

GREATER NOTTINGHAM STRATEGIC PLAN

STRATEGIC TRANSPORT ASSESSMENT



SYSTRA

GREATER NOTTINGHAM STRATEGIC PLAN

STRATEGIC TRANSPORT ASSESSMENT

IDENTIFICATION TABLE

Client/Project owner	Nottingham City Council
Project	Greater Nottingham Strategic Plan
Study	Strategic Transport Assessment
Type of document	Report
Date	21/11/2023
Reference number	GB01T23D17
Number of pages	68

APPROVAL

Version	Name		Position	Date	Modifications
1.0	Author	Jonathan Pagett	Associate	25/09/2023	First issue
	Checked by	Duncan Irons	Director	25/09/2023	
	Approved by	Duncan Irons	Director	25/09/2023	
2.0	Author	Jonathan Pagett	Associate	15/11/2023	Addition of Strategic Plan scenario analysis
	Checked by	Duncan Irons	Director	15/11/2023	
	Approved by	Duncan Irons	Director	15/11/2023	
2.1	Author	Jonathan Pagett	Associate	21/11/2023	Modifications to Table 12 and Table 13
	Checked by	Duncan Irons	Director	21/11/2023	
	Approved by	Duncan Irons	Director	21/11/2023	

TABLE OF CONTENTS

1.	STRATEGIC TRANSPORT ASSESSMENT	4
1.1	INTRODUCTION	4
2.	THE EAST MIDLANDS GATEWAY MODEL	6
2.1	EMGM OVERVIEW	6
3.	REFERENCE CASE INPUTS	10
3.1	INTRODUCTION	10
3.2	INFRASTRUCTURE SCHEMES	10
3.3	COMMITTED AND PROPOSED DEVELOPMENTS	12
3.4	EAST MIDLANDS FREEPORT SITES	13
4.	REFERENCE CASE ANALYSIS	15
4.1	INTRODUCTION	15
4.2	HIGHWAY TRIP GROWTH	15
4.3	TRAFFIC FLOW CHANGE	15
4.4	JUNCTION CONGESTION	18
5.	GREATER NOTTINGHAM STRATEGIC PLAN SCENARIO	21
5.1	ADDITIONAL DEVELOPMENT	21
5.2	DEVELOPMENT PERSON TRIPS	27
6.	STRATEGIC PLAN TRANSPORT IMPACTS	31
6.1	DEVELOPMENT TRIP DISTRIBUTION	31
6.2	HIGHWAY FLOW CHANGE	34
6.3	JUNCTION CONGESTION	37
6.4	NETWORK STATISTICS	42

1. STRATEGIC TRANSPORT ASSESSMENT

1.1 Introduction

- 1.1.1 Four authorities in the Greater Nottingham area (Broxtowe, Gedling, Nottingham City and Rushcliffe), together with Derbyshire and Nottinghamshire County Councils, are in the process of preparing a review of the Greater Nottingham Aligned Core Strategy (to be called the Greater Nottingham Strategic Plan or GNSP) for implementation across the Plan period to 2041. The Authorities have developed a preferred strategy in terms of accommodating housing and employment growth within the GNSP area, as shown in Figure 1.
- 1.1.2 The purpose of this commission is to undertake an assessment of the strategic transport impacts of the GNSP to provide an indication of whether the development proposals are feasible in strategic transport terms and, if so, what strategic mitigation is required to accommodate the Plan proposals.
- 1.1.3 In summary this report details:
- The land use and infrastructure requirements of the 2041 Reference Case model required to assess the strategic transport impacts of the GNSP using the East Midlands Gateway Model (EMGM);
 - The modelling outputs and analysis of the Reference Case; and
 - The modelling outputs and analysis of the Strategic Plan scenario.

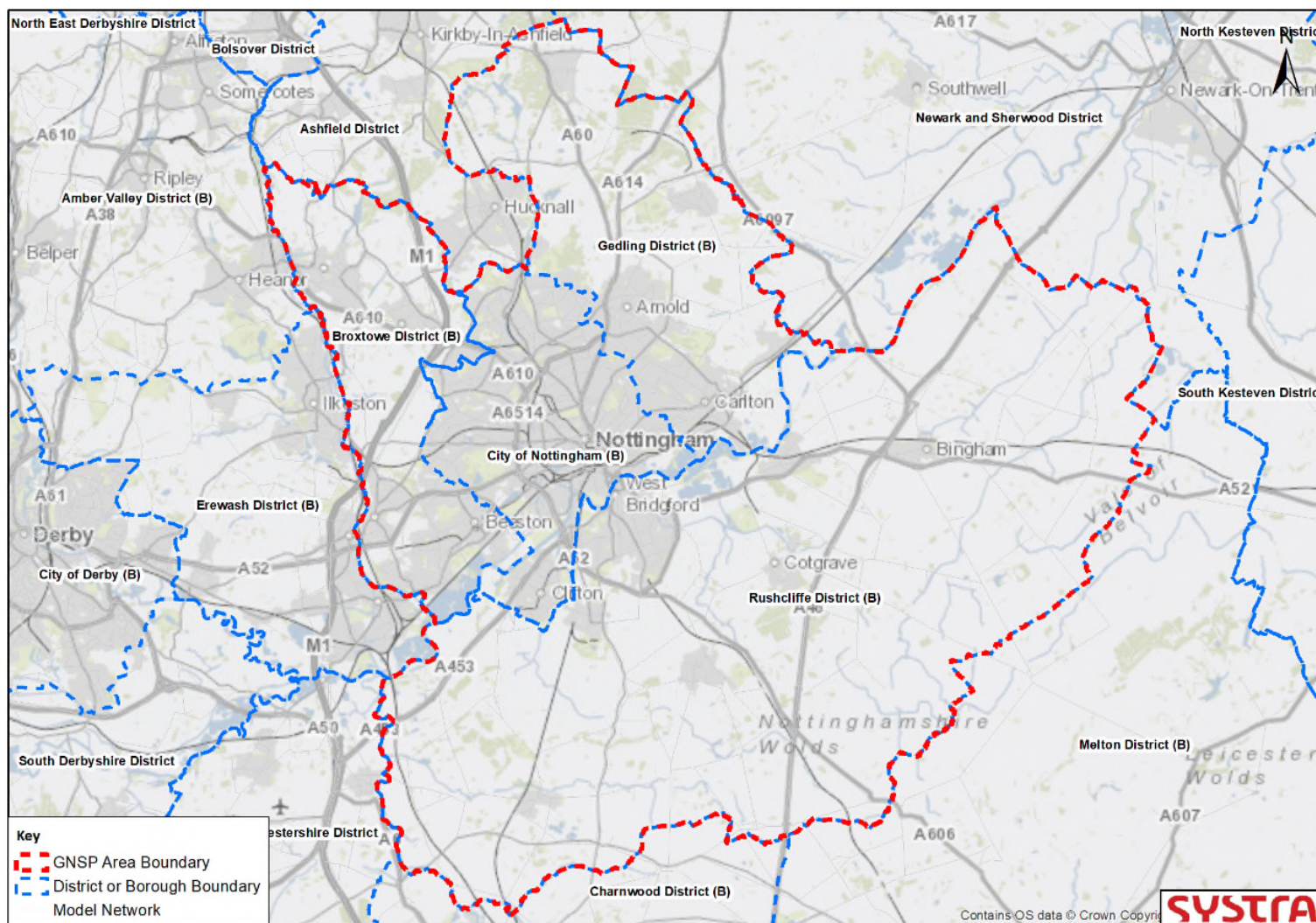


Figure 1. Greater Nottingham Strategic Plan Area

2. THE EAST MIDLANDS GATEWAY MODEL

2.1 EMGM Overview

- 2.1.1 The EMGM has been developed as a multimodal transport model built following guidance in the Department for Transport's (DfT) Transport Analysis Guidance (TAG). The EMGM is fully simulated in an area covering Nottinghamshire, Derbyshire and North Leicestershire, as shown in Figure 2. Also shown is the GNSP area in yellow.
- 2.1.2 The EMGM was recalibrated and validated in line with the DfT's TAG. To ensure that the EMGM is fit for purpose for the present assessment, a review of the model was undertaken in and around the GNSP area. It was found that the EMGM achieves good levels of calibration and validation and is therefore fit for purpose.
- 2.1.3 An overview of the structure of the EMGM is shown in Figure 3. In summary, the modelling suite is comprised of the following elements:
- SATURN Highway Model;
 - CUBE Voyager Public Transport Model;
 - Cube Variable Demand Model including destination, mode choice, trip frequency and time of day responses;
 - Park and Ride model; and
 - TRICS based Trip End Model.

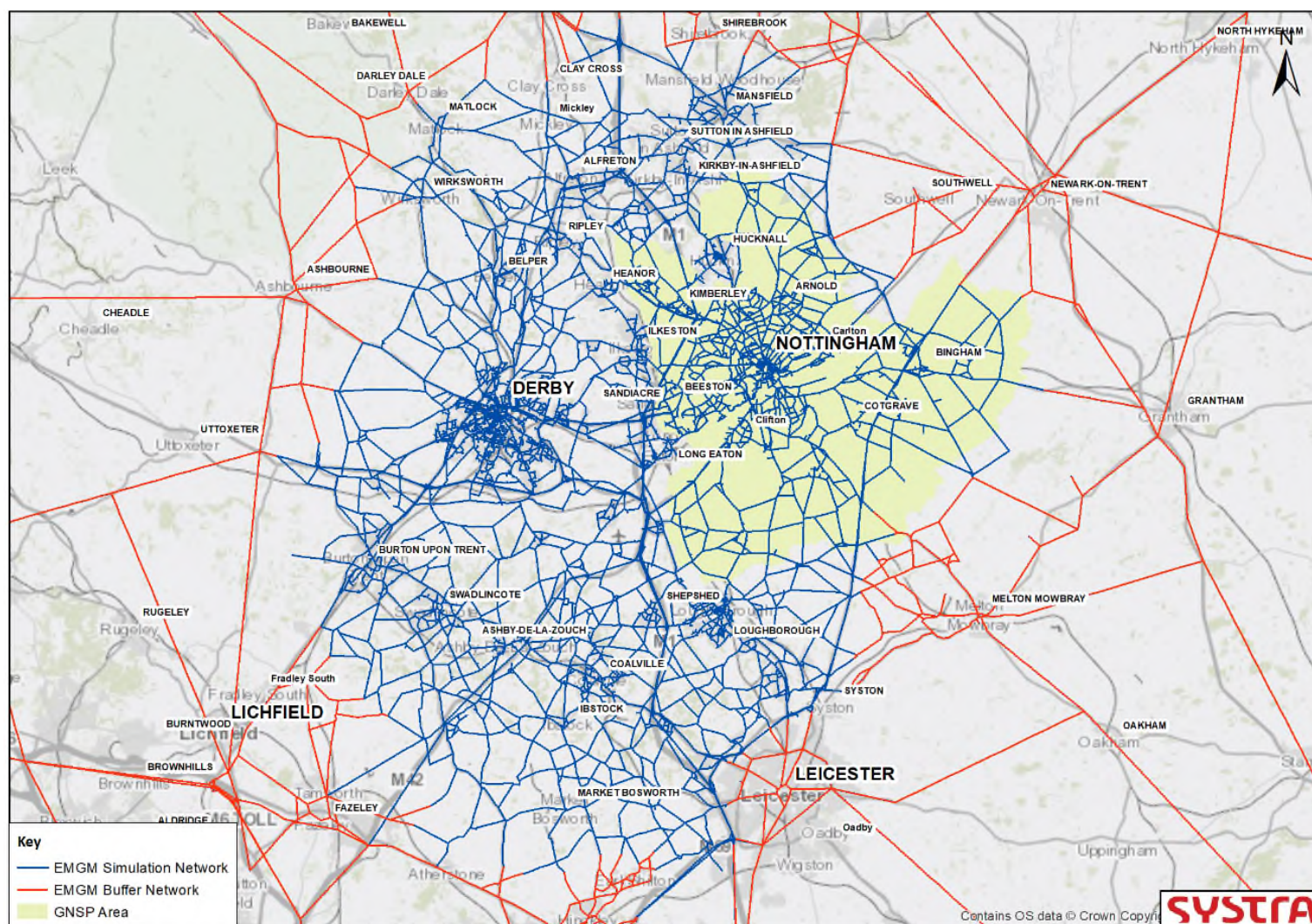


Figure 2. EMGM Model Extent and GNSP Area

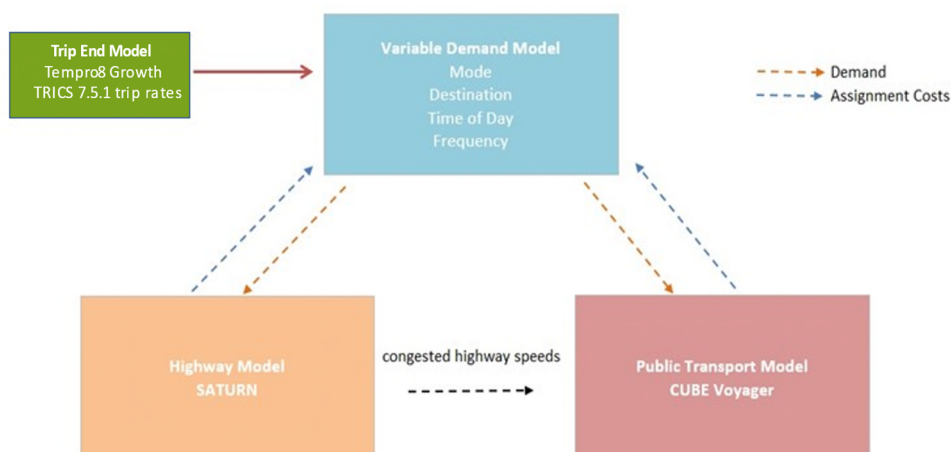


Figure 3. EMGM Technical Structure

2.1.4 Forecast demand is calculated in the Trip End Model, as in Figure 4.

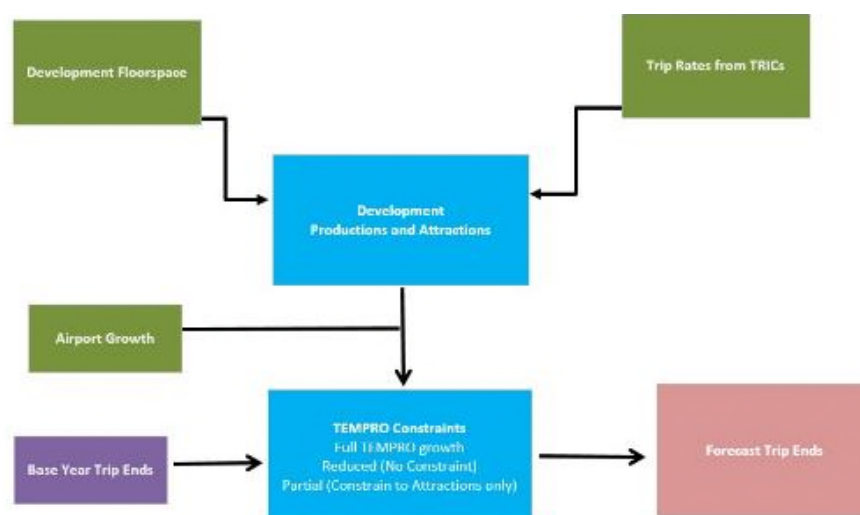


Figure 4. Trip End Model Structure

- 2.1.5 The number of development trips is calculated from trip rates contained within TRICS and are applied to floorspace, or the number of dwellings, proposed at each development. The development trips are added to the base matrices and then background growth is applied to the matrix in a way that ensures that the outturn growth matches Trip End Model Presentation Program (TEMPro 8) growth forecasts i.e. the EMGM is constrained to TEMPro growth.
- 2.1.6 Outturn generations for developments which have been entered specifically, closely align with the expected level of generations. Residual TEMPro growth is applied to surrounding wards within each MSOA and constrained at a district level.
- 2.1.7 Trip rates have been extracted from TRICS 7.5.1 for different types of land-use and segmented by mode and time period. The final person trip rates applied in the trip end model are shown in Table 1. These have been previously agreed with the Local Authorities and National Highways for the development of previous EMGM Reference Cases.

Table 1. EMGM Person Trips Rates

	AM PEAK (08:00 – 09:00)			PM PEAK (17:00 – 18:00)		
	ARRIVAL	DEPARTURE	TOTAL	ARRIVAL	DEPARTURE	TOTAL
Residential houses (per dwelling)	0.183	0.729	0.912	0.570	0.257	0.827
Residential flat (per flat)	0.074	0.295	0.369	0.231	0.104	0.335
B1 Employment (per 100sqm)	1.631	0.115	1.746	0.102	1.479	1.581
B2 Employment (per 100sqm)	0.388	0.145	0.533	0.081	0.375	0.456
B8 Employment (per 100sqm)	0.087	0.023	0.110	0.011	0.042	0.090
Primary Education (per 100sqm)	7.193	1.613	8.806	0.311	0.658	0.969
Secondary Education (per 100sqm)	2.341	0.256	2.597	0.066	0.634	0.700
College (Nottingham Skills Hub, per pupil)	0.359	0.017	0.376	0.031	0.069	0.100
Food Retail (per 100sqm)	3.518	2.624	6.142	6.558	6.887	13.445
Non-Food Retail (per 100sqm)	0.287	0.069	0.356	0.253	0.206	0.459
Café/Restaurant/Bar (per 100sqm)	0.000	0.000	0.000	6.256	2.874	9.130
Health Centre (Clinic) (per 100sqm)	1.952	0.355	2.307	0.124	0.805	0.929

3. REFERENCE CASE INPUTS

3.1 Introduction

- 3.1.1 This chapter details the developments and infrastructure schemes that have been included in the 2041 Reference Case. Opening years and build out rates are based upon best available knowledge, as provided by each Planning Authority.

3.2 Infrastructure Schemes

Committed Infrastructure Schemes

- 3.2.1 Table 2 to Table 5 detail the committed infrastructure schemes that have been included in the Reference Case, that are either already constructed or committed, with a year of opening in or before 2041, presented by Authority.

