LLITM 2014 Base

Melton Mowbray Distributor Road Outline Business Case: Forecasting Report

Quality Information

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Revision History

Revision	Revision date	Details	Authorised	Name	Position
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Section 1 – Overview

1.1 Introduction

1.1.1 The Leicester and Leicestershire Integrated Transport Model (LLITM 2014 Base) was commissioned by Leicestershire County Council (LCC), and is a suite of models containing highway and public transport assignment models; a variable demand model, which includes a parking model of Leicester City and Loughborough town centre; and a land-use model.

1.1.2 LLITM 2014 draws on and augments previous versions of the model suite, extending the coverage of the detailed model area beyond Leicestershire, creating demand matrices to reflect 2011 Census data, incorporating significant new observed data (highway RSIs and counts, and public transport counts), and making best use of electronic ticketing and mobile phone data. The new NTEM 7.2 has also been incorporated in LLITM 2014.

1.1.3 This report discusses the forecasting assumptions and processes used in LLITM 2014 for the purposes of the assessment and appraisal of the proposed Melton Mowbray Distributor Road. This includes the assumptions adopted within this set of forecasts, and the results of these forecasts for the Core Scenario (i.e. without the proposed scheme) and including the proposed Distributor Road for Melton Mowbray. This report also includes details on the WebTAG high / low growth scenarios undertaken as part of the assessment of the proposed scheme.

1.1.4 The economic appraisal of the scheme has been undertaken using forecasts up to and including a forecast year of 2041. LLITM 2014 has functionality to forecast up to 2051, and a sensitivity test on the scheme benefits has been undertaken including this forecast year. With this in mind, this report details the LLITM 2014 forecasts up to 2051; however it should be noted that the forecasts post-2041 have only been used as a sensitivity test and do not form part of the central appraisal of the proposed scheme.

1.2 Report Structure

1.2.1 This forecasting report contains the following sections, in addition to this introduction:

- Section 2 – Forecasting Processes: this section provides an overview of the forecasting processes adopted within LLITM 2014.
- Section 3 – Forecasting Assumptions: this section details the forecast assumptions used to generate the Core Scenario and their sources, and also provides details on the proposed scheme.
- Section 4 – Core Scenario Forecasts: this section details the forecast results from the Core Scenario using the defined forecasting processes and assumptions. This includes the forecast land-use data, how these drive forecast year demand, and the performance of the highway network in forecast years.
- Section 5 – With Scheme Scenario Forecasts: this section details the change from the Core Scenario due to the inclusion of the proposed scheme, primarily in terms of the changes to the forecast highway network performance and flows.
- Section 6 – WebTAG High / Low Growth Sensitivity Testing: this section details the methodology adopted to implement the WebTAG high / low growth scenarios, and also details the forecast demand and highway network performance in these sensitivity tests.
- Section 7 – Summary of Forecasts: this section provides a summary of the forecasts detailed within this forecasting report for the Melton Mowbray Distributor Road Outline Business Case.

1.2.2 In addition to these sections, this forecasting report also includes the following appendices:

- Appendix A – Location of Key Developments in Melton Mowbray
- Appendix B – Core Scenario Forecast Vehicle Flows
- Appendix C – Core Scenario Forecast Volume-Capacity Ratios
- Appendix D – Core Scenario Forecast Junction Delays

- Appendix E – With Scheme Forecast Vehicle Flow Changes
- Appendix F – With Scheme Forecast Volume-Capacity Ratio Changes

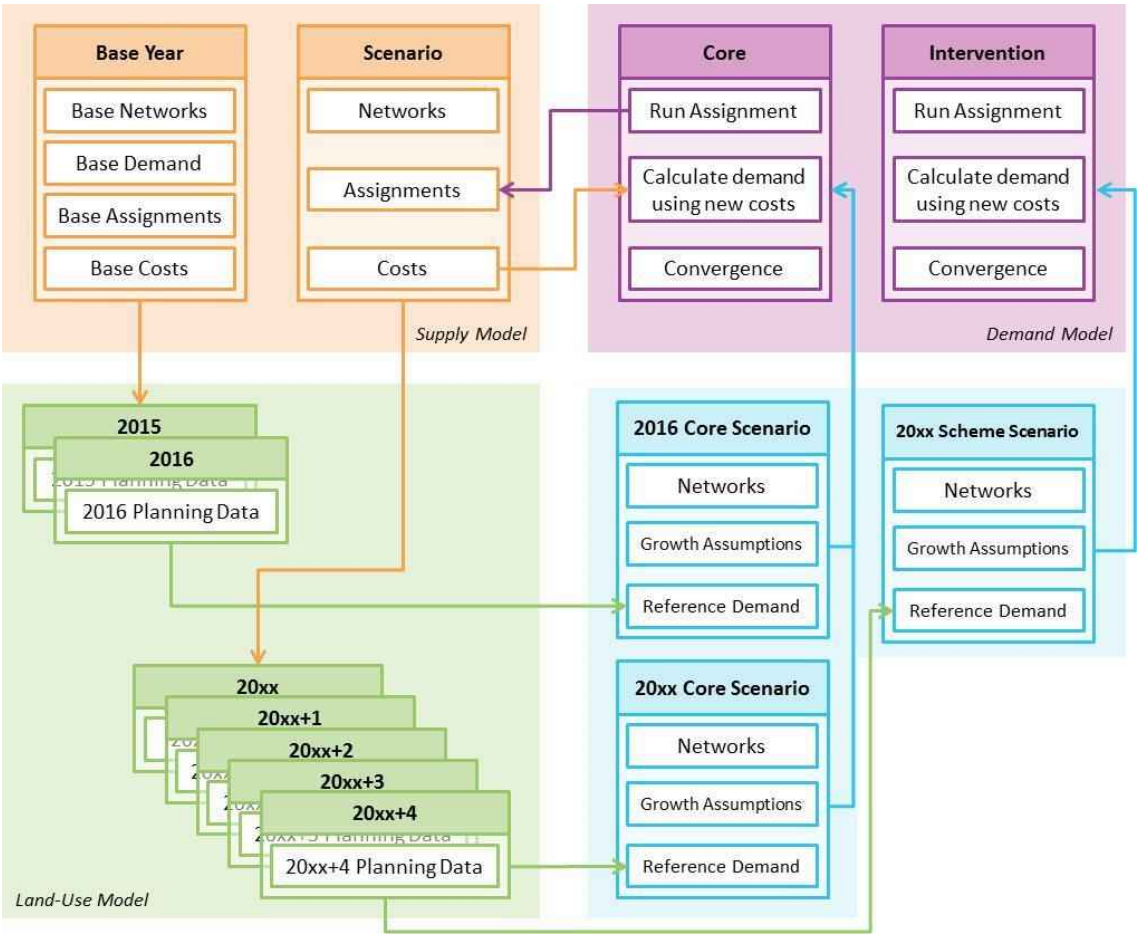
Section 2 – Forecasting Processes

2.1 Introduction

2.1.1 This section outlines the forecast processes contained within LLITM 2014, drawing on information contained within the *'LLLUM Model Description Report'* and *'PR203 – LLITM 2014 Demand Model Development Report'*. These reports contain detailed discussion on the assumptions and processes contained within the land-use and demand models respectively.

2.1.2 Figure 2.1 shows an outline of the flow of information and data within LLITM 2014 when forecasting. The land-use model produces planning data forecasts based on the results of the previous transport model year. These planning assumptions, along with the highway and public transport network assumptions and various economic assumptions, are used within the variable demand model to produce forecast future year demand. This iteration between the land-use and transport models continues at five-yearly intervals to build up a set of forecasts from 2014 to 2051.

Figure 2.1: Overview of Data Flow within LLITM 2014



2.1.3 The following sections detail some of the processes contained within the main elements of LLITM 2014, and give references to other reports and technical notes where applicable.

2.2 Land-Use Model

2.2.1 As previously stated, the *'LLLUM Model Description Report'* should be referred to for detailed information on the processes and methodologies applied in the land-use model.

2.2.2 The LLITM 2014 land-use model estimates land-use patterns in future scenarios, based on assumed economic changes over time, working in single year steps. Every fifth year, land-use data are passed to the transport model, which is run and matrices of transport generalised costs are passed back to the LLITM 2014 land-use model. The land-use model considers the following:

- accessibility to transport;
- employment;
- migration;
- household transition;
- housing location;
- car ownership;
- development; and
- residential quality.

2.2.3 Further information on each of these key processes can be found in the *'LLLUM Model Description Report'*. The main outputs from the land-use model used in the transport model are the population, household, employment and car ownership forecasts. It is these forecasts that drive the forecast trip-ends, through the use of the DfT's CTripEnd software, and ultimately drive the starting point for forecast demand in a given future year.

2.3 Supply Models

2.3.1 LLITM 2014 contains both highway and public transport assignment models. The validation report for each of these elements can be found in *'PR201: LLITM 2014 Highway Local Model Validation Report'* and *'PR202: LLITM 2014 Public Transport Local Model Validation Report'* respectively. Further information on the performance of the base year highway model in the vicinity of the proposed scheme is detailed in *'LLITM 2014 Local Melton Highway LMVR'*.

2.3.2 In addition to these two assignment models there is also an active mode (walking and cycling) assignment, which uses the public transport network as a proxy for the active mode network.

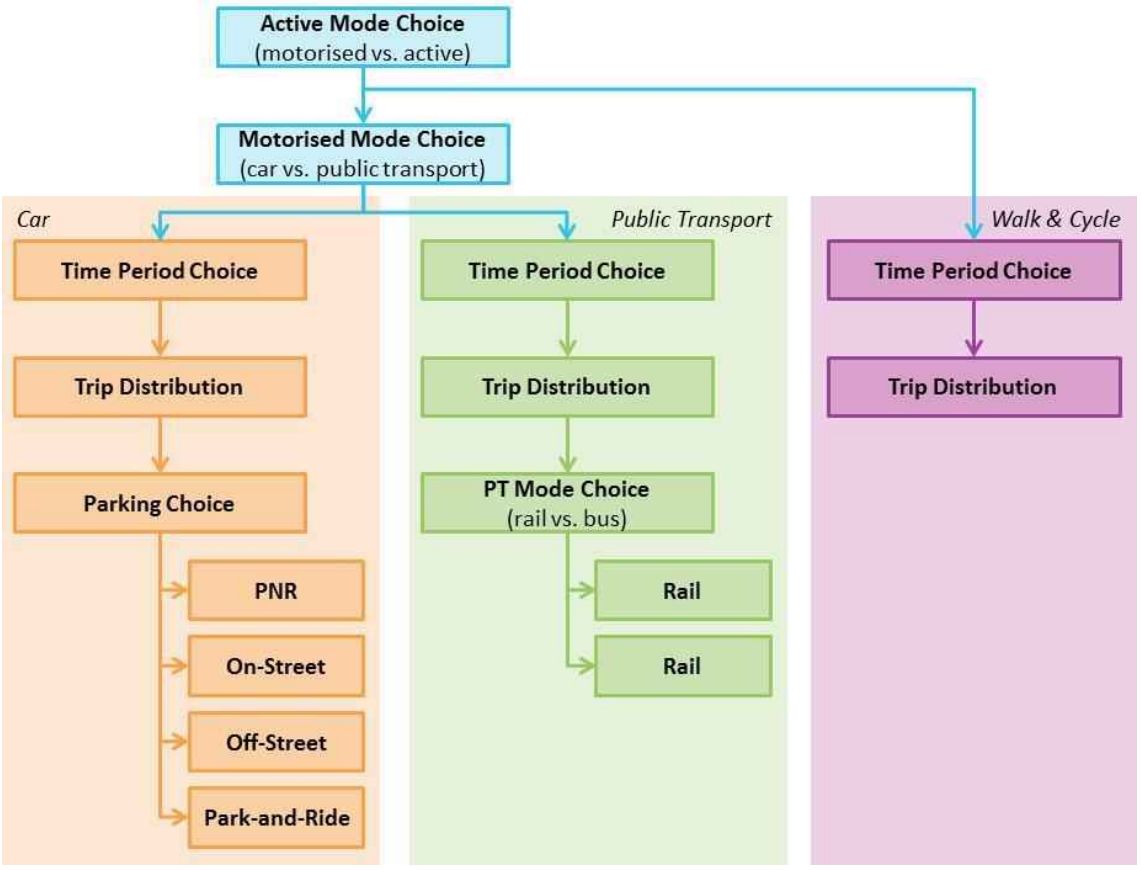
2.3.3 Potential transport schemes have been categorised, following the advice in WebTAG, as one of 'near certain', 'more than likely', 'reasonably foreseeable' or 'hypothetical'. Schemes that are considered to be either 'near certain' or 'more than likely' are included in the Core Scenario. These Core Scenario schemes are listed in Table 3.3 and Table 3.4 for the highway and public transport assignment models respectively. Similarly Table 3.5 gives the Core Scenario schemes for the active mode network.

2.4 Demand Model

2.4.1 LLITM 2014 contains a WebTAG-compliant variable demand model, which is detailed in *'PR203: LLITM 2014 Demand Model Development Report'*. The demand model also contains a parking model which is applied to trips attracted to Leicester City and Loughborough. This parking model estimates the additional costs of parking based on demand and available parking capacity, and also performs the choice between the highway and park-and-ride modes.

2.4.2 Central to the demand model is the choice structure defining how forecast demand is derived. Figure 2.2 shows this choice structure for a car-available, non-freight trip purpose. The choices available to some other segments of demand differ slightly from this. For example, no-car available demand does not have the choice of 'car' as a mode, and so chooses only between public transport and active mode.

Figure 2.2: Typical LLITM 2014 Choice Model Structure



2.4.3 These choices are based on the composite costs at each choice level, which are derived from the costs from the assignment models and the parking model, along with the economic parameters assumed in a given forecast year. The economic assumptions used in the Core Scenario can be found in Table 3.2. Sensitivity parameters for these choice models are based on the DfT's WebTAG advice.

2.4.4 Results of model sensitivity and realism tests for the demand model are reported in *'PR203: LLITM 2014 Demand Model Development Report'*.

Section 3 – Forecasting Assumptions

3.1 Introduction

3.1.1 This section details the forecasting assumptions used within the model forecasts for the assessment of the proposed Melton Mowbray Distributor Road. This includes the assumptions underpinning the Core Scenario (i.e. without the proposed scheme), including highway and public transport infrastructure changes from the base year and economic assumptions, and also the assumptions adopted for the modelling of the proposed Distributor Road.

3.2 Core Scenario Assumptions

3.2.1 There are a number of assumptions required when running the integrated model in forecasting mode. These include network inputs for highway and public transport, assumptions on the supply and cost of parking in Leicester City and Loughborough, economic assumptions such as values of time and fuel costs, and planning policy assumptions for the land-use model.

3.2.2 In accordance with WebTAG Unit M4, information regarding potential future land-use and transport developments has been considered together with their likelihoods. For transport schemes, Melton Borough Council, Leicestershire County Council and Highways England have been consulted, with scheme details, plans, and uncertainty developed from agreement between these parties for inclusion / exclusion in the Core Scenario.

3.2.3 For future development (i.e. land-use) information, the process of developing the uncertainty log has involved the use of both national guidance, and detailed input, workshop engagement and review by planners at Melton Borough Council. This has been done to ensure suitable, accurate and contemporary inputs to the uncertainty log development, and thus also model forecasting.

3.2.4 Following WebTAG, it is important that national and local sources of uncertainty are assessed as part of the model forecasting approach. At a national level, uncertainty in forecasting can typically relate to:

- national uncertainty in travel demand;
- national uncertainty in travel cost; and
- other modelled / nationally-based forecast parameter errors.

At a local level, such sources of uncertainty typically include:

- local uncertainty (within the vicinity of the scheme) in travel demand, including uncertainty surrounding whether proposed developments are built; and
- local uncertainty (within the vicinity of the scheme) in travel supply / cost, which includes whether other transport infrastructure projects materialise.

3.2.5 The development of the model forecasts for the MMDR scheme has followed the same structure.

3.2.6 The assumptions adopted within the Core Scenario are set out in Table 3.2 which lists the assumptions used in forecasting, excluding the network assumptions for the highway, public transport, and walk / cycle networks, which are detailed in Table 3.3, Table 3.4 and Table 3.5 respectively. Table 3.3 and Table 3.4 include schemes which were considered as part of this review but were not included within the Core Scenario due to their likelihood.

3.2.7 Aside from new or amended signalised junctions as part of the adopted highway schemes detailed in Table 3.3, no alterations have been made to signal timings from those included in the base year network.

3.2.8 The assumptions adopted in the land-use model have been detailed for the following areas:

- housing development in Melton Mowbray (the focus of the proposed scheme);
- employment development in Melton Mowbray (the focus of the proposed scheme); and
- other developments / planning permissions within Melton Borough.

3.2.9 Table 3.6 and Table 3.7 show the assumptions used in the land-use model for the residential and employment development in and around Melton Mowbray respectively. Maps of these development sites within Melton Mowbray are provided in Appendix A. Table 3.8 provides details of residential developments within the remainder of Melton Borough.

3.2.10 Across both the land-use and transport model assumptions for the Core Scenario, the classifications detailed in Table A2 of WebTAG Unit M4 have been adopted. These classifications are reproduced in Table 3.1.

Table 3.1: WebTAG Unit M4 (Table A2)

Probability of the input	Status	Core Scenario Assumption
Near certain: the outcome will happen or there is a high probability that it will happen	Intent announced by proponent to regulatory agencies. Approved development proposals. Projects under construction.	This should form part of the Core Scenario
More than likely: the outcome is likely to happen, but there is come uncertainty	Submission of planning or consent application imminent. Development application within the consent process.	This could form part of the Core Scenario
Reasonably foreseeable: the outcome may happen, but there is significant uncertainty	Identified within a development plan. Not directly associated with the transport strategy / scheme, but may occur if the strategy / scheme is implemented. Development conditional upon the transport strategy / scheme proceeding. Or, a committed policy goal, subject to tests (e.g. of deliverability) whose outcomes are subject to significant uncertainty.	These should be excluded from the Core Scenario, but may form part of the alternative scenarios
Hypothetical: there is considerable uncertainty whether this outcome will ever happen	Conjecture based upon currently available information. Discussed on a conceptual basis. One of a number of possible inputs in an initial consultation process. Or, a policy aspiration.	These should be excluded from the Core Scenario, but may form part of the alternative scenarios

3.2.11 Specific attention has been paid within the uncertainty log to provide comments justifying the level of WebTAG uncertainty allocated, and importantly to directly cross reference planning approvals and planning application references to those sites that are ‘near certain’ or ‘more than likely’. This has been done to provide up-to-date information and proof on the planning status of each development, and to support the inclusion of any specific development sites in the modelling.

3.2.12 Where planning references are not provided local knowledge of Melton Borough Council planners has been used to best define the level of certainty. In the majority of cases, unless a planning application is known to be in development and being progressed for submission to Melton Borough Council and Leicestershire County Council, the development is not incorporated in the Core Scenario.

3.2.13 Any sites categorised as ‘reasonably foreseeable’ or ‘hypothetical’ have been excluded from the modelling. Importantly, this means that a large number dwellings are currently excluded from the Core Scenario model forecasts, with a number of further employment locations also not incorporated in the Core Scenario.

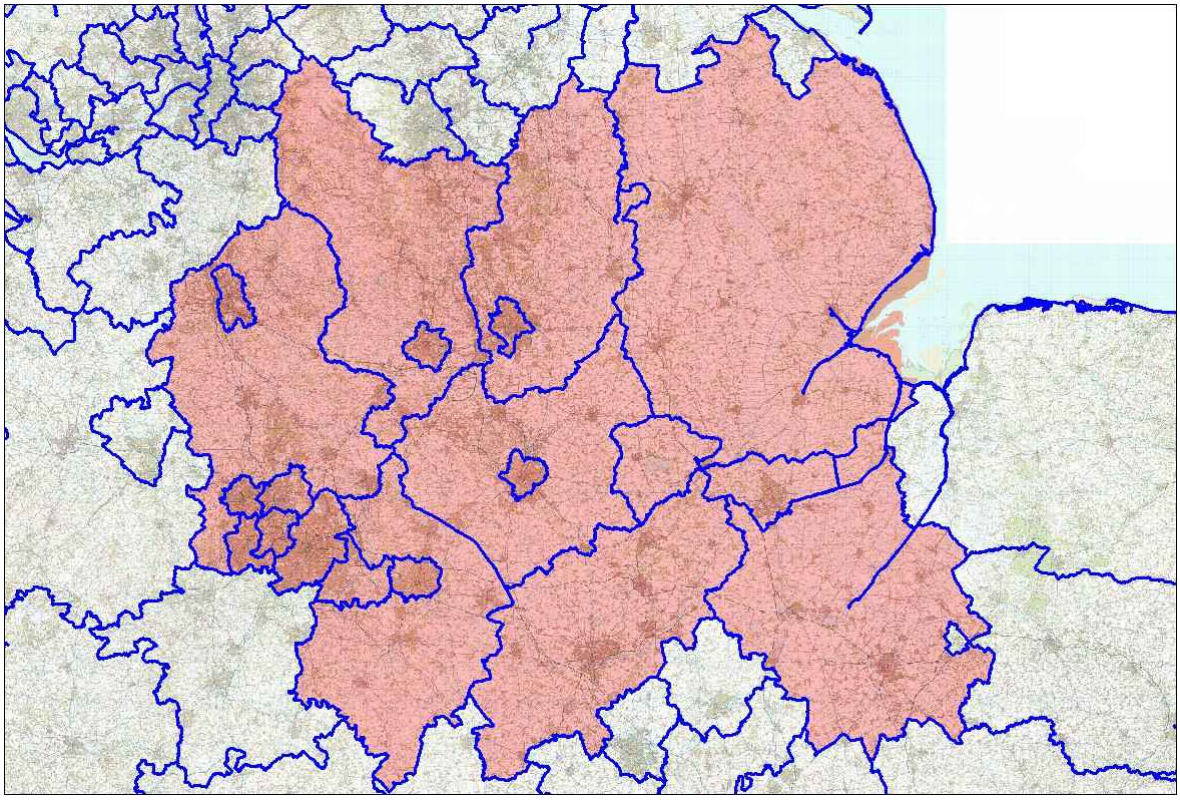
3.2.14 In addition to the quantum of development included / excluded in the Core Scenario, the uncertainty log also provides details of which year the development is likely to be in place. The phasing of development, where included in the Core Scenario, has been included in the modelling as per that detailed in either the planning application or the Local Plan. Both of these sources being informed from developer returns on their own timing and forecast build out rates.

3.2.15 It is also of note that the uncertainty log has taken account of windfalls and small sites in a cumulative manner. Whilst these are individually very minor their cumulative effect may be a material consideration, and thus these sites form a specific item in the uncertainty log. The 'near certain' categorisation is evidenced by similar levels of delivery of windfall sites in recent years, and their expectation of such sites continuing to come forward as per previous years.

3.2.16 It is important to note that the land-use model operates to an overall NTEM constraint (v7.2) at the 'fully modelled area' level, as detailed in the *'LLLUM Model Description Report'*. This 'fully modelled area' is shown in Figure 3.1, and is defined by the housing market and travel to work area of the County. In transport terms, this area of constraint is aligned with the simulation area of the transport model, plus an additional number of zones in each direction to fully model cross-boundary impacts and match NTEM geographies.

3.2.17 Thus, whilst the local uncertainty log inputs on the basis of planning applications and consented development in Melton may be different to NTEM local forecasts, over a wider spatial area growth is constrained to the latest DfT forecasts; those being the latest version of NTEM (v7.2) for the Core Scenario. Further details on the constraint applied to the land-use forecasts is given in Section 4.2.

Figure 3.1: Fully Modelled Area within LLITM 2014 Land-Use Model



Map contains Ordnance Survey data © Crown copyright and database right 2017

Table 3.2: Core Scenario Forecasting Assumptions

<table>
<tr><th>Input</th><th>Assumption / Source</th></tr>
<tr><td>Economic Growth

(GDP growth, value of time)</td><td>Information on changes in GDP and values of time are taken from DfT advice (WebTAG data book, March 2017[1]).

Values of time are assumed to be constant across modes[2], time periods, productions and attractions, and vary only by purpose, income segment and length of trip.</td></tr>
<tr><td>Public Transport Fares</td><td>All public transport fares are assumed to grow 1% per annum above inflation. This is consistent with recent government policy on rail fares, and consistent with previous trend data across the county for bus fares.</td></tr>
<tr><td>Vehicle Operating Costs</td><td>Changes in fuel prices, vehicle fuel efficiency, and non-fuel vehicle operating costs (VOCs) have been taken from the WebTAG data book, March 2017. A broad indication of the scale of changes from 2014 is illustrated below for car; however this varies somewhat by purpose and average journey speed. All changes are real i.e. excluding inflation.
<table>
<tr><th>Year</th><th>Petrol Price</th><th>Avg. Fuel Price</th><th>Avg. Fuel Consumption</th><th>Non-Fuel Costs</th><th>Overall VOC</th></tr>
<tr><td>2021</td><td>-3%</td><td>-5%</td><td>-17%</td><td>-4%</td><td>-21%</td></tr>
<tr><td>2026</td><td>9%</td><td>6%</td><td>-26%</td><td>-4%</td><td>-22%</td></tr>
<tr><td>2031</td><td>11%</td><td>7%</td><td>-31%</td><td>-4%</td><td>-26%</td></tr>
<tr><td>2036</td><td>13%</td><td>9%</td><td>-32%</td><td>-4%</td><td>-26%</td></tr>
<tr><td>2041</td><td>15%</td><td>11%</td><td>-32%</td><td>-4%</td><td>-25%</td></tr>
<tr><td>2046</td><td>17%</td><td>11%</td><td>-32%</td><td>-4%</td><td>-25%</td></tr>
<tr><td>2051</td><td>19%</td><td>11%</td><td>-32%</td><td>-4%</td><td>-25%</td></tr>
</table></td></tr>
<tr><td>Parking Charges</td><td>Parking charges are assumed to grow in line with inflation, i.e. 0% real growth.</td></tr>
<tr><td>Parking Capacities</td><td>Zonal capacities of private non-residential parking (PNR) increase and decrease in relation to the changes in employment within each zone. Other parking capacities are unchanged over time.</td></tr>
<tr><td>Land-use: Population and Employment Forecasts</td><td>Total population and employment growth across the land-use model fully modelled area has been constrained to TEMPro 7.2 forecasts. Detailed information on planning policy (land allocated by development type) has been collated from individual districts and used in the land-use model.</td></tr>
<tr><td>Car Ownership</td><td>Car ownership is forecast within the land-use model, which has been developed with reference to the DfT’s NatCOP</td></tr>
</table>

[1] This version of the WebTAG data book was the latest available version at the time of the model development and the start of this assessment of the proposed Melton Mowbray Distributor Road. Subsequent to this, a July 2017 version of the WebTAG data book was released; however these revised assumptions could not be incorporated within the model forecasts within the project programme.
[2] Non-working values of time do not vary by mode within WebTAG; however, values of time do vary by mode for employers’ business trips. The functions for distance-based values of time for employers’ business are different for rail trips over 100km. Given the location and focus of the model not representing this variation is not considered material to the model forecasts.

<table>
<tr><th>Input</th><th>Assumption / Source</th></tr>
<tr><td></td><td>forecasts (which underpin TEMPro 7.2 forecasts).</td></tr>
<tr><td>Car Occupancy</td><td>Global changes in car occupancy over time are assumed to be zero, in line with current WebTAG guidance. However, changes are assumed relating to the workplace and school travel planning schemes in Loughborough, Coalville, Shepshed, Hinckley and parts of Leicester (see below under ‘Smarter Choices’).</td></tr>
<tr><td>Trip rates</td><td>Trip rates are assumed to be constant over time (as in NTEM 7.2). Demand growth is applied at a 24-hour level, so ‘reference demand’ time period proportions by purpose are also assumed to be constant over time. Outturn modelled proportions and trip rates by mode may vary due to the variable demand model (time period and mode choice).

Trip rates from NTEM 7.2 have been applied to all model zones; however adjustment factors have been applied to the trip rates applied to developments to the north and south of Melton Mowbray (see Table 4.1 for details on the growth assumed for these developments) which are important to the assessment of the proposed scheme. For these sites, the modelled trip rate has been compared with median trip rates derived from TRICS, considering developments with ‘edge of town’ locations, similar public transport options, and with more than 500 dwellings.

Based on this analysis, an adjustment factor has been applied within the modelling to uplift the NTEM-based trip rate (applied at a 24-hour level) to result in outturn AM Peak and PM Peak hour trip rates which are comparable with those derived from TRICS (namely 0.38 AM Peak hour origins per household, and 0.32 PM Peak hour destinations per household).</td></tr>
<tr><td>Highway Congestion Changes

(for external buffer network)</td><td>The external buffer network is coded with fixed speeds within the highway model, and these are varied over time in-line with expected changes in journey times. RTF15 forecasts of average speeds on inter-urban strategic roads have been used within LLITM 2014 to determine the changes in external buffer network speeds, summarised as follows:

<table>
<tr><th>Year</th><th>Change from 2014 Speed</th></tr>
<tr><td>2016</td><td>-0.4%</td></tr>
<tr><td>2021</td><td>-1.4%</td></tr>
<tr><td>2026</td><td>-2.1%</td></tr>
<tr><td>2031</td><td>-3.5%</td></tr>
<tr><td>2036</td><td>-5.0%</td></tr>
<tr><td>2041</td><td>-6.5%</td></tr>
<tr><td>2046</td><td>-8.3%</td></tr>
<tr><td>2051</td><td>-10.2%</td></tr>
</table>
</td></tr>
</table>

Input	Assumption / Source
Active Mode Costs	Changes to walk and cycle costs are represented as part of the representation of the LSTF Smarter Choices funding within Loughborough, Coalville, Hinckley and Leicester. These changes are detailed in Table 3.5.
Smarter Choices	Three Smarter Choices schemes have been modelled within the LLITM 2014 Core Scenario, following WebTAG guidance (documented in *'TN119 - Modelling of Smarter Choices within LLITM'*). These are the LSTF schemes in Loughborough, Coalville and Shepshed, and the LSTF2 schemes in the Leicester City area and Hinckley. The derivation of the target car driver reductions and the results of the calibration process are detailed in TN119. These measures also include changes to the average car occupancies within the model for workplace and school travel plans, which are also detailed in TN119. However, in summary, the following impacts of Smarter Choices have been calibrated in 2016[3]: • **Loughborough, Coalville and Shepshed LSTF Scheme:** o 0.9% reduction in commuting car drivers to Loughborough, Coalville and Shepshed o 3.4% reduction in education car drivers to Loughborough and Coalville o 2.6% reduction in all car drivers from Loughborough and Coalville • **Leicester City LSTF2 Scheme:** o 1.7% reduction in commuting car drivers to Narborough Road / NW Leicester City area • **Hinckley LSTF2 Scheme:** o 1.8% reduction in commuting car drivers to Hinckley o 1.0% reduction in education car drivers to Hinckley o 0.8% reduction in all car drivers from Hinckley
Freight Growth	Freight demand is forecast by using trip rates derived from TRICS, applied on a per-employee basis to the employment data derived from the land-use model such that freight growth is responsive to land-use change and is adjusted to be consistent at an overall level with the RTF forecasts from the DfT's National Transport Model (NTM).

[3] These reductions in car drivers are after a converged 2016 model run, whereas the effects of Smarter Choices measures are calibrated after a single iteration of the demand model. It is also worth noting that these reductions are based on the network and planning forecast assumptions in the initial version of the LLITM 2014 Base Core Scenario (developed in Spring 2017). No significant changes have been made to the forecast assumptions for 2016 since this model run, and so the calibration exercise has not been repeated.

Table 3.3: Core Scenario Highway Network Scheme Assumptions

Location	Scheme Name	Certainty	Timescale	Included from	Comment
Melton	Highway improvements for new development • Phase 1: Leicester Road to Kirby Lane • Phase 2: As Phase 1, plus Burton Road and Dalby Road • Phase 3: As Phase 2, plus Dalby Road to Kirby Lane	Near certain	2021-2036	Phase 1 2021 Phase 2 2031 Phase 3 2036	Infrastructure is directly linked to the Melton South SUE which is identified in the Melton Local Plan. Planning applications either approved, submitted or imminent
Melton	Highway improvements for new development • Phase 1: Nottingham Road to Scalford Road • Phase 2: As Phase 1, plus Scalford Road to Melton Spinney Road	More than likely	2031-2036	Phase 1 2031 Phase 2 2036	Infrastructure is directly linked to the Melton North SUE which is identified in the Melton Local Plan. Planning applications are imminent
Melton	Gladman's Site Access (Leicester Road and Kirby Lane)	Near certain	2021	2021	Linked to development which is identified in the Melton Local Plan and has been granted planning permission
Blaby	Leicester North West Project Phase 1	Complete	2015-2016	2016	Leicestershire County Council / Leicester City Council Highways Scheme
Blaby	Glenfield Park / Optimus Point S278 works	Complete	2014-2016	2016	Developer Scheme (Blaby Local Plan) Infrastructure is linked to the Glenfield Park/Optimus Point development which has Secretary of State approval
Charnwood	A6 Loughborough Road Bus Lane and Parking Controls	More than likely	2016	2016	Leicestershire County Council Highways Scheme Infrastructure is linked to the Hallam Fields Development (Birstall) which has planning permission

Location	Scheme Name	Certainty	Timescale	Included from	Comment
Cotes	A60 Nottingham Road/Loughborough reduction of speed limit	Completed	2016	2016	Developer Scheme (Charnwood Local Plan)
Daventry	DIRFT III - Daventry International Rail Freight Terminal	More than likely	2016	2016	Highways England Committed Scheme Linked to the DIRFT III development which is under construction
Hinckley & Bosworth	RGF/MIRA, A5 Redgate Junction @ A444 to Higham Lane Junction.	Complete	Jan-2015	2016	Highways England Committed Scheme
Hinckley & Bosworth	A5 Dodwells and Longshoot junctions	Complete	2015	2016	Highways England Committed Scheme
Kegworth	M1 J24	Complete	Oct-2014	2016 only	Highways England Committed Scheme
Leicester City	Removal of Belgrave Flyover	Complete	2014-2015	2016	Leicester City Council Scheme
Leicester City	Saffron Lane - Old Velodrome Improvements	Complete	2016	2016	Leicester City Council Scheme
Leicester City	Closure of Hotel Street and St Martins to traffic	Complete	2016	2016	Leicester City Council Scheme
Leicester City	Haymarket / Charles Street bus station development	Complete	Sep-2015	2016	Leicester City Council Scheme
Leicester City	New supermarket opens on Abbey Lane	Complete	Jun-2014	2016	Developer Scheme (Leicester City)
Leicester City	Additional 20mph zones	Complete	2012-2016	2016	Leicester City Council Scheme
Leicester City	St Nicholas Circle	Complete	2015	2016	Leicester City Council Scheme
Leicester City	Traffic calming schemes	More than likely	2016 / 2021	Phase 1 2016 Phase 2 2021	Leicester City Council Scheme
Loughborough	Loughborough Integrated Transport Scheme (closure of old A6 and junction improvements)	Complete	2013	2016	Leicestershire County Council Highways Scheme
North West Leicestershire	M1 Junction 22	Complete	Mar-2016	2016	Leicestershire County Council Highways Scheme, partially LEP funded Infrastructure is linked to the Coalville Growth Corridor

Location	Scheme Name	Certainty	Timescale	Included from	Comment
Nottingham	A453 upgrade - Including removal of temp 40mph speed limit	Complete	Sep-2015	2016	Highways England Committed Scheme
Rugby	Rugby Radio Station	Near certain	2016-2019	2016	Developer Scheme (Rugby Local Plan) Infrastructure is associated with the Rugby SUE development which has planning permission
Barwell	Access arrangements and highway improvements for development	More than likely	2016-2018	2021	Infrastructure is linked to the Barwell SUE which is included in the Hinckley & Bosworth Local Plan Planning application has been submitted
Blaby	Desford Crossroads	More than likely	2021	2021	Leicestershire County Council Highways Scheme The infrastructure is linked to development in the area and LCC are actively seeking funding for the scheme
Castle Donington	Western Link Road from Back lane to Tops Hill, NWLDC package of measures to help mitigate growth planned	More than likely	2016-2021	2021	Developer Scheme (North West Leicestershire Local Plan) Infrastructure associated with the Park Lane Development which has planning permission
Catthorpe	M1 J19	Complete	2016-2017	2021	Highways England Committed Scheme
Charnwood	Mountsorrel Lane, Rothley Link Road	More than likely	2021	2021	Developer Scheme (Charnwood Local Plan) Linked to development in Rothley which has been granted planning permission
Charnwood	A512 junction improvements	More than likely	2016-2019	2021	Included in the Charnwood Local Plan

Location	Scheme Name	Certainty	Timescale	Included from	Comment
					Infrastructure Schedule, linked to West of Loughborough SUE which has been granted planning permission
Charnwood	Broadnook Garden Suburb	Reasonably foreseeable	2021	n/a	Scheme unlikely to be delivered
Coalville	Improve A511 Stephenson Way, Option A:Junction Improvements	More than likely	2016-2021	2021	Developer Scheme (North West Leicestershire Local Plan) Infrastructure associated with the South East Coalville Development which has planning permission
Coalville	Bardon Road Link	More than likely	2016-2021	2021	Developer Scheme (North West Leicestershire Local Plan) Infrastructure associated with the Bardon Grange Development. Planning application has been submitted
Harborough	Harborough Strategic Development Area	More than likely	2021	2021	Developer Scheme (Harborough Local Plan) Infrastructure associated with the Market Harborough East Development, which has been granted planning permission
Hinckley	Hinckley Area Project Phase 1-3	Near certain	2014-2017	2021	Leicestershire County Council Highways Scheme
Kegworth	Kegworth Bypass	More than likely	2021-2026	2021	East Midlands Gateway Scheme Development included at the same certainty, therefore the transport scheme is also included
Leicester City	East of Hamilton Development Improvements	More than likely	2016	2021	Linked to the East of Hamilton development which has planning

Location	Scheme Name	Certainty	Timescale	Included from	Comment
					permission and is under construction
Leicester City	Welford Road	Complete	2017	2021	Leicester City Council Scheme
Leicester City	Swaine Street bridge rebuild	More than likely	2017	2021	Leicester City Council Scheme
Leicester City	Leicester City North West, Phase II	More than likely	2018-2019	2021	Leicester City Council Scheme Linked to the Waterside development which has been granted planning permission
Leicestershire	A5 widening to dual carriageway near Hinckley	More than likely	2015-2020	2021	Highways England Committed Scheme
Loughborough	A512 widening B591 to M1 J23, improvements to J23 and completion of dualling thereafter to either Snell's Nook Lane or Epinal Way junction	More than likely	2016-2021	2021	Developer Scheme (Charnwood Local Plan) Infrastructure is included in the Charnwood Local Plan's Infrastructure schedule, with an 'essential' status to improve access to the West of Loughborough growth areas
Lubbesthorpe	Access arrangements for SUE including strategic traffic link to the A563 Lubbesthorpe Way	More than likely	2015-2017	2021	Blaby Local Plan Planning permission for the Lubbeshorpe SUE has been granted and the infrastructure is associated with this development
North West Leicestershire	A42 Junction 13	Under construction	2017	2021	Leicestershire County Council Highways Scheme, partially LEP funded Infrastructure is linked to the Coalville Growth Corridor
Nottingham	M1 Junction 23a - 25 SMART motorway	Under construction	2017	2021	Highways England Committed Scheme
SRFI	Southern Access for new	More than likely	2017-2020	2021	East Midlands Gateway Scheme

Location	Scheme Name	Certainty	Timescale	Included from	Comment
	development				Development included at the same certainty, therefore the transport scheme is also included
SRFI	Highway improvements for new development	More than likely	2016-2021	2021	East Midlands Gateway Scheme Development included at the same certainty, therefore the transport scheme is also included
Various	M1 J16 - J19	More than likely	2021	2021	Highways England Committed Scheme
Warwickshire	M6 J2 - J4 SMART motorway	More than likely	2017-2020	2021	Highways England Committed Scheme
Warwickshire	Improvements to Coton Arches and Eastboro Way Roundabouts, and opening of Bermuda Bridge to traffic	More than likely	2021	2021	Warwickshire County Council Scheme
Blaby	Link across M69 as part of Lubbesthorpe development	More than likely	2018-2023	2026	Developer Scheme (Blaby Local Plan) Infrastructure is linked to the Lubbesthorpe SUE development which has planning permission
Coalville	Improve A511 between Coalville and M1 J22, including 'Birch Tree'	More than likely	2019-2024	2026	Developer Scheme (North West Leicestershire Local Plan) Infrastructure associated with the South East Coalville Development which has planning permission
Earl Shilton	Access arrangements and highway improvements for development	More than likely	2026	2026	Infrastructure is linked to the Earl Shilton SUE which is included in the Hinckley & Bosworth Local Plan Planning application has been submitted
Earl Shilton & Barwell	Highway improvements for SUE	More than likely	2018-2023	2026	Infrastructure is linked to the Earl Shilton & Barwell SUEs which are included in the Hinckley & Bosworth

Location	Scheme Name	Certainty	Timescale	Included from	Comment
					Local Plan Planning application has been submitted
Leicester City	Waterside Development	More than likely	mid 2020s	2026	Developer Scheme (Leicester City) Infrastructure associated with the Waterside development which has been granted planning permission
Leicestershire	M1 Junctions 19-23A	More than likely	2020-2025	2026	Highways England Committed Scheme
Loughborough	Garendon Park link	More than likely	2021-2026	2026	Developer Scheme (Charnwood Local Plan) Infrastructure is linked to the West of Loughborough SUE which is included in the Charnwood Local Plan and has been granted planning permission
Lubbesthorpe	Highway improvements for SUE	More than likely	2018-2023	2026	Developer Scheme (Blaby Local Plan) Infrastructure is linked to the Lubbesthorpe SUE development which has planning permission
North of East Leicester	North of East Leicester Development Network	More than likely	2023	2026	Developer Scheme (Charnwood Local Plan) Infrastructure is linked to the North Of East Leicester SUE which has planning permission

Table 3.4: Core Scenario Public Transport Network Scheme Assumptions

Location	Scheme Name	Certainty	Timescale	Included from	Comment
Lubbesthorpe	Sustainable Urban Extension services	Near certain	2013-2016	2016	Blaby Local Plan
North of East Leicester	Sustainable Urban Extension services	Near certain	2013-2016	2016	Charnwood Local Plan
Garendon	New service for Garendon	Near certain	2022-2026	2026	Developer scheme (Charnwood Local Plan)
Hinckley	Hinckley Area Project Phases 1 to 3	Complete	2016	2016	Leicestershire County Council Scheme
Kegworth	East Midlands Gateway Strategic Rail Freight Interchange	Reasonably foreseeable	2017-2020	n/a	Scheme unlikely to be delivered
Charnwood	A6 Loughborough Road Bus Lane and Parking Controls	Near certain	2016	2016	Leicestershire County Council Scheme
Aston Green	New services to accommodate development	Near certain	2013-2016	2016	Developer Funding (Leicester City)
National	Midland Mainline electrification	Reasonably foreseeable	2026	n/a	Announced in 2017 that project has been cancelled
LENUKLE	New rail service between Leicester and Coventry	Reasonably foreseeable	2021	n/a	Status downgraded due to uncertainty
National	High Speed 2 (not represented[4])	More than likely	Late-2026	2031	National Government Proposal

Table 3.5: Core Scenario Active Mode Network Scheme Assumptions

Location	Scheme Name	Certainty	Timescale	Included from	Comment
Coalville / Loughborough	LSTF package of measures	Near certain	2012-2015	2016	Leicestershire County Council Scheme
Hinckley	Hinckley Area Project Phases 1 to 3	Near certain	Apr 2016	2016	Leicestershire County Council Scheme
Leicester City	Cycling Ambition funding	More than likely	2016	2016	Leicester City Council Scheme

[4] Due to the uncertainties regarding the schemes which might be brought forward to provide access to / from Leicestershire and the proposed HS2 station at Toton and the expected limited impact of HS2 on traffic flows through Melton Mowbray, this scheme has not been represented within the model forecasts.

Table 3.6: Core Scenario Melton Mowbray Residential Development Assumptions

Ref. No.	Description	Timescale	Quantum	Certainty	Comment
1	Melton North Sustainable Development	2021	125dw	Near certain	Planning submission 14/00808/OUT for 200dw pending; start date identified (19/20), with remainder post 2021.
		2036 / 2041	1500dw	More than Likely	Land identified in local plan for housing provision. Planning applications for remainder of site known to be in process of development for submission to local planning authority.
2	Melton South Sustainable Development	2021	205dw	Near Certain	Permission 15/00910/OUT approved for up to 520dw. Remainder for delivery after 2021.
		2036 / 2041	1675dw	Near Certain	Land identified in local plan for housing provision. Planning applications submitted to local planning authority; 16/00515/OUT for 1,500 dwellings, and 15/00127/OUT for further 175 dwellings.
3	Land at Nottingham Road	2021 / 2036 / 2041	85dw	Near Certain	Permission 14/00078/OUT approved for 85dw; start date identified (17/18).
4	King Edward VII – Burton Road	2021 / 2036 / 2041	120dw	Near Certain	Permission 27/102016/OUT approved for 120dw; start date identified (18/19).
5	Hilltop Farm – Nottingham Road	2021 / 2036 / 2041	45dw	Near Certain	Permissions 16/00281/OUT and 15/00593/OUT approved for 45dw; start date identified (19/20).
6	Land fronting Dieppe Way - Scalford Road	2036 / 2041	37dw	More than likely	Allocated in Local Plan; planning discussions with agents underway; start date identified (22/23).
7	Land adjacent Bartholomew's Way	2036 / 2041	70dw	More than likely	Allocated in Local Plan; planning discussions with agents underway; start date identified (20/21).
8	War Memorial Hospital, Ankle Hill, Melton Mowbray	2021 / 2036 / 2041	98dw	Near Certain	Planning application 07/00733/FUL approved.
9	Land West Of Bowling Green, Leicester Road, Melton Mowbray	2021 / 2036 / 2041	97dw	Near Certain	Planning application 16/00290/FUL approved.
10	Field No. 3310, Scalford Road, Melton Mowbray	2021 / 2036 / 2041	80dw	Near Certain	Planning application 15/00178/FUL approved.
11	Windfall Sites	2021	88dw	Near Certain	With Planning Permission.
12	Windfall Sites	2036/2041	34dw per annum	Near Certain	Near Certain to come forward.
13	Strategic Growth Plan- Melton Mowbray	2041	2000dw	Reasonably Foreseeable	Part of Strategic Growth Plan for Melton Mowbray.

Ref. No.	Description	Timescale	Quantum	Certainty	Comment
14	Spreckley's Farm, Burton Road, Melton Mowbray	2021 / 2036 / 2041	1259dw	Hypothetical	Considered but not part of Local Plan, and with no planning status.
15	Land at Snow Hill, Melton Mowbray	2021 / 2036 / 2041	240dw	Hypothetical	Considered but not part of Local Plan, and with no planning application status.

Threshold of 30 dwellings has been applied for inclusion within the Uncertainty Log

Table 3.7: Core Scenario Melton Mowbray Employment Development Assumptions

Ref. No.	Description	Timescale	Quantum (GFA)	Certainty	Comment
1	Barlows Lodge, Colston Lane	2021 / 2036 / 2041	400	Near Certain	Planning approved- application 14/00664/FUL
2	25 - 29 Pate Road	2021 / 2036 / 2041	1,130	Near Certain	Planning approved- application 14/00704/FUL
3	Turnstyle Woodturners, Burton Road	2021 / 2036 / 2041	110	Near Certain	Planning approved- application 14/00739/COU
4	The Airfield, Dalby Road	2021 / 2036 / 2041	9,900	Near Certain	Planning approved- application 14/01013/FUL
5	Melton Foods, 3 Samworth Way	2021 / 2036 / 2041	62,900	Near Certain	Planning approved- application 15/00029/FUL
6	Flextraction Ltd, 44 Mill Street	2021 / 2036 / 2041	307	Near Certain	Planning approved- application 15/00268/COU
7	Belvoir Brewery, Crown Business Park	2021 / 2036 / 2041	3,227	Near Certain	Planning approved- application 15/00272/FUL
8	Melton Foods, 3 Samworth Way	2021 / 2036 / 2041	53,449	Near Certain	Planning approved- application 15/00336/FUL
9	Melton Building Supplies, 52 Thorpe Road	2021 / 2036 / 2041	6,575	Near Certain	Planning approved- application 15/00716/FUL
10	Unit 13 Ground Floor, Crown Business Park	2021 / 2036 / 2041	2,256	Near Certain	Planning approved- application 15/00767/FUL
11	The Wheel, 9 High Street	2021 / 2036 / 2041	239	Near Certain	Planning approved- application 15/00807/FUL
12	SEME, Unit 8, Hudson Road	2021 / 2036 / 2041	136	Near Certain	Planning approved- application 15/00835/FUL
13	Kettleby Foods, 2 Samworth Way, Melton Mowbray, LE13 1GA	2021 / 2036 / 2041	5,000	Near Certain	Planning approved- application 15/00946/FUL
14	Melton Foods, 3 Samworth Way, Melton Mowbray, LE13 1GA	2021 / 2036 / 2041	250	Near Certain	Planning approved- application 16/00258/FUL
15	Brickfield Farm, Whissendine Road, Leesthorpe, LE14 2XJ	2021 / 2036 / 2041	486.6	Near Certain	Planning approved- application 16/00274/FUL

Ref. No.	Description	Timescale	Quantum (GFA)	Certainty	Comment
16	Land At Rear Of MasterFoods 2-8, Hudson Road, Melton Mowbray	2021 / 2036 / 2041	2,000	Near Certain	Planning approved- application 16/00449/FUL
17	Agricultural building off Melton Road	2021 / 2036 / 2041	1,520	Near Certain	Planning approved- application 16/00460/FUL
18	The Paddock, Brook Farm, Hickling Lane, Long Clawson	2021 / 2036 / 2041	27,500	Near Certain	Planning approved- application 16/00472/FUL
19	Land Adjacent of Unit 9, Station Road, Old Dalby	2021 / 2036 / 2041	942	Near Certain	Planning approved- application 16/00585/FUL
20	The Manor, Plungar Lane, Barkestone le Vale, Nottingham	2021 / 2036 / 2041	2,000	Near Certain	Planning application 16/00595/COU
21	Woodhill Farm, Nottingham Lane, Old Dalby, LE14 3LX	2021 / 2036 / 2041	4,200	Near Certain	Planning approved- application 16/00602/FUL
22	Spencer Osteopath, 18 Church Street, Melton Mowbray, LE13 0PN	2021 / 2036 / 2041	128	Near Certain	Planning application 16/00747/COU
23	28 Digby Drive, Melton Mowbray, LE13 0RQ	2021 / 2036 / 2041	100	Near Certain	Planning approved- application 16/00868/FUL
24	The Garage. 17 Main Street, Stathern, LE14 4HW	2021 / 2036 / 2041	327	Near Certain	Planning approved- application 17/00090/FUL
25	Perfectos Inks Ltd, Units 4 To 5, Normanton Lane, Bottesford	2021 / 2036 / 2041	3,159	Near Certain	Planning application 17/00332/COU
26	Land adjacent to Wendover Dalby Road Airfield, Dalby Road, Melton Mowbray	2021 / 2036 / 2041	6,000	Near Certain	Planning approved- application 17/00353/FUL
27	Field 7300, Six Hills Lane, Old Dalby	2021 / 2036 / 2041	994.49	Near Certain	Planning approved- application 17/00462/FUL
28	Melton South Employment	2021 / 2036 / 2041	200,000	More than Likely	Part of Melton South SUE as per housing, and Local Plan
29	Asfordby Hill Employment Site (Holwell Business Park)	2021 / 2036 / 2041	150,000	More than Likely	Local Plan Protected Employment Site
30	Asfordby Hill Employment Site (Holwell Business Park) (Asfordby Neighbourhood Plan)	2021 / 2036 / 2041	32,300	More than Likely	Local Plan Employment site and also part of Asfordby Neighbourhood Plan Allocation
31	Asfordby Business Park (Rebranded as Melton Commercial Park)	2021 / 2036 / 2041	100,000	More than Likely	Local Plan Allocation with representations

Ref. No.	Description	Timescale	Quantum (GFA)	Certainty	Comment
32	Truframe Proposals Melton South		14,530	Reasonably Foreseeable	Representation made to MBC only
33	Samworth Extension		20,000	Reasonably Foreseeable	Representation made to MBC only

Note: Sites 28 to 31, whilst included in the Core Scenario are only occupied to the extent that there is demand in the NTEM v7.2 controlled economic scenario for their occupations (i.e. they are not assumed fully built in the forecasting).

Table 3.8: Core Scenario Wider Area Residential Development Assumptions

Ref. No.	Description	Timescale	Quantum	Certainty	Comment
1	Asfordby- Land east of Station Lane & south of Klondyke Way	2021 / 2036 / 2041	100dw	Near Certain	Application 14/00980/OUT granted for 100 dwellings
2	Asfordby - Fields south of Bypass and north of Regency Road	2021 / 2036 / 2041	55dw	More than Likely	Application 16/00539/OUT submitted for 55 dwellings; Part of Local Plan
3	Bottesford- Land rear of Daybell's Farm Grantham Road & land adjacent 18 Grantham Road	2021 / 2036 / 2041	41dw	More than Likely	Application 17/00250/OUT submitted; Part of Local Plan
4	Bottesford -Land off Grantham Road	2021 / 2036 / 2041	65dw	More than Likely	Allocated in Local Plan; planning with agents underway; start date identified
5	Bottesford -Rectory Farm	2036 / 2041	163dw	More than Likely	Allocated in Local Plan; planning with agents underway; start date identified
6	Bottesford -Land at bottom of Beacon Hill, Normanton Lane	2021 / 2036 / 2041	55dw	More than Likely	Allocated in Local Plan; planning with agents underway; start date identified
7	Harby- Land west of Saltby Road east of Highfields Farm	2021 / 2036 / 2041	35dw	More than Likely	Planning 17/00299/OUT submitted; Part of Local Plan
8	Harby- Former Millway Foods, Colston Lane	2021 / 2036 / 2041	53dw	Near Certain	Planning 15/00673/OUT - 53 dwellings. Appeal allowed
9	Harby- Land at Colston Lane	2021 / 2036 / 2041	61dw	Near Certain	Planning 16/00318/OUT for 50 dwellings
10	Harby-Land off Canal Lane	2021 / 2036 / 2041	42dw	Near Certain	Planning 15/00944/OUT granted subject to s106 agreement
11	Harby- Land west of Harby Lane	2021 / 2036 / 2041	35dw	More than Likely	Allocated in Local Plan; planning with agents underway; start date identified
12	Corner of Broughton Lane & Hickling Lane	2021 / 2036 / 2041	31dw	More than Likely	Planning 16/00810/OUT for 31 dwellings pending

Ref. No.	Description	Timescale	Quantum	Certainty	Comment
13	Birleys Garage, Waltham Lane	2021 / 2036 / 2041	41dw	More than Likely	16/00560/OUT for 41dwellings pending
14	Land off Sandpit Lane	2021 / 2036 / 2041	55dw	More than Likely	16/00032/OUT for 55 dwellings pending
15	Land off High Street	2021 / 2036 / 2041	42dw	More than Likely	Allocated in Local Plan; planning with agents underway; start date identified
16	Point Farm, Main Street	2021 / 2036 / 2041	65dw	More than Likely	Allocated in Local Plan; planning with agents underway; start date identified
17	Walton- Land east of Melton Road	2021 / 2036 / 2041	105dw	Near Certain	16/00847/OUT for 60 dwellings pending to south. 15/01011/OUT for 45 dwellings granted
18	Land off Houghton Close & Glebe Road	2021 / 2036 / 2041	40dw	More than Likely	Allocated in Local Plan; planning with agents underway; start date identified
19	Land of Stanton Road	2021 / 2036 / 2041	47dw	More than Likely	Allocated in Local Plan; planning with agents underway; start date identified
20	Frisby- Land off Great Lane	2021 / 2036 / 2041	48dw	More than Likely	Allocated in Local Plan; planning with agents underway; start date identified
21	Frisby -Land south of village	2021 / 2036 / 2041	67dw	More than Likely	Allocated in Local Plan; planning with agents underway; start date identified
22	Land West Of Marquis Road and North Of Station Road, Old Dalby	2021 / 2036 / 2041	39dw	Near Certain	Planning application 15/00017/OUT approved
23	Windfall Sites	2021	167dw	Near Certain	With Planning Permission
24	Canal Farm, Long Clawson	2021 / 2036 / 2041	40dw	Reasonably Foreseeable	Considered but not part of Local Plan
25	Land off Burrough Road, Somerby	2021 / 2036 / 2041	33dw	Reasonably Foreseeable	Considered but not part of Local Plan
26	Land north of Stathern (part)	2021 / 2036 / 2041	45dw	Hypothetical	Considered but not part of Local Plan
27	Land east of Melton Road, Waltham on the Wolds	2021 / 2036 / 2041	168dw	Reasonably Foreseeable	Considered but not part of Local Plan
28	Land west of Mere Road, Waltham on the Wolds	2021 / 2036 / 2041	67dw	Reasonably Foreseeable	Considered but not part of Local Plan
29	Land at Bescaby Lane, Waltham on the Wolds (part)	2021 / 2036 / 2041	30dw	Reasonably Foreseeable	Considered but not part of Local Plan
30	Land off Quorn Avenue, Ab Kettleby	2021 / 2036 / 2041	45dw	Hypothetical	Considered but not part of Local Plan

Ref. No.	Description	Timescale	Quantum	Certainty	Comment
31	Rotherby Lane, Frisby on the Wreake	2021 / 2036 / 2041	47dw	Hypothetical	Considered but not part of Local Plan
32	Land to the north west of Thorpe Road (A607) Thorpe Arnold (part)	2021 / 2036 / 2041	37dw	Hypothetical	Considered but not part of Local Plan
33	The Holding, Waltham Road, Thorpe Arnold	2021 / 2036 / 2041	45dw	Hypothetical	Considered but not part of Local Plan

Threshold of 30 dwellings has been applied for inclusion within the Uncertainty Log

3.2.18 As shown in Table 3.3, there are two highway network schemes included in the Core Scenario within Melton Mowbray. These are a new link road between Leicester Road and Burton Road to the south of Melton Mowbray (built in three phases between 2021 and 2036), and a new link road to the north of Melton Mowbray between Nottingham Road and Melton Spinney Road (built in two phases between 2031 and 2036).

3.2.19 Both of these schemes are related to urban extensions to the north and south of Melton Mowbray included in Table 3.2, and are therefore developer-led schemes which are included in the Core Scenario (i.e. excluding the proposed scheme).

3.2.20 The proposed scheme (discussed in detail in Section 3.3) includes the Core Scenario scheme for the northern link between Nottingham Road and Melton Spinney Road. Inclusion of the proposed Melton Mowbray Distributor Road therefore brings forward the delivery of this link road to the north of the town.

3.2.21 The southern link between Leicester Road and Burton Road included in the Core Scenario is unaffected by the inclusion of the proposed scheme.

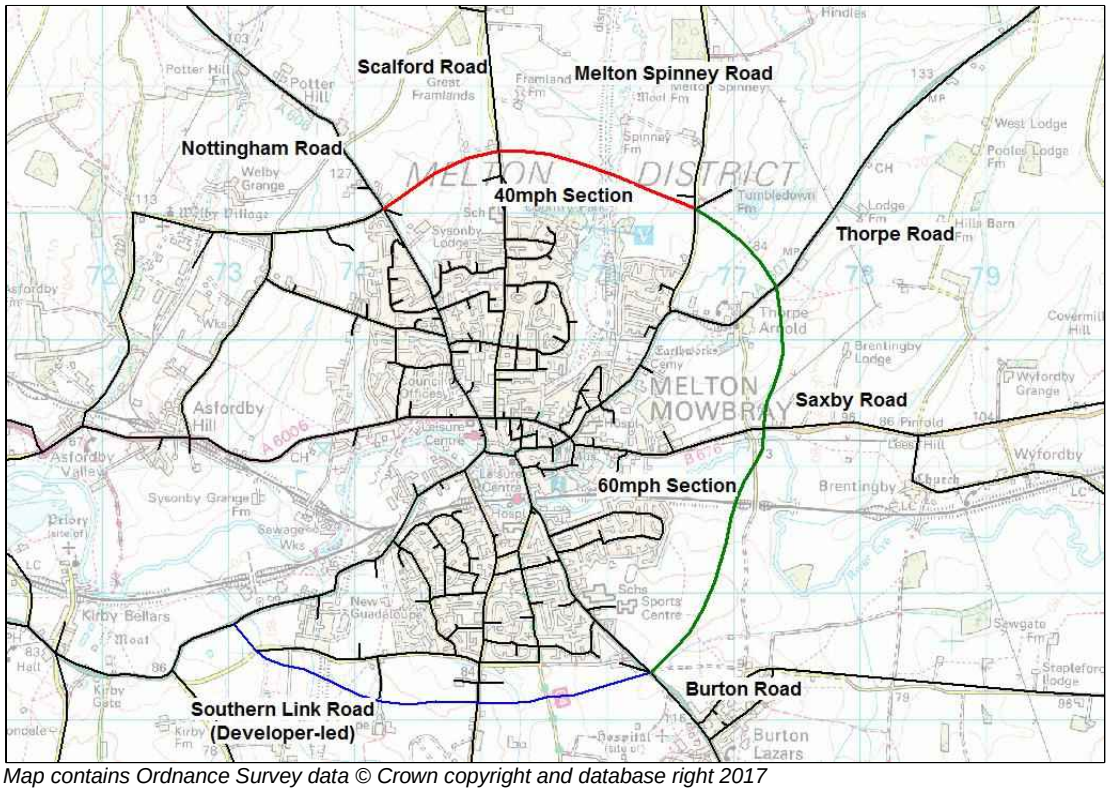
3.3 Scheme Assumptions

3.3.1 The assumptions detailed in Section 3.2 define the Core Scenario, which are the forecast assumptions excluding the proposed Melton Mowbray Distributor Road. This section details the incremental changes to these assumptions in the “with scheme” scenario.

3.3.2 The first modelled year in which the proposed scheme is represented is 2021, and within this forecast year the link road relating to the northern SUE between Nottingham Road and Melton Spinney Road (included in Table 3.3) has not been completed. As discussed, the proposed scheme brings forward the delivery of this scheme, providing a continuous link around the eastern side of Melton Mowbray from Nottingham Road to the north and Burton Road to the south.

3.3.3 This link between Nottingham Road and Burton Road is assumed to be a single carriageway route with a 40mph speed limit between Nottingham Road and Melton Spinney Road, and a 60mph link for the remainder of the route. The route of the proposed Melton Mowbray Distributor Road is shown in Figure 3.2 in red and green. The route of the southern link included in the Core Scenario is also shown in blue.

Figure 3.2: Proposed Melton Mowbray Distributor Road



3.3.4 This proposed route, including the section between Nottingham Road and Melton Spinney Road, creates a number of new junctions and amends some existing junctions. The following details the assumptions adopted for each of these junctions:

- **Nottingham Road:** the existing priority junction between Nottingham Road and St Bartholomew's Way is converted to a five-arm roundabout with flared approaches, including access to / from the proposed route and also access to / from the residential development to the north of the existing Melton Mowbray urban area.
- **Scalford Road:** a new four-arm roundabout with flared approaches. (Access to / from the residential development to the north of Melton Mowbray is assumed to be via an additional roundabout to south of this junction.)
- **Melton Spinney Road:** a new five-arm roundabout with flared approaches, including the relocated access to / from Twinlakes Park.
- **Thorpe Road:** a new four-arm roundabout with flared approaches.
- **Saxby Road:** a new four-arm roundabout with flared approaches.
- **Burton Road:** a new five-arm roundabout including access to / from the link road detailed in the Core Scenario between Leicester Road and Burton Road, and also access to / from the residential development to the south of Melton Mowbray.

