trip Generation; Report Reference: ADC1475 TN2 (7 February 2017)*

3.2.4. Northampton Gateway development is not included in the Reference case scenarios.

4 MODEL ASSESSMENTS

4.1 MODELLED SCENARIOS

4.1.1. This chapter presents the results of the modelling assessments for the following scenarios:

- B1 2021 Opening Year Reference Case: all committed and allocated development and infrastructure in place by 2021
- C1 2021 Circular Compliant Reference Case: all committed development and infrastructure compliant in the DfT 02/2013 Circular.
- D1 2031 Future Assessment Year Reference Case: all committed and allocated development and infrastructure in place by 2031.

4.1.2. The results are presented by way of the following outputs for the AM peak and PM peak periods for all reference case scenarios:

- Actual flow difference
- Junction volume to capacity (V/C) plots

4.2 ACTUAL FLOWS

4.2.1. Actual flows (the number of vehicles modelled to be travelling along a link) are shown in PCU/hour. Passenger Car Unit (PCU) is a unit of measure where Heavy Goods Vehicles (HGV) are converted to equivalent passenger cars using a standard conversion factor. High quality version of the all plots described in this section can be found in Appendix B.

4.2.2. Figure 6 and Figure 7 show actual flow differences between B1 Scenario and Base in the AM peak and the PM peak, respectively. Links with increases in actual flow are shown in red/orange and links with decreases in actual flow are shown in green, all relative to Base models.

Figure 6 - AM Peak Actual Flow Difference Plot between B1 and Base

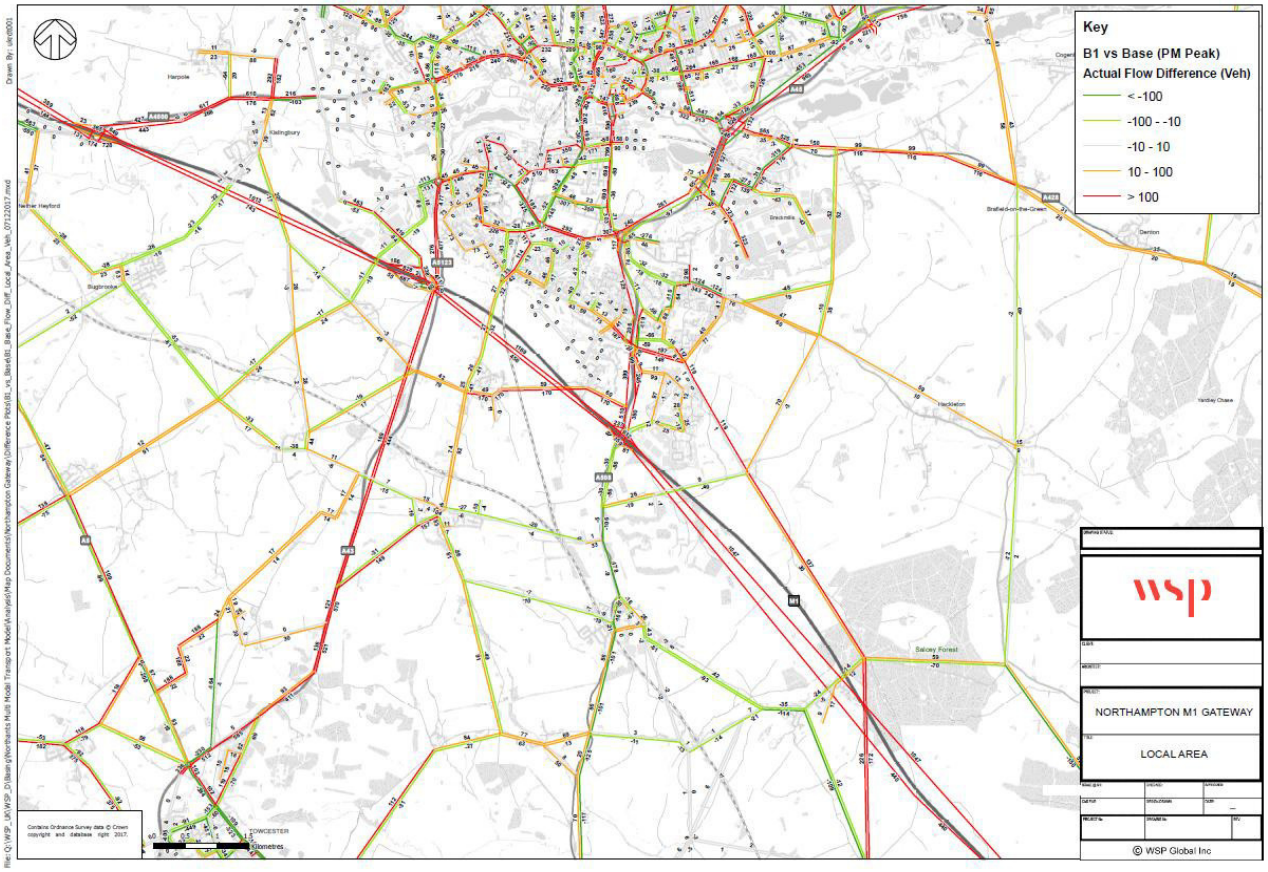

Figure 7 - PM Peak Actual Flow Difference Plot between B1 and Base

4.2.3. Figure 8 and Figure 9 show actual flow differences between C1 Scenario and Base in the AM peak and the PM peak, respectively. Links with increases in actual flow are shown in red/orange and links with decreases in actual flow are shown in green, all relative to Base models.

4.2.4. Figure 10 and Figure 11 show actual flow differences between D1 Scenario and Base in the AM peak and the PM peak, respectively. Links with increases in actual flow are shown in red/orange and links with decreases in actual flow are shown in green, all relative to Base models.