Table 2. National Highways Committed Infrastructure Schemes

NATIONAL HIGHWAYS SCHEME
A52 Nottingham junction improvements at the following junctions: Bingham Road, Stragglethorpe Road, Silverdale roundabout and Gamston roundabout
Grade Separation of A38 junctions with A61, A52 and A5111
EM SRFI mitigation at M1 J24/24a
A52 Nottingham Junctions Improvement Scheme (Nottingham Knight and Wheatcroft)
Improvements to M1 J22 (associated with Bardon Grange development)
A453 Mill Hill roundabout and Crusader roundabout improvement schemes as conditioned to the consented Clifton South SUE development (planning reference 14/01417/OUT)
Smart Motorways schemes implemented along M1 J23a to J25
M1 J20 signalisation to support the Lutterworth East development
A46/A6 junction improvements to support North Birstall development
M1 J26/A610 slip road improvements

Table 3. Nottingham City and Nottinghamshire Committed Infrastructure Schemes

NOTTINGHAM CITY AND NOTTINGHAMSHIRE SCHEME
Turning Point South
Gedling Access Road
Boots Link Road

NOTTINGHAM CITY AND NOTTINGHAMSHIRE SCHEME

A614 / A6097 MRN junction scheme package (6 junctions)

A60 Larch Farm crossroads improvement, Ravenshead

A612 Colwick Loop Road bus priority linked to southern growth corridor

Northern, Southern, Central and Western bus priority growth corridors as part of Transforming Cities Fund

Table 4. Derby City and Derbyshire Committed Infrastructure Schemes

DERBY CITY OR DERBYSHIRE SCHEME

Highway Proposals associated with the East Midlands Gateway development adjacent to M1 J24

Stenson Road/A5111 associated with Stenson Fields development

Radbourne Lane development mitigation

Schemes associated with South Derbyshire Core Strategy (south of A50)

A52 Wyvern Transport Improvement Scheme

NO2 Scheme

Rolls Royce Victory Road Realignment

New A50 junction and associated South Derby Growth Zone link road

Pentagon Island bus priority

Junction Improvements at Blue Peter Roundabout and London Road

Junction Improvements associated with Boulton Moor development

Transforming Cities Fund schemes

Table 5. Leicestershire Committed Infrastructure Schemes

LEICESTERSHIRE SCHEME

Bardon vehicular link and improvements to A42 junction 13 (associated with Bardon Grange)

Link Road between A512 and A6 north and improvements to M1 J23 (associated with Garendon)

Castle Donnington Western Relief Road linking Back Lane with Hill Top

Signalisation of the A50/A46 roundabout (associated with Ashton Green and Glenfield Park)

Signalisation of the A46/Ansty Lane roundabout (associated with Ashton Green)

LEICESTERSHIRE SCHEME

Kegworth Bypass

Infrastructure Schemes Without Funding Commitment

- 3.2.2 Table 6 to Table 8 detail all proposed infrastructure schemes that have been included in the Reference Case that are associated with Local Plans within the wider modelled area.

Table 6. Nottinghamshire Proposed Infrastructure Schemes

NOTTINGHAMSHIRE SCHEMES

Ashfield transport enhancements associated with Local Plan

Table 7. Derbyshire Proposed Infrastructure Schemes

DERBYSHIRE SCHEMES

Kirk Hallam Relief Road

Amber Valley transport enhancements associated with Local Plan

Erewash transport enhancements associated with Local Plan

Table 8. Leicestershire Proposed Infrastructure Schemes

LEICESTERSHIRE SCHEMES

Main road via East Thurmaston from Barkby Thorpe Lane to King Street and Hamilton Lane

Link to Sandhills Avenue

Link road from North East Leicester SUE

Capacity enhancements at A607 Barkby Thorpe Lane and Troon way / Barkby Road roundabouts

3.3 Committed and Proposed Developments

Developments Located Outside of the Greater Nottingham Strategic Plan Area

- 3.3.1 Appendix A details the committed and proposed housing and employment developments, presented by Authority, that are located outside of the GNSP area and are therefore included in the Reference Case to represent their level of build out in 2041.
- 3.3.2 To be explicitly included in the Reference Case, only developments of at least approximately 180 dwellings (or those that are of an equivalent size in terms of trip generation for non-residential developments (e.g. B1-13,000 sqm, B2-42,000 sqm and B8-200,000 sqm)) are

explicitly modelled, due to the EMGM being strategic. Smaller developments are included through the application of TEMPro 8 growth assumptions.

Developments Located Within the Greater Nottingham Strategic Plan Area

- 3.3.3 Within the GNSP area, only developments, or parts of developments, that have been constructed between 2016 and 2023, or those do not form part of the proposed Greater Nottingham Aligned Strategic Plan, are included in the Reference Case. Growth in the GNSP area is constrained to represent the completed development and infrastructure in 2023. This is so as to be able to assess the full impact of the Strategic Plan.
- 3.3.4 Appendix B details the committed and proposed housing, employment and educational developments that are located within the GNSP area and are therefore included in the Reference Case to represent their level of build out in 2023.
- 3.3.5 Non-allocated housing in Gedling, specifically within Arnold, Bestwood, Calverton, Carlton and Ravenshead, has been included in the Reference Case by spreading the defined housing quantum in Appendix B across the respective settlement zones proportionately. Similarly, Nottingham City Centre flat/apartment development windfall has been accounted for in the Reference Case by spreading the defined quantum in Appendix B across Nottingham City Centre zones.

3.4 East Midlands Freeport Sites

- 3.4.1 The East Midlands Freeport proposals include three schemes, as follows.

East Midlands Intermodal Park (Freeport) – Excluded

- 3.4.2 Although outside of the GNSP area, the East Midlands Intermodal Park (EMIP) does not currently have firm committed status and sufficient planning detail to include in the EMGM. Therefore, EMIP has been excluded from the Reference Case.

East Midlands Airport Area (Freeport) – Included

- 3.4.1 As it is outside of the GNSP area, the East Midlands Airport Area Freeport has been included in the Reference Case.

Ratcliffe-on-Soar Power Station (Freeport) – Excluded

- 3.4.2 The proposed development floorspace for the Ratcliffe-on-Soar Power Station Freeport is currently c.810,000 sqm and comprises battery storage, hydrogen, advanced manufacturing, a gigafactory, logistics, a data centre, research and development, offices, a training facility, hotel and ancillary facilities.

- 3.4.3 As the Ratcliffe-on-Soar Power Station Freeport is located within the GNSP area, with none of the development likely to be built out by the commencement of the new Strategic Plan, the Ratcliffe-on-Soar Power Station Freeport has been excluded from the Reference Case.

4. REFERENCE CASE ANALYSIS

4.1 Introduction

- 4.1.1 A 2041 Reference Case model has been developed for this assessment. The Reference Case represents information about the 'most likely' future year scenario taking into account planning permissions and allocations to date, but excluding the developments associated with the GNSP, as detailed in Chapter 3.

4.2 Highway Trip Growth

- 4.2.1 Table 9 outlines the growth in highway trips between the 2016 Base and the 2041 Reference Case model in highway trips. There is 19% growth in highway trips between 2016 and 2041 in the AM peak and 18% growth in the PM peak. Within the GNSP area, only developments/part of developments that have been constructed between 2016 and 2023, or those do not form part of the proposed Greater Nottingham Aligned Strategic Plan, are included in the Reference Case.

Table 9. Growth in Highway Trips 2016 to 2041

PEAK	2016 BASE	2041 REFERENCE CASE	GROWTH
AM	321,220	383,838	19%
PM	323,893	381,699	18%

4.3 Traffic Flow Change

- 4.3.1 Figure 5 shows AM peak traffic flow change for the 2041 Reference Case compared to the 2016 Base model. Figure 6 shows the same for the PM peak. Red represents links which experience an increase in traffic, whilst green represents links which see a reduction.
- 4.3.2 Traffic growth between 2016 and 2041, as well as various infrastructure schemes, impact on traffic flows on the local and Strategic Road Network (SRN). In the GNSP area, on the SRN, the M1, A46, A52 and A453 in particular are forecast to experience increases in traffic. This is the result of a combination of the following:
- Development growth using these corridors;
 - Mitigation of Erewash and Ashfield Local Plan development impacts and schemes;
 - Strategic schemes on the A52 at Nottingham Knight and Wheatcroft;
 - Improvements to M1 J26 and J27 which releases additional capacity;
 - Improvements to M1 J24a/J24, built as part of the East Midlands Gateway Rail Freight Interchange and the Kegworth Bypass, which releases capacity at M1 J24a/J24 and improves connections between the A42, A50, A453 and the M1.
- 4.3.3 On the local highway network, a number of routes are also forecast to experience increases in traffic flow. Much of the flow change in the GNSP area is a result general traffic growth but also can be attributed to local schemes such as the Boots Link Road, the Turning Point South scheme and new development accesses, e.g. Gedling, which redistribute traffic and release highway capacity.

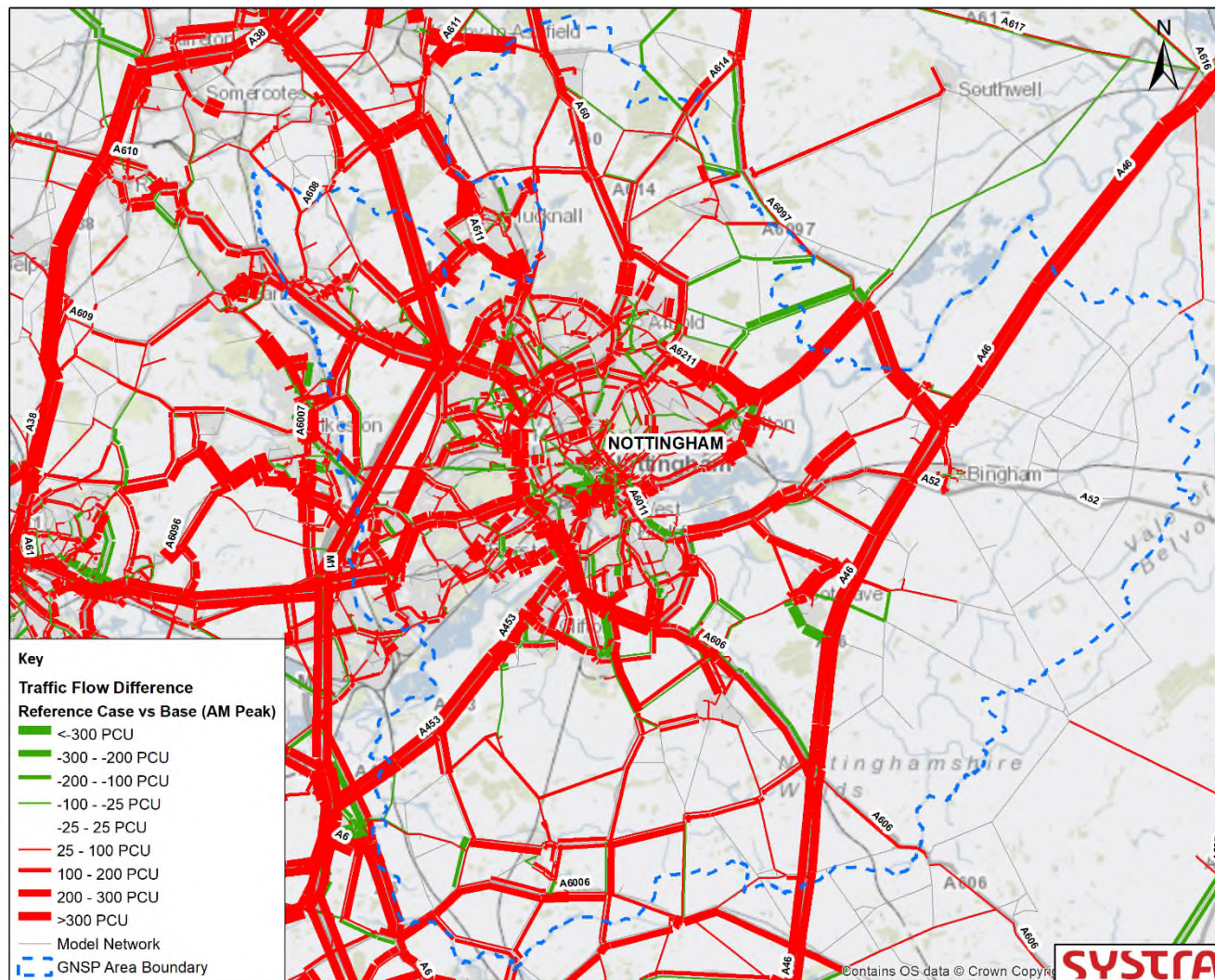


Figure 5. Flow Difference – AM Peak

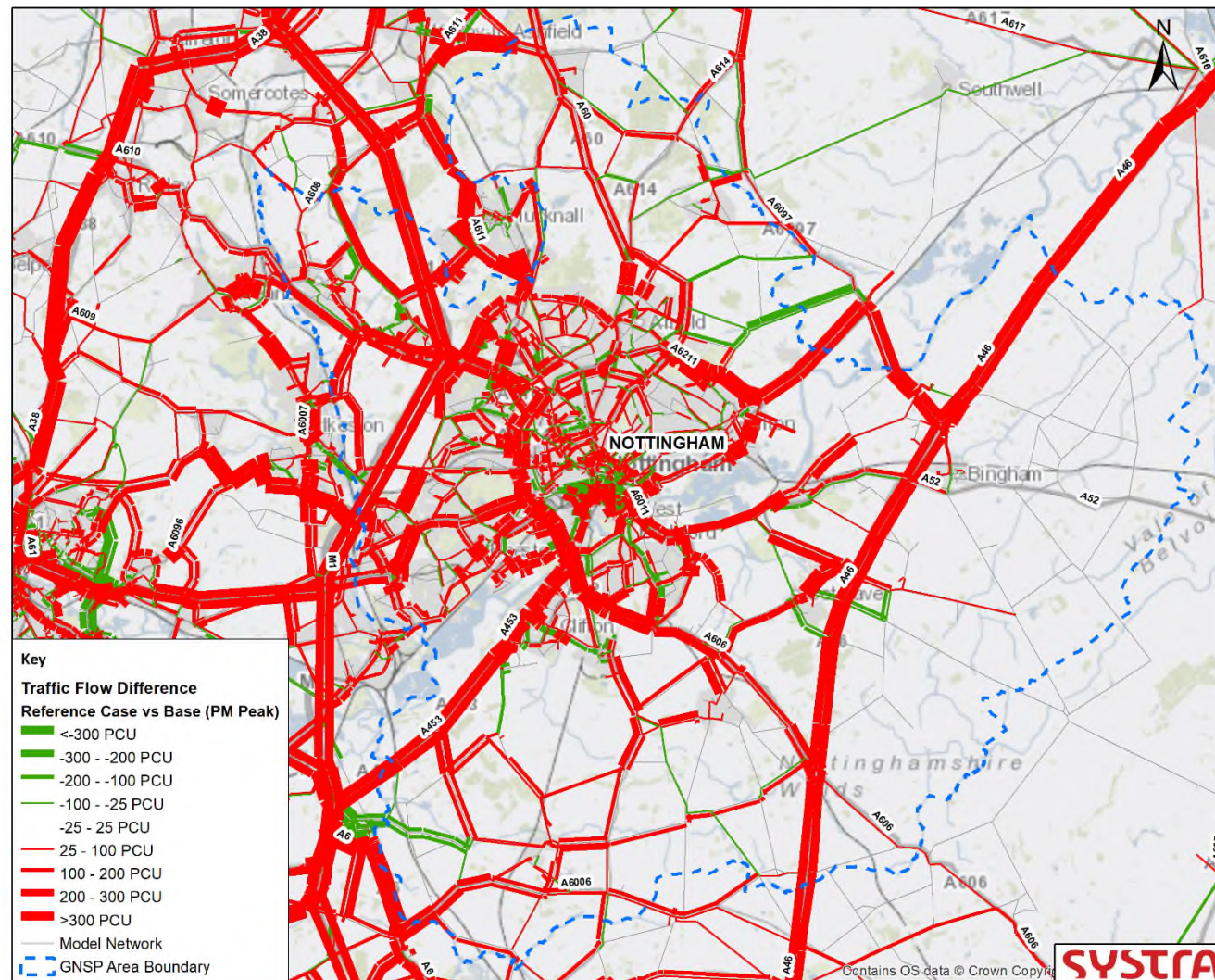


Figure 6. Flow Difference – PM Peak

4.4 Junction Congestion

- 4.4.1 Junction congestion is measured by determining the ratio of the volume of traffic to the capacity that can be accommodated by a junction. A Volume to Capacity (V/C) of 85% is considered to be the threshold at which a junction is approaching its operational capacity, therefore increasing the likelihood of operational problems, including congestion, with associated delays and queues. A V/C of $\geq 100\%$ indicates that a junction is operating above its theoretical maximum capacity, with substantial congestion, queuing and delays.
- 4.4.2 Figure 7 and Figure 8 show the junctions which are forecast to have a V/C of 85% or higher in the Reference Case. Orange represents junctions with a V/C over 85% but under 100%. Red marks junctions severely congested with a V/C of 100% or more.
- 4.4.3 In 2041, the Reference Case shows severe congestion, particularly within and around Nottingham City, but also across the GNSP area, in particular around Broxtowe given the District's proximity to the M1.
- 4.4.4 The M1 and A52 include several junctions with a V/C $\geq 100\%$ in the 2041 Reference Case. For example M1 J24/J24a, J25 and J26, as well as the A52 towards Derby and through Nottingham City, are significantly congested in both peaks, with V/C of $\geq 100\%$ at multiple points along these strategic routes.
- 4.4.5 On the local network, there is significant congestion within wider Nottingham and the City itself generally, particularly on strategic roads such as the A60, A610 and A6514.