Section 4 – Core Scenario Forecasts

4.1 Introduction

4.1.1 This section details the LLITM 2014 forecasts for the Core Scenario, i.e. the scenario excluding the proposed distributor road for Melton Mowbray. These forecasts use the land-use – transport interaction (LUTI) functionality available within LLITM 2014, iterating between the land-use and transport models every five years up to an ultimate forecast year of 2051.

4.1.2 This section firstly discusses the planning data forecasts generated by the land-use model, and then discusses how these are used the derive forecast year demand estimates within the transport model. This section also details the highway model forecasts within the vicinity of the scheme, based on the changes in demand from the validated base year model driven by the land-use forecasts.

4.2 Planning Data Forecasts

4.2.1 The first element of the Core Scenario forecasts is the planning data forecasts produced by the land-use model. Figure 4.1 and Figure 4.2 show the forecast growth in population and employment respectively by district within Leicestershire from the 2014 base year to 2051.

4.2.2 Figure 4.1 shows that Melton Borough is forecast to have around a 23% increase in population from 2014 to 2036, largely driven by the Melton Borough Local Plan which incorporates the delivery of two urban extensions for Melton Mowbray, to the north and the south of the existing urban area.

4.2.3 In terms of employment, Figure 4.2 shows that North West Leicestershire is forecast to have significant employment growth up to 2026. This is driven by the Strategic Rail Freight Interchange development adjacent to East Midlands Airport, which is included within the land-use model's assumptions. By 2051, the forecast growth in North West Leicestershire, Melton Borough and Blaby are the highest within Leicestershire at around 20% to 25%.

Figure 4.1: LLITM 2014 Population Growth Forecasts by District

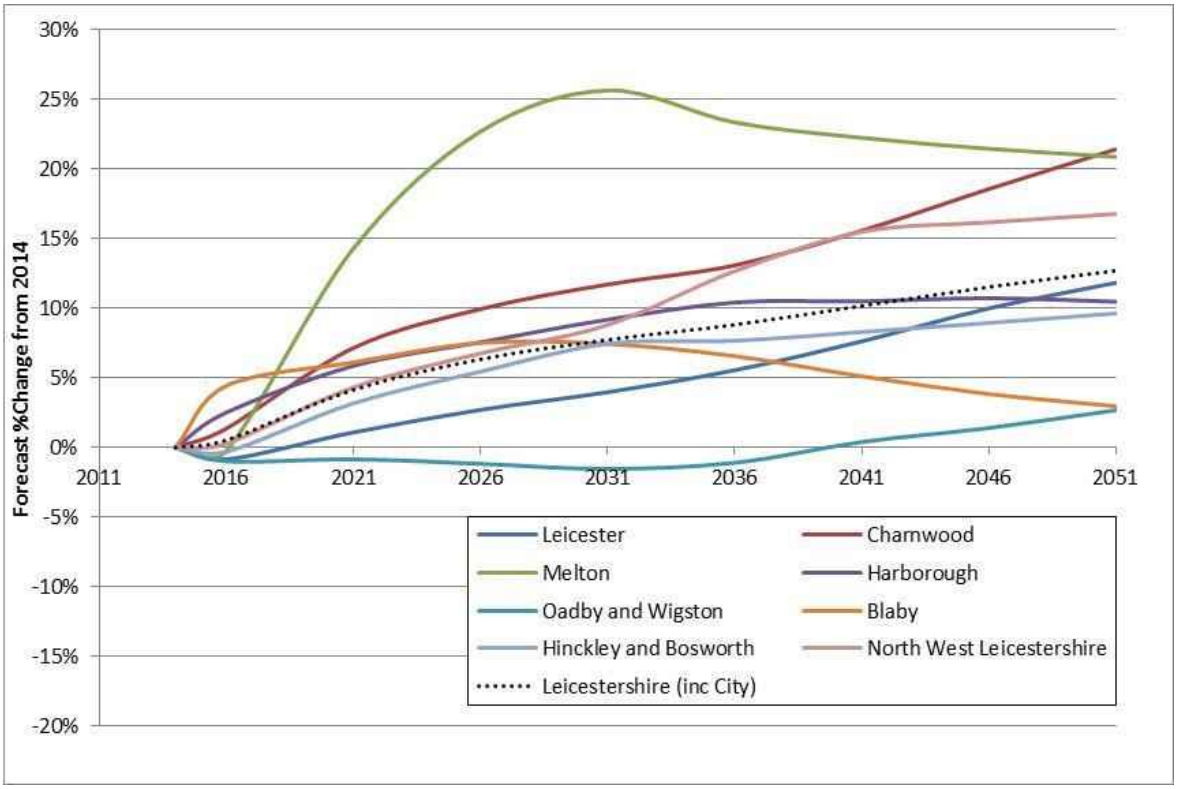
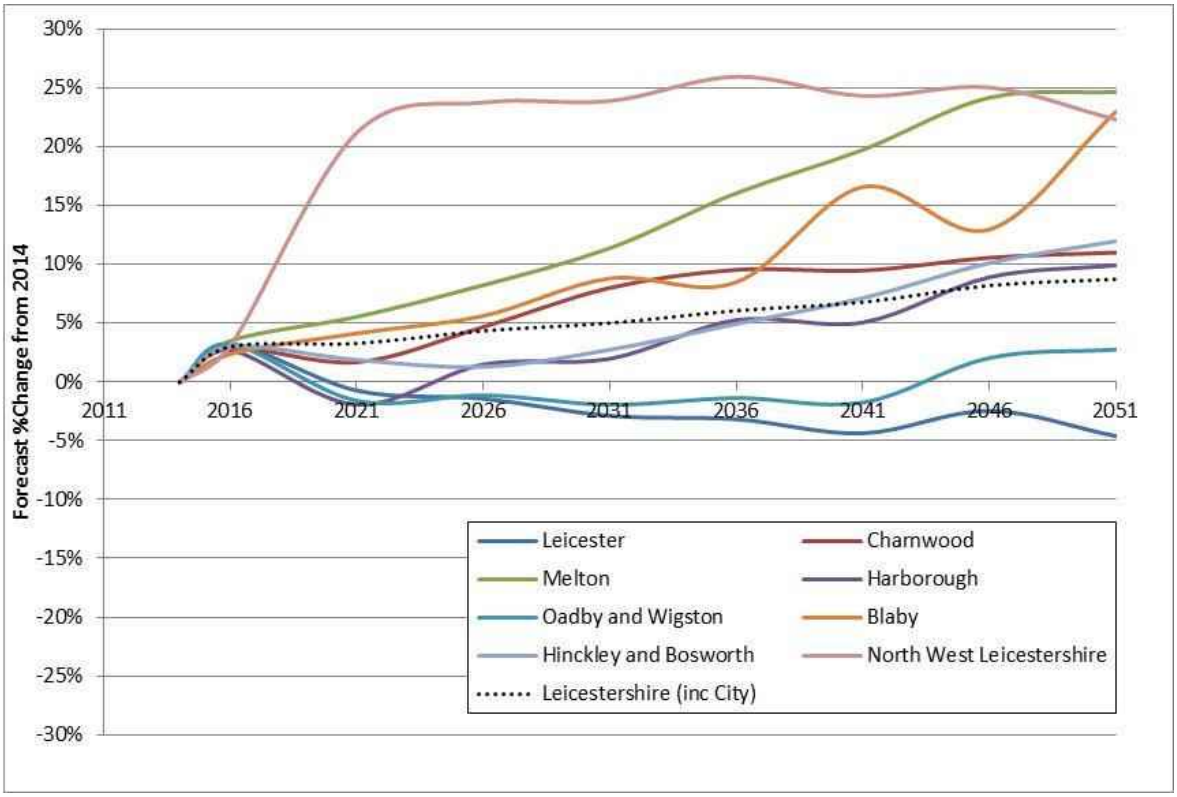


Figure 4.2: LLITM 2014 Employment Growth Forecasts by District



4.2.4 Table 4.2 and Table 4.3 provide more detail on the population and employment forecasts from the land-use model by district within Leicestershire, and also for the land-use model's 'fully modelled area'. This 'fully modelled area' is the subset of zones within the model for which the land-use model provides forecast planning data, with TEMPro 7.2 forecasts used directly for zones outside this area. The 'fully modelled area' is shown in Figure 3.1 which covers Leicestershire and the neighbouring counties.

4.2.5 Table 4.4 and Table 4.5 provide information on the assumed growth in population and employment by district from the land-use model for districts within Leicestershire and for the 'fully modelled area', and compares these growth forecasts with TEMPro 7.2.

4.2.6 The land-use model includes a constraint to TEMPro 7.2 forecasts, and this constraint is applied at the 'fully modelled area' with the land-use model's base case. The land-use model's base case are forecasts including changes to economic parameters (such as fuel costs and values of time) but excluding changes in travel costs. With the introduction of forecast changes in travel costs, the land-use model allows the planning data forecasts to deviate from TEMPro.

4.2.7 Based on this, it is not expected that the LLITM 2014 land-use forecasts will be consistent with TEMPro 7.2 forecasts for the individual districts within Leicestershire, or for Leicestershire as a whole; however, the land-use forecasts should be broadly consistent with TEMPro for the 'fully modelled area'. Table 4.4 demonstrates that the population forecasts for the 'fully modelled area' are consistent with the forecasts contained within TEMPro 7.2, with Table 4.5 showing that the LLITM 2014 employment forecasts are consistent, albeit lower, than those contained within TEMPro.

4.2.8 In terms of population growth to 2036, the land-use model forecasts growth of 9% across Leicestershire (compared with 11% growth within TEMPro 7.2), and growth of 23% within Melton Borough (compared with 4% within TEMPro). This significant difference in terms of population growth within Melton Borough is due to the inclusion of the planning applications and planning status of developments comprising the Local Plan for the district within the forecasts, which is not reflected within the current TEMPro forecasts.

4.2.9 In terms of employment growth, the growth from 2014 to 2036 across Leicestershire is forecast to be 6%, compared with 9% employment growth within the TEMPro 7.2. Within Melton Borough, the land-use model forecasts employment growth to 2036 of 16%, which compares to 9% within TEMPro. The TEMPro employment growth is evenly distributed across districts within Leicestershire, whereas the

LLITM 2014 forecasts vary significantly by district, reflecting the expected location of growth within the county.

4.2.10 Figure 4.3 shows the forecast growth in households from 2014 to 2036 within Melton Borough within LLITM 2014. Within this figure the significant growth in households to the north and south of the existing Melton Mowbray urban area can be seen due to the urban extensions assumed within the Local Plan. Figure 4.4 shows the same information, but for employment growth within the district between 2014 and 2036. This shows that the majority of the employment growth is focussed to the west and south-west of Melton Mowbray.

4.2.11 In terms of the these two urban extensions to the north and south of Melton Mowbray, Table 4.1 shows the forecast households contained within these two developments within the Core Scenario. In terms of the northern development, the majority of the forecast growth is between 2021 and 2031, with overall growth of around 1,500 households assumed within the forecasts. In terms of the southern development, the forecast growth is higher at around 1,800 households, with the majority of this growth occurring between 2021and 2031.

Table 4.1: Forecast Households in Melton Mowbray North and South Urban Extensions

	2014	2016	2021	2026	2031	2036	2041	2046	2051
North	10	196	626	1,208	1,470	1,547	1,529	1,519	1,518
Growth	-	*186*	*616*	*1,197*	*1,460*	*1,536*	*1,519*	*1,509*	*1,508*
South	6	5	357	816	1,690	1,710	1,768	1,828	1,871
Growth	-	*0*	*351*	*810*	*1,684*	*1,704*	*1,762*	*1,822*	*1,865*

Table 4.2: LLITM 2014 Population Forecasts by District

	2014	2016	2021	2026	2031	2036	2041	2046	2051
Leicester	330,474	327,681	334,053	339,401	343,593	348,778	355,655	363,458	369,545
Charnwood	173,771	176,125	186,180	191,037	194,103	196,487	200,810	206,013	210,963
Melton	51,154	51,032	58,461	62,757	64,260	63,090	62,524	62,120	61,826
Harborough	86,760	88,937	91,837	93,310	94,722	95,786	95,858	96,054	95,839
Oadby and Wigston	57,591	57,019	57,097	56,913	56,700	56,956	57,815	58,395	59,130
Blaby	95,821	100,061	101,676	103,013	102,939	102,104	100,714	99,496	98,653
Hinckley and Bosworth	107,544	107,217	110,952	113,398	115,554	115,779	116,453	117,164	117,889
North West Leicestershire	94,798	95,065	98,886	101,198	103,134	106,794	109,472	110,116	110,691
Leicestershire (inc City)	***997,912***	***1,003,137***	***1,039,142***	***1,061,029***	***1,075,005***	***1,085,774***	***1,099,303***	***1,112,817***	***1,124,535***
Fully Modelled Area	***9,878,507***	***9,992,010***	***10,317,617***	***10,630,077***	***10,899,021***	***11,135,918***	***11,397,738***	***11,652,006***	***11,893,314***

Table 4.3: LLITM 2014 Employment Forecasts by District

	2014	2016	2021	2026	2031	2036	2041	2046	2051
Leicester	164,028	169,358	162,850	161,717	159,337	158,846	156,898	160,018	156,493
Charnwood	67,423	69,367	68,571	70,592	72,836	73,873	73,831	74,569	74,866
Melton	21,695	22,453	22,902	23,487	24,170	25,185	25,987	26,951	27,057
Harborough	41,099	42,212	40,314	41,718	41,917	43,274	43,190	44,771	45,189
Oadby and Wigston	20,304	20,962	19,983	20,079	19,914	20,029	19,953	20,723	20,867
Blaby	58,583	59,986	61,017	61,891	63,760	63,571	68,324	66,196	72,073
Hinckley and Bosworth	43,311	44,615	44,133	43,877	44,507	45,462	46,410	47,704	48,513
North West Leicestershire	58,042	59,841	70,372	71,864	71,939	73,143	72,190	72,606	71,023
Leicestershire (inc City)	***474,484***	***488,793***	***490,142***	***495,223***	***498,379***	***503,384***	***506,783***	***513,538***	***516,083***
Fully Modelled Area	***4,512,678***	***4,611,255***	***4,669,616***	***4,736,426***	***4,790,020***	***4,856,017***	***4,915,640***	***4,991,029***	***5,045,820***

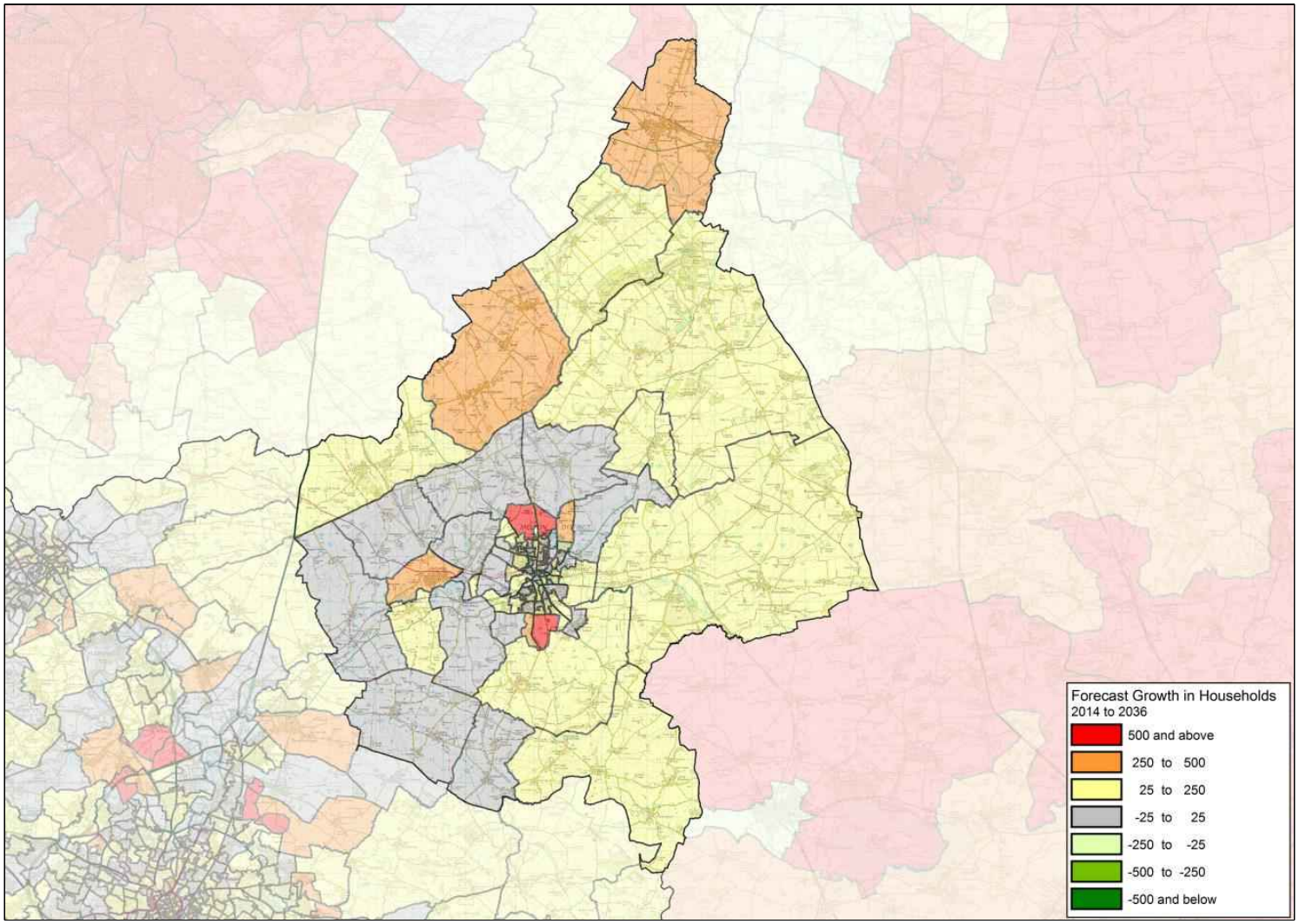
Table 4.4: LLITM 2014 Population Forecast Growth from 2014 by District (compared with TEMPro 7.2, shown in grey)

	2016		2021		2026		2031		2036		2041		2046		2051	
Leicester	-1%	1%	1%	3%	3%	7%	4%	9%	6%	11%	8%	14%	10%	16%	12%	19%
Charnwood	1%	2%	7%	7%	10%	10%	12%	15%	13%	18%	16%	21%	19%	24%	21%	27%
Melton	0%	0%	14%	2%	23%	3%	26%	4%	23%	4%	22%	5%	21%	6%	21%	6%
Harborough	3%	1%	6%	5%	8%	9%	9%	12%	10%	14%	10%	17%	11%	20%	10%	23%
Oadby and Wigston	-1%	0%	-1%	0%	-1%	1%	-2%	1%	-1%	2%	0%	3%	1%	5%	3%	6%
Blaby	4%	2%	6%	4%	8%	6%	7%	8%	7%	9%	5%	11%	4%	13%	3%	15%
Hinckley and Bosworth	0%	2%	3%	5%	5%	8%	7%	10%	8%	12%	8%	15%	9%	17%	10%	20%
North West Leicestershire	0%	2%	4%	3%	7%	4%	9%	5%	13%	6%	15%	7%	16%	9%	17%	11%
Leicestershire (inc City)	***1%***	***1%***	***4%***	***4%***	***6%***	***7%***	***8%***	***9%***	***9%***	***11%***	***10%***	***14%***	***12%***	***16%***	***13%***	***18%***
Fully Modelled Area	***1%***	***1%***	***4%***	***5%***	***8%***	***8%***	***10%***	***10%***	***13%***	***13%***	***15%***	***15%***	***18%***	***18%***	***20%***	***20%***

Table 4.5: LLITM 2014 Employment Forecast Growth from 2014 by District (compared with TEMPro 7.2, shown in grey)

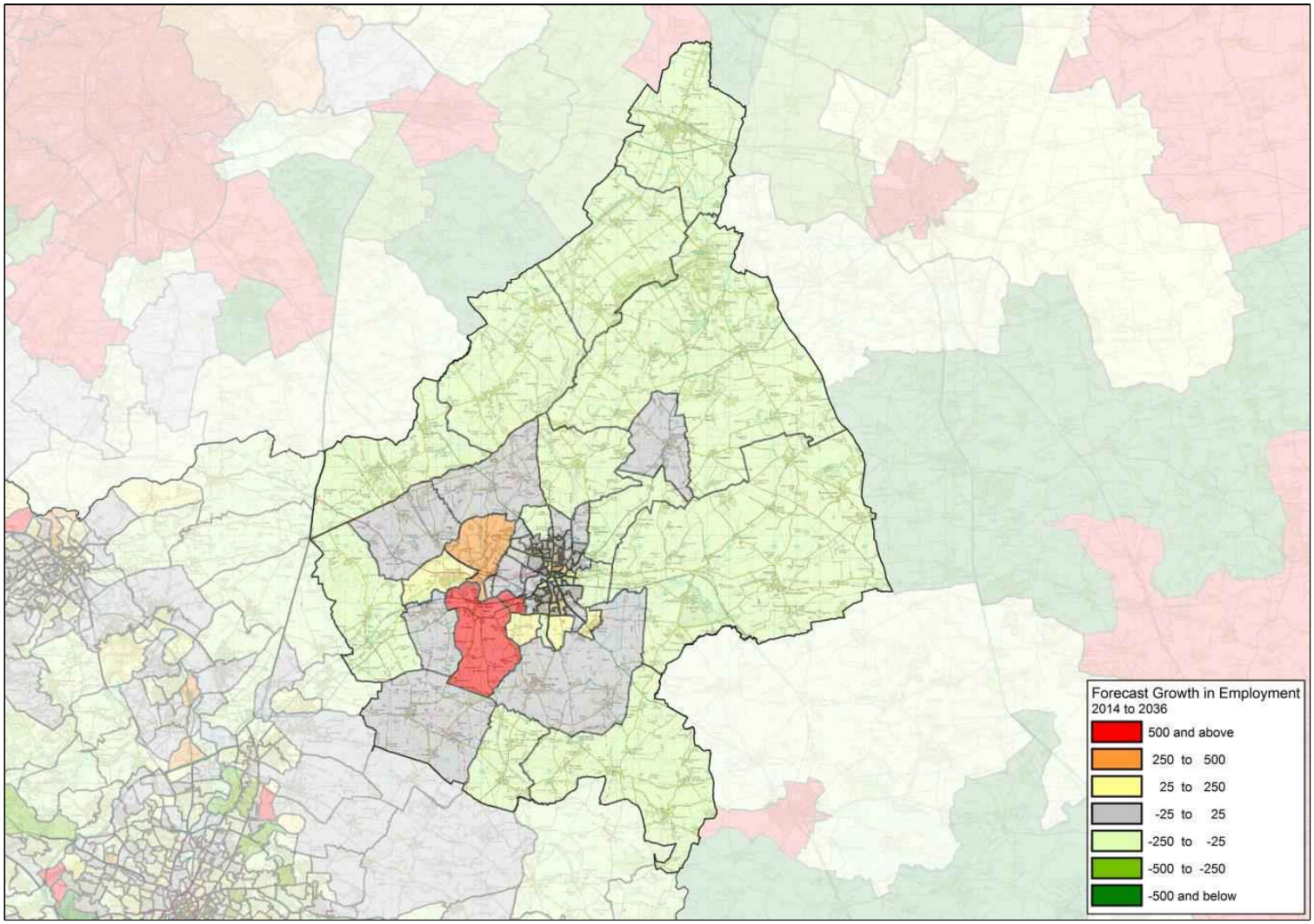
	2016		2021		2026		2031		2036		2041		2046		2051	
Leicester	3%	3%	-1%	4%	-1%	6%	-3%	7%	-3%	9%	-4%	11%	-2%	13%	-5%	14%
Charnwood	3%	3%	2%	4%	5%	6%	8%	7%	10%	9%	10%	10%	11%	12%	11%	14%
Melton	3%	4%	6%	5%	8%	6%	11%	7%	16%	9%	20%	11%	24%	13%	25%	14%
Harborough	3%	4%	-2%	5%	2%	6%	2%	7%	5%	9%	5%	11%	9%	13%	10%	14%
Oadby and Wigston	3%	3%	-2%	5%	-1%	6%	-2%	7%	-1%	9%	-2%	11%	2%	13%	3%	14%
Blaby	2%	3%	4%	5%	6%	6%	9%	8%	9%	9%	17%	11%	13%	13%	23%	15%
Hinckley and Bosworth	3%	4%	2%	5%	1%	6%	3%	7%	5%	9%	7%	11%	10%	13%	12%	14%
North West Leicestershire	3%	4%	21%	5%	24%	6%	24%	7%	26%	9%	24%	11%	25%	13%	22%	14%
Leicestershire (inc City)	***3%***	***3%***	***3%***	***5%***	***4%***	***6%***	***5%***	***7%***	***6%***	***9%***	***7%***	***11%***	***8%***	***13%***	***9%***	***14%***
Fully Modelled Area	***2%***	***3%***	***3%***	***4%***	***5%***	***6%***	***6%***	***7%***	***8%***	***9%***	***9%***	***10%***	***11%***	***12%***	***12%***	***14%***

Figure 4.3: LLITM 2014 Household Growth from 2014 to 2036 in Melton Borough



Map contains Ordnance Survey data © Crown copyright and database right 2017

Figure 4.4: LLITM 2014 Employment Growth from 2014 to 2036 in Melton Borough



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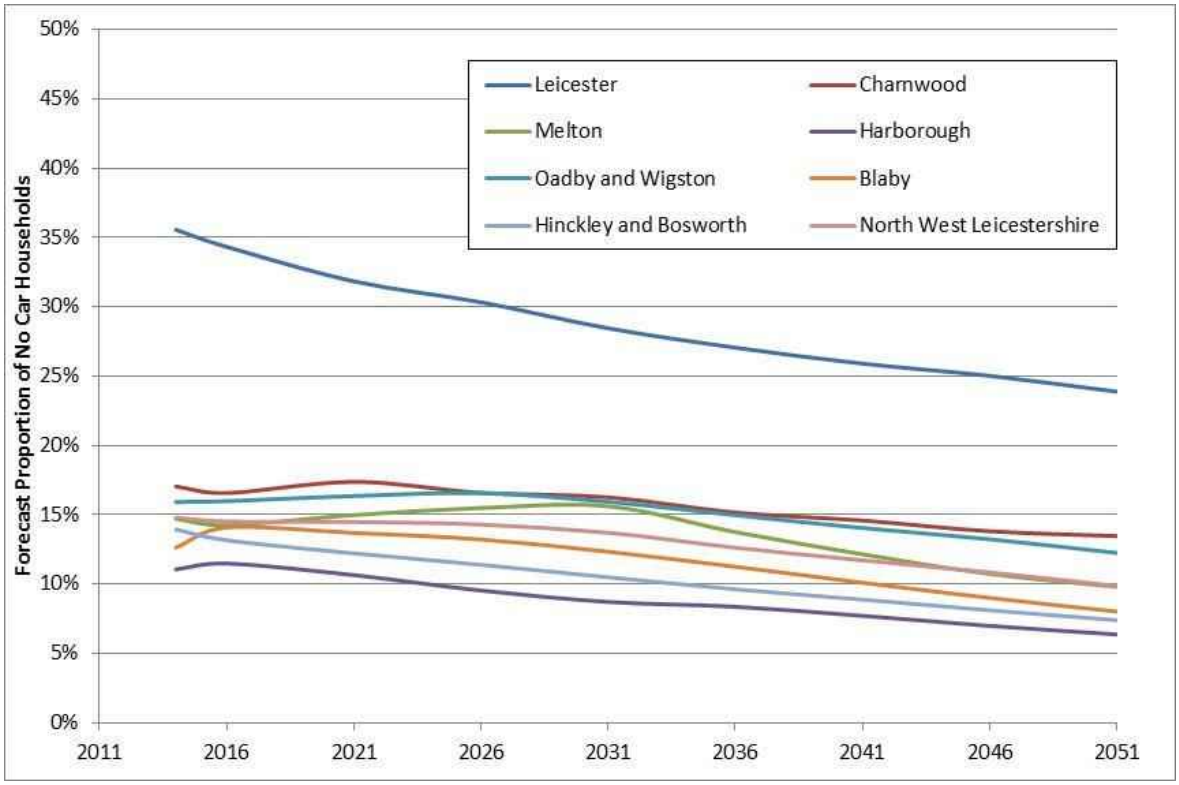
4.3 Car Ownership Forecasts

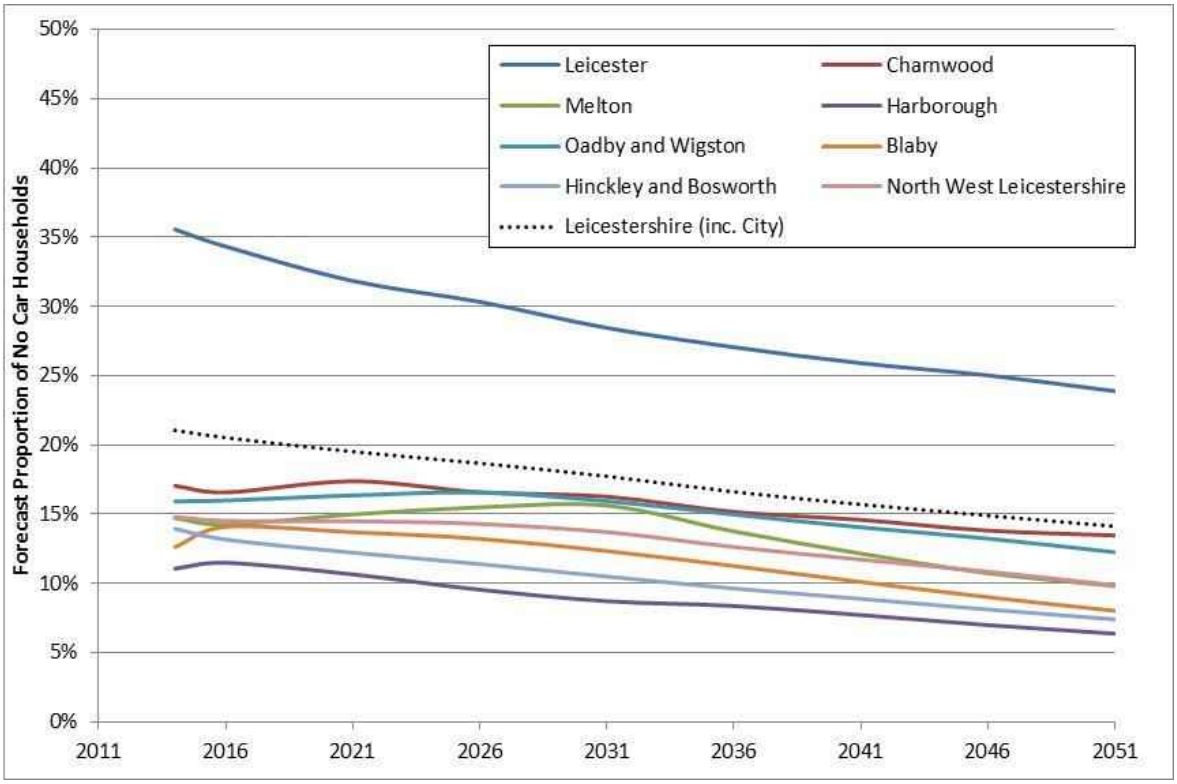
4.3.1 In addition to providing forecasts for population and employment within the 'fully modelled area', the land-use model also provides forecasts for car ownership. Figure 4.5 shows the change in the proportion of households with no car by district within Leicestershire between 2014 and 2051. This shows that there is forecast to be a declining proportion of households with no car over time, and that the levels of no car owning households are higher within Leicester City than elsewhere in the county.

Figure 4.5: LLITM 2014 Forecast Proportion of Households with No Car by District



4.3.2 Using the car ownership forecasts from the land-use model, the total number of cars owned by residents within Leicestershire has been estimated. The growth in the number of cars owned within each district within Leicestershire is shown in Figure 4.6.

Figure 4.6: LLITM 2014 Forecast Growth in the Number of Cars by District



4.3.3 As with the planning data forecasts from LLITM 2014, Table 4.6 and Table 4.7 provide further detail on the forecasts for the proportion of households with no car and the forecast growth in the number of cars owned for each district within Leicestershire respectively, for Leicestershire as a whole, and for the land-use model's 'fully modelled area'. These two tables also provide a comparison with the corresponding forecasts from TEMPro 7.2.

4.3.4 In terms of the proportion of households with no car, within Melton Borough this is assumed to be 15% within 2014 (in line with TEMPro estimates), and is forecast to decrease to 14% by 2036 (compared with 12% in TEMPro) and 10% by 2051 (which is in line with TEMPro forecasts).

4.3.5 In terms of the number of cars owned within Melton Borough, this is both a function of the proportion of households in the different car ownership levels and the forecast growth in households. As discussed, the forecast growth in population (and therefore households) is above that assumed within TEMPro due to the inclusion of the latest Local Plan within Melton Borough, and therefore the growth in the number of cars owned within Melton Borough is also above that forecast within TEMPro. By 2036 the forecast growth in the number of cars within Melton Borough is 27% within LLITM 2014, compared with 16% within TEMPro forecasts.

Table 4.6: LLITM 2014 Forecast Proportion of Households with No Car by District (compared with TEMPro 7.2, shown in grey)

	2014		2016		2021		2026		2031		2036		2041		2046		2051	
Leicester	36%	36%	34%	35%	32%	33%	30%	32%	28%	30%	27%	29%	26%	27%	25%	26%	24%	24%
Charnwood	17%	18%	17%	17%	17%	16%	17%	16%	16%	15%	15%	14%	15%	13%	14%	13%	13%	12%
Melton	15%	15%	14%	15%	15%	14%	15%	13%	16%	13%	14%	12%	12%	11%	11%	11%	10%	10%
Harborough	11%	12%	11%	12%	11%	11%	10%	11%	9%	10%	8%	10%	8%	10%	7%	9%	6%	9%
Oadby and Wigston	16%	17%	16%	16%	16%	16%	17%	15%	16%	14%	15%	13%	14%	13%	13%	12%	12%	11%
Blaby	13%	13%	14%	12%	14%	12%	13%	11%	12%	11%	11%	10%	10%	10%	9%	9%	8%	9%
Hinckley and Bosworth	14%	14%	13%	14%	12%	13%	11%	13%	10%	12%	10%	12%	9%	11%	8%	11%	7%	10%
North West Leicestershire	15%	15%	15%	15%	14%	14%	14%	13%	14%	13%	13%	12%	12%	11%	11%	11%	10%	10%
Leicestershire (inc City)	***21%***	***21%***	***21%***	***21%***	***20%***	***20%***	***19%***	***19%***	***18%***	***18%***	***17%***	***17%***	***16%***	***16%***	***15%***	***16%***	***14%***	***15%***
Fully Modelled Area	***24%***	***23%***	***23%***	***23%***	***22%***	***22%***	***21%***	***21%***	***19%***	***20%***	***18%***	***19%***	***18%***	***18%***	***17%***	***17%***	***16%***	***16%***

Table 4.7: LLITM 2014 Forecast Growth in the Number of Cars from 2014 by District (compared with TEMPro 7.2, shown in grey)

	2016		2021		2026		2031		2036		2041		2046		2051	
Leicester	3%	4%	7%	11%	13%	19%	21%	27%	27%	36%	34%	45%	42%	55%	51%	65%
Charnwood	3%	4%	12%	12%	20%	18%	27%	26%	32%	34%	38%	41%	44%	49%	49%	56%
Melton	2%	2%	16%	6%	23%	9%	25%	12%	27%	15%	31%	18%	35%	21%	38%	24%
Harborough	3%	3%	9%	8%	14%	15%	19%	20%	24%	26%	29%	32%	34%	38%	39%	44%
Oadby and Wigston	0%	2%	2%	5%	4%	7%	5%	11%	9%	15%	14%	19%	18%	24%	24%	29%
Blaby	4%	3%	9%	8%	12%	12%	15%	17%	19%	22%	23%	27%	27%	32%	31%	37%
Hinckley and Bosworth	2%	3%	8%	8%	12%	14%	17%	20%	21%	25%	26%	31%	32%	37%	38%	42%
North West Leicestershire	2%	3%	6%	7%	8%	11%	12%	15%	20%	19%	26%	23%	31%	28%	36%	33%
Leicestershire (inc City)	***3%***	***3%***	***9%***	***9%***	***14%***	***15%***	***19%***	***21%***	***24%***	***27%***	***30%***	***33%***	***35%***	***40%***	***41%***	***47%***
Fully Modelled Area	***3%***	***3%***	***9%***	***10%***	***16%***	***16%***	***23%***	***23%***	***29%***	***30%***	***36%***	***37%***	***44%***	***44%***	***51%***	***52%***

4.4 Demand Forecasts

4.4.1 The planning forecasts from the land-use model are used within the variable demand model to produce the demand forecasts for a given year. The planning forecasts are one of the key drivers of demand change from the base to future year, along with changes in values of time and travel costs (such as fuel costs, public transport fares and congestion). The assumptions for these variables are detailed in Table 3.2.

4.4.2 Figure 4.7 shows the growth in 24-hour trip productions across all modes by district within Leicestershire, with Figure 4.8 showing the growth in demand for highway demand only, both including freight demand. These two figures show a similar pattern in growth for all modes and for highway demand only, suggesting that there is not forecast to be significant change in mode share over time.

4.4.3 Table 4.8 and Table 4.9 provide further details on the 24-hour trip production forecasts for all modes and highway demand (including freight) respectively by district within Leicestershire. Using these forecasts Table 4.10 and Table 4.11 show the growth in 24-hour trip productions by district for all modes and highway demand only respectively.

4.4.4 Table 4.12 and Table 4.13 show the growth in 24-hour trip productions for all modes and highway demand excluding freight demand, with these tables also including the forecast growth in population from the land-use model. Whilst there are other drivers of growth included within the forecasting process, it is expected that the growth in non-freight demand is broadly aligned with the change in population.

4.4.5 Considering demand for all modes (excluding freight) in 2036, the forecast change in population is consistent with the forecast change in travel demand. For example, the districts with the lowest forecast growth in population, namely Oadby and Wigston (with population forecast to decrease by 1%), Leicester City (with forecast population growth of 5%) and Blaby (with forecast population growth of 6%), also have the lowest forecast increase in travel demand (1% decrease in Oadby and Wigston, 7% increase in Leicester City and 5% increase in Blaby).

4.4.6 Similarly, Melton Borough is forecast to have the highest population growth from 2014 to 2036 at 23%, and this district is also forecast to have the highest growth in travel demand excluding freight at 25% across all modes, and also for highway demand only with forecast growth of 32%.

4.4.7 For demand growth across Leicestershire, from 2014 to 2036 LLITM 2014 forecasts growth in 24-hour production demand for all modes (excluding freight) of 9%, with growth in highway demand of 13%. The corresponding forecasts from TEMPro 7.2 forecast an 8% increase in traffic produced within Leicestershire for all modes, with highway demand forecast to grow by 13%. The growth rates forecast within LLITM 2014 for demand are consistent with those forecast within TEMPro, given the differences in underlying forecasting assumptions such as the detailed land-use data.

Figure 4.7: LLITM 2014 Core Scenario Forecast Growth in 24-hour Trip Productions (All Modes) by District

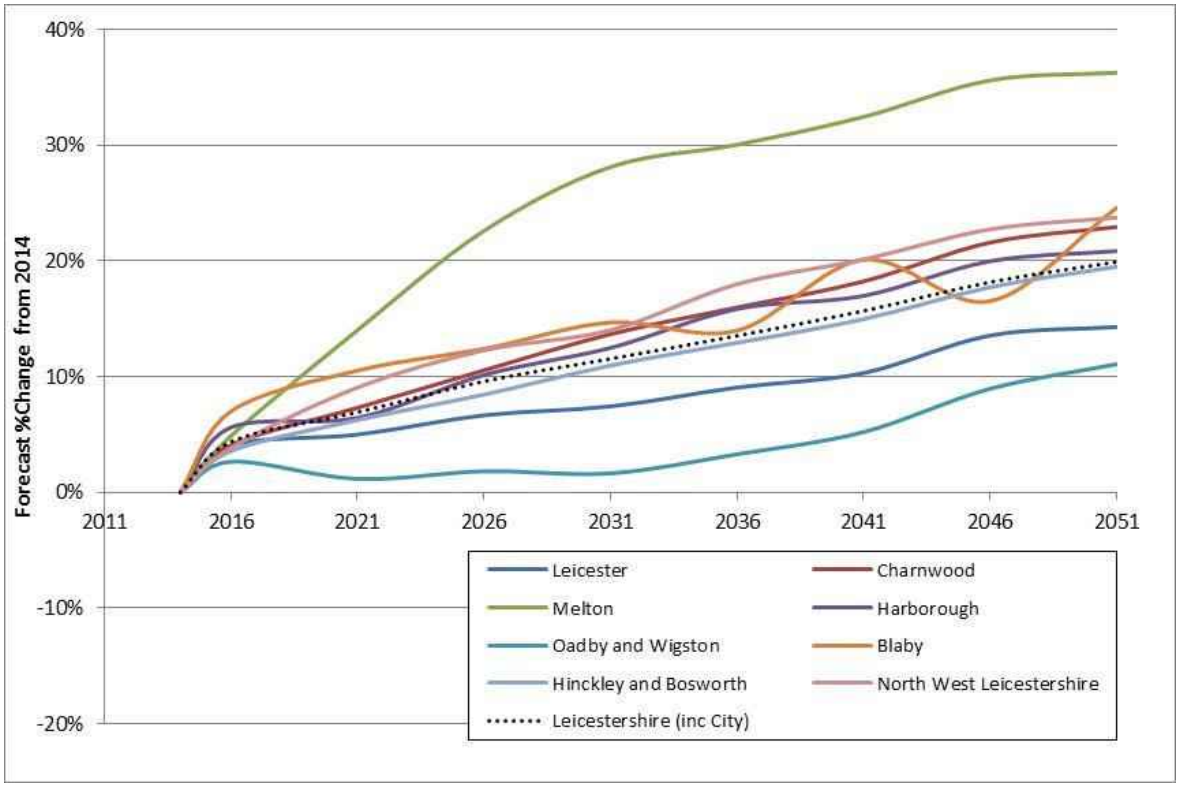
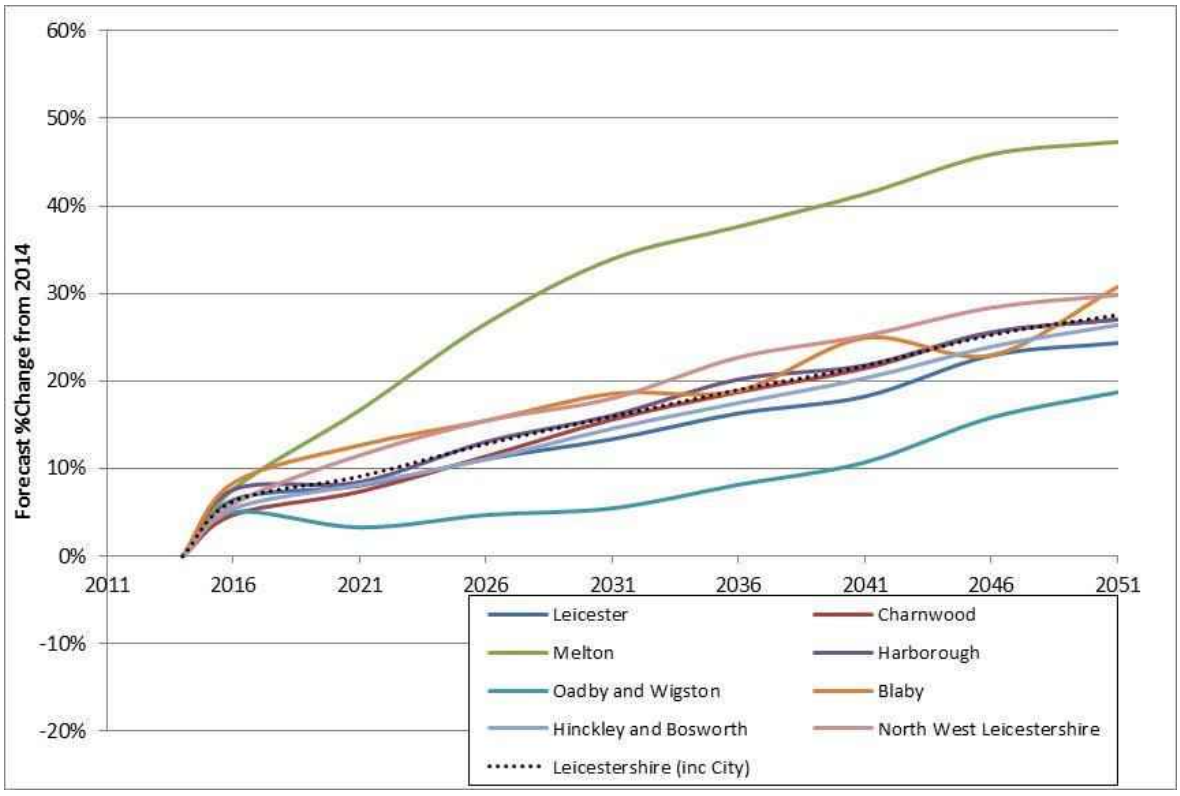


Figure 4.8: LLITM 2014 Core Scenario Forecast Growth in 24-hour Trip Productions (Highway) by District



4.4.8 Considering Melton Borough in more detail, Figure 4.9 shows the forecast 24-hour mode share for trips produced within the district, excluding freight demand. This figure shows that there is forecast to

be a small increase in the highway mode share over time, with a corresponding decrease in the share of active mode (walking and cycling) trips.

4.4.9 Table 4.14 provides additional detail on the forecast 24-hour mode shares for trips produced within Melton Borough. This table shows that the mode share for highway trips is forecast to increase from 72% in 2014 to 76% in 2036, with the mode share for active mode trips forecast to reduce from 26% in 2014 to 22% in 2036. The mode share for public transport trips (both bus and rail) is not forecast to change significantly over time, staying at around 1% to 2% of trips produced within the district.

Figure 4.9: LLITM 2014 Core Scenario Forecast 24-hour Mode Share within Melton Borough

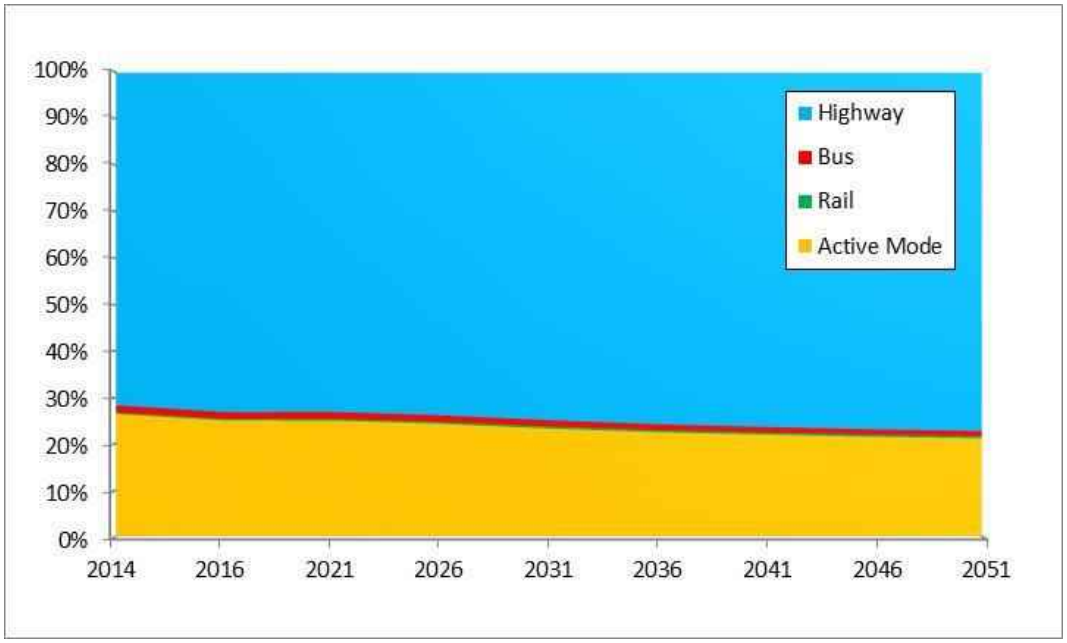


Table 4.8: LLITM 2014 Core Scenario Forecast 24-hour Trip Productions (All Modes) by District

	2014	2016	2021	2026	2031	2036	2041	2046	2051
Leicester	730,189	759,688	766,609	778,804	784,402	796,329	805,443	829,093	834,502
Charnwood	387,622	403,406	415,957	428,487	440,614	449,539	458,266	471,298	476,503
Melton	111,794	117,235	127,454	137,057	143,220	145,371	148,066	151,592	152,329
Harborough	192,837	203,657	205,231	212,385	216,915	223,394	225,585	231,349	233,043
Oadby and Wigston	99,740	102,372	100,894	101,554	101,371	103,021	104,929	108,661	110,783
Blaby	210,553	225,293	232,705	236,660	241,450	239,982	252,860	245,336	262,282
Hinckley and Bosworth	227,254	235,346	241,441	246,441	252,156	256,614	261,262	267,524	271,556
North West Leicestershire	242,302	251,600	264,255	272,030	276,268	285,889	291,071	297,376	299,819
Leicestershire (inc City)	***2,202,290***	***2,298,597***	***2,354,546***	***2,413,417***	***2,456,395***	***2,500,139***	***2,547,482***	***2,602,231***	***2,640,817***

Table 4.9: LLITM 2014 Core Scenario Forecast 24-hour Trip Productions (Highway) by District

	2014	2016	2021	2026	2031	2036	2041	2046	2051
Leicester	497,351	529,305	537,383	552,458	563,795	578,463	588,050	611,289	618,369
Charnwood	287,078	300,585	308,230	319,771	331,869	340,887	348,656	360,266	364,735
Melton	84,336	90,771	98,382	106,733	112,940	116,066	119,207	123,029	124,225
Harborough	146,375	157,490	158,744	165,469	169,894	175,930	178,262	183,800	185,904
Oadby and Wigston	71,203	74,784	73,542	74,547	75,097	77,019	78,831	82,467	84,534
Blaby	163,570	177,231	184,274	188,863	193,911	194,480	204,333	201,090	213,830
Hinckley and Bosworth	173,900	183,319	188,092	193,155	199,229	204,342	209,222	215,494	219,795
North West Leicestershire	193,467	204,962	215,736	223,360	228,333	237,379	242,113	248,352	251,166
Leicestershire (inc City)	***1,617,280***	***1,718,448***	***1,764,382***	***1,824,356***	***1,875,068***	***1,924,566***	***1,968,675***	***2,025,787***	***2,062,558***

Table 4.10: LLITM 2014 Core Scenario Forecast Growth in 24-hour Trip Productions (All Modes, including freight) from 2014 by District

	2016	2021	2026	2031	2036	2041	2046	2051
Leicester	4%	5%	7%	7%	9%	10%	14%	14%
Charnwood	4%	7%	11%	14%	16%	18%	22%	23%
Melton	5%	14%	23%	28%	30%	32%	36%	36%
Harborough	6%	6%	10%	12%	16%	17%	20%	21%
Oadby and Wigston	3%	1%	2%	2%	3%	5%	9%	11%
Blaby	7%	11%	12%	15%	14%	20%	17%	25%
Hinckley and Bosworth	4%	6%	8%	11%	13%	15%	18%	19%
North West Leicestershire	4%	9%	12%	14%	18%	20%	23%	24%
Leicestershire (inc City)	***4%***	***7%***	***10%***	***12%***	***14%***	***16%***	***18%***	***20%***

Table 4.11: LLITM 2014 Core Scenario Forecast Growth in 24-hour Trip Productions (Highway, including freight) from 2014 by District

	2016	2021	2026	2031	2036	2041	2046	2051
Leicester	6%	8%	11%	13%	16%	18%	23%	24%
Charnwood	5%	7%	11%	16%	19%	21%	25%	27%
Melton	8%	17%	27%	34%	38%	41%	46%	47%
Harborough	8%	8%	13%	16%	20%	22%	26%	27%
Oadby and Wigston	5%	3%	5%	5%	8%	11%	16%	19%
Blaby	8%	13%	15%	19%	19%	25%	23%	31%
Hinckley and Bosworth	5%	8%	11%	15%	18%	20%	24%	26%
North West Leicestershire	6%	12%	15%	18%	23%	25%	28%	30%
Leicestershire (inc City)	***6%***	***9%***	***13%***	***16%***	***19%***	***22%***	***25%***	***28%***

Table 4.12: LLITM 2014 Core Scenario Forecast Growth in 24-hour Trip Productions (All Modes, excluding freight) from 2014 by District (compared with LLITM population growth, shown in grey)

	2016		2021		2026		2031		2036		2041		2046		2051	
Leicester	1%	-1%	3%	1%	4%	3%	5%	4%	7%	5%	8%	8%	11%	10%	12%	12%
Charnwood	1%	1%	5%	7%	7%	10%	9%	12%	10%	13%	12%	15%	15%	18%	16%	21%
Melton	2%	0%	12%	14%	20%	23%	24%	25%	25%	23%	26%	22%	27%	21%	27%	21%
Harborough	2%	2%	5%	6%	7%	7%	9%	9%	11%	10%	12%	10%	13%	11%	13%	10%
Oadby and Wigston	-1%	-1%	-1%	-1%	-2%	-1%	-2%	-2%	-1%	-1%	0%	0%	2%	1%	4%	3%
Blaby	3%	4%	5%	6%	6%	7%	6%	7%	5%	6%	7%	5%	4%	4%	7%	3%
Hinckley and Bosworth	0%	0%	3%	3%	5%	5%	7%	7%	8%	8%	9%	8%	11%	9%	11%	10%
North West Leicestershire	-1%	0%	3%	4%	5%	7%	6%	9%	9%	13%	11%	15%	12%	16%	12%	17%
Leicestershire (inc City)	***1%***	***1%***	***4%***	***4%***	***6%***	***6%***	***7%***	***8%***	***9%***	***9%***	***10%***	***10%***	***12%***	***11%***	***13%***	***13%***

Table 4.13: LLITM 2014 Core Scenario Forecast Growth in 24-hour Trip Productions (Highway, excluding freight) from 2014 by District (compared with LLITM population growth, shown in grey)

	2016		2021		2026		2031		2036		2041		2046		2051	
Leicester	2%	-1%	5%	1%	8%	3%	11%	4%	14%	5%	16%	8%	21%	10%	22%	12%
Charnwood	1%	1%	4%	7%	7%	10%	9%	12%	11%	13%	13%	15%	17%	18%	18%	21%
Melton	4%	0%	14%	14%	23%	23%	30%	25%	32%	23%	34%	22%	37%	21%	37%	21%
Harborough	3%	2%	6%	6%	10%	7%	12%	9%	15%	10%	16%	10%	17%	11%	18%	10%
Oadby and Wigston	0%	-1%	0%	-1%	0%	-1%	1%	-2%	2%	-1%	4%	0%	7%	1%	10%	3%
Blaby	4%	4%	6%	6%	7%	7%	8%	7%	8%	6%	8%	5%	8%	4%	8%	3%
Hinckley and Bosworth	1%	0%	5%	3%	8%	5%	10%	7%	12%	8%	14%	8%	16%	9%	17%	10%
North West Leicestershire	0%	0%	4%	4%	7%	7%	9%	9%	12%	13%	14%	15%	16%	16%	16%	17%
Leicestershire (inc City)	***2%***	***1%***	***5%***	***4%***	***8%***	***6%***	***11%***	***8%***	***13%***	***9%***	***15%***	***10%***	***18%***	***11%***	***19%***	***13%***

Table 4.14: LLITM 2014 Core Scenario Forecast 24-hour Mode Share within Melton Borough

	2014	2016	2021	2026	2031	2036	2041	2046	2051
Highway (excluding freight)	72%	73%	73%	74%	75%	76%	76%	77%	77%
Bus	2%	1%	1%	1%	1%	1%	1%	1%	1%
Rail	0%	0%	0%	0%	0%	0%	0%	0%	0%
Active Mode	26%	25%	25%	24%	23%	22%	22%	21%	21%

Note: Percentages rounded to the nearest integer, so may not sum to 100%

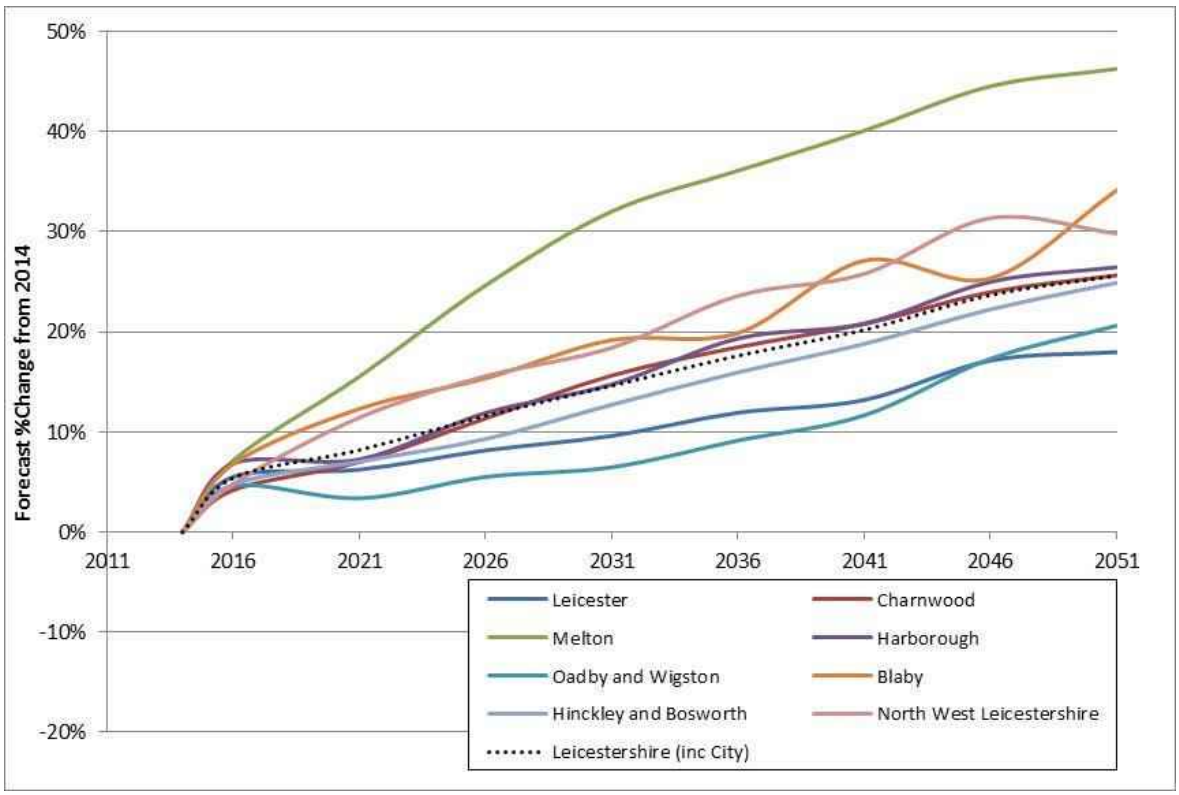
4.4.10 The demand model operates using 24-hour production-attraction, person tours, linking the outbound and return legs of home-based trips. This demand is then converted from production-attraction to origin-destination format, from person trips to vehicle trips, and from period to peak hour prior to assignment within the highway and public transport models.

4.4.11 For home-based trips, the demand data within the demand model is stored in tours, detailing the time period of the outbound and return legs of each tour. The production-attraction matrix is used directly for the outbound time period origin-destination matrix, with the production-attraction matrix being transpose for use in the return time period origin-destination matrix. For non-home-based trips, the demand data are stored in origin-destination format, and therefore no conversion is required.

4.4.12 Occupancy factors to convert from person demand to vehicle demand have been estimated from the observed roadside interview data. A relationship between trip length and average vehicle occupancy has been estimated for each trip purpose. Peak hour factors have been derived from the roadside interview data and traffic counts, and are applied to the AM Peak and PM Peak demand to generate peak hour matrices for assignment.

4.4.13 Figure 4.10 shows the forecast growth in 24-hour highway trip origins by district within Leicestershire. This figure shows a similar pattern and scale of growth in highway demand as presented for trips produced within each district, as shown in Figure 4.8.

Figure 4.10: LLITM 2014 Core Scenario Forecast Growth in 24-hour Trip Origins (Highway) by District



4.4.14 Table 4.15 provides further information on the 24-hour highway trip origin forecasts by district within Leicestershire, with Table 4.16 showing the growth in highway trip origins, including freight demand.

4.4.15 Table 4.17 details on the forecast growth in 24-hour highway trip origins by district excluding freight, and compares these with the forecast population growth. As with the analysis of trip productions, there is a good correlation between the forecast growth in population within a district and the outturn forecast growth in trip origins, with districts forecast to have a higher growth in population also forecast to have above average growth in trip origins and vice-versa.

Table 4.15: LLITM 2014 Core Scenario Forecast 24-hour Trip Origins (Highway) by District

	2014	2016	2021	2026	2031	2036	2041	2046	2051
Leicester	600,366	633,371	637,791	649,328	658,056	671,936	679,573	703,239	708,292
Charnwood	348,936	363,527	373,320	388,536	403,493	413,388	421,480	432,582	438,443
Melton	105,261	112,754	121,598	131,198	138,980	143,260	147,478	152,142	153,979
Harborough	180,245	192,563	193,311	201,685	206,828	215,099	217,797	225,309	227,936
Oadby and Wigston	85,093	89,015	87,962	89,775	90,601	92,874	95,008	99,817	102,633
Blaby	206,414	220,442	231,807	238,133	246,003	247,454	262,378	258,757	276,895
Hinckley and Bosworth	214,398	224,551	229,486	234,320	241,674	248,591	254,697	262,099	267,783
North West Leicestershire	245,727	257,487	273,792	283,995	290,981	303,720	309,117	322,815	319,036
Leicestershire (inc City)	***1,986,440***	***2,093,710***	***2,149,066***	***2,216,969***	***2,276,614***	***2,336,321***	***2,387,528***	***2,456,760***	***2,494,998***

Table 4.16: LLITM 2014 Core Scenario Forecast Growth in 24-hour Trip Origins (Highway, including freight) from 2014 by District

	2016	2021	2026	2031	2036	2041	2046	2051
Leicester	5%	6%	8%	10%	12%	13%	17%	18%
Charnwood	4%	7%	11%	16%	18%	21%	24%	26%
Melton	7%	16%	25%	32%	36%	40%	45%	46%
Harborough	7%	7%	12%	15%	19%	21%	25%	26%
Oadby and Wigston	5%	3%	6%	6%	9%	12%	17%	21%
Blaby	7%	12%	15%	19%	20%	27%	25%	34%
Hinckley and Bosworth	5%	7%	9%	13%	16%	19%	22%	25%
North West Leicestershire	5%	11%	16%	18%	24%	26%	31%	30%
Leicestershire (inc City)	***5%***	***8%***	***12%***	***15%***	***18%***	***20%***	***24%***	***26%***

Table 4.17: LLITM 2014 Core Scenario Forecast Growth in 24-hour Trip Origins (Highway, excluding freight) from 2014 by District (compared with LLITM population growth, shown in grey)

	2016		2021		2026		2031		2036		2041		2046		2051	
Leicester	2%	-1%	4%	1%	5%	3%	7%	4%	10%	5%	11%	8%	14%	10%	15%	12%
Charnwood	1%	1%	4%	7%	8%	10%	11%	12%	12%	13%	14%	15%	17%	18%	18%	21%
Melton	4%	0%	13%	14%	22%	23%	29%	25%	32%	23%	34%	22%	37%	21%	38%	21%
Harborough	3%	2%	5%	6%	9%	7%	11%	9%	15%	10%	16%	10%	19%	11%	19%	10%
Oadby and Wigston	1%	-1%	1%	-1%	2%	-1%	3%	-2%	5%	-1%	7%	0%	11%	1%	14%	3%
Blaby	3%	4%	7%	6%	9%	7%	11%	7%	12%	6%	15%	5%	15%	4%	18%	3%
Hinckley and Bosworth	1%	0%	4%	3%	6%	5%	9%	7%	12%	8%	13%	8%	16%	9%	17%	10%
North West Leicestershire	0%	0%	6%	4%	9%	7%	12%	9%	16%	13%	18%	15%	23%	16%	20%	17%
Leicestershire (inc City)	***2%***	***1%***	***5%***	***4%***	***8%***	***6%***	***10%***	***8%***	***13%***	***9%***	***15%***	***10%***	***17%***	***11%***	***18%***	***13%***

4.5 Demand Model Convergence

4.5.1 The variable demand model iterates between the assignment models (highway and public transport) and the demand choice calculations, and a measure of convergence based on the change in forecast demand between two iterations is calculated in line with WebTAG. This approach is detailed in *'PR203 – LLITM 2014 Demand Model Development Report'*.