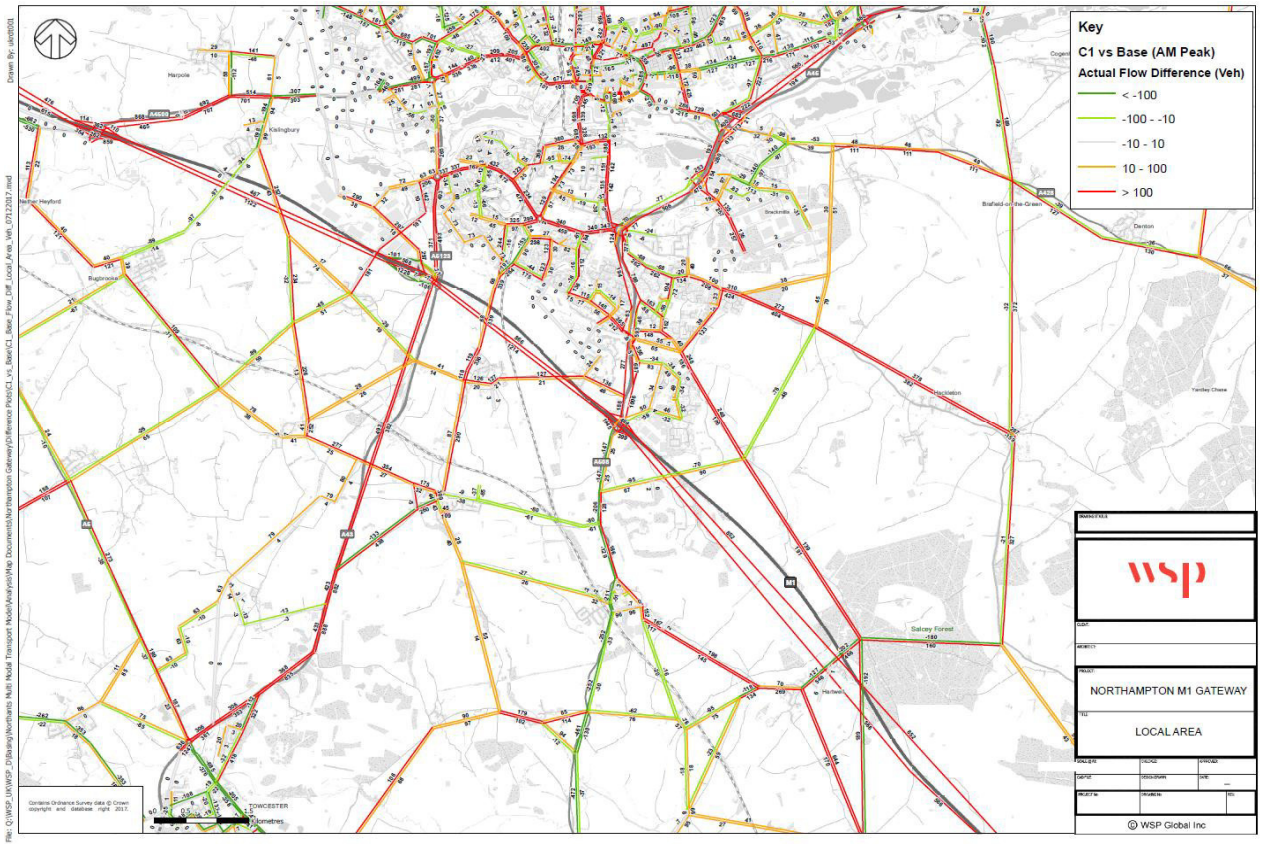

Figure 8 - AM Peak Actual Flow Difference Plot between C1 and Base

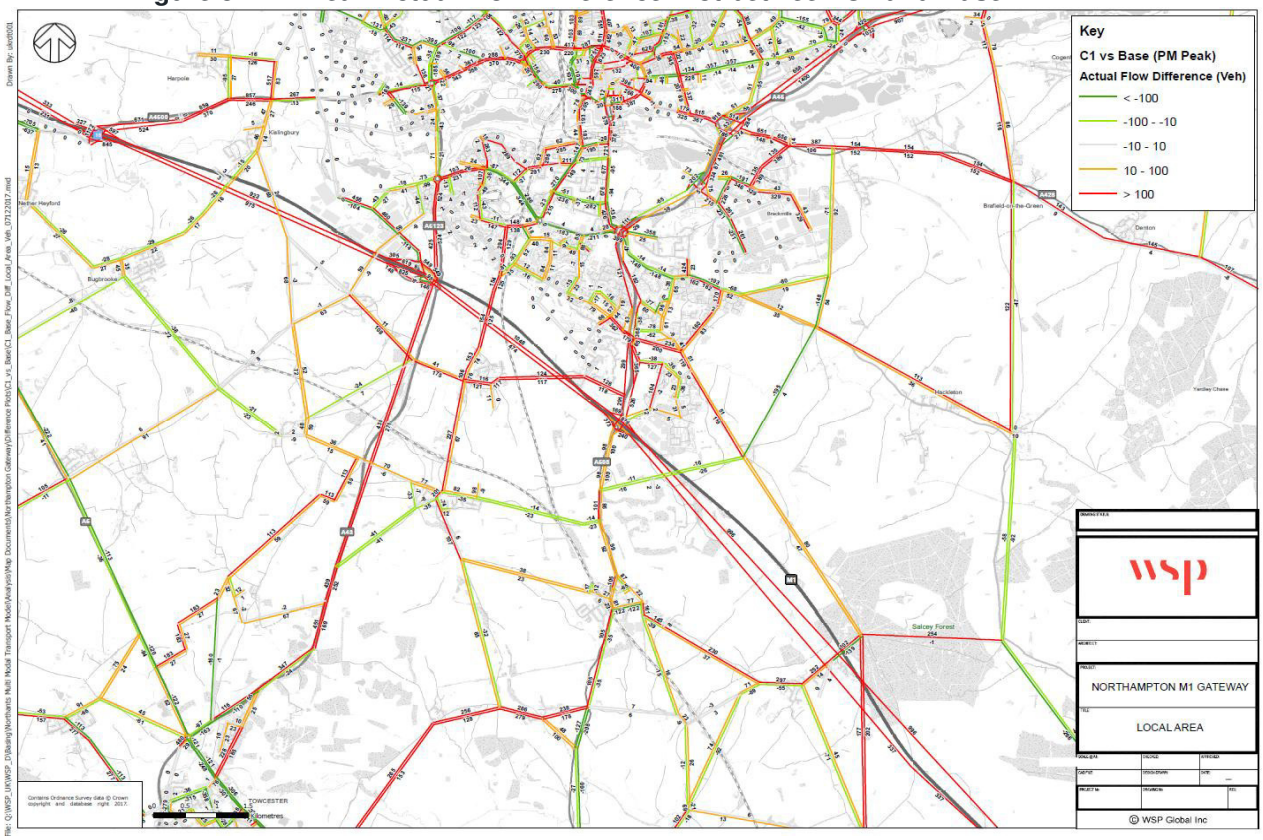

Figure 9 - PM Peak Actual Flow Difference Plot between C1 and Base

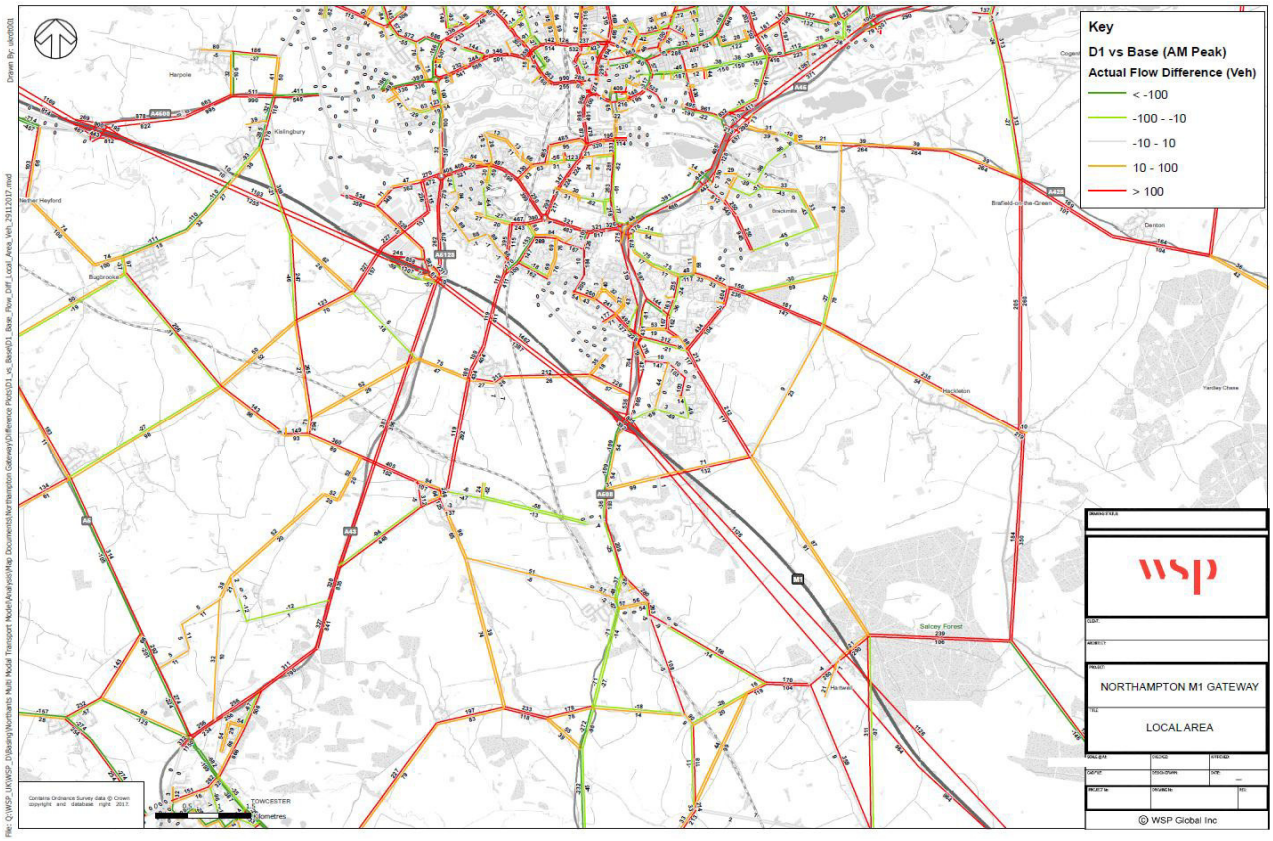

Figure 10 - AM Peak Actual Flow Difference Plot between D1 and Base

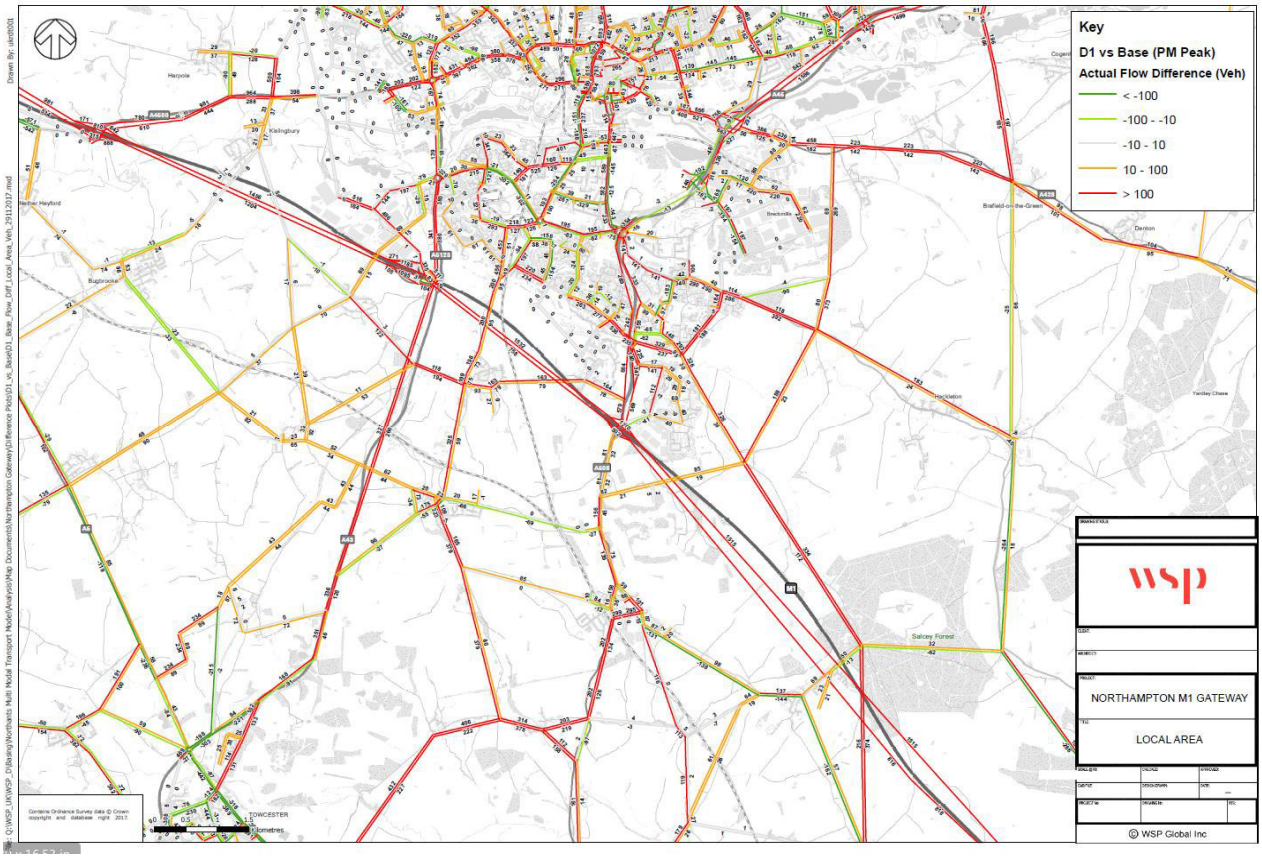

Figure 11 - PM Peak Actual Flow Difference Plot between D1 and Base

4.2.5. Table 12 shows the actual flows of the 2015 Base Year, and the Reference Case models. Figure 6 shows the location of the links.

Figure 12 - Location of Links in Reference Case models

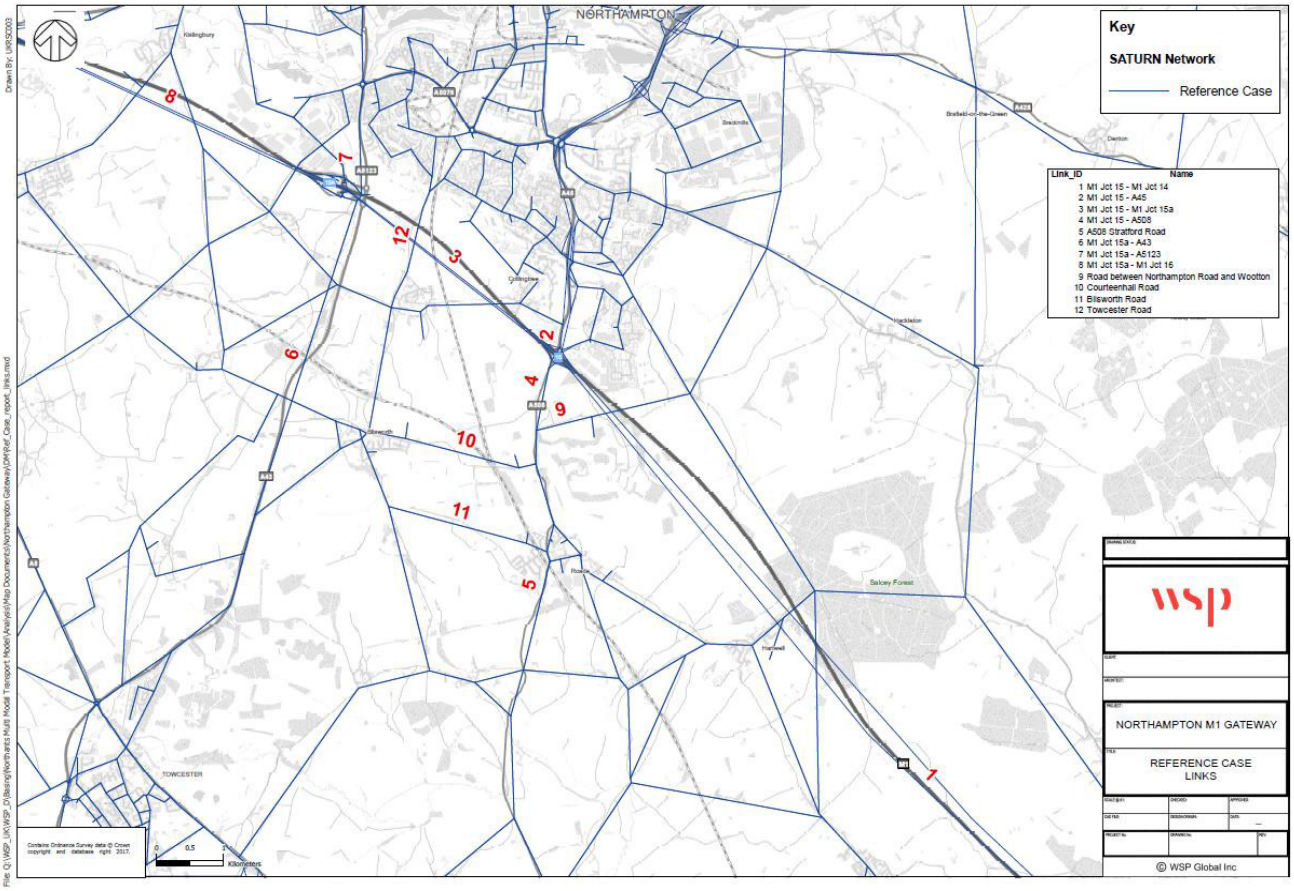

Table 12 - Actual Link Flows (PCU)