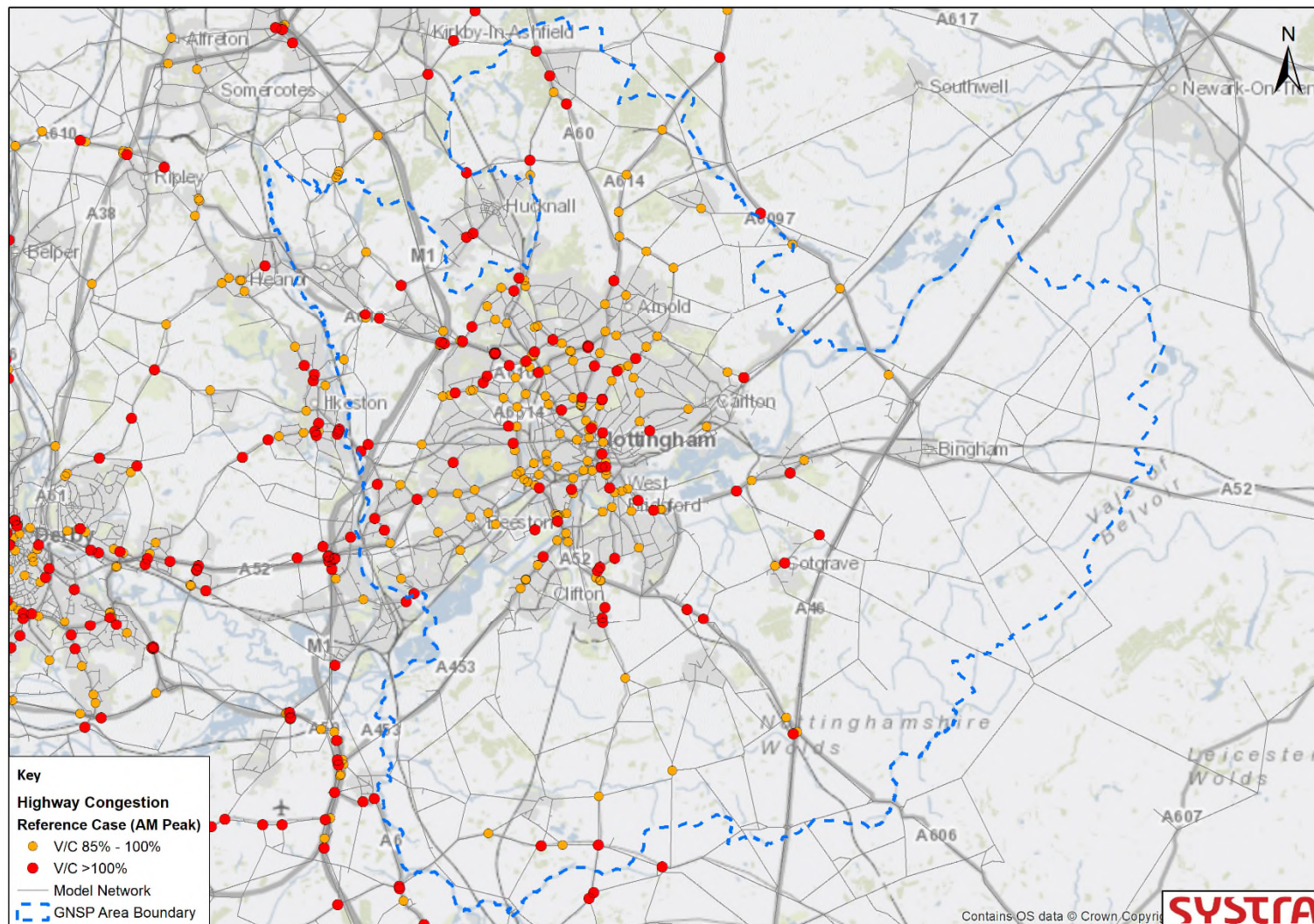


Figure 7. Reference Case Congestion – AM Peak

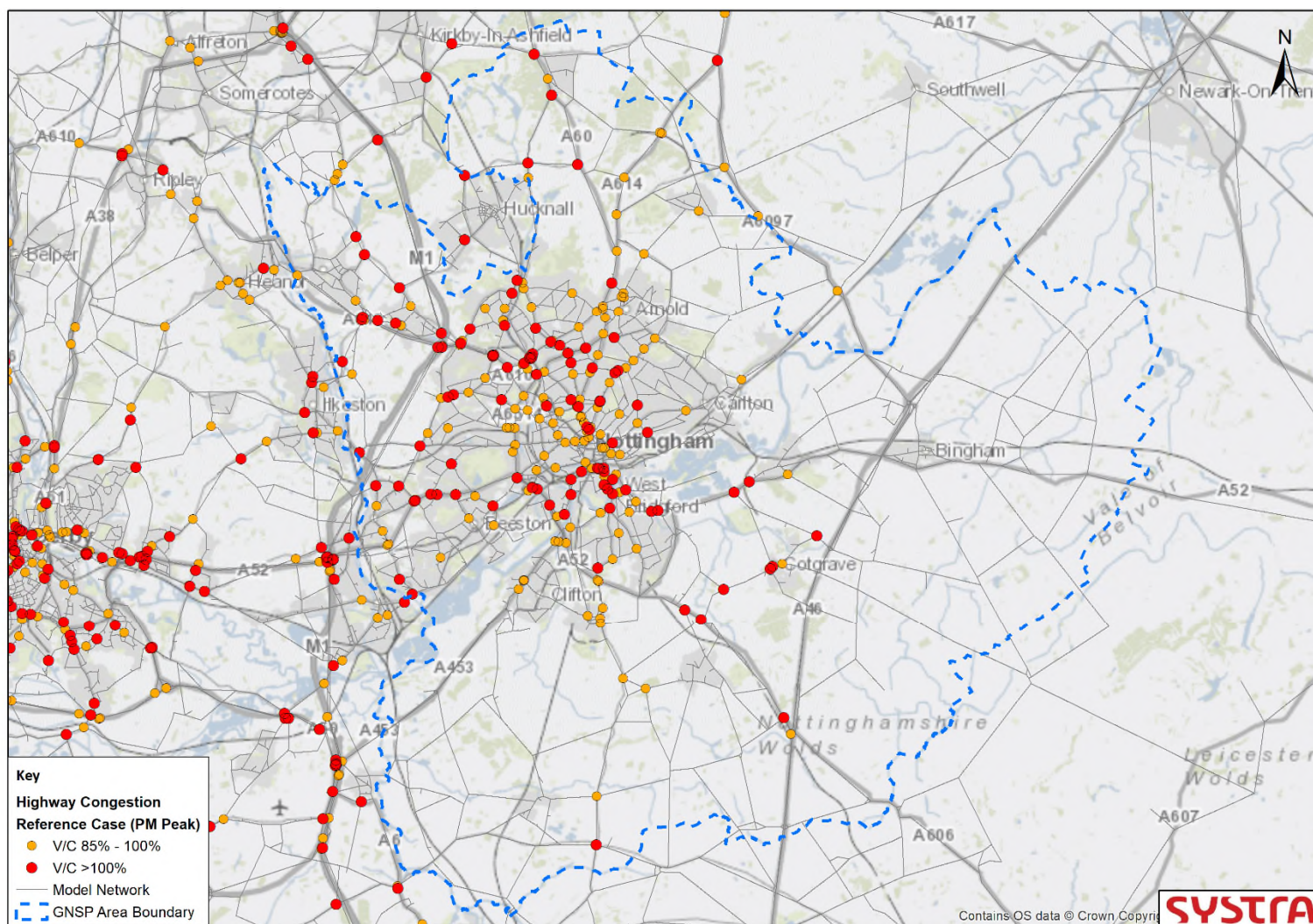


Figure 8. Reference Case Congestion – PM Peak

5. GREATER NOTTINGHAM STRATEGIC PLAN SCENARIO

5.1 Additional Development

- 5.1.1 Figure 9 shows the approximate locations of the GNSP development sites and includes both the developments that are already committed but will incur further development between 2023 and 2041 and new site allocations in the GNSP area.
- 5.1.2 Table 10 details the quantum of housing development that has been included in the Reference Case, within the Strategic Plan scenario and the difference between the two, presented by Authority. The ID numbers of each development are with reference to Figure 9.
- 5.1.3 In total, an additional **38,838 homes** are explicitly modelled in the Strategic Plan scenario compared to the Reference Case in the GNSP area, distributed by Local Authority as follows:
- 5,201 homes in Broxtowe;
 - 6,747 homes in Gedling;
 - 17,584 homes in Nottingham City; and
 - 9,306 homes in Rushcliffe.

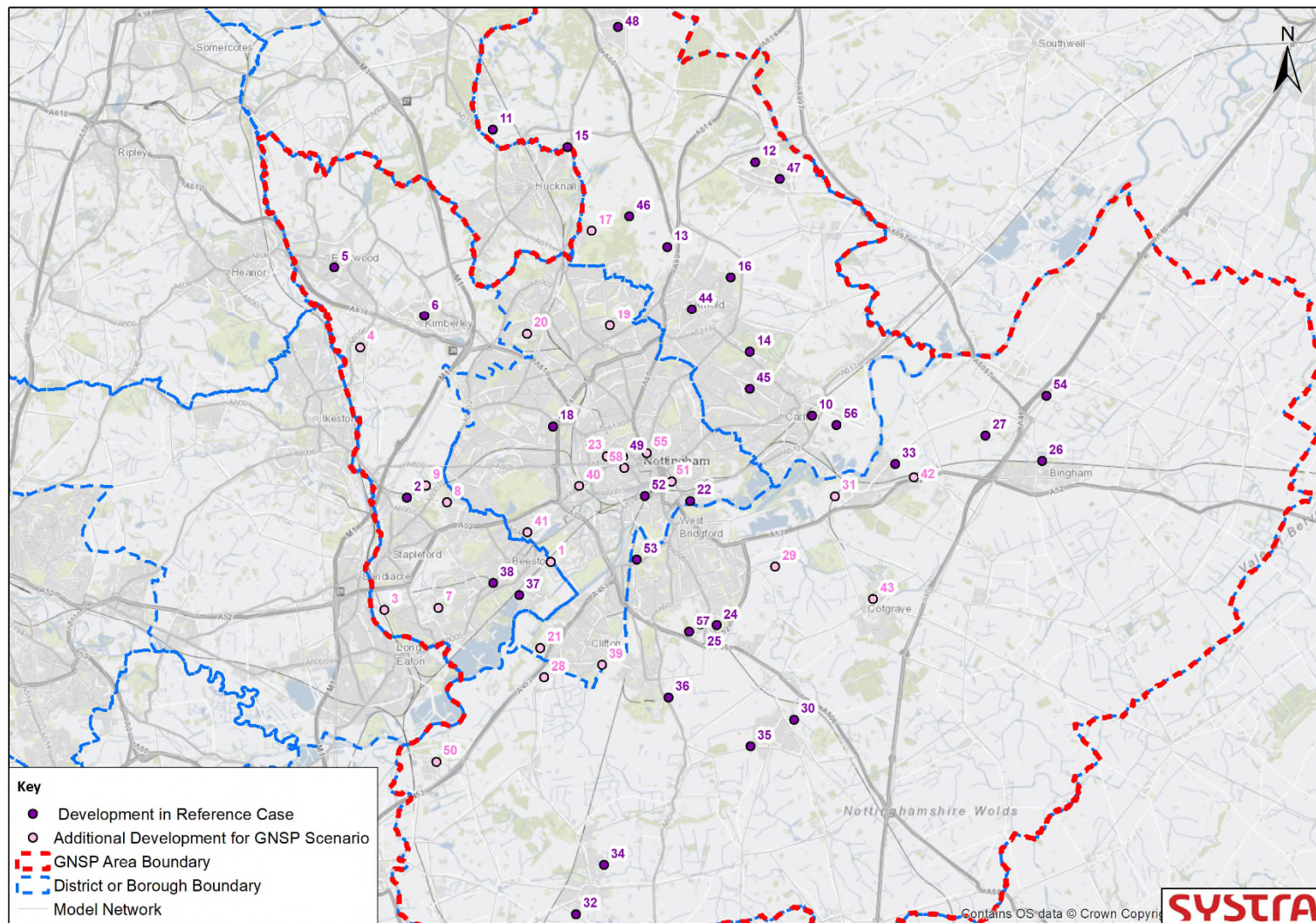


Figure 9. Sites with Additional Development 2023-2041

Table 10. GNSP Area Housing Developments with Additional Development

ID	DEVELOPMENT	AUTHORITY	HOMES IN REFERENCE CASE	HOMES IN GNSP SCENARIO	DIFFERENCE IN HOMES
1	Boots Site	Broxtowe / City	-	627	627
2	Field Farm	Broxtowe	129	450	321
3	Toton Strategic Location for Growth	Broxtowe	-	1,200	1,200
4	Land west of Awsworth	Broxtowe	-	250	250
5	Eastwood	Broxtowe	581	960	379
6	Kimberley	Broxtowe	149	363	214
7	Chetwynd Barracks	Broxtowe	-	1,500	1,500
8	Land Adjacent and north west of Bramcote Crematorium	Broxtowe	-	190	190
9	East of Coventry Lane, Bramcote	Broxtowe	-	470	470
37	Beeston Business Park, Technology Drive, Beeston	Broxtowe	221	310	89
38	Bartons land between High Road & Queens Road West, Chilwell	Broxtowe	30	221	191
10	Teal Close	Gedling	331	807	476
11	Top Wighay Farm	Gedling	38	1,900	1,862
12	H16 Park Road, Calverton	Gedling	101	363	262
13	Land West of A60 Redhill (X2 and X3)	Gedling	70	220	150
14	Gedling Colliery	Gedling	465	941	476
15	North of Papplewick Lane	Gedling	225	255	30
16	Mapperley Plains and Killisick Lane	Gedling	89	435	346

ID	DEVELOPMENT	AUTHORITY	HOMES IN REFERENCE CASE	HOMES IN GNSP SCENARIO	DIFFERENCE IN HOMES
17	Bestwood Business Park	Gedling	-	220	220
44	Arnold (non-allocated sites)	Gedling	204	864	660
45	Carlton (non-allocated sites)	Gedling	507	1,221	714
46	Bestwood (non-allocated sites)	Gedling	35	541	506
47	Calverton (non-allocated sites)	Gedling	61	586	525
48	Ravenshead (non-allocated sites)	Gedling	66	586	520
18	Chalfont Drive	Nottingham City	345	475	130
19	Former Padstow School Site Gainsford Crescent	Nottingham City	-	291	291
20	Stanton Tip	Nottingham City	-	500	500
21	Clifton West	Nottingham City	-	285	285
22	Waterside	Nottingham City	204	1,289	1,085
23	Alfreton Road - Forest Mill	Nottingham City	-	484	484
39	Farnborough Road - Former Fairham Comprehensive	Nottingham City	-	196	196
40	406/408 Derby Road and Northern Dairies LTD	Nottingham City	-	306	306
41	Western Village, University of Nottingham Campus	Nottingham City	-	200	200
49	City Centre flats	Nottingham City	4,973	18,850	13,877
24	East and West of Melton Road, Edwalton	Rushcliffe	1,277	1,844	567

ID	DEVELOPMENT	AUTHORITY	HOMES IN REFERENCE CASE	HOMES IN GNSP SCENARIO	DIFFERENCE IN HOMES
26	East and West of Chapel Lane, Bingham	Rushcliffe	408	1,022	614
27	RAF Newton	Rushcliffe	115	528	413
28	Clifton South	Rushcliffe	-	3,000	3,000
29	East of Gamston North of Tollerton	Rushcliffe	-	3,000	3,000
30	Between Platt Lane and Station Road, Keyworth	Rushcliffe	128	187	59
31	Land North of Nottingham Road/The Paddocks	Rushcliffe	-	175	175
32	Land at Rempstone Road (north)	Rushcliffe	100	282	182
33	Shelford Road/Grooms Cottage	Rushcliffe	216	455	239
34	Lantern Lane, E. Leake	Rushcliffe	231	365	134
35	North of Bunny Lane	Rushcliffe	114	221	107
36	East of L'borough Rd/Meadowcroft	Rushcliffe	109	231	122
42	North of Grantham Road	Rushcliffe	-	280	280
43	Land R/O Mill Lane/the Old Park/South of Hollygate Lane	Rushcliffe	-	414	414

5.1.4 Table 11 details the quantum of commercial development that has been included in the Strategic Plan scenario and the difference between the this scenario and the Reference Case.

Table 11. GNSP Area Commercial Developments with Additional Development

ID	DEVELOPMENT	AUTHORITY	COMMERICAL DEV. (SQM) IN REFERENCE CASE	COMMERICAL DEV. (SQM) IN GNSP SCENARIO	DIFFERENCE BETWEEN SCENARIOS (SQM)
3	Toton Strategic Location for Growth	Broxtowe	-	B1 – 10,000 B2 – 4,000 B8 – 4,000	B1 – 10,000 B2 – 4,000 B8 – 4,000

ID	DEVELOPMENT	AUTHORITY	COMMERICAL DEV. (SQM) IN REFERENCE CASE	COMMERICAL DEV. (SQM) IN GNSP SCENARIO	DIFFERENCE BETWEEN SCENARIOS (SQM)
56	Teal Close, ALDI and Local Centre	Gedling	Retail – 1,818	Retail – 3,447	Retail – 1,629
1	Boots Site	Nottingham City	-	B1 – 4,500 B2 – 30,000 B8 – 10,000	B1 – 4,500 B2 – 30,000 B8 – 10,000
51	Canal Quarter - Island Site	Nottingham City	-	Retail – 3,750	Retail – 3,750
52	Phase 1 Unity Square, Sheriffs Way	Nottingham City	B1 – 36,519	B1 – 58,360	B1 – 21,841
55	Victoria Centre Huntingdon Street	Nottingham City	-	Retail – 37,000	Retail – 37,000
58	Nottingham City Centre offices	Nottingham City	-	B1 – 115,741	B1 – 115,741
28	Clifton South	Rushcliffe	-	B1 – 20,000 B2 – 40,000 B8 – 40,000 Retail – 2,500	B1 – 20,000 B2 – 40,000 B8 – 40,000 Retail – 2,500
29	East of Gamston North of Tollerton	Rushcliffe	-	Retail – 2,500	Retail – 2,500
50	Ratcliffe on Soar Power Station	Rushcliffe	-	B1 – 96,739 B2 – 493,290 B8 – 167,234	B1 – 96,739 B2 – 493,290 B8 – 167,234
53	Land on Wilford Lane West Bridgford	Rushcliffe	Retail – 2,783	Retail – 4,098	Retail – 1,315
54	East Bridgford Garden Centre	Rushcliffe	Retail – 12,469	Retail – 13,136	Retail – 667
57	Landmere Lane Edwalton	Rushcliffe	Retail – 3,370	Retail – 3,770	Retail – 400

5.1.5 In total, an additional 268,821m² of B1, 567,290m² of B2, 221,234m² of B8 and 49,761m² of retail space is explicitly modelled in the Strategic Plan scenario compared to the Reference Case in the GNSP area, distributed by Local Authority as follows:

- 10,000m² B1, 4,000m² B2 and 4,000m² B8 in Broxtowe;
- 1,629m² retail in Gedling;
- 142,082m² B1, 30,000m² B2, 10,000m² B8 and 40,750m² retail in the City; and
- 116,739m² B1, 533,290m² B2, 207,234m² B8 and 7,382m² retail in Rushcliffe.

5.1.6 Smaller proposed sites with less than 180 dwellings (or equivalent generations for non-residential uses) that are not detailed in Table 10 or Table 11 but are part of the GNSP cannot be specifically modelled in the EMGM due to the model's strategic nature. Such developments have been included indirectly through the application of TEMPro growth constraint within the GNSP area.

5.2 Development Person Trips

5.2.1 Table 12 details the number of person trips travelling to and from each development in the Strategic Plan scenario, the number of additional trips relative to the Reference Case and the modelled mode share between highway (HW), public transport (PT) and active modes.