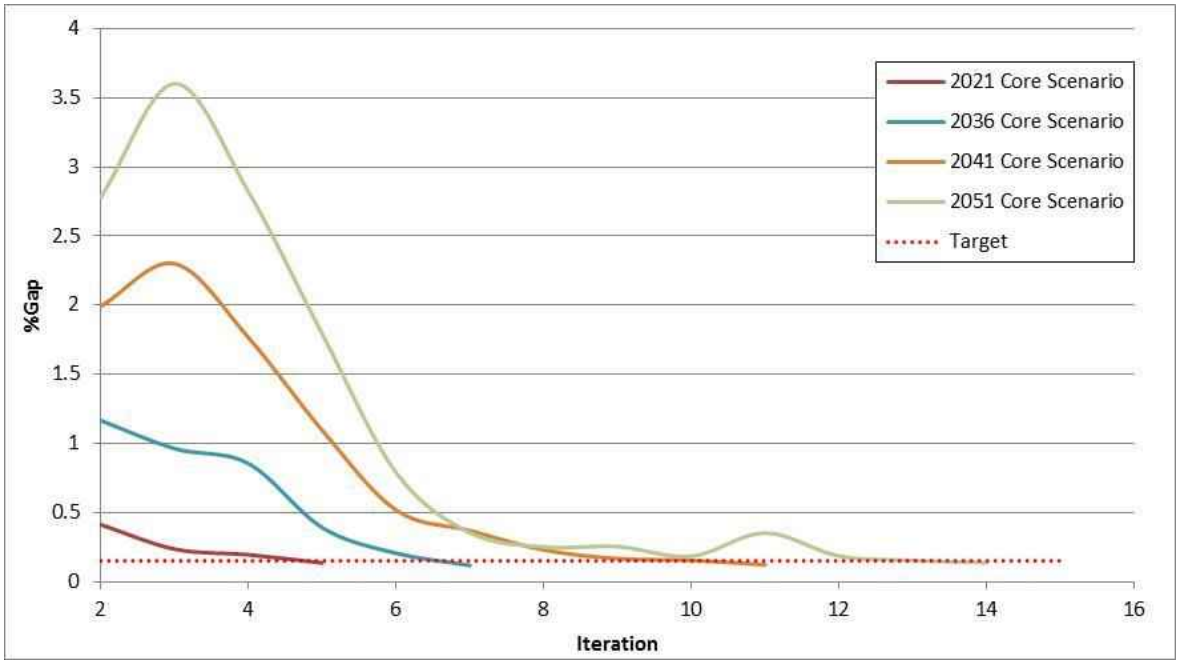
4.5.2 The target convergence level for a $\%Gap$ of less than 0.15% has been adopted within LLITM 2014[5], and Table 4.18 details the demand model convergence by iteration for the 2021, 2036, 2041 and 2051 Core Scenario model runs. These are the forecast years used within the economic assessment of the proposed scheme, with the 2051 forecasts used as a sensitivity test on the scheme benefits.

4.5.3 This shows that in all forecast years the target $\%Gap$ value is reached, with the number of iterations required to attain this target generally increasing in later forecast years. The convergence of the demand model by iteration in the Core Scenario is also shown in Figure 4.11.

Table 4.18: LLITM 2014 Core Scenario Demand Model Convergence

Iteration	2021	2036	2041	2051
2	0.41	1.17	1.99	2.78
3	0.23	0.96	2.30	3.60
4	0.19	0.85	1.76	2.82
5	0.13	0.39	1.09	1.79
6		0.21	0.52	0.79
7		0.12	0.37	0.35
8			0.23	0.25
9			0.17	0.25
10			0.15	0.18
11			0.12	0.35
12				0.18
13				0.15
14				0.14

Figure 4.11: LLITM 2014 Core Scenario Demand Model Convergence



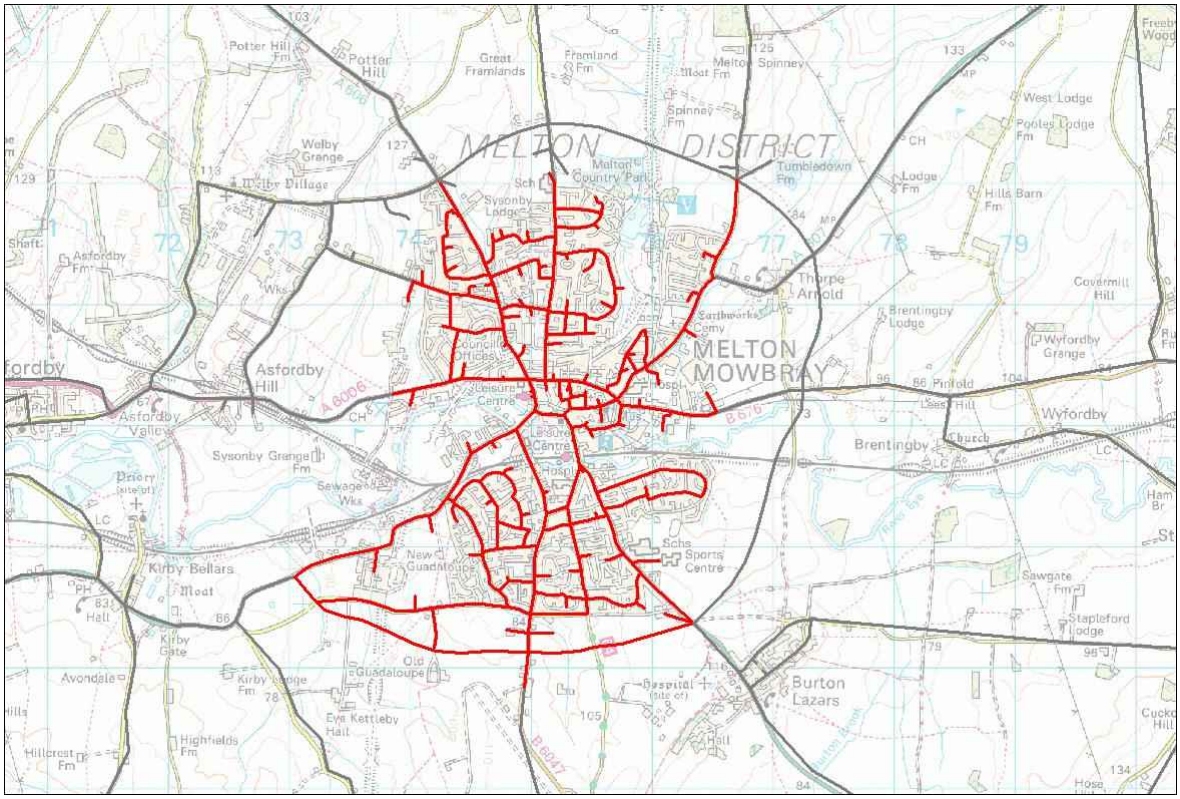
[5] WebTAG Unit M2 §6.3.8 states that a $\%Gap$ value of 0.1% can be achieved in many cases, but that remedial action is only required if the $\%Gap$ value is not below 0.2%.

4.6 Highway Assignment Forecasts

4.6.1 Taking the demand forecasts from the demand model, the forecast highway demand is assigned on the highway network. This network is the validated base year network with the addition of the defined highway schemes (detailed in Table 3.3) based on the given forecast year. This section details some of the forecasts produced by the assignment of the forecast demand on the highway network.

4.6.2 The first set of forecasts from the highway model is a series of network performance indicators. These provide forecasts for the amount of traffic on the network (measures in vehicle distance), the delay on the network (measure both in terms of vehicle delay and delay per kilometre), and the average speed on the network. For this analysis those links within Melton Borough and Melton Mowbray have been identified. Those links selected as being within Melton Mowbray are shown in Figure 4.12, and includes those links within the urban area, excluding the proposed distributor road.

Figure 4.12: Links Selected as within Melton Mowbray



Map contains Ordnance Survey data © Crown copyright and database right 2017

4.6.3 Based on this, Figure 4.13 shows the forecast change in the network performance indicators over time for both Melton Borough and Melton Mowbray in the AM Peak and PM Peak hours. This figure shows that within both the district and the urban area, and within both peak hours, there is forecast to be an increase in the traffic on the network (measured in vehicle distance) and delay experienced by these vehicles (both in terms of vehicle delay and delay per kilometre), with a corresponding reduction in average speeds.

4.6.4 Table 4.19 provides more detail on the network performance forecasts for Melton Borough in the three modelled hours, with Table 4.20 showing the change in these indicators compared with the 2014 base year. Considering the change between 2014 and 2036, traffic on the Melton Borough network is forecast to increase by 27% in the AM Peak hour, 41% in the interpeak hour, and 33% in the PM Peak hour. This increase in traffic on the network results in a forecast reduction in average speeds within Melton Borough of 3% in the AM Peak, 1% in the interpeak and 4% in the PM Peak.

4.6.5 Table 4.21 and Table 4.22 show the same analysis, but for links identified as being within Melton Mowbray rather than Melton Borough. This analysis shows that traffic within Melton Mowbray is forecast to increase by 35% in the AM Peak, 47% in the interpeak and 37% in the PM Peak between

2014 and 2036. Despite this increase in traffic, average network speeds are forecast to increase between 2014 and 2036 in the AM Peak and interpeak hours by 2% between 2014 and 2036, with a 2% reduction in average speeds in the PM Peak hour. This increase in average speeds within Melton Mowbray in the AM Peak and interpeak is due to the additional infrastructure assumed within the Core Scenario.

4.6.6 As part of the Core Scenario assumptions, a new link between A607 Leicester Road and the A606 Burton Road to the south of Melton Mowbray is assumed to be constructed in phases between 2021 and 2036. By 2036 this link is assumed to be complete, and this provides additional network capacity within Melton Mowbray. The impact of this scheme can be seen by considering the forecast change in average speeds in years prior to 2036. In 2026 for example, this southern link is not complete and the average speeds within Melton Mowbray are forecast to reduce by 3% in the two peak hours and 1% in the interpeak hour.

Figure 4.13: LLITM 2014 Core Scenario Forecast Change in Network Performance within Melton Borough and Melton Mowbray within AM Peak and PM Peak Hours

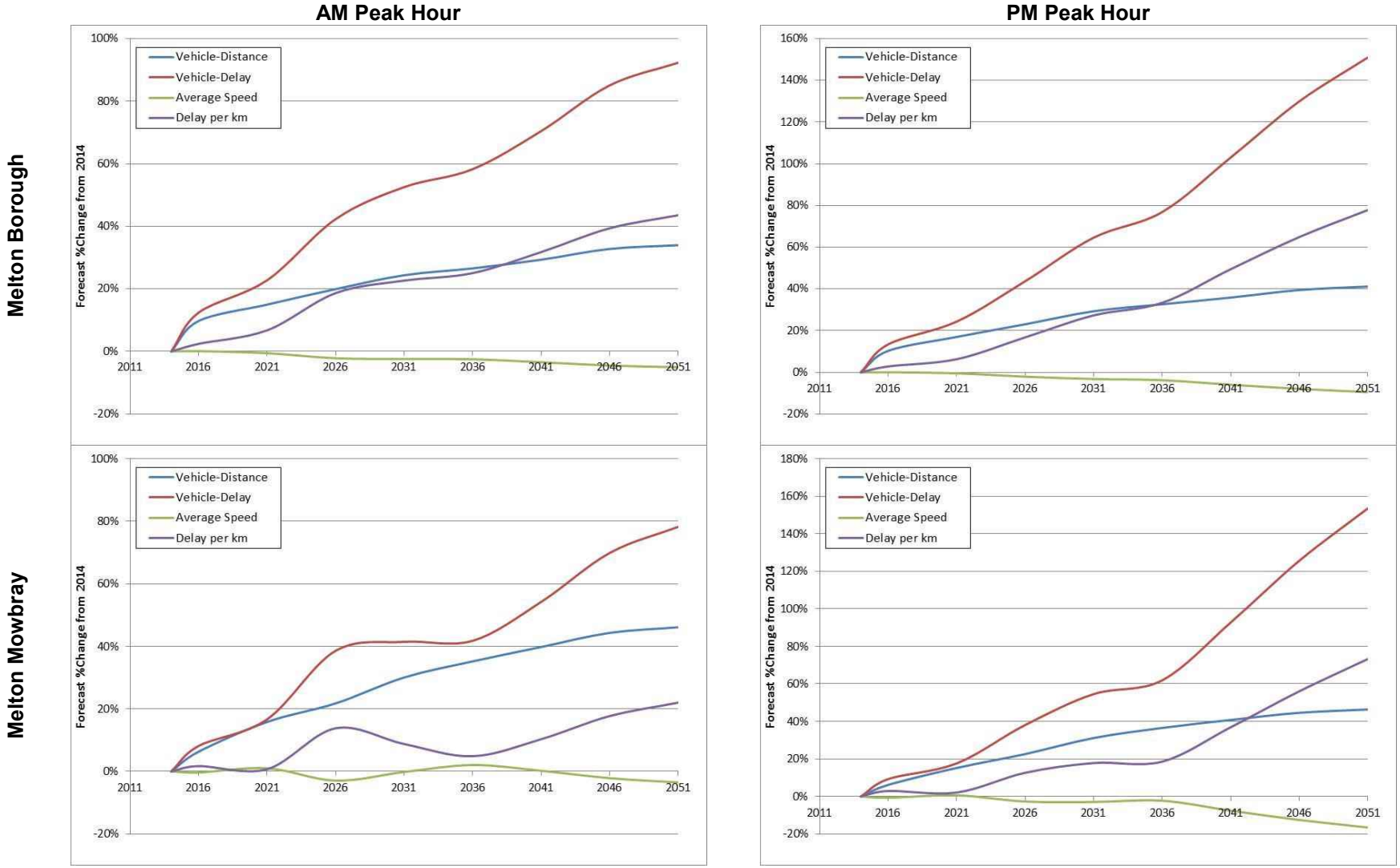


Table 4.19: LLITM 2014 Core Scenario Forecast Network Performance within Melton Borough

		2014	2016	2021	2026	2031	2036	2041	2046	2051
AM Peak Hour	Vehicle Distance (veh-km)	110,745	121,535	127,339	132,817	137,729	140,152	143,235	147,039	148,370
	Vehicle Delay-Time (veh-hours)	274	308	337	390	418	434	467	507	527
	Average Speed (kph)	56	56	55	54	54	54	54	53	53
	Vehicle Delay/Vehicle Distance (sec/km)	9	9	10	11	11	11	12	12	13
Interpeak Hour	Vehicle Distance (veh-km)	75,614	85,432	92,373	97,474	102,831	106,324	108,990	111,901	113,579
	Vehicle Delay-Time (veh-hours)	175	201	224	253	284	297	318	337	350
	Average Speed (kph)	55	56	55	55	54	55	54	54	54
	Vehicle Delay/Vehicle Distance (sec/km)	8	8	9	9	10	10	10	11	11
PM Peak Hour	Vehicle Distance (veh-km)	115,021	126,853	134,543	141,524	148,713	152,548	156,243	160,406	162,319
	Vehicle Delay-Time (veh-hours)	305	345	379	438	501	539	618	700	764
	Average Speed (kph)	55	55	55	54	53	53	52	51	50
	Vehicle Delay/Vehicle Distance (sec/km)	10	10	10	11	12	13	14	16	17

Table 4.20: LLITM 2014 Core Scenario Forecast Change from 2014 in Network Performance within Melton Borough

		2016	2021	2026	2031	2036	2041	2046	2051
AM Peak Hour	Vehicle Distance (veh-km)	10%	15%	20%	24%	27%	29%	33%	34%
	Vehicle Delay-Time (veh-hours)	12%	23%	42%	53%	58%	70%	85%	92%
	Average Speed (kph)	0%	-1%	-2%	-2%	-3%	-3%	-4%	-5%
	Vehicle Delay/Vehicle Distance (sec/km)	2%	7%	19%	23%	25%	32%	39%	44%
Interpeak Hour	Vehicle Distance (veh-km)	13%	22%	29%	36%	41%	44%	48%	50%
	Vehicle Delay-Time (veh-hours)	14%	28%	44%	62%	69%	81%	92%	99%
	Average Speed (kph)	0%	0%	-1%	-1%	-1%	-2%	-2%	-3%
	Vehicle Delay/Vehicle Distance (sec/km)	1%	5%	12%	19%	20%	26%	30%	33%
PM Peak Hour	Vehicle Distance (veh-km)	10%	17%	23%	29%	33%	36%	39%	41%
	Vehicle Delay-Time (veh-hours)	13%	24%	44%	65%	77%	103%	130%	151%
	Average Speed (kph)	0%	0%	-2%	-3%	-4%	-6%	-8%	-10%
	Vehicle Delay/Vehicle Distance (sec/km)	3%	6%	17%	27%	33%	49%	65%	78%

Table 4.21: LLITM 2014 Core Scenario Forecast Network Performance within Melton Mowbray

		2014	2016	2021	2026	2031	2036	2041	2046	2051
AM Peak Hour	Vehicle Distance (veh-km)	17,279	18,369	20,012	21,037	22,466	23,357	24,152	24,933	25,241
	Vehicle Delay-Time (veh-hours)	189	205	221	262	268	268	292	321	337
	Average Speed (kph)	28	28	29	27	28	29	28	28	27
	Vehicle Delay/Vehicle Distance (sec/km)	39	40	40	45	43	41	44	46	48
Interpeak Hour	Vehicle Distance (veh-km)	13,277	14,499	16,023	17,289	18,712	19,535	20,226	20,839	21,160
	Vehicle Delay-Time (veh-hours)	132	147	162	183	201	203	218	233	242
	Average Speed (kph)	29	29	29	29	29	30	29	29	29
	Vehicle Delay/Vehicle Distance (sec/km)	36	37	36	38	39	37	39	40	41
PM Peak Hour	Vehicle Distance (veh-km)	18,521	19,661	21,334	22,705	24,292	25,285	26,073	26,774	27,099
	Vehicle Delay-Time (veh-hours)	211	230	248	291	326	341	406	476	535
	Average Speed (kph)	28	28	28	27	27	27	26	24	23
	Vehicle Delay/Vehicle Distance (sec/km)	41	42	42	46	48	49	56	64	71

Table 4.22: LLITM 2014 Core Scenario Forecast Change from 2014 in Network Performance within Melton Mowbray

		2016	2021	2026	2031	2036	2041	2046	2051
AM Peak Hour	Vehicle Distance (veh-km)	6%	16%	22%	30%	35%	40%	44%	46%
	Vehicle Delay-Time (veh-hours)	8%	17%	39%	41%	42%	54%	70%	78%
	Average Speed (kph)	0%	1%	-3%	0%	2%	0%	-2%	-4%
	Vehicle Delay/Vehicle Distance (sec/km)	2%	1%	14%	9%	5%	10%	18%	22%
Interpeak Hour	Vehicle Distance (veh-km)	9%	21%	30%	41%	47%	52%	57%	59%
	Vehicle Delay-Time (veh-hours)	12%	23%	39%	52%	54%	66%	77%	84%
	Average Speed (kph)	0%	1%	-1%	0%	2%	1%	-0%	-1%
	Vehicle Delay/Vehicle Distance (sec/km)	2%	2%	7%	8%	5%	9%	13%	15%
PM Peak Hour	Vehicle Distance (veh-km)	6%	15%	23%	31%	37%	41%	45%	46%
	Vehicle Delay-Time (veh-hours)	9%	18%	38%	55%	62%	93%	126%	153%
	Average Speed (kph)	-1%	1%	-3%	-3%	-2%	-8%	-12%	-17%
	Vehicle Delay/Vehicle Distance (sec/km)	3%	2%	13%	18%	19%	37%	56%	73%

4.6.7 In addition to the network performance forecasts, Figure 4.14 to Figure 4.17 show the forecast traffic volumes within Melton Mowbray in the 2014 base year and 2036 forecast year for the AM Peak and PM Peak hours. The corresponding plots for 2014, 2021, 2036, 2041 and 2051 for all three modelled time periods are given in Appendix B.

4.6.8 These plots show that there are forecast to be more links within the higher flow categories (shown in orange and red) in 2036 than in 2014 within the two peak hours. These links with higher forecast flows are generally located within the town centre, and in particular to the north-west of the inner ring road (on Wilton Road and Norman Way) in the AM Peak hour, and to the north, south and west of the inner ring road in the PM Peak hour.

4.6.9 In addition to the forecast vehicle flows, Figure 4.18 to Figure 4.21 show the forecast volume-capacity ratios on the network in the 2014 base year and 2036 forecast year for the AM Peak and PM Peak hours. The corresponding forecasts for other forecast years and time periods can be found in Appendix C.

4.6.10 As with the forecast flow plots, the analysis of volume-capacity ratios shows that there are forecast to be more locations within Melton Mowbray town centre, in particular on approaches to the inner ring road, which are in the higher categories of volume-capacity ratio (i.e. where flows are at 80% or more of capacity).

4.6.11 In addition to the forecast flows and volume-capacity ratios, Figure 4.22 to Figure 4.25 show the forecast average junction delays within Melton Mowbray in the 2014 base year and 2036 forecast year for the AM Peak and PM Peak hours. The corresponding figures for other modelled years and time periods can be found in Appendix D.

4.6.12 The forecast delay plots show the locations of the significant delays within Melton Mowbray, generally around the inner ring road, in the two peak hours. These plots, along with those contained within Appendix D, show that there are no locations within Melton Mowbray where the forecast junction delay increases significantly and beyond plausible levels.

4.6.13 As discussed with the network performance forecasts, the introduction of the southern link between the A607 Leicester Road and the A606 Burton Road provides additional capacity to the network which is forecast to increase average speeds within Melton Mowbray. In addition to this, the introduction of this link road affects the forecast routeing of traffic through Melton Mowbray.

4.6.14 Figure 4.26 and Figure 4.27 show the routeing of through traffic within Melton Mowbray in the AM Peak hour in the 2014 base year and the 2036 forecast year respectively. Within the analysis of the 2014 through traffic, the A606 through traffic (travelling north-west to / from south-east) along Nottingham Road and Burton Road is evident, particularly in the northbound direction in this time period. However, the level of through traffic on this route in the AM Peak in 2036 is forecast to be smaller in magnitude.

4.6.15 Within Figure 4.27 it can be seen that the majority of through trips for Melton Mowbray in 2036 are forecast to use the new southern link between the A606 and the A607. This link, in conjunction with the A6006 through Asfordby, provides an alternative route for longer distance trips travelling between the north-west and south-east of Melton Mowbray, which is forecast to be the preferred route compared with the existing A606.

Figure 4.14: LLITM 2014 Core Scenario Forecast Highway Vehicle Flows – 2014 Base Year AM Peak

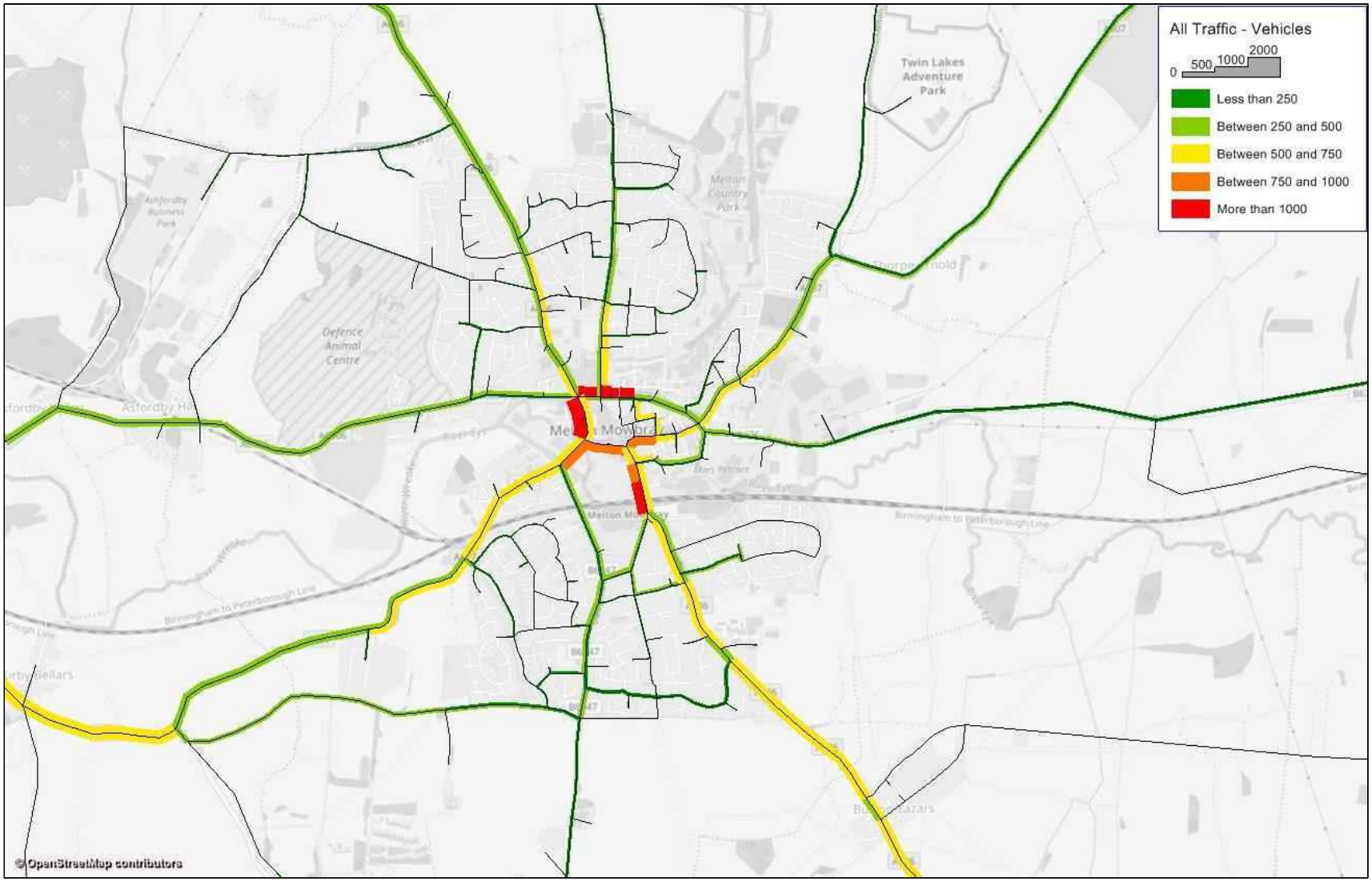


Figure 4.15: LLITM 2014 Core Scenario Forecast Highway Vehicle Flows – 2036 Forecast Year AM Peak

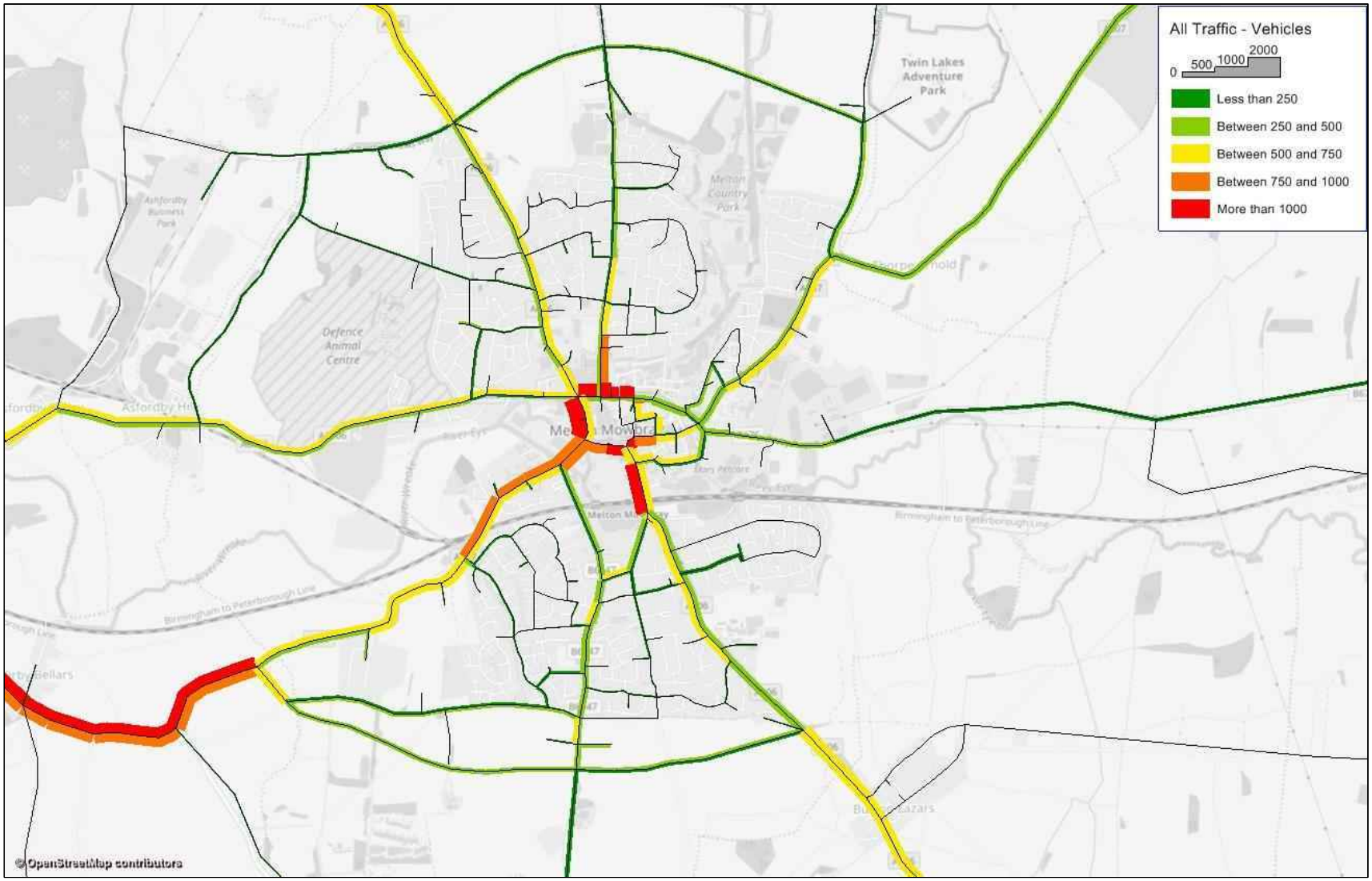


Figure 4.16: LLITM 2014 Core Scenario Forecast Highway Vehicle Flows – 2014 Base Year PM Peak

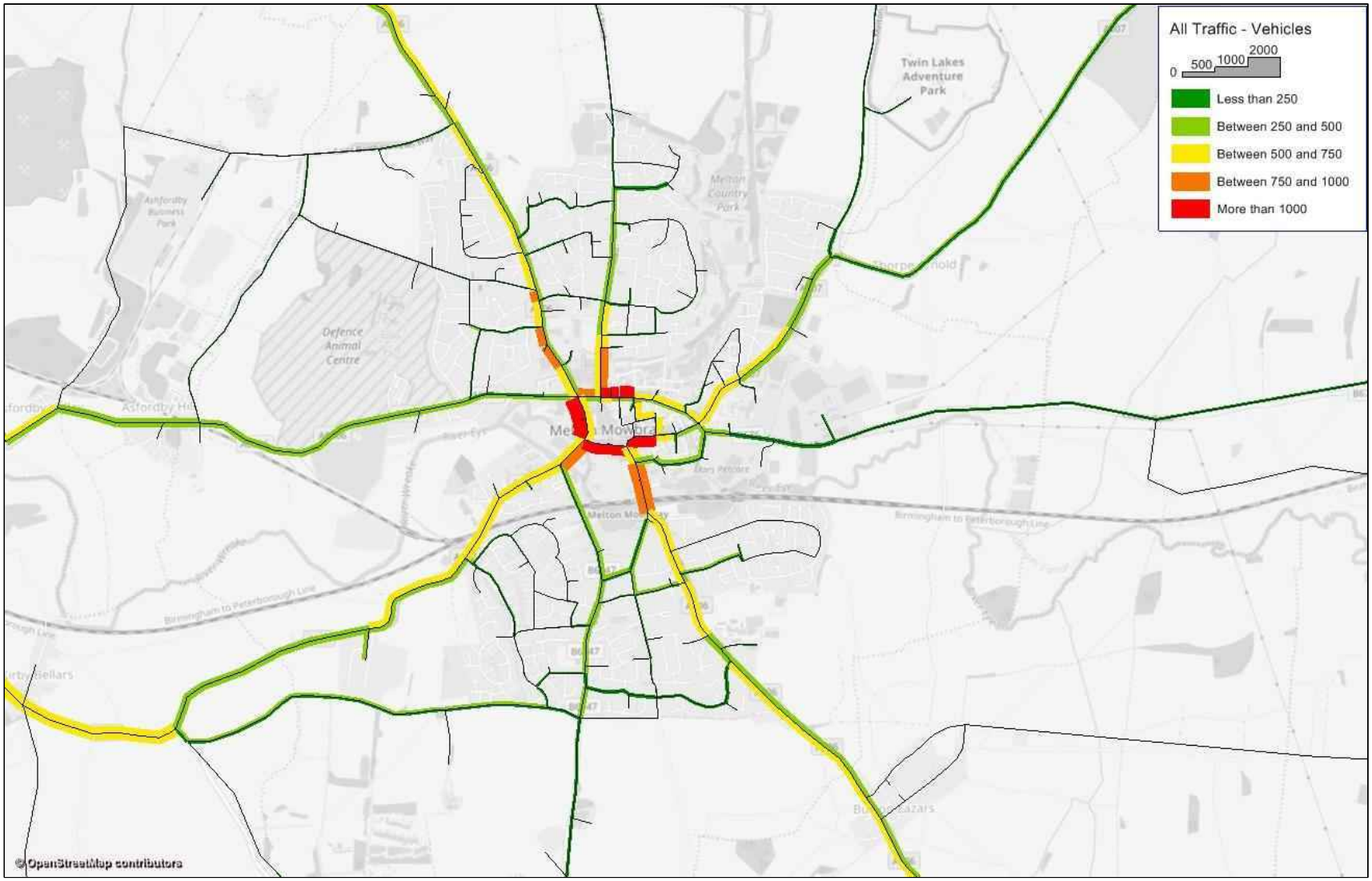


Figure 4.17: LLITM 2014 Core Scenario Forecast Highway Vehicle Flows – 2036 Forecast Year PM Peak

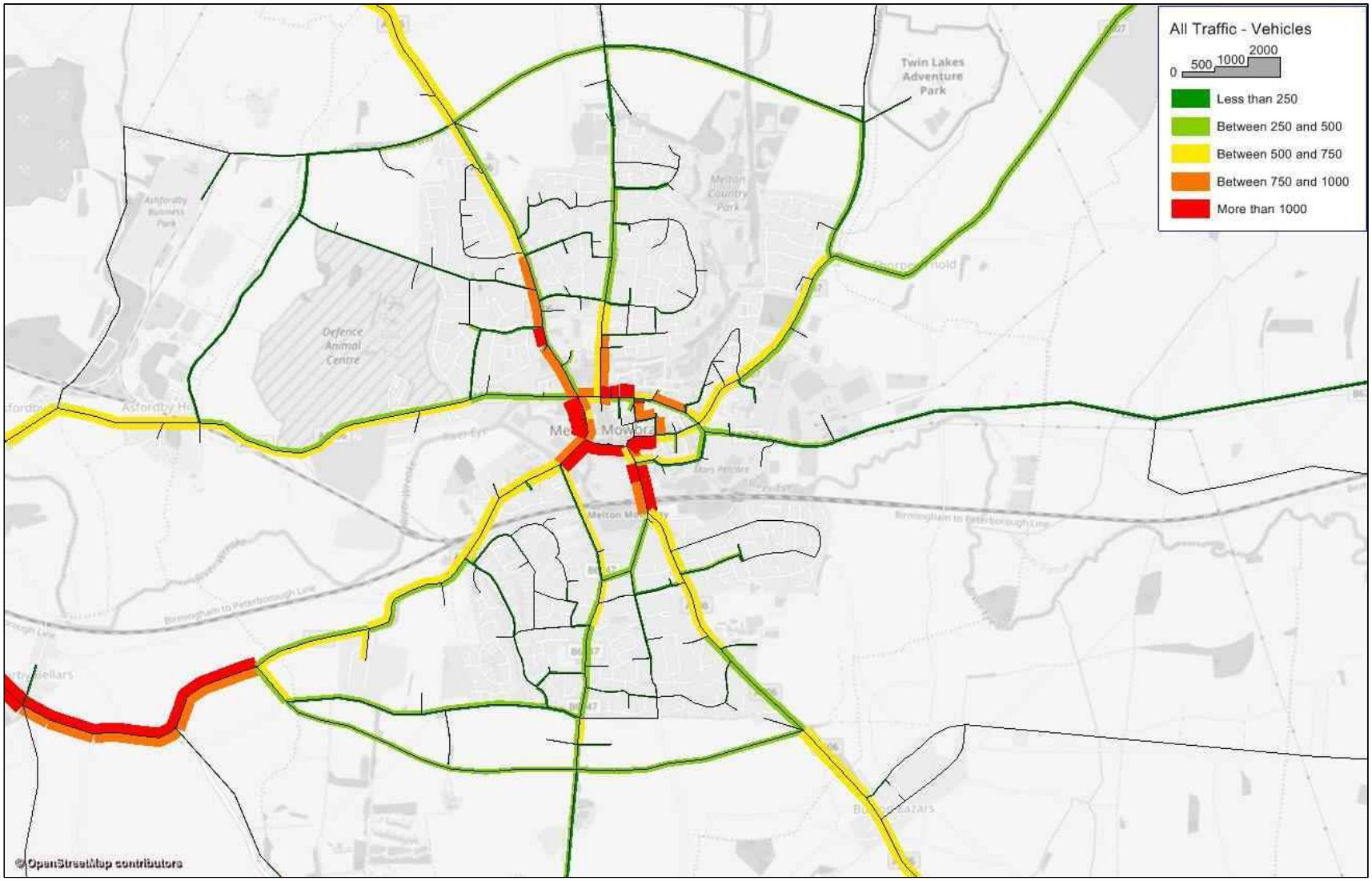


Figure 4.18: LLITM 2014 Core Scenario Forecast Highway Volume-Capacity Ratio – 2014 Base Year AM Peak

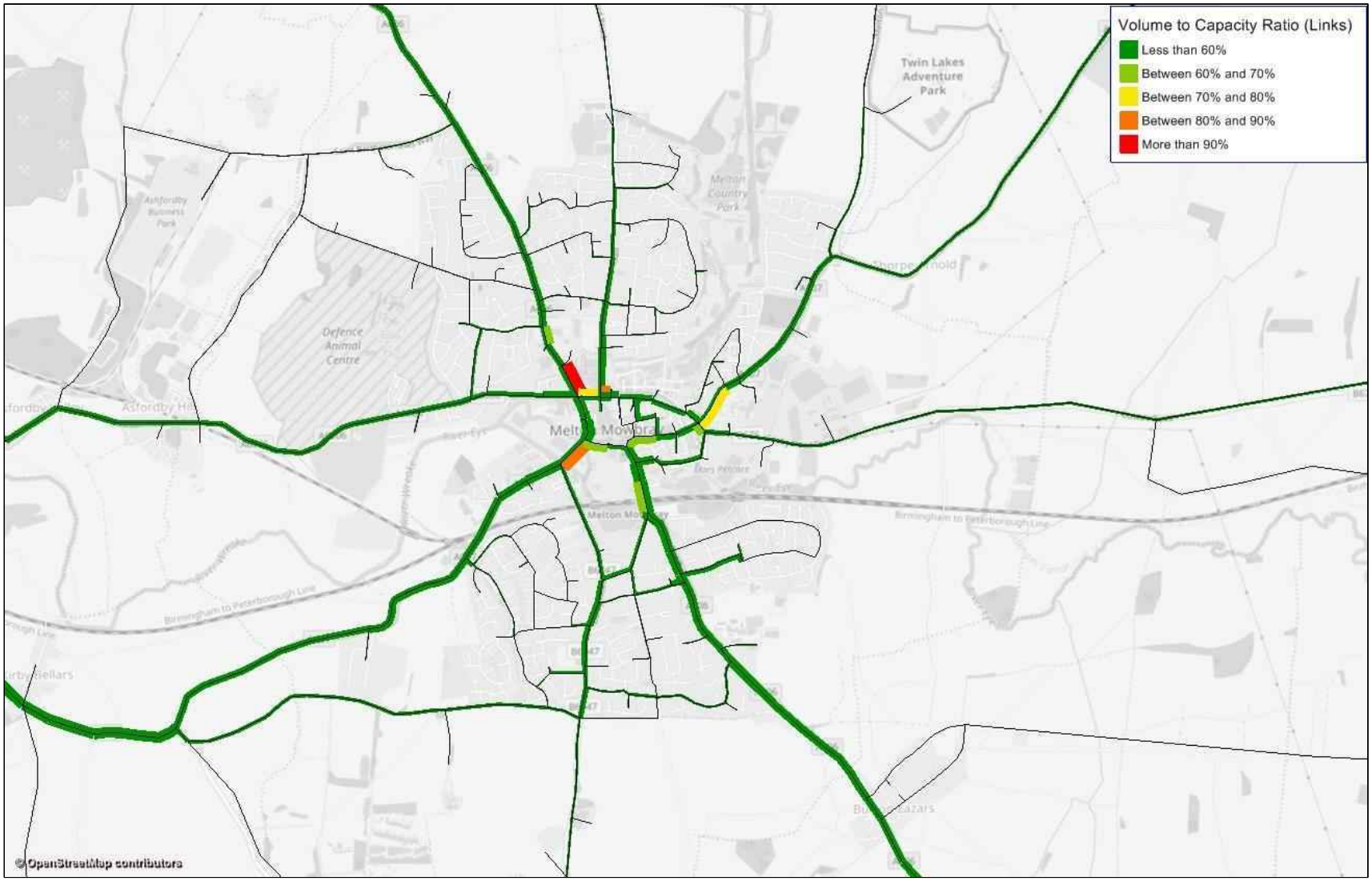


Figure 4.19: LLITM 2014 Core Scenario Forecast Highway Volume-Capacity Ratio – 2036 Forecast Year AM Peak

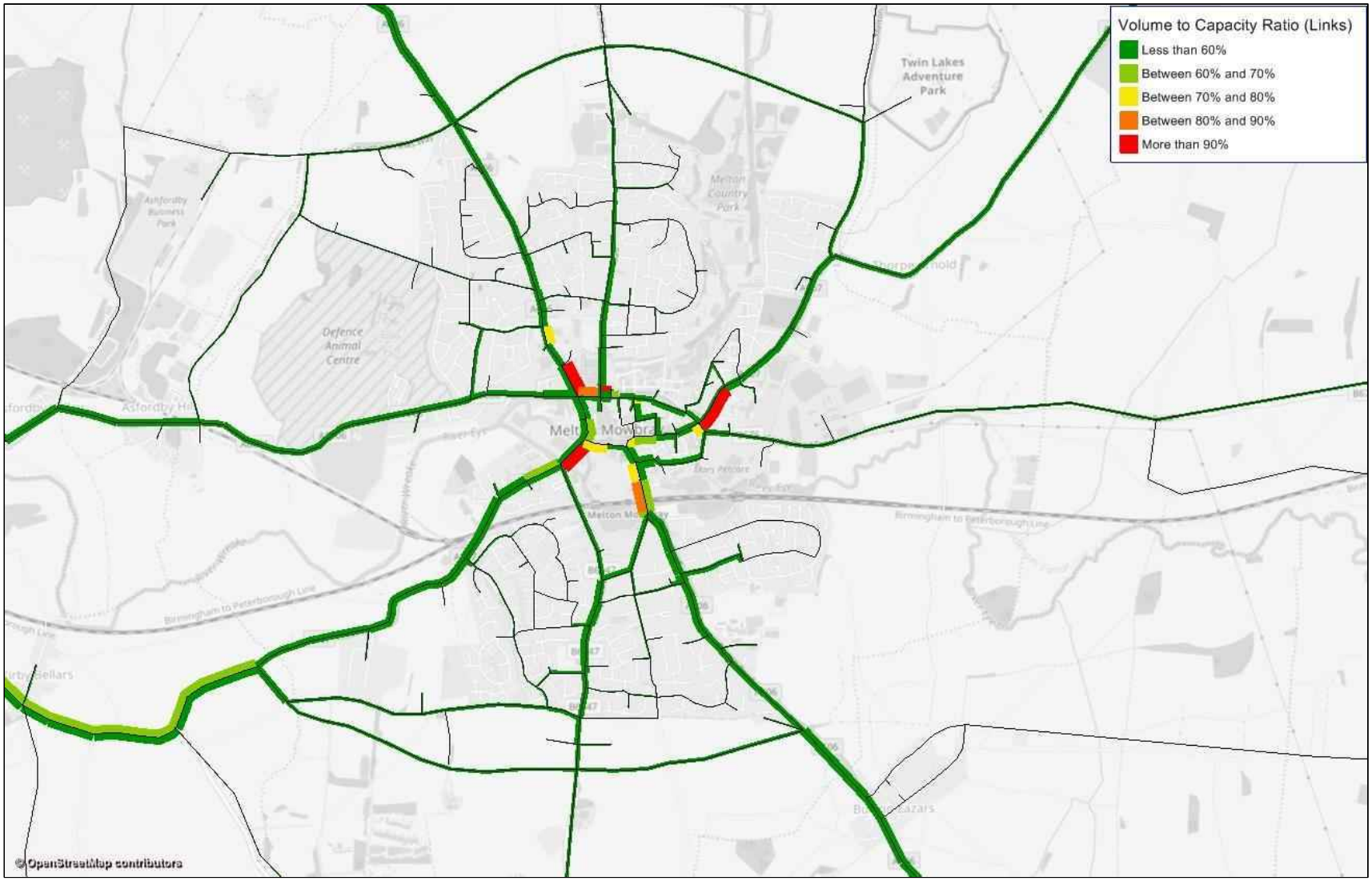


Figure 4.20: LLITM 2014 Core Scenario Forecast Highway Volume-Capacity Ratio – 2014 Base Year PM Peak

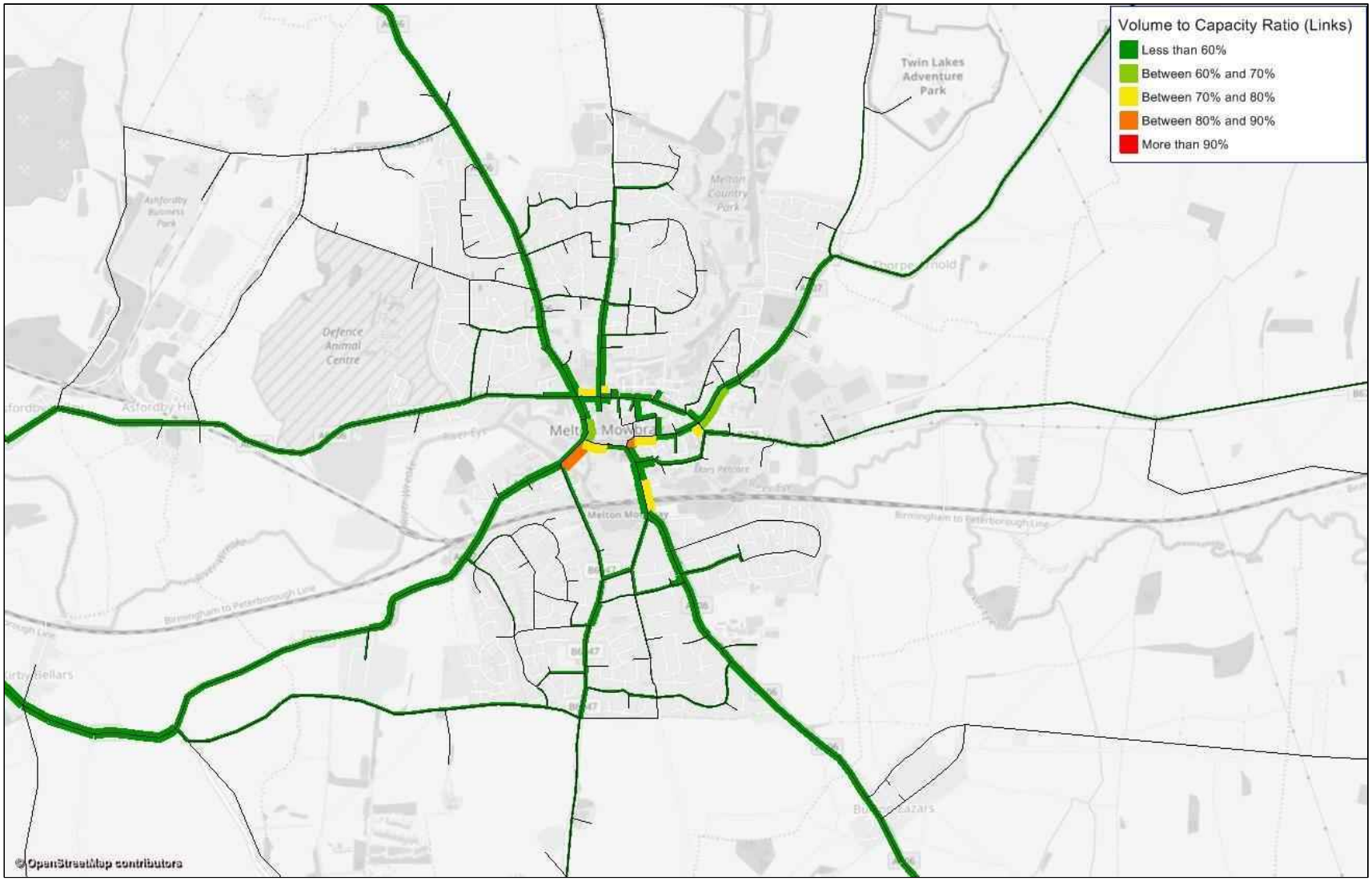


Figure 4.21: LLITM 2014 Core Scenario Forecast Highway Volume-Capacity Ratio – 2036 Forecast Year PM Peak

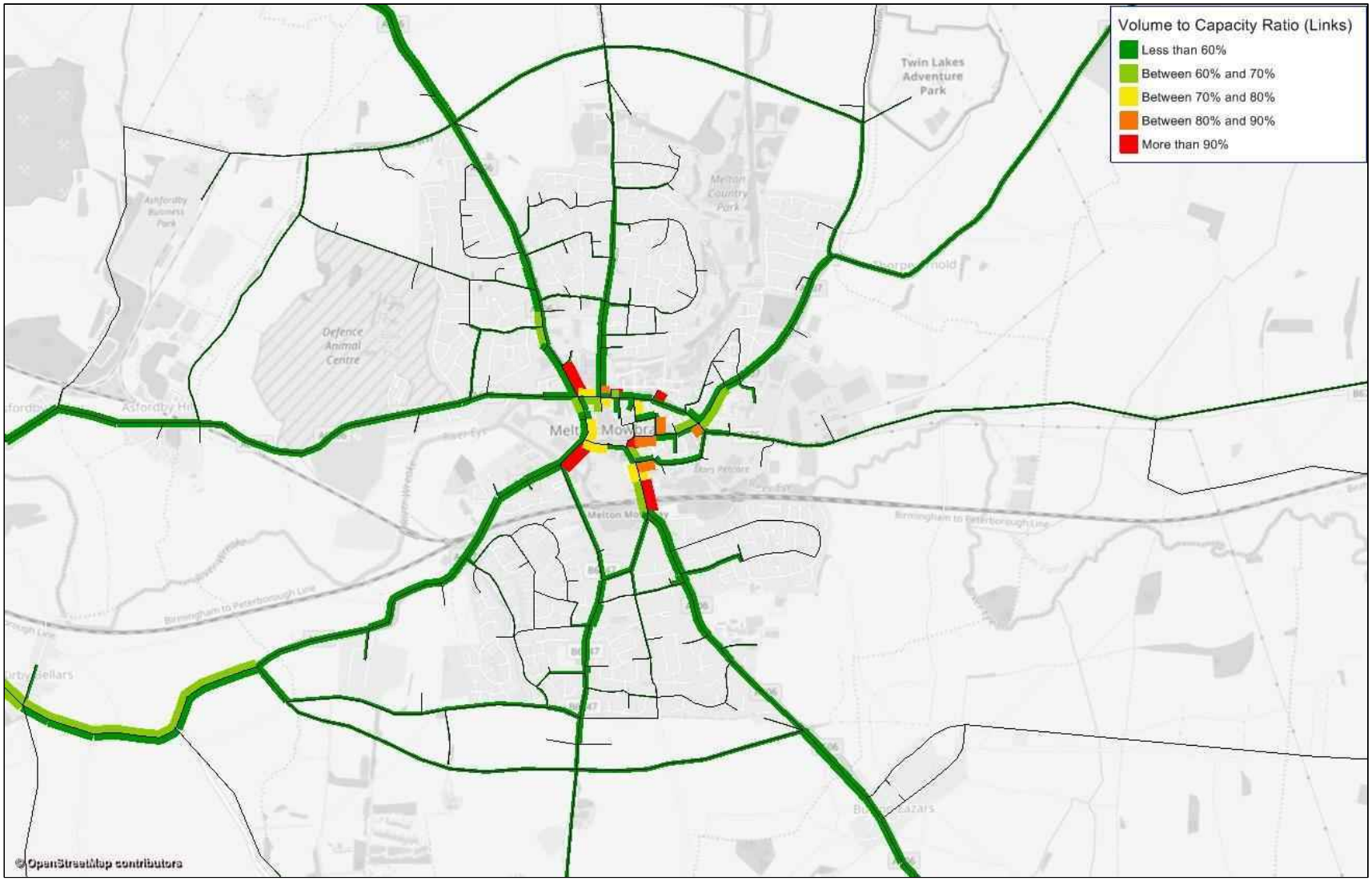


Figure 4.22: LLITM 2014 Core Scenario Forecast Highway Junction Delay – 2014 Base Year AM Peak

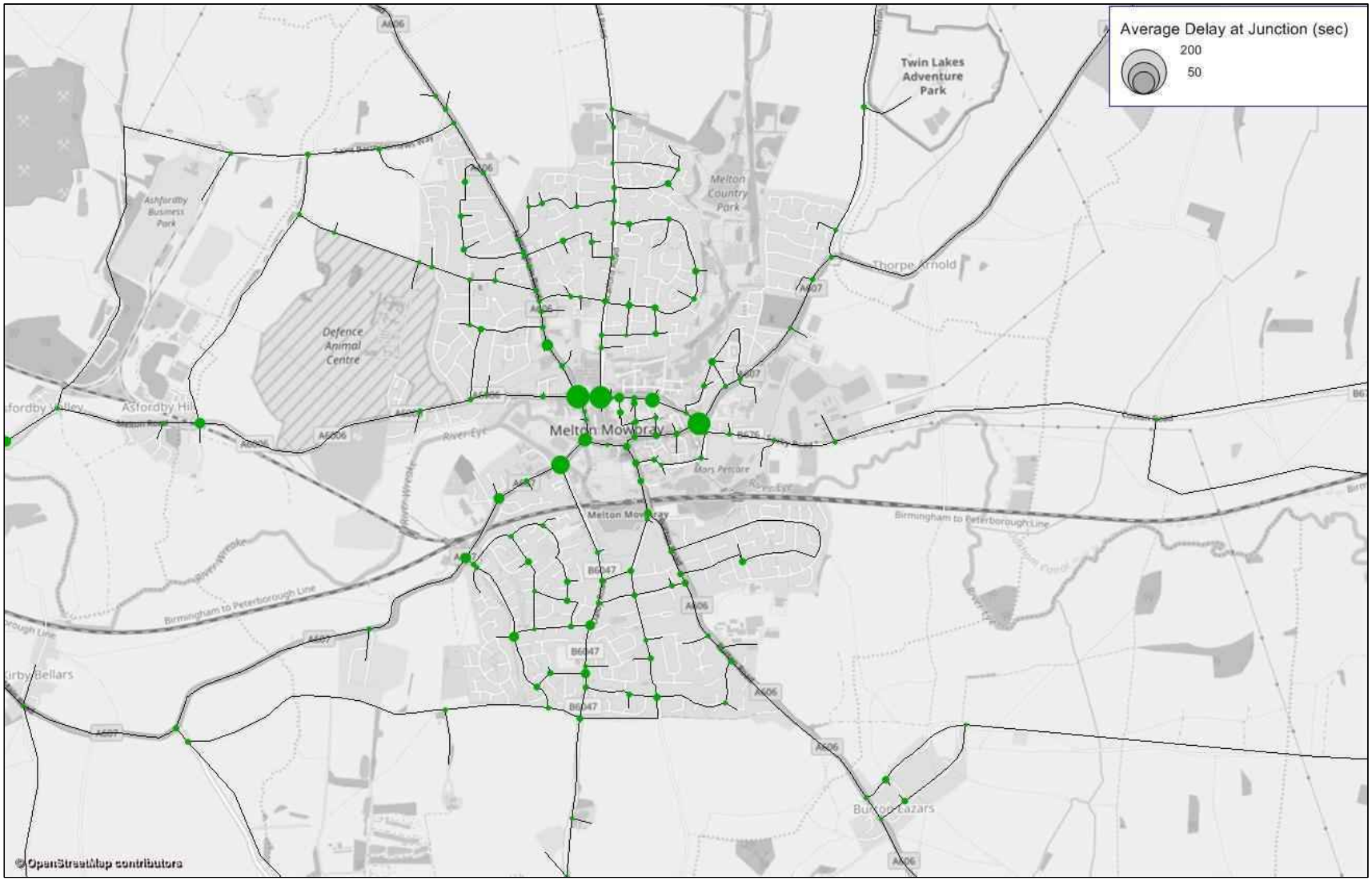


Figure 4.23: LLITM 2014 Core Scenario Forecast Highway Junction Delay – 2036 Forecast Year AM Peak

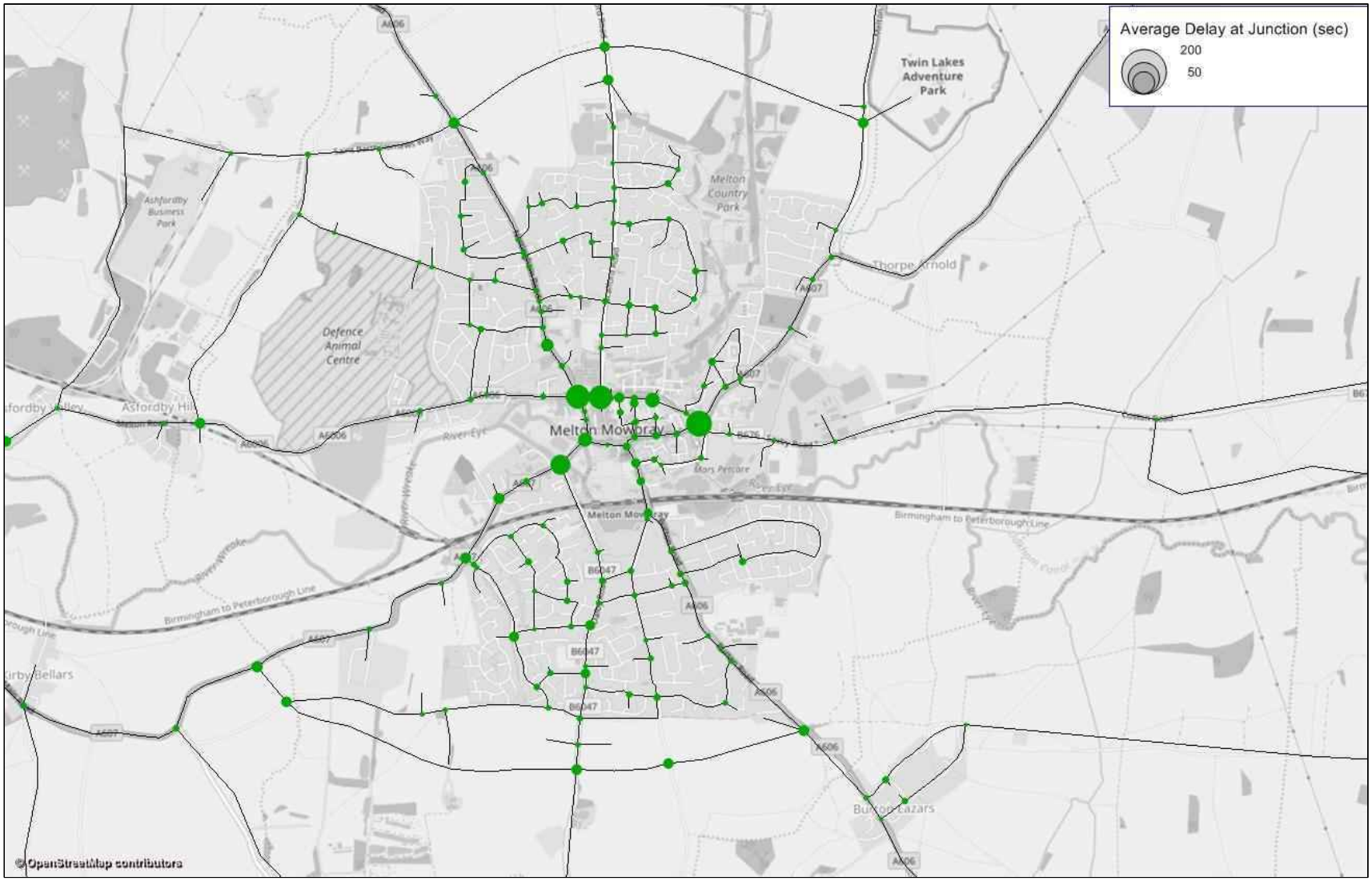


Figure 4.24: LLITM 2014 Core Scenario Forecast Highway Junction Delay – 2014 Base Year PM Peak