Link ID	Description	Direction	2015 A1		2021 B1		2021 C1		2031 D1	
	Motorway and A-Roads		AM	PM	AM	PM	AM	PM	AM	PM
1	M1 Jct 15 - M1 Jct 14	NB	4109	4854	4875	5319	4731	5213	5149	5738
	M1 Jct 14 - M1 Jct 15	SB	4436	4398	5339	5469	5340	5409	5637	5950
3	M1 Jct 15 - M1 Jct 15a	NB	4087	5103	5174	5579	5411	5588	5677	5910
	M1 Jct 15a - M1 Jct 15	SB	4966	4693	5926	5929	5939	5786	6552	6310
8	M1 Jct 15a - M1 Jct 16	NB	4061	4549	5219	5313	5325	5535	5525	5798
	M1 Jct 16 - M1 Jct 15a	SB	4979	4752	5696	5810	5498	5719	6204	6299
	Average 2015 to 2021/2031 Growth (on M1)				21%	18%	21%	17%	30%	27%
2	M1 Jct 15 - A45	NB	2716	2721	2908	3242	2987	3020	3319	3321
	M1 Jct 15 - A45	SB	2622	2897	3201	3244	3743	3372	3606	3427
4	M1 Jct 15 - A508	NB	897	876	920	850	735	978	835	964
	M1 Jct 15 - A508	SB	1149	1229	1287	1140	1203	1296	1229	1241
5	A508 Stratford Road	NB	698	679	690	769	432	788	673	888
	A508 Stratford Road	SB	887	753	891	651	883	719	901	889
6	M1 Jct 15a - A43	NB	1611	1646	1864	1822	2122	2093	2016	1982
	A43 - M1 Jct 15a	SB	1863	1293	1879	1745	2209	1566	2179	1556
7	M1 Jct 15a - A5123	NB	1492	1640	1881	2009	1840	2141	1758	2025
	A5123 - M1 Jct15a	SB	1576	968	1828	1480	2103	1506	1886	1361
	Average 2015 to 2021/2031 Growth (on A Road)				12%	15%	18%	19%	19%	20%
	Local Roads									
9	Road between Northampton Road and Wootton Road	EB	128	56	112	82	34	44	160	139
	Road between Northampton Road and Wootton Road	WB	57	64	101	45	125	48	157	86
10	Courteenhall Road	EB	279	100	212	80	199	85	221	99
	Courteenhall Road	WB	359	395	264	386	298	338	347	304
11	Blisworth Road	EB	38	23	65	16	11	62	89	109
	Blisworth Road	WB	58	23	37	14	84	46	50	23
12	Towcester Road	NB	611	475	554	502	680	631	731	679
	Towcester Road	SB	463	691	693	633	808	830	881	787

4.2.6. The M1 has an increase of approximately 1,000 PCU in each direction through Northampton in both the AM and PM peak comparing the 2015 Base Year models to Reference Case models. This occurs due to the Smart Motorway Scheme along the M1 between junctions 14 to 19, where the number of lanes in each direction is being increased from three to four lanes. The extra capacity is making the M1 more attractive and is therefore drawing in traffic that was previously using local roads as well as accommodating growth from background and developments included in the network. The average growth in traffic flow along the M1, between the Base and 2021scneaiors (both B1 and C1) is on average +21% in the AM peak and +17% in the PM peak. Between the Base and 2031, traffic growth is on average 30% in the AM peak, 27% in the PM peak.

4.2.7. There is also a noticeable increase in flow on the A45, A43 and A5123. On the A45, flow increases on an average by +500 PCU in the Reference Case scenario compared to the base models in both peaks. Flow increases on the A43 and A5123 on average by approximately +300 PCU in both peak periods whereas flow increases along the A508 is not significant in reference Case models comparing to the base models. The average increase in traffic flow along the A roads (the A45, A43, A5123 and A508) between the Base and B1 2021 is on average +12% in the AM peak and +15% in the PM peak. Between the Base and D1 2031, traffic growth is on average +19% in the AM peak and +20% in the PM peak. The average increase in traffic flow along the A roads in C1 scenario (Circular) is very similar to D1 scenario.

4.2.8. The growth varies heavily by link on the local roads due to the density of development varying between locations and therefore it is less useful to calculate an average for such links. There are noticeable increases in flows on the nearby parallel road of the Towcester Road. Traffic flow in the AM peak southbound along the Towcester Road increases by approximately +200 PCU, +300 PCU and +400 PCU in the B1, C1 and D1 respectively.

4.2.9. Comparing the 2031 D1 models and 2021 B1 models, a general increase in traffic can be seen. This mainly impacts the A45, Northampton and the M1 due to increased level of development and background traffic as the year's progress.

4.2.10. Plots showing the actual flow for the full study area extent are provided in Appendix C.

4.3 JUNCTION VOLUME TO CAPACITY (V/C)

4.3.1. The modelling results are presented by way of Volume to Capacity (V/C) plots and tables for key junctions in the area around the development.

4.3.2. Congestion at junctions is assessed by considering the ratio of volume to capacity (V/C) for each turning movement. Junctions have been assessed based on the worst performing turn, and classified according to the bands set out in Table 13.

Table 13 - Junction Assessment Criteria

V/C range	Congestion band
< 75%	
75% - 85%	
85% - 100%	
> 100%	

4.3.3. Figure 7 shows the location of the junctions around Northampton Gateway SRFI where performance assessments were undertaken and further described in this report.

Figure 13 - Northampton Gateway SRFI local junctions

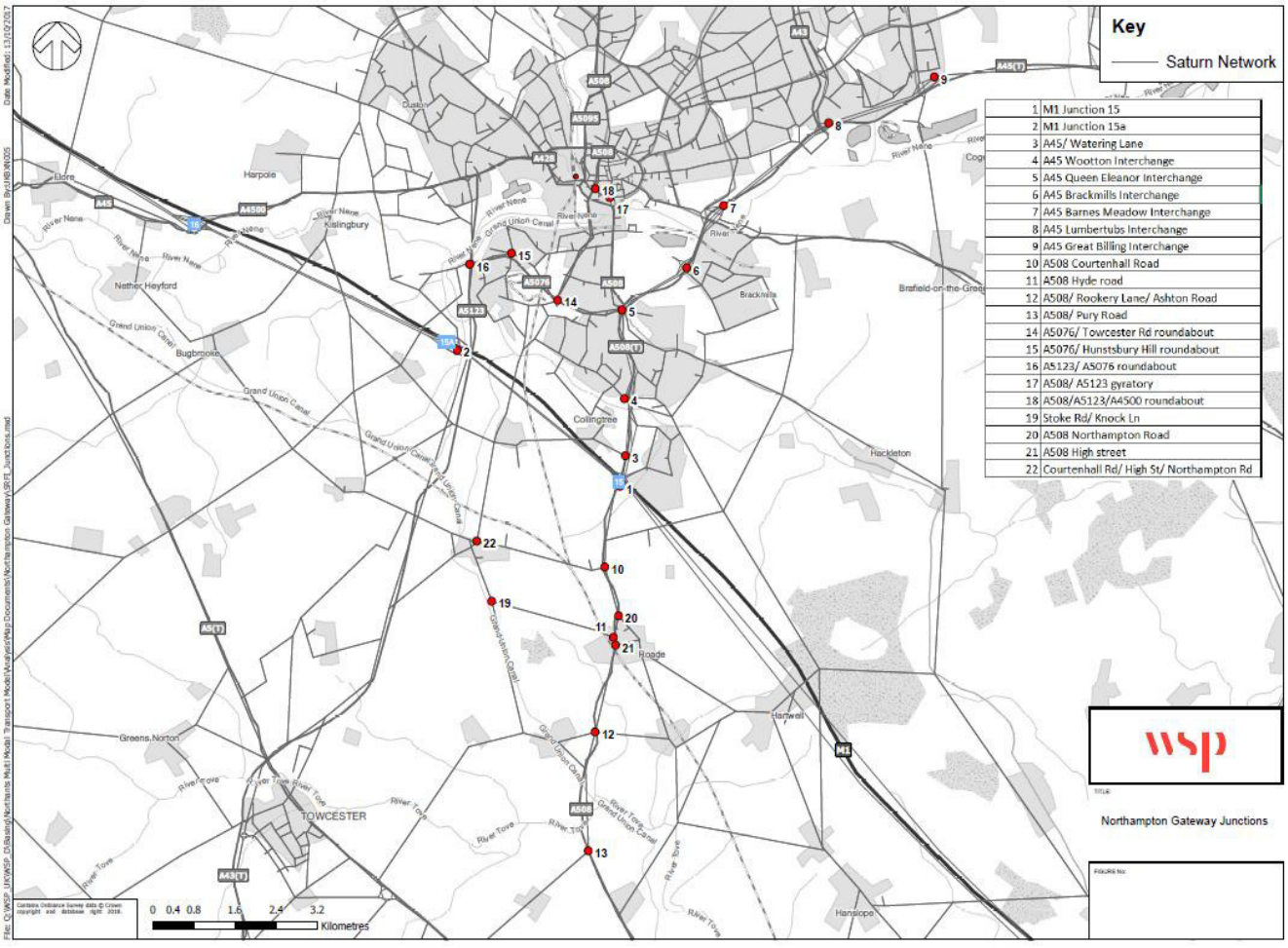

Table 14 - V/C [%] Reference Case Scenarios

ID	Junction	AM Peak				PM Peak			
		2015 Base	B1	C1	D1	2015 Base	B1	C1	D1
1	M1 Junction 15	116	112	102	105	100	100	103	103
2	M1 Junction 15a	105	109	112	115	107	112	112	113
3	A45/Watering Ln	64	69	71	80	67	79	73	82
4	A45 Wootton Interchange	72	70	102	100	79	83	86	88
5	A45 Queen Eleanor Interchange	102	100	100	101	113	113	110	113
6	A45 Brackmills Interchange	102	100	100	108	110	254	231	189
7	A45 Barnes Meadow Interchange	111	112	111	112	115	124	112	112
8	A45 Lumbertubs Interchange	107	111	108	115	94	95	100	103
9	A45 Great Billing Interchange	110	109	108	111	96	95	105	111
10	A508/Courteenhall Rd	87	93	85	99	95	104	90	95
11	A508/Hyde Rd	85	94	94	91	85	84	89	87
12	A508/Rookery Ln/Ashton Rd	69	53	46	91	42	38	50	74
13	A508/Pury Rd	97	100	60	101	51	65	43	95
14	A5076/Towcester Rd roundabout	93	93	101	104	92	107	84	103
15	A5076/Huntsbury Hill roundabout	82	102	101	104	100	103	102	105
16	A5123/A5076 roundabout	101	78	77	75	102	83	73	79
17	A508/A5123 gyratory	100	101	101	102	100	97	97	102
18	Newport Pagnell Rd/Wooldale Rd	47	52	49	76	105	57	44	51
19	Stoke Rd/Knock Ln	28	28	33	33	14	22	21	46
20	A508/Northampton Rd	80	81	88	81	93	90	98	101
21	A508/Hight St mini-roundabout	101	100	92	100	77	87	89	101
22	Courteenhall Rd/High St/Northampton Rd		83	101	101	86	102		98

4.3.4. M1 junctions 15 (ID 1) and 15a (ID 2) show a high levels of congestion, V/C over 100%, in the 2015 Base models. These remain relatively similar throughout the Reference case scenarios in both 2021 and 2031 forecast years, apart the Junction 15 in the AM scenario, where there is a small decrease in V/C values.