Table 12. Development Trips (People)

ID	DEVELOPMENT	AUTHORITY	STRATEGIC PLAN SCENARIO TRIPS		ADDITIONAL TRIPS		MODE SHARE		
			AM	PM	AM	PM	HW	PT	ACTIVE
1	Boots Site	Broxtowe	380	364	380	364	80%	10%	10%
2	Field Farm	Broxtowe	435	411	309	292	86%	4%	10%
3	Toton Strategic Location for Growth	Broxtowe	1,390	1,296	1,390	1,296	76%	13%	11%
4	Land west of Awsworth	Broxtowe	246	228	246	228	85%	4%	11%
5	Eastwood	Broxtowe	947	873	369	341	80%	10%	10%
6	Kimberley	Broxtowe	357	330	209	194	85%	4%	11%
7	Chetwynd Barracks	Broxtowe	1,450	1,369	1,450	1,369	74%	16%	10%
8	Land Adjacent to Bramcote Crematorium	Broxtowe	185	173	185	173	85%	4%	11%
9	East of Coventry Lane, Bramcote	Broxtowe	456	429	456	429	85%	4%	11%
37	Beeston Business Park, Technology Drive, Beeston	Broxtowe	297	284	82	79	80%	10%	10%
38	Bartons land between High Road & Queens Road West	Broxtowe	212	203	183	175	73%	16%	11%
10	Teal Close	Gedling	772	742	449	436	82%	7%	11%
11	Top Wighay Farm	Gedling	2,260	2,121	2,222	2,087	83%	6%	11%
12	H16 Park Road, Calverton	Gedling	360	333	259	240	84%	5%	11%
13	Land West of A60 Redhill	Gedling	217	201	148	137	84%	5%	11%
14	Gedling Colliery	Gedling	920	862	459	433	82%	7%	11%

ID	DEVELOPMENT	AUTHORITY	STRATEGIC PLAN SCENARIO TRIPS		ADDITIONAL TRIPS		MODE SHARE		
			AM	PM	AM	PM	HW	PT	ACTIVE
15	North of Papplewick Lane	Gedling	252	232	28	26	82%	7%	11%
16	Mapperley Plains and Killisick Lane	Gedling	428	398	339	316	82%	7%	11%
17	Bestwood Business Park	Gedling	217	199	217	199	85%	4%	11%
44	Arnold (non-allocated)	Gedling	848	749	648	603	71%	21%	8%
45	Carlton (non-allocated)	Gedling	1,189	1,053	695	653	86%	6%	8%
46	Bestwood (non-allocated)	Gedling	533	463	498	459	88%	5%	7%
47	Calverton (non-allocated)	Gedling	580	506	520	480	85%	7%	8%
48	Ravenshead (non-allocated)	Gedling	583	505	517	476	86%	6%	8%
56	Teal Close, ALDI and Local Centre	Gedling	208	522	93	245	78%	2%	20%
1	Boots Site	Nottingham	479	474	479	474	68%	20%	12%
18	Chalfont Drive	Nottingham	460	433	121	115	78%	12%	10%
19	Former Padstow School Site Gainsford Crescent	Nottingham	287	264	287	264	75%	14%	11%
20	Stanton Tip	Nottingham	490	453	490	453	65%	24%	11%
21	Clifton West	Nottingham	265	257	265	257	79%	11%	10%
22	Waterside	Nottingham	1,699	1,569	1,495	1,382	73%	15%	12%
23	Alfreton Road - Forest Mill	Nottingham	474	437	474	437	71%	19%	10%
39	Farnborough Road - Former Fairham Comprehensive	Nottingham	183	178	183	178	74%	15%	11%
40	406/408 Derby Road and Northern Dairies LTD	Nottingham	298	277	298	277	66%	23%	11%
41	Western Village, University of Nottingham Campus	Nottingham	195	181	195	181	67%	22%	11%
49	Nottingham City Centre flats	Nottingham	35,262	32,059	25,960	23,602	26%	14%	60%
51	Canal Quarter - Island Site	Nottingham	201	619	201	619	58%	23%	19%
52	Phase 1 Unity Square, Sheriffs Way	Nottingham	1,232	1,128	460	418	53%	28%	19%

ID	DEVELOPMENT	AUTHORITY	STRATEGIC PLAN SCENARIO TRIPS		ADDITIONAL TRIPS		MODE SHARE		
			AM	PM	AM	PM	HW	PT	ACTIVE
55	Victoria Centre Huntingdon Street	Nottingham	425	195	425	195	13%	25%	62%
58	Nottingham City Centre offices	Nottingham	2,444	2,237	2,444	2,237	58%	24%	18%
24	East and West of Melton Road, Edwalton	Rushcliffe	1,762	1,683	577	569	85%	4%	11%
26	East and West of Chapel Lane, Bingham	Rushcliffe	1,007	933	602	558	84%	5%	11%
27	RAF Newton	Rushcliffe	520	483	406	377	86%	4%	10%
28	Clifton South	Rushcliffe	3,399	3,363	3,399	3,363	77%	12%	11%
29	East of Gamston North of Tollerton	Rushcliffe	2,913	2,756	2,913	2,756	86%	3%	11%
30	Between Platt Lane and Station Road, Keyworth	Rushcliffe	180	170	54	53	82%	8%	10%
31	Land North of Nottingham Road/The Paddocks	Rushcliffe	170	160	170	160	82%	8%	10%
32	Land at Rempstone Road N.	Rushcliffe	269	252	170	161	85%	4%	11%
33	Shelford Road/Grooms Cottage	Rushcliffe	446	415	231	217	86%	4%	10%
34	Lantern Lane, E. Leake	Rushcliffe	347	327	120	116	83%	6%	11%
35	North of Bunny Lane	Rushcliffe	212	200	101	96	77%	13%	10%
36	East of L'borough Rd	Rushcliffe	220	210	113	110	85%	4%	11%
42	North of Grantham Road	Rushcliffe	275	255	275	255	81%	9%	10%
43	Land R/O Mill Lane/the Old Park/S. of Hollygate Lane	Rushcliffe	405	376	405	376	83%	6%	11%
50	Ratcliffe on Soar Power Sta.	Rushcliffe	4,616	4,909	4,616	4,909	85%	2%	13%
53	Wilford Lane West Bridgford	Rushcliffe	227	678	62	231	72%	9%	19%
54	E. Bridgford Garden Centre	Rushcliffe	47	115	2	8	79%	2%	19%
57	Landmere Lane, Edwalton	Rushcliffe	214	625	7	66	77%	3%	20%
Total			77,345	73,517	60,351	57,200	55%	12%	33%

- 5.2.2 In summary, an additional **60,351** person trips are made in the AM peak and an additional **57,200** person trips are made in the PM peak between the Reference Case and with Strategic Plan scenario, split 55% on highway modes, 12% on public transport modes and 33% on active modes overall, which can be summarised by Local Authority as shown in Table 13.

Table 13. Summary of Development Trips (People) by Local Authority

AUTHORITY	STRATEGIC PLAN SCENARIO TRIPS		ADDITIONAL TRIPS		MODE SHARE (STRATEGIC PLAN SCENARIO)		
	AM	PM	AM	PM	HW	PT	ACTIVE
Broxtowe	6,354	5,961	5,259	4,941	79%	11%	10%
Gedling	9,367	8,886	7,093	6,789	82%	8%	10%
Nottingham City	44,394	40,763	33,777	31,090	34%	16%	50%
Rushcliffe	17,229	17,910	14,223	14,380	83%	5%	12%

- 5.2.3 Considering highway and public transport modes, which are modes explicitly modelled by the EMGM, the number of total person trips in the EMGM increases by 6% between the Reference Case and the Strategic Plan scenario, which is made up predominantly of additional GNSP development trips (circa. 90% of growth) but also from an increase in background traffic (circa. 10% of growth) between 2023-2041 between the Reference Case and the Strategic Plan scenario in the GNSP area.
- 5.2.4 Accounting for vehicle occupancy and mode share, there are an additional **16,113** vehicle trips modelled in the AM peak and an additional **15,434** vehicle trips modelled in the PM peak overall.

6. STRATEGIC PLAN TRANSPORT IMPACTS

6.1 Development Trip Distribution

- 6.1.1 Figure 10 and Figure 11 show the distribution of GNSP development traffic across the network in the AM and PM peaks, respectively.
- 6.1.2 In the AM and PM peak, significant levels of development trips utilise the SRN, especially the A46, A52, A453 and M1 on routes to and from the GNSP area. M1 Junctions 24 through to 27 are used by development traffic depending upon where in the GNSP area the trip originates or is destined. On the local road network, many development trips utilise the A52 and A6514 to travel around Nottingham in both peaks, having headed in/out of Nottingham City on a variety of radial routes, including but not limited to in the AM peak the A606, A60, A612, A6005, A6200, A609, A610 and A6130. Nearby to the A453, development trips route via local roads in and around Gotham in order to access the A453 at junctions less congested than those within Clifton and around the Clifton South (Fairham Pastures) development.

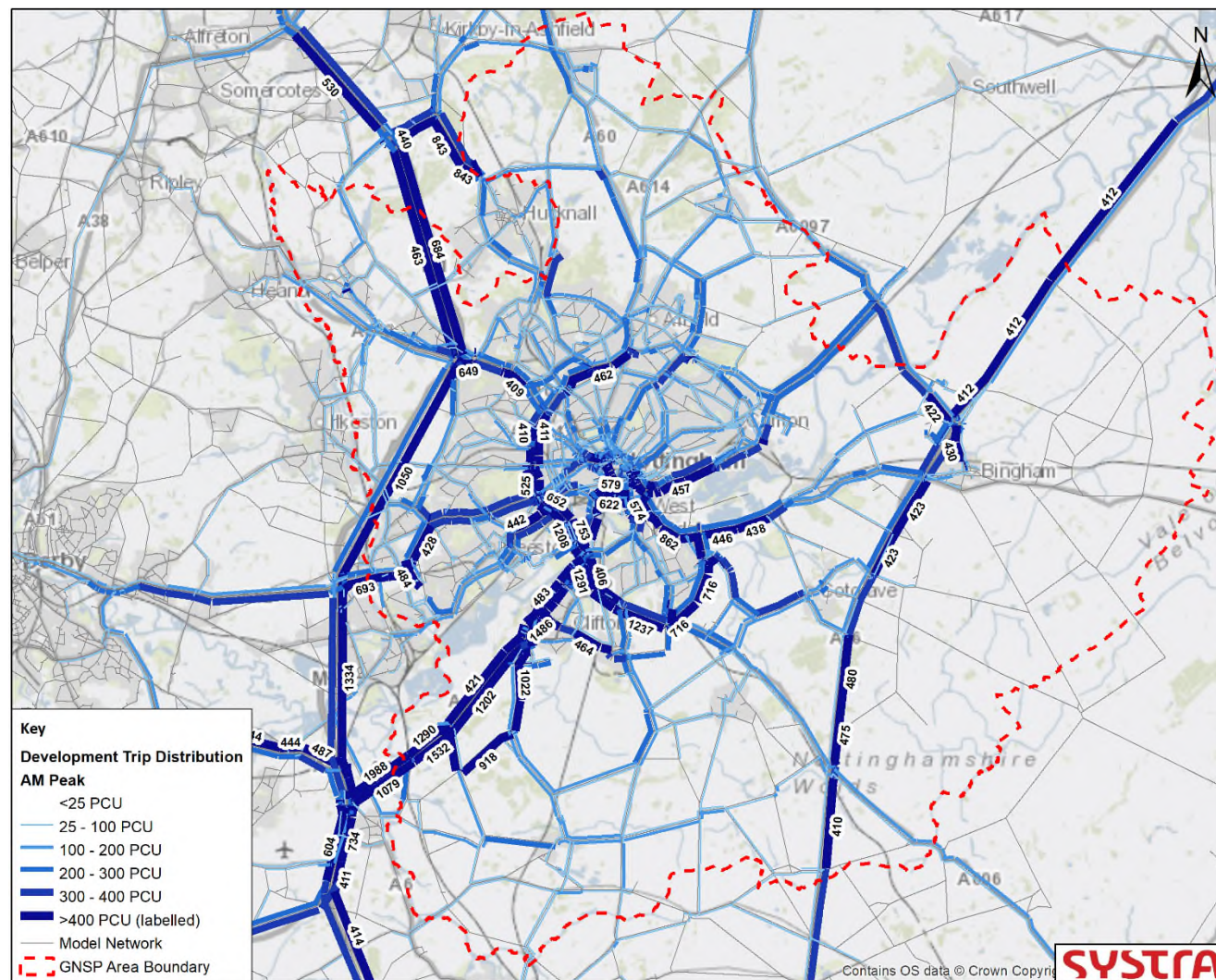


Figure 10. Development Trip Distribution – AM Peak

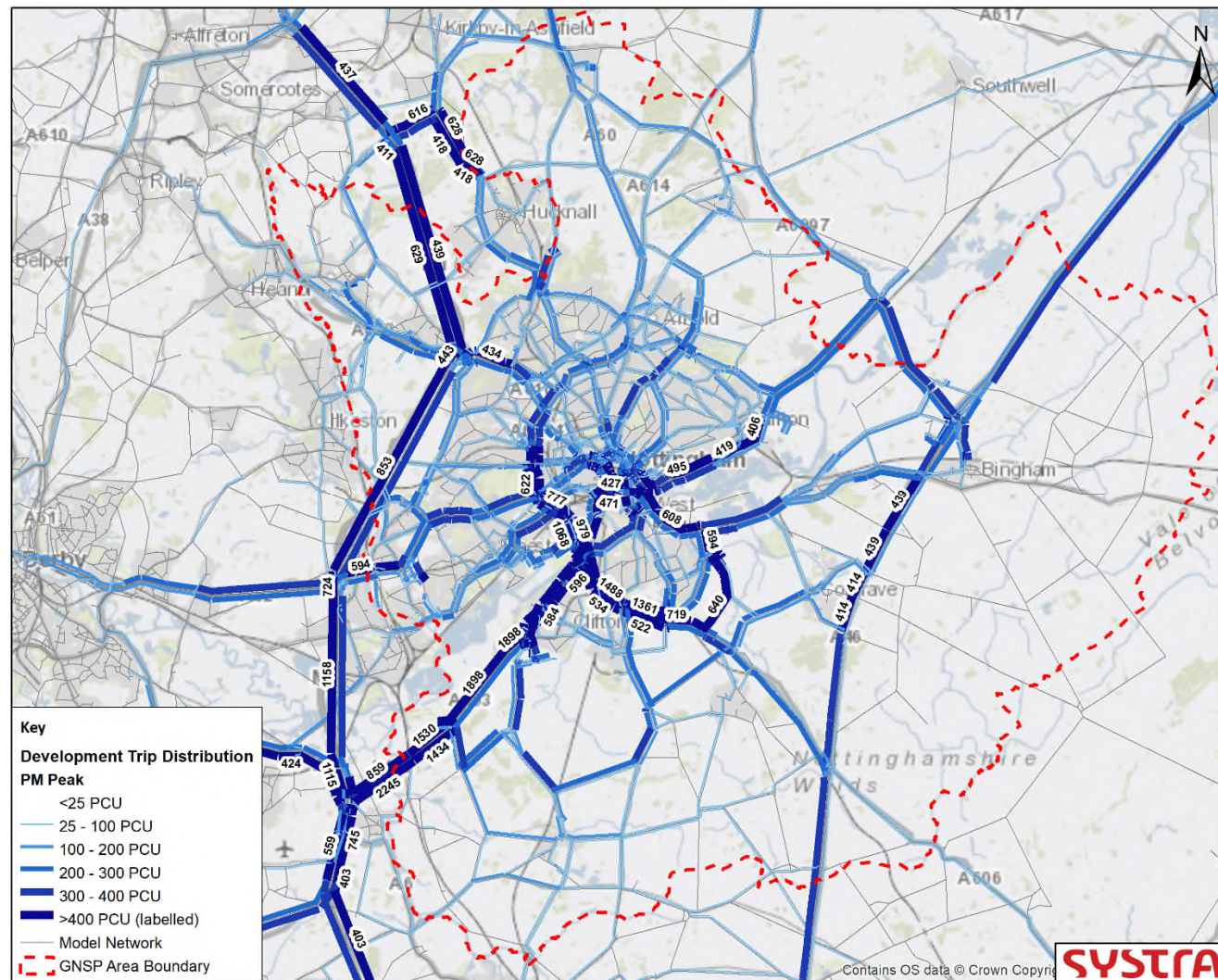
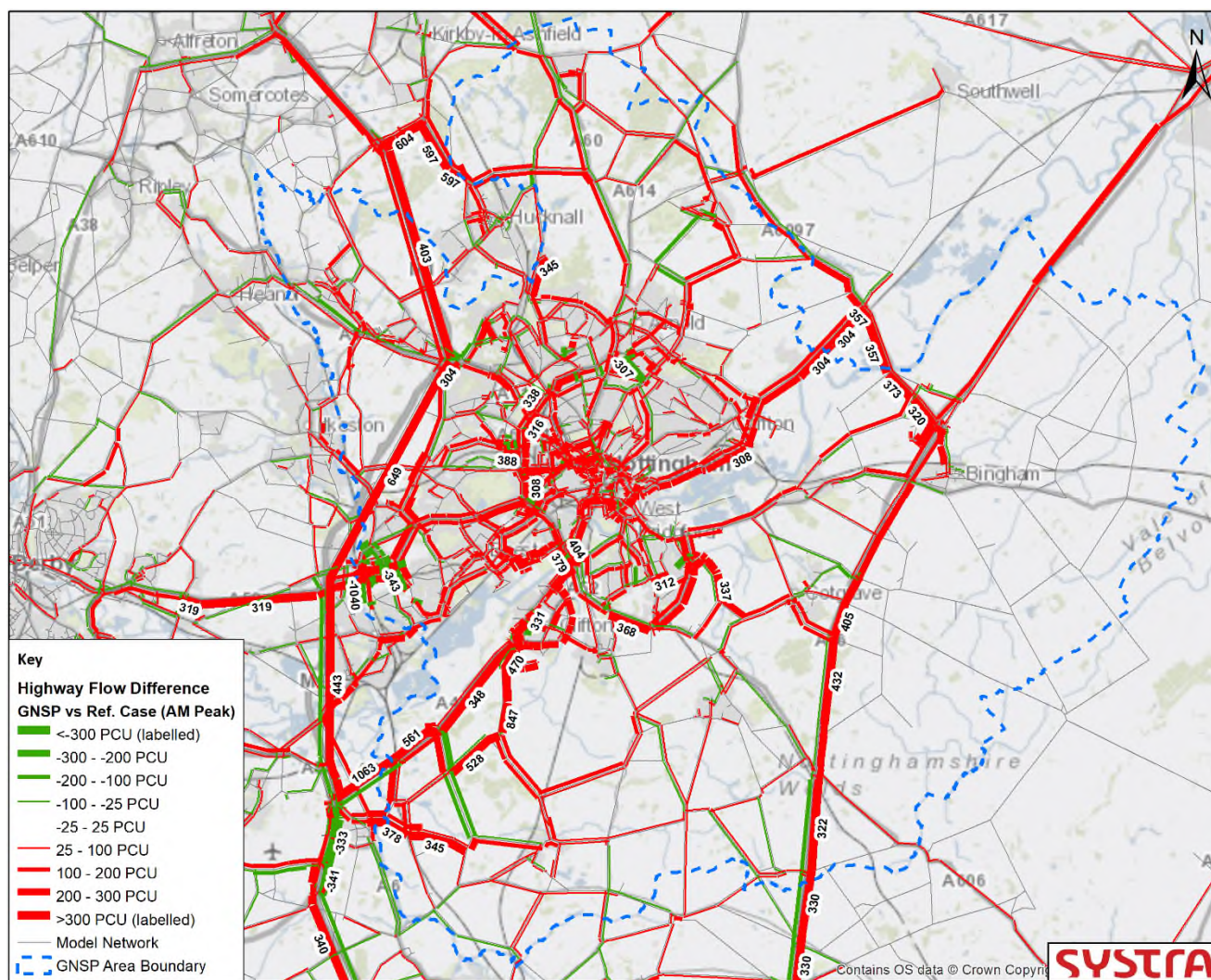


Figure 11. Development Trip Distribution – PM Peak

6.2 Highway Flow Change

- 6.2.1 Highway flow change on the network is a function of traffic directly generated by the GNSP developments and traffic which is reassigned as a consequence of the additional development traffic being present in the network in the Strategic Plan scenario.
- 6.2.2 Figure 12 and Figure 13 show highway flow change compared to the Reference Case. Red links represent roads which experience a net increase in traffic, whilst green links represent roads which experience a reduction in traffic.
- 6.2.3 Highway flow change is broadly similar in both peaks, with there being increases in highway flows as a result of the additional GNSP development. There is some reassignment of existing traffic, particularly in the west of Nottingham around Toton, which is due to the addition of the development and infrastructure in this area, such as the Toton Link Road. There is also localised reassignment in Rushcliffe on the A453, partly as a result of an increase in congestion and highway flow at A453 junctions near the Clifton South and Ratcliffe on Soar Power Station sites which causes a flow decrease on the A453 due to reassignment from congestion (in the PM peak predominately).
- 6.2.4 There are decreases in highway flow on the M1 around Junction 24 in the AM peak. This is due to increased volumes of traffic in the Strategic Plan scenario utilising the M1 to access the A453 at Junction 24, which increases congestion and the volume of queued flow in the model on the M1 around Junction 24. This reduces the volume of traffic that is able to pass freely along the M1 south of Junction 24, since queued flow and congestion increases, whilst demand flow does not change.