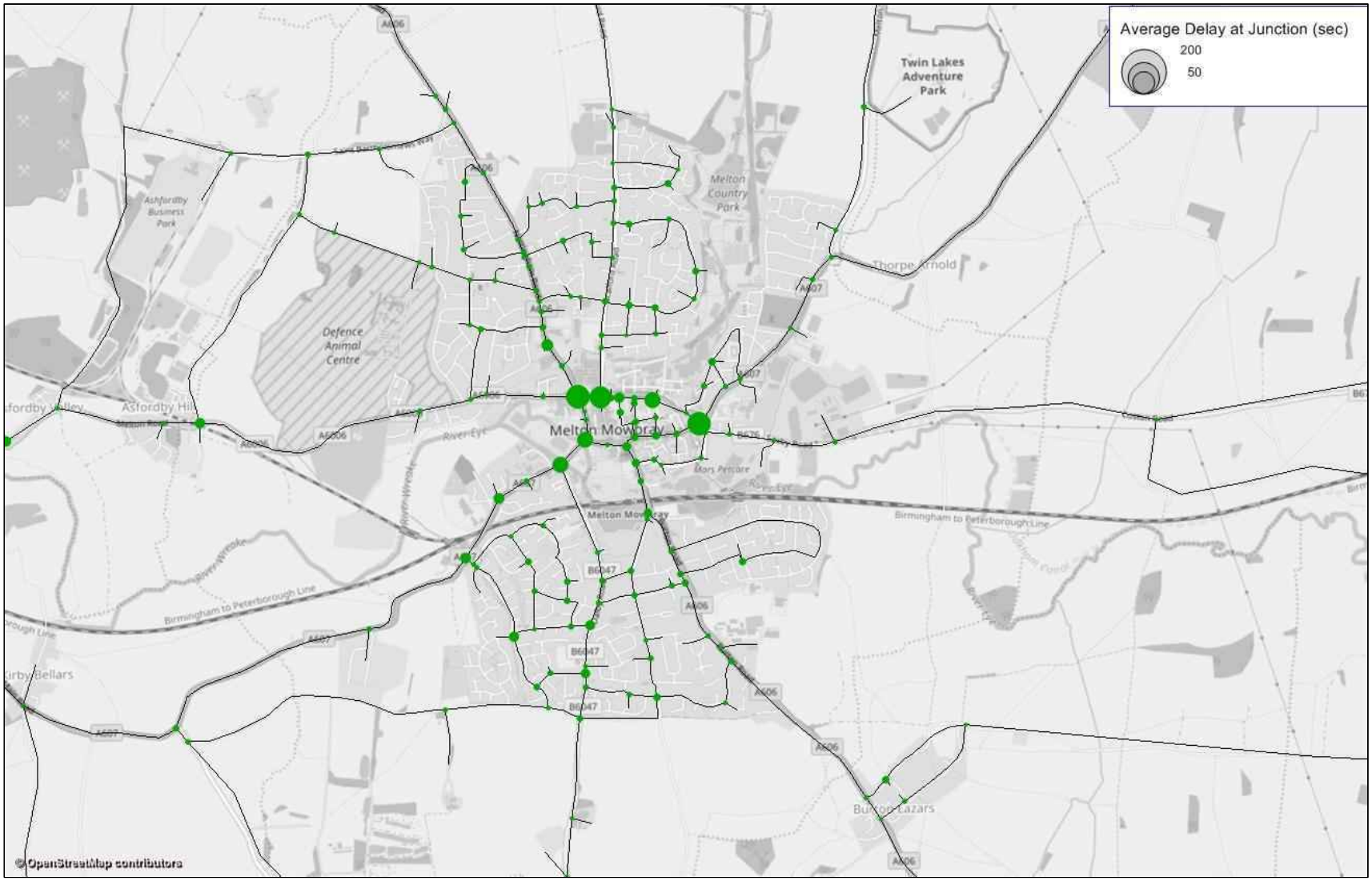


Figure 4.25: LLITM 2014 Core Scenario Forecast Highway Junction Delay – 2036 Forecast Year PM Peak

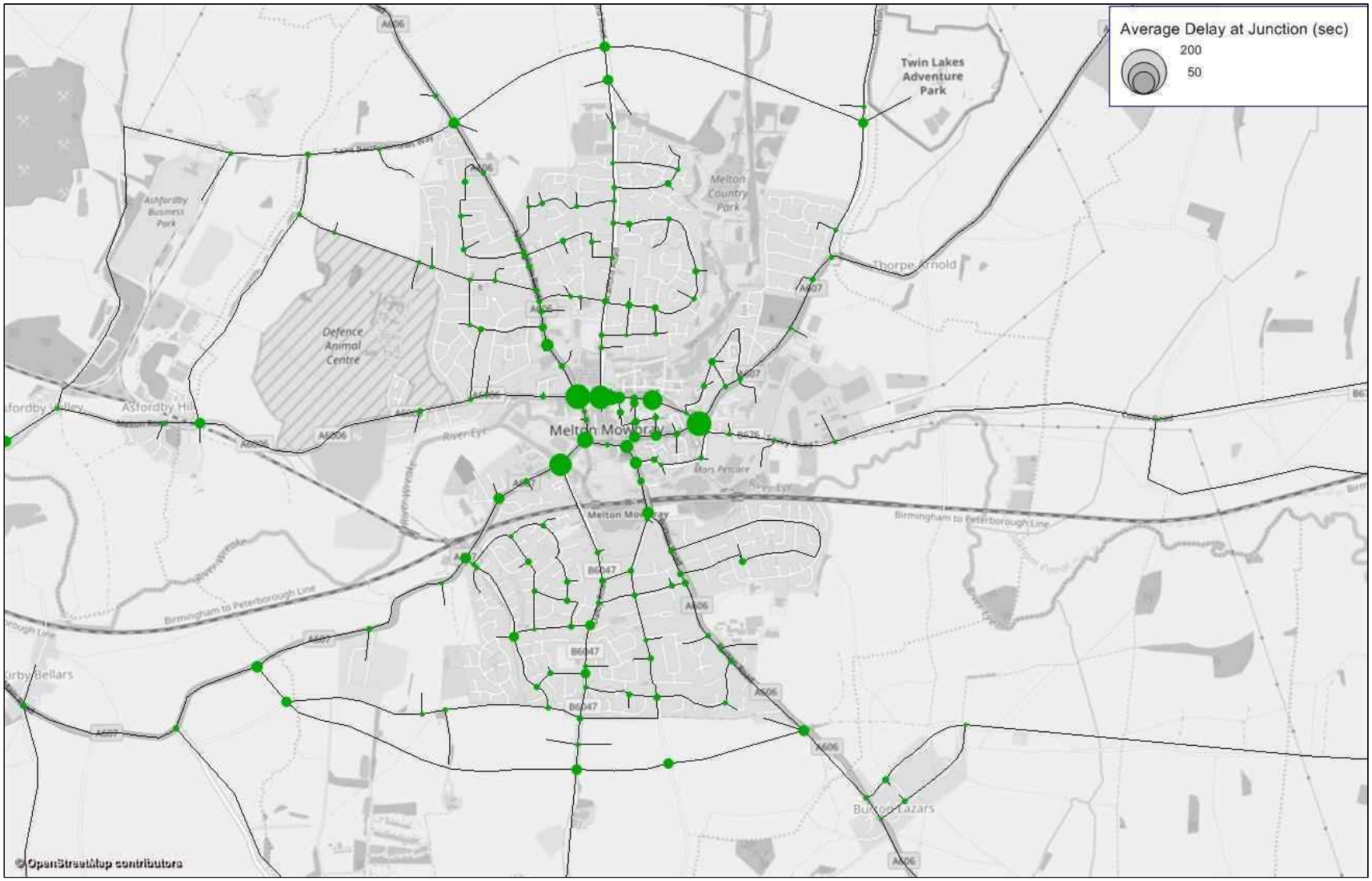


Figure 4.26: LLITM 2014 Core Scenario Forecast Highway Melton Mowbray Through Traffic – 2014 Base Year AM Peak

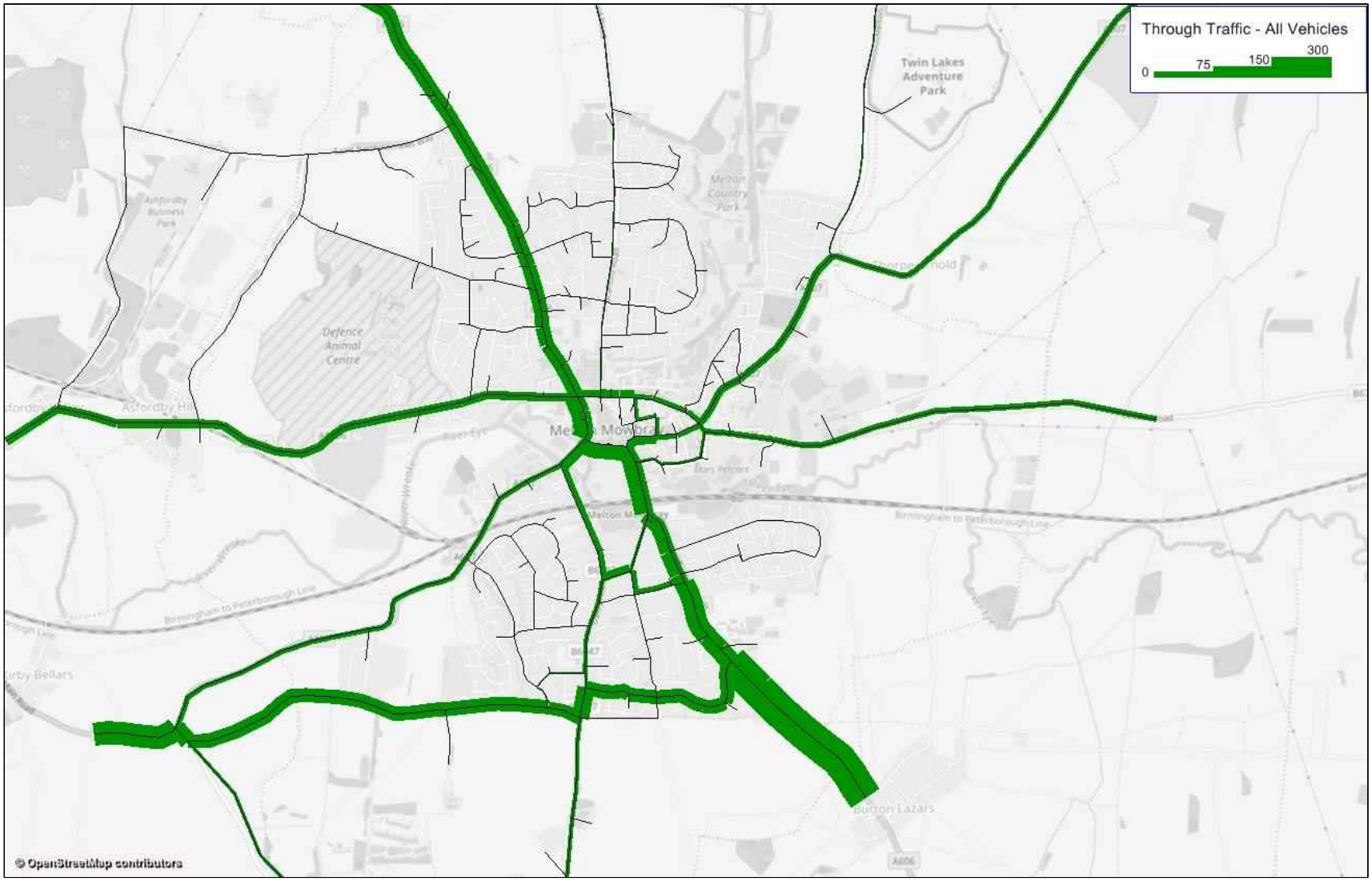
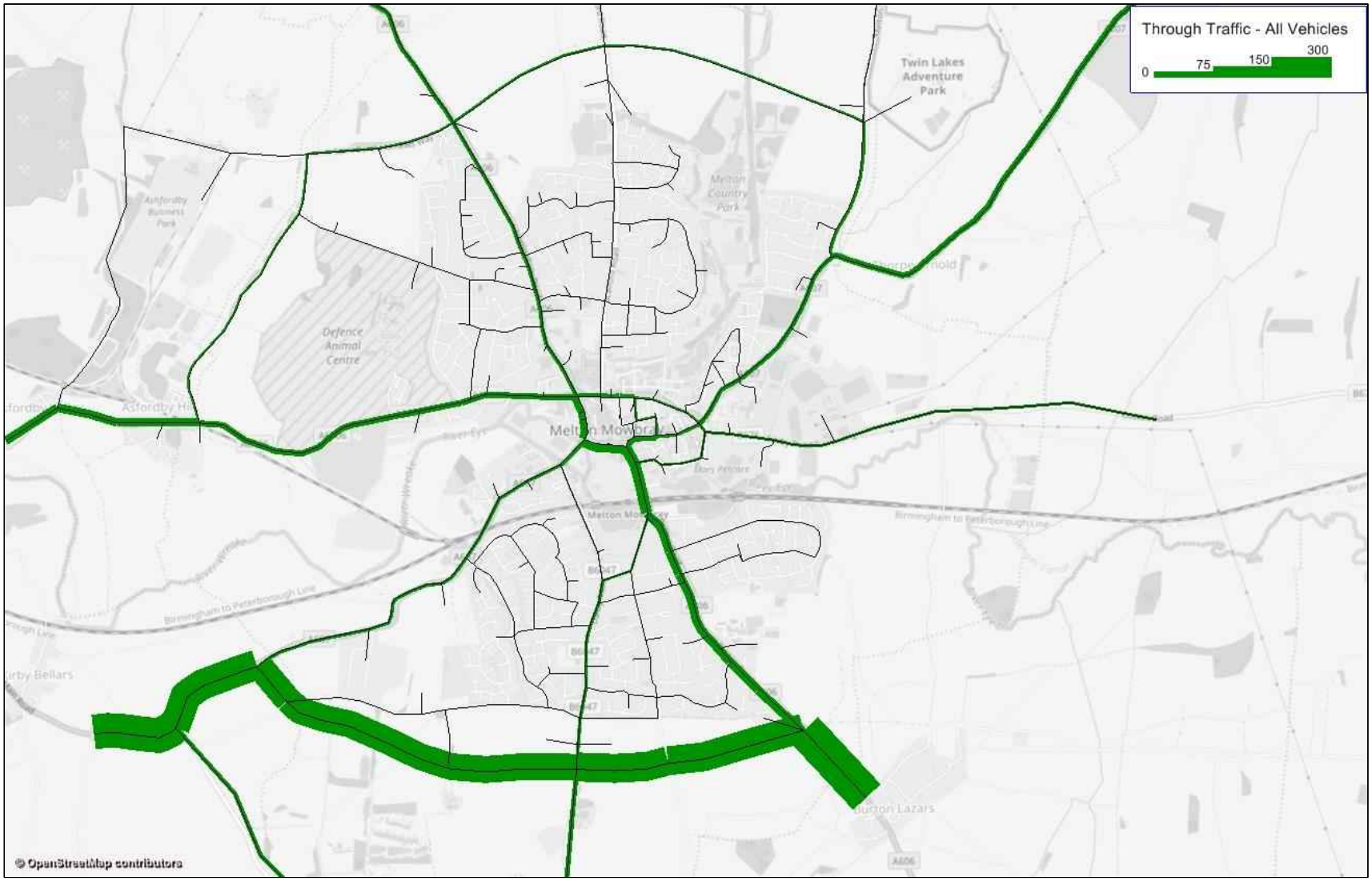


Figure 4.27: LLITM 2014 Core Scenario Forecast Highway Melton Mowbray Through Traffic – 2036 Forecast Year AM Peak



Section 5 – With Scheme Scenario Forecasts

5.1 Introduction

5.1.1 Based on the Core Scenario forecasts, from 2021 onwards LLITM 2014 forecasts have been undertaken with the addition of the proposed scheme as defined in Section 3.2.18 to produce the "with scheme" scenario. This section details the changes in the model forecasts as a result of implementing the proposed scheme in comparison with the Core Scenario forecasts detailed in Section 4.

5.2 Demand Model Convergence

5.2.1 As with the Core Scenario, the demand model has been run iteratively with the assignment models, with the convergence of the overall model assessed against a target of 0.15. Table 5.1 details the convergence statistics by iteration for the "with scheme" scenario, which has been undertaken in 2021, 2036, 2041 and 2051.

5.2.2 Table 5.1 demonstrates that the demand model reaches the desired convergence level in 2021 and 2036 forecast years. In 2041 and 2051 the demand model does not reach the target $\%Gap$ value, stopping at the maximum number of iterations (30); however the $\%Gap$ value is close to the target, and below the upper recommended value of 0.2 within WebTAG in 2041, with the 2051 forecasts used as a sensitivity test within the scheme appraisal.

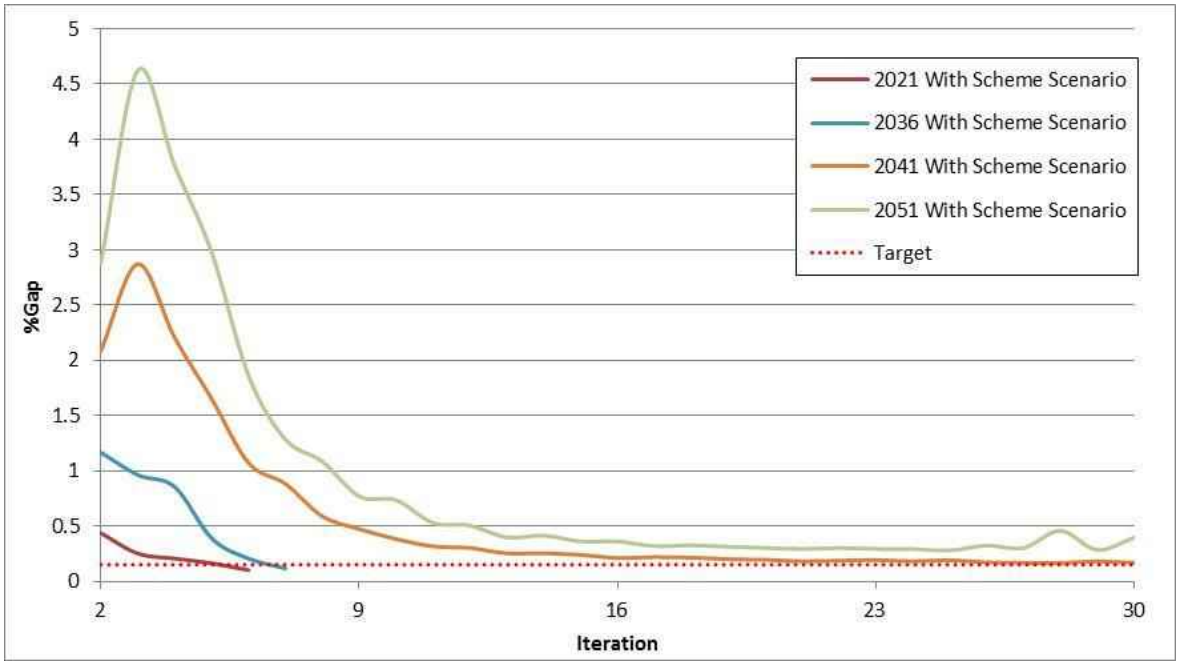
5.2.3 The "with scheme" forecasts include demand responses to the scheme for HGV and LGV traffic, which are fixed within the "without scheme" forecasts. This adds to the demand responses available within the model, and may worsen the convergence of the model compared to the Core Scenario forecasts.

5.2.4 It is worth noting that the changes in the forecast flows and delays in response to the proposed scheme within the vicinity of Melton Mowbray (presented later in this section) do not show evidence of model responses which cannot be explained by the implementation of the scheme. Therefore, whilst the levels of convergence in the demand model are lower than in the Core Scenario, this does not appear to be material to the forecasts within the vicinity of the proposed scheme, and therefore to the assessment of the scheme.

Table 5.1: LLITM 2014 With Scheme Demand Model Convergence

Iteration	2021	2036	2041	2051
2	0.44	1.23	2.09	2.88
3	0.25	1.25	2.87	4.62
4	0.21	1.13	2.20	3.76
5	0.16	0.72	1.65	2.98
6	0.10	0.50	1.07	1.86
7		0.30	0.88	1.28
8		0.25	0.59	1.08
9		0.18	0.47	0.77
10		0.15	0.38	0.73
11		0.12	0.32	0.53
12			0.30	0.50
13			0.25	0.40
14			0.25	0.41
15			0.24	0.36
16			0.21	0.36
17			0.22	0.32
18			0.21	0.32
19			0.20	0.31
20			0.19	0.30
21			0.18	0.29
22			0.19	0.30
23			0.19	0.29
24			0.18	0.29
25			0.19	0.28
26			0.17	0.32
27			0.17	0.30
28			0.16	0.46
29			0.18	0.28
30			0.17	0.40

Figure 5.1: LLITM 2014 With Scheme Demand Model Convergence



5.3 Highway Assignment Forecasts

5.3.1 Comparable network performance statistics to those detailed in Section 4.6 have been produced for the "with scheme" forecasts from LLITM 2014. Figure 5.2 provides a summary of the forecast network performance statistics within the AM Peak and PM Peak hours for the highway network within Melton Borough and Melton Mowbray. Figure 5.2 shows the forecast for these network performance indicators in the "with scheme" scenario, with the corresponding forecasts from the Core Scenario (i.e. excluding the proposed scheme) shown as dotted lines within the plots.

5.3.2 In summary, Figure 5.2 shows that with the inclusion of the proposed scheme:

- there is a forecast increase in traffic (measured in vehicle-kilometres) within Melton Borough, with a forecast reduction in traffic within Melton Mowbray as traffic shifts onto the proposed distributor road;
- there is a forecast reduction in vehicle-delays both within Melton Borough and Melton Mowbray; and
- there is a forecast increase in average network speeds within both Melton Borough and Melton Mowbray.

5.3.3 Table 5.2 and Table 5.4 provide further detail on the forecast network performance statistics for Melton Borough and Melton Mowbray respectively for the "with scheme" scenario. The network statistics for 2014 and 2016, which are prior to the assumed opening of the proposed scheme, are those detailed in Section 4.6 as part of the Core Scenario forecasts.

5.3.4 Table 5.3 and Table 5.5 show the forecast change in the highway network performance statistics from the Core Scenario forecasts with the introduction of the proposed scheme for Melton Borough and Melton Mowbray respectively. Taking the 2036 forecasts, Table 5.3 shows that there is forecast to be a 4% increase in traffic (measured in vehicle-kilometres) within Melton Borough in all time periods, with between a 4% and 5% increase in average network speeds across the borough. Within Melton Mowbray in 2036 there is forecast to be around a 10% reduction in traffic within the urban area, and between a 2% and 8% increase in average network speeds depending on the time period.

5.3.5 Figure 5.3 and Figure 5.4 show the forecast change in traffic levels within Melton Mowbray as a result of introducing the proposed scheme within the 2036 AM Peak hour and PM Peak hour models. Corresponding plots for all three time periods and for 2021, 2036, 2041 and 2051 are shown in Appendix E.

5.3.6 These forecasts for the two peak hours in 2036 show that with the inclusion of the proposed scheme there is forecast to be a reduction in traffic volumes within Melton Mowbray as trips reroute onto the new distributor road. The largest reductions in traffic levels are forecast on the A606 Burton Road to the south-east of the town centre, and on the A607 Thorpe Road and Melton Spinney Road to the north-east of the town centre.

5.3.7 In addition to the forecast flow changes with the introduction of the proposed scheme, Figure 5.5 and Figure 5.6 show the forecast change in the volume-capacity ratios from the Core Scenario to the "with scheme" scenario in the 2036 forecasts for the AM Peak and PM Peak hours. The corresponding figures for 2021, 2036, 2041 and 2051 for the AM Peak, interpeak and PM Peak are given in Appendix F.

5.3.8 The forecast change in volume-capacity ratios follows a similar pattern as the forecast flow changes, with areas with higher forecast reductions in flow with the introduction of the scheme also forecast to see the largest reductions in volume-capacity ratios.

5.3.9 Figure 5.7 shows the forecast routeing of Melton Mowbray through traffic in the 2036 "with scheme" scenario in the AM Peak hour. This can be compared with the corresponding figure from the Core Scenario (see Figure 4.27), and shows that the proposed distributor road carries a significant proportion of the through traffic, removing this through traffic from the urban area.

Figure 5.2: LLITM 2014 With Scheme Forecast Change in Network Performance within Melton Borough and Melton Mowbray within AM Peak and PM Peak Hours

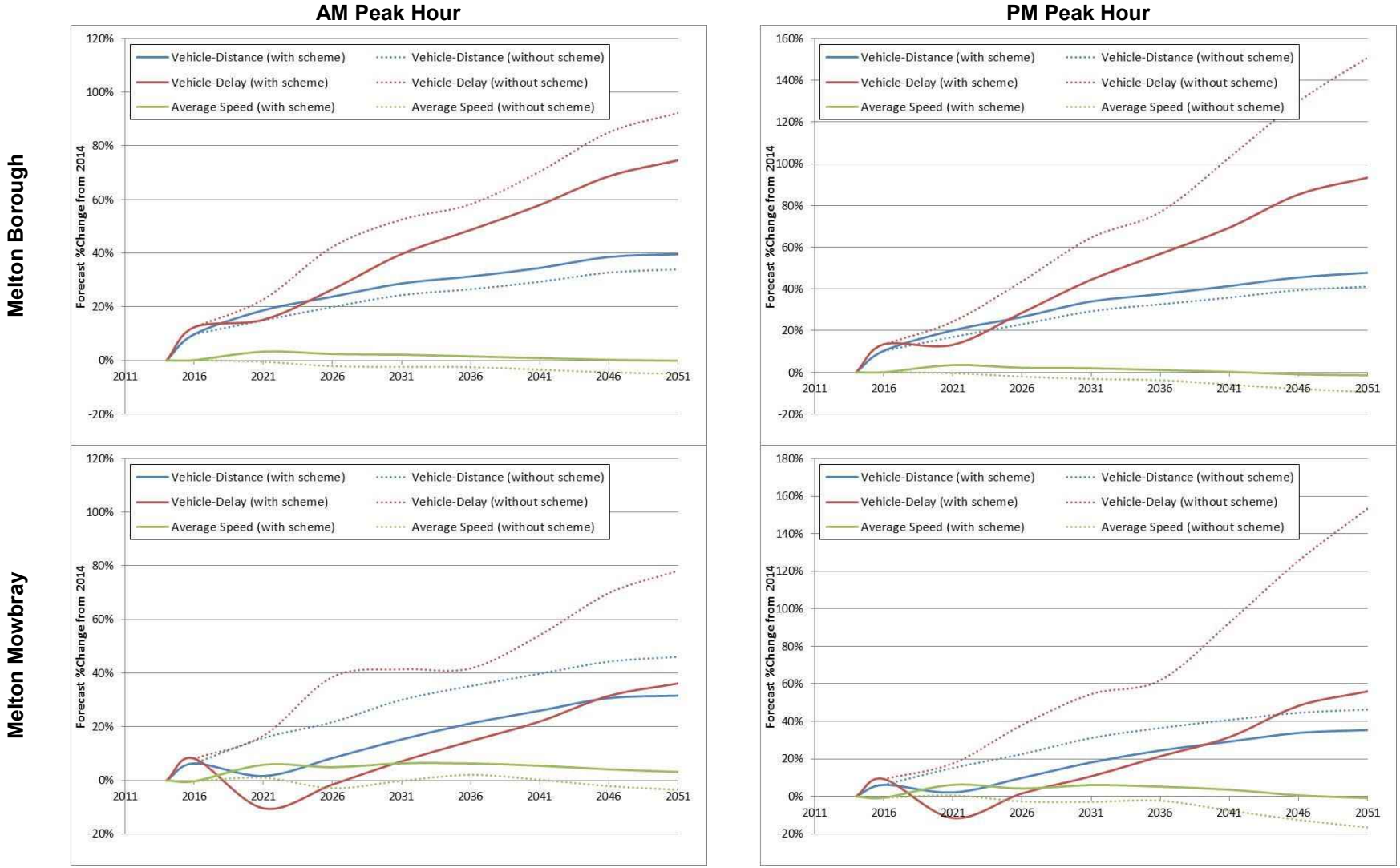


Table 5.2: LLITM 2014 With Scheme Forecast Network Performance within Melton Borough

		2014	2016	2021	2026	2031	2036	2041	2046	2051
AM Peak Hour	Vehicle Distance (veh-km)	110,745	121,535	131,454	137,075	142,535	145,431	148,918	153,473	154,606
	Vehicle Delay-Time (veh-hours)	274	308	316	347	383	407	433	462	479
	Average Speed (kph)	56	56	57	57	57	56	56	56	56
	Vehicle Delay/Vehicle Distance (sec/km)	9	9	9	9	10	10	10	11	11
Interpeak Hour	Vehicle Distance (veh-km)	75,614	85,432	95,658	100,969	107,416	110,711	113,550	116,914	118,830
	Vehicle Delay-Time (veh-hours)	175	201	207	232	259	279	297	316	324
	Average Speed (kph)	55	56	58	57	57	57	57	56	56
	Vehicle Delay/Vehicle Distance (sec/km)	8	8	8	8	9	9	9	10	10
PM Peak Hour	Vehicle Distance (veh-km)	115,021	126,853	138,204	145,549	154,103	158,160	162,620	167,392	169,928
	Vehicle Delay-Time (veh-hours)	305	345	345	392	440	478	516	564	589
	Average Speed (kph)	55	55	57	56	56	56	55	55	54
	Vehicle Delay/Vehicle Distance (sec/km)	10	10	9	10	10	11	11	12	12

Table 5.3: LLITM 2014 With Scheme Forecast Change from Core Scenario in Network Performance within Melton Borough

		2021	2026	2031	2036	2041	2046	2051
AM Peak Hour	Vehicle Distance (veh-km)	3%	3%	3%	4%	4%	4%	4%
	Vehicle Delay-Time (veh-hours)	-6%	-11%	-8%	-6%	-7%	-9%	-9%
	Average Speed (kph)	4%	5%	5%	4%	4%	5%	5%
	Vehicle Delay/Vehicle Distance (sec/km)	-9%	-14%	-12%	-9%	-11%	-13%	-13%
Interpeak Hour	Vehicle Distance (veh-km)	4%	4%	4%	4%	4%	4%	5%
	Vehicle Delay-Time (veh-hours)	-8%	-8%	-9%	-6%	-7%	-6%	-7%
	Average Speed (kph)	4%	4%	5%	4%	4%	4%	5%
	Vehicle Delay/Vehicle Distance (sec/km)	-11%	-11%	-13%	-10%	-10%	-10%	-12%
PM Peak Hour	Vehicle Distance (veh-km)	3%	3%	4%	4%	4%	4%	5%
	Vehicle Delay-Time (veh-hours)	-9%	-10%	-12%	-11%	-17%	-19%	-23%
	Average Speed (kph)	4%	4%	5%	5%	6%	8%	9%
	Vehicle Delay/Vehicle Distance (sec/km)	-11%	-13%	-15%	-14%	-20%	-23%	-26%

Table 5.4: LLITM 2014 With Scheme Forecast Network Performance within Melton Mowbray

		2014	2016	2021	2026	2031	2036	2041	2046	2051
AM Peak Hour	Vehicle Distance (veh-km)	17,279	18,369	17,558	18,719	19,921	20,954	21,771	22,581	22,737
	Vehicle Delay-Time (veh-hours)	189	205	170	186	203	217	231	249	258
	Average Speed (kph)	28	28	30	30	30	30	30	29	29
	Vehicle Delay/Vehicle Distance (sec/km)	39	40	35	36	37	37	38	40	41
Interpeak Hour	Vehicle Distance (veh-km)	13,277	14,499	13,942	15,127	16,429	17,371	18,026	18,673	18,851
	Vehicle Delay-Time (veh-hours)	132	147	127	143	157	170	181	194	199
	Average Speed (kph)	29	29	30	30	31	31	30	30	30
	Vehicle Delay/Vehicle Distance (sec/km)	36	37	33	34	34	35	36	37	38
PM Peak Hour	Vehicle Distance (veh-km)	18,521	19,661	18,910	20,357	21,884	23,058	23,937	24,794	25,081
	Vehicle Delay-Time (veh-hours)	211	230	187	214	234	256	278	313	329
	Average Speed (kph)	28	28	30	29	30	29	29	28	28
	Vehicle Delay/Vehicle Distance (sec/km)	41	42	36	38	38	40	42	45	47

Table 5.5: LLITM 2014 With Scheme Forecast Change from Core Scenario in Network Performance within Melton Mowbray

		2021	2026	2031	2036	2041	2046	2051
AM Peak Hour	Vehicle Distance (veh-km)	-12%	-11%	-11%	-10%	-10%	-9%	-10%
	Vehicle Delay-Time (veh-hours)	-23%	-29%	-24%	-19%	-21%	-23%	-24%
	Average Speed (kph)	5%	8%	7%	4%	5%	6%	7%
	Vehicle Delay/Vehicle Distance (sec/km)	-12%	-20%	-15%	-10%	-12%	-15%	-15%
Interpeak Hour	Vehicle Distance (veh-km)	-13%	-13%	-12%	-11%	-11%	-10%	-11%
	Vehicle Delay-Time (veh-hours)	-22%	-22%	-22%	-17%	-17%	-17%	-18%
	Average Speed (kph)	4%	4%	5%	2%	3%	3%	3%
	Vehicle Delay/Vehicle Distance (sec/km)	-10%	-11%	-11%	-6%	-7%	-7%	-8%
PM Peak Hour	Vehicle Distance (veh-km)	-11%	-10%	-10%	-9%	-8%	-7%	-7%
	Vehicle Delay-Time (veh-hours)	-25%	-26%	-28%	-25%	-32%	-34%	-38%
	Average Speed (kph)	6%	7%	9%	8%	12%	15%	19%
	Vehicle Delay/Vehicle Distance (sec/km)	-15%	-18%	-20%	-18%	-26%	-29%	-33%

Figure 5.3: LLITM 2014 Forecast Highway Vehicle Flow Changes from Core Scenario to With Scheme – 2036 Forecast Year AM Peak

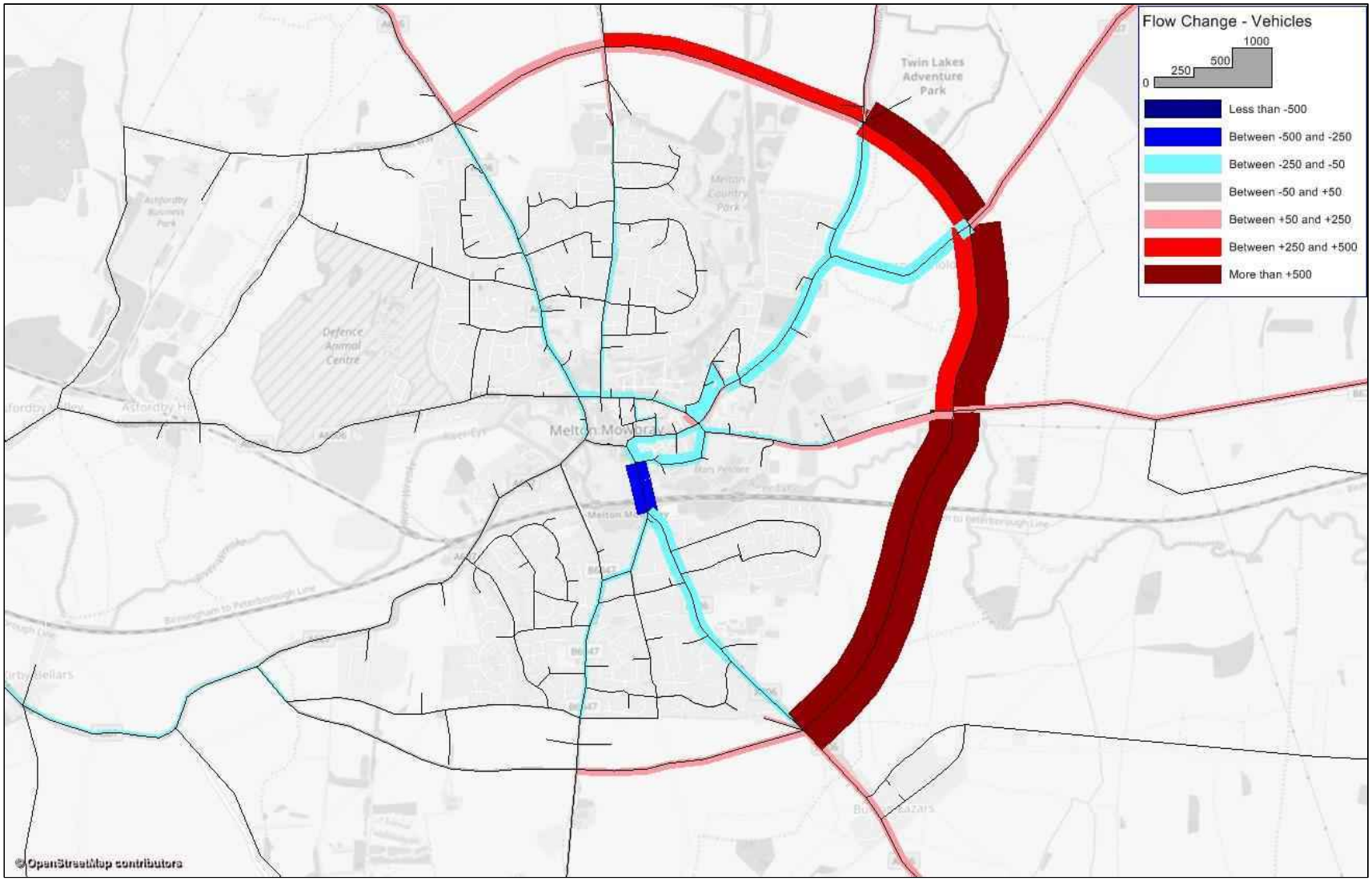


Figure 5.4: LLITM 2014 Forecast Highway Vehicle Flow Changes from Core Scenario to With Scheme – 2036 Forecast Year PM Peak

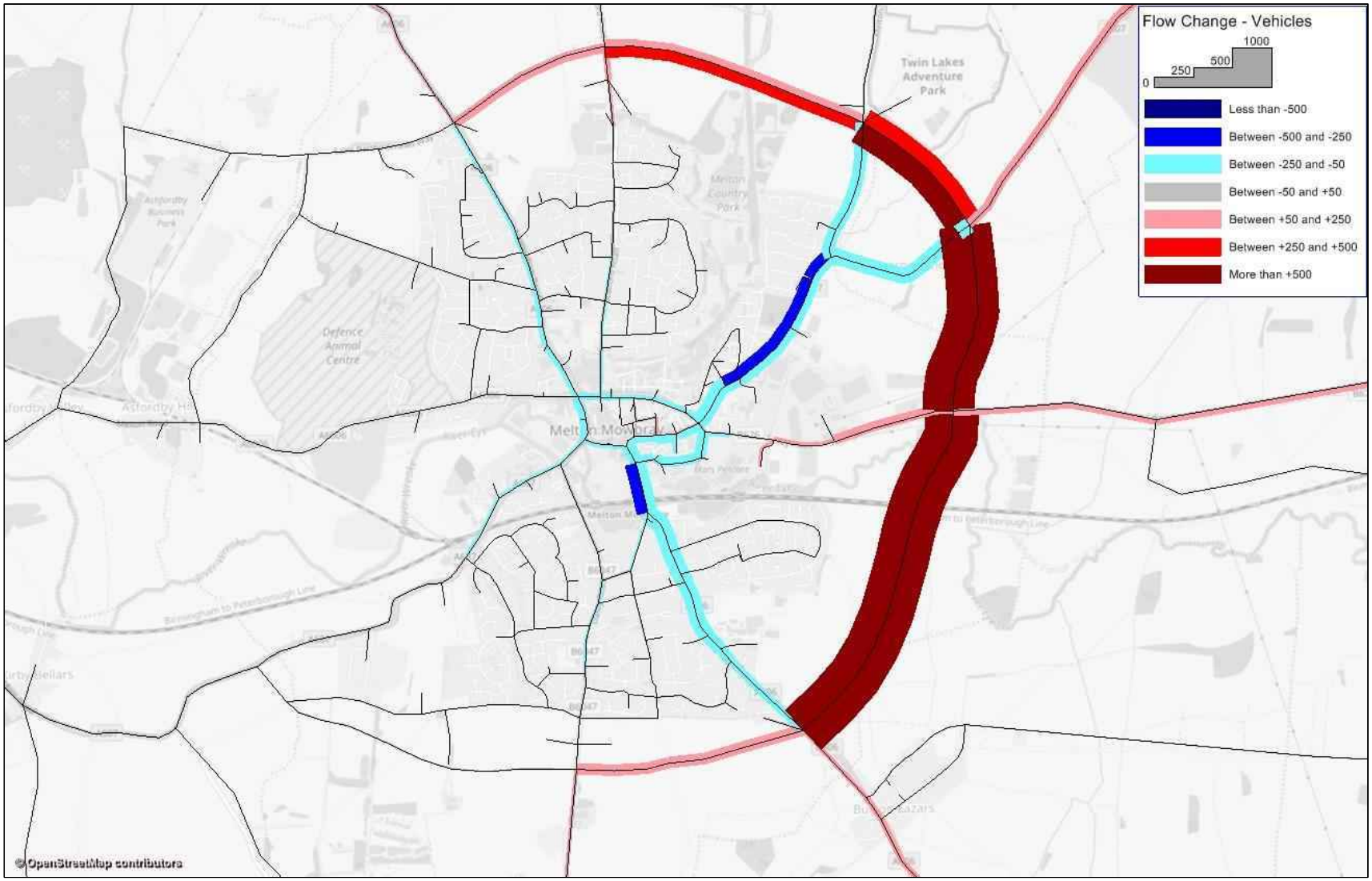


Figure 5.5: LLITM 2014 Forecast Highway Volume-Capacity Ratio Changes from Core Scenario to With Scheme – 2036 Forecast Year AM Peak

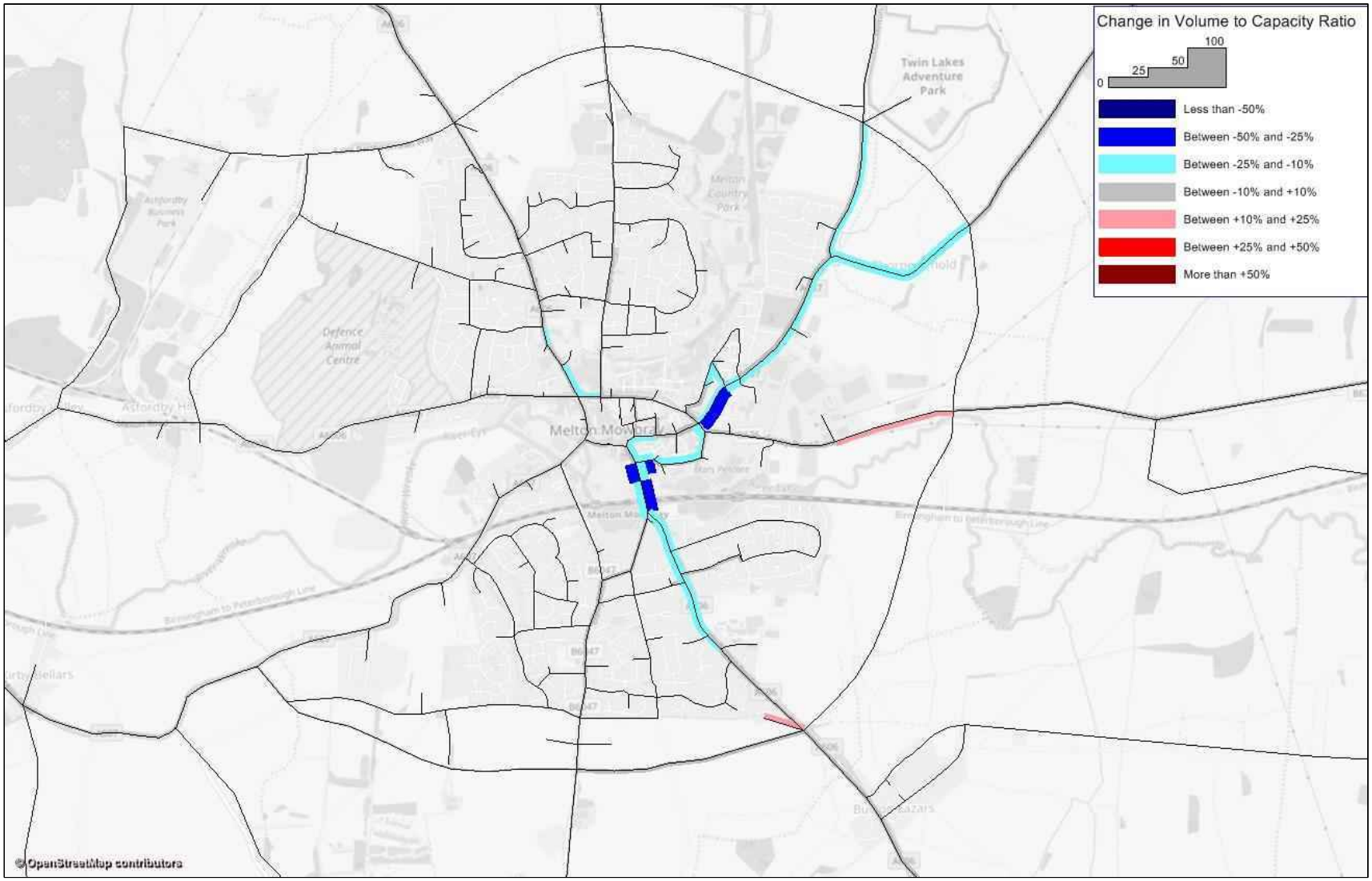


Figure 5.6: LLITM 2014 Forecast Highway Volume-Capacity Ratio Changes from Core Scenario to With Scheme – 2036 Forecast Year PM Peak

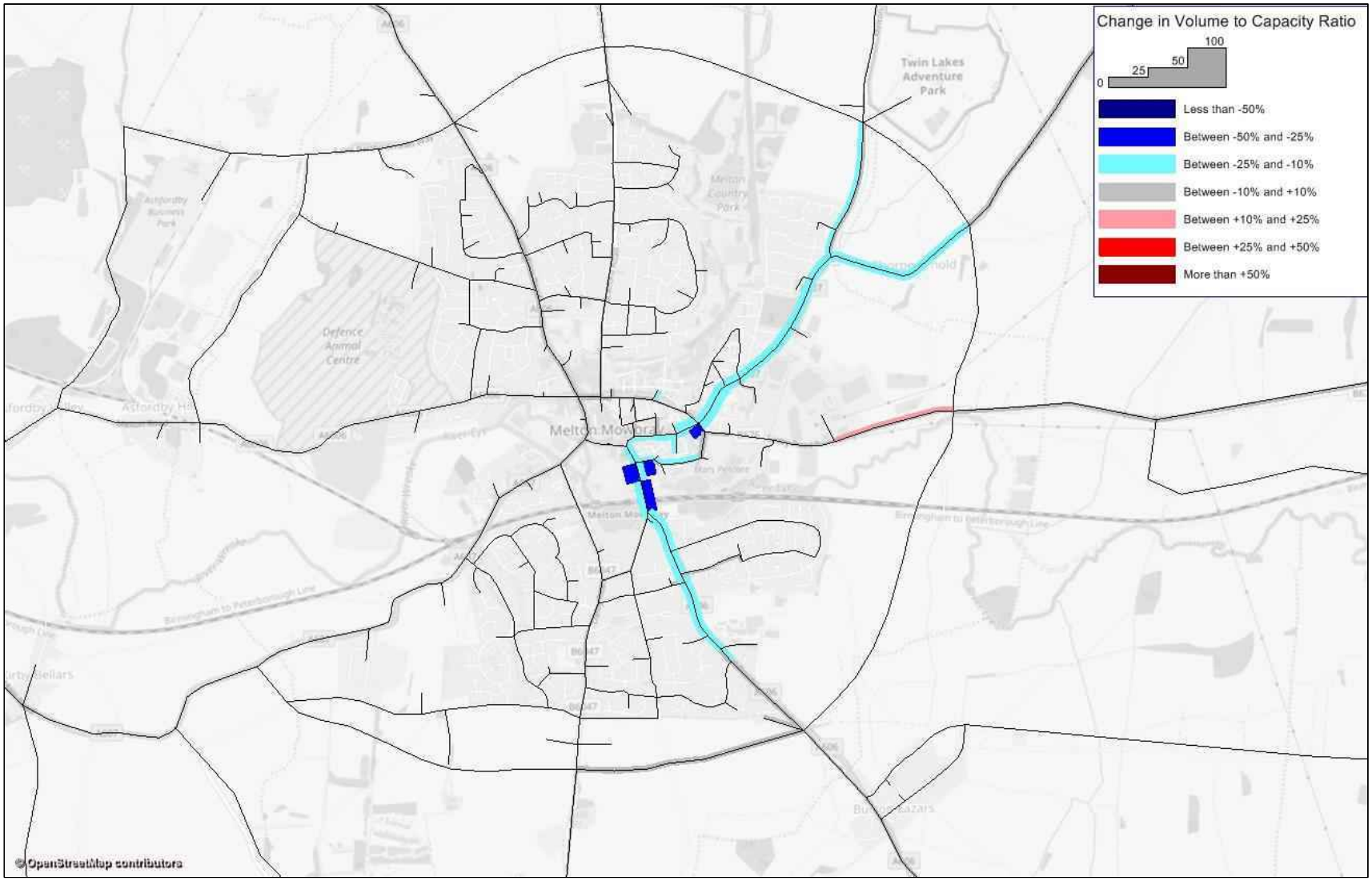
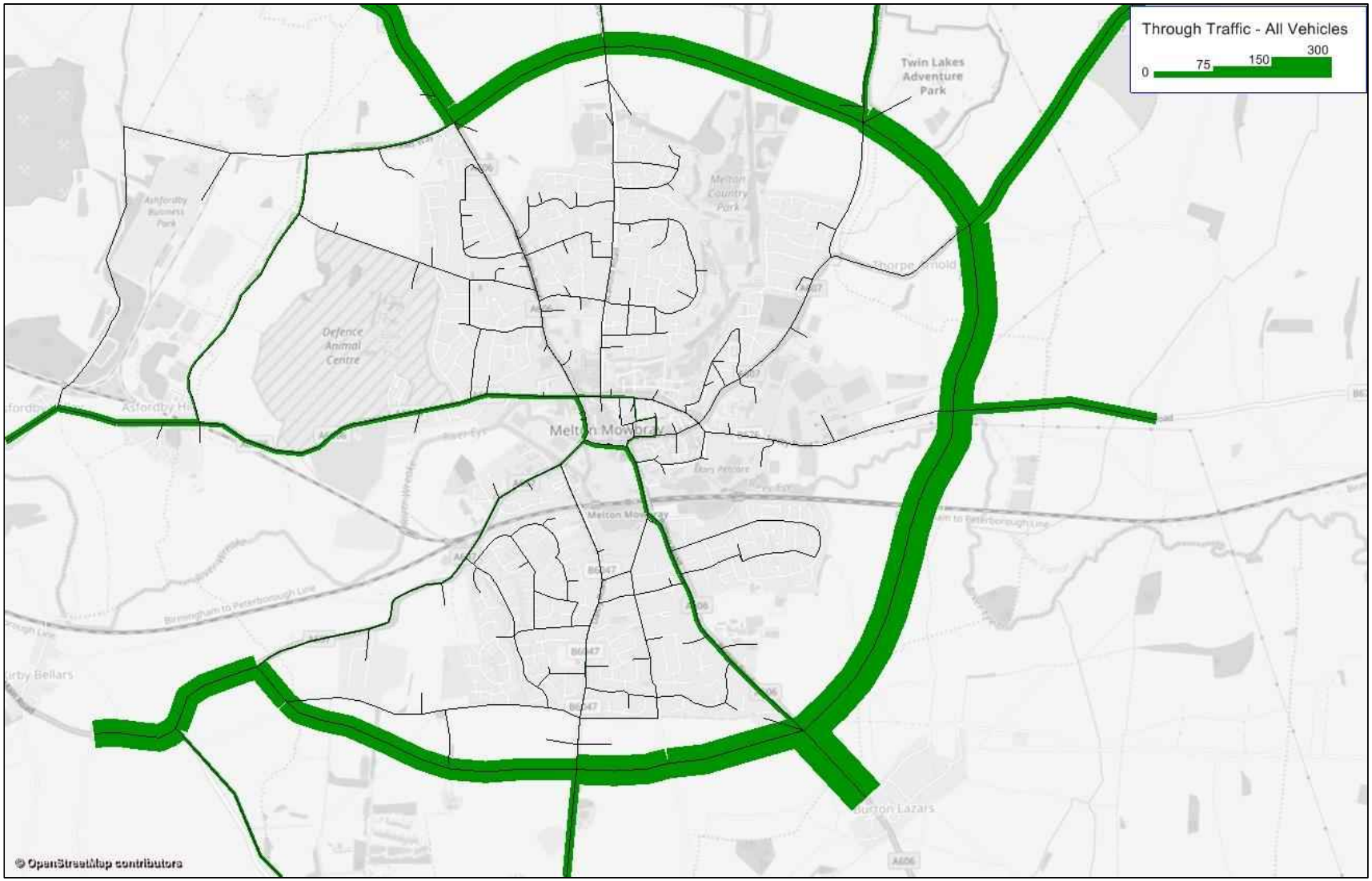


Figure 5.7: LLITM 2014 "with scheme" Scenario Forecast Highway Melton Mowbray Through Traffic – 2036 Forecast Year AM Peak



Section 6 – WebTAG High / Low Growth Sensitivity Testing

6.1 Introduction

6.1.1 Section 4 and Section 5 detail the "central" forecasts for the Core Scenario and the "with scheme" scenario based on the forecasting assumptions detailed in Section 3. To provide an indication of the uncertainty around these forecasts, high and low growth scenarios have been produced based on the guidance detailed in Section 4 of WebTAG Unit M4.

6.1.2 These high and low growth forecasts add or subtract a proportion of the base year demand based on the number of years between the given forecast year and the model's base year, and a factor which varies by mode of travel. This proportion of the base year demand is calculated as follows:

$$\min\left(\sqrt{\mathrm{FY}-2014}, 6\right) * \mathrm{p}$$

where p equals 2.5% for highway demand, and 1.5% for public transport (based on guidance regarding bus demand within WebTAG). For active modes, the same value of p as adopted for public transport has been assumed.

6.1.3 This adjustment to the forecast demand matrices has been applied to the 'reference' demand, which is that based on changes in land-use prior to the application of the variable demand model. This adjusted 'reference' demand is then used as the starting point for the demand model, responding to forecast changes in cost from the base year (including fuel costs and values of time).

6.1.4 The WebTAG high / low growth sensitivity tests have been run from 2021 onwards for the Core Scenario (i.e. excluding the proposed scheme) and the "with scheme" scenario. The corresponding sensitivity test has not been undertaken in 2016 as this forecast year is not used within the scheme appraisal.

6.2 Demand Forecasts

6.2.1 Table 6.1 and Table 6.2 detail the forecast "central" and high / low growth demand totals for 24-hour trip productions for all modes from Leicestershire and Melton Borough respectively for the Core Scenario. Within these two tables the percentage change in demand within the high / low growth scenarios compared with the "central" forecasts is given, along with the corresponding expected change based on the formula defined within WebTAG.

6.2.2 For the high growth sensitivity test, the percentage change in demand from the "central" case matches the expectation from WebTAG for all forecast years for both Leicestershire and Melton Borough, demonstrating that the sensitivity test has been applied correctly.

6.2.3 For the low growth scenario, the modelled difference in demand is generally smaller in magnitude (by around 0.2 to 0.4 percentage points) than expected based on WebTAG. This is due to the fact that a condition has been applied within the low growth scenario to ensure that no demand movement has a negative number of trips, limiting the proportion of the base year demand which could be subtracted for some movements.

6.2.4 Table 6.3 and Table 6.4 provide the corresponding demand forecasts for the high / low growth scenarios in the Core Scenario, but including only highway demand. Again, there is a good correspondence between the expected difference from WebTAG and the difference in demand forecasts between the high / low growth scenario and the "central" forecasts for highway demand; however there is greater variation than with all mode demand. This is due to the effect of the mode choice component within the variable demand model, which reallocates demand between modes in response to travel costs.

6.2.5 Table 6.5 to Table 6.8 present the same set of forecasts for 24-hour trip productions for all modes and highway demand, produced within Leicestershire and Melton Borough, for the "with scheme" scenario. These tables present a similar pattern of demand changes in the high / low growth scenarios compared with the "central" forecasts with the inclusion of the proposed scheme as discussed for the Core Scenario forecasts.

Table 6.1: LLITM 2014 High / Low Growth Core Scenario Forecast 24-hour Trip Productions (All Modes) for Leicestershire

	2021	2026	2031	2036	2041	2046	2051
Central Forecast	2,354,546	2,413,417	2,456,395	2,500,139	2,547,482	2,602,231	2,640,817
Low Growth Scenario	2,228,067	2,247,608	2,259,218	2,276,121	2,299,538	2,332,798	2,356,554
%Difference	*-5.4%*	*-6.9%*	*-8.0%*	*-9.0%*	*-9.7%*	*-10.4%*	*-10.8%*
WebTAG Expectation	*-5.5%*	*-7.1%*	*-8.3%*	*-9.2%*	*-10.0%*	*-10.7%*	*-11.2%*
High Growth Scenario	2,485,084	2,583,738	2,659,251	2,731,095	2,803,040	2,880,644	2,936,025
%Difference	*5.5%*	*7.1%*	*8.3%*	*9.2%*	*10.0%*	*10.7%*	*11.2%*
WebTAG Expectation	*5.5%*	*7.1%*	*8.3%*	*9.2%*	*10.0%*	*10.7%*	*11.2%*

Table 6.2: LLITM 2014 High / Low Growth Core Scenario Forecast 24-hour Trip Productions (All Modes) for Melton Borough

	2021	2026	2031	2036	2041	2046	2051
Central Forecast	127,454	137,057	143,220	145,371	148,066	151,592	152,329
Low Growth Scenario	120,961	128,560	133,121	133,906	135,395	137,847	137,840
%Difference	*-5.1%*	*-6.2%*	*-7.1%*	*-7.9%*	*-8.6%*	*-9.1%*	*-9.5%*
WebTAG Expectation	*-5.2%*	*-6.4%*	*-7.3%*	*-8.1%*	*-8.8%*	*-9.4%*	*-9.9%*
High Growth Scenario	134,124	145,789	153,610	157,192	161,158	165,858	167,446
%Difference	*5.2%*	*6.4%*	*7.3%*	*8.1%*	*8.8%*	*9.4%*	*9.9%*
WebTAG Expectation	*5.2%*	*6.4%*	*7.3%*	*8.1%*	*8.8%*	*9.4%*	*9.9%*

Table 6.3: LLITM 2014 High / Low Growth Core Scenario Forecast 24-hour Trip Productions (Highway) for Leicestershire

	2021	2026	2031	2036	2041	2046	2051
Central Forecast	1,764,382	1,824,356	1,875,068	1,924,566	1,968,675	2,025,787	2,062,558
Low Growth Scenario	1,659,869	1,687,135	1,711,807	1,738,746	1,763,493	1,803,063	1,828,027
%Difference	*-5.9%*	*-7.5%*	*-8.7%*	*-9.7%*	*-10.4%*	*-11.0%*	*-11.4%*
WebTAG Expectation	*-6.1%*	*-7.7%*	*-8.9%*	*-9.9%*	*-10.7%*	*-11.3%*	*-11.8%*
High Growth Scenario	1,869,973	1,961,830	2,038,738	2,110,805	2,174,111	2,249,045	2,298,560
%Difference	*6.0%*	*7.5%*	*8.7%*	*9.7%*	*10.4%*	*11.0%*	*11.4%*
WebTAG Expectation	*6.1%*	*7.7%*	*8.9%*	*9.9%*	*10.7%*	*11.3%*	*11.8%*

Table 6.4: LLITM 2014 High / Low Growth Core Scenario Forecast 24-hour Trip Productions (Highway) for Melton Borough

	2021	2026	2031	2036	2041	2046	2051
Central Forecast	98,382	106,733	112,940	116,066	119,207	123,029	124,225
Low Growth Scenario	92,846	99,489	104,319	106,256	108,370	111,283	111,852
%Difference	*-5.6%*	*-6.8%*	*-7.6%*	*-8.5%*	*-9.1%*	*-9.5%*	*-10.0%*
WebTAG Expectation	*-5.7%*	*-6.8%*	*-7.7%*	*-8.5%*	*-9.2%*	*-9.7%*	*-10.2%*
High Growth Scenario	103,935	114,010	121,611	125,940	130,136	134,917	136,820
%Difference	*5.6%*	*6.8%*	*7.7%*	*8.5%*	*9.2%*	*9.7%*	*10.1%*
WebTAG Expectation	*5.7%*	*6.8%*	*7.7%*	*8.5%*	*9.2%*	*9.7%*	*10.2%*

Table 6.5: LLITM 2014 High / Low Growth With Scheme Scenario Forecast 24-hour Trip Productions (All Modes) for Leicestershire

	2021	2026	2031	2036	2041	2046	2051
Central Forecast	2,354,920	2,413,198	2,456,425	2,500,050	2,547,531	2,602,431	2,639,939
Low Growth Scenario	2,228,028	2,247,667	2,259,216	2,275,927	2,299,694	2,332,930	2,356,817
%Difference	*-5.4%*	*-6.9%*	*-8.0%*	*-9.0%*	*-9.7%*	*-10.4%*	*-10.7%*
WebTAG Expectation	*-5.5%*	*-7.1%*	*-8.3%*	*-9.2%*	*-10.0%*	*-10.7%*	*-11.2%*
High Growth Scenario	2,484,763	2,583,650	2,659,363	2,731,270	2,803,481	2,881,349	2,936,834
%Difference	*5.5%*	*7.1%*	*8.3%*	*9.2%*	*10.0%*	*10.7%*	*11.2%*
WebTAG Expectation	*5.5%*	*7.1%*	*8.3%*	*9.2%*	*10.0%*	*10.7%*	*11.2%*

Table 6.6: LLITM 2014 High / Low Growth With Scheme Scenario Forecast 24-hour Trip Productions (All Modes) for Melton Borough

	2021	2026	2031	2036	2041	2046	2051
Central Forecast	127,457	137,059	143,218	145,373	148,066	151,591	151,195
Low Growth Scenario	120,959	128,560	133,116	133,905	135,394	137,847	137,844
%Difference	*-5.1%*	*-6.2%*	*-7.1%*	*-7.9%*	*-8.6%*	*-9.1%*	*-8.8%*
WebTAG Expectation	*-5.2%*	*-6.4%*	*-7.3%*	*-8.1%*	*-8.8%*	*-9.4%*	*-10.0%*
High Growth Scenario	134,123	145,786	153,608	157,200	161,163	165,852	167,462
%Difference	*5.2%*	*6.4%*	*7.3%*	*8.1%*	*8.8%*	*9.4%*	*10.8%*
WebTAG Expectation	*5.2%*	*6.4%*	*7.3%*	*8.1%*	*8.8%*	*9.4%*	*10.0%*

Table 6.7: LLITM 2014 High / Low Growth With Scheme Scenario Forecast 24-hour Trip Productions (Highway) for Leicestershire

	2021	2026	2031	2036	2041	2046	2051
Central Forecast	1,765,042	1,824,357	1,875,422	1,924,667	1,969,509	2,026,540	2,061,943
Low Growth Scenario	1,659,951	1,687,416	1,712,090	1,738,672	1,764,265	1,803,517	1,828,538
%Difference	*-6.0%*	*-7.5%*	*-8.7%*	*-9.7%*	*-10.4%*	*-11.0%*	*-11.3%*
WebTAG Expectation	*-6.1%*	*-7.7%*	*-8.9%*	*-9.9%*	*-10.7%*	*-11.3%*	*-11.8%*
High Growth Scenario	1,869,835	1,961,925	2,039,320	2,111,364	2,175,428	2,250,459	2,299,761
%Difference	*5.9%*	*7.5%*	*8.7%*	*9.7%*	*10.5%*	*11.0%*	*11.5%*
WebTAG Expectation	*6.1%*	*7.7%*	*8.9%*	*9.9%*	*10.7%*	*11.3%*	*11.8%*

Table 6.8: LLITM 2014 High / Low Growth With Scheme Scenario Forecast 24-hour Trip Productions (Highway) for Melton Borough

	2021	2026	2031	2036	2041	2046	2051
Central Forecast	98,576	106,948	113,217	116,290	119,441	123,272	123,313
Low Growth Scenario	93,016	99,673	104,551	106,443	108,558	111,470	112,040
%Difference	*-5.6%*	*-6.8%*	*-7.7%*	*-8.5%*	*-9.1%*	*-9.6%*	*-9.1%*
WebTAG Expectation	*-5.7%*	*-6.8%*	*-7.7%*	*-8.5%*	*-9.2%*	*-9.7%*	*-10.3%*
High Growth Scenario	104,147	114,260	121,943	126,228	130,449	135,257	137,191
%Difference	*5.7%*	*6.8%*	*7.7%*	*8.5%*	*9.2%*	*9.7%*	*11.3%*
WebTAG Expectation	*5.7%*	*6.8%*	*7.7%*	*8.5%*	*9.2%*	*9.7%*	*10.3%*

6.3 Demand Model Convergence

6.3.1 The convergence of the demand model is, in part, a function of the level of demand within a given forecast scenario. The higher the demand within a given model run, the higher the levels of forecast congestion, and therefore the greater instability in the travel costs from the supply models.