4.3.5. At junction ID 4, the V/C is low in the A1 (2015 Base models) and B1 (2021 Reference Case) but reaches significant levels in the C1 and D1 models in the AM peak due to accommodate more growth in the network. In the PM peak, V/C remains low in all three forecast scenarios.

4.3.6. Similar to M1 junctions, high levels of congestion are modelled to occur at most of the junctions along the A45 corridor in all three Reference Case scenarios in the AM and PM peaks, such as A45 Queen Eleanor Interchange (ID 5), A45 Brackmills Interchange (ID 6), A45 Barnes Meadow Interchange (ID 7), A45 Lumbertubs Interchange (ID 8) and A45 Great Billing Interchange (ID 9).

4.3.7. It is predicted that most of the junctions along the A508 corridor show moderate to high congestion in at least one peak in both Base and Reference Case Scenarios, specially junctions around Roade village.

4.3.8. Along the A5076, both Junctions (ID 14 and 15) operate at moderate or high levels at least one peak in both Base and Reference Case models that suggest this corridor is generally congested and at capacity.

4.3.9. In Blisworth, Junctions ID 22 operates at moderate or high levels at least one peak in both Base and Reference Case models that suggest this junction is generally operating at capacity.

4.3.1. At two (Junctions ID 3 and ID 19) of the 22 junctions assessed, the V/C ratios remain mostly under 85% in both AM peak and PM peak in all forecast scenarios, which indicates that these junctions are consistently operating within capacity in both peaks.

4.3.2. Appendix D contains junction V/C plots showing all of the junctions in the NSTM2 which are over capacity in the Base, 2021 and 2031 models.

4.3.3. Appendix E contains junction V/C difference plots between the 2021 and 2031 Reference case models and the Base models.

5 SUMMARY

5.1 MODEL RUNS

5.1.1. WSP have been commissioned by ADC Infrastructure Ltd, on behalf of Roxhill Developments Ltd, to undertake transport modelling for the Northampton Gateway SRFI (Strategic Rail Freight Interchange) development adjacent to M1 Junction 15 in Northamptonshire using the Northamptonshire Strategic Traffic Model (NSTM2).

5.1.2. The validated base year model which the NSTM2 forecasts were based on in this report is 2015. The associated Local Model Validation Report (LMVR) is available dated April 2017.

5.1.3. As well as for the Base, the NSTM2 has been built for a 2021 and a 2031 Reference forecast year, which includes committed and potential developments and associated highway improvements. The models have been constructed to represent the most likely development levels in the forecast year, and incorporate all of the planned infrastructure improvements that are likely to occur. For all peak periods (AM peak and PM peak), three reference case models have been prepared :

- B1 2021 Opening Year Reference Case: all committed and allocated development and infrastructure in place by 2021
- C1 2021 Circular Compliant Reference Case: all committed development and infrastructure compliant in the DfT 02/2013 Circular.
- D1 2031 Future Assessment Year Reference Case: all committed and allocated development and infrastructure in place by 2031.

5.2 REFERENCE CASE FORECAST RESULTS

5.2.1. Traffic flows between the Base the forecast year models rise in line with background and committed development growth, but the increases in percentage terms vary from location to location, depending on the committed infrastructure schemes that are scheduled to come forward. For example, growth on the M1 is almost twice as high between the Base and the forecast years as it is on the A roads, such as A43 and A45. There are some exceptions however. For example, traffic flows increases along the A508 are not significant in reference Case models comparing to the base models. However, there are some noticeable increases in flows on nearly parallel route of the Towcester Road near the development. Comparing the 2031 models and 2021 models, a general increase in traffic can be seen. This mainly impacts the A45, Northampton and the M1 due to increased level of development and background traffic as the year's progress.

5.2.2. Regarding junction V/C in the 2021 and 2031 models, V/C generally increases between the Base and the forecast year models as traffic flows increase and committed developments come forward. M1 junctions and most of the A45 junctions show high levels of congestion, V/C over 100%, in the 2015 Base models. These remain relatively similar throughout the Reference case scenarios in both 2021 and 2031 forecast years. It is also predicted that the some junctions along the A508 corridor show moderate to high congestion in at least one peak in both Base and Reference Case Scenarios, specially junctions around Roade village.

5.3 CONCLUSION

5.3.1. The model has the ability to quantify the benefits of policy change or new transport infrastructure in Northamptonshire, enabling the testing of future transport proposals and developments in an efficient, consistent and evidentially based manner. It has been constructed as a strategic model covering the entirety of Northamptonshire and as a multi-modal transport model capable of assessing the impact of future changes in journey patterns.

5.3.2. The forecast Core Scenario models have been developed based on a robust basis to reflect these aims. They are therefore considered fit for future option testing.

Appendix A

DEVELOPMENT AND INFRASTRUCTURE ASSUMPTIONS

Drawn By: ukjjs001

File: Q:\WSP_UK\WSP_D\Basing\Northants Multi Modal Transport Model\Analysis\Map Documents\DEVELOPMENT LOCATIONS\Committed Developments (Residential) v2.mxd

Key

- Large Committed Development
- District Boundary

Priors Hall (4893 Dwellings)
Deenethorpe Airfield Garden Village (1250 Dwellings)
Weldon Park (991 Dwellings)
West Corby SUE (3996 Dwellings)
Land West of Stanion (554 Dwellings)
South of Brooke Weston Academy (530 Dwellings)
Desborough North (560 Dwellings)
Rothwell North (791 Dwellings)
Westhill (460 Dwellings)
East of Kettering (3385 Dwellings)
Thrapston South (649 Dwellings)
Darsdale Farm, Chelveston Road (431 Dwellings)
Wellingborough North (1577 Dwellings)
Irthlingborough West (672 Dwellings)
WEAST Development (2836 Dwellings)
Rushden East SUE (1600 Dwellings)
Northampton North SUE (1500 Dwellings)
Park Farm Way / Shelley Road (496 Dwellings)
Northampton North SUE (2000 Dwellings)
Northampton North of Whitehills (1050 Dwellings)
Dallington Grange (3000 Dwellings)
Park Campus (750 Dwellings)
Mickle Well Park (450 Dwellings)
Land at Monkmoor Farm (1000 Dwellings)
Daventry North East SUE (2600 Dwellings)
Northampton West SUE (2500 Dwellings)
Upton Lodge (1801 Dwellings)
Princess Marina Hospital (550 Dwellings)
Bridge St/St John/Angel St (561 Dwellings)
Norwood Farm (1699 Dwellings)
Upton Park (1000 Dwellings)
Ransome Road (400 Dwellings)
Pineham (646 Dwellings)
Northampton South of Brackmills (1300 Dwellings)
Northampton South SUE (2000 Dwellings)
Roade Masterplan (432 Dwellings)
Towcester South SUE (2310 Dwellings)
Radstone Fields (1000 Dwellings)

MARKET HARBOROUGH
LUTTERWORTH
DESBOROUGH
CORBY
KETTERING
THRAPSTON
OUNDLE
RUGBY
BURTON LATIMER
RAUNDS
HIGHAM FERRERS
DAVENTRY
TOWCESTER
NEWPORT PAGNELL
OLNEY
BEDFORD
KEMPSTON
SANDY
ST NEOTS
MILTON KEYNES
BANBURY
AMPTHILL

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0 2 4 6 8 Kilometres

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LARGE COMMITTED DEVELOPMENTS IN NORTHAMPTONSHIRE

Drawn By: ukjjs001

File: Q:\WSP_UK\WSP_D\Basing\Northants Multi Modal Transport Model\Analysis\Map Documents\DEVELOPMENT LOCATIONS\Committed Developments\Committed Developments (Employment) v2.mxd

Key

- Large Committed Development
- District Boundary

Seymour Plantation (417 Jobs)
Rockingham Enterprise Zone (6133 Jobs)
Priors Hall (849 Jobs)
Land at Cockerell Road (525 Jobs)
TC & R03 - Retail Expansion (772 Jobs)
Former Gefco Automative Site (1066 Jobs)
West Corby SUE (931 Jobs)
Stanion Lane Plantation (3009 Jobs)
North Kettering (8520 Jobs)
Newlands Phase 1 (800 Jobs)
Vehicle Depot, Islip (788 Jobs)
A14 J10 Business Park (699 Jobs)
Kettering South (1103 Jobs)
North Raunds (527 Jobs)
Warth Park Extension Phase 2 (783 Jobs)
DIRFT Phase III (9000 Jobs)
Ithlingborough West (649 Jobs)
WEAST Development (1722 Jobs)
Appleby Lodge (1826 Jobs)
Sites E1 and E2 (909 Jobs)
New Valley Farm (700 Jobs)
Rushden Lakes (1714 Jobs)
Rushden East SUE (770 Jobs)
Northampton North SUE (1316 Jobs)
Dallington Grange (1432 Jobs)
Daventry North East SUE (572 Jobs)
Daventry Town Centre (1300 Jobs)
Castle Station (1663 Jobs)
Bridge St/St John/Angel St (2500 Jobs)
The Waterside: St Peter's Way (2385 Jobs)
University Nunn Mills (1606 Jobs)
Junction 16 (4556 Jobs)
Weedon Depot (400 Jobs)
Milton Ham (826 Jobs)
Towcester South SUE (1102 Jobs)
Silverstone Circuit (7374 Jobs)
Land North of Turweston Road (422 Jobs)

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0 2 4 6 8 Kilometres

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LARGE COMMITTED DEVELOPMENTS IN NORTHAMPTONSHIRE

Drawn By: ukjjs001

File: Q:\WSP_UK\WSP_D\Basing\Northants Multi Modal Transport Model\Analysis\Map Documents\DEVELOPMENT LOCATIONS\Infrastructure\Infrastructure Improvements.mxd

Key

- Committed Infrastructure Scheme
- Proposed Link Alignment
- District Boundary

C11 C2 C7 C6 C3 C15 C14 C1 C4 C8 C13 C10 C16 C12 C9

K1 K8 KTC6 K2 KTC8 K3 K6 K7 KTC7 K5 K9

W24 R2 W18 W22 W23 W19 W12 R1 W16 W21 W9 W7 W11 R3 W6 W4 W2 W8 W10 W1 W3

N27 N26 N29 N2 N16 N1 N18 N22 N9 N23 D13 N3 N4 N7 N17 N20 N21 N25 N19

SN21 SN16 SN17 N28 SN20 SN22 SN18 SN19

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0 2 4 6 8 Kilometres

WSP | PARSONS BRINCKERHOFF

COMMITTED INFRASTRUCTURE SCHEMES IN NORTHAMPTONSHIRE

Appendix B

FLOW DIFFERENCE PLOTS

Drawn By: ukrdt001

File: Q:\WSP_UK\WSP_D\Basing\Northants Multi Modal Transport Model\Analysis\Map Documents\Northampton Gateway\Difference Plots\B1_vs_Base\B1_Base_Flow_Diff_Local_Area_Veh_07122017.mxd

Key

B1 vs Base (AM Peak)

Actual Flow Difference (Veh)

- < -100
- -100 - -10
- -10 - 10
- 10 - 100
- > 100

Harpole
Kislingbury
Nether Heyford
Bugbrooke
Brafield-on-the-Green
Denton
Brackmills
Hackleton
Yardley Chase
Salcey Forest
Hartwell
TOWCESTER
A4500
A5123
A45
A428
A508
A5
A43
M1

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0 0.5 1 1.5 Kilometres

DRAWING STATUS:

wsp

CLIENT:

ARCHITECT:

PROJECT: NORTHAMPTON M1 GATEWAY

TITLE: LOCAL AREA

SCALE @ A1:	CHECKED:	APPROVED:
CAD FILE:	DESIGN DRAWN:	DATE: —
PROJECT No:	DRAWING No:	REV:

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Drawn By: ukrdt001

File: Q:\WSP_UK\WSP_D\Basing\Northants Multi Modal Transport Model\Analysis\Map Documents\Northampton Gateway\Difference Plots\B1_vs_Base\B1_Base_Flow_Diff_Local_Area_Veh_07122017.mxd