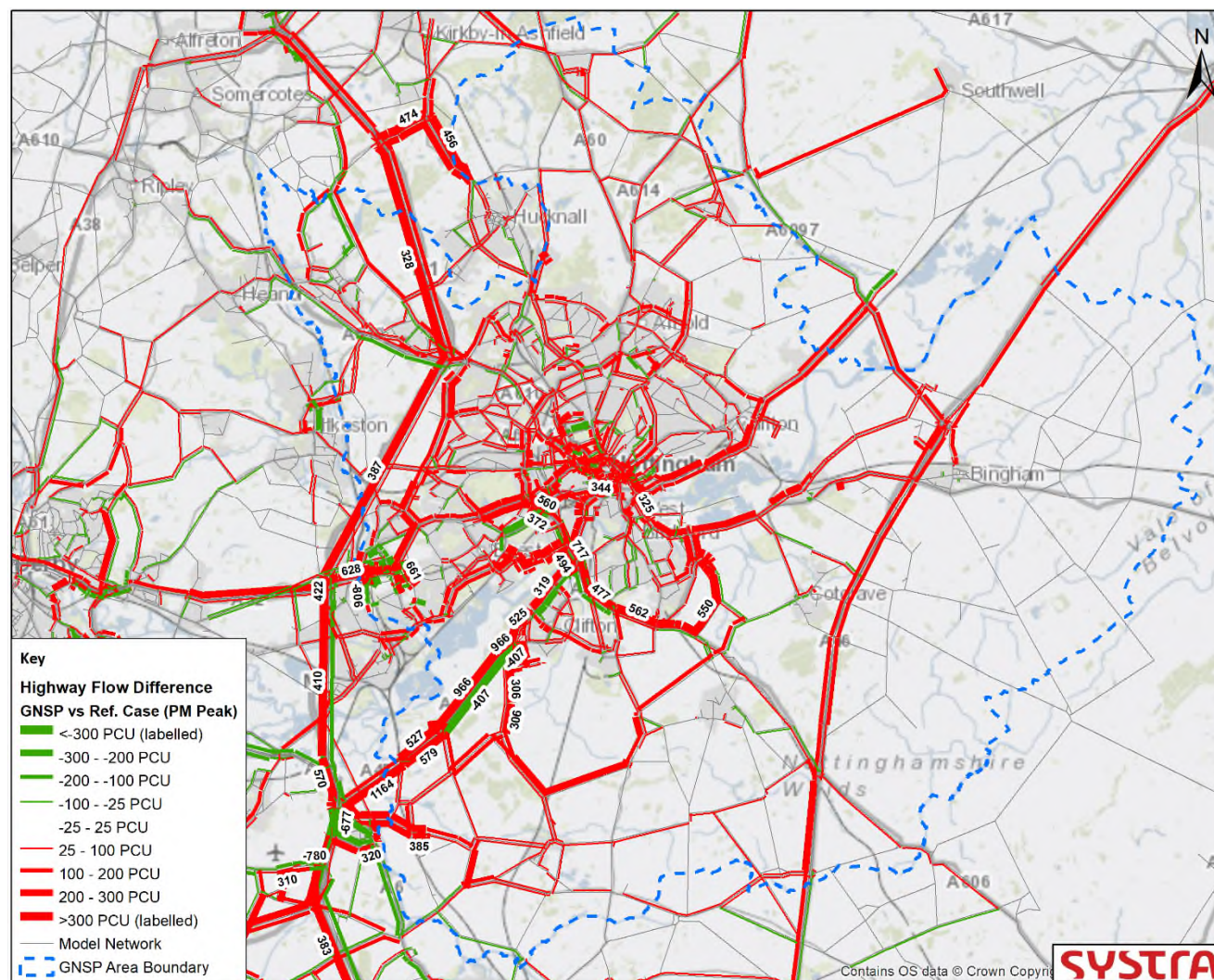


Figure 13. Highway Flow Difference – PM Peak

6.3 Junction Congestion

- 6.3.1 Junction congestion is measured by determining the ratio of the volume (V) of traffic to the capacity (C) that can be accommodated by a junction. A Volume to Capacity (V/C) of 85% is considered to be the threshold at which a junction is approaching its operational capacity, therefore increasing the likelihood of operational problems, including congestion, with associated delays and queues. A V/C of $\geq 100\%$ indicates that a junction is operating above its theoretical maximum capacity, with substantial congestion, queuing and delays.
- 6.3.2 Figure 14 and Figure 15 show the change in congestion as a result of additional development traffic at junctions which are forecast to have a V/C ratio of $>85\%$ in either the Reference Case or the Strategic Plan scenario. The change in congestion is shown relative to congestion in the Reference Case.
- 6.3.3 Junction congestion in the Strategic Plan scenario is shown in Figure 16 and Figure 17.
- 6.3.4 Appendix C details the change in congestion at each junction, where between the Reference Case and the Strategic Plan scenario the V/C increases by $\geq 10\%$ at congested junctions.
- 6.3.5 On much of the SRN, there is generally an increase in junction congestion. There is however some reduction in V/C at A52 Bardhills Roundabout due to the additional capacity provided by the Toton Link Road infrastructure. The A453 also shows an increase in congestion of $>10\%$ at M1 J24 and junctions through Clifton. Further north on the M1, V/C decreases by $>15\%$ at J26 in the AM peak, whereas in the PM peak V/C increases by $>15\%$ as a result. However, in both peaks, the J26 remains congested in the Strategic Plan scenario.
- 6.3.6 Within Nottingham there are a significant number of junctions that exhibit an increase in congestion. In most cases however, this congestion increase is focussed on strategic corridors such as the A52, A60, A610, A612, A6008 and A6011 where most of additional development traffic routes, as well as in the City Centre itself, where many junctions were already congested in the Reference Case before any additional development is added.