6.3.2 Table 6.9 summarises the number of iterations required to converge the variable demand model in the "central" forecast and the high / low growth sensitivity tests. This information has been summarised for the 2021, 2036 and 2041 forecasts as these are the modelled years which are used in the economic assessment of the high / low growth scenarios. (Note that some forecast scenarios have reached the maximum number of iterations within LLITM 2014, namely 30 iterations.)

6.3.3 Table 6.9 shows that the low growth sensitivity tests generally take fewer iterations to converge than the "central" forecasts, and conversely the high growth sensitivity tests generally take additional iterations to converge compared with the "central" forecasts. This is in line with the expectation that the number of iterations to reach convergence is related to the level of demand assumed within a given model run.

Table 6.9: LLITM 2014 Demand Model Convergence Iterations – Summary

		2021	2036	2041
Core Scenario	Low	5	5	9
	Central	5	7	11
	High	6	8	13
"With Scheme" Scenario	Low	5	6	30
	Central	6	11	30
	High	7	16	30

6.3.4 Table 6.10 and Table 6.11 provide further detail on the demand model convergence within the high growth sensitivity tests for the Core Scenario and the "with scheme" scenario forecasts respectively. Table 6.12 and Table 6.13 show the corresponding demand model convergence for the low growth sensitivity tests. Figure 6.1 also provides a summary of the convergence of the demand model in the high / low growth sensitivity testing.

6.3.5 The only scenario which does not reach the target $\%Gap$ value of 0.15 is the high growth "with scheme" sensitivity test, which reaches a $\%Gap$ value of 0.25 after 30 iterations. This is above the recommendation within WebTAG of 0.2; however, as discussed, there will be additional congestion in the high growth which will worsen the convergence compared to the Central Case forecasts (where the corresponding test reached a $\%Gap$ of 0.17.

Table 6.10: LLITM 2014 High Growth Core Scenario Demand Model Convergence

Iteration	2021	2036	2041
2	0.48	1.78	3.03
3	0.37	1.88	3.82
4	0.32	1.65	3.05
5	0.19	0.77	1.74
6	0.10	0.39	0.80
7		0.16	0.46
8		0.13	0.25
9			0.20
10			0.22
11			0.18
12			0.15
13			0.14
14			
15			

Table 6.11: LLITM 2014 High Growth With Scheme Demand Model Convergence

Iteration	2021	2036	2041
2	0.50	1.86	3.16
3	0.43	2.52	4.95
4	0.42	2.22	3.97
5	0.26	1.39	2.85
6	0.15	0.91	1.79
7	0.11	0.57	1.32
8		0.51	0.99
9		0.40	0.80
10		0.37	0.67
11		0.30	0.53
12		0.27	0.51
13		0.24	0.49
14		0.20	0.48
15		0.16	0.41
16		0.15	0.38
17			0.36
18			0.40
19			0.34
20			0.32
21			0.30
22			0.31
23			0.26
24			0.27
25			0.26
26			0.28
27			0.25
28			0.25
29			0.26
30			0.25

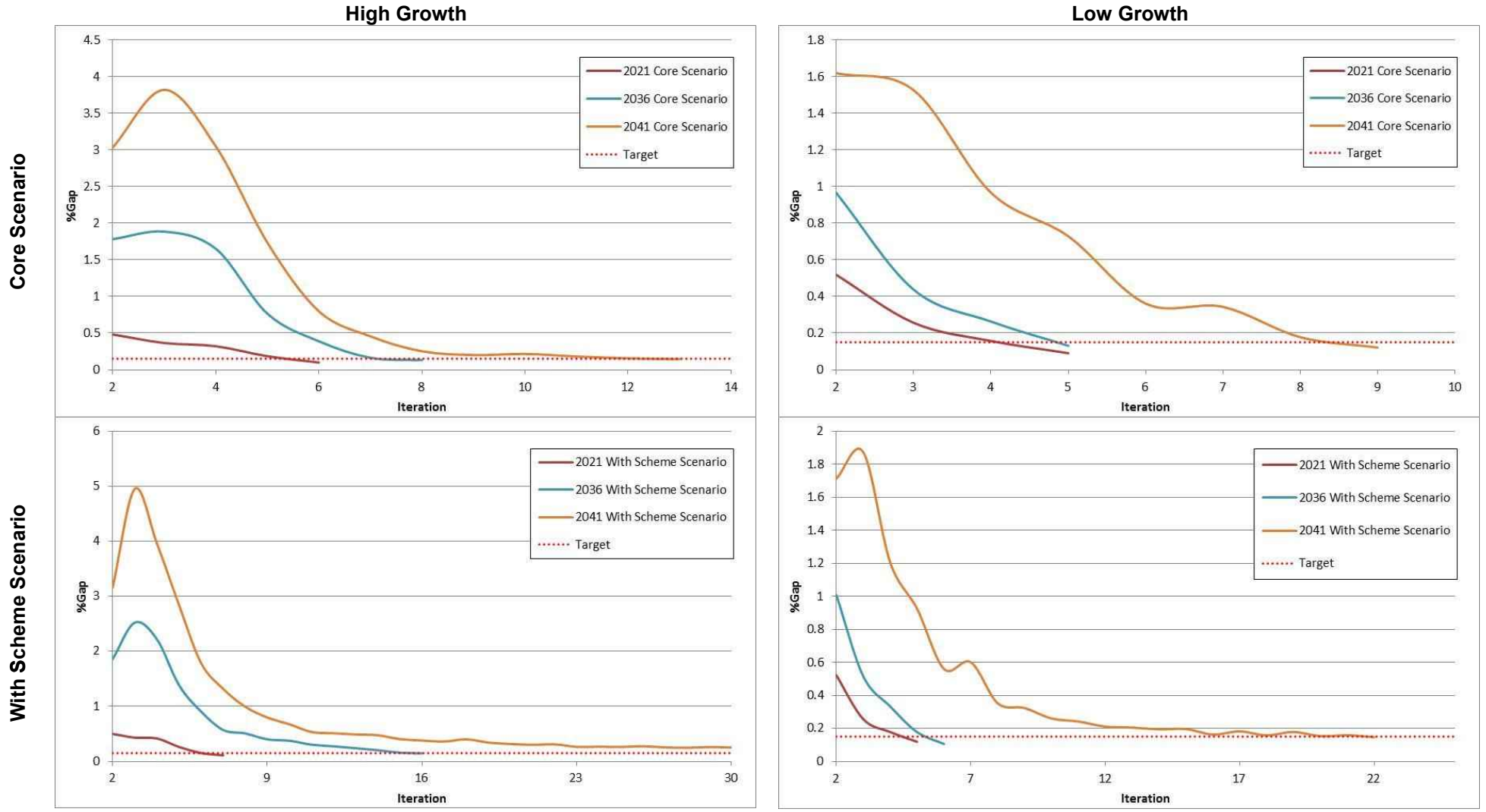
Table 6.12: LLITM 2014 Low Growth Core Scenario Demand Model Convergence

Iteration	2021	2036	2041
2	0.52	0.97	1.62
3	0.26	0.44	1.53
4	0.16	0.26	0.97
5	0.09	0.13	0.73
6			0.36
7			0.34
8			0.18
9			0.12
10			

Table 6.13: LLITM 2014 Low Growth With Scheme Demand Model Convergence

Iteration	2021	2036	2041
2	0.52	1.01	1.71
3	0.26	0.52	1.87
4	0.18	0.33	1.21
5	0.12	0.18	0.93
6		0.11	0.56
7			0.60
8			0.35
9			0.32
10			0.26
11			0.24
12			0.21
13			0.20
14			0.19
15			0.20
16			0.16
17			0.18
18			0.16
19			0.18
20			0.15
21			0.16
22			0.15
23			
24			
25			
26			
27			
28			
29			
30			

Figure 6.1: LLITM 2014 High / Low Growth Demand Model Convergence



6.4 Highway Assignment Forecasts

6.4.1 Using the high / low growth forecast demand, these matrices have been assigned within the highway model and the resulting forecast performance of the highway network in these two sensitivity tests has been analysed. As with previous assessments of the highway network performance, statistics relating to the level of traffic on the network, the level of delay on the network and the average speed on the network have been calculated.

6.4.2 These forecasts for the AM Peak and PM Peak hours, for the Core Scenario and "with scheme" scenario for Melton Borough are shown in Figure 6.2. Within these plots, the solid line represents the forecast change in the network performance statistics within the "central" forecasts, with the dotted lines showing the corresponding forecasts for the high and low growth sensitivity tests. Figure 6.3 shows the corresponding forecasts for the highway network within Melton Mowbray in the Core Scenario and "with scheme" scenario.

6.4.3 Table 6.14 to Table 6.29 provide further details on the forecast highway network statistics in the high / low growth scenarios and comparing these with the corresponding "central" forecasts. This analysis has been undertaken for both the Melton Borough and Melton Mowbray network and for the Core Scenario and "with scheme" scenarios.

6.4.4 The following provides an overview of the key changes in the forecast network performance for 2036 within the high / low sensitivity tests:

- **High Growth**
    - Vehicle-kilometres are forecast to increase by between 7% and 9% across Melton Borough in both the Core Scenario and the "with scheme" scenarios, with similar increases of between 6% to 8% within Melton Mowbray.
    - This increase in traffic results in a forecast decrease in average network speeds within Melton Borough of between 1% and 4%, with a forecast reduction in average speeds within Melton Mowbray of generally up to 4%. The forecast reduction in average speed within Melton Mowbray in the PM Peak is 10%.
- **Low Growth**
    - Vehicle-kilometres are forecast to decrease by between 8% and 9% within Melton Borough in the low growth scenario, with a corresponding reduction in vehicle-kilometres of between 7% and 8% within Melton Mowbray.
    - These reductions in forecast traffic on the network results in average speeds increasing by between 1% to 2% within Melton Borough, and by up to 5% within Melton Mowbray.

Figure 6.2: LLITM 2014 High / Low Growth Forecast Change in Network Performance within Melton Borough within AM Peak and PM Peak Hours

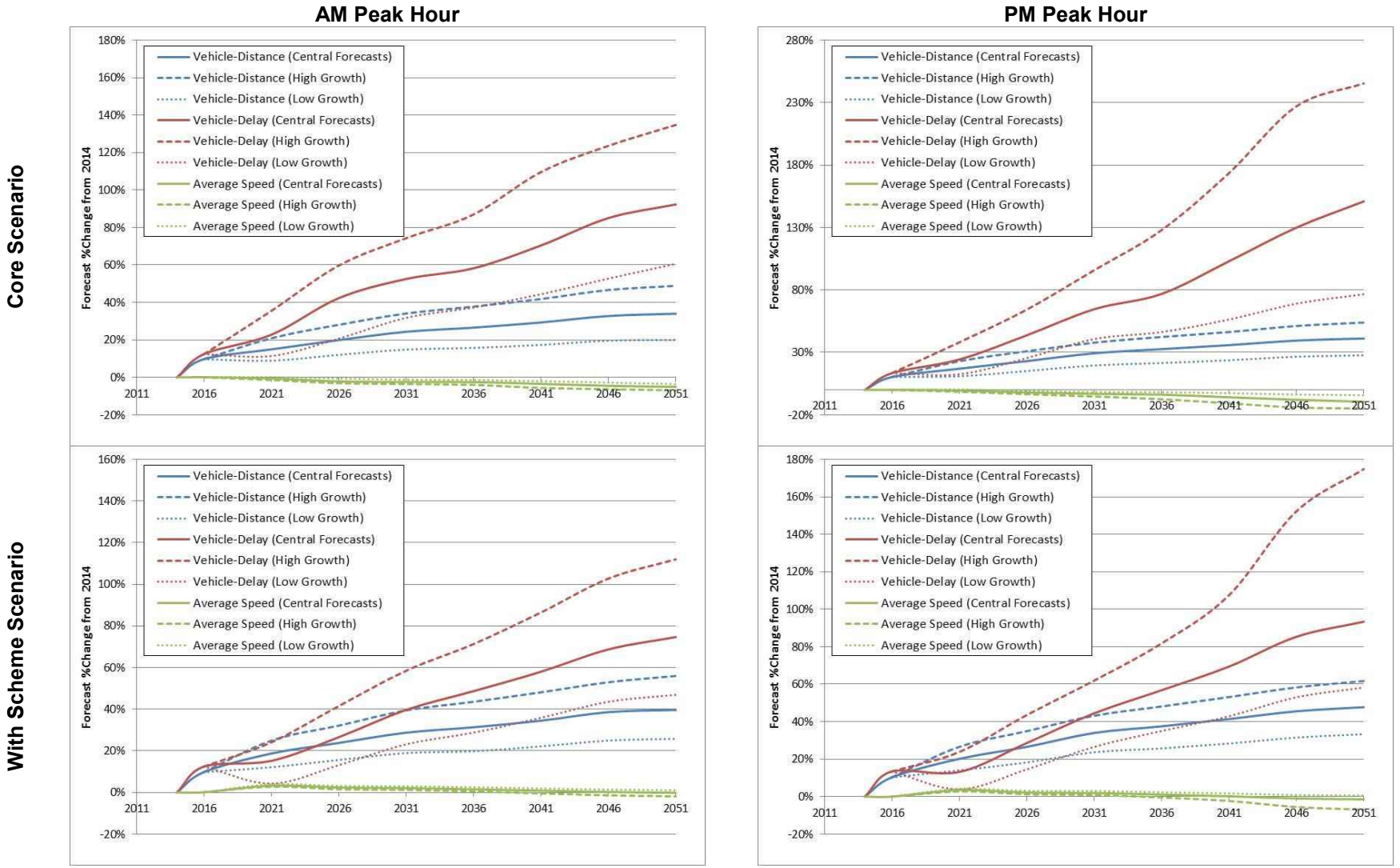


Figure 6.3: LLITM 2014 High / Low Growth Forecast Change in Network Performance within Melton Mowbray within AM Peak and PM Peak Hours

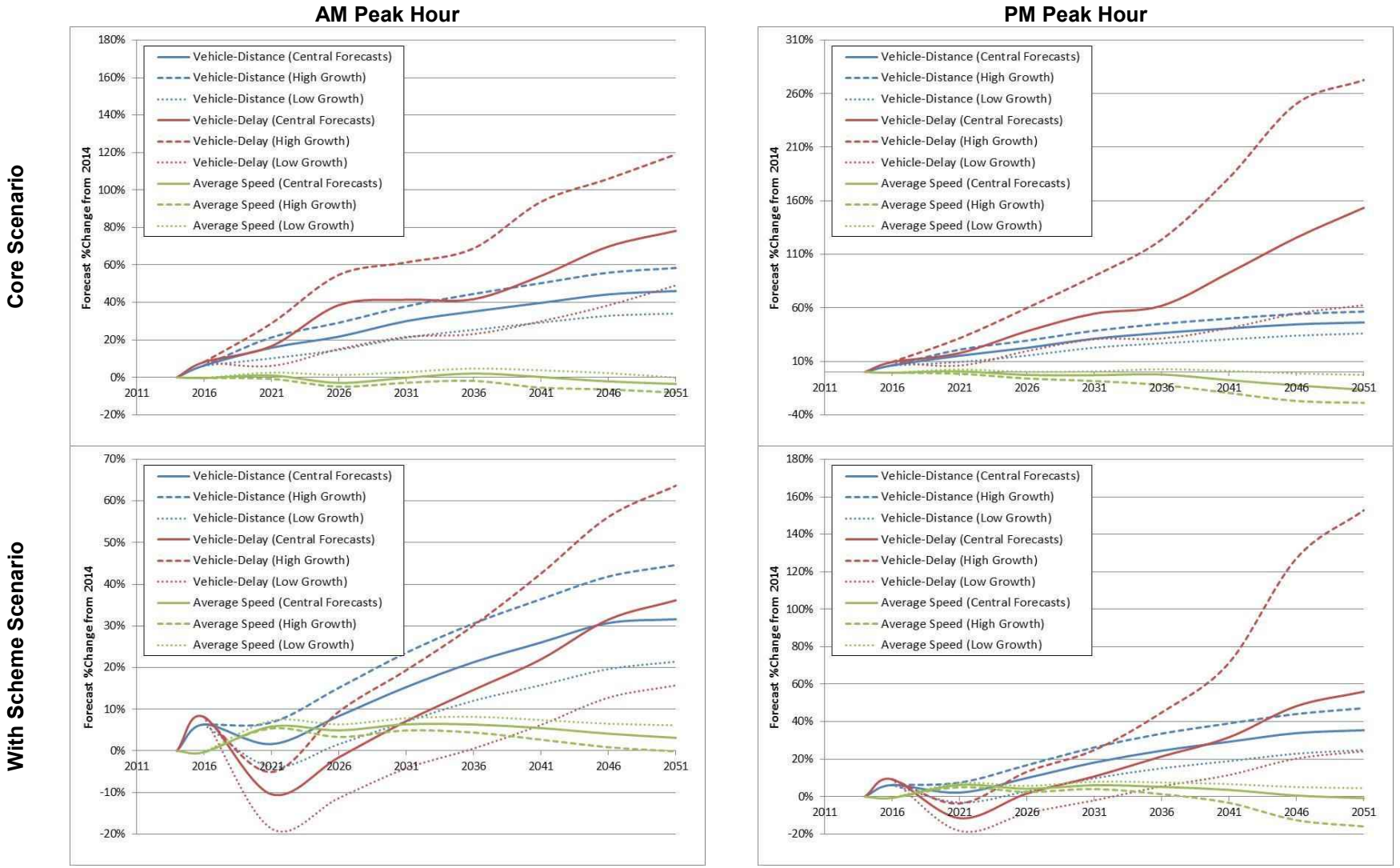


Table 6.14: LLITM 2014 High Growth Core Scenario Forecast Network Performance within Melton Borough

		2021	2026	2031	2036	2041	2046	2051
AM Peak Hour	Vehicle Distance (veh-km)	133,903	141,843	148,519	152,621	157,060	162,405	164,858
	Vehicle Delay-Time (veh-hours)	371	438	478	512	574	613	643
	Average Speed (kph)	55	54	54	53	52	52	52
	Vehicle Delay/Vehicle Distance (sec/km)	10	11	12	12	13	14	14
Interpeak Hour	Vehicle Distance (veh-km)	97,523	104,227	110,870	115,649	119,617	123,718	125,926
	Vehicle Delay-Time (veh-hours)	244	282	320	340	367	395	412
	Average Speed (kph)	55	54	54	54	54	53	53
	Vehicle Delay/Vehicle Distance (sec/km)	9	10	10	11	11	12	12
PM Peak Hour	Vehicle Distance (veh-km)	141,455	150,586	158,531	163,749	168,282	173,883	177,019
	Vehicle Delay-Time (veh-hours)	421	500	597	694	833	996	1,052
	Average Speed (kph)	54	53	52	51	49	47	47
	Vehicle Delay/Vehicle Distance (sec/km)	11	12	14	15	18	21	21

Table 6.15: LLITM 2014 High Growth Forecast Change within Core Scenario in Network Performance within Melton Borough

		2021	2026	2031	2036	2041	2046	2051
AM Peak Hour	Vehicle Distance (veh-km)	5%	7%	8%	9%	10%	10%	11%
	Vehicle Delay-Time (veh-hours)	10%	12%	14%	18%	23%	21%	22%
	Average Speed (kph)	-1%	-1%	-1%	-2%	-2%	-2%	-2%
	Vehicle Delay/Vehicle Distance (sec/km)	5%	5%	6%	8%	12%	9%	10%
Interpeak Hour	Vehicle Distance (veh-km)	6%	7%	8%	9%	10%	11%	11%
	Vehicle Delay-Time (veh-hours)	9%	12%	13%	15%	16%	17%	18%
	Average Speed (kph)	0%	-1%	-1%	-1%	-1%	-1%	-1%
	Vehicle Delay/Vehicle Distance (sec/km)	3%	4%	5%	5%	5%	6%	6%
PM Peak Hour	Vehicle Distance (veh-km)	5%	6%	7%	7%	8%	8%	9%
	Vehicle Delay-Time (veh-hours)	11%	14%	19%	29%	35%	42%	38%
	Average Speed (kph)	-1%	-1%	-2%	-4%	-5%	-7%	-6%
	Vehicle Delay/Vehicle Distance (sec/km)	6%	7%	12%	20%	25%	31%	26%

Table 6.16: LLITM 2014 High Growth Core Scenario Forecast Network Performance within Melton Mowbray

		2021	2026	2031	2036	2041	2046	2051
AM Peak Hour	Vehicle Distance (veh-km)	20,958	22,317	23,831	24,976	25,965	26,936	27,370
	Vehicle Delay-Time (veh-hours)	244	293	305	320	367	390	415
	Average Speed (kph)	28	27	27	28	27	26	26
	Vehicle Delay/Vehicle Distance (sec/km)	42	47	46	46	51	52	55
Interpeak Hour	Vehicle Distance (veh-km)	16,881	18,386	19,962	20,978	21,807	22,516	22,952
	Vehicle Delay-Time (veh-hours)	175	204	226	231	251	272	284
	Average Speed (kph)	29	28	29	29	29	28	28
	Vehicle Delay/Vehicle Distance (sec/km)	37	40	41	40	41	43	45
PM Peak Hour	Vehicle Distance (veh-km)	22,386	23,954	25,662	26,865	27,784	28,563	28,982
	Vehicle Delay-Time (veh-hours)	277	337	400	472	593	739	786
	Average Speed (kph)	27	26	26	24	22	20	20
	Vehicle Delay/Vehicle Distance (sec/km)	45	51	56	63	77	93	98

Table 6.17: LLITM 2014 High Growth Forecast Change within Core Scenario in Network Performance within Melton Mowbray

		2021	2026	2031	2036	2041	2046	2051
AM Peak Hour	Vehicle Distance (veh-km)	5%	6%	6%	7%	8%	8%	8%
	Vehicle Delay-Time (veh-hours)	10%	12%	14%	19%	26%	21%	23%
	Average Speed (kph)	-2%	-2%	-3%	-4%	-6%	-4%	-5%
	Vehicle Delay/Vehicle Distance (sec/km)	5%	5%	8%	11%	17%	12%	13%
Interpeak Hour	Vehicle Distance (veh-km)	5%	6%	7%	7%	8%	8%	8%
	Vehicle Delay-Time (veh-hours)	8%	11%	12%	14%	15%	17%	17%
	Average Speed (kph)	-1%	-1%	-2%	-2%	-2%	-3%	-3%
	Vehicle Delay/Vehicle Distance (sec/km)	3%	5%	5%	6%	6%	8%	8%
PM Peak Hour	Vehicle Distance (veh-km)	5%	6%	6%	6%	7%	7%	7%
	Vehicle Delay-Time (veh-hours)	12%	16%	23%	38%	46%	55%	47%
	Average Speed (kph)	-2%	-3%	-6%	-10%	-13%	-17%	-15%
	Vehicle Delay/Vehicle Distance (sec/km)	7%	10%	16%	30%	37%	46%	38%

Table 6.18: LLITM 2014 High Growth With Scheme Scenario Forecast Network Performance within Melton Borough

		2021	2026	2031	2036	2041	2046	2051
AM Peak Hour	Vehicle Distance (veh-km)	138,314	146,283	154,400	158,965	164,013	169,365	172,701
	Vehicle Delay-Time (veh-hours)	340	388	434	469	511	556	581
	Average Speed (kph)	57	56	56	56	55	55	55
	Vehicle Delay/Vehicle Distance (sec/km)	9	10	10	11	11	12	12
Interpeak Hour	Vehicle Distance (veh-km)	100,990	108,037	115,924	120,427	124,716	129,741	132,672
	Vehicle Delay-Time (veh-hours)	224	257	290	316	341	365	379
	Average Speed (kph)	57	57	57	57	56	56	56
	Vehicle Delay/Vehicle Distance (sec/km)	8	9	9	9	10	10	10
PM Peak Hour	Vehicle Distance (veh-km)	145,557	155,167	164,667	170,361	176,115	182,067	185,985
	Vehicle Delay-Time (veh-hours)	377	437	493	554	632	768	837
	Average Speed (kph)	57	56	56	55	54	52	51
	Vehicle Delay/Vehicle Distance (sec/km)	9	10	11	12	13	15	16

Table 6.19: LLITM 2014 High Growth Forecast Change within With Scheme Scenario in Network Performance within Melton Borough

		2021	2026	2031	2036	2041	2046	2051
AM Peak Hour	Vehicle Distance (veh-km)	5%	7%	8%	9%	10%	10%	12%
	Vehicle Delay-Time (veh-hours)	8%	12%	13%	15%	18%	20%	21%
	Average Speed (kph)	0%	-1%	-1%	-1%	-1%	-2%	-2%
	Vehicle Delay/Vehicle Distance (sec/km)	2%	5%	5%	5%	7%	9%	9%
Interpeak Hour	Vehicle Distance (veh-km)	6%	7%	8%	9%	10%	11%	12%
	Vehicle Delay-Time (veh-hours)	8%	11%	12%	13%	15%	16%	17%
	Average Speed (kph)	0%	-1%	-1%	-1%	-1%	-1%	-1%
	Vehicle Delay/Vehicle Distance (sec/km)	3%	4%	4%	4%	5%	4%	5%
PM Peak Hour	Vehicle Distance (veh-km)	5%	7%	7%	8%	8%	9%	9%
	Vehicle Delay-Time (veh-hours)	9%	12%	12%	16%	22%	36%	42%
	Average Speed (kph)	-1%	-1%	-1%	-2%	-2%	-5%	-6%
	Vehicle Delay/Vehicle Distance (sec/km)	4%	5%	5%	8%	13%	25%	30%

Table 6.20: LLITM 2014 High Growth With Scheme Scenario Forecast Network Performance within Melton Mowbray

		2021	2026	2031	2036	2041	2046	2051
AM Peak Hour	Vehicle Distance (veh-km)	18,453	19,892	21,347	22,563	23,571	24,510	24,988
	Vehicle Delay-Time (veh-hours)	180	207	226	246	270	296	310
	Average Speed (kph)	30	29	30	30	29	29	28
	Vehicle Delay/Vehicle Distance (sec/km)	35	37	38	39	41	43	45
Interpeak Hour	Vehicle Distance (veh-km)	14,703	16,106	17,599	18,699	19,488	20,253	20,661
	Vehicle Delay-Time (veh-hours)	136	157	174	189	205	220	229
	Average Speed (kph)	30	30	30	30	30	29	29
	Vehicle Delay/Vehicle Distance (sec/km)	33	35	36	36	38	39	40
PM Peak Hour	Vehicle Distance (veh-km)	19,900	21,622	23,381	24,743	25,758	26,683	27,261
	Vehicle Delay-Time (veh-hours)	203	239	263	306	361	479	533
	Average Speed (kph)	29	29	29	28	27	24	23
	Vehicle Delay/Vehicle Distance (sec/km)	37	40	41	44	51	65	70

Table 6.21: LLITM 2014 High Growth Forecast Change within With Scheme Scenario in Network Performance within Melton Mowbray

		2021	2026	2031	2036	2041	2046	2051
AM Peak Hour	Vehicle Distance (veh-km)	5%	6%	7%	8%	8%	9%	10%
	Vehicle Delay-Time (veh-hours)	6%	11%	11%	13%	17%	19%	20%
	Average Speed (kph)	0%	-2%	-1%	-2%	-3%	-3%	-3%
	Vehicle Delay/Vehicle Distance (sec/km)	1%	5%	4%	5%	8%	9%	9%
Interpeak Hour	Vehicle Distance (veh-km)	5%	6%	7%	8%	8%	8%	10%
	Vehicle Delay-Time (veh-hours)	8%	10%	11%	12%	13%	14%	15%
	Average Speed (kph)	-1%	-1%	-1%	-1%	-2%	-2%	-2%
	Vehicle Delay/Vehicle Distance (sec/km)	2%	3%	4%	4%	5%	5%	5%
PM Peak Hour	Vehicle Distance (veh-km)	5%	6%	7%	7%	8%	8%	9%
	Vehicle Delay-Time (veh-hours)	9%	11%	13%	19%	30%	53%	62%
	Average Speed (kph)	-1%	-2%	-2%	-4%	-7%	-13%	-15%
	Vehicle Delay/Vehicle Distance (sec/km)	3%	5%	5%	11%	21%	42%	49%

Table 6.22: LLITM 2014 Low Growth Core Scenario Forecast Network Performance within Melton Borough

		2021	2026	2031	2036	2041	2046	2051
AM Peak Hour	Vehicle Distance (veh-km)	120,625	124,063	127,198	128,193	129,939	132,438	132,883
	Vehicle Delay-Time (veh-hours)	305	331	361	376	396	419	440
	Average Speed (kph)	56	55	55	55	54	54	54
	Vehicle Delay/Vehicle Distance (sec/km)	9	10	10	11	11	11	12
Interpeak Hour	Vehicle Distance (veh-km)	87,255	90,728	94,665	96,917	98,848	100,851	101,427
	Vehicle Delay-Time (veh-hours)	205	226	250	258	273	288	295
	Average Speed (kph)	56	55	55	55	55	55	54
	Vehicle Delay/Vehicle Distance (sec/km)	8	9	10	10	10	10	10
PM Peak Hour	Vehicle Distance (veh-km)	127,588	132,404	137,497	139,788	142,326	145,590	146,914
	Vehicle Delay-Time (veh-hours)	343	382	429	446	476	515	538
	Average Speed (kph)	55	55	54	54	54	53	53
	Vehicle Delay/Vehicle Distance (sec/km)	10	10	11	11	12	13	13

Table 6.23: LLITM 2014 Low Growth Forecast Change within Core Scenario in Network Performance within Melton Borough

		2021	2026	2031	2036	2041	2046	2051
AM Peak Hour	Vehicle Distance (veh-km)	-5%	-7%	-8%	-9%	-9%	-10%	-10%
	Vehicle Delay-Time (veh-hours)	-9%	-15%	-14%	-13%	-15%	-17%	-16%
	Average Speed (kph)	1%	2%	1%	1%	1%	2%	2%
	Vehicle Delay/Vehicle Distance (sec/km)	-4%	-9%	-6%	-5%	-7%	-8%	-7%
Interpeak Hour	Vehicle Distance (veh-km)	-6%	-7%	-8%	-9%	-9%	-10%	-11%
	Vehicle Delay-Time (veh-hours)	-8%	-10%	-12%	-13%	-14%	-15%	-16%
	Average Speed (kph)	0%	1%	1%	1%	1%	1%	1%
	Vehicle Delay/Vehicle Distance (sec/km)	-3%	-4%	-4%	-5%	-5%	-5%	-5%
PM Peak Hour	Vehicle Distance (veh-km)	-5%	-6%	-8%	-8%	-9%	-9%	-9%
	Vehicle Delay-Time (veh-hours)	-10%	-13%	-15%	-17%	-23%	-26%	-30%
	Average Speed (kph)	1%	1%	2%	2%	3%	5%	6%
	Vehicle Delay/Vehicle Distance (sec/km)	-5%	-7%	-8%	-10%	-15%	-19%	-22%

Table 6.24: LLITM 2014 Low Growth Core Scenario Forecast Network Performance within Melton Mowbray

		2021	2026	2031	2036	2041	2046	2051
AM Peak Hour	Vehicle Distance (veh-km)	19,032	19,821	20,952	21,665	22,337	22,956	23,168
	Vehicle Delay-Time (veh-hours)	201	218	230	233	246	262	282
	Average Speed (kph)	29	29	29	30	29	29	28
	Vehicle Delay/Vehicle Distance (sec/km)	38	40	40	39	40	41	44
Interpeak Hour	Vehicle Distance (veh-km)	15,154	16,162	17,403	18,045	18,607	19,122	19,318
	Vehicle Delay-Time (veh-hours)	149	165	178	179	189	200	207
	Average Speed (kph)	30	29	30	30	30	30	29
	Vehicle Delay/Vehicle Distance (sec/km)	35	37	37	36	37	38	39
PM Peak Hour	Vehicle Distance (veh-km)	20,258	21,368	22,741	23,485	24,181	24,827	25,185
	Vehicle Delay-Time (veh-hours)	224	252	276	277	297	326	343
	Average Speed (kph)	29	28	28	29	28	27	27
	Vehicle Delay/Vehicle Distance (sec/km)	40	42	44	42	44	47	49

Table 6.25: LLITM 2014 Low Growth Forecast Change within Core Scenario in Network Performance within Melton Mowbray

		2021	2026	2031	2036	2041	2046	2051
AM Peak Hour	Vehicle Distance (veh-km)	-5%	-6%	-7%	-7%	-8%	-8%	-8%
	Vehicle Delay-Time (veh-hours)	-9%	-17%	-14%	-13%	-16%	-18%	-16%
	Average Speed (kph)	2%	4%	3%	3%	4%	5%	4%
	Vehicle Delay/Vehicle Distance (sec/km)	-4%	-12%	-8%	-6%	-9%	-11%	-9%
Interpeak Hour	Vehicle Distance (veh-km)	-5%	-7%	-7%	-8%	-8%	-8%	-9%
	Vehicle Delay-Time (veh-hours)	-8%	-10%	-11%	-12%	-14%	-14%	-15%
	Average Speed (kph)	1%	1%	2%	2%	2%	2%	2%
	Vehicle Delay/Vehicle Distance (sec/km)	-3%	-4%	-5%	-5%	-6%	-6%	-6%
PM Peak Hour	Vehicle Distance (veh-km)	-5%	-6%	-6%	-7%	-7%	-7%	-7%
	Vehicle Delay-Time (veh-hours)	-10%	-13%	-15%	-19%	-27%	-31%	-36%
	Average Speed (kph)	2%	3%	4%	5%	9%	13%	17%
	Vehicle Delay/Vehicle Distance (sec/km)	-5%	-8%	-10%	-13%	-21%	-26%	-31%

Table 6.26: LLITM 2014 Low Growth With Scheme Scenario Forecast Network Performance within Melton Borough

		2021	2026	2031	2036	2041	2046	2051
AM Peak Hour	Vehicle Distance (veh-km)	124,171	128,034	131,676	132,670	135,268	138,327	139,274
	Vehicle Delay-Time (veh-hours)	286	310	337	353	372	393	403
	Average Speed (kph)	58	57	57	57	57	56	56
	Vehicle Delay/Vehicle Distance (sec/km)	8	9	9	10	10	10	10
Interpeak Hour	Vehicle Distance (veh-km)	90,272	93,888	98,760	100,861	102,906	105,205	106,219
	Vehicle Delay-Time (veh-hours)	191	209	229	244	257	271	278
	Average Speed (kph)	58	57	58	57	57	57	57
	Vehicle Delay/Vehicle Distance (sec/km)	8	8	8	9	9	9	9
PM Peak Hour	Vehicle Distance (veh-km)	131,121	135,985	142,234	144,604	147,576	151,262	153,343
	Vehicle Delay-Time (veh-hours)	317	349	386	411	435	466	482
	Average Speed (kph)	57	57	57	56	56	56	55
	Vehicle Delay/Vehicle Distance (sec/km)	9	9	10	10	11	11	11

Table 6.27: LLITM 2014 Low Growth Forecast Change within With Scheme Scenario in Network Performance within Melton Borough

		2021	2026	2031	2036	2041	2046	2051
AM Peak Hour	Vehicle Distance (veh-km)	-6%	-7%	-8%	-9%	-9%	-10%	-10%
	Vehicle Delay-Time (veh-hours)	-9%	-11%	-12%	-13%	-14%	-15%	-16%
	Average Speed (kph)	1%	1%	1%	1%	1%	1%	1%
	Vehicle Delay/Vehicle Distance (sec/km)	-4%	-4%	-5%	-5%	-5%	-6%	-7%
Interpeak Hour	Vehicle Distance (veh-km)	-6%	-7%	-8%	-9%	-9%	-10%	-11%
	Vehicle Delay-Time (veh-hours)	-8%	-10%	-11%	-12%	-13%	-14%	-14%
	Average Speed (kph)	0%	0%	1%	1%	1%	1%	1%
	Vehicle Delay/Vehicle Distance (sec/km)	-2%	-3%	-4%	-4%	-4%	-5%	-4%
PM Peak Hour	Vehicle Distance (veh-km)	-5%	-7%	-8%	-9%	-9%	-10%	-10%
	Vehicle Delay-Time (veh-hours)	-8%	-11%	-12%	-14%	-16%	-17%	-18%
	Average Speed (kph)	1%	1%	1%	1%	2%	2%	2%
	Vehicle Delay/Vehicle Distance (sec/km)	-3%	-5%	-5%	-6%	-7%	-9%	-9%

Table 6.28: LLITM 2014 Low Growth With Scheme Scenario Forecast Network Performance within Melton Mowbray

		2021	2026	2031	2036	2041	2046	2051
AM Peak Hour	Vehicle Distance (veh-km)	16,619	17,552	18,493	19,357	20,002	20,671	20,977
	Vehicle Delay-Time (veh-hours)	154	168	181	190	201	213	219
	Average Speed (kph)	30	30	30	31	30	30	30
	Vehicle Delay/Vehicle Distance (sec/km)	33	34	35	35	36	37	38
Interpeak Hour	Vehicle Distance (veh-km)	13,163	14,140	15,250	16,012	16,543	17,079	17,322
	Vehicle Delay-Time (veh-hours)	118	130	141	151	159	169	174
	Average Speed (kph)	31	30	31	31	31	30	30
	Vehicle Delay/Vehicle Distance (sec/km)	32	33	33	34	35	36	36
PM Peak Hour	Vehicle Distance (veh-km)	17,937	19,043	20,333	21,316	22,021	22,761	23,122
	Vehicle Delay-Time (veh-hours)	172	192	207	222	235	254	262
	Average Speed (kph)	30	29	30	30	30	29	29
	Vehicle Delay/Vehicle Distance (sec/km)	35	36	37	38	38	40	41

Table 6.29: LLITM 2014 Low Growth Forecast Change within With Scheme Scenario in Network Performance within Melton Mowbray

		2021	2026	2031	2036	2041	2046	2051
AM Peak Hour	Vehicle Distance (veh-km)	-5%	-6%	-7%	-8%	-8%	-8%	-8%
	Vehicle Delay-Time (veh-hours)	-9%	-10%	-11%	-12%	-13%	-14%	-15%
	Average Speed (kph)	1%	1%	1%	2%	2%	2%	3%
	Vehicle Delay/Vehicle Distance (sec/km)	-4%	-4%	-4%	-5%	-5%	-6%	-8%
Interpeak Hour	Vehicle Distance (veh-km)	-6%	-7%	-7%	-8%	-8%	-9%	-8%
	Vehicle Delay-Time (veh-hours)	-7%	-9%	-10%	-11%	-12%	-13%	-13%
	Average Speed (kph)	1%	1%	1%	1%	1%	2%	2%
	Vehicle Delay/Vehicle Distance (sec/km)	-2%	-3%	-3%	-3%	-4%	-5%	-5%
PM Peak Hour	Vehicle Distance (veh-km)	-5%	-6%	-7%	-8%	-8%	-8%	-8%
	Vehicle Delay-Time (veh-hours)	-8%	-10%	-12%	-13%	-15%	-19%	-20%
	Average Speed (kph)	1%	1%	2%	2%	3%	5%	5%
	Vehicle Delay/Vehicle Distance (sec/km)	-3%	-4%	-5%	-6%	-8%	-12%	-14%

6.4.5 Figure 6.4 and Figure 6.5 show the forecast flow change in the 2036 Core Scenario between the “central” forecasts and the high growth scenario in the AM Peak and PM Peak respectively. These figures show a general increase in the forecast traffic volumes within Melton Mowbray, and in particular on the key radial routes within the urban area.

6.4.6 Figure 6.6 and Figure 6.7 show the same comparison but for the WebTAG low growth scenario in the AM Peak and PM Peak. These plots show a similar, but opposite, change in forecast traffic volumes to that with the high growth scenario with reductions in forecast vehicle flows within Melton Mowbray. The exception to this is in the 2036 low growth scenario where there is evidence of rerouteing between Thorpe Road and residential areas to the north as congestion is relieved at the Thorpe Road / Norman Way junction in the low growth scenario.

6.4.7 Figure 6.8 to Figure 6.11 show the same set of comparisons for the high and low growth scenarios, but for the “with scheme” scenario. These figures show a similar pattern of change in forecast vehicle flows in the WebTAG high / low growth scenarios compared with the “central” forecasts; however, there is forecast to be less change in the eastern half of Melton Mowbray. This is due to some of this traffic using the distributor road contained within the “with scheme” scenario as opposed to travelling through Melton Mowbray.

Figure 6.4: LLITM 2014 Forecast Highway Vehicle Flow Changes from Central Forecasts to High Growth Core Scenario– 2036 Forecast Year AM Peak

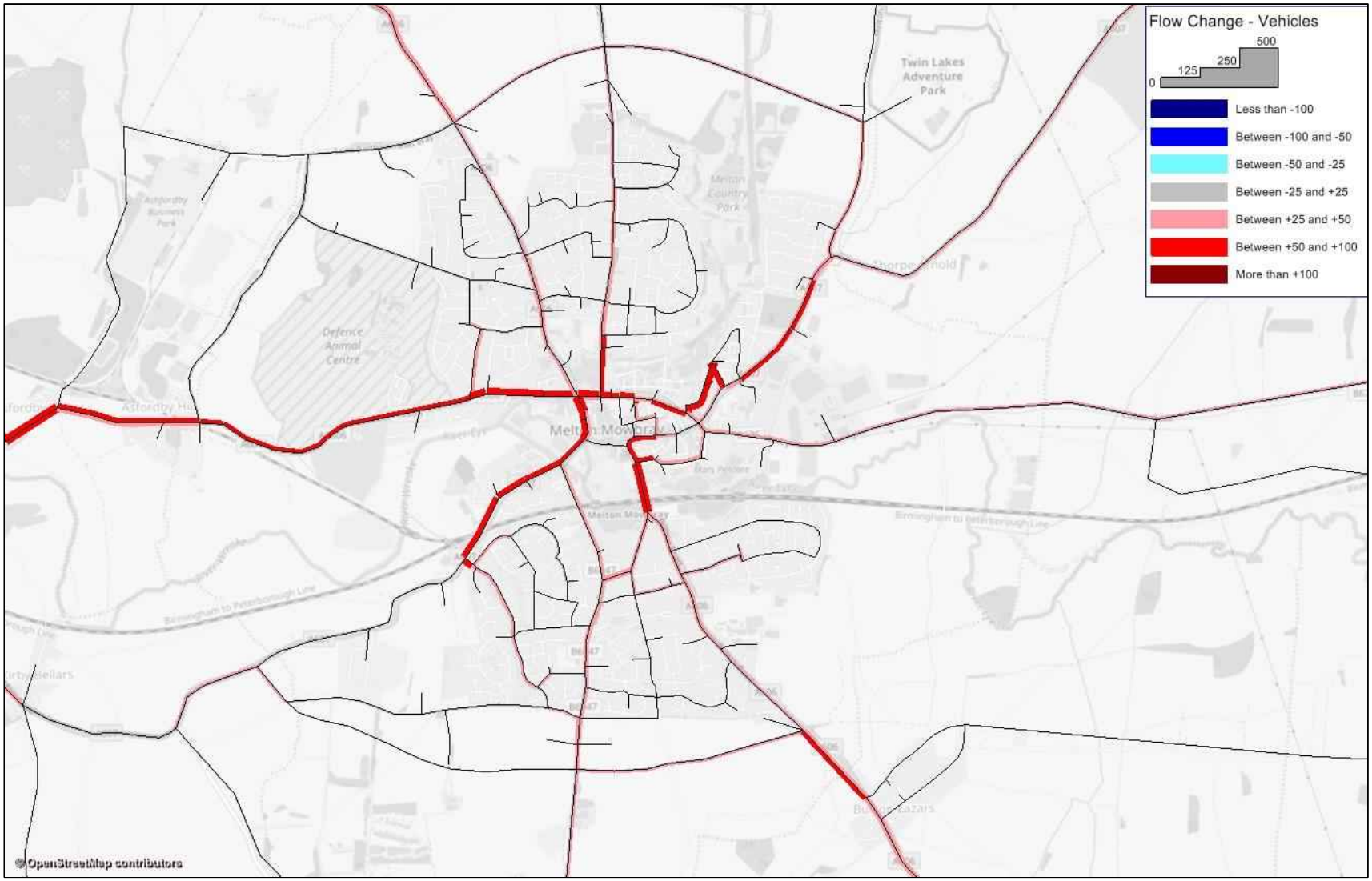


Figure 6.5: LLITM 2014 Forecast Highway Vehicle Flow Changes from Central Forecasts to High Growth Core Scenario – 2036 Forecast Year PM Peak

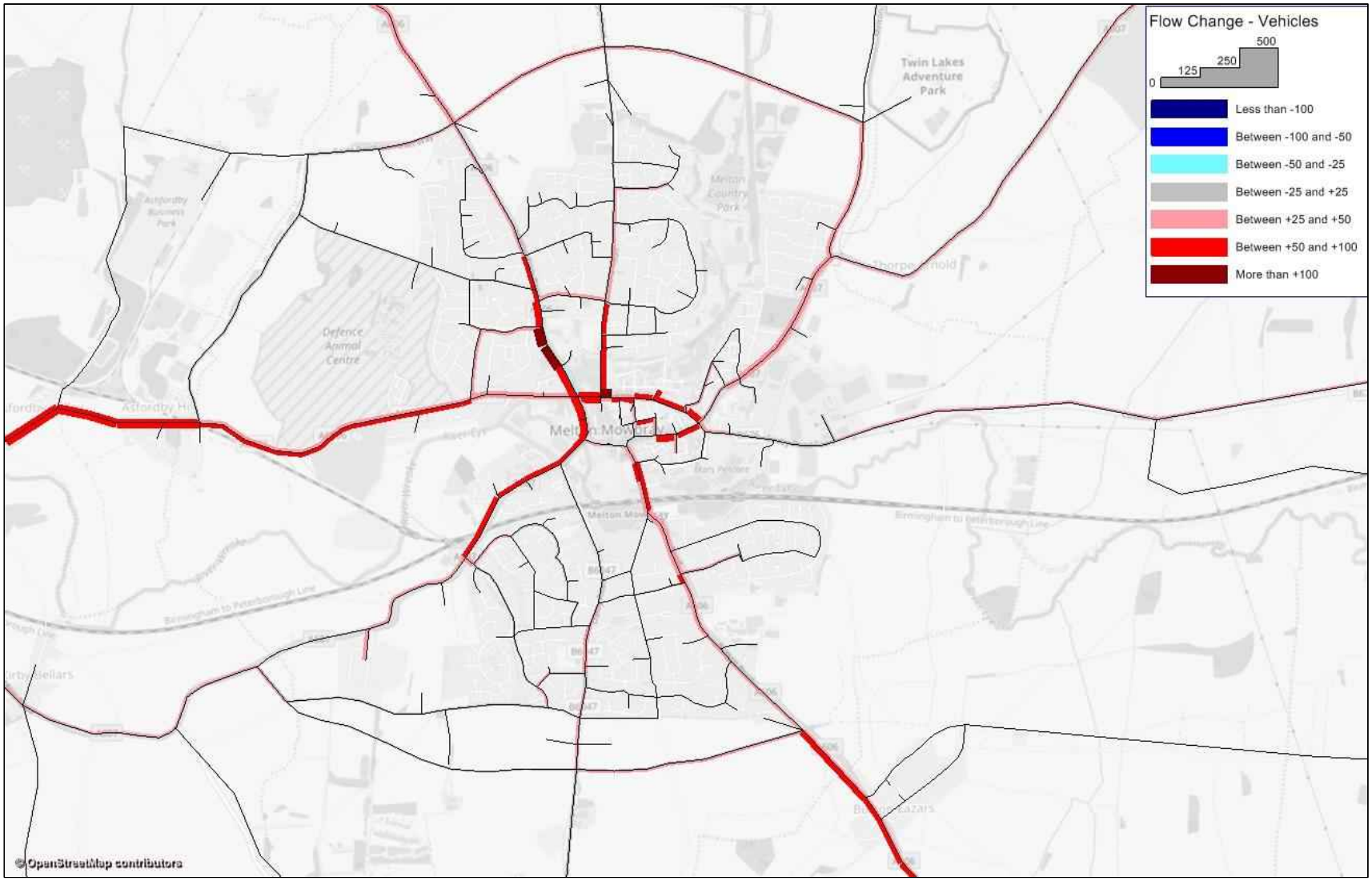


Figure 6.6: LLITM 2014 Forecast Highway Vehicle Flow Changes from Central Forecasts to Low Growth Core Scenario – 2036 Forecast Year AM Peak

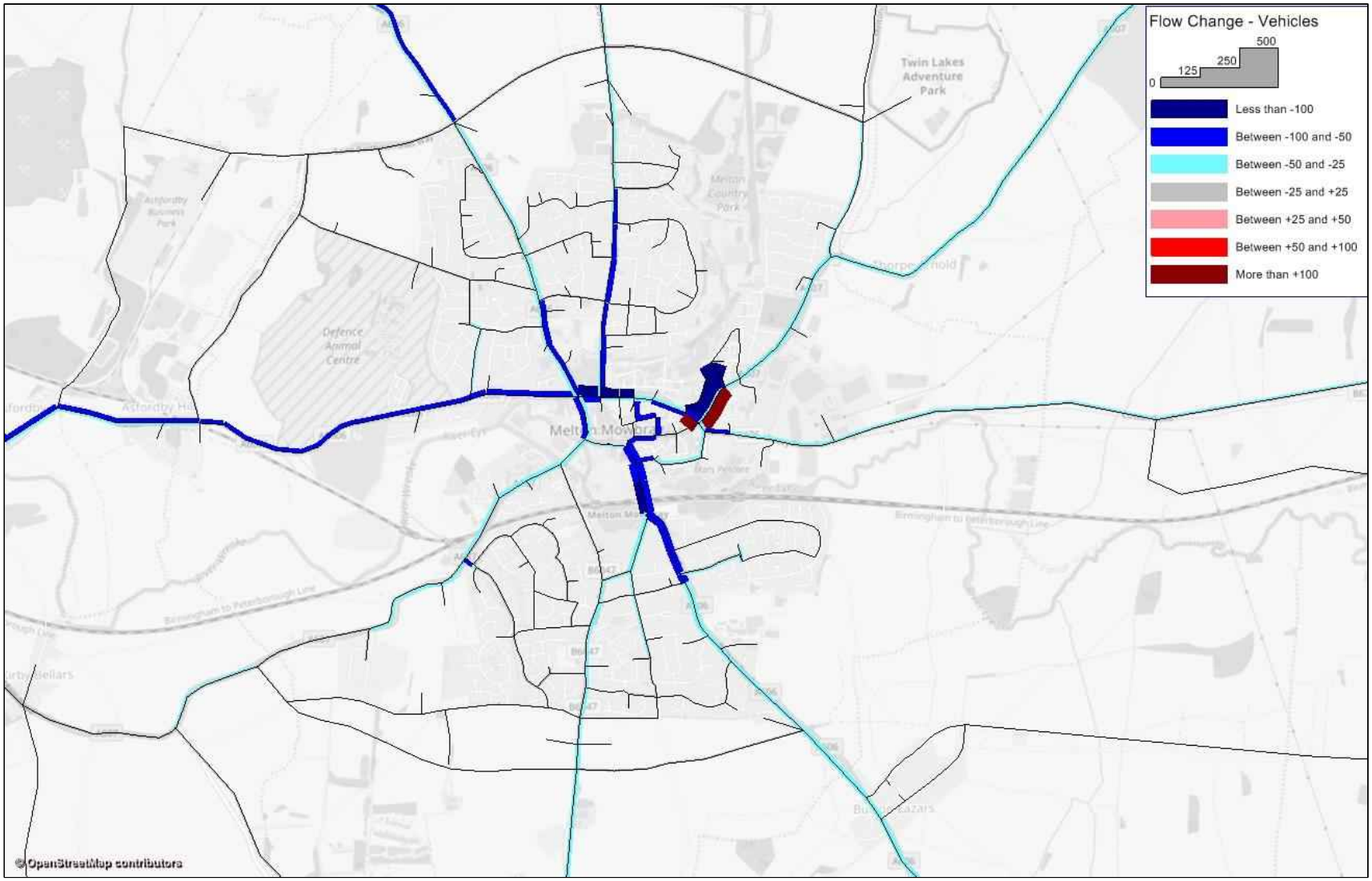


Figure 6.7: LLITM 2014 Forecast Highway Vehicle Flow Changes from Central Forecasts to Low Growth Core Scenario – 2036 Forecast Year PM Peak

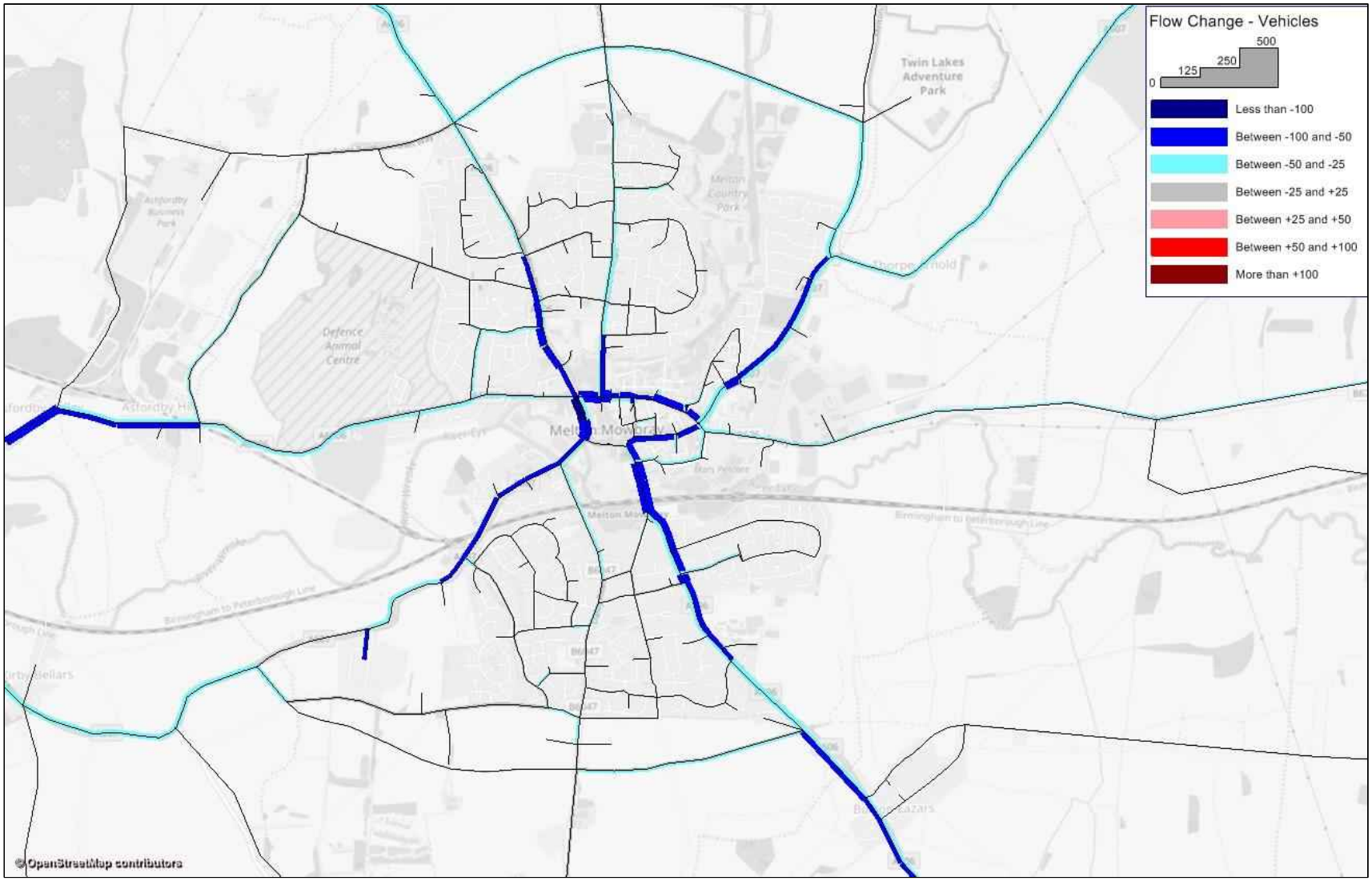


Figure 6.8: LLITM 2014 Forecast Highway Vehicle Flow Changes from Core Scenario to With Scheme (High Growth) – 2036 Forecast Year AM Peak

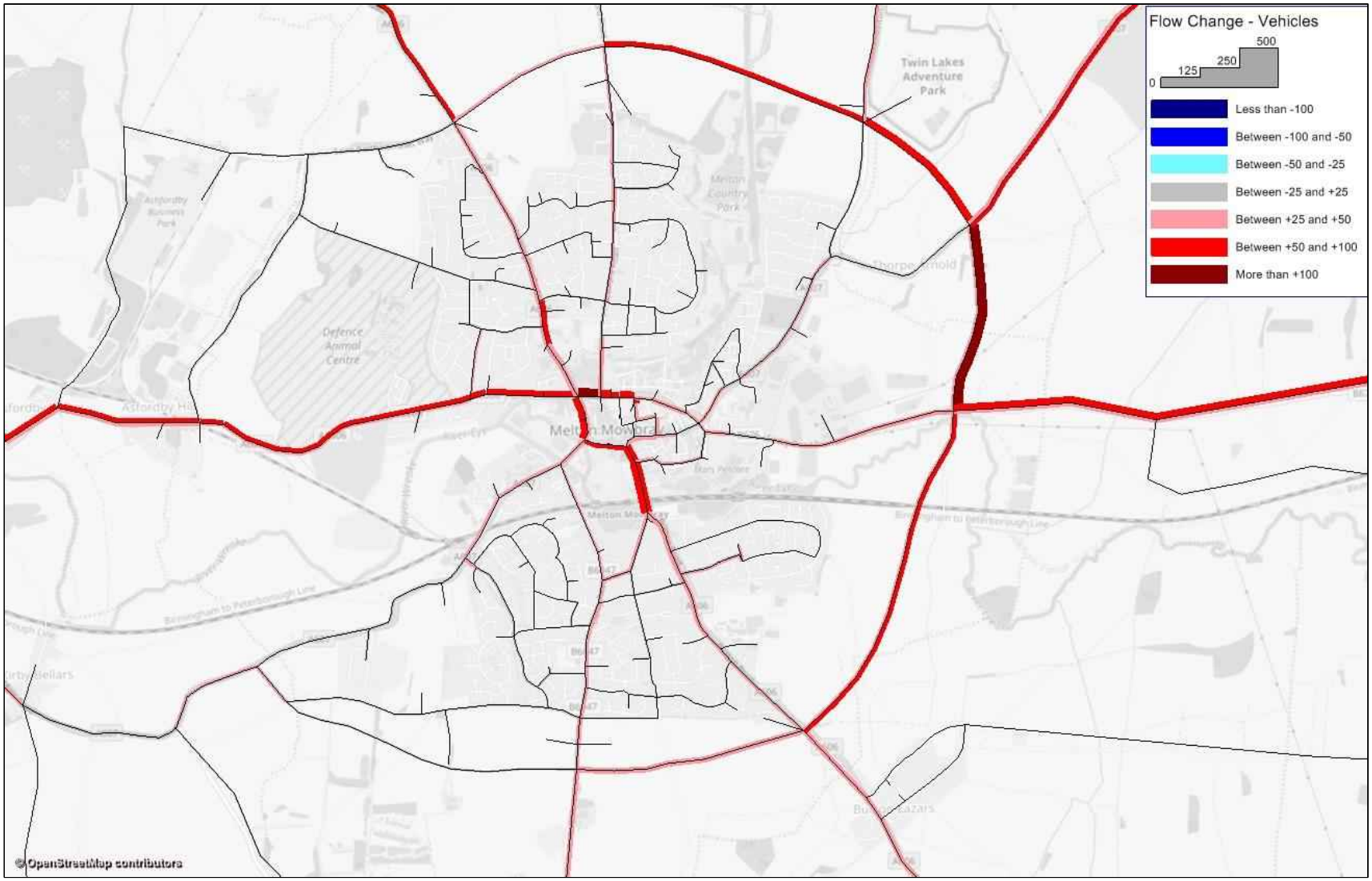


Figure 6.9: LLITM 2014 Forecast Highway Vehicle Flow Changes from Core Scenario to With Scheme (High Growth) – 2036 Forecast Year PM Peak

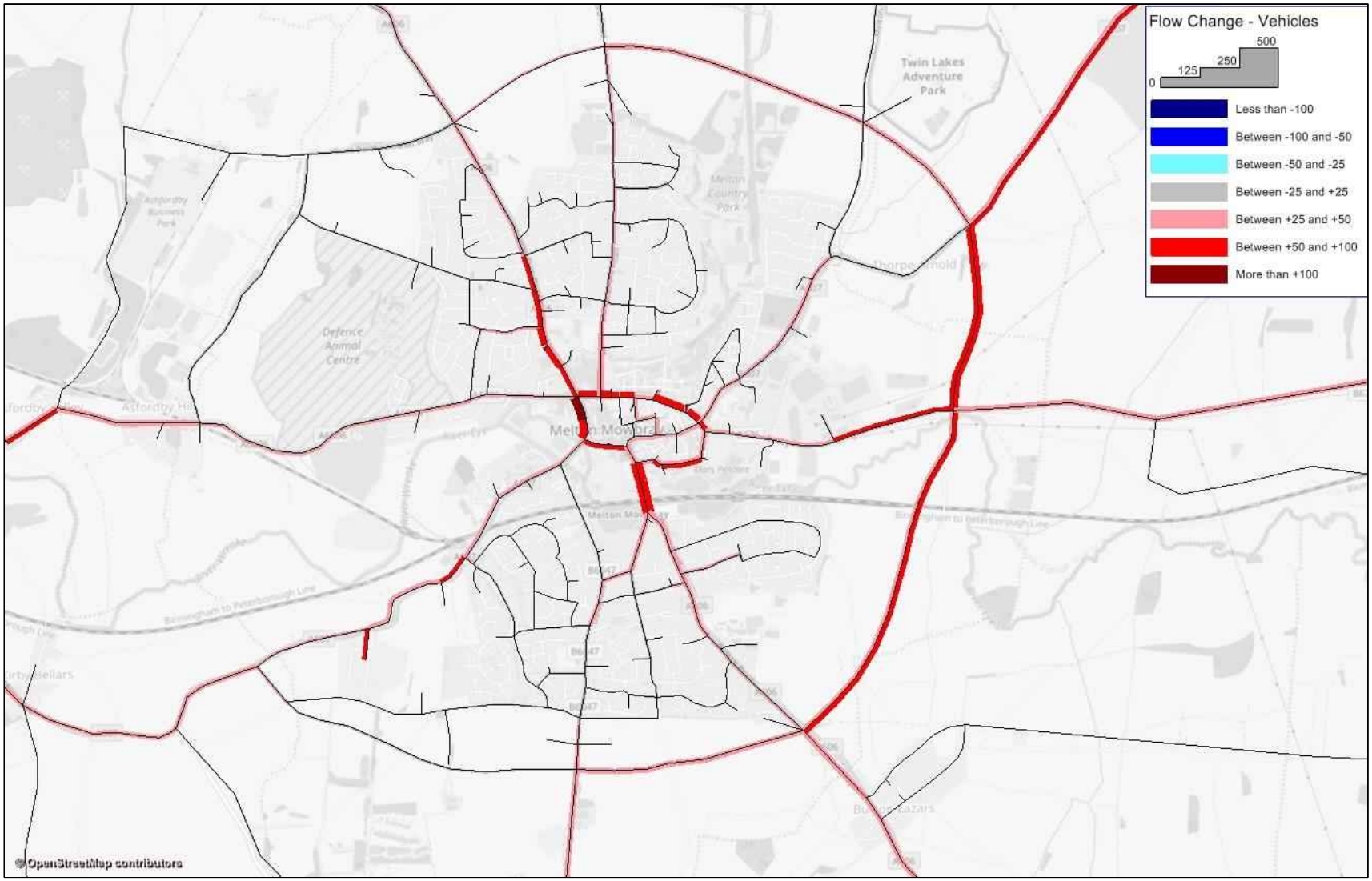


Figure 6.10: LLITM 2014 Forecast Highway Vehicle Flow Changes from Core Scenario to With Scheme (Low Growth) – 2036 Forecast Year AM Peak

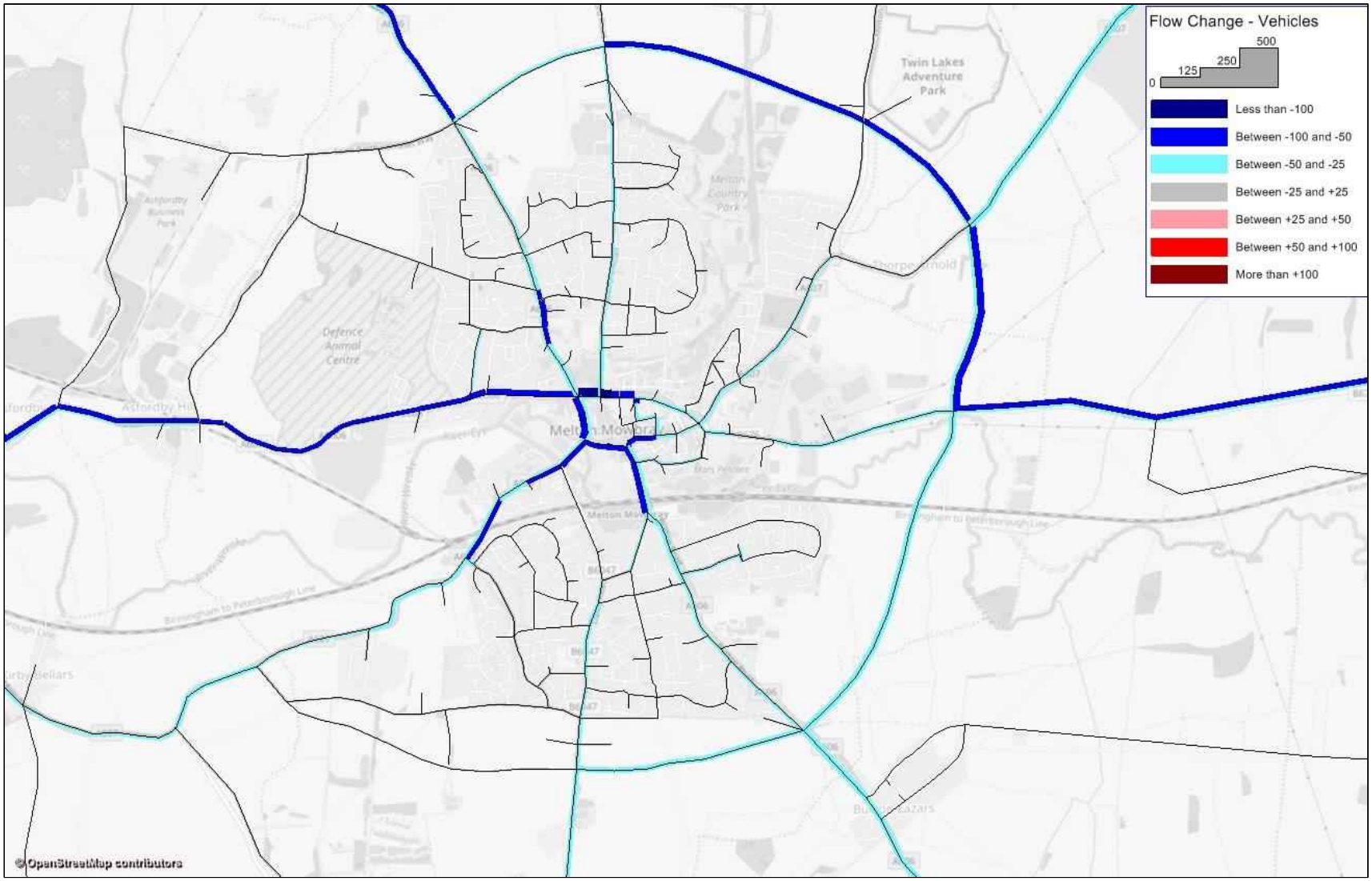
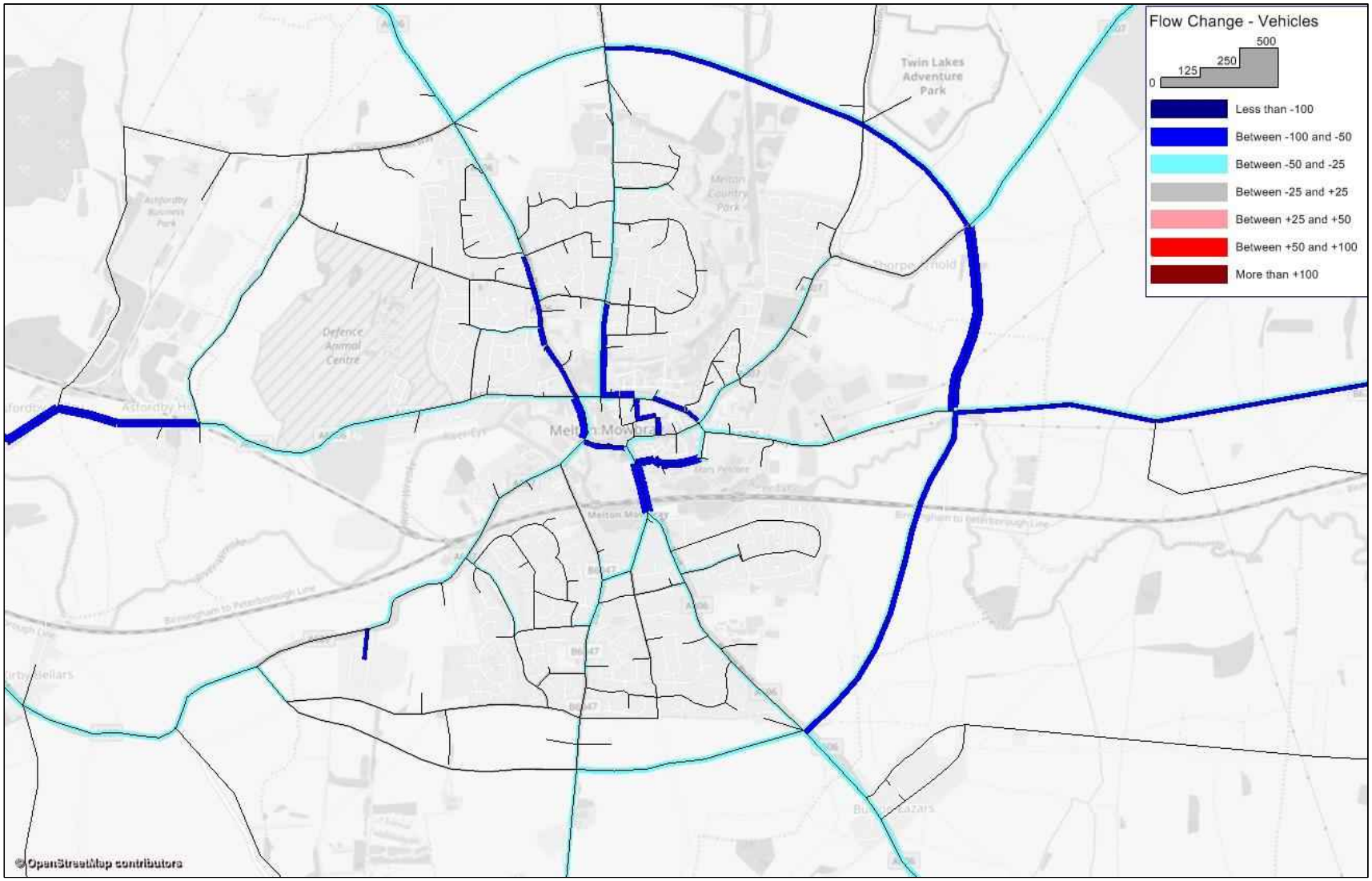


Figure 6.11: LLITM 2014 Forecast Highway Vehicle Flow Changes from Core Scenario to With Scheme (Low Growth) – 2036 Forecast Year PM Peak



Section 7 – Summary of Forecasts

7.1 Summary of Forecasts

7.1.1 The preceding sections of this document detail the forecasting processes and assumptions adopted within LLITM 2014 to produce the forecasts detailed in this report, the results of this forecasting process for the "central" case both excluding and including the proposed scheme, and the forecast results in the WebTAG high / low growth sensitivity tests.