Key

B1 vs Base (PM Peak)

Actual Flow Difference (Veh)

- < -100
- -100 - -10
- -10 - 10
- 10 - 100
- > 100

Harpole
Kislingbury
Nether Heyford
Bugbrooke
Brackmills
Brafield-on-the-Green
Denton
Hackleton
Yardley Chase
Salcey Forest
TOWCESTER
A4500
A5123
A45
A428
A508
A5
A43
M1

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0 0.5 1 1.5 Kilometres

DRAWING STATUS:

wsp

CLIENT:

ARCHITECT:

PROJECT: NORTHAMPTON M1 GATEWAY

TITLE: LOCAL AREA

SCALE @ A1:	CHECKED:	APPROVED:
CAD FILE:	DESIGN DRAWN:	DATE: —
PROJECT No:	DRAWING No:	REV:

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Drawn By: ukrdt001

File: Q:\WSP_UK\WSP_D\Basing\Northants Multi Modal Transport Model\Analysis\Map Documents\Northampton Gateway\Difference Plots\C1_vs_Base\C1_Base_Flow_Diff_Local_Area_Veh_07122017.mxd

Key

C1 vs Base (AM Peak)

Actual Flow Difference (Veh)

- < -100
- -100 - -10
- -10 - 10
- 10 - 100
- > 100

Harpole
Kislingbury
Nether Heyford
Bugbrooke
Brackmills
Brafield-on-the-Green
Denton
Hackleton
Yardley Chase
Salcey Forest
Hartwell
TOWCESTER
A4500
A5123
A45
A428
A5
A43
A508
M1

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0 0.5 1.5 Kilometres

DRAWING STATUS:

CLIENT:

ARCHITECT:

PROJECT: NORTHAMPTON M1 GATEWAY

TITLE: LOCAL AREA

SCALE @ A1:	CHECKED:	APPROVED:
CAD FILE:	DESIGN/DRAWN:	DATE: —
PROJECT No:	DRAWING No:	REV:

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Drawn By: ukrdt001

File: Q:\WSP_UK\WSP_D\Basing\Northants Multi Modal Transport Model\Analysis\Map Documents\Northampton Gateway\Difference Plots\C1_vs_Base\C1_Base_Flow_Diff_Local_Area_Veh_07122017.mxd

Key

C1 vs Base (PM Peak)

Actual Flow Difference (Veh)

- < -100
- -100 - -10
- -10 - 10
- 10 - 100
- > 100

Harpole
Kislingbury
Nether Heyford
Bugbrooke
Brackmills
Brafield-on-the-Green
Denton
Hackleton
Yardley Chase
Salcey Forest
TOWCESTER
A4500
A5123
A45
A428
A5
A43
A508
M1

Contains Ordnance Survey data © Crown copyright and database right 2017.

0 0.5 1 1.5 Kilometres

DRAWING STATUS:

wsp

CLIENT:

ARCHITECT:

PROJECT: NORTHAMPTON M1 GATEWAY

TITLE: LOCAL AREA

SCALE @ A1:	CHECKED:	APPROVED:
CAD FILE:	DESIGN DRAWN:	DATE: ---
PROJECT No:	DRAWING No:	REV:

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Drawn By: ukrdt001

File: Q:\WSP_UK\WSP_D\Basing\Northants Multi Modal Transport Model\Analysis\Map Documents\Northampton Gateway\Difference Plots\D1_vs_Base\D1_Base_Flow_Diff_Local_Area_Veh_29112017.mxd

Key

D1 vs Base (AM Peak)

Actual Flow Difference (Veh)

- < -100
- -100 - -10
- -10 - 10
- 10 - 100
- > 100

Harpole
Kislingbury
Nether Heyford
Bugbrooke
Brackmills
Brafield-on-the-Green
Denton
Hackleton
Yardley Chase
Salcey Forest
Hartwell
TOWCESTER
A4500
A5123
A45
A428
A5
A43
A508
M1

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0 0.5 1 1.5 Kilometres

DRAWING STATUS:

wsp

CLIENT:

ARCHITECT:

PROJECT: NORTHAMPTON M1 GATEWAY

TITLE: LOCAL AREA

SCALE @ A1:	CHECKED:	APPROVED:
CAD FILE:	DESIGN DRAWN:	DATE: —
PROJECT No:	DRAWING No:	REV:

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Drawn By: ukrdt001

File: Q:\WSP_UK\WSP_D\Basing\Northants Multi Modal Transport Model\Analysis\Map Documents\Northampton Gateway\Difference Plots\D1_vs_Base\D1_Base_Flow_Diff_Local_Area_Veh_29112017.mxd

Key

D1 vs Base (PM Peak)

Actual Flow Difference (Veh)

- < -100
- -100 - -10
- -10 - 10
- 10 - 100
- > 100

Harpole
Kislingbury
Nether Heyford
Bugbrooke
Brafield-on-the-Green
Brackmills
Denton
Hackleton
Yardley Chase
Salcey Forest
TOWCESTER
A4500
A5123
A45
A428
A508
A5
A43
M1

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0 0.5 1 1.5 Kilometres

DRAWING STATUS:

wsp

CLIENT:

ARCHITECT:

PROJECT: NORTHAMPTON M1 GATEWAY

TITLE: LOCAL AREA

SCALE @ A1:	CHECKED:	APPROVED:
CAD FILE:	DESIGN DRAWN:	DATE: —
PROJECT No:	DRAWING No:	REV:

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Appendix C

ACTUAL FLOWS

Drawn By: ukrdt001

File: Q:\WSP_UK\WSP_D\Basing\Northants Multi Modal Transport Model\Analysis\Map Documents\Northampton Gateway\LMVR\Actual_flow_new_template.mxd

Key

2015 Base Scenario - AM Peak

Actual Flow (All PCU)

Harpole
Weedon Bec
Nether Heyford
Bugbrooke
Collingtree
Hackleton
Cogenhoe
Wollaston
Bozeat
Brafield-on-the-Green
Denton
Yardley Hastings
Yardley Chase
Harrold
Lavendon
Turvey
OLNEY
Greens Norton
TOWCESTER
Hanslope
Yardley Gobion
Castlethorpe
Potterspury
The Wilderness
Sherington
The Green
Grand Union Canal
River Nene
River Great Ouse
River Tove
River Glyme

A45
A45(T)
A43(T)
A5(T)
A508
M1
A509
A428

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0 0.5 1 Kilometers

DRAWING STATUS:

wsp

CLIENT:

ARCHITECT:

PROJECT: NORTHAMPTON M1 GATEWAY

TITLE: WIDER AREA

SCALE @ A1:	CHECKED:	APPROVED:
CAD FILE:	DESIGN-DRAWN:	DATE: —
PROJECT No:	DRAWING No:	REV:

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Drawn By: ukrdt001

File: Q:\WSP_UK\WSP_D\Basing\Northants Multi Modal Transport Model\Analysis\Map Documents\Northampton Gateway\LMVR\Actual_flow_new_template.mxd

Key

2015 Base Scenario - PM Peak

Actual Flow (All PCU)

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0 0.5 1 Kilometers

DRAWING STATUS:

wsp

CLIENT:

ARCHITECT:

PROJECT: NORTHAMPTON M1 GATEWAY

TITLE: WIDER AREA

SCALE @ A1:	CHECKED:	APPROVED:
CAD FILE:	DESIGN-DRAWN:	DATE: ---
PROJECT No:	DRAWING No:	REV:

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Drawn By: UKWMS001

File: Q:\WSP_UK\WSP_D\Basing\Northants Multi Modal Transport Model\Analysis\Map Documents\Northampton Gateway\DM\2021_B1_v12\2021_B1_v12 DM Actual Flow All PCU Wider Area.mxd

Key

2021 Scenario B1 - AM Peak

Actual Flow (Total PCU)

Harpole
Weedon Bec
Nether Heyford
Greens Norton
Cogenhoe
Wollaston
Bozeat
Brafield-on-the-Green
Denton
Yardley Hastings
Hackleton
Yardley Chase
Harrold
Lavendon
Turvey
OLNEY
Yardley Gobion
Castlethorpe
Potterspury
Old Stratford
The Wilderness
Sherington
The Green
Central Milton Keynes

River Nene
River Tove
River Great Ouse
Grand Union Canal
River Glyme
River Till

A45(T)
A508
A5(T)
M1
A6
A428
A509

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0 0.5 1 Kilometers

DRAWING STATUS:

wsp

CLIENT:

ARCHITECT:

PROJECT:

NORTHAMPTON M1 GATEWAY

TITLE:

WIDER AREA

SCALE @ A1:	CHECKED:	APPROVED:
CAD FILE:	DESIGN DRAWN:	DATE: —
PROJECT No:	DRAWING No:	REV:

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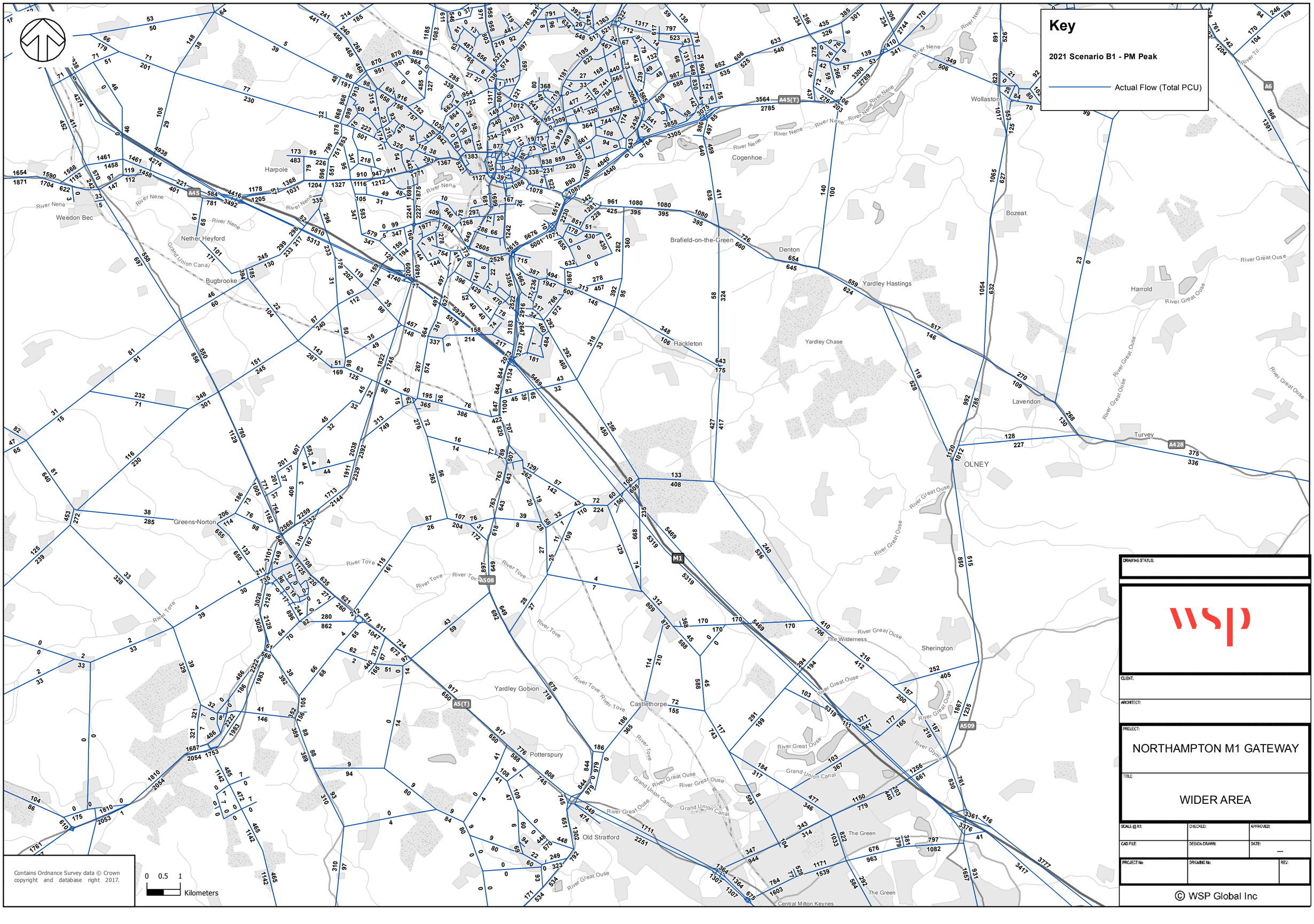
Key
2021 Scenario B1 - PM Peak
Actual Flow (Total PCU)
Harpole
Weedon Bec
Nether Heyford
Bugbrooke
Grand Union Canal
Greens Norton
Cogenhoe
Wollaston
Bozeat
Brafield-on-the-Green
Denton
Yardley Hastings
Hackleton
Yardley Chase
Harrold
River Great Ouse
Lavendon
Turvey
OLNEY
Sherington
The Wilderness
Yardley Gobion
Castlethorpe
Potterspury
Old Stratford
Central Milton Keynes
The Green
River Nene
River Tove
River Ouse
River Till
River Glyme
A45
A45(T)
A5(T)
A508
A509
A6
A428
M1
Contains Ordnance Survey data © Crown copyright and database right 2017.
0 0.5 1
Kilometers
DRAWING STATUS:
wsp
CLIENT:
ARCHITECT:
PROJECT:
NORTHAMPTON M1 GATEWAY
TITLE:
WIDER AREA
SCALE @ A1:
CHECKED:
APPROVED:
CAD FILE:
DESIGN DRAWN:
DATE:
PROJECT No:
DRAWING No:
REV:
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Drawn By: UKWMS001
File: Q:\WSP_UK\WSP_D\Basing\Northants Multi Modal Transport Model\Analysis\Map Documents\Northampton Gateway\DM\2021_B1_v12\2021_B1_v12\2021_B1_v12 DM Actual Flow All PCU Wider Area.mxd