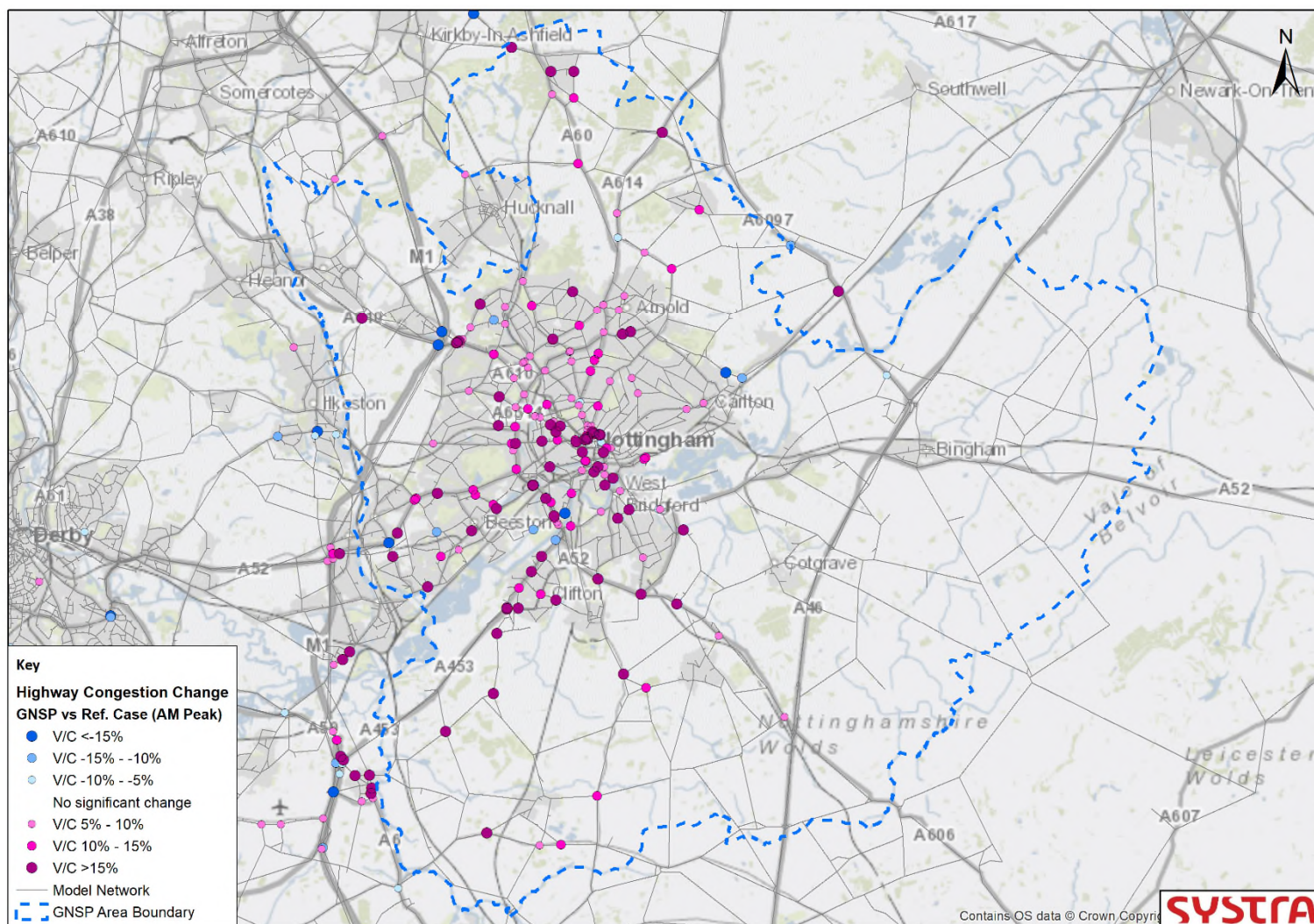


Figure 14. Junction Congestion Difference – AM Peak

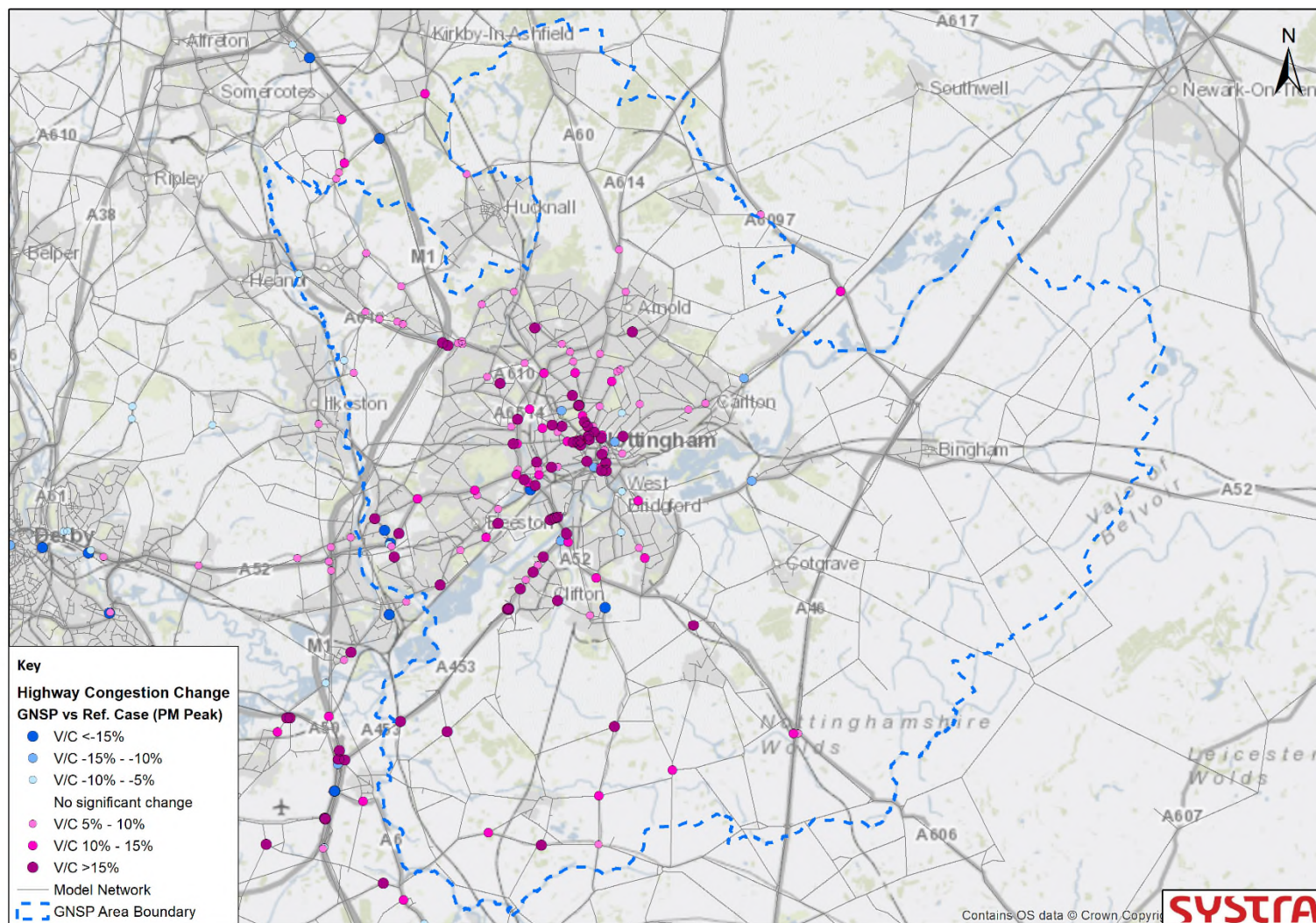


Figure 15. Junction Congestion Difference – PM Peak

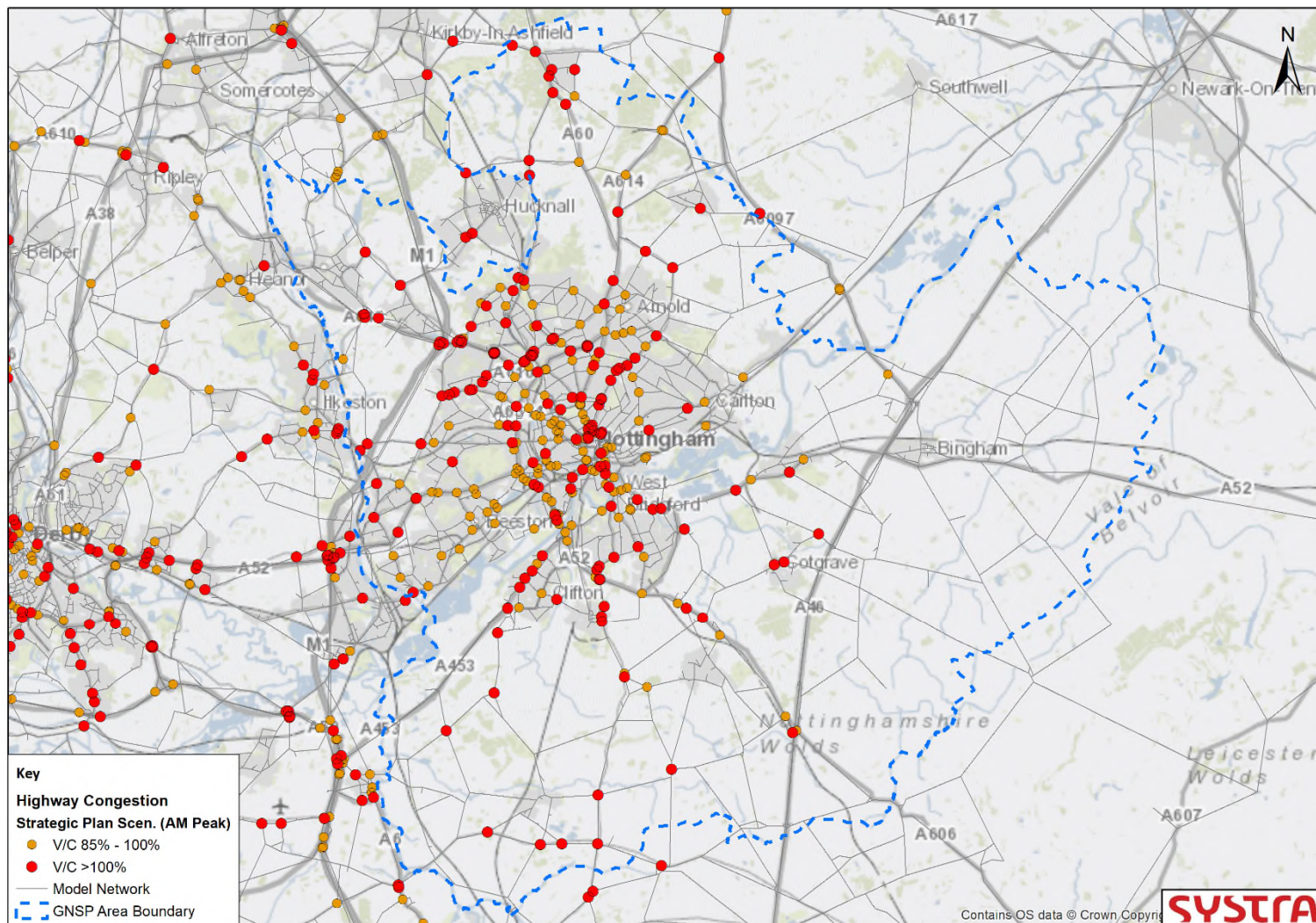


Figure 16. Strategic Plan Scenario Congestion – AM Peak

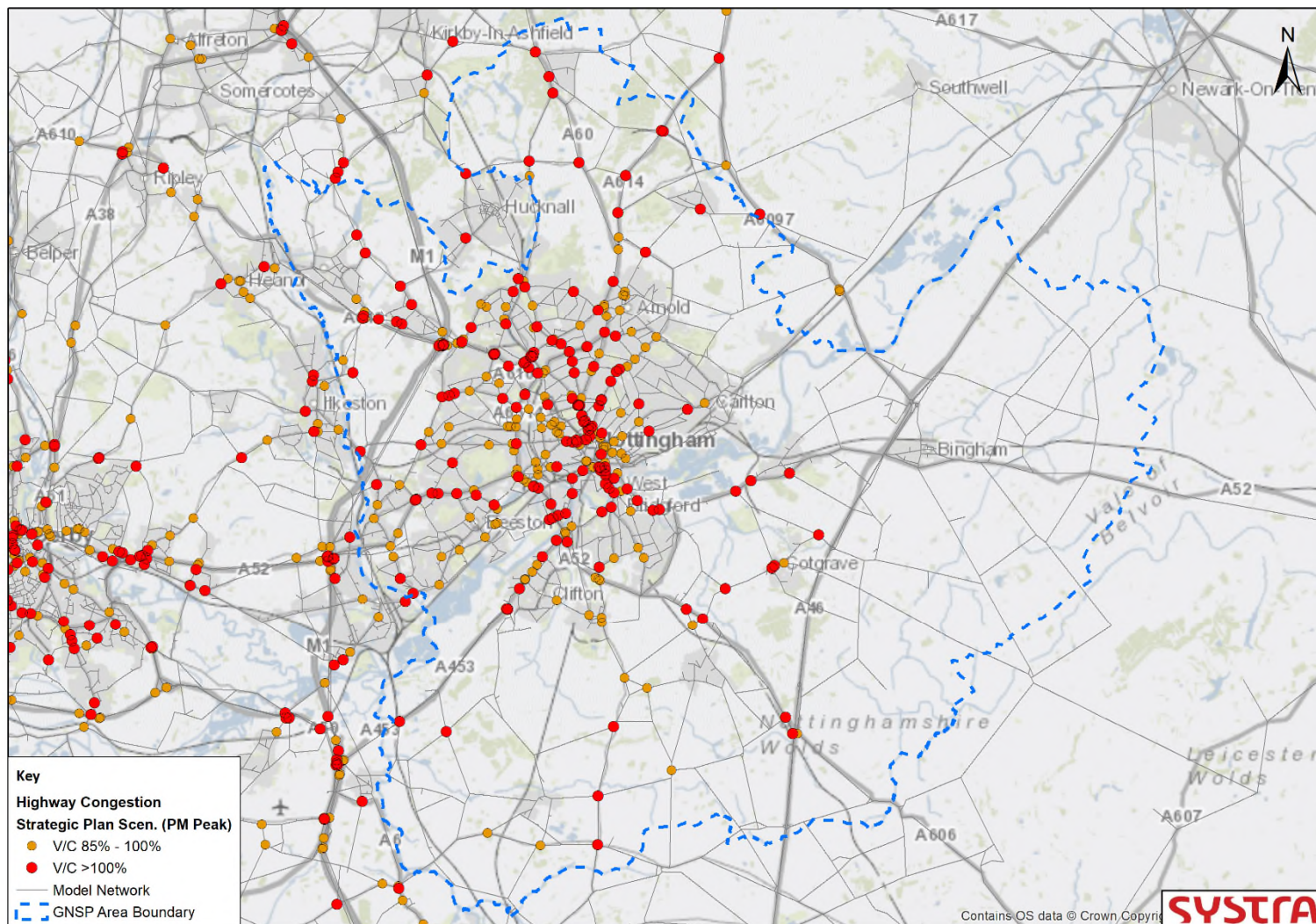


Figure 17. Strategic Plan Scenario Congestion – PM Peak

6.4 Network Statistics

- 6.4.1 Network statistics provide a way of gauging the overall impact from the addition of trips associated with the development sites. An explanation of the key indicators is as follows:
- **Congestion / Over Capacity Queues** – reflect the change in overall congestion and is the time spent queuing at junctions that are over capacity. As traffic levels increase, a growing number of junctions reach capacity and the time spent queuing at junctions can increase;
 - **Total Travel Time** – across the highway network in PCU hours;
 - **Total Travel Distance** – across the highway network in PCU kilometres; and
 - **Average Speed** – expressed as kilometres per hour, averaged for all traffic. Increased traffic levels lead to greater delays, potentially resulting in a lower average travel speed.
- 6.4.2 To focus network statistical analysis, an Area of Interest (AOI) has been defined by comparing the Reference Case against the Strategic Plan scenario to ascertain the area where the impacts of the additional development are most pronounced. The extent of the AOI is shown in Figure 18. The AOI incorporates all of the junctions identified as exhibiting a change in V/C of >10% and extends therefore slightly beyond the GNSP area boundary.

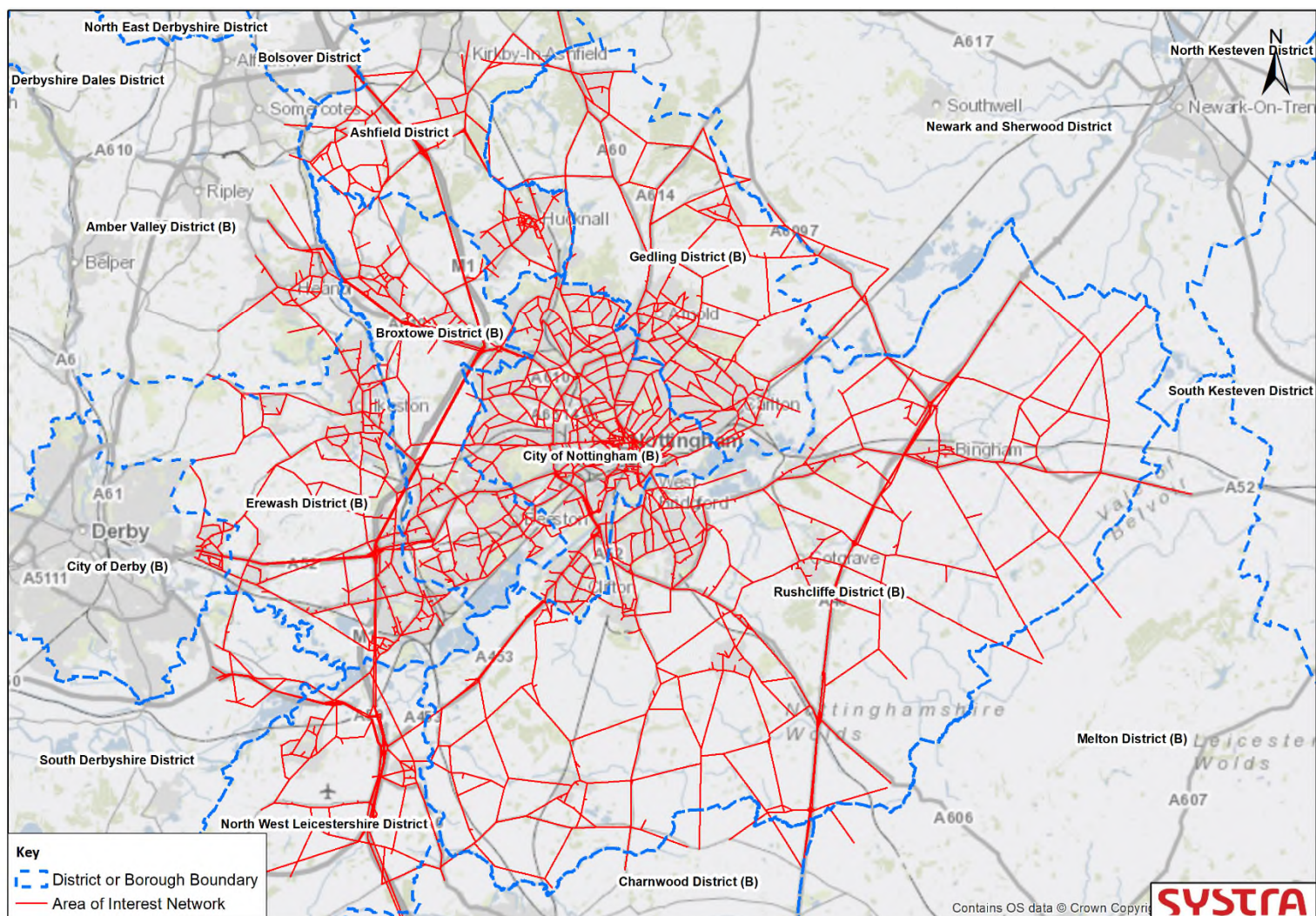


Figure 18. Area of Interest

6.4.3 Network statistics for the AOI are provided in Table 14 and Table 15.

Table 14. Network Statistics – AM Peak

INDICATOR	REFERENCE CASE	STRATEGIC PLAN	CHANGE (%)
Overcapacity Queues (PCU hrs) / Congestion	2,132	4,170	96%
Total Travel Time (PCU hrs)	49,886	57,172	15%
Total Travel Distance (PCU kms)	1,991,599	2,113,981	6%
Average Speed km/hr	40	37	-7%

Table 15. Network Statistics – PM Peak

INDICATOR	REFERENCE CASE	STRATEGIC PLAN	CHANGE (%)
Overcapacity Queues (PCU hrs) / Congestion	2,801	4,464	59%
Total Travel Time (PCU hrs)	50,793	57,422	13%
Total Travel Distance (PCU kms)	1,995,519	2,112,284	6%
Average Speed km/hr	39	37	-6%

6.4.4 In both peaks, there is a significant increase in congestion in the AOI (denoted by the overcapacity queues statistic) between the two scenarios, which accompany increases in total travel time and total travel distance. Congestion almost doubles in the AM peak and by 59% in the PM peak. The resultant effect is average speeds reduce due to increased congestion.

Appendix A – Developments Located Outside the GNSP Area

Nottinghamshire Housing Development

REF.	DEVELOPMENT	AUTHORITY	BUILD OUT 2041
N1	Rolls Royce	Ashfield	902
N35	Clipstone Road East	Mansfield	511
N36	Pleasley Hill Farm (formerly Penniment Farm)	Mansfield	850
N68	Land North of A611/South of Broomhill Farm/Land at Broomhill Farm, Hucknall	Ashfield	850
N69	Rolls Royce/Hucknall Town FC	Ashfield	727
N70	Land adj. Stubbing Wood Farm, Watnall Rd	Ashfield	198
N71	Walesby Drive/A611 off Diamond Avenue, Derby Road/Land off Diamond Avenue/Warwick Close/Annesley Miners Welfare Institute	Ashfield	359
N74	Cauldwell Village	Ashfield	315
N75	Adj. Oakham Business Park, Sutton-in-Ashfield	Ashfield	225
N76	Rear Kingsmill Hospital, Sutton-in-Ashfield	Ashfield	264
N77	Sunnyside Farm, Blackwell Road, Huthwaite	Ashfield	283
N78	Land to the East of A6075, Beck Lane, Skegby	Ashfield	212
N79	Land at Beck Lane, Skegby	Ashfield	422
N80	Alfreton Road	Ashfield	223
N81	Bull and Butcher and land off Park Lane	Ashfield	318
N97	Jubilee Way East, Mansfield SUE 2	Mansfield	850
N98	Lindhurst, SUE 3	Mansfield	1,800

Derbyshire Housing Development

REF.	DEVELOPMENT	AUTHORITY	BUILD OUT 2041
D17	Wragley Way (SDDC)	SDDC	1,950
D19	Boulton Moor Phase 1	SDDC	905
D20	Boulton Moor Phase 2	SDDC	550

REF.	DEVELOPMENT	AUTHORITY	BUILD OUT 2041
D21	Boulton Moor Phase 3	SDDC	190
D22	Land at Hackwood Farm	SDDC	290
D24	Primula Way	SDDC	500
D25	Chellaston Fields	SDDC	500
D26	Land West of Mickleover Phase 1 (Newhouse Farm)	SDDC	300
D27	Land West of Mickleover Phase 2	SDDC	252
D28	Land West of Mickleover Phase 3	SDDC	1,100
D29	Broomy Farm	SDDC	600
D30	Land NE of Hatton	SDDC	400
D31	North of William Nadin Way	SDDC	600
D32	Church Street, Church Gresley	SDDC	350
D33	Land off the Mease, Hilton	SDDC	485
D34	Woodville Regeneration Area	SDDC	300
D37	Highland Farm	SDDC	1,056
D38	Drakelow Power Station	SDDC	2,239
D41	Phase 1 Radbourne Lane, Mackworth	Amber Valley	510
D42	Phase 2 Radbourne Lane, Mackworth	Amber Valley	600
D43	Land S of Mansfield Road/N of A38, Alferton	Amber Valley	323
D44	Coppice Farm, Peasehill Road, Ripley	Amber Valley	400
D45	Lily Street Farm, Derby Road, Swanwick	Amber Valley	600
D46	Kedleston Road, Quarndon	Amber Valley	400
D47	Shipley Lakeside, Shipley	Amber Valley	307
D49b	South Stanton	Erewash	1,000
D50	West of Quarry Hill Road	Erewash	350
D53	Nether Farm, Birchwood Lane, Somercotes	Amber Valley	200

REF.	DEVELOPMENT	AUTHORITY	BUILD OUT 2041
D54	Land off Somercotes Hill, Somercotes	Amber Valley	180
D56	Newlands/Loscoe Fields	Amber Valley	500
D57	Acorn Way	Erewash	600
D58	Spondon	Erewash	200
D59	Kirk Hallam	Erewash	1,300
D60	Cotmanhay	Erewash	250
D64	Nottingham Road	Amber Valley	181
D65	Land off Brun Lane, Mackworth	Amber Valley	2,000
D66	Land off Aldreds Lane, Heanor	Amber Valley	250

Derby City Housing Development

REF.	DEVELOPMENT	AUTHORITY	BUILD OUT 2041
D1	Ryknel Road (Heatherton Extn)	DCC	900
D3	Derby Royal Infirmary	DCC	920
D6	Manor/Kingsway Hospitals	DCC	837
D9	Brook Farm Chaddesden	DCC	230
D10	Hackwood Farm	DCC	410
D11	Nightingale Works	DCC	400
D13	Various City Centre	DCC	750
D14	Castleward	DCC	840
D15	Friar Gate Goods Yard	DCC	400
D16	Wragley Way (DCC)	DCC	180
D18	Boulton Moor/Snelsmoor Grange	DCC	800
D55	Onslow Road	DCC	203

Leicestershire Housing Development

REF.	DEVELOPMENT	AUTHORITY	BUILD OUT 2041
L1	Bardon Grange, Coalville	NW Leicestershire	800
L3	South East Coalville	NW Leicestershire	2,700
L4	Standard Hill Coalville	NW Leicestershire	400
L5	Money Hill (phase 1) Ashby	NW Leicestershire	605
L6	Money Hill (phase 2) Ashby	NW Leicestershire	1,252
L8	Holywell Spring Farm Ashby	NW Leicestershire	400
L9	Burton Road/Moira Road Ashby	NW Leicestershire	800
L10	Castle Donington	NW Leicestershire	895
L11	Bosworth Road, Measham	NW Leicestershire	300
L15	Garendon Park, Loughborough	NW Leicestershire	3,200
L16	North East of Leicester	NW Leicestershire	4,500
L17	North of Birstall (Broadnook)	NW Leicestershire	1,650
L19	West Shepshed (various applications)	NW Leicestershire	892
L21	Land at Gynsill Lane & Anstey Lane, Glenfield	Charnwood	260
L23	Laburnum Way, Loughborough	Charnwood	422
L24	Land South of Loughborough	Charnwood	723
L25	Land off Tickow Lane (north), Shepshed	Charnwood	394
L26	Land N of Hallamford Rd and W of Shepshed	Charnwood	250
L27	Land off Tickow Lane (south)	Charnwood	300
L28	Land West of Anstey	Charnwood	600
L29	Land South East of Syston	Charnwood	960
L30	Barkby Road, Syston	Charnwood	270

Nottinghamshire Employment Development

REF.	DEVELOPMENT	AUTHORITY	BUILD OUT 2041 (SQM)
N1	Rolls Royce	Ashfield	B1 – 47,000 B2 – 35,250 B8 – 35,250
N36	Pleasley Hill Farm (formerly Penniment Farm)	Ashfield	B1 – 3,300 B2 – 90,000
N82	Land to the North East of Junction 27, M1	Ashfield	B8 – 184,200
N83	Land to the South East of Junction 27, M1	Ashfield	B8 – 225,000

Derbyshire Employment Development

REF.	DEVELOPMENT	AUTHORITY	BUILD OUT 2041 (SQM)
D23	Land South of Sinfin Moor/Infinity Park	SDDC	B1 – 3,000 B2 – 3,000 B8 – 24,000
D33	Land off The Mease, Hilton	SDDC	B1 – 7,000 B2 – 14,000 B8 – 14,000
D34	Woodville Regeneration Area	SDDC	B1 – 12,000 B2 – 24,000 B8 – 24,000
D35	Land North of Dove Valley Business Park	SDDC	B1 – 28,300 B2 – 56,600 B8 – 56,600
D38	Drakelow Power Station	SDDC	B1 – 12,000 B2 – 24,000 B8 – 24,000
D45	Lily Street Farm, Derby Road, Swanwick	Amber Valley	B1 – 6,500 B2 – 7,500 B8 – 10,000
D49a	North Stanton	Erewash	B2 – 200,000 B8 – 200,000

Derby City Employment Development

REF.	DEVELOPMENT	AUTHORITY	BUILD OUT 2041 (SQM)
D1	Ryknel Road (Heatherton Extn)	DCC	B1 – 7,000
D2	Chaddesden Sidings (South)	DCC	B2 – 22,875 B8 – 132,075
D4	Chaddesden Sidings (West)	DCC	B2 – 13,000 B8 – 13,000
D5	Raynesway/Derby Commercial Park	DCC	B8 – 181,000
D6	Manor/Kingsway Hospitals	DCC	B1 – 20,000
D8	Chellaston Business Park/Infinity Park	DCC	B1 – 2,500 B2 – 42,013 B8 – 92,160
D12	Infinity Park Extension	DCC	B1 – 5,000 B2 – 45,000
D39a	SmartParc (old Celanese Site)	Derby City	B2 – 60,000
D39b	SmartParc (old Celanese Site)	Derby City	B2 – 149,000

Leicestershire Employment Development

REF.	DEVELOPMENT	AUTHORITY	BUILD OUT 2041 (SQM)
L7	Land at Money Hill Ashby	NW Leicestershire	B1 – 16,000 B2 – 32,000 B8 – 32,000
L12S	East Midlands Gateway	NW Leicestershire	6 million sq. foot
L13	East Midlands Airport (Pegasus) Extension	NW Leicestershire	B1 – 54,400 B8 – 36,000
L14	Loughborough, Science Park	Charnwood	B1 – 250,000
L15	Garendon Park, Loughborough	Charnwood	B1 – 15,000 B2 – 30,000 B8 – 30,000
L16	North East of Leicester	Charnwood	B1 – 13,000 B2 – 26,000 B8 – 26,000
L17	North of Birstall (Broadnook)	Charnwood	B1 – 15,000 B2 – 30,000 B8 – 30,000

REF.	DEVELOPMENT	AUTHORITY	BUILD OUT 2041 (SQM)
L18	Watermead	Charnwood	B1 – 12,500 B2 – 23,750 B8 – 23,750