7.1.2 In terms of the forecasting process, LLITM 2014 is a land-use – transport interaction model, which includes both highway and a public transport assignment models, a variable demand model, and a land-use model. LLITM 2014 also incorporates the DfT's CTripEnd software to produce trip-end forecasts based on the planning forecasts produced by the land-use model.

7.1.3 In order to develop forecasts, assumptions on the changes to the highway and public transport networks have been collected from LCC, neighbouring authorities and Highways England, and information regarding the location and scale of proposed developments collated from planning applications as part of the Local Plan. In addition to these forecast assumptions, forecasts for a number of economic parameters (such as values of time and fuel prices) have been taken from WebTAG.

7.1.4 Using these forecast assumptions, the land-use model forecasts a 23% increase in population between 2014 and 2036 within Melton Borough, with a 16% increase in employment over the same period. This forecast growth in population and employment drives growth in travel demand produced within Melton Borough. Total travel demand produced within Melton Borough is forecast to grow by 30% between 2014 and 2036, with a forecast 38% growth in highway demand.

7.1.5 The forecast increase in highway demand over time results in additional traffic and delays both within Melton Borough and Melton Mowbray. Traffic levels within the district are forecast to increase from 2014 to 2036 by between around 25% and 40% depending on the time of day. This forecast increase in traffic results in increase in delay of between around 60% and 75% and reductions in average speed of between 1% and 4% between 2014 and 2036.

7.1.6 Within Melton Mowbray, a similar level of traffic growth is forecast between 2014 and 2036 of around 35% to 50% depending on the time period. Forecast delays increase by between 40% and 60% due to this increase in traffic, with average speeds forecast to change between a 2% reduction and a 2% increase. The forecast increase in average speeds within Melton Mowbray between 2014 and 2036, despite the forecast increases in traffic levels, is due to the additional infrastructure relating to the northern and southern urban extensions included within the Core Scenario.

7.1.7 With the introduction of the proposed scheme, forecast levels of traffic within Melton Borough increase (in 2036 by around 4%), with levels of traffic within Melton Mowbray forecast to decrease (by around 10% in 2036). Average speeds within the district and Melton Mowbray are forecast to increase with the introduction of the proposed scheme, by between 4% and 5% across the district and by between 2% and 8% within Melton Mowbray in 2036.

7.1.8 The introduction of the proposed scheme results in traffic routeing away from the Melton Mowbray urban area and onto the new route. Significant reductions in traffic volumes are forecast on Thorpe Road and Burton Road within Melton Mowbray as a result of the scheme, with smaller reductions in flow forecast on Nottingham Road and Norman Way.

7.1.9 In addition to these "central" forecasts, high and low growth scenarios have been undertaken using the approach detailed within WebTAG Unit M4. These sensitivity tests results in a reduction in highway demand produced within Melton Borough of 8.5% from the "central" forecasts in the low growth scenario, and a corresponding 8.5% increase in highway demand in the high growth scenario. This forecast increase or decrease in highway demand results in corresponding increases and decreases in traffic both within Melton Borough and Melton Mowbray, with larger forecast reductions in average speed in the high growth scenario and smaller reductions in average speed in the low growth scenario.

Appendix A Location of Key Developments in Melton Mowbray

Figure A.1: Key Residential Developments within Melton Mowbray

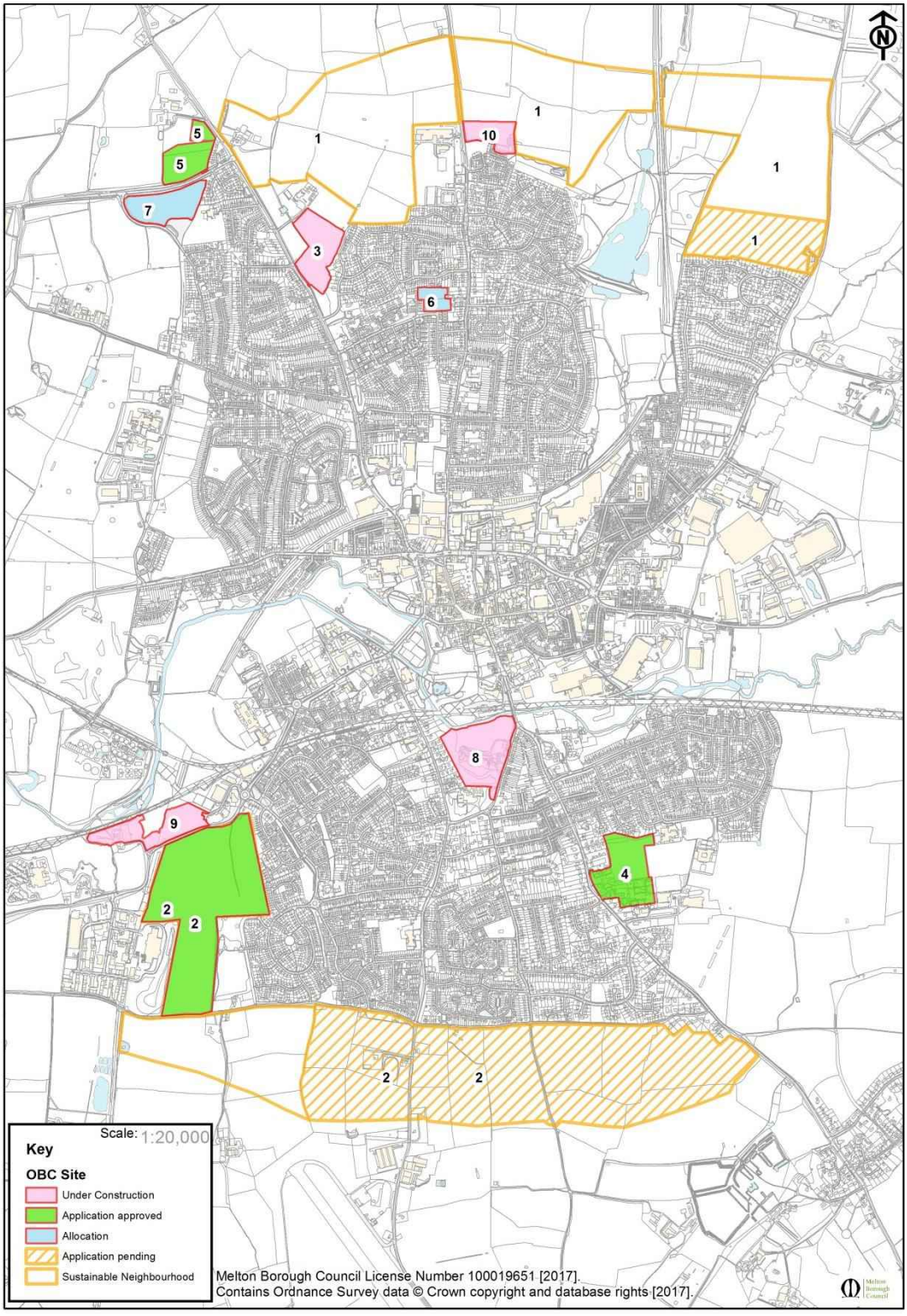
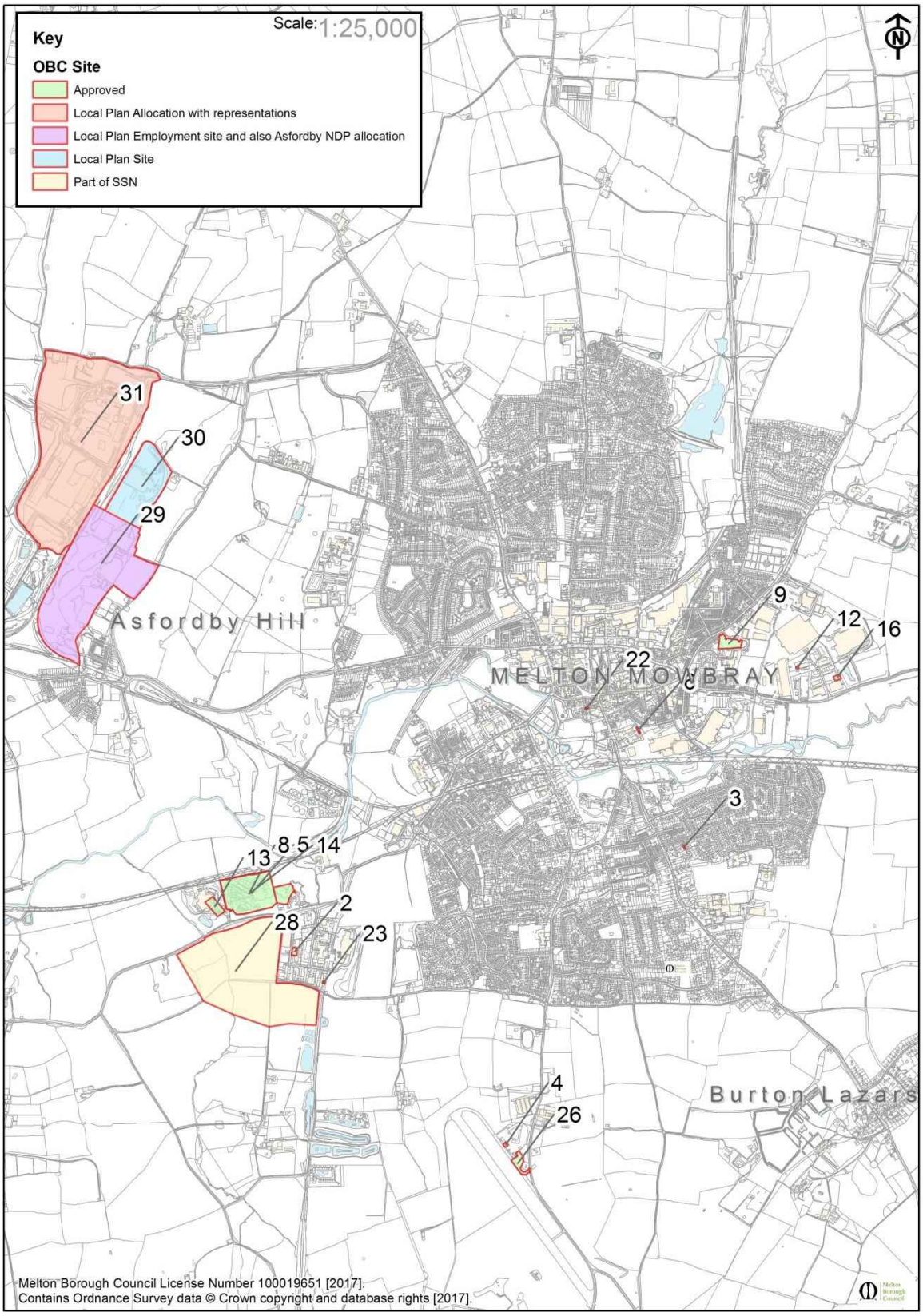


Figure A.2: Key Employment Developments within Melton Mowbray



Appendix B Core Scenario Forecast Vehicle Flows

Figure B.1: LLITM 2014 Core Scenario Forecast Highway Vehicle Flows – 2014 Base Year AM Peak

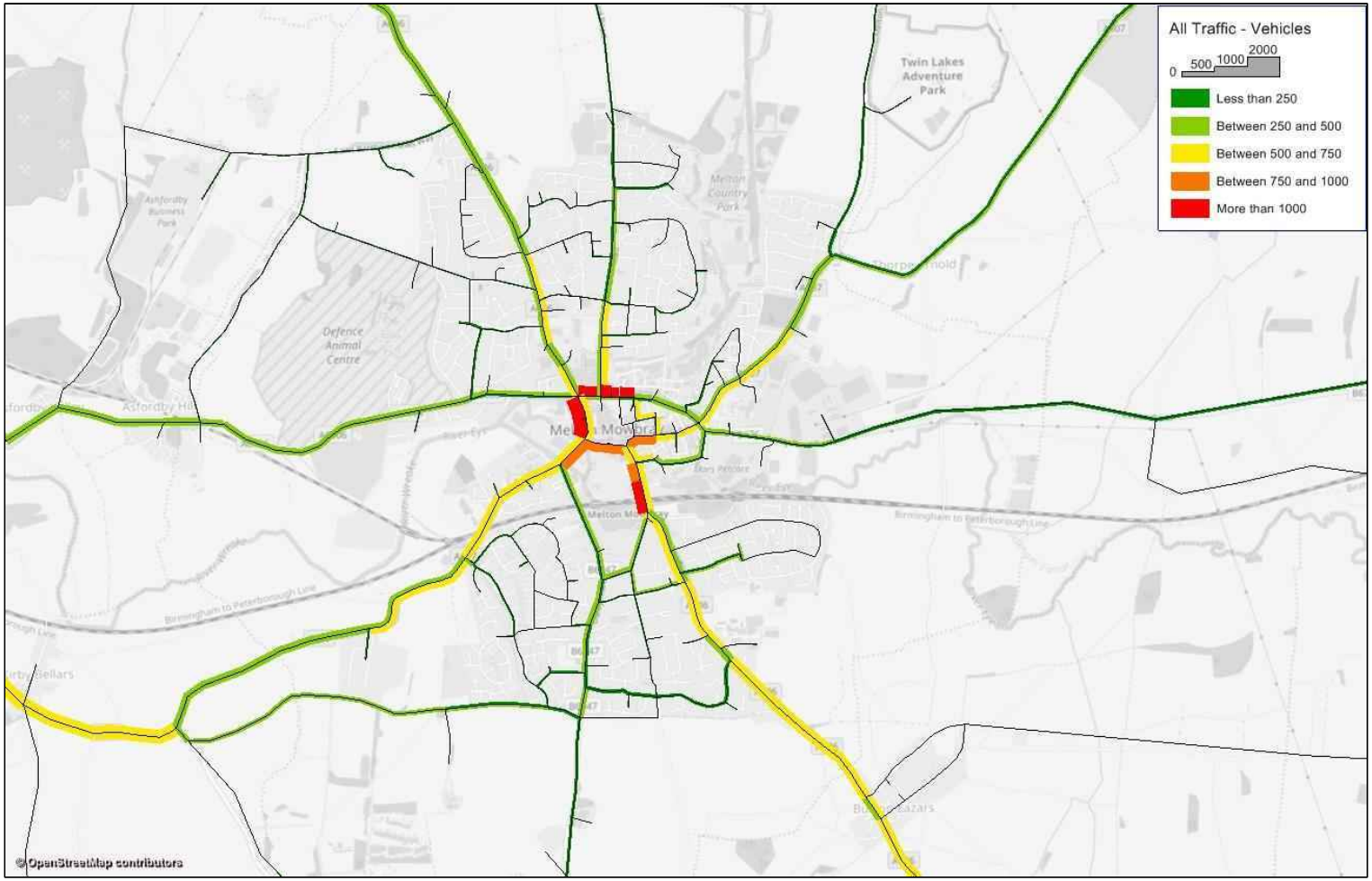


Figure B.2: LLITM 2014 Core Scenario Forecast Highway Vehicle Flows – 2014 Base Year Interpeak

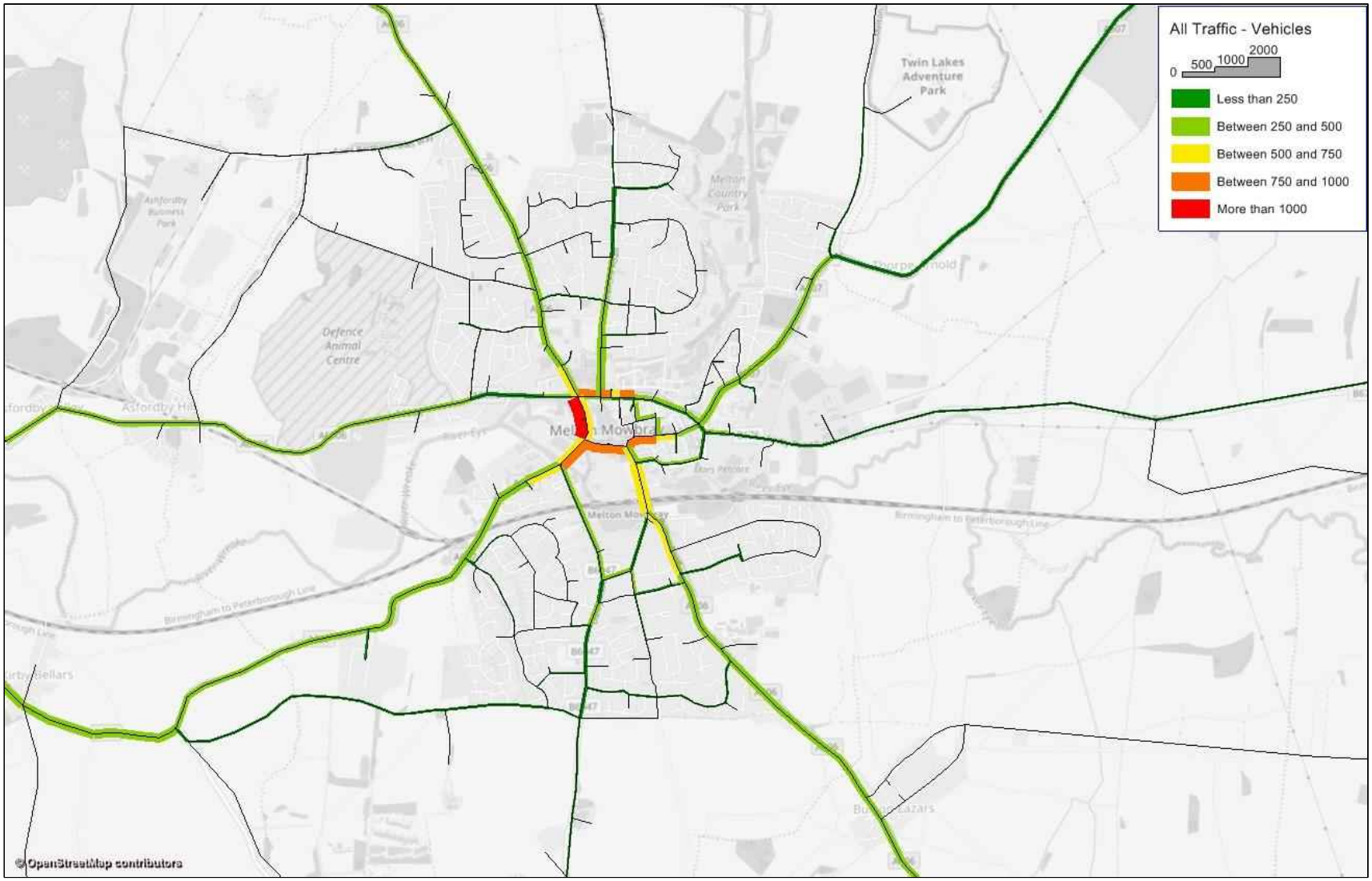


Figure B.3: LLITM 2014 Core Scenario Forecast Highway Vehicle Flows – 2014 Base Year PM Peak

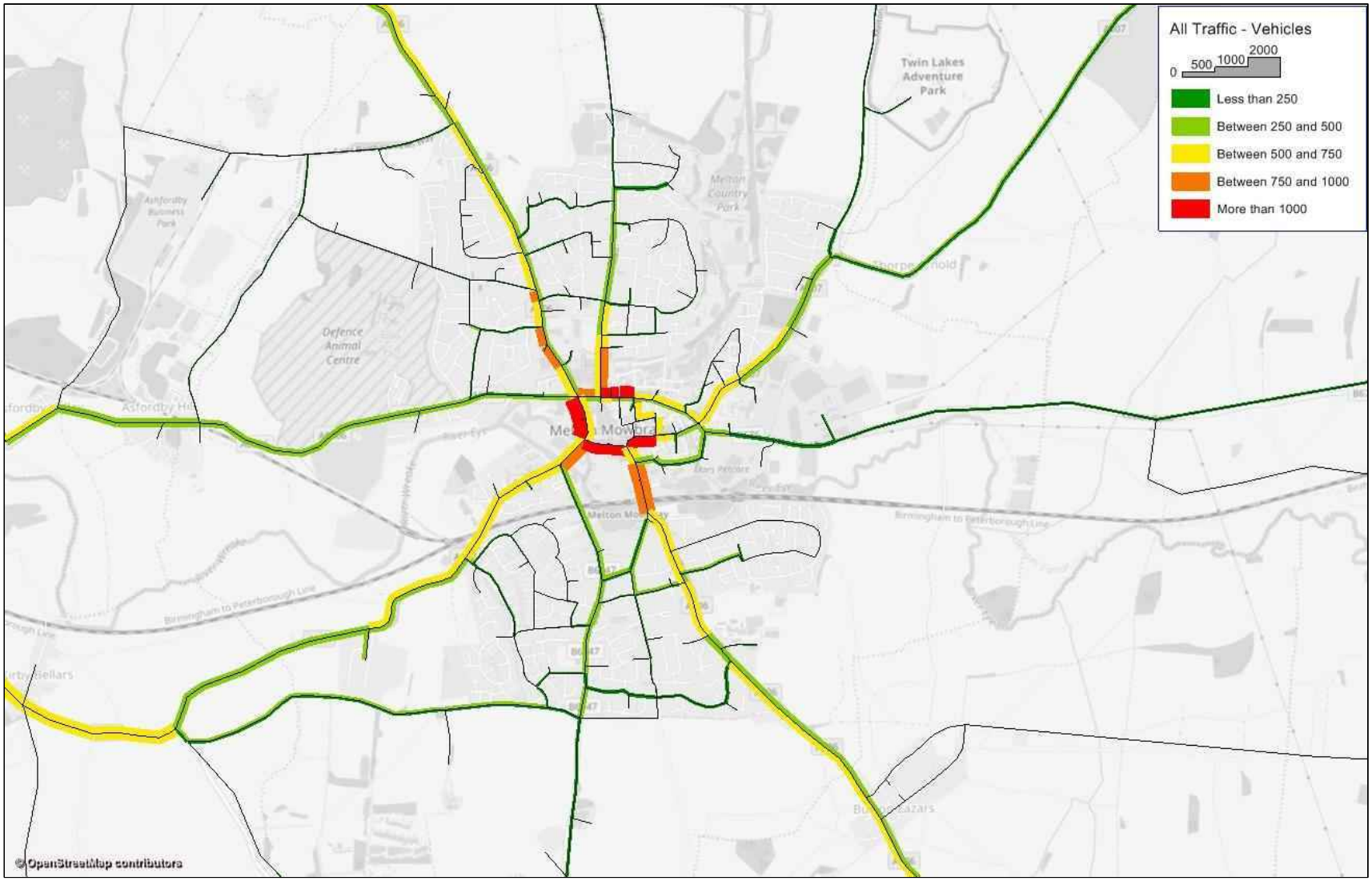


Figure B.4: LLITM 2014 Core Scenario Forecast Highway Vehicle Flows – 2021 Forecast Year AM Peak

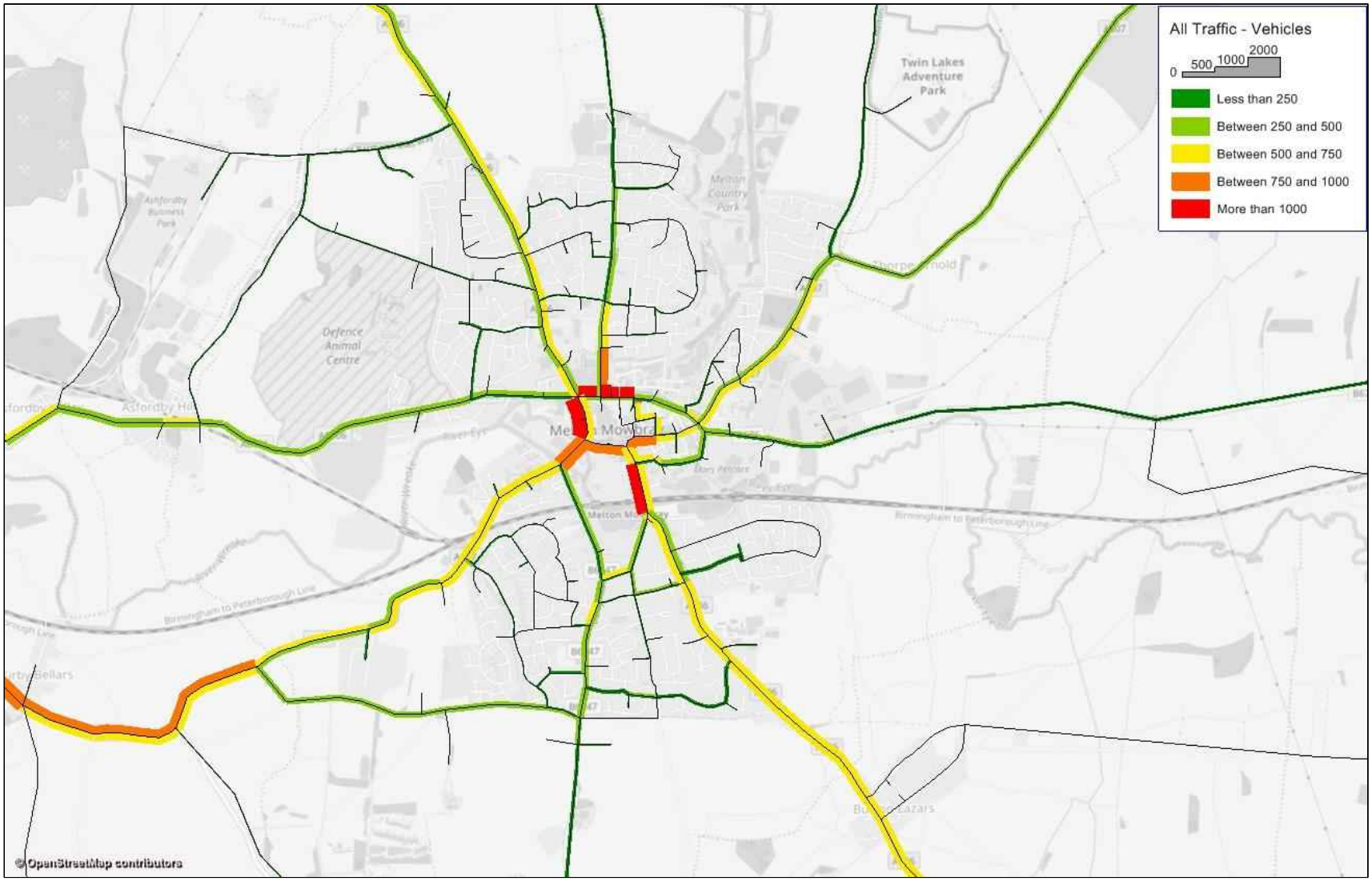


Figure B.5: LLITM 2014 Core Scenario Forecast Highway Vehicle Flows – 2021 Forecast Year Interpeak

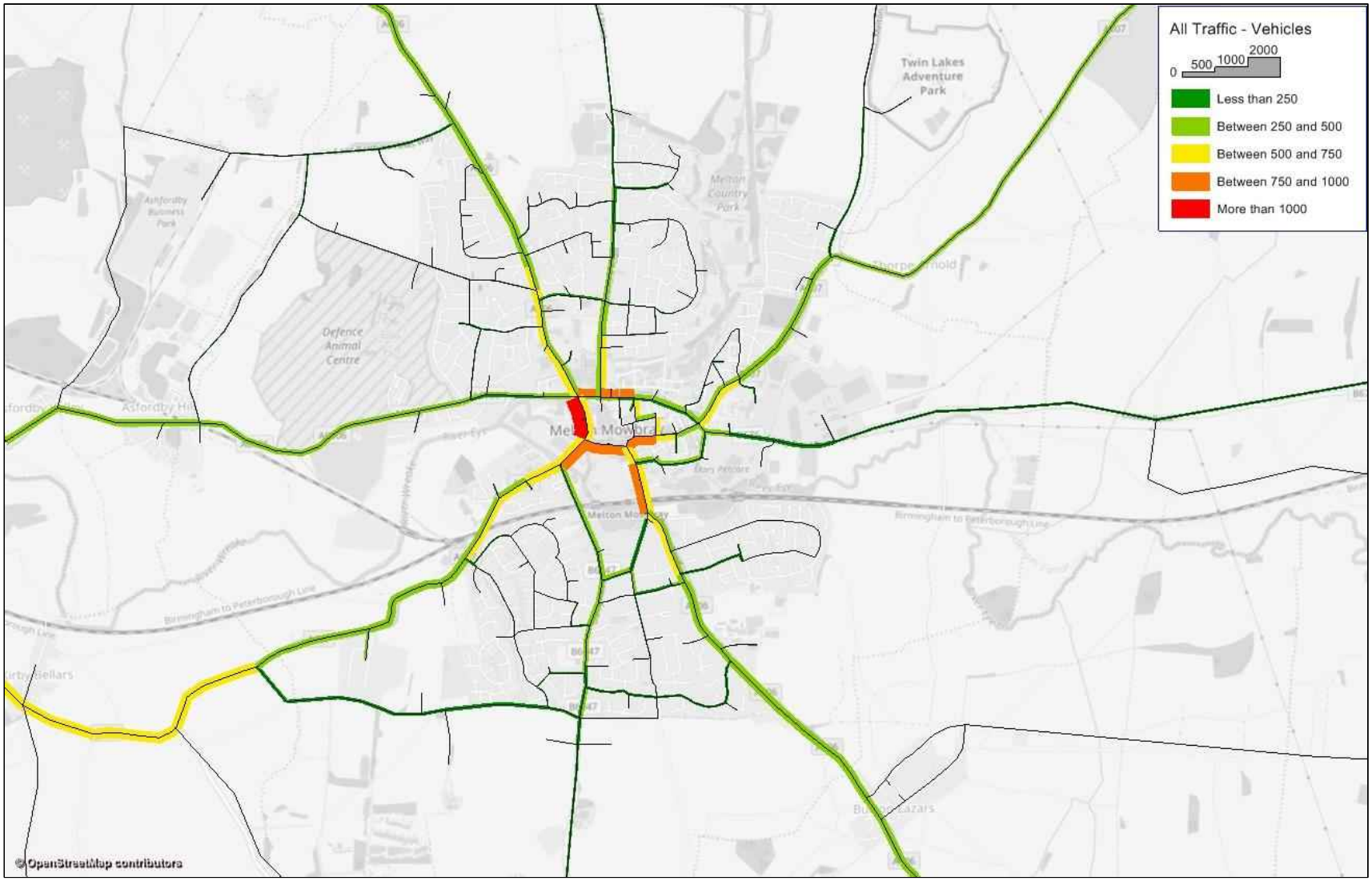


Figure B.6: LLITM 2014 Core Scenario Forecast Highway Vehicle Flows – 2021 Forecast Year PM Peak

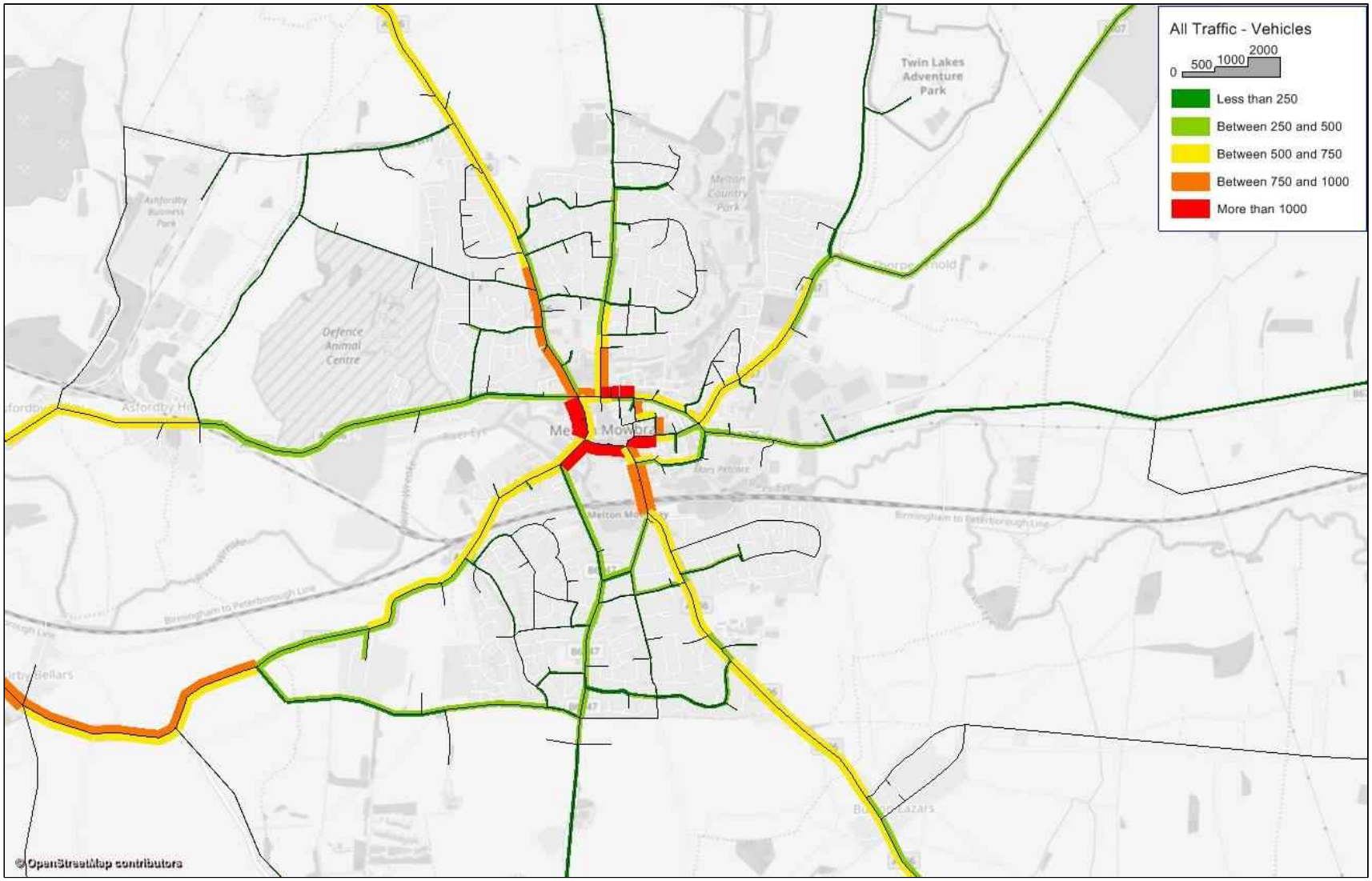


Figure B.7: LLITM 2014 Core Scenario Forecast Highway Vehicle Flows – 2036 Forecast Year AM Peak

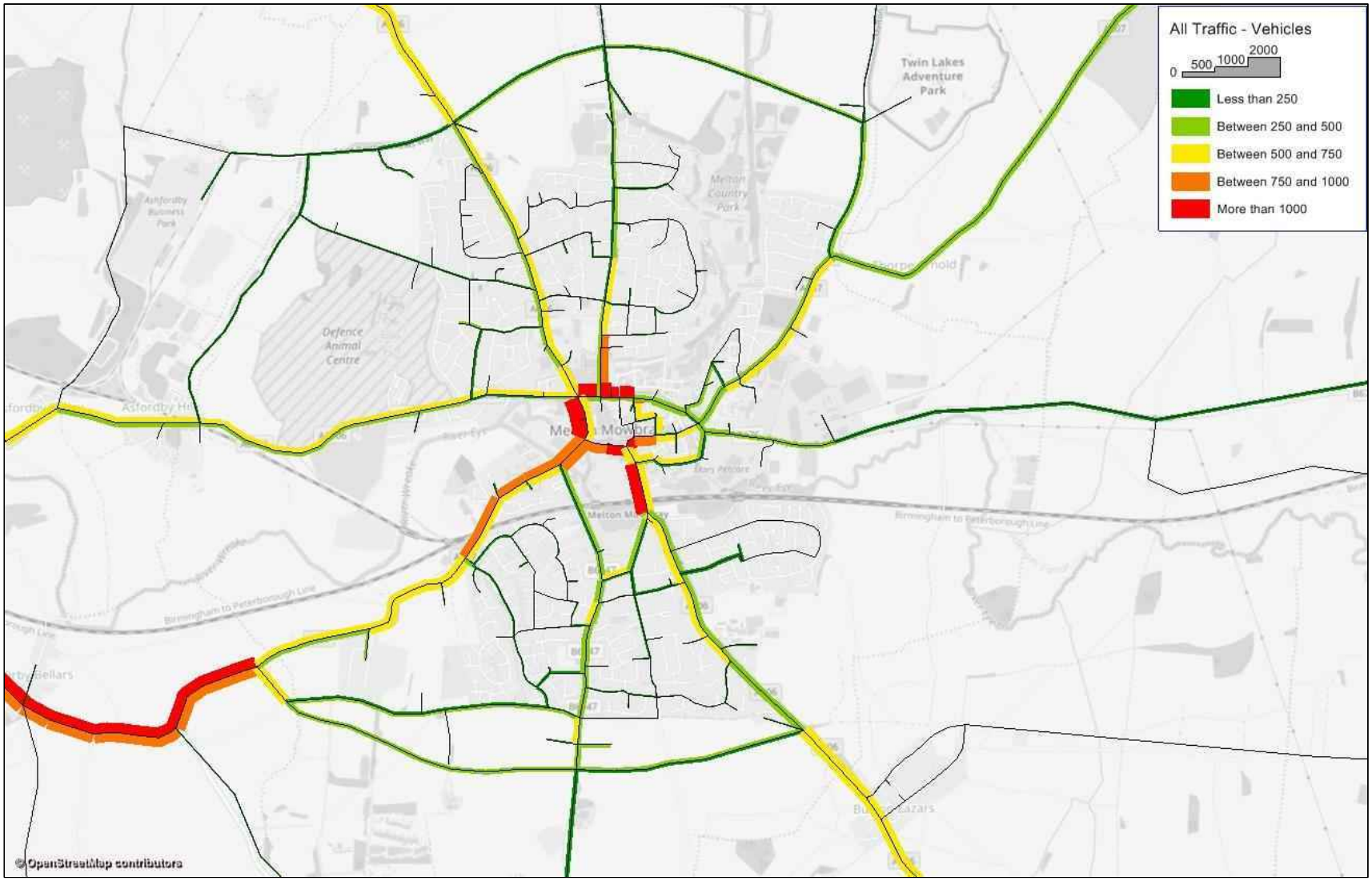


Figure B.8: LLITM 2014 Core Scenario Forecast Highway Vehicle Flows – 2036 Forecast Year Interpeak

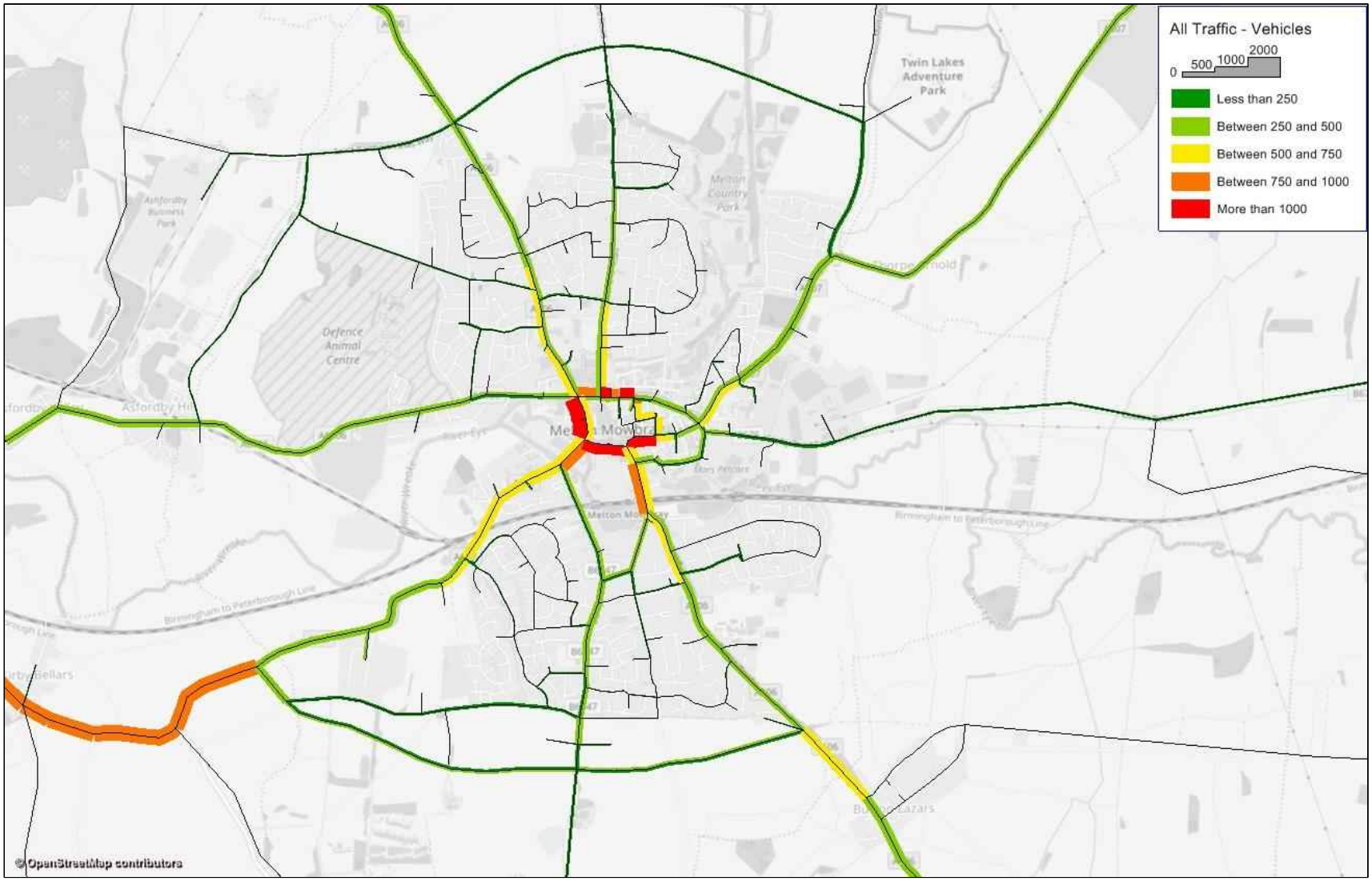


Figure B.9: LLITM 2014 Core Scenario Forecast Highway Vehicle Flows – 2036 Forecast Year PM Peak

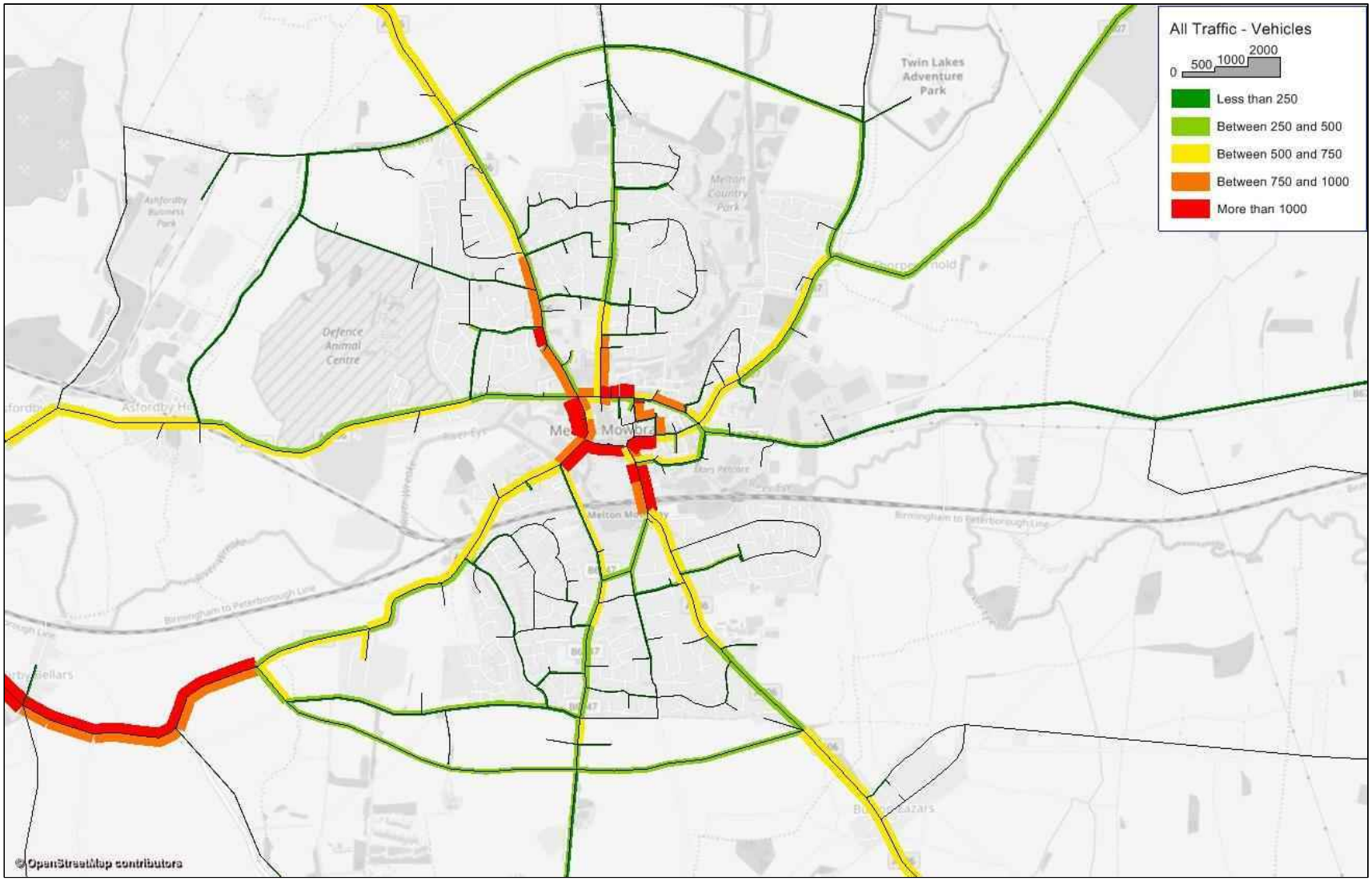


Figure B.10: LLITM 2014 Core Scenario Forecast Highway Vehicle Flows – 2041 Forecast Year AM Peak

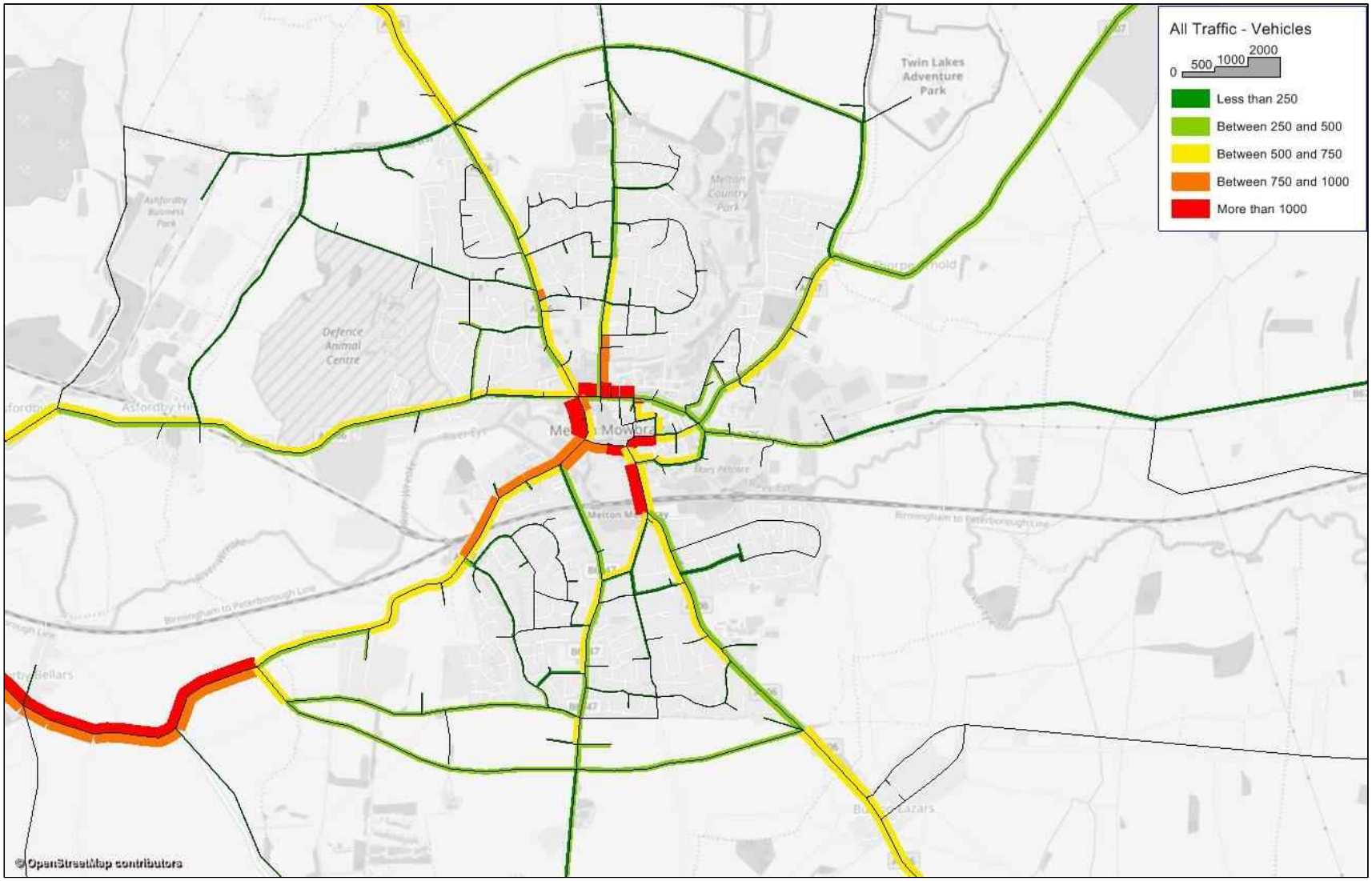


Figure B.11: LLITM 2014 Core Scenario Forecast Highway Vehicle Flows – 2041 Forecast Year Interpeak

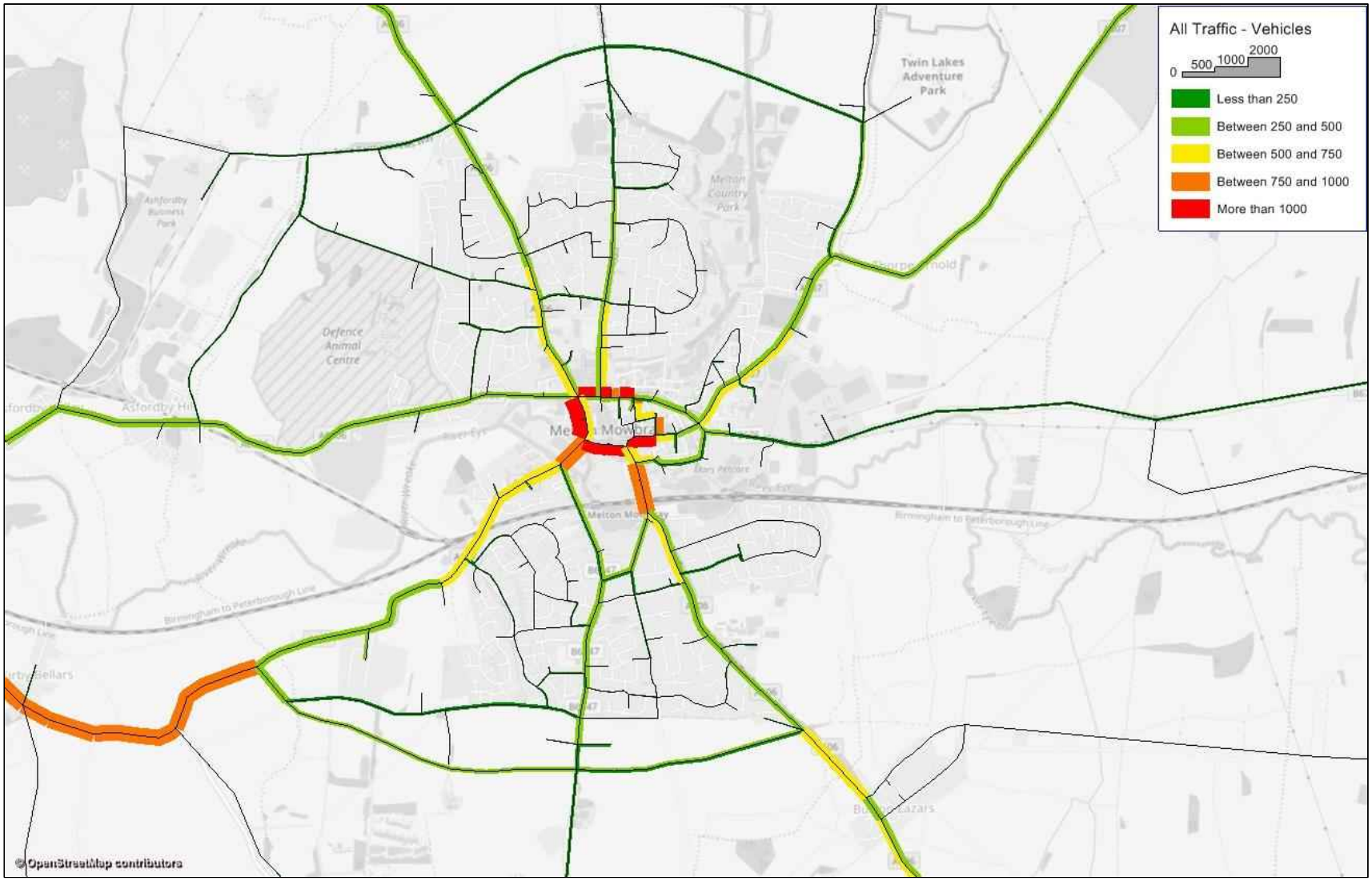


Figure B.12: LLITM 2014 Core Scenario Forecast Highway Vehicle Flows – 2041 Forecast Year PM Peak