Drawn By: UKWMS001

File: Q:\WSP_UK\WSP_D\Basing\Northants Multi Modal Transport Model\Analysis\Map Documents\Northampton Gateway\DM\2021_C1_v4\2031_C1_v4 DM Actual Flow All PCU Wide Area.mxd

Key

2021 Scenario C1 - AM Peak

Actual Flow (Total PCU)

Harpole
Weedon Bec
Nether Heyford
Bugbrooke
Greens-Norton
TOWCESTER
Cogenhoe
Wollaston
Bozeat
Brafield-on-the-Green
Denton
Yardley Hastings
Yardley Chase
Hackleton
Harrold
Lavendon
OLNEY
Turvey
Hanslope
Castlethorpe
Yardley Gobion
Potterspury
The Wilderness
Sherington
The Green

River Nene
Grand Union Canal
River Tove
River Great Ouse
River Glyme

A43
A45(T)
A43(T)
A5(T)
M1
A508
A509
A428

0 0.5 1 Kilometers

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DRAWING STATUS:

wsp

CLIENT:

ARCHITECT:

PROJECT: NORTHAMPTON M1 GATEWAY

TITLE: WIDE AREA

SCALE @ A1:	CHECKED:	APPROVED:
CAD FILE:	DESIGN DRAWN:	DATE: —
PROJECT No:	DRAWING No:	REV:

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File: Q:\WSP_UK\WSP_DiBasing\Northants Multi Modal Transport Model\Analysis\Map Documents\Northampton Gateway\DM\2021_C1_v4\2031_C1_v4 DM Actual Flow All PCU Wide Area.mxd

Key

2021 Scenario C1 - PM Peak

Actual Flow (Total PCU)

Harpole
Kislingbury
Weedon Bec
Nether Heyford
Bugbrooke
Greens-Norton
TOWCESTER
Cogenhoe
Wollaston
Bozeat
Brafield-on-the-Green
Denton
Yardley Hastings
Yardley Chase
Hackleton
Harrold
Lavendon
OLNEY
Turvey
Hanslope
Castlethorpe
Yardley Gobion
Potterspury
The Wilderness
Sherington
The Green

River Nene
Grand Union Canal
River Tove
River Great Ouse
River Glyme

A45
A45(T)
A43(T)
A5(T)
M1
A508
A509
A428

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0 0.5 1 Kilometers

DRAWING STATUS:

CLIENT:

ARCHITECT:

PROJECT: NORTHAMPTON M1 GATEWAY

TITLE: WIDE AREA

SCALE @ A1:	CHECKED:	APPROVED:
CAD FILE:	DESIGN DRAWN:	DATE: ---
PROJECT No:	DRAWING No:	REV:

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File: Q:\WSP_UK\WSP_D\Basing\Northants Multi Modal Transport Model\Analysis\Map Documents\Northampton Gateway\DM\2031_D1_v8\2031_D1_v8 DM Actual Flow All PCU Wide Area.mxd

Key

2031 Scenario D1 - AM Peak

Actual Flow (Total PCU)

Harpole
Weedon Bec
Nether Heyford
Bugbrooke
Greens-Norton
TOWCESTER
Yardley Gobion
Potterspury
Hackleton
Brafield-on-the-Green
Cogenhoe
Wollaston
Bozeat
Denton
Yardley Hastings
Yardley Chase
Harrold
Lavendon
Turvey
OLNEY
Hanslope
Castlethorpe
The Wilderness
Sherington
The Green

River Nene
River Tove
Grand Union Canal
River Great Ouse
River Glyme

A45(T)
A43(T)
A5(T)
A508
M1
A509
A428

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0 0.5 1 Kilometers

DRAWING STATUS:

wsp

CLIENT:

ARCHITECT:

PROJECT:
NORTHAMPTON M1 GATEWAY

TITLE:
WIDE AREA

SCALE @ A1:	CHECKED:	APPROVED:
CAD FILE:	DESIGN DRAWN:	DATE: —
PROJECT No:	DRAWING No:	REV:

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File: Q:\WSP_UK\WSP_D\Basing\Northants Multi Modal Transport Model\Analysis\Map Documents\Northampton Gateway\DM\2031_D1_v8\2031_D1_v8 DM Actual Flow All PCU Wide Area.mxd

Key

2031 Scenario D1 - PM Peak

Actual Flow (Total PCU)

Harpole
Weedon Bec
Nether Heyford
Greens-Norton
TOWCESTER
Cogenhoe
Wollaston
Bozeat
Brafield-on-the-Green
Denton
Yardley Hastings
Yardley Chase
Hackleton
Harrold
Lavendon
Turvey
OLNEY
Hanslope
Castlethorpe
Yardley Gobion
Potterspury
The Wilderness
Sherington
The Green

River Nene
Grand Union Canal
River Tove
River Great Ouse
River Glyme

A45(T)
A5(T)
A43(T)
M1
A508
A509
A428

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0 0.5 1 Kilometers

DRAWING STATUS:

CLIENT:

ARCHITECT:

PROJECT: NORTHAMPTON M1 GATEWAY

TITLE: WIDE AREA

SCALE @ A1:	CHECKED:	APPROVED:
CAD FILE:	DESIGN DRAWN:	DATE: —
PROJECT No:	DRAWING No:	REV:

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Appendix D

V/C PLOTS

Drawn By: ukrdt001

File: Q:\WSP_UK\WSP_D\Basing\Northants Multi Modal Transport Model\Analysis\Map Documents\Northampton Gateway\DS\VC Wider 01022018.mxd

Key

2015 Base Scenario

Junction V/C (%) AM Peak

- < 75%
- 75% - 85%
- 85% - 100%
- > 100%

NORTHAMPTON
TOWCESTER
OLNEY
NEWPORT PAGNELL
Duston
Harpole
Flore
Weedon Bec
Nether Heyford
Kislingbury
Bugbrooke
Collingtree
Brackmills
Brafield-on-the-Green
Denton
Earls Barton
Wollaston
Cogenhoe
Bozeat
Yardley Hastings
Yardley Chase
Hackleton
Harrold
Lavendon
Turvey
Sherington
The Wilderness
Hanslope
Castlethorpe
Yardley Gobion
Hartwell
Roade
Blisworth
Old Stratford
Deanshanger
Potterspury
Silverstone
Greens.Norton
The Green
A5
A45
A4500
A428
A508
A5095
A5123
A5076
A508(T)
A43
A43(T)
A45(T)
A5(T)
M1
A509
A4146
River Nene
Grand Union Canal
River Tove
River Great Ouse
River Great Ouse River Great Ouse
River Glyme

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0 0.5 1 Kilometers

DRAWING STATUS:

wsp

CLIENT:

ARCHITECT:

PROJECT:

NORTHAMPTON M1 GATEWAY

TITLE:

WIDE AREA

SCALE @ A1:	CHECKED:	APPROVED:
CAD FILE:	DESIGN-DRAWN:	DATE: —
PROJECT No:	DRAWING No:	REV:

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Drawn By: ukrdt001

File: Q:\WSP_UK\WSP_D\Basing\Northants Multi Modal Transport Model\Analysis\Map Documents\Northampton Gateway\DS\VC Wider 01022018.mxd

Key

2015 Base Scenario

Junction V/C (%) PM Peak

- < 75%
- 75% - 85%
- 85% - 100%
- > 100%

NORTHAMPTON

TOWCESTER

OLNEY

NEWPORT PAGNELL

Duston · Harpole · Flore · Weedon Bec · Nether Heyford · Bugbrooke · Kislingbury · Earls Barton · Wollaston · Cogenhoe · Bozeat · Brafield-on-the-Green · Denton · Yardley Hastings · Yardley Chase · Harrold · Lavendon · Turvey · Brackmills · Collingtree · Hackleton · Blisworth · Roade · Hartwell · Hanslope · Castlethorpe · Yardley Gobion · Potterspury · Old Stratford · Deanshanger · Greens Norton · Silverstone · The Wilderness · Sherington · The Green

A508 · A43 · A45(T) · A5095 · A5123 · A428 · A45 · A4500 · A5076 · A508(T) · A5(T) · A43(T) · M1 · A509 · A4146 · A6 · A428

River Nene · Grand Union Canal · River Great Ouse · River Tove

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0 0.5 1 Kilometers

DRAWING STATUS:

wsp

CLIENT:

ARCHITECT:

PROJECT: NORTHAMPTON M1 GATEWAY

TITLE: WIDE AREA

SCALE @ A1:	CHECKED:	APPROVED:
CAD FILE:	DESIGN-DRAWN:	DATE: —
PROJECT No:	DRAWING No:	REV:

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Drawn By: UKWMS001

File: Q:\WSP_UK\WSP_D\Basing\Northants Multi Modal Transport Model\Analysis\Map Documents\Northampton Gateway\Difference Plots\VC Wider 28112017v4.mxd

Key

2021 Scenario B1

Junction V/C (%) AM Peak

- < 75%
- 75% - 85%
- 85% - 100%
- > 100%

NORTHAMPTON

TOWCESTER

OLNEY

NEWPORT PAGNELL

Duston
Harpole
Flore
Weedon Bec
Nether Heyford
Kislingbury
Bugbrooke
Collingtree
Brackmills
Brafield-on-the-Green
Denton
Earls Barton
Wollaston
Cogenhoe
Bozeat
Yardley Hastings
Yardley Chase
Hackleton
Harrold
Lavendon
Turvey
Sherington
Blisworth
Roade
Hartwell
Greens Norton
Yardley Gobion
Hanslope
Castlethorpe
The Wilderness
The Green
Silverstone
Potterspury
Old Stratford
Deanshanger