Appendix B – Developments Located Within the GNSP Area

Housing Development

REF.	DEVELOPMENT	AUTHORITY	BUILD OUT 2023	% OF 2041 BUILD OUT	BUILD OUT 2041
N12	Field Farm	Broxtowe	129	29%	450
N17	Eastwood	Broxtowe	581	61%	960
N18	Kimberley	Broxtowe	149	41%	363
N23	Teal Close	Gedling	331	41%	807
N24	Top Wighay Farm	Gedling	38	2%	1,900
N25	H16 Park Road, Calverton	Gedling	101	28%	363
N27	Land West of A60 Redhill (X2 and X3)	Gedling	70	32%	220
N28	Gedling Colliery	Gedling	465	49%	941
N29	North of Papplewick Lane	Gedling	225	88%	255
N31	Mapperley Plains and Killisick Lane	Gedling	89	20%	435
N38	Chalfont Drive	Nottingham City	345	73%	475
N45	Waterside	Nottingham City	204	16%	1,289
N51-52	East and West of Melton Road, Edwalton	Rushcliffe	1,277	69%	1,844
N54	East and West of Chapel Lane, Bingham	Rushcliffe	408	40%	1,022
N55	RAF Newton	Rushcliffe	115	22%	528
N62	Kirk Ley, East Leake	Rushcliffe	287	100%	287
N63	Between Platt Lane and Station Road, Keyworth	Rushcliffe	128	68%	187
N96	Land at Former Cotgrave Colliery	Rushcliffe	372	100%	372
N99	Land at Rempstone Road (north)	Rushcliffe	100	35%	282

REF.	DEVELOPMENT	AUTHORITY	BUILD OUT 2023	% OF 2041 BUILD OUT	BUILD OUT 2041
N100	Shelford Road/Grooms Cottage	Rushcliffe	216	47%	455
N104	Lantern Lane, E. Leake	Rushcliffe	231	63%	365
N105	North of Bunny Lane	Rushcliffe	114	52%	221
N106	East of L'borough Rd/Meadowcroft	Rushcliffe	109	47%	231
N107	Ilkeston Road - Radford Mill	Nottingham City	339	100%	339
N108	Woodhouse Way - Woodhouse Park	Nottingham City	214	100%	214
N109	11 and Workshop Deakin Place	Nottingham City	328	100%	328
N115	Beeston Business Park, Technology Drive, Beeston	Broxtowe	221	71%	310
N116	Bartons land between High Road & Queens Road West, Chilwell	Broxtowe	30	14%	221
N137	Arnold (non-allocated)	Gedling	204	24%	864
N157	Bestwood (non-allocated)	Gedling	35	6%	541
N147	Calverton (non-allocated)	Gedling	61	10%	586
N158	Carlton (non-allocated)	Gedling	507	42%	1,221
N159	Ravenshead (non-allocated)	Gedling	66	11%	586
N160	City Centre flats (windfall)	Nottingham City	4,973	28%	18,850

Employment Development

REF.	DEVELOPMENT	AUTHORITY	BUILD OUT 2023 (SQM)	% OF 2041 BUILD OUT	BUILD OUT 2041 (SQM)
N42	Phase 1 Unity Square, Sheriffs Way	Nottingham City	B1 – 36,519	63%	B1 – 58,360
N101	Sainsbury land south of Colwick Loop Road	Gedling	Retail – 11,781	100%	Retail – 11,781

REF.	DEVELOPMENT	AUTHORITY	BUILD OUT 2023 (SQM)	% OF 2041 BUILD OUT	BUILD OUT 2041 (SQM)
N102	Land on Wilford Lane West Bridgford	Rushcliffe	Retail – 2,783	68%	Retail – 4,098
N103	East Bridgford Garden Centre	Rushcliffe	Retail – 12,469	95%	Retail – 13,136
N110	Lidl, Bulwell	Nottingham City	Retail – 1,927	100%	Retail – 1,927
N111	Woodhouse Park	Nottingham City	Retail – 1,743	100%	Retail – 1,743
N112	The Triangle, Clifton	Nottingham City	Retail – 5,749	100%	Retail – 5,749
N113	Beechdale Baths	Nottingham City	Retail – 3,065	100%	Retail – 3,065
N114	Former NCV Garage Hucknall Road	Nottingham City	Retail – 1,600	100%	Retail – 1,600
N117	The Square, Beeston	Broxtowe	Retail – 8,290	100%	Retail – 8,290
N122	NG2 West	Nottingham City	B1 – 14,000	100%	B1 – 14,000
N123	Royal Quarter - Burton Street, Guildhall, Police and Fire Station	Nottingham City	B1 – 15,000	100%	B1 – 15,000
N135	Teal Close, ALDI and Local Centre	Gedling	Retail – 1,818	53%	Retail – 3,447
N136	Landmere Lane Edwalton	Rushcliffe	Retail – 3,370	89%	Retail – 3,770

Educational Development

REF.	DEVELOPMENT	AUTHORITY	BUILD OUT 2023	% OF 2041 BUILD OUT	BUILD OUT 2041
N50S	Nottingham College	Nottingham City	4,000 pupils	100%	4,000 pupils

Appendix C – Junction Congestion Data and Location Plots

Junction Congestion Change of ≥10%, where V/C ratio is ≥85% in either the Reference Case or Strategic Plan Scenario

ID	LOCATION	REF. CASE AM	GNSP SCEN. AM	REF. CASE PM	GNSP SCEN. PM	DIFF. AM	DIFF. PM
1	Erewash	60	104	98	104	45	6
2	Erewash	66	97	75	95	31	20
3	Erewash	84	97	84	80	12	n/a
4	Erewash	77	102	78	78	25	n/a
5	NW Leicestershire	62	54	68	98	n/a	31
6	NW Leicestershire	79	95	53	61	16	n/a
7	NW Leicestershire	60	97	43	30	37	n/a
8	NW Leicestershire	78	102	62	81	24	n/a
9	NW Leicestershire	39	91	15	20	52	n/a
10	Charnwood	46	44	58	96	n/a	37
11	NW Leicestershire	53	50	102	119	n/a	18
12	NW Leicestershire	70	65	110	128	n/a	18
13	NW Leicestershire	77	75	90	103	n/a	12
14	NW Leicestershire	73	72	79	104	n/a	25
15	NW Leicestershire	103	102	106	120	-2	15
16	NW Leicestershire	39	43	43	98	n/a	55
17	NW Leicestershire	61	87	70	99	26	29
18	NW Leicestershire	51	58	85	134	n/a	48
19	NW Leicestershire	116	116	69	101	n/a	33
20	NW Leicestershire	77	78	80	91	n/a	11
21	Charnwood	93	93	74	88	n/a	14
22	NW Leicestershire	133	139	105	115	7	11
23	NW Leicestershire	87	100	75	70	13	n/a

ID	LOCATION	REF. CASE AM	GNSP SCEN. AM	REF. CASE PM	GNSP SCEN. PM	DIFF. AM	DIFF. PM
24	NW Leicestershire	65	100	55	59	35	n/a
25	Rushcliffe	100	103	94	105	2	12
26	Rushcliffe	80	100	55	61	20	n/a
27	Rushcliffe	72	89	59	57	17	n/a
28	Rushcliffe	74	93	82	84	18	n/a
29	Rushcliffe	84	89	84	95	5	11
30	Rushcliffe	38	68	37	106	n/a	69
31	Rushcliffe	48	219	52	119	171	67
32	Rushcliffe	69	94	51	69	25	n/a
33	Rushcliffe	10	104	4	29	94	n/a
34	Rushcliffe	90	105	36	34	15	n/a
35	Rushcliffe	88	100	94	105	12	11
36	Rushcliffe	36	45	43	103	n/a	60
37	Rushcliffe	98	103	77	89	5	12
38	Rushcliffe	63	109	69	100	46	31
39	Rushcliffe	102	110	66	90	7	24
40	Rushcliffe	86	101	81	93	15	12
41	Rushcliffe	56	53	61	100	n/a	40
42	Rushcliffe	103	102	87	102	-1	15
43	Rushcliffe	82	95	89	94	13	4
44	Rushcliffe	43	148	40	63	105	n/a
45	Rushcliffe	59	49	61	85	n/a	24
46	Rushcliffe	59	90	55	80	31	n/a
47	Rushcliffe	73	92	94	97	20	3
48	Rushcliffe	92	94	84	95	3	11

ID	LOCATION	REF. CASE AM	GNSP SCEN. AM	REF. CASE PM	GNSP SCEN. PM	DIFF. AM	DIFF. PM
49	Rushcliffe	39	98	42	91	59	49
50	Rushcliffe	13	105	17	53	92	n/a
51	Newark & Sherwood	57	97	82	95	40	12
52	Gedling	88	101	80	83	12	n/a
53	Gedling	69	96	68	92	27	24
54	Gedling	54	92	49	64	39	n/a
55	Gedling	81	94	102	104	13	2
56	Gedling	81	94	32	44	14	n/a
57	Gedling	57	100	70	84	43	n/a
58	Gedling	82	100	55	61	19	n/a
59	Gedling	84	100	28	36	17	n/a
60	Gedling	88	102	96	100	14	5
61	Gedling	76	96	96	100	20	5
62	Ashfield	73	56	72	86	n/a	14
63	Ashfield	33	35	90	104	n/a	14
64	Ashfield	85	85	80	91	n/a	12
65	Broxtowe	78	102	81	89	24	8
66	Broxtowe	89	107	64	71	17	n/a
67	Broxtowe	100	100	62	98	n/a	36
68	Broxtowe	64	70	79	92	n/a	13
69	Broxtowe	58	69	57	98	n/a	41
70	Broxtowe	76	92	71	79	16	n/a
71	Broxtowe	79	94	94	99	15	4
72	Broxtowe	73	71	68	87	n/a	19

ID	LOCATION	REF. CASE AM	GNSP SCEN. AM	REF. CASE PM	GNSP SCEN. PM	DIFF. AM	DIFF. PM
73	Broxtowe	60	86	59	80	25	n/a
74	Broxtowe	101	101	77	96	n/a	19
75	Broxtowe	81	91	88	98	10	11
76	Broxtowe	79	91	101	100	12	n/a
77	Broxtowe	74	91	105	105	17	n/a
78	Broxtowe	61	100	58	61	39	n/a
79	Broxtowe	72	96	106	110	23	4
80	Broxtowe	57	103	68	90	46	22
81	Broxtowe	66	100	59	90	34	31
82	Broxtowe	52	59	63	95	n/a	32
83	Nottingham	69	89	64	78	20	n/a
84	Nottingham	94	105	87	101	11	14
85	Nottingham	13	36	48	93	n/a	45
86	Nottingham	71	95	57	101	24	44
87	Nottingham	65	84	61	85	n/a	24
88	Nottingham	30	47	96	109	n/a	13
89	Nottingham	56	87	97	105	30	8
90	Nottingham	79	93	60	95	14	35
91	Nottingham	97	113	34	40	16	n/a
92	Nottingham	54	126	55	94	72	39
93	Nottingham	69	101	50	91	32	41
94	Nottingham	61	92	47	51	31	n/a
95	Nottingham	56	68	78	95	n/a	17
96	Nottingham	69	103	83	95	35	13
97	Nottingham	1	177	2	9	176	n/a

ID	LOCATION	REF. CASE AM	GNSP SCEN. AM	REF. CASE PM	GNSP SCEN. PM	DIFF. AM	DIFF. PM
98	Nottingham	48	46	41	89	n/a	48
99	Nottingham	27	40	93	106	n/a	14
100	Nottingham	52	52	43	101	n/a	58
101	Nottingham	44	90	35	43	46	n/a
102	Nottingham	101	100	81	101	-1	20
103	Nottingham	78	88	66	74	10	n/a
104	Nottingham	86	91	81	97	5	17
105	Nottingham	87	91	115	132	4	17
106	Nottingham	70	96	113	116	26	3
107	Nottingham	81	93	74	91	13	17
108	Nottingham	86	98	95	95	12	n/a
109	Nottingham	37	96	109	103	58	-6
110	Nottingham	62	90	76	75	28	n/a
111	Nottingham	106	109	119	133	3	14
112	Nottingham	73	97	70	83	23	n/a
113	Nottingham	80	91	75	76	10	n/a
114	Nottingham	62	92	91	102	30	11
115	Nottingham	103	113	83	98	11	16
116	Nottingham	90	101	86	87	11	2
117	Nottingham	45	85	40	41	40	n/a
118	Nottingham	69	79	74	86	n/a	12
119	Nottingham	69	91	78	85	22	8
120	Nottingham	73	97	68	87	24	19
121	Nottingham	97	108	107	105	12	-2
122	Nottingham	81	94	85	97	13	12

ID	LOCATION	REF. CASE AM	GNSP SCEN. AM	REF. CASE PM	GNSP SCEN. PM	DIFF. AM	DIFF. PM
123	Nottingham	46	55	57	89	n/a	32
124	Nottingham	59	45	71	86	n/a	15
125	Nottingham	69	86	72	75	16	n/a
126	Nottingham	58	89	72	99	32	27
127	Nottingham	58	58	62	88	n/a	26
128	Nottingham	73	84	74	87	n/a	13
129	Nottingham	60	86	80	88	26	8
130	Nottingham	66	79	95	109	n/a	15
131	Nottingham	95	95	55	87	1	32
132	Nottingham	85	105	97	99	20	1
133	Nottingham	81	96	99	104	15	5
134	Nottingham	76	90	91	91	13	n/a
135	Nottingham	77	89	99	100	12	1
136	Nottingham	90	104	99	106	14	7
137	Nottingham	84	94	89	89	10	n/a
138	Nottingham	81	91	83	79	10	n/a
139	Nottingham	90	102	89	97	13	7
140	Nottingham	96	102	92	106	6	14
141	Nottingham	65	68	82	98	n/a	16
142	Nottingham	74	88	54	61	14	n/a
143	Nottingham	85	96	47	53	12	n/a
144	Nottingham	71	93	80	83	22	n/a
145	Nottingham	77	88	31	30	11	n/a
146	Nottingham	87	98	101	101	11	1
147	Nottingham	60	72	68	101	n/a	33

ID	LOCATION	REF. CASE AM	GNSP SCEN. AM	REF. CASE PM	GNSP SCEN. PM	DIFF. AM	DIFF. PM
148	Nottingham	79	91	95	96	12	1
149	Nottingham	97	100	88	100	3	12
150	Nottingham	57	55	76	98	n/a	22
151	Nottingham	58	59	74	87	n/a	13
152	Nottingham	68	100	64	92	32	29
153	Nottingham	75	88	50	70	14	n/a
154	Nottingham	77	105	72	90	28	19
155	Nottingham	58	98	35	42	39	n/a
156	Nottingham	96	95	73	85	-1	12
157	Nottingham	78	94	68	89	16	21
158	Nottingham	38	100	58	55	62	n/a
159	Nottingham	91	94	76	90	2	14
160	Nottingham	72	99	84	92	27	8
161	Nottingham	83	98	106	108	15	2
162	Nottingham	49	65	65	87	n/a	22
163	Nottingham	77	91	83	92	15	9
164	Nottingham	95	99	74	93	4	19
165	Nottingham	94	96	81	92	1	10
166	Nottingham	82	94	94	101	11	7
167	Nottingham	88	98	81	91	10	10
168	Nottingham	80	91	34	56	10	n/a
169	Nottingham	58	69	47	87	n/a	40
170	Nottingham	45	100	30	46	55	n/a
171	Nottingham	67	73	64	98	n/a	34
172	Nottingham	7	6	7	119	n/a	112

ID	LOCATION	REF. CASE AM	GNSP SCEN. AM	REF. CASE PM	GNSP SCEN. PM	DIFF. AM	DIFF. PM
173	Nottingham	48	69	52	102	n/a	49
174	Nottingham	66	91	28	56	25	n/a
175	Nottingham	81	92	76	73	11	n/a
176	Nottingham	30	33	56	100	n/a	44
177	Nottingham	58	60	96	114	n/a	18
178	Nottingham	30	32	61	105	n/a	44
179	Nottingham	23	31	56	106	n/a	50
180	Nottingham	97	100	35	96	3	60
181	Nottingham	83	95	101	104	12	2
182	Nottingham	82	100	92	86	18	-7
183	Nottingham	84	85	84	106	1	22
184	Nottingham	90	104	99	97	14	-2
185	Nottingham	133	152	81	138	20	57