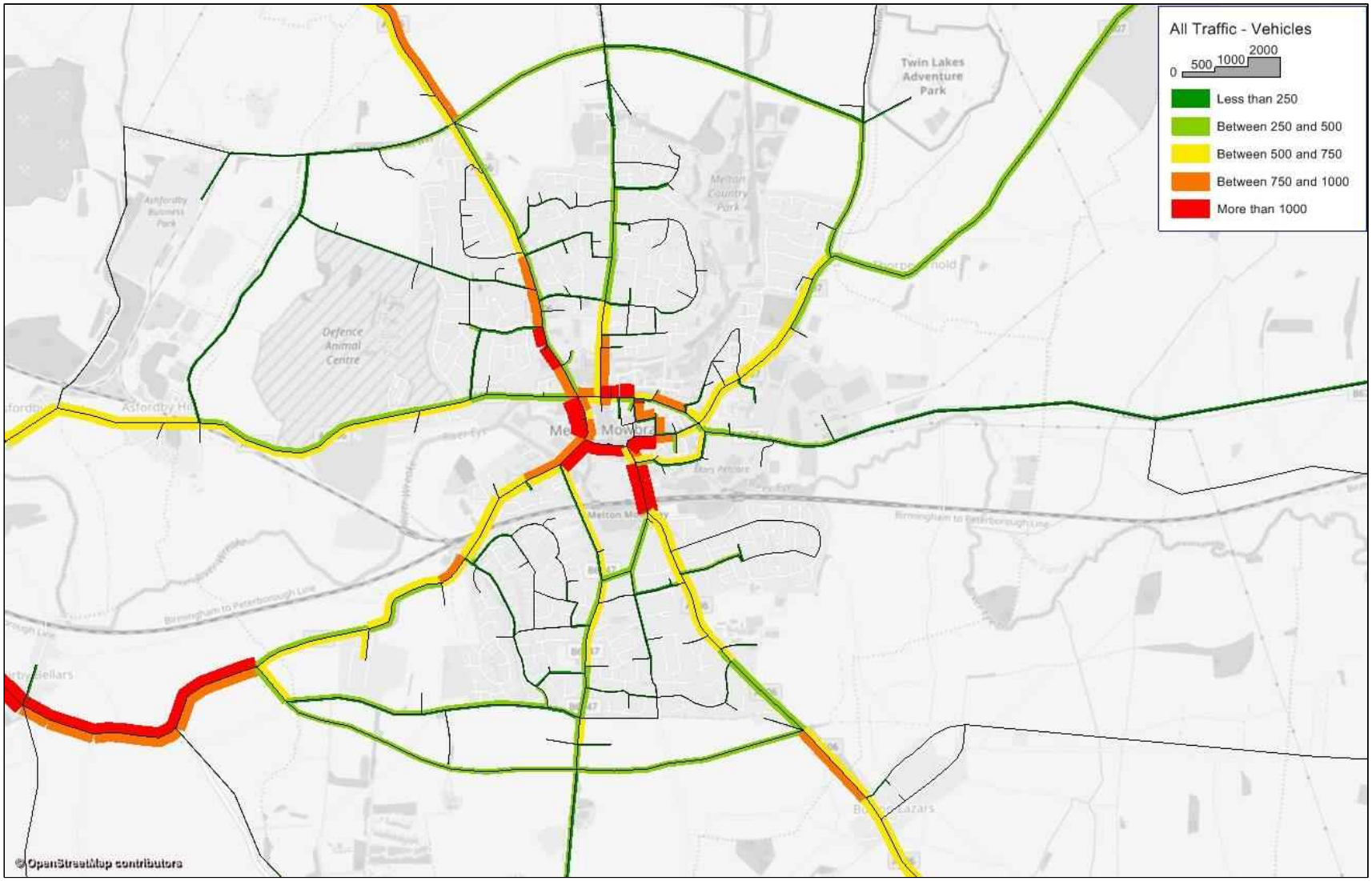


Figure B.13: LLITM 2014 Core Scenario Forecast Highway Vehicle Flows – 2051 Forecast Year AM Peak

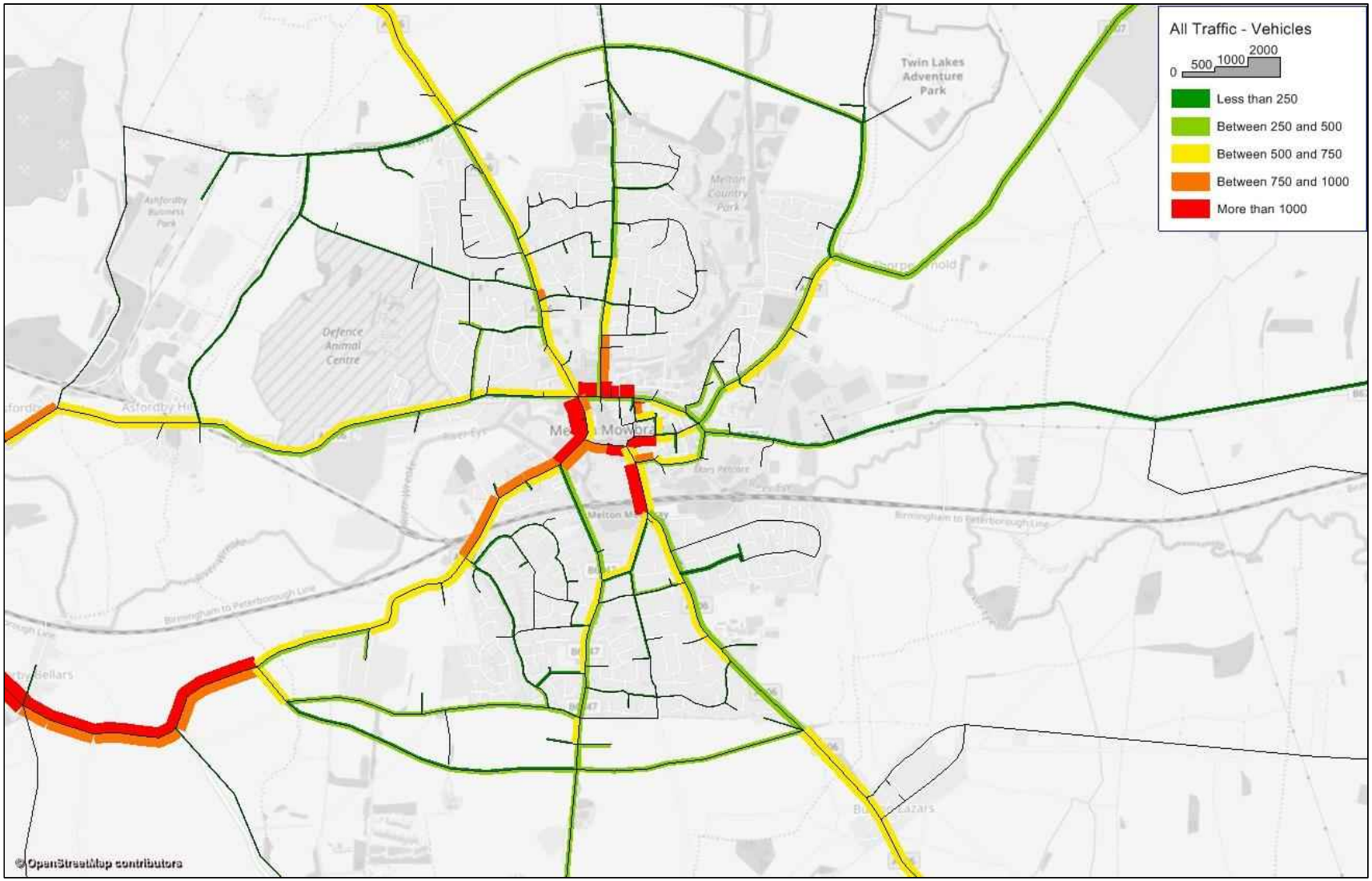


Figure B.14: LLITM 2014 Core Scenario Forecast Highway Vehicle Flows – 2051 Forecast Year Interpeak

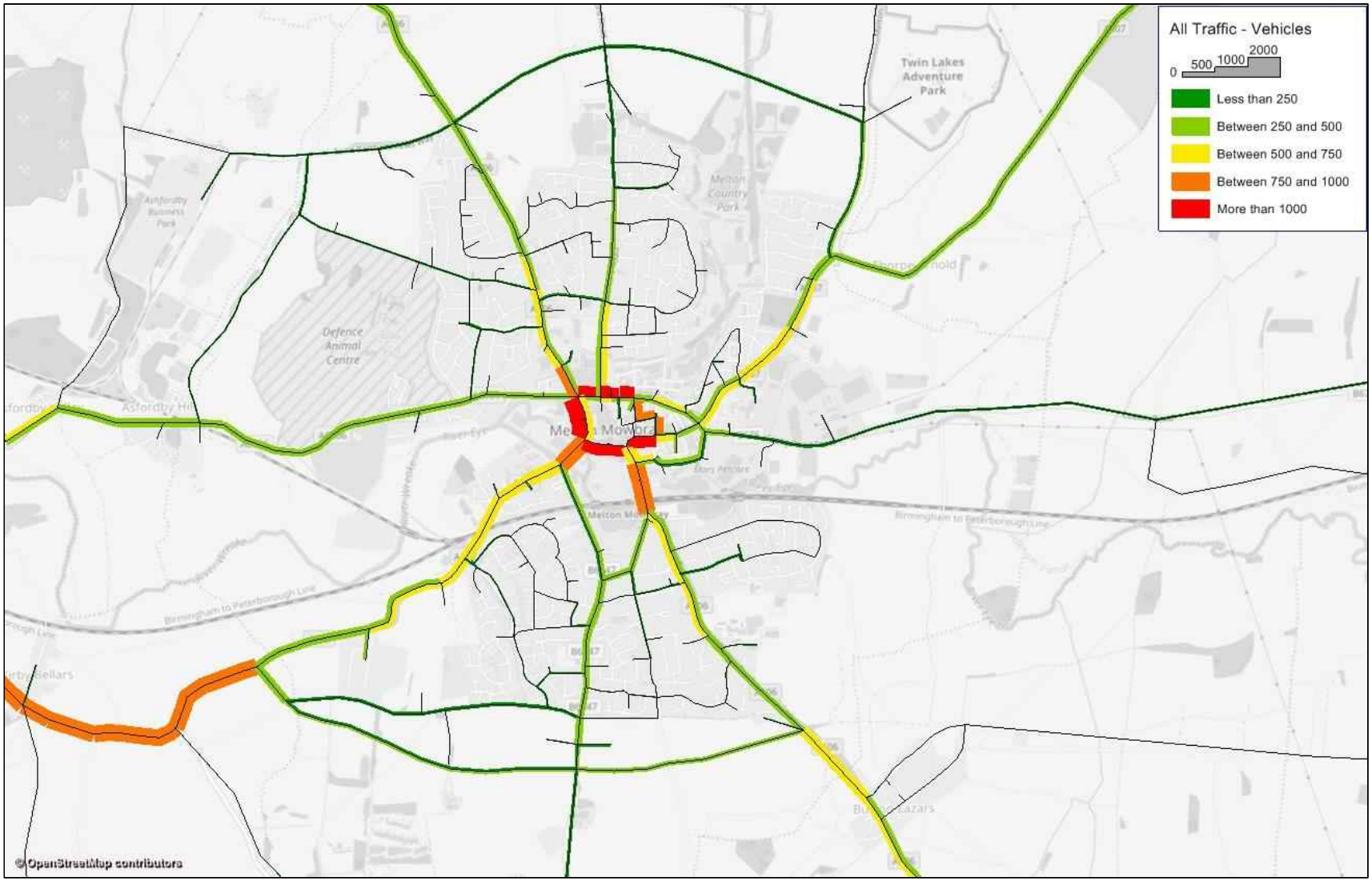
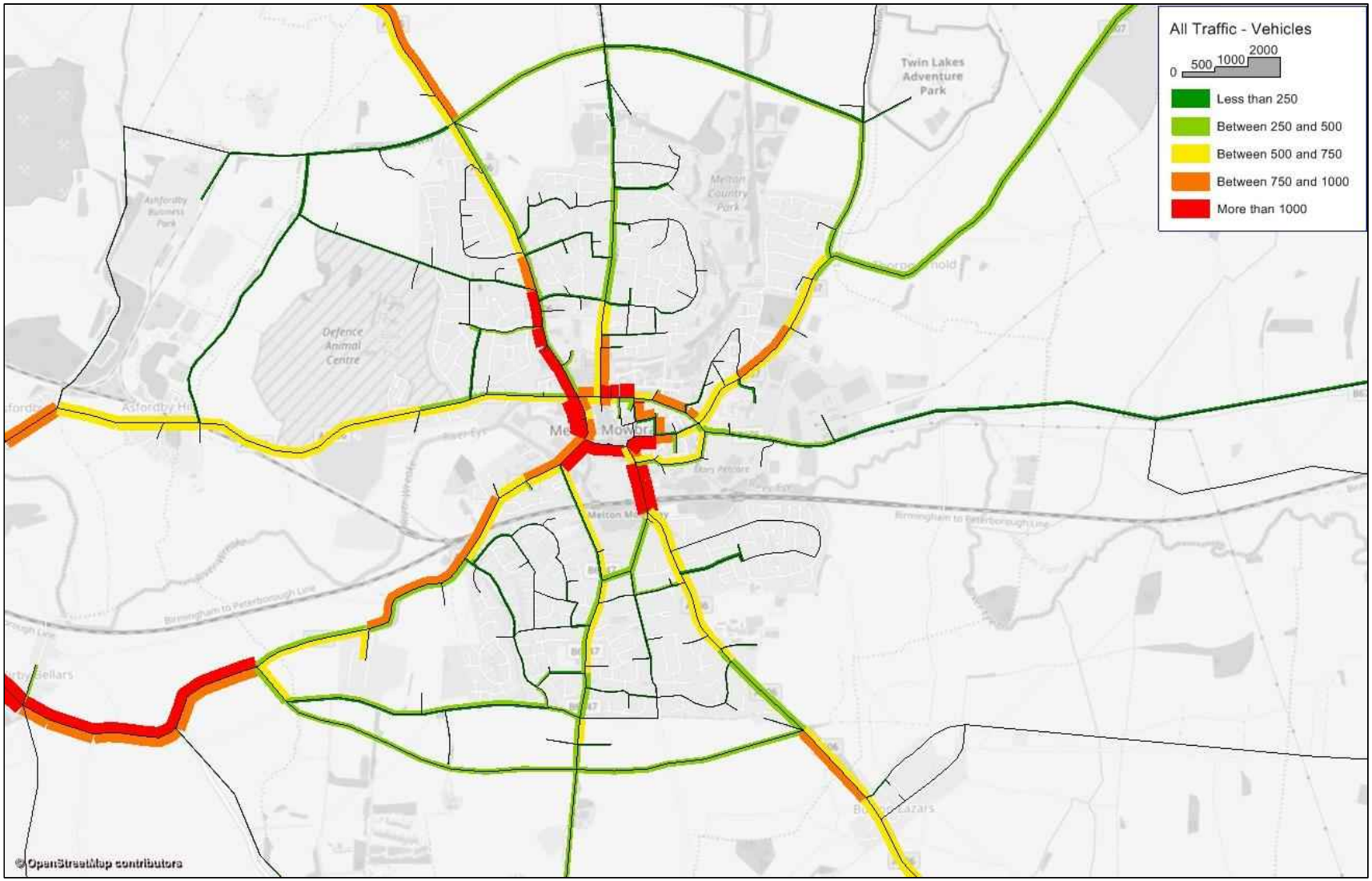


Figure B.15: LLITM 2014 Core Scenario Forecast Highway Vehicle Flows – 2051 Forecast Year PM Peak



Appendix C Core Scenario Forecast Volume-Capacity Ratios

Figure C.1: LLITM 2014 Core Scenario Forecast Highway Volume-Capacity Ratio – 2014 Base Year AM Peak

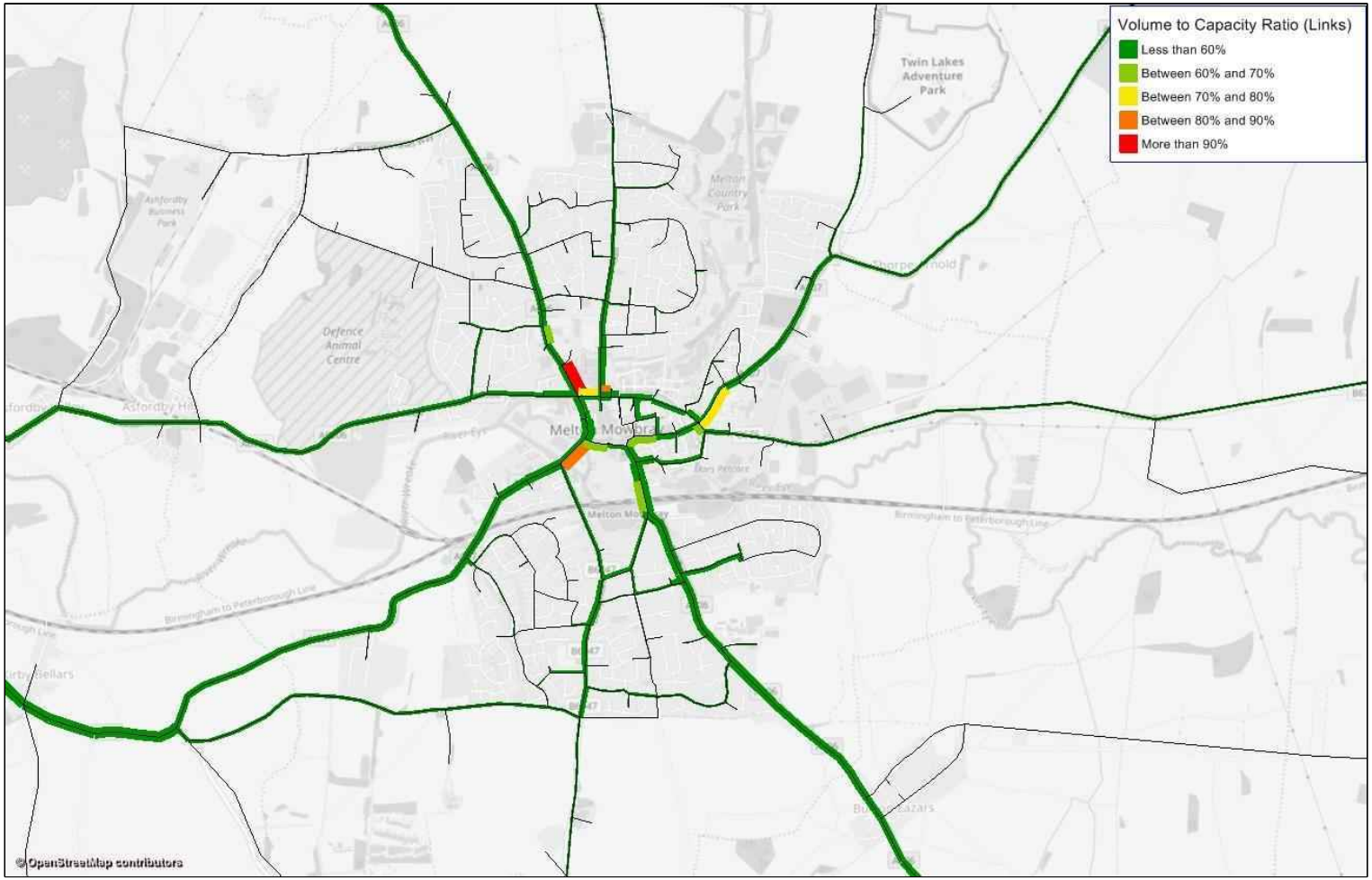


Figure C.2: LLITM 2014 Core Scenario Forecast Highway Volume-Capacity Ratio – 2014 Base Year Interpeak

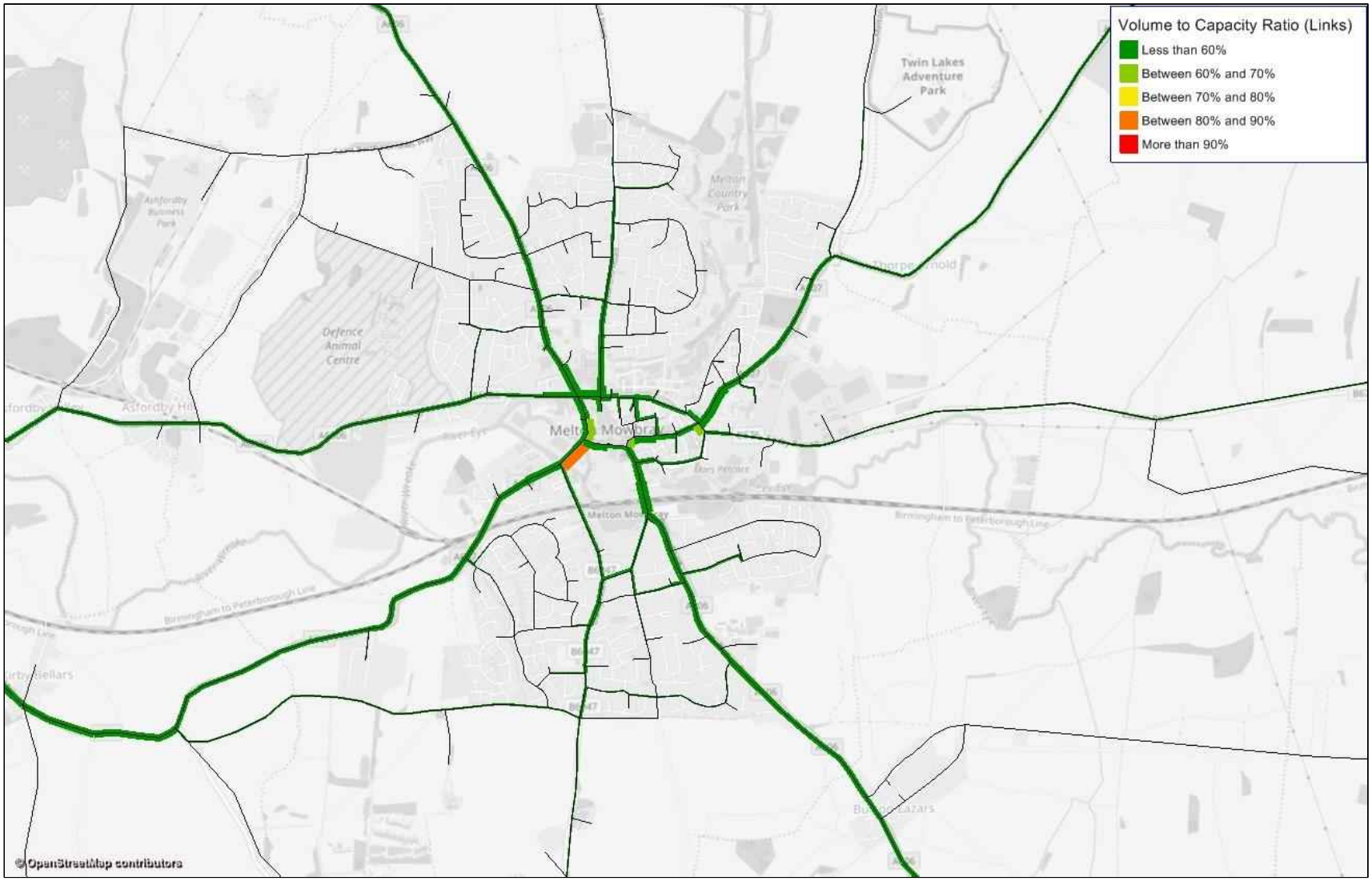


Figure C.3: LLITM 2014 Core Scenario Forecast Highway Volume-Capacity Ratio – 2014 Base Year PM Peak

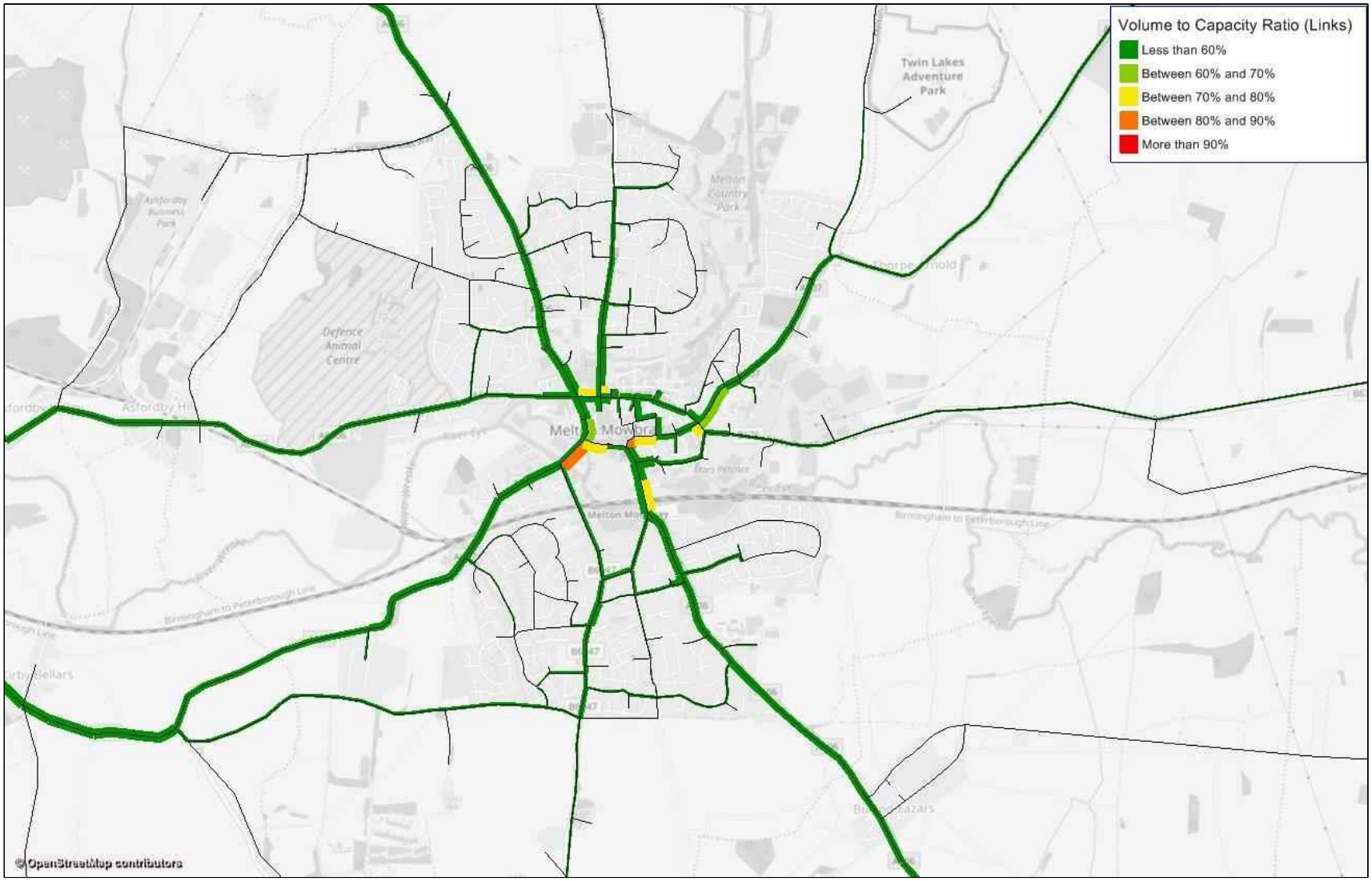


Figure C.4: LLITM 2014 Core Scenario Forecast Highway Volume-Capacity Ratio – 2021 Forecast Year AM Peak

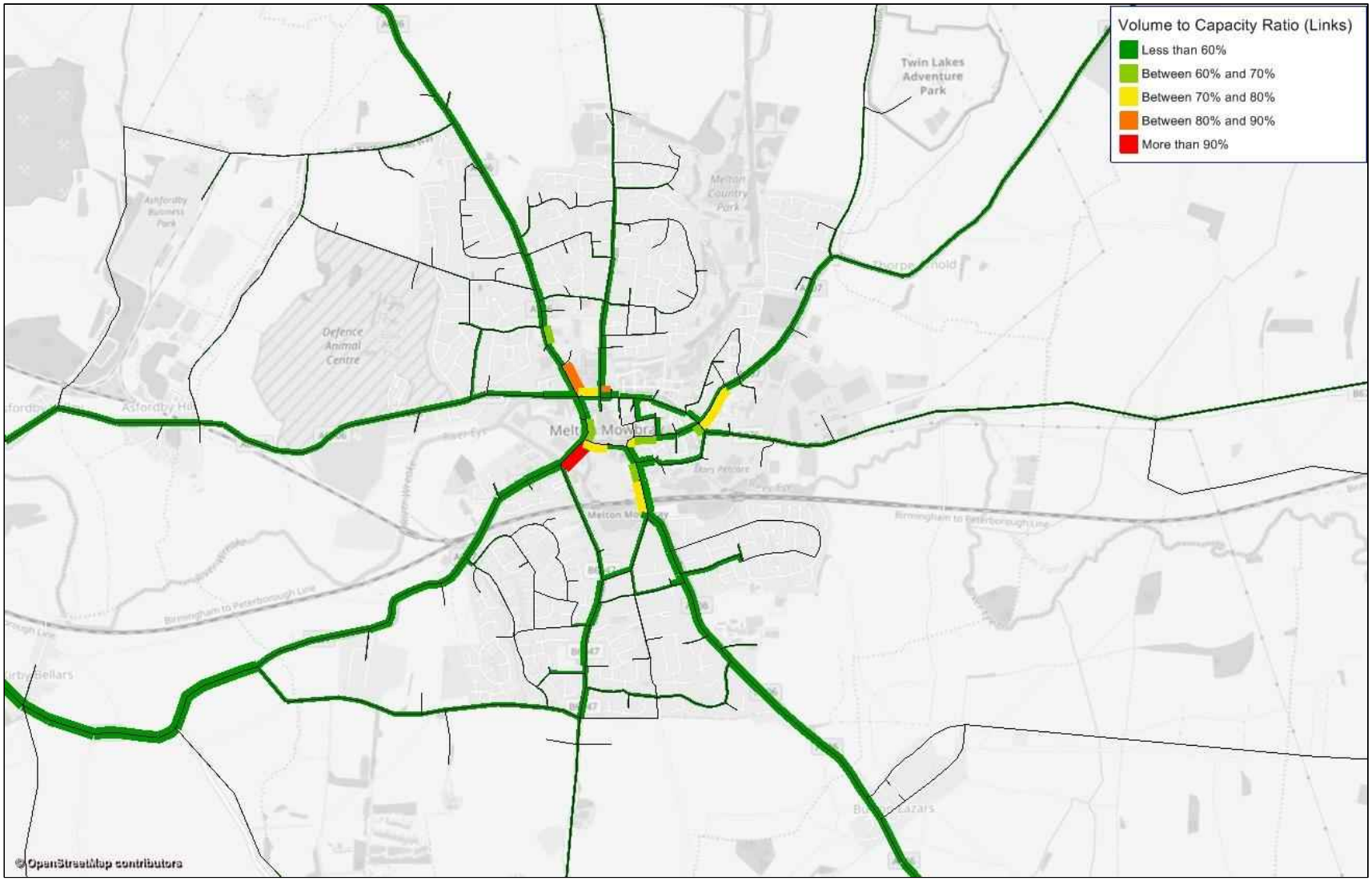


Figure C.5: LLITM 2014 Core Scenario Forecast Highway Volume-Capacity Ratio – 2021 Forecast Year Interpeak

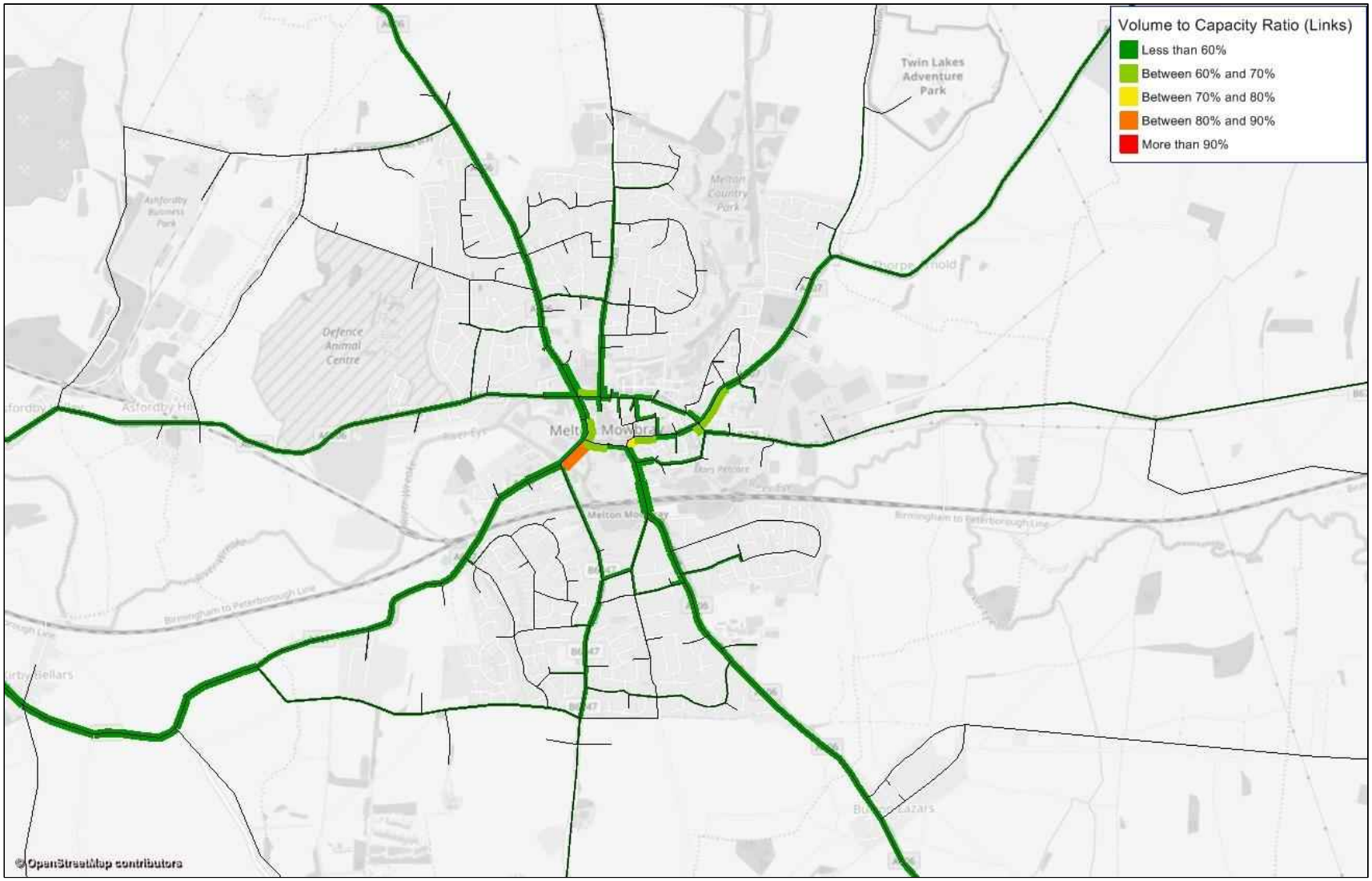


Figure C.6: LLITM 2014 Core Scenario Forecast Highway Volume-Capacity Ratio – 2021 Forecast Year PM Peak

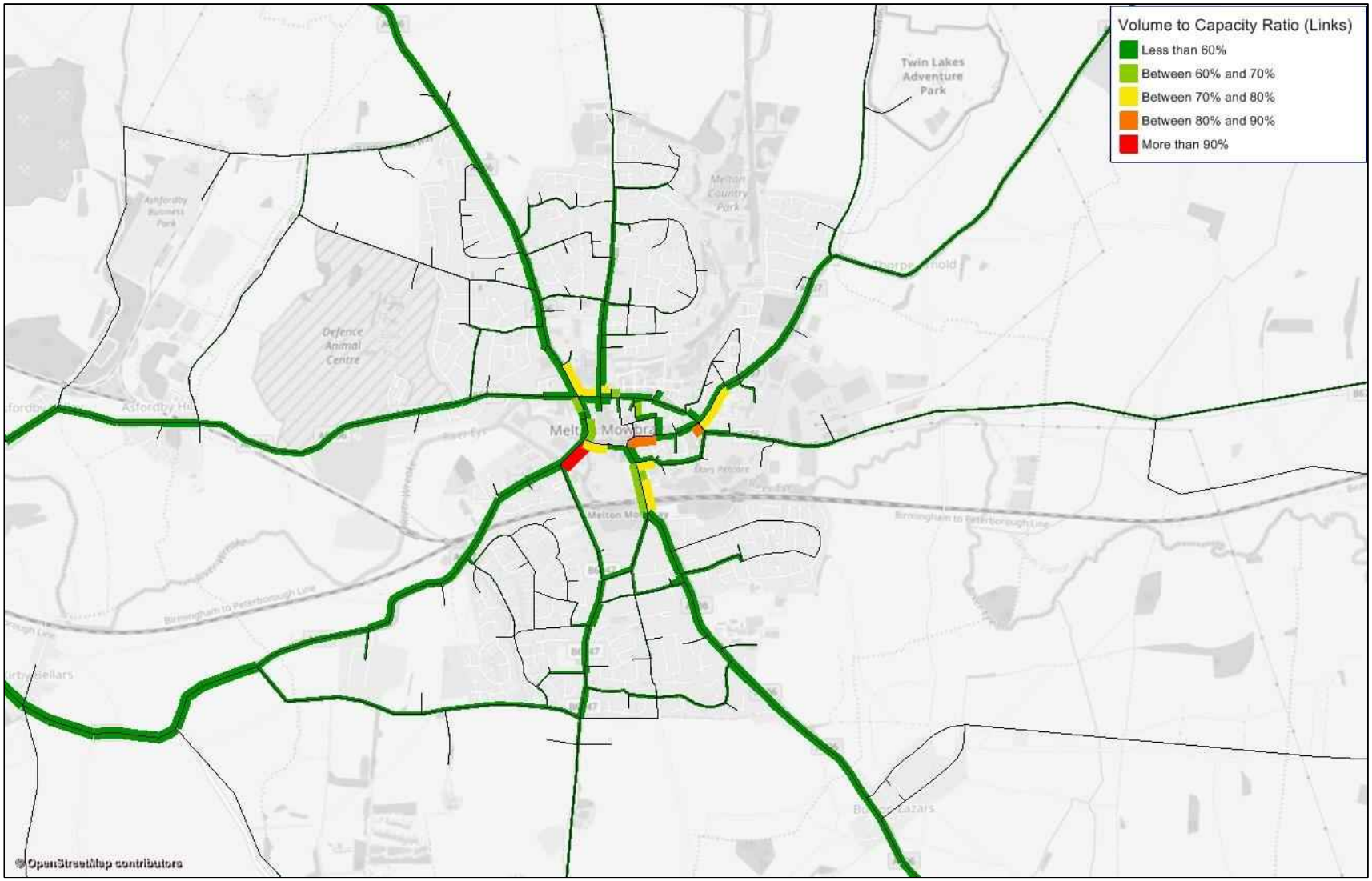


Figure C.7: LLITM 2014 Core Scenario Forecast Highway Volume-Capacity Ratio – 2036 Forecast Year AM Peak

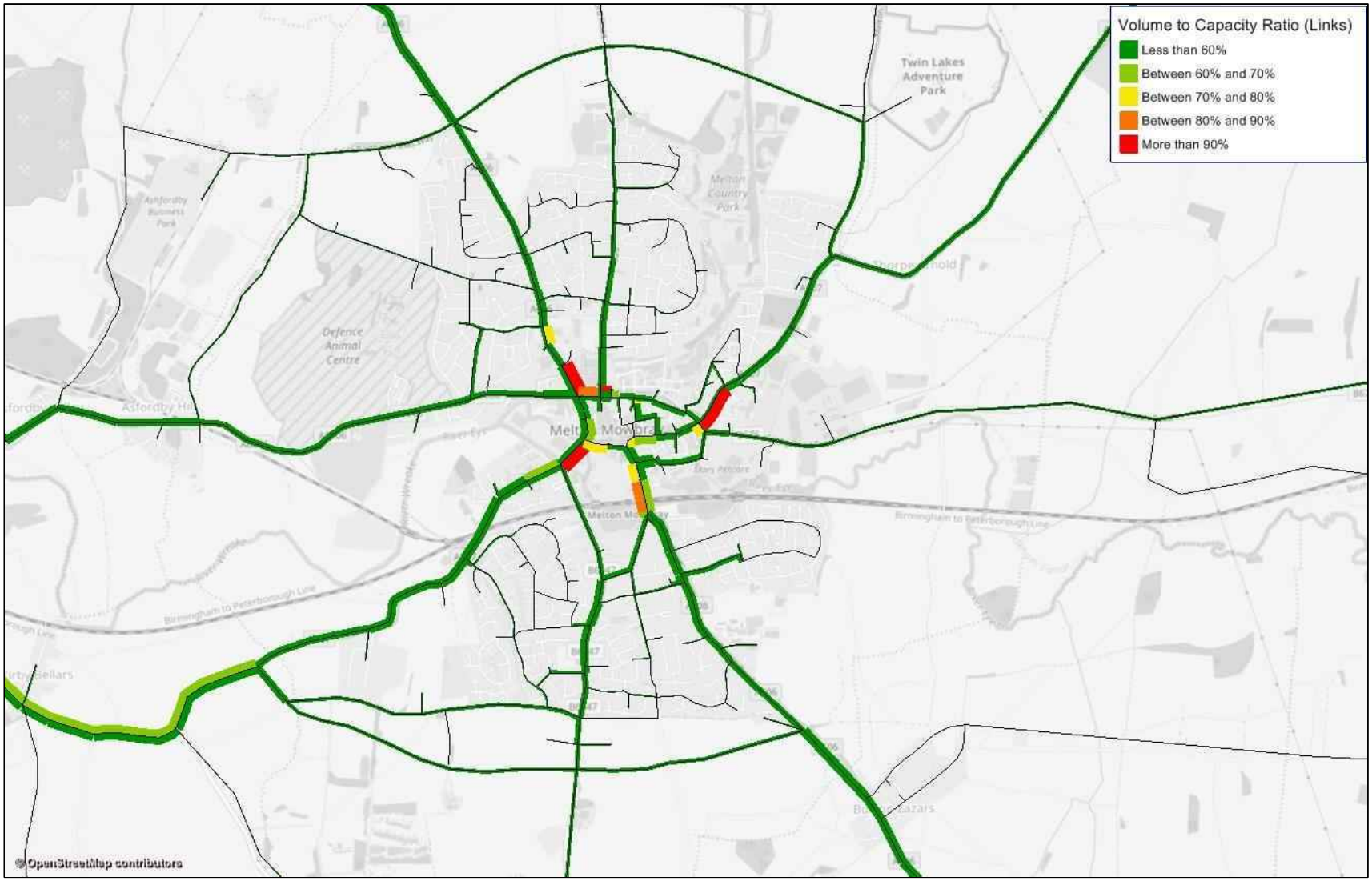


Figure C.8: LLITM 2014 Core Scenario Forecast Highway Volume-Capacity Ratio – 2036 Forecast Year Interpeak

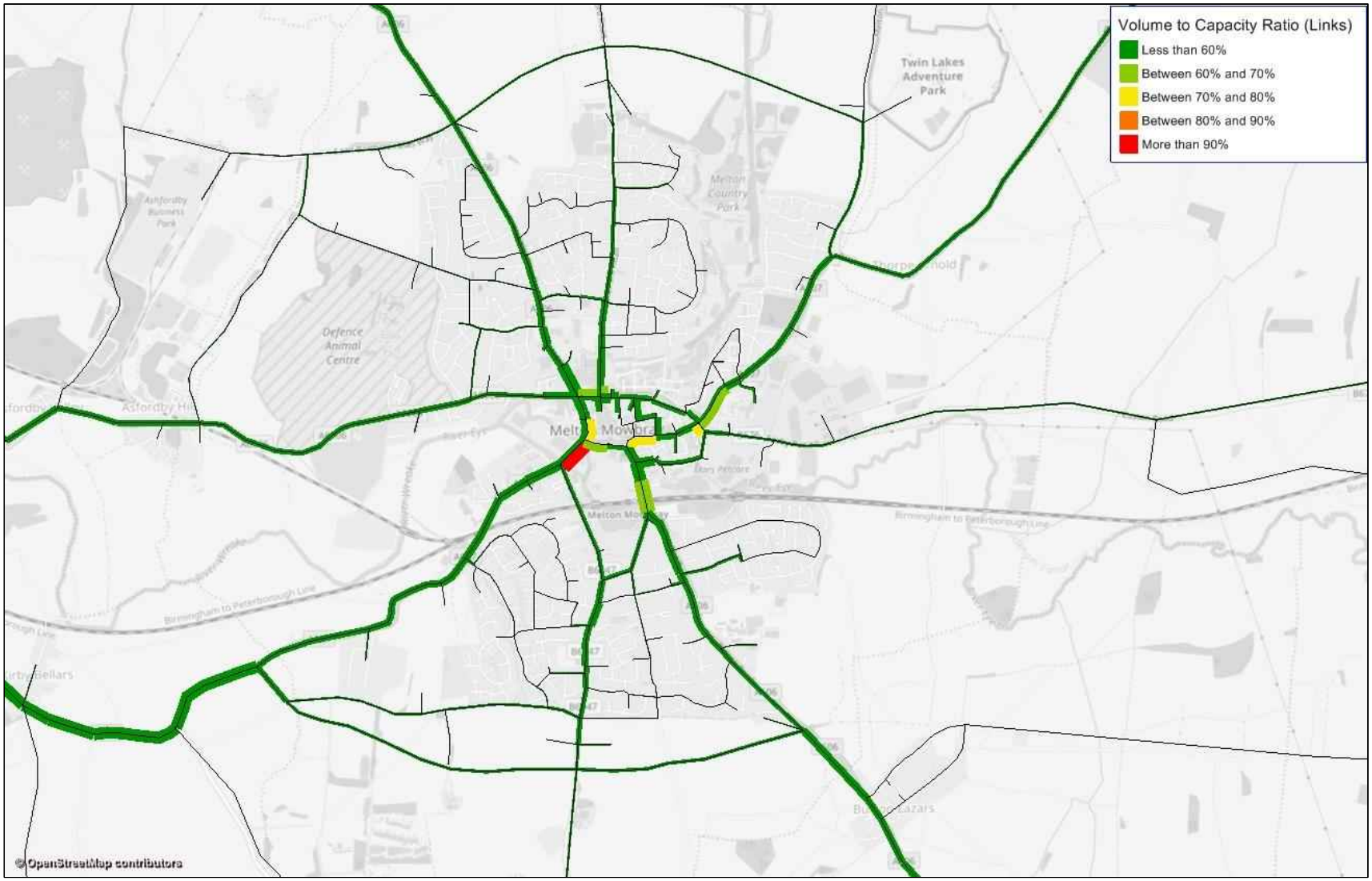


Figure C.9: LLITM 2014 Core Scenario Forecast Highway Volume-Capacity Ratio – 2036 Forecast Year PM Peak

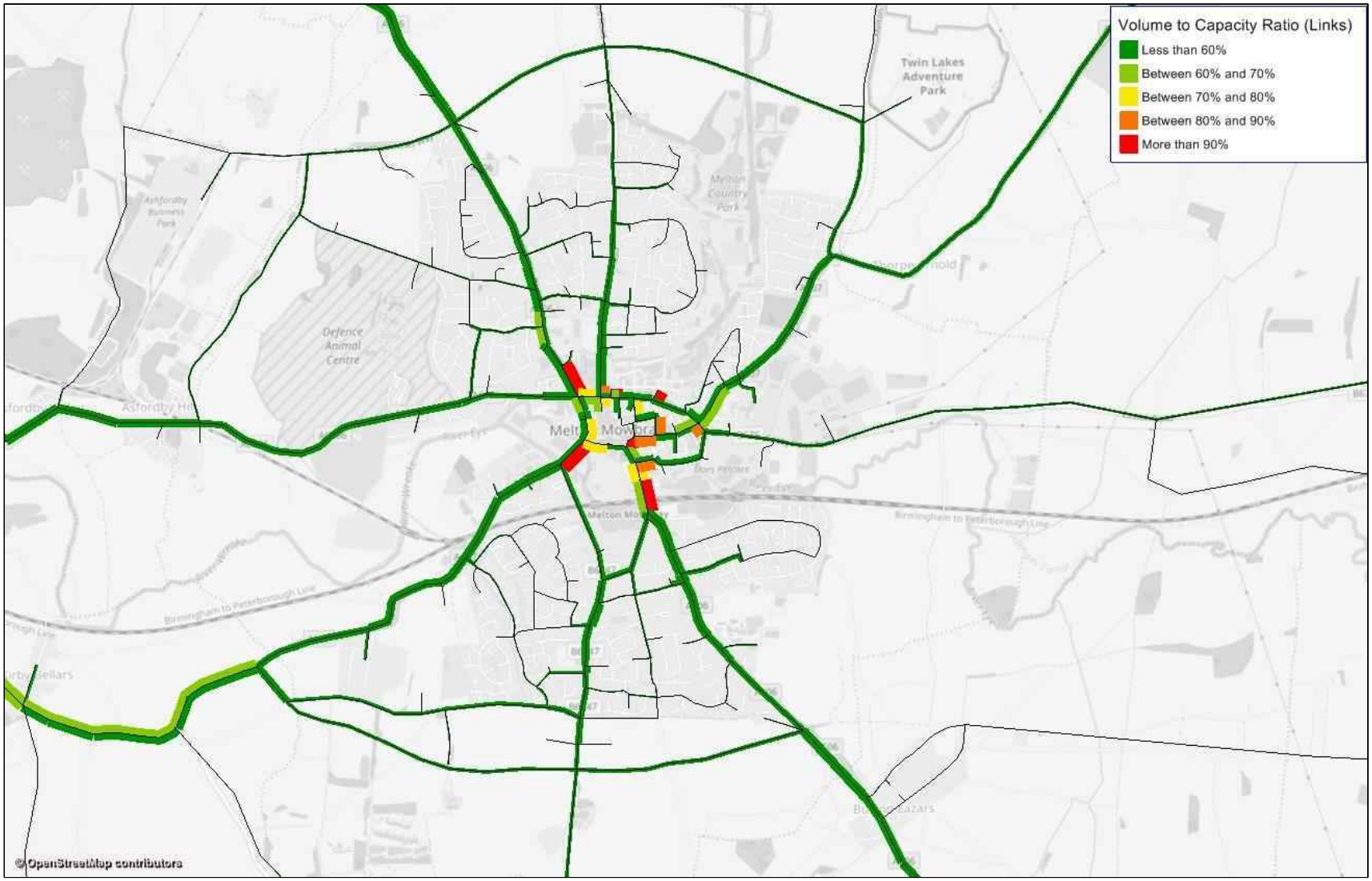


Figure C.10: LLITM 2014 Core Scenario Forecast Highway Volume-Capacity Ratio – 2041 Forecast Year AM Peak

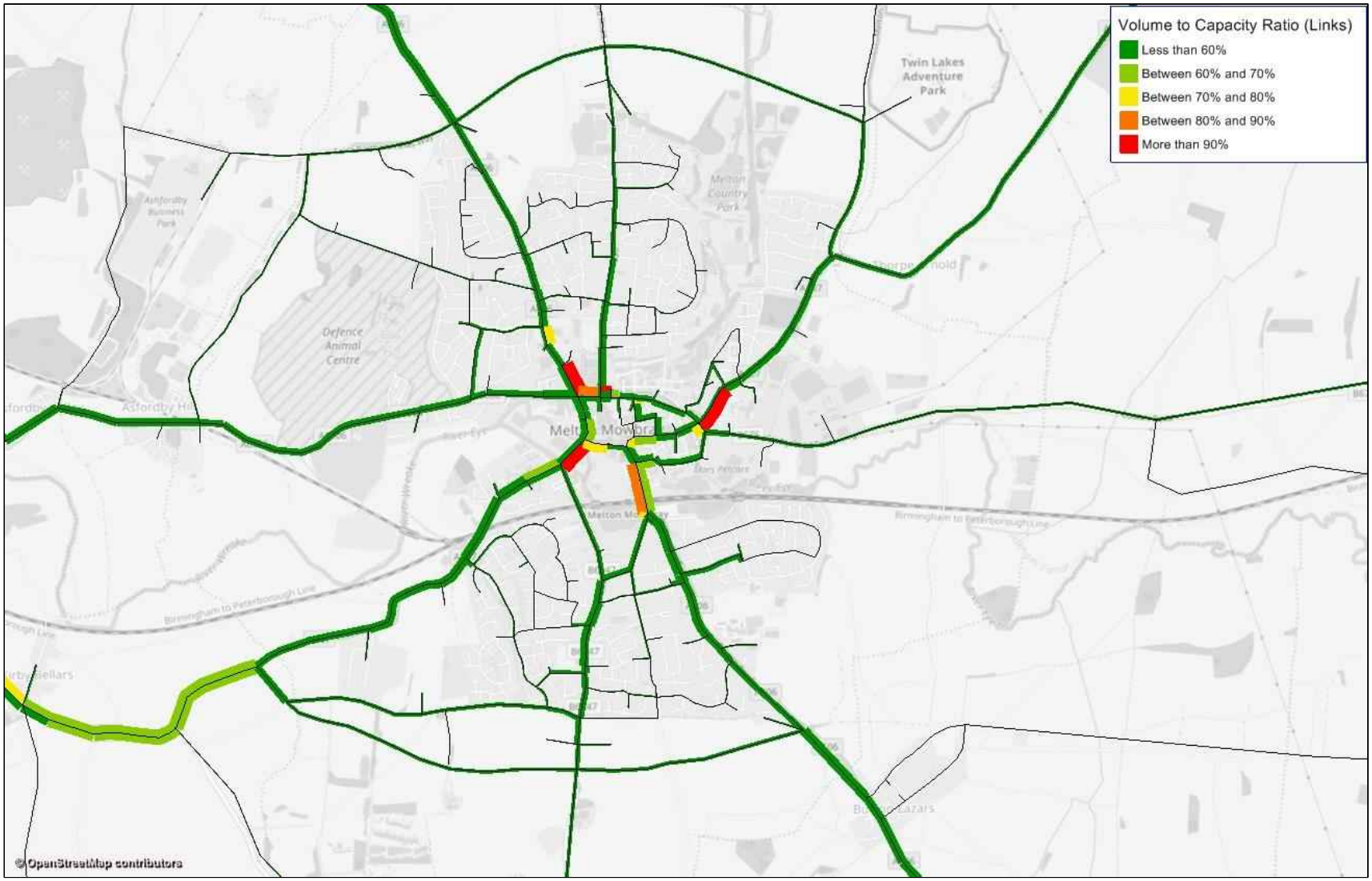


Figure C.11: LLITM 2014 Core Scenario Forecast Highway Volume-Capacity Ratio – 2041 Forecast Year Interpeak

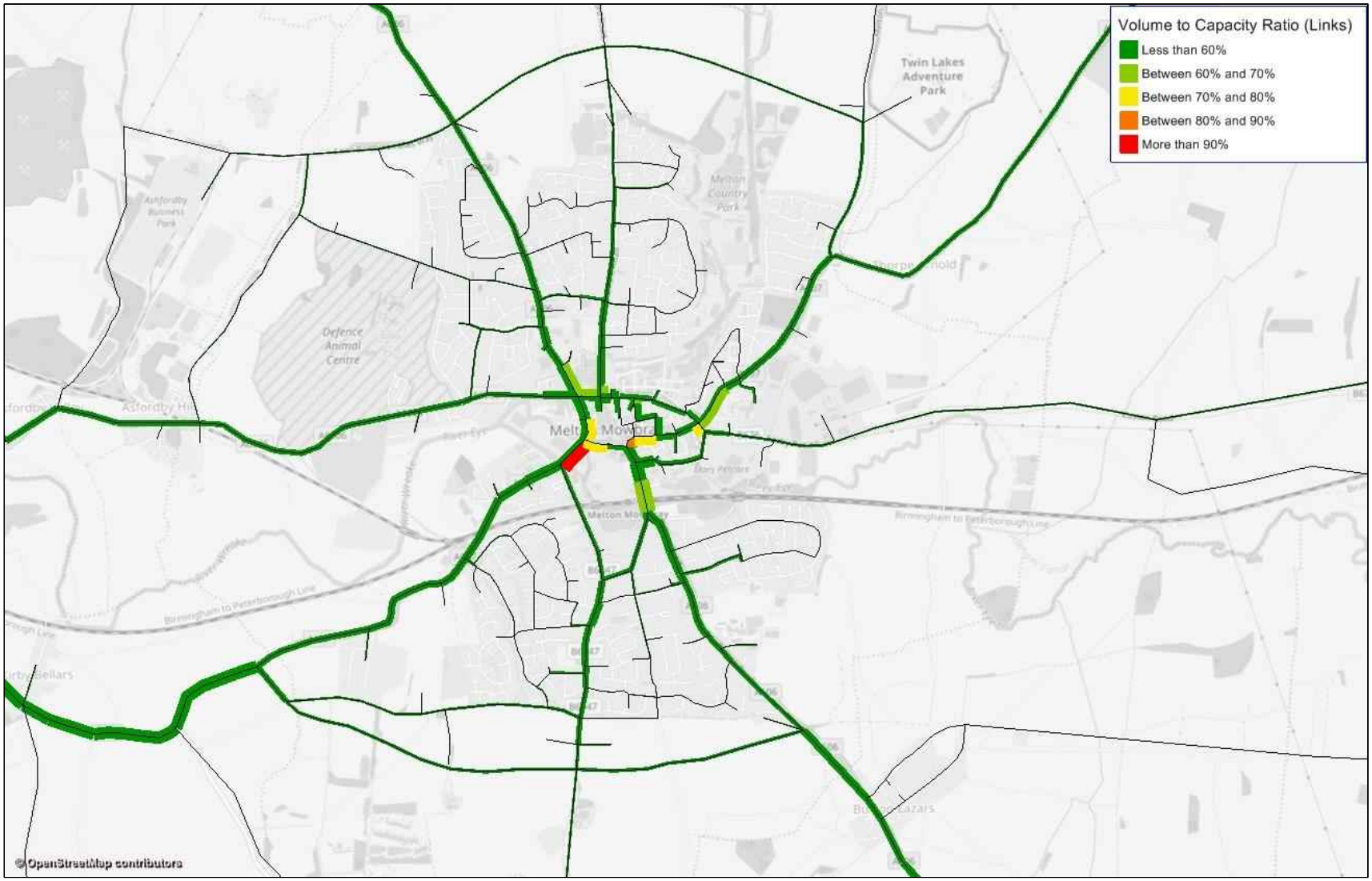


Figure C.12: LLITM 2014 Core Scenario Forecast Highway Volume-Capacity Ratio – 2041 Forecast Year PM Peak

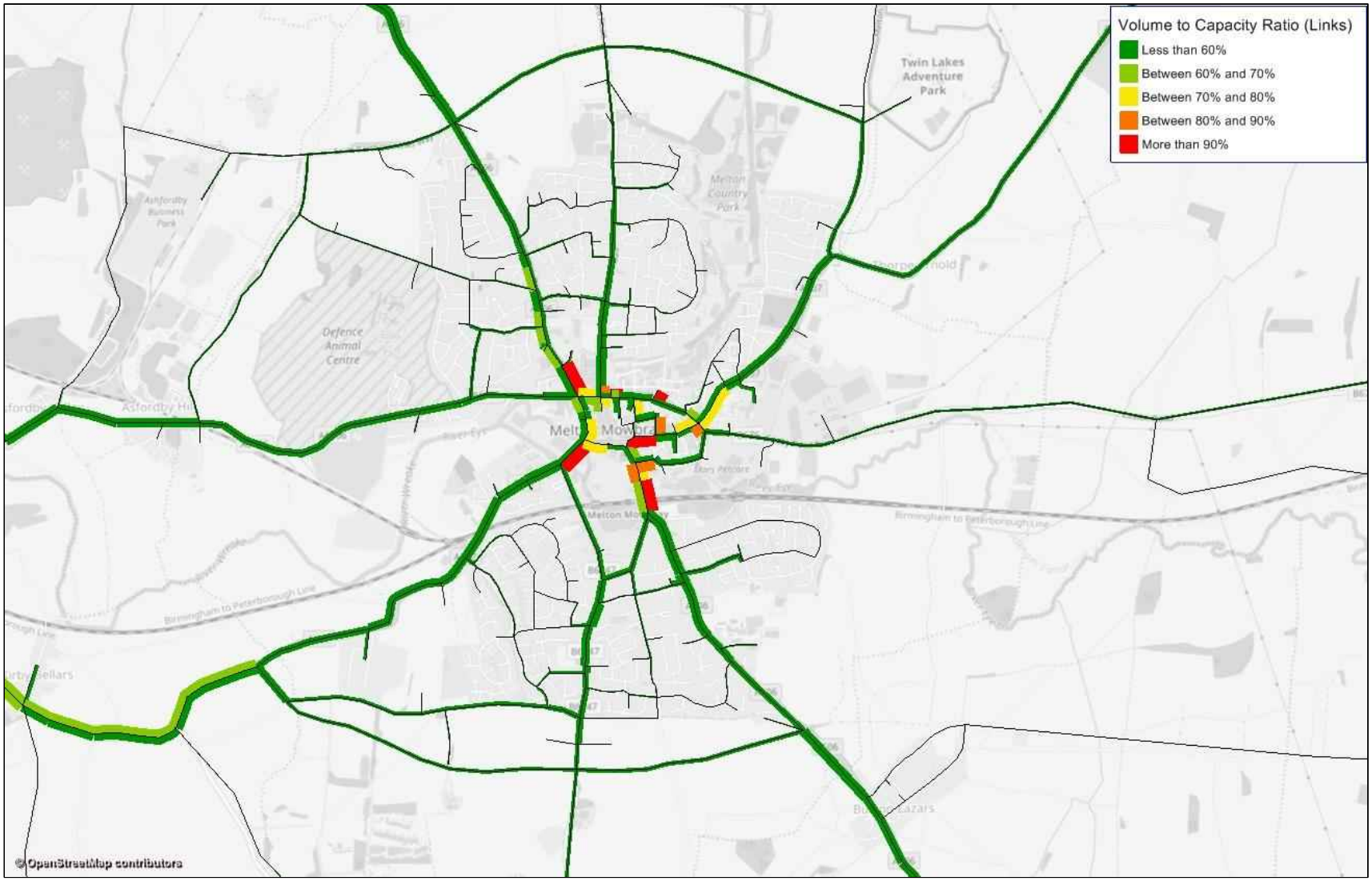


Figure C.13: LLITM 2014 Core Scenario Forecast Highway Volume-Capacity Ratio – 2051 Forecast Year AM Peak

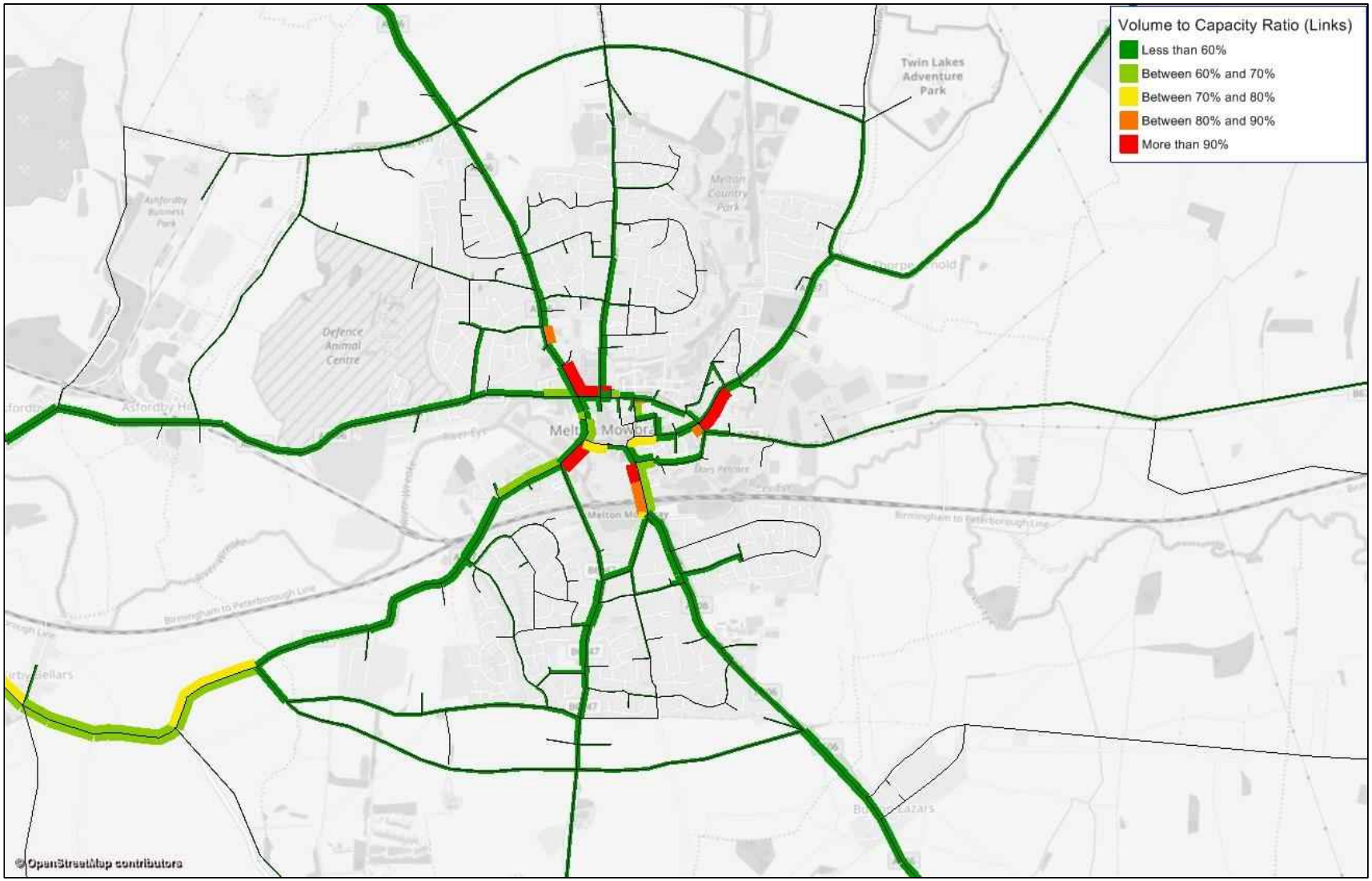


Figure C.14: LLITM 2014 Core Scenario Forecast Highway Volume-Capacity Ratio – 2051 Forecast Year Interpeak