A45 A4500 A508 A43 A45(T) A5095 A5123 A428 A5076 A508(T) A5(T) A43(T) M1 A509 A4146 A428

River Nene Grand Union Canal River Tove River Great Ouse River Glyme

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0 0.5 1 Kilometers

DRAWING STATUS:

wsp

CLIENT:

ARCHITECT:

PROJECT: NORTHAMPTON M1 GATEWAY

TITLE: WIDE AREA

SCALE @ A1:	CHECKED:	APPROVED:
CAD FILE:	DESIGN-DRAWN:	DATE: —
PROJECT No:	DRAWING No:	REV:

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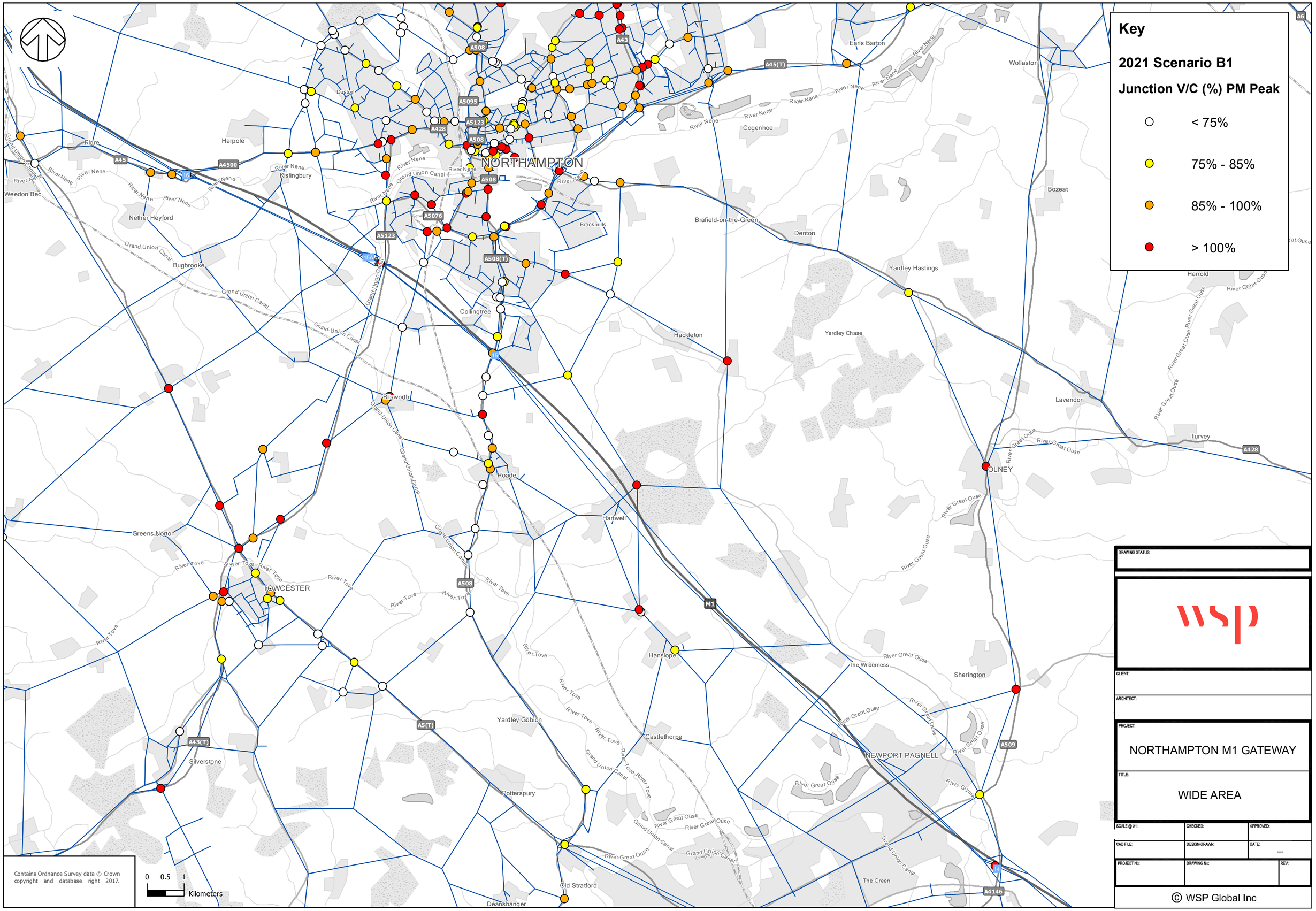
File: Q:\WSP_UK\WSP_D\Basing\Northants Multi Modal Transport Model\Analysis\Map Documents\Northampton Gateway\Difference Plots\VC Wider 28112017v4.mxd


Key
2021 Scenario B1
Junction V/C (%) PM Peak
< 75%
75% - 85%
85% - 100%
> 100%
NORTHAMPTON
TOWCESTER
OLNEY
NEWPORT PAGNELL
Duston
Harpole
Kislingbury
Flore
Weedon Bec
Nether Heyford
Bugbrooke
Collingtree
Brackmills
Brafield-on-the-Green
Denton
Earls Barton
Wollaston
Cogenhoe
Bozeat
Yardley Hastings
Yardley Chase
Hackleton
Harrold
Lavendon
Turvey
Blisworth
Roade
Hartwell
Greens Norton
Silverstone
Yardley Gobion
Castlethorpe
Hanslope
Potterspury
Old Stratford
Deanshanger
The Wilderness
Sherington
The Green
A45
A4500
A5095
A428
A508
A5076
A5123
A508(T)
A43
A45(T)
A43(T)
A5(T)
M1
A509
A4146
A6
River Nene
Grand Union Canal
River Tove
River Great Ouse
River Great Ouse River Great Ouse
River Great Ouse
River Great Ouse

Drawn By: UKWMS001

File: Q:\WSP_UK\WSP_D\Basing\Northants Multi Modal Transport Model\Analysis\Map Documents\Northampton Gateway\Difference Plots\VC Wider 28112017v4.mxd

Key

2021 Scenario C1

Junction V/C (%) AM Peak

- < 75%
- 75% - 85%
- 85% - 100%
- > 100%

NORTHAMPTON
TOWCESTER
OLNEY
Weedon Bec
Flore
Harpole
Kislingbury
Nether Heyford
Bugbrooke
Duston
Earls Barton
Wollaston
Cogenhoe
Bozeat
Brackmills
Brafield-on-the-Green
Denton
Yardley Hastings
Yardley Chase
Harrold
Collingtree
Hackleton
Blisworth
Roade
Hartwell
Greens Norton
Hanslope
The Wilderness
Sherington
Yardley Gobion
Castlethorpe
NEWPORT PAGNELL
Lavendon
Turvey
Silverstone
Potterspury
Old Stratford
Deanshanger
The Green

A45 A4500 A508 A43 A45(T) A5095 A5123 A428 A5076 A508(T) A5(T) A43(T) M1 A509 A4146 A428

River Nene
Grand Union Canal
River Tove
River Great Ouse
River Great Ouse River Great Ouse
River Great Ouse
River Great Ouse

Drawn By: UKWMS001

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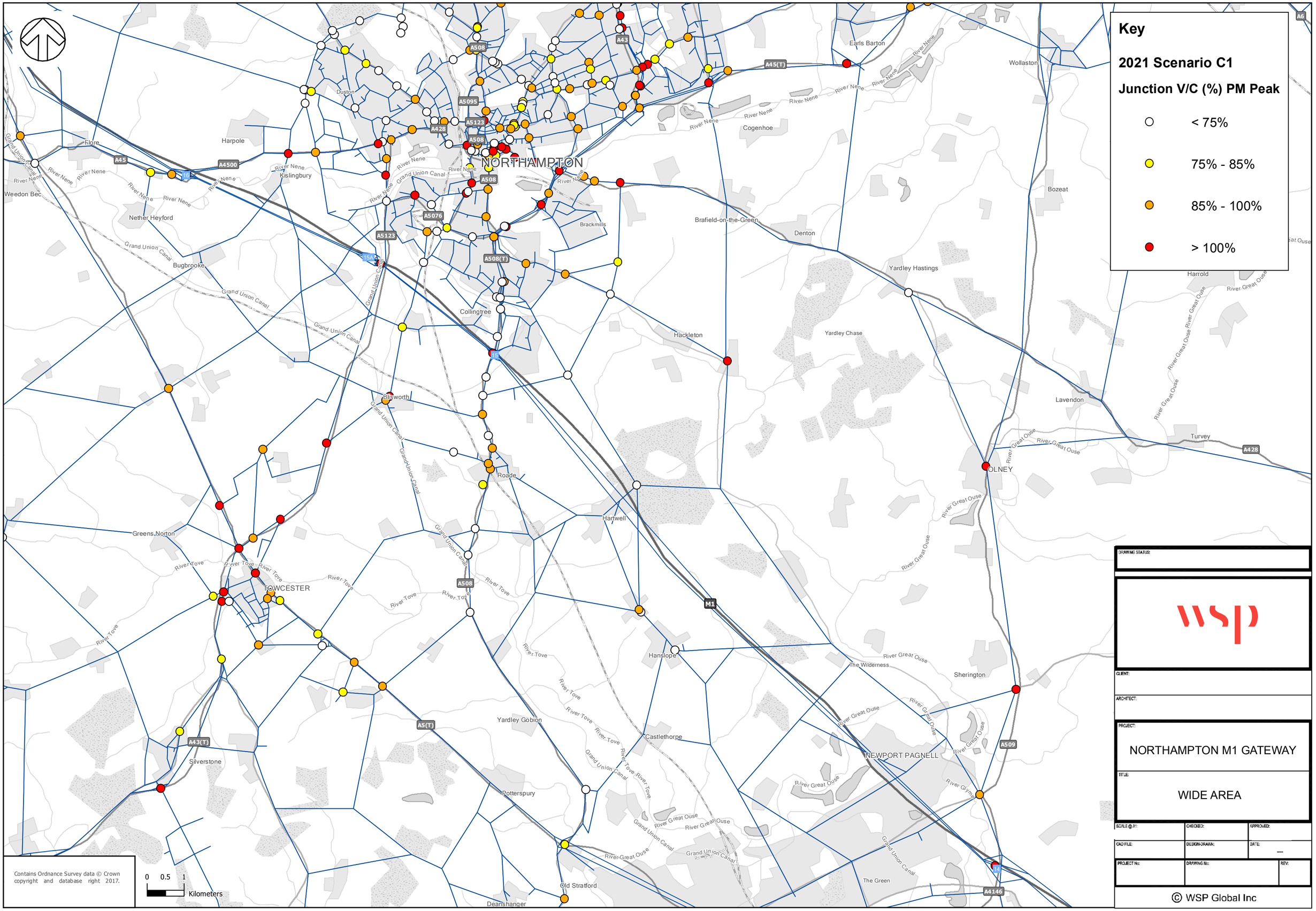
Key
2021 Scenario C1
Junction V/C (%) PM Peak
< 75%
75% - 85%
85% - 100%
> 100%
NORTHAMPTON
TOWCESTER
OLNEY
NEWPORT PAGNELL
Duston
Harpole
Kislingbury
Flore
Weedon Bec
Nether Heyford
Bugbrooke
Collingtree
Brackmills
Brafield-on-the-Green
Denton
Earls Barton
Wollaston
Cogenhoe
Bozeat
Yardley Hastings
Yardley Chase
Hackleton
Harrold
Lavendon
Turvey
Blisworth
Roade
Hartwell
Greens Norton
Hanslope
The Wilderness
Sherington
Yardley Gobion
Castlethorpe
Potterspury
Old Stratford
Deanshanger
The Green
Silverstone
A45
A4500
A508
A5095
A5123
A428
A43
A45(T)
A5076
A508(T)
A5(T)
A43(T)
M1
A509
A4146
A6
River Nene
Grand Union Canal
River Tove
River Great Ouse
River Great Ouse River Great Ouse
River Great Ouse
River Great Ouse