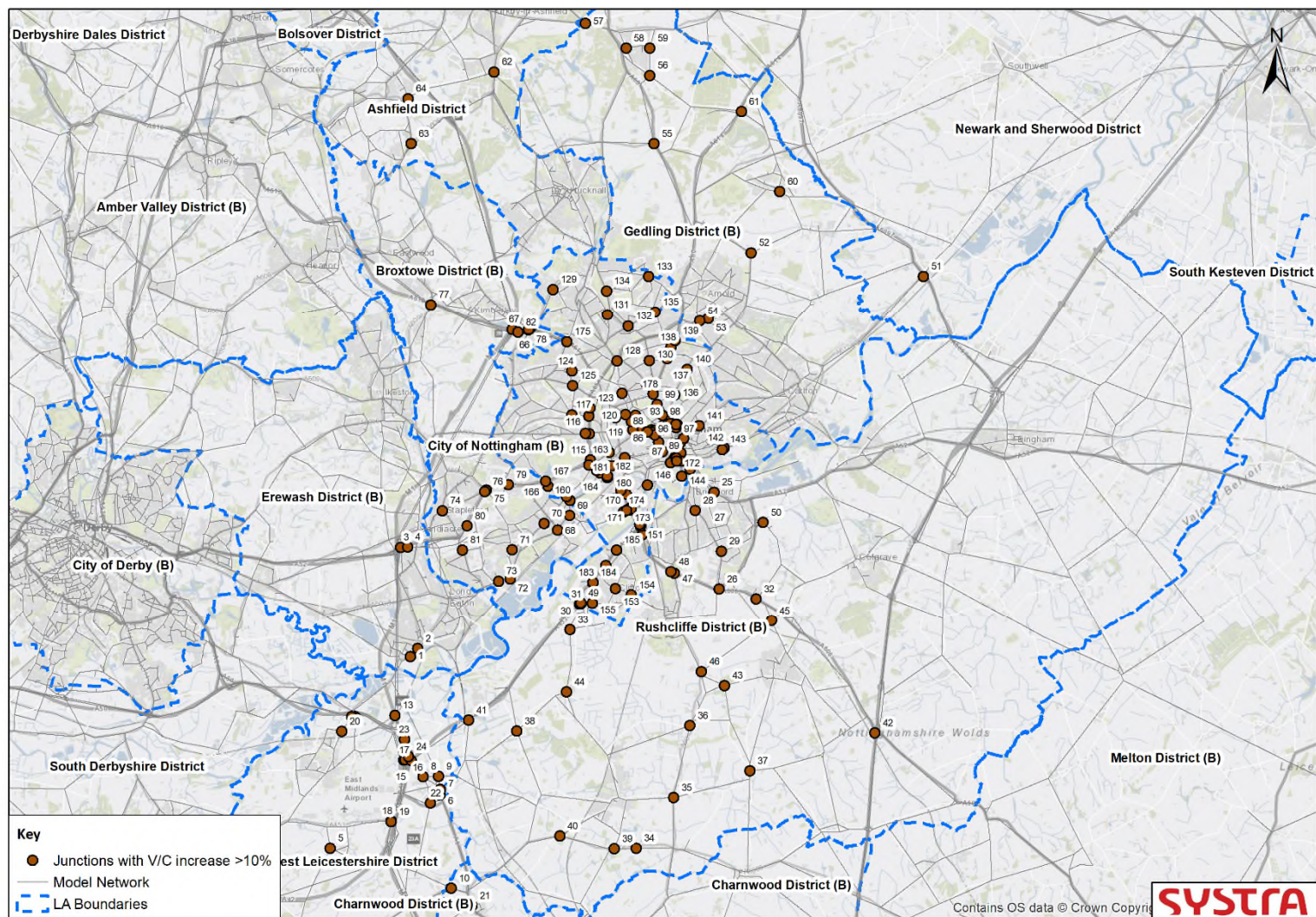


Figure 19. Overall GNSP Area Junction Locations

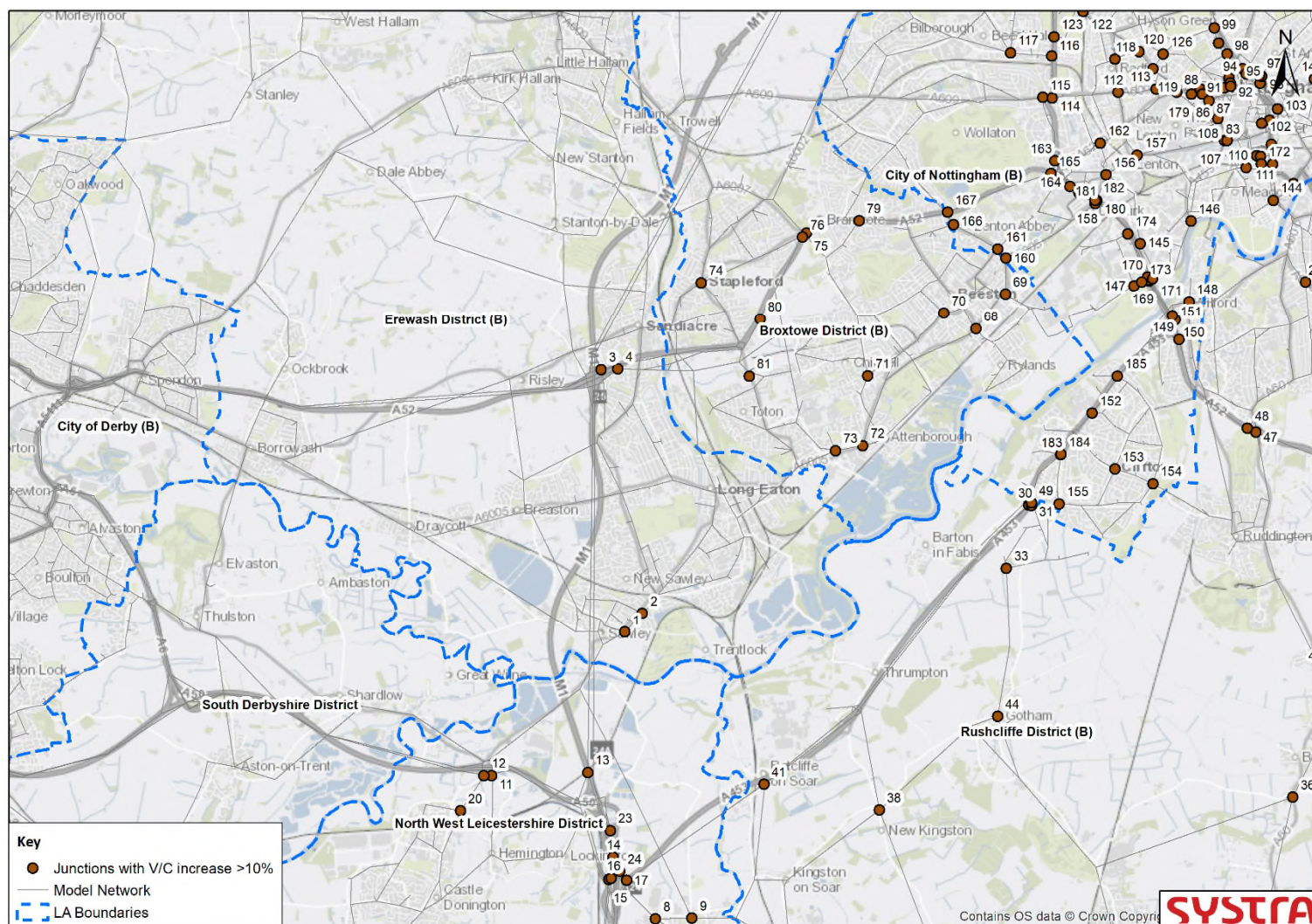


Figure 20. West GNSP Area Junction Locations

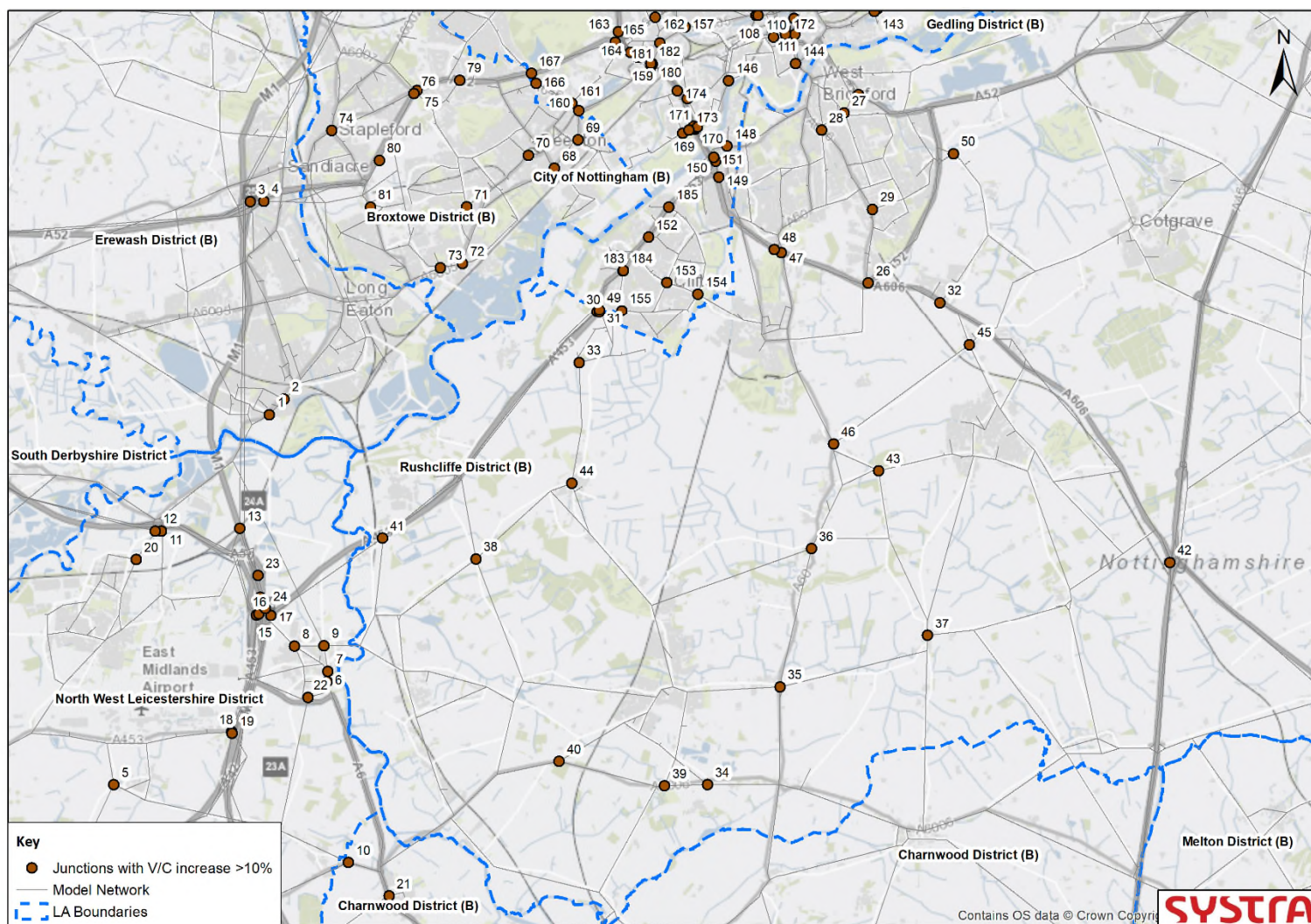


Figure 21. South GNSP Area Junction Locations

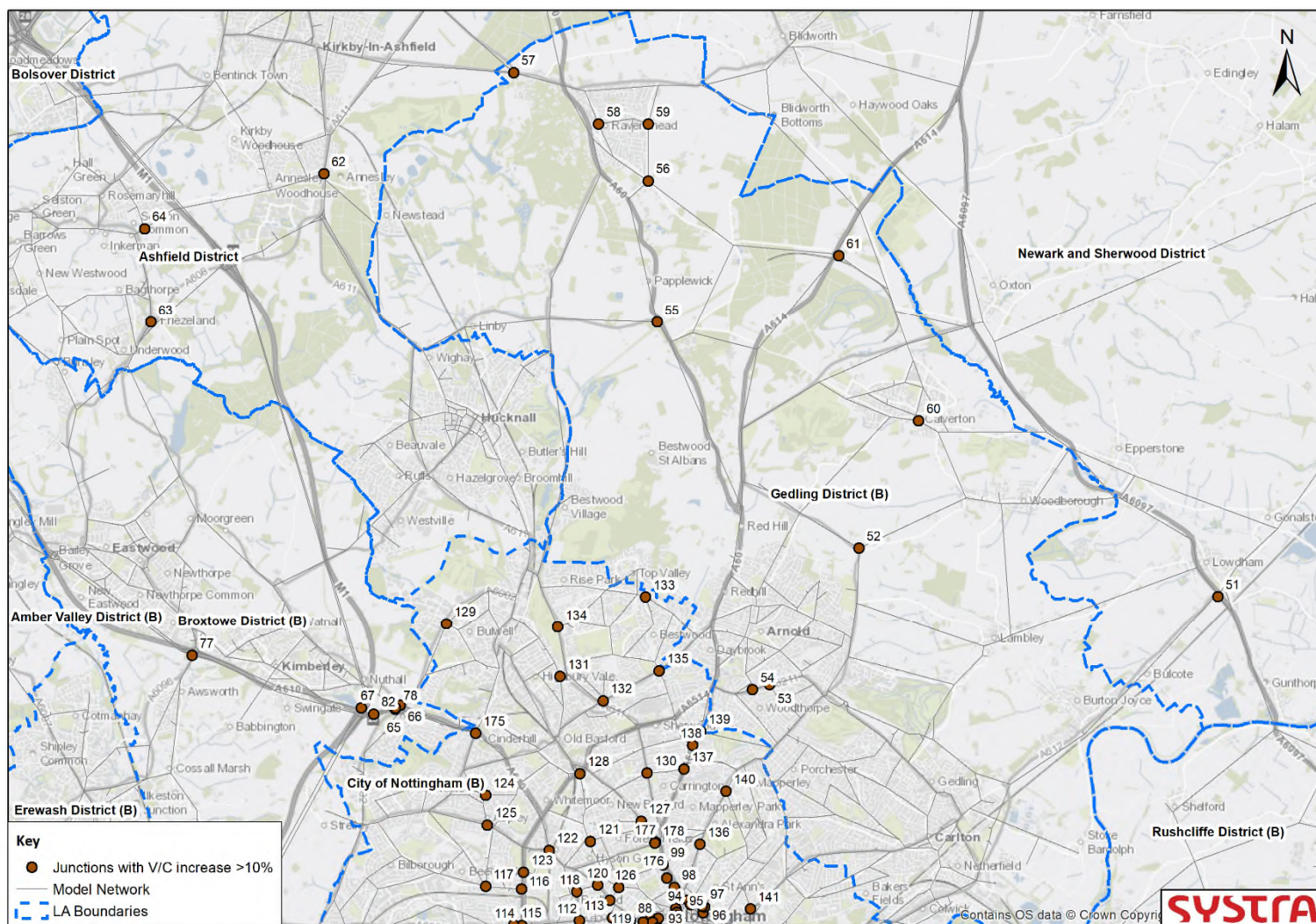


Figure 22. North GNSP Area Junction Locations

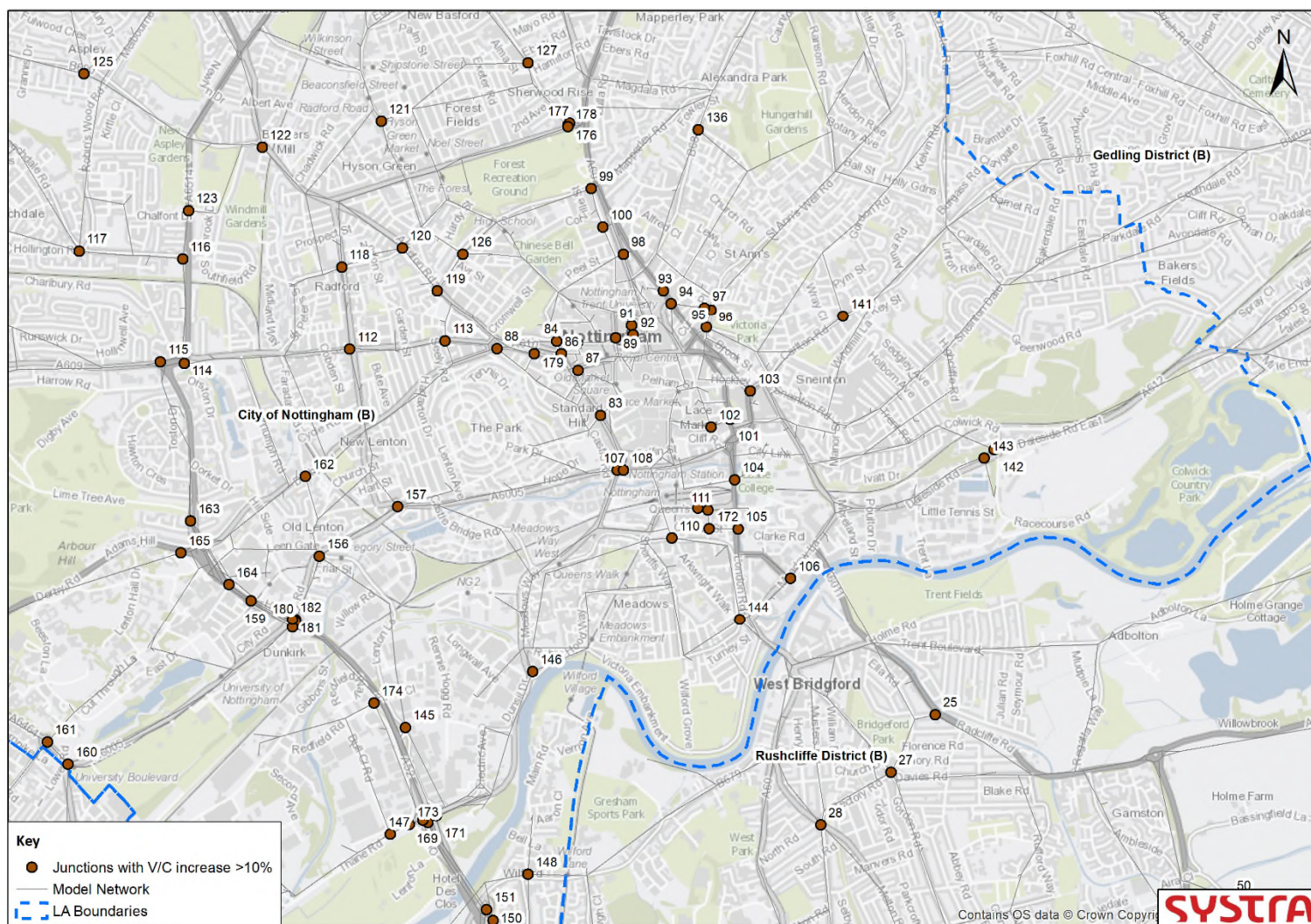


Figure 23. Nottingham City Centre Junction Locations

SYSTRA provides advice on transport, to central, regional and local government, agencies, developers, operators and financiers.

A diverse group of results-oriented people, we are part of a strong team of professionals worldwide. Through client business planning, customer research and strategy development we create solutions that work for real people in the real world.

For more information visit www.systra.com/uk

Birmingham

Alpha Tower, Crowne Plaza, Suffolk Street
Birmingham, B1 1TT
T: +44 (0)121 393 4841

Bristol

33 Colston Avenue, Bristol, BS1 4UA

Cork

City Quarter, Lapps Quay, Cork City
Cork, T12 WY42, Republic of Ireland

Dublin

2nd Floor, Riverview House, 21-23 City Quay
Dublin D02 AY91, Republic of Ireland
T: +353 (0) 1 566 2028

Edinburgh

83 Princes Street, Edinburgh, United Kingdom, EH2 2ER
T: +44 (0)131 460 1847

Glasgow

The Centrum Business Centre Limited, 38 Queen Street, Glasgow,
G1 3DX
T: +44 (0)141 468 4205

Leeds

100 Wellington Street, Leeds, LS1 1BA
T: +44 (0)113 360 4842

London

One Carey Lane, London, England EC2V 8AE
T: +44 (0)20 3855 0079

Manchester

5th Floor, Four Hardman Street, Spinningfields
Manchester, M3 3HF
Tel: +44 (0)161 504 5026

Newcastle

Floor E, South Corridor, Milburn House, Dean Street,
Newcastle, NE1 1LE
T: +44 (0)191 249 3816

Reading

Davidson House, Forbury Square,
Reading, RG1 3EU
T: +44 118 208 0111

Woking

Dukes Court, Duke Street
Woking, Surrey GU21 5BH
T: +44 (0)1483 357705

York

Meridian House, The Crescent
York, YO24 1AW
Tel: +44 1904 454 600

Other locations:

France:

Bordeaux, Lille, Lyon, Marseille, Paris

Northern Europe:

Astana, Copenhagen, Kiev, London, Moscow, Riga, Wroclaw

Southern Europe & Mediterranean: Algiers, Baku, Bucharest,

Madrid, Rabat, Rome, Sofia, Tunis

Middle East:

Cairo, Dubai, Riyadh

Asia Pacific:

Bangkok, Beijing, Brisbane, Delhi, Hanoi, Hong Kong, Manila,
Seoul, Shanghai, Singapore, Shenzhen, Taipei

Africa:

Abidjan, Douala, Johannesburg, Kinshasa, Libreville, Nairobi

Latin America:

Lima, Mexico, Rio de Janeiro, Santiago, São Paulo

North America:

Little Falls, Los Angeles, Montreal, New-York, Philadelphia,
Washington

SYSTRA