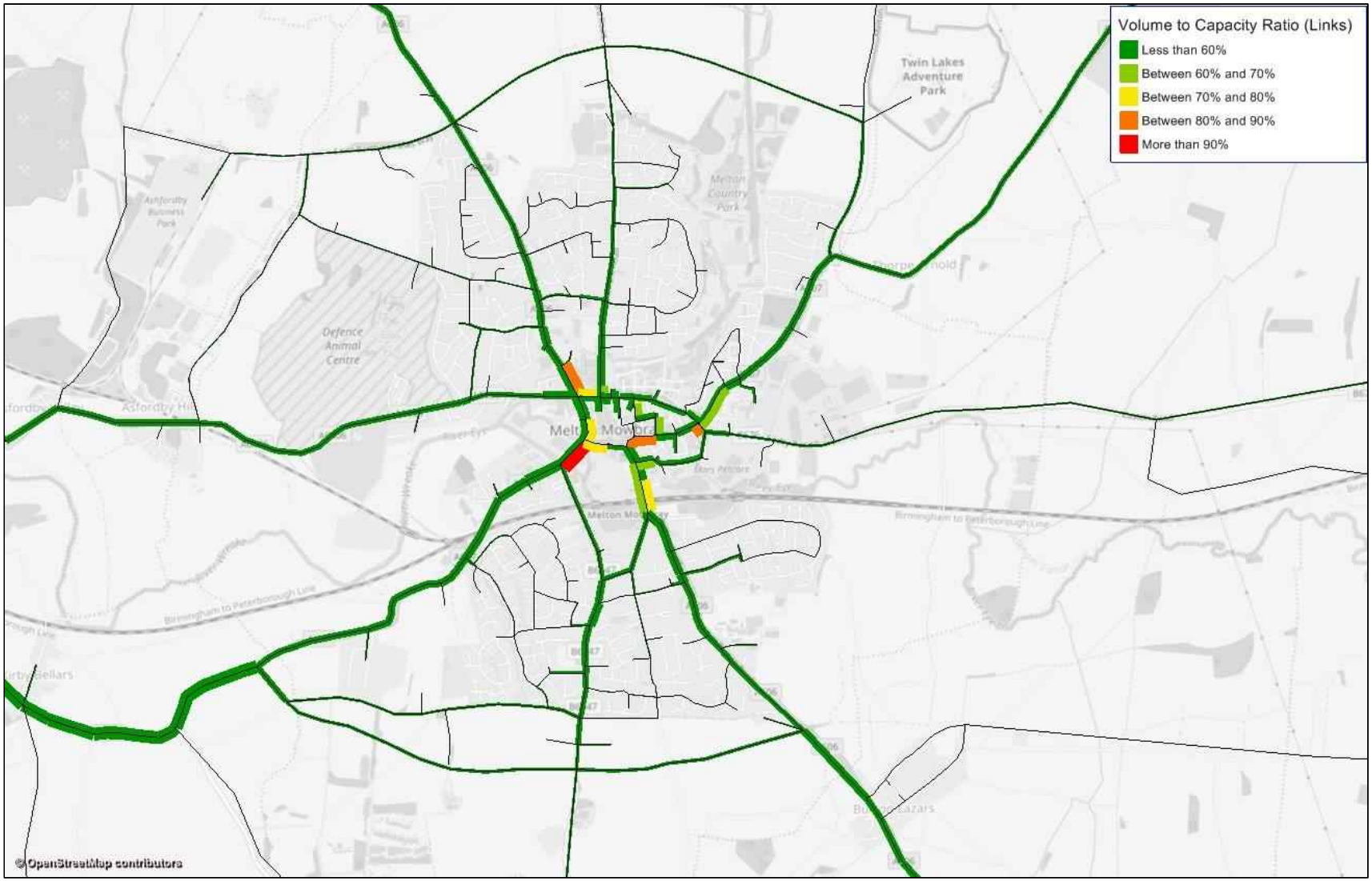
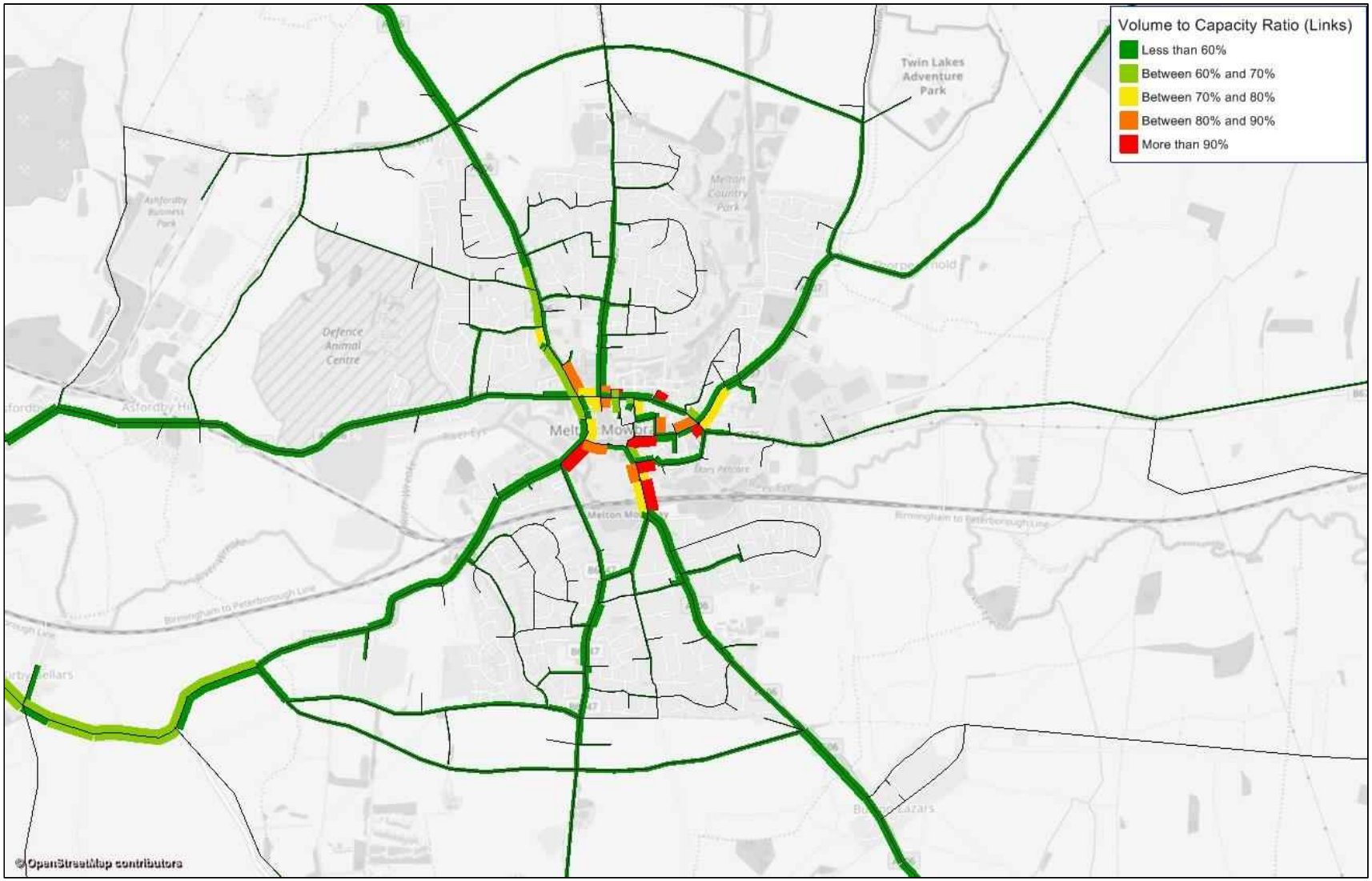


Figure C.15: LLITM 2014 Core Scenario Forecast Highway Volume-Capacity Ratio – 2051 Forecast Year PM Peak



Appendix D Core Scenario Forecast Junction Delays

Figure D.1: LLITM 2014 Core Scenario Forecast Highway Junction Delays – 2014 Base Year AM Peak

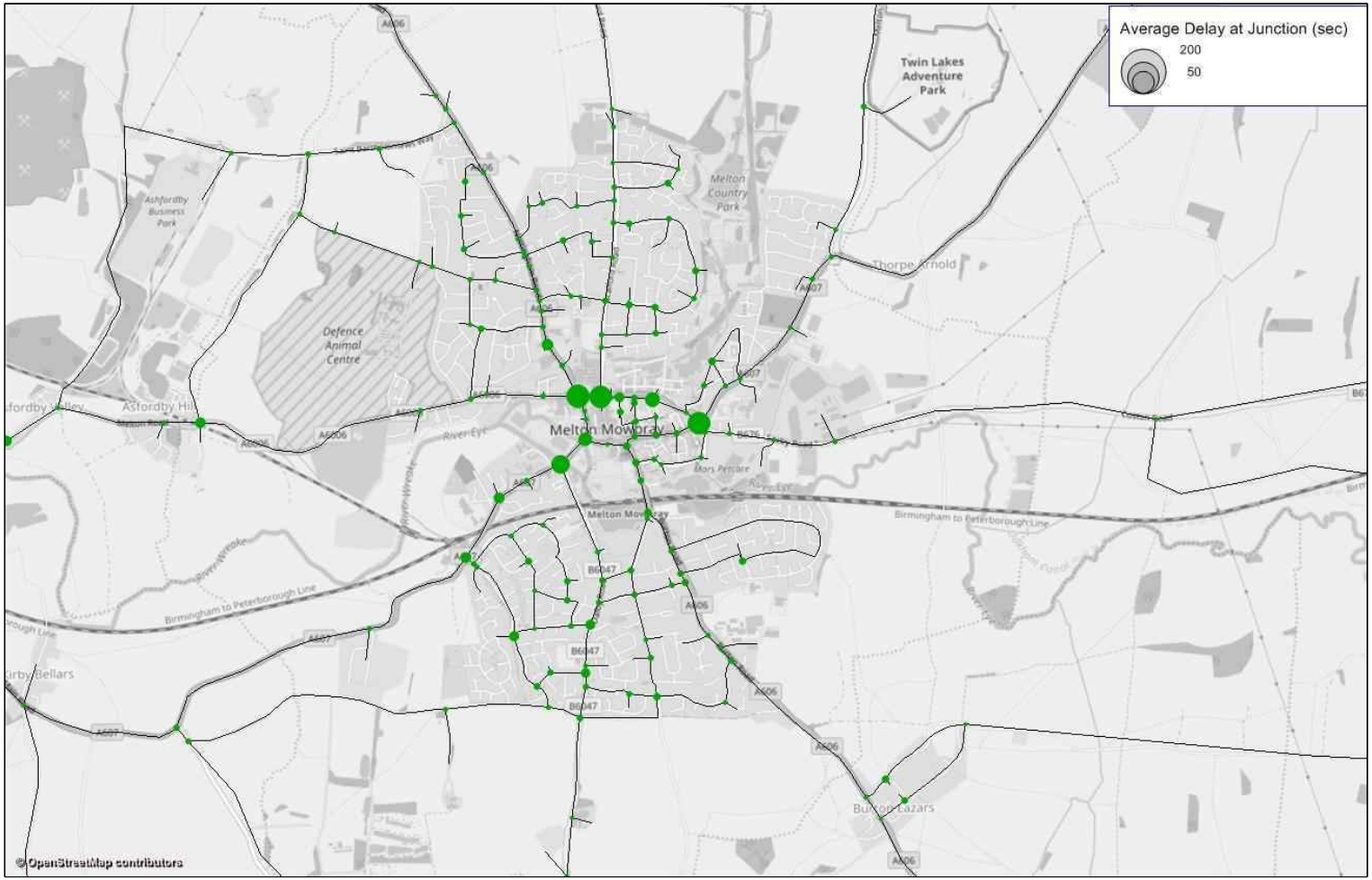


Figure D.2: LLITM 2014 Core Scenario Forecast Highway Junction Delays – 2014 Base Year Interpeak

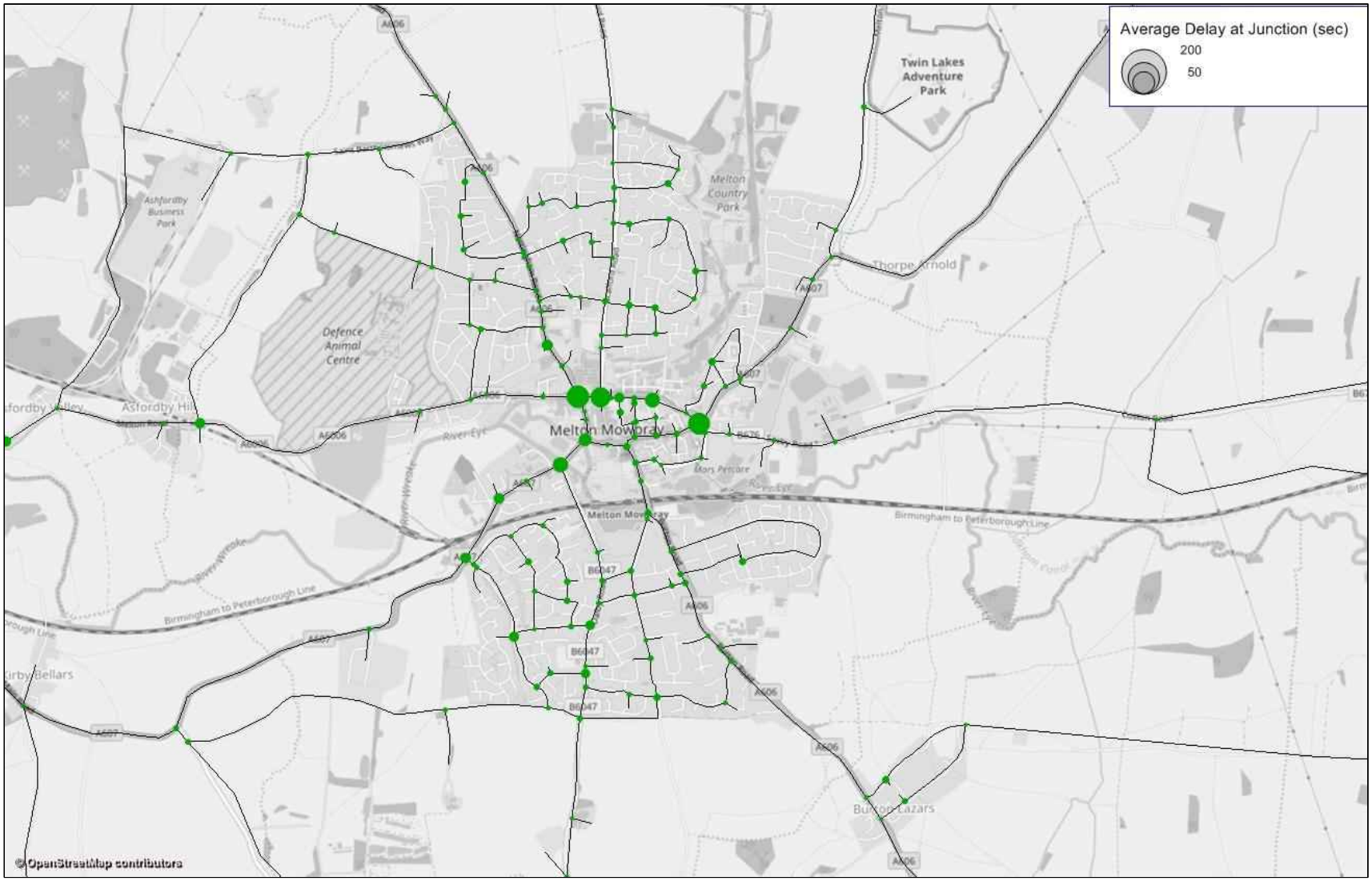


Figure D.3: LLITM 2014 Core Scenario Forecast Highway Junction Delays – 2014 Base Year PM Peak

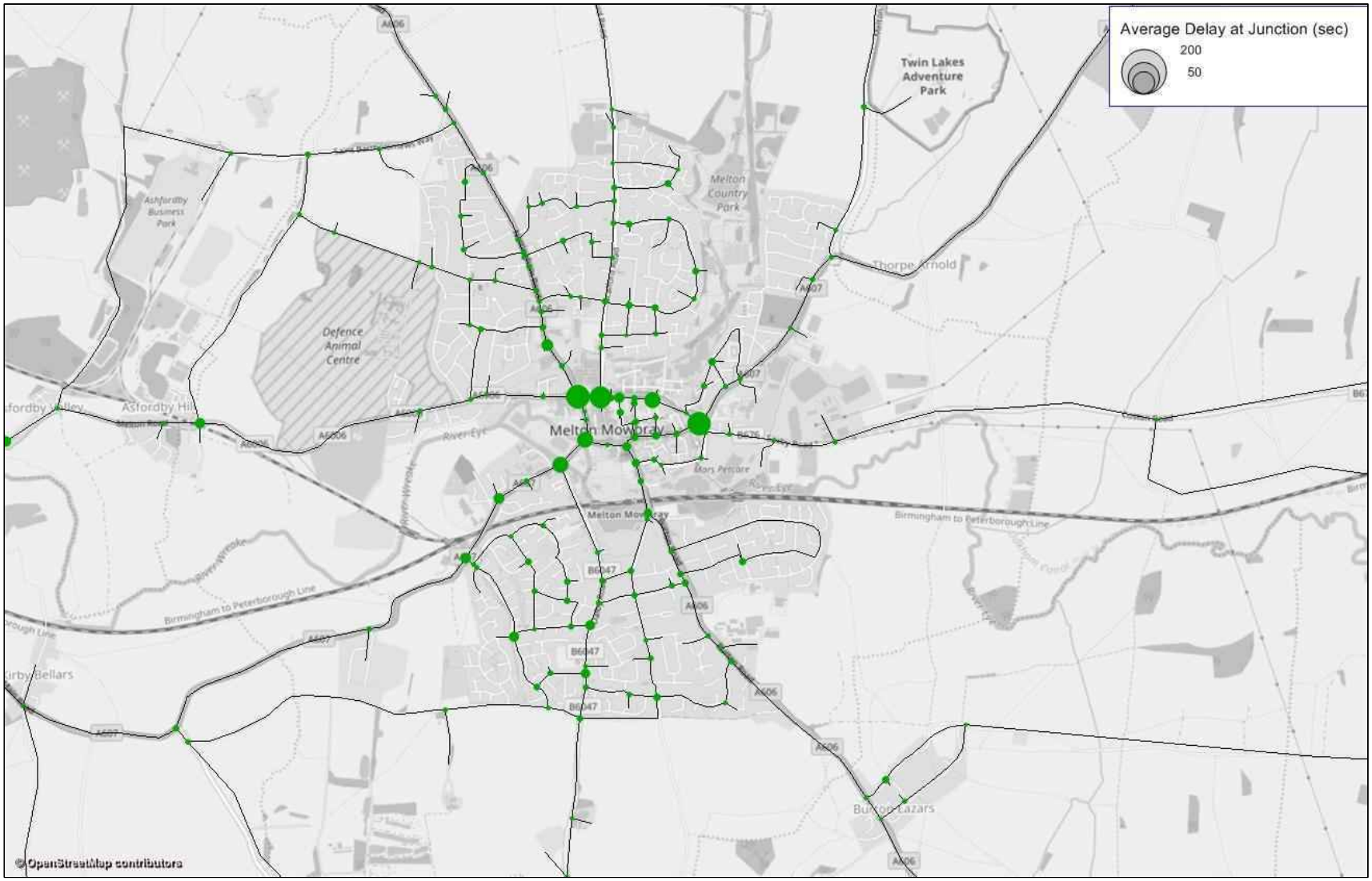


Figure D.4: LLITM 2014 Core Scenario Forecast Highway Junction Delays – 2021 Forecast Year AM Peak

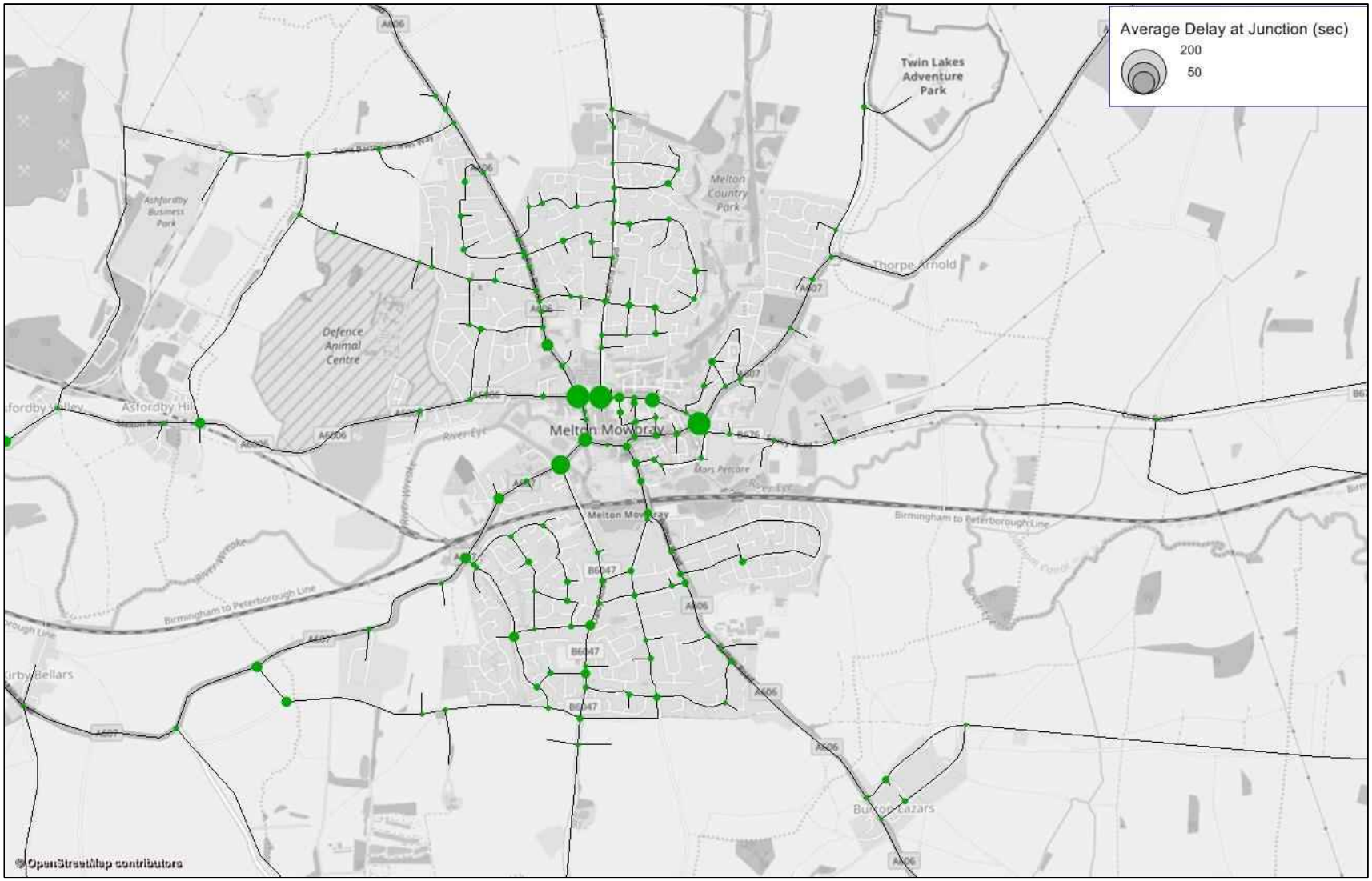


Figure D.5: LLITM 2014 Core Scenario Forecast Highway Junction Delays – 2021 Forecast Year Interpeak

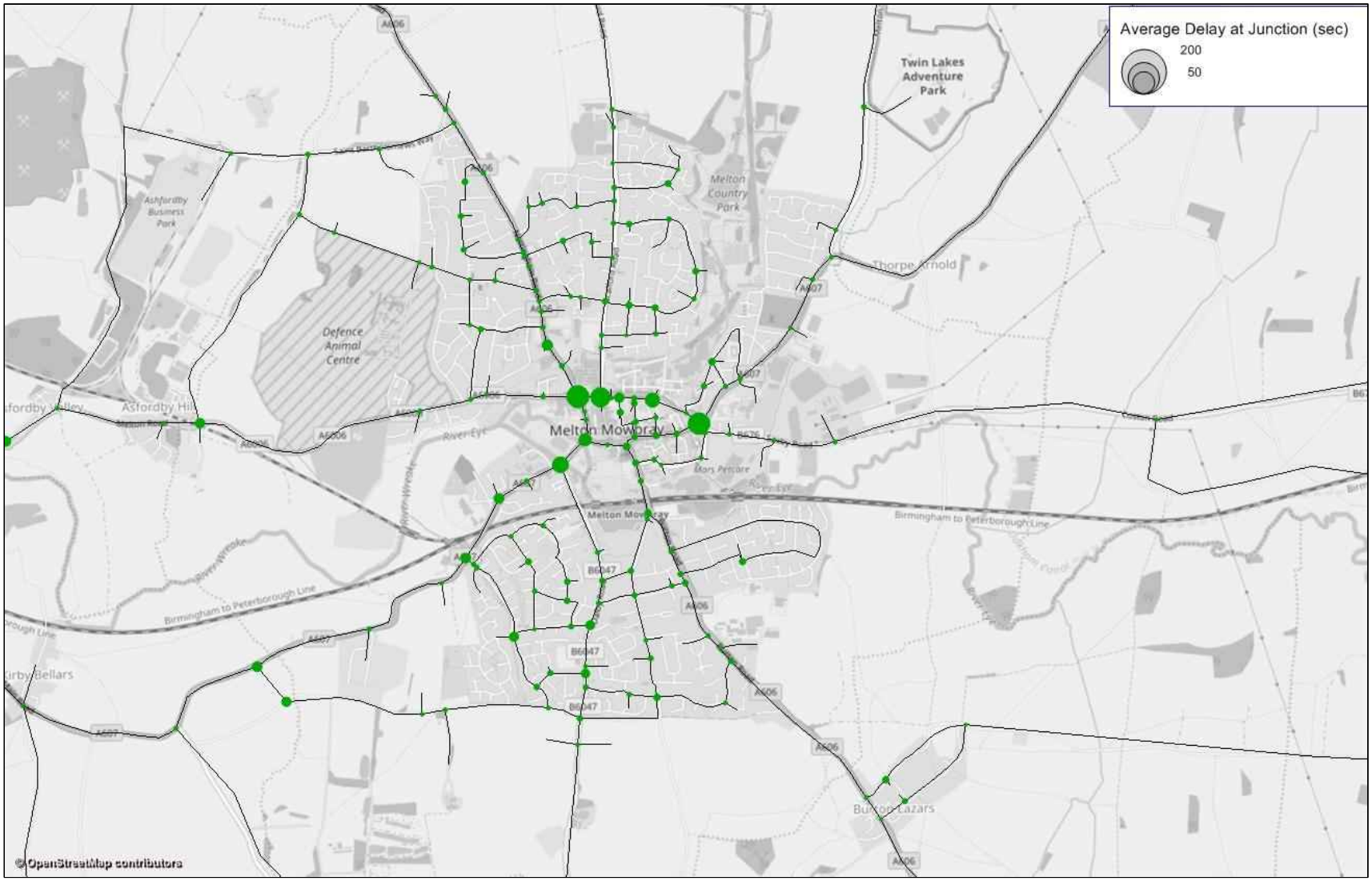


Figure D.6: LLITM 2014 Core Scenario Forecast Highway Junction Delays – 2021 Forecast Year PM Peak

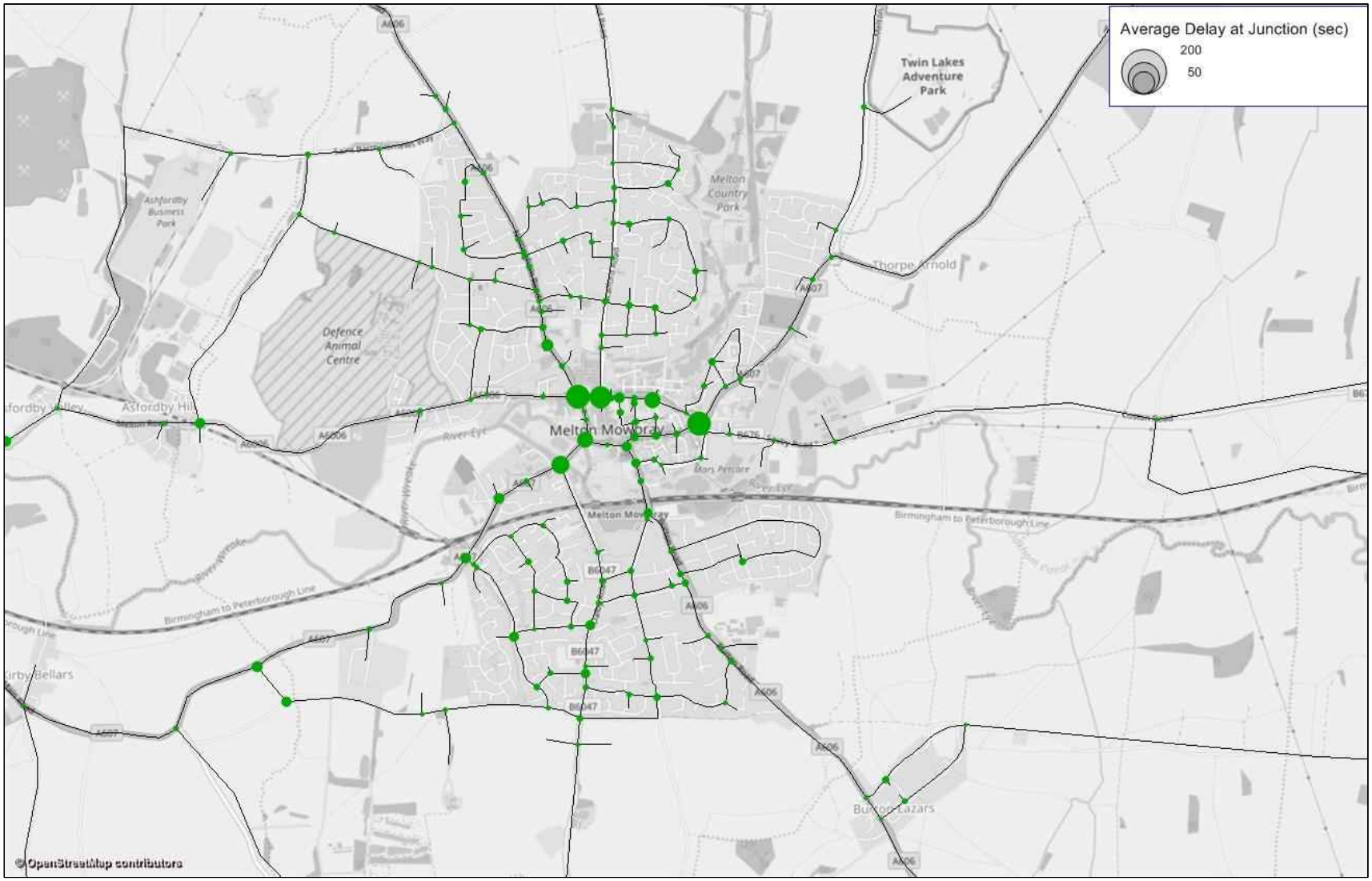


Figure D.7: LLITM 2014 Core Scenario Forecast Highway Junction Delays – 2036 Forecast Year AM Peak

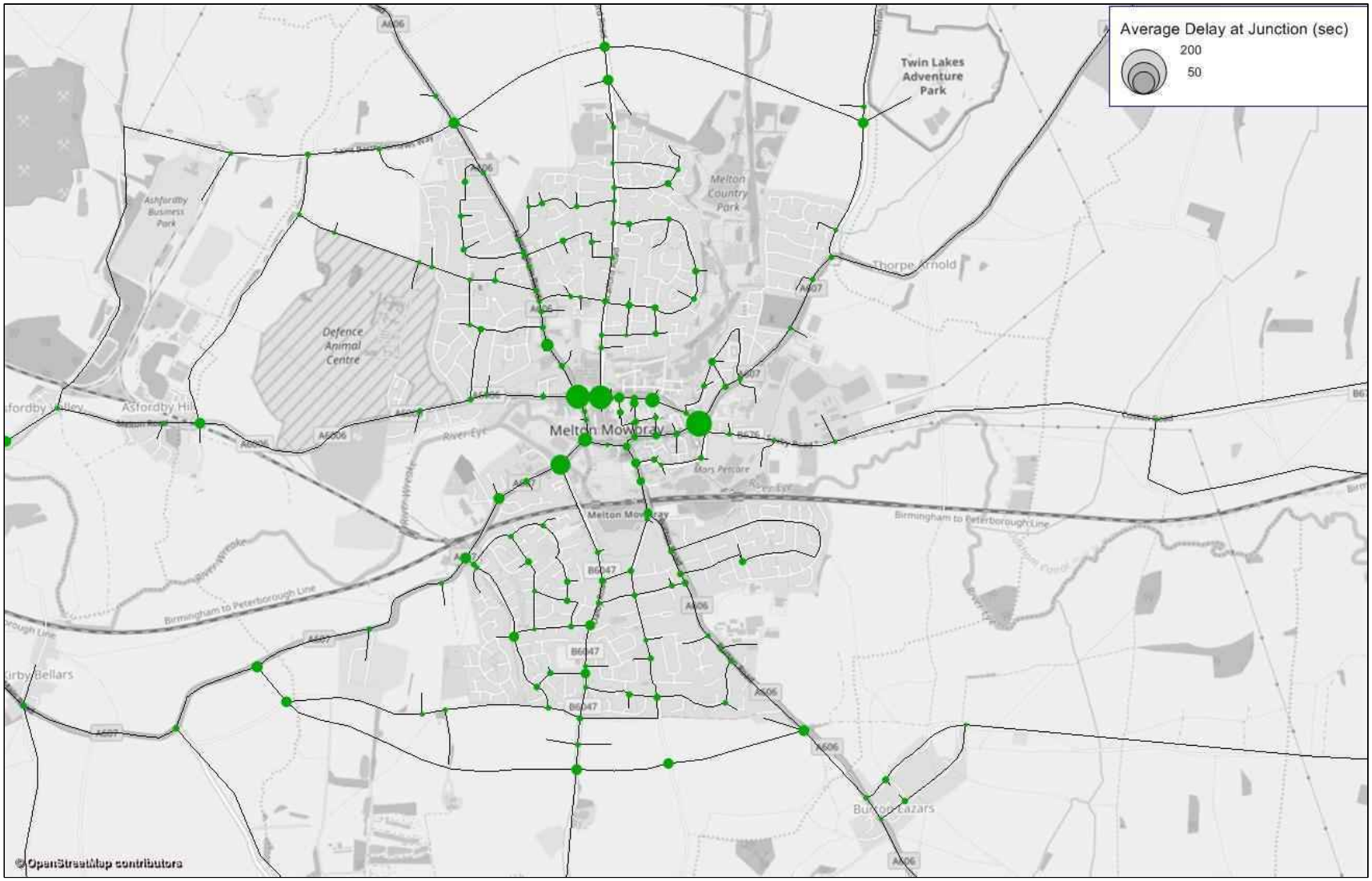


Figure D.8: LLITM 2014 Core Scenario Forecast Highway Junction Delays – 2036 Forecast Year Interpeak

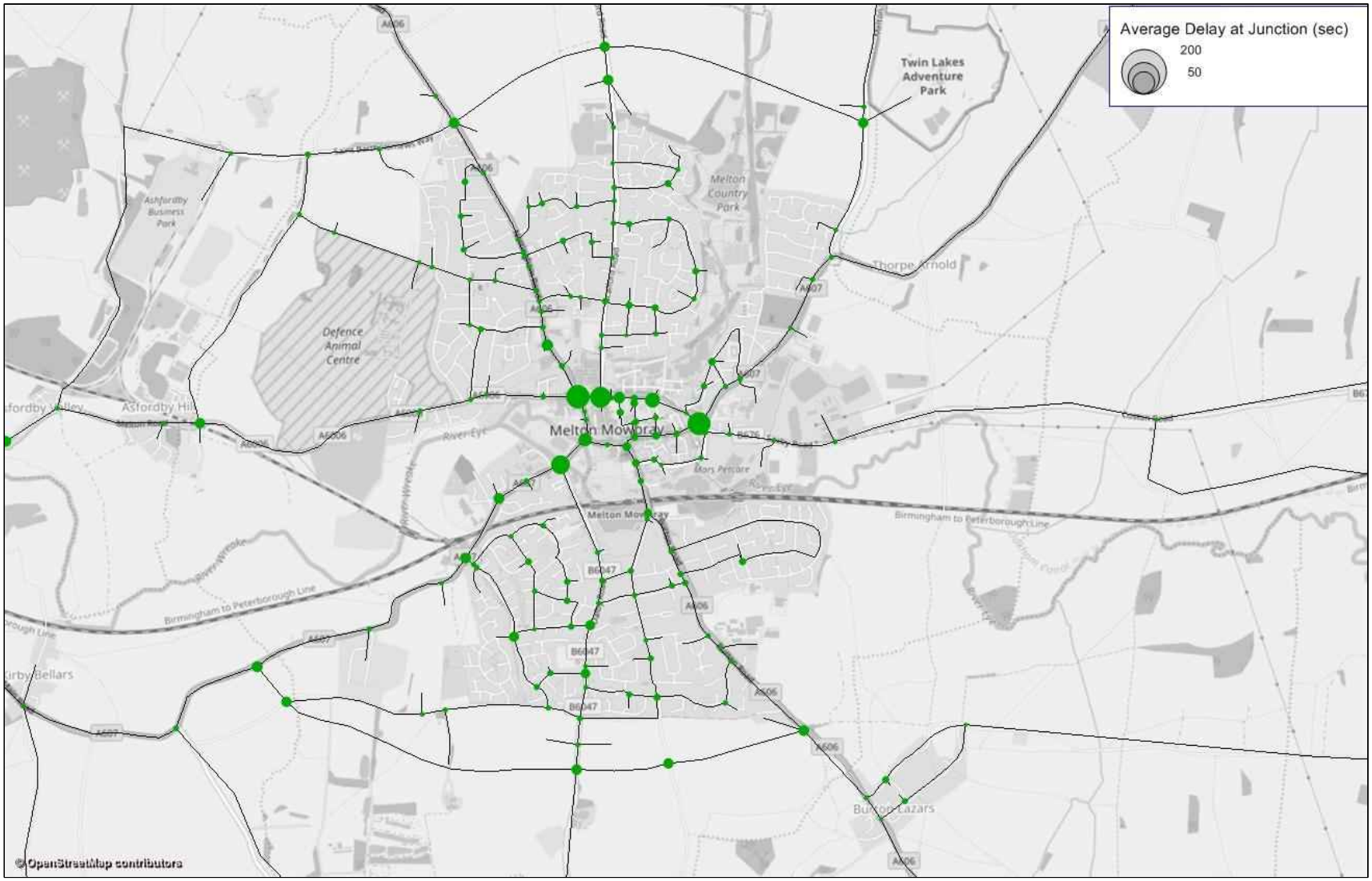


Figure D.9: LLITM 2014 Core Scenario Forecast Highway Junction Delays – 2036 Forecast Year PM Peak

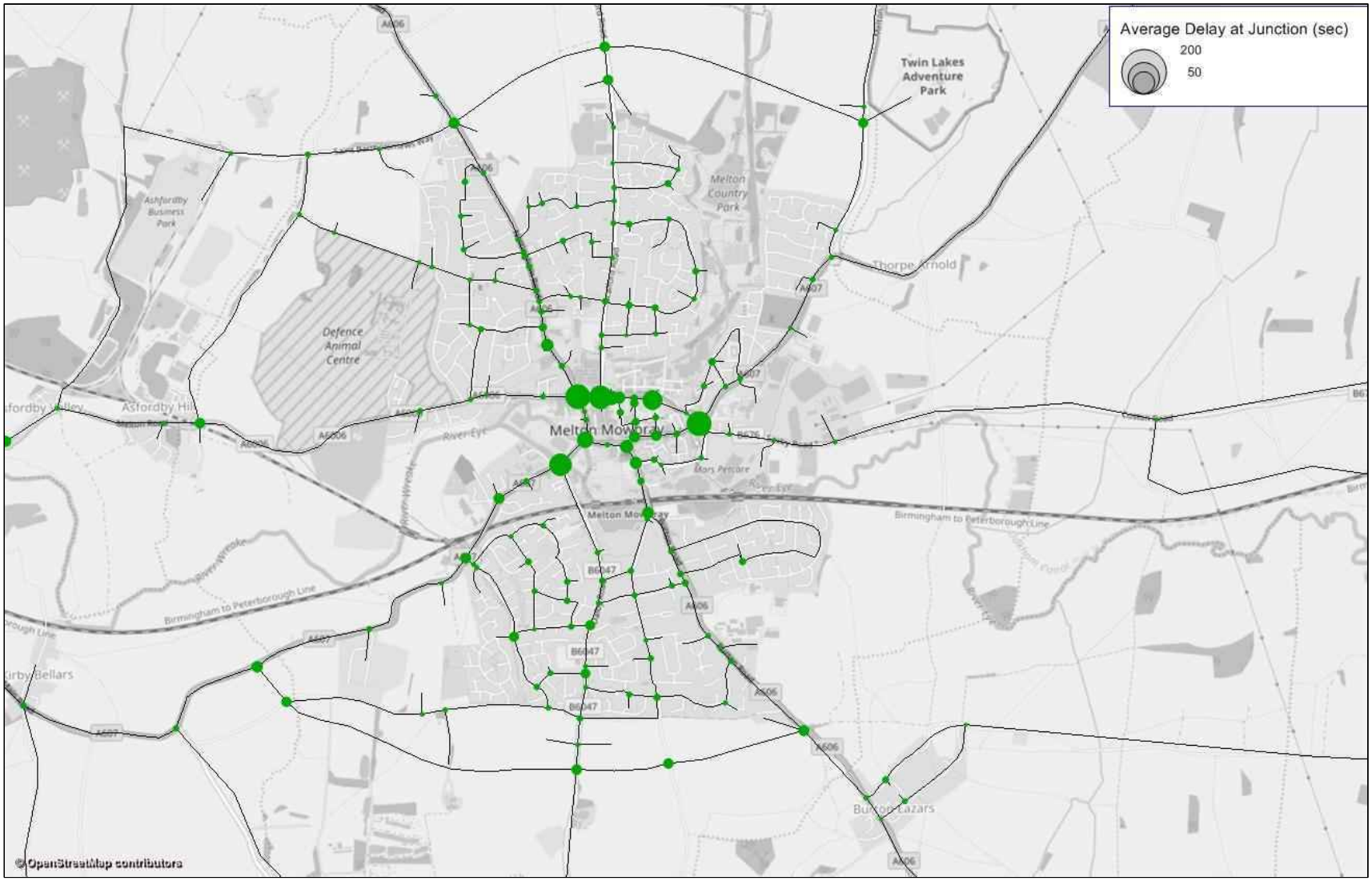


Figure D.10: LLITM 2014 Core Scenario Forecast Highway Junction Delays – 2041 Forecast Year AM Peak

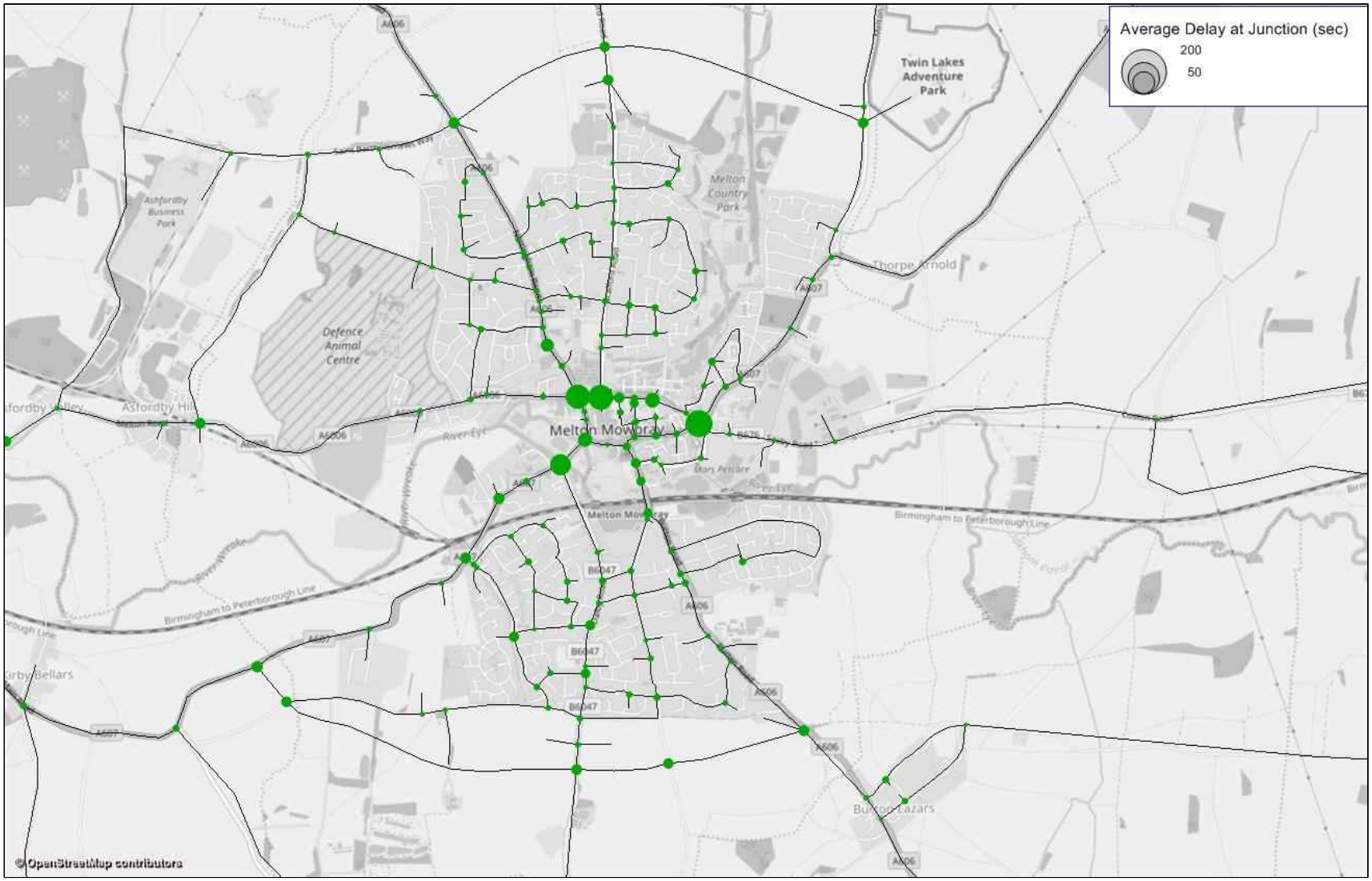


Figure D.11: LLITM 2014 Core Scenario Forecast Highway Junction Delays – 2041 Forecast Year Interpeak

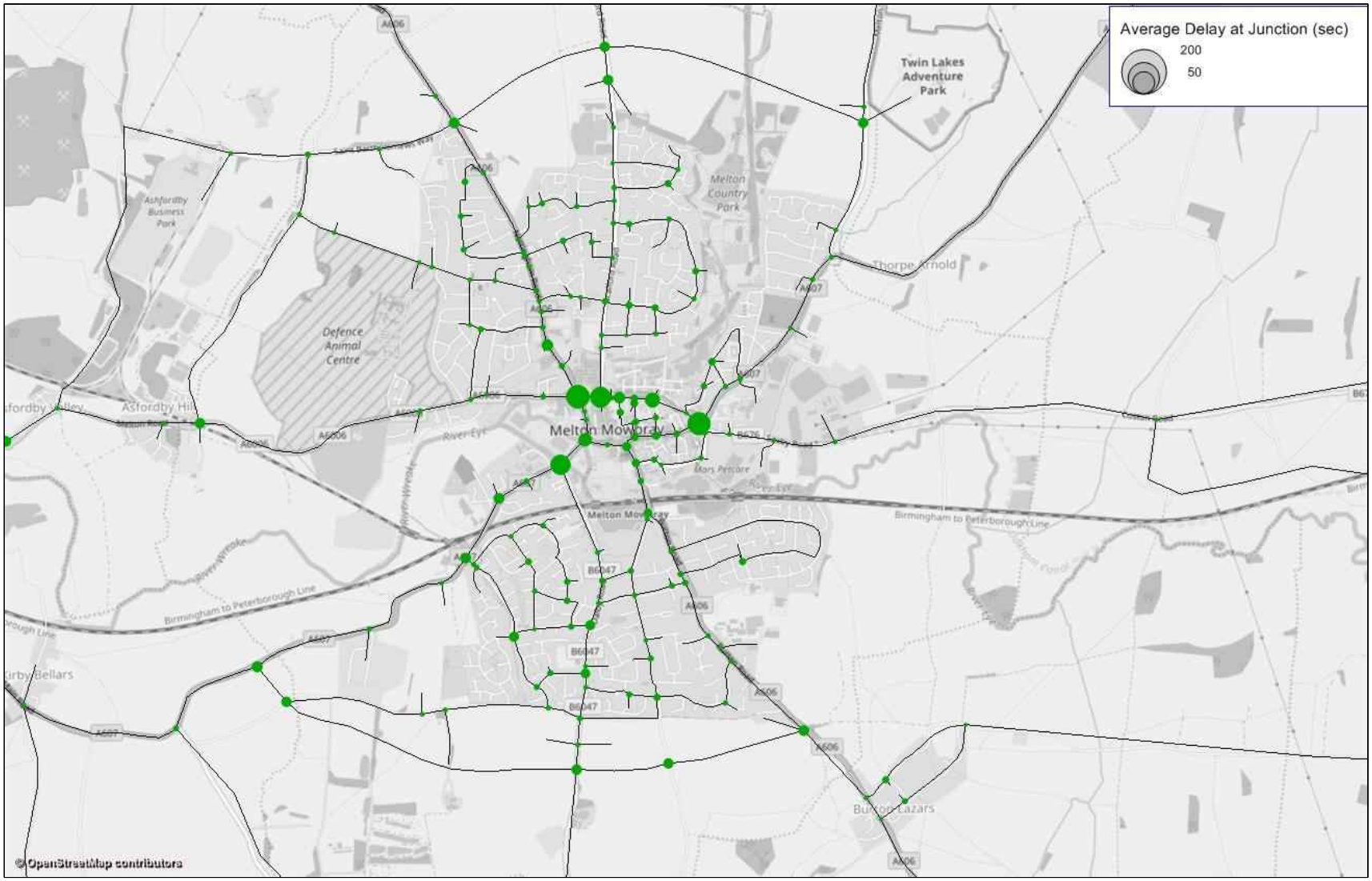


Figure D.12: LLITM 2014 Core Scenario Forecast Highway Junction Delays – 2041 Forecast Year PM Peak

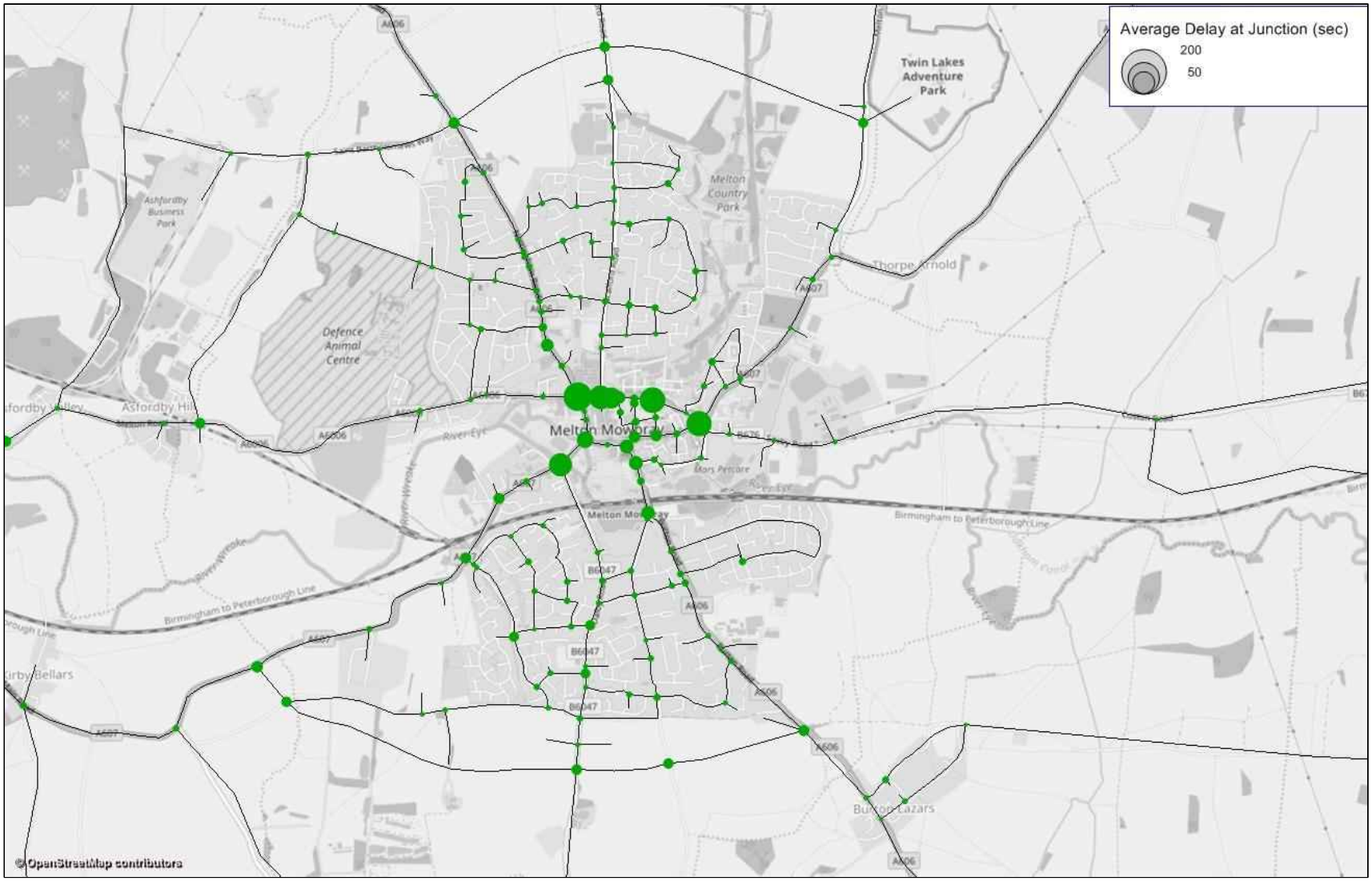


Figure D.13: LLITM 2014 Core Scenario Forecast Highway Junction Delays – 2051 Forecast Year AM Peak

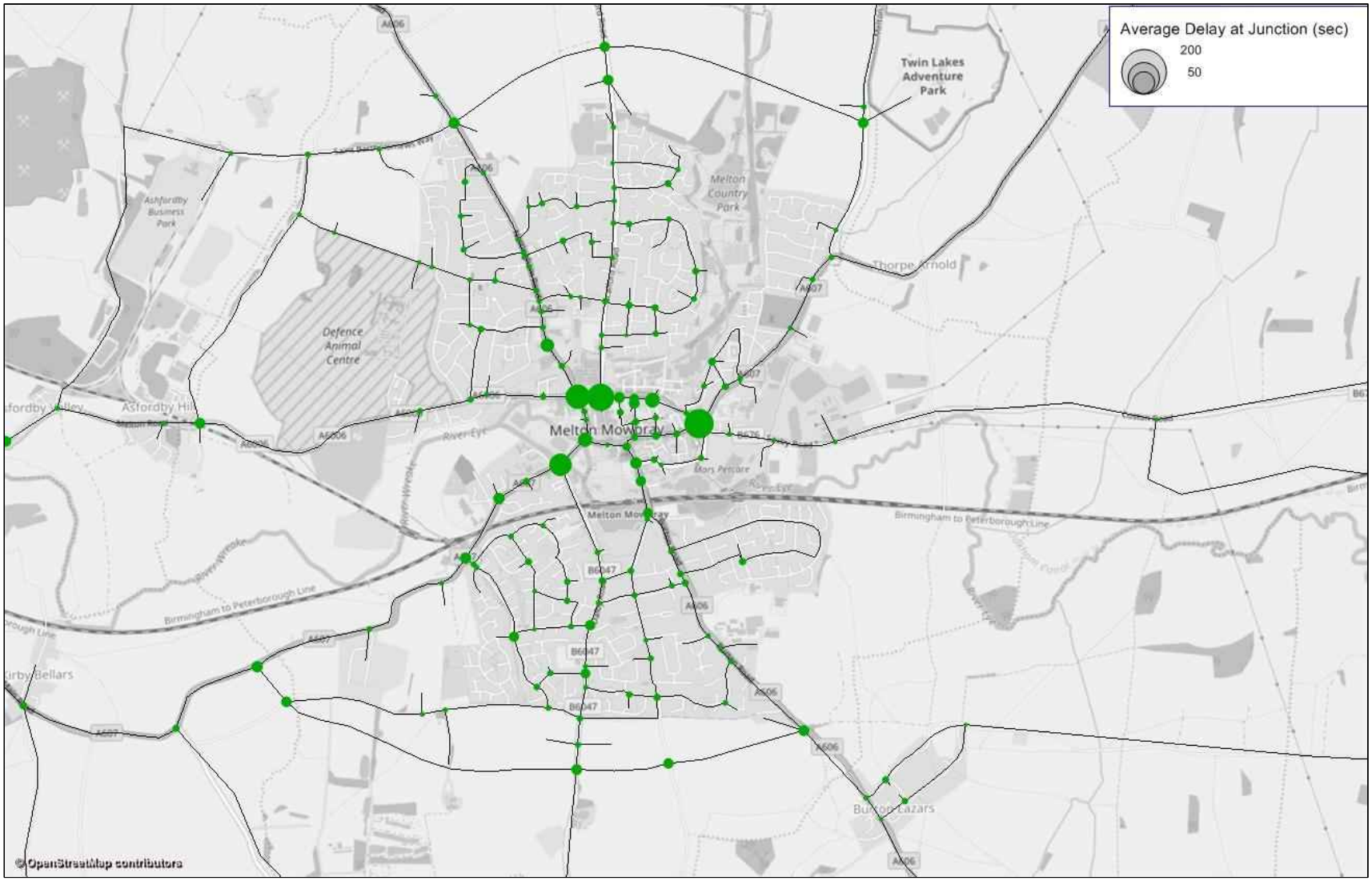


Figure D.14: LLITM 2014 Core Scenario Forecast Highway Junction Delays – 2051 Forecast Year Interpeak

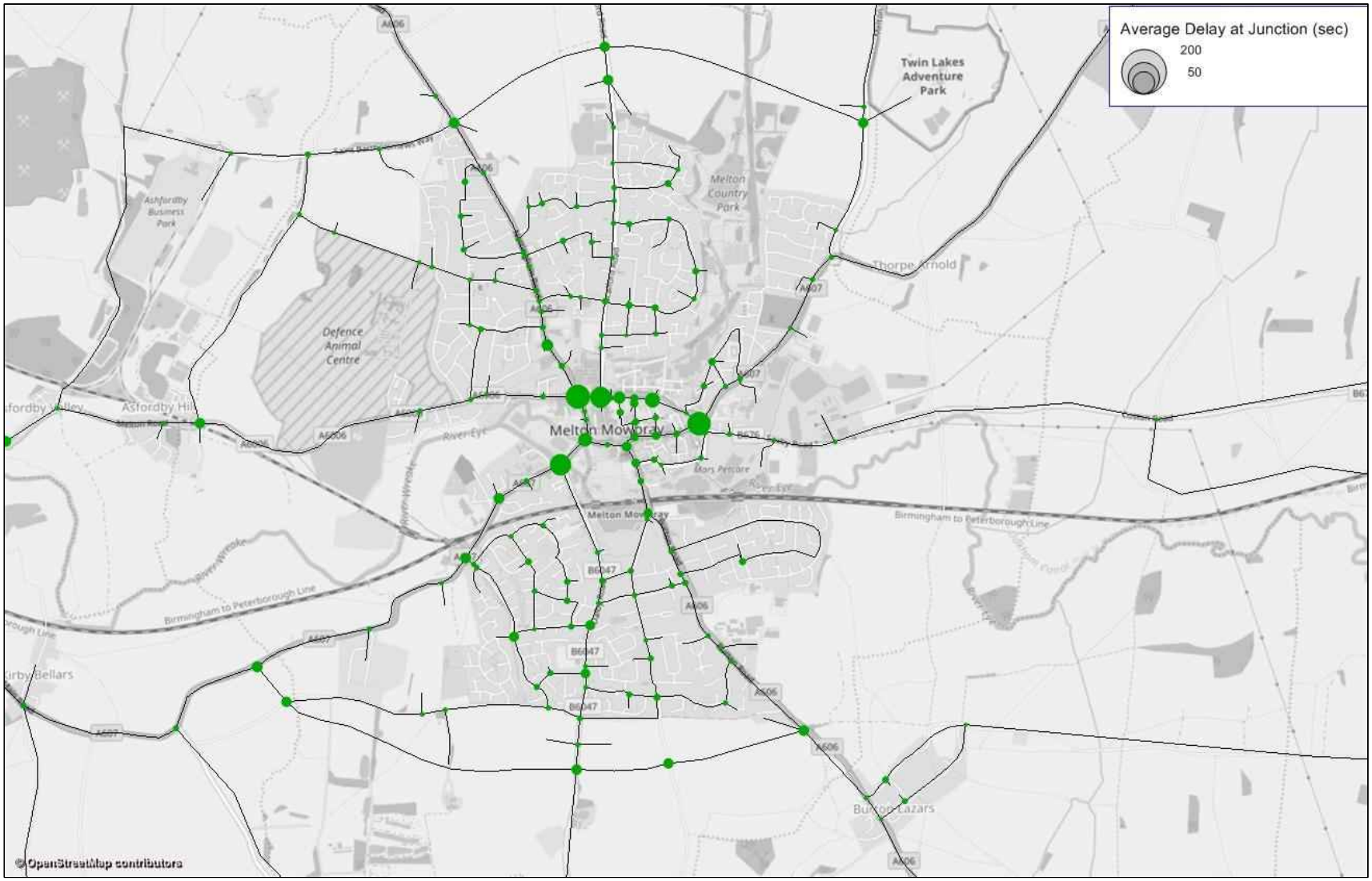