Drawn By: UKWMS001

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Key

2031 Scenario D1

Junction V/C (%) AM Peak

- < 75%
- 75% - 85%
- 85% - 100%
- > 100%

NORTHAMPTON

TOWCESTER

OLNEY

Duston
Harpole
Kislingbury
Flore
Weedon Bec
Nether Heyford
Bugbrooke
Collingtree
Brackmills
Brafield-on-the-Green
Denton
Earls Barton
Wollaston
Cogenhoe
Bozeat
Yardley Hastings
Yardley Chase
Hackleton
Harrold
Lavendon
Turvey
Sherington
Greens Norton
Blisworth
Roade
Hartwell
Hanslope
Yardley Gobion
Castlethorpe
Silverstone
Potterspury
Old Stratford
Deanshanger
The Wilderness
NEWPORT PAGNELL
The Green

A45 A4500 A508 A5095 A5123 A428 A43 A45(T) A5076 A508(T) A5(T) A43(T) M1 A509 A4146 A428

River Nene
Grand Union Canal
River Tove
River Great Ouse
River Great Ouse River Great Ouse
River Great Ouse
River Great Ouse

Drawn By: UKWMS001

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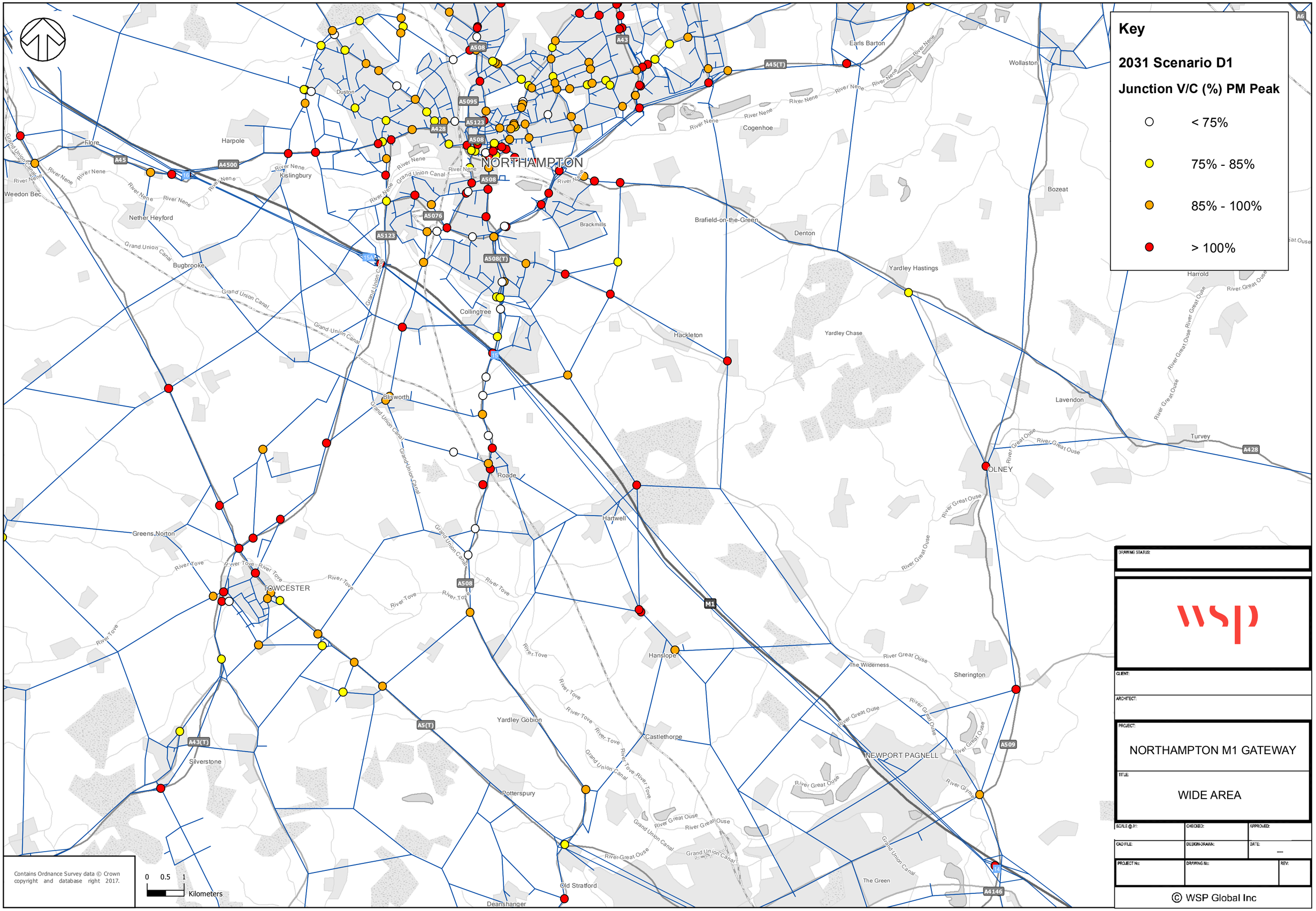

Appendix E

V/C DIFFERENCE PLOTS

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Key

B1 vs Base (AM Peak)

V/C Difference

- < -5%
- -5% - 5%
- > 5%

NORTHAMPTON
OLNEY
TOWCESTER
NEWPORT PAGNELL

Earls Barton
Wollaston
Bozeat
Cogenhoe
Brafield-on-the-Green
Denton
Yardley Hastings
Yardley Chase
Hackleton
Harrold
Lavendon
Turvey
Duston
Harpole
Flore
Weedon Bec
Nether Heyford
Kislingbury
Bugbrooke
Brackmills
Collingtree
Blisworth
Roade
Hartwell
Greens.Norton
Hanslope
The Wilderness
Sherington
Yardley Gobion
Castlethorpe
Potterspury
Old Stratford
Deanshanger
The Green

A45 A45(T) A43 A43(T) A508 A508(T) A5095 A5123 A428 A4500 A5076 A5(T) M1 A509 A4146

River Nene River Great Ouse River Tove Grand Union Canal

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0 1 2 3 Kilometres

DRAWING STATUS:

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ARCHITECT:

PROJECT: NORTHAMPTON M1 GATEWAY

TITLE: WIDER AREA

SCALE @ A1: CHECKED:

CAD FILE: DESIGN/DRAWN: DATE:

PROJECT No: DRAWING No: REV:

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Key

B1 vs Base (PM Peak)

V/C Difference

- < -5%
- -5% - 5%
- > 5%

NORTHAMPTON
TOWCESTER
OLNEY
NEWPORT PAGNELL
Duston
Harpole
Flore
Weedon Bec
Nether Heyford
Kislingbury
Bugbrooke
Collingtree
Brackmills
Earls Barton
Wollaston
Cogenhoe
Bozeat
Brafield-on-the-Green
Denton
Yardley Hastings
Yardley Chase
Hackleton
Harrold
Lavendon
Turvey
Blisworth
Roade
Hartwell
Greens.Norton
Silverstone
Yardley Gobion
Castlethorpe
Hanslope
The Wilderness
Sherington
Potterspury
Old Stratford
Deanshanger
The Green
Grand Union Canal
River Nene
River Tove
River Great Ouse
River Glyme
A45
A4500
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A43
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A428
A5123
A5076
A508(T)
A45(T)
A5(T)
A43(T)
M1
A509
A4146
A428
J15
J15A
J14

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TITLE:

WIDER AREA

SCALE @ A1: | CHECKED:

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Key

C1 vs Base (AM Peak)

V/C Difference

- < -5%
- -5% - 5%
- > 5%

NORTHAMPTON
OLNEY
TOWCESTER
NEWPORT PAGNELL

Earls Barton
Wollaston
Bozeat
Cogenhoe
Brafield-on-the-Green
Denton
Yardley Hastings
Yardley Chase
Hackleton
Harrold
Lavendon
Turvey
Duston
Harpole
Flore
Weedon Bec
Nether Heyford
Kislingbury
Bugbrooke
Brackmills
Collingtree
Blisworth
Roade
Hartwell
Greens.Norton
Hanslope
The Wilderness
Sherington
Yardley Gobion
Castlethorpe
Potterspury
Old Stratford
Deanshanger
The Green

A508 A43 A45(T) A5095 A428 A5123 A45 A4500 A5076 A508(T) A5(T) A43(T) M1 A509 A4146 A428

River Nene Grand Union Canal River Great Ouse River Tove

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0 1 2 3 Kilometres

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PROJECT: NORTHAMPTON M1 GATEWAY

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SCALE @ A1: CHECKED:

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Key

C1 vs Base (PM Peak)

V/C Difference

- < -5%
- -5% - 5%
- > 5%

NORTHAMPTON
Duston
Harpole
Flore
Weedon Bec
Nether Heyford
Kislingbury
Bugbrooke
Collingtree
Brackmills
Earls Barton
Wollaston
Cogenhoe
Bozeat
Brafield-on-the-Green
Denton
Yardley Hastings
Hackleton
Yardley Chase
Harrold
Lavendon
Turvey
OLNEY
Blisworth
Roade
Hartwell
Greens.Norton
TOWCESTER
Silverstone
Yardley Gobion
Hanslope
Castlethorpe
Potterspury
Old Stratford
Deanshanger
The Wilderness
Sherington
NEWPORT PAGNELL
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River Nene
River Great Ouse
River Tove
Grand Union Canal
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A428
A43
A45(T)
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A508(T)
A5(T)
A43(T)
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A4146
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Key

D1 vs Base (AM Peak)

V/C Difference

- < -5%
- -5% - 5%
- > 5%

NORTHAMPTON
Duston
Harpole
Flore
Weedon Bec
Nether Heyford
Bugbrooke
Kislingbury
Brackmills
Collingtree
Blisworth
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Cogenhoe
Bozeat
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Denton
Yardley Hastings
Yardley Chase
Hackleton
Harrold
Lavendon
OLNEY
Turvey
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NEWPORT PAGNELL
The Green
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Potterspury
Old Stratford
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Greens.Norton
TOWCESTER
Silverstone
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A45(T)
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A5123
A508(T)
A5(T)
A43(T)
M1
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A4146
River Nene
Grand Union Canal
River Great Ouse
River Tove
River Glyme

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0 1 2 3 Kilometres

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PROJECT:

NORTHAMPTON M1 GATEWAY

TITLE:

WIDER AREA

SCALE @ A1:	CHECKED:	
CAD FILE:	DESIGN/DRAWN:	DATE: ___
PROJECT No:	DRAWING No:	REV:

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Key

D1 vs Base (PM Peak)

V/C Difference

- < -5%
- -5% - 5%
- > 5%

NORTHAMPTON
TOWCESTER
OLNEY
NEWPORT PAGNELL

Harpole
Flore
Weedon Bec
Nether Heyford
Kislingbury
Bugbrooke
Duston
Earls Barton
Wollaston
Cogenhoe
Bozeat
Brackmills
Brafield-on-the-Green
Denton
Yardley Hastings
Yardley Chase
Hackleton
Collingtree
Blisworth
Roade
Greens.Norton
Silverstone
Yardley Gobion
Potterspury
Old Stratford
Deanshanger
Hanwell
Hanslope
Castlethorpe
The Wilderness
Sherington
Lavendon
Turvey
Harrold
The Green

A45 A4500 A508 A5095 A428 A43 A45(T) A5076 A5123 A508(T) A5(T) A43(T) M1 A509 A4146 A428

River Nene Grand Union Canal River Tove River Great Ouse River Glyme

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0 1 2 3 Kilometres

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TITLE: WIDER AREA

SCALE @ A1: CHECKED:

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PROJECT No: DRAWING No: REV:

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Basing View
Basingstoke, Hampshire
RG21 4HJ

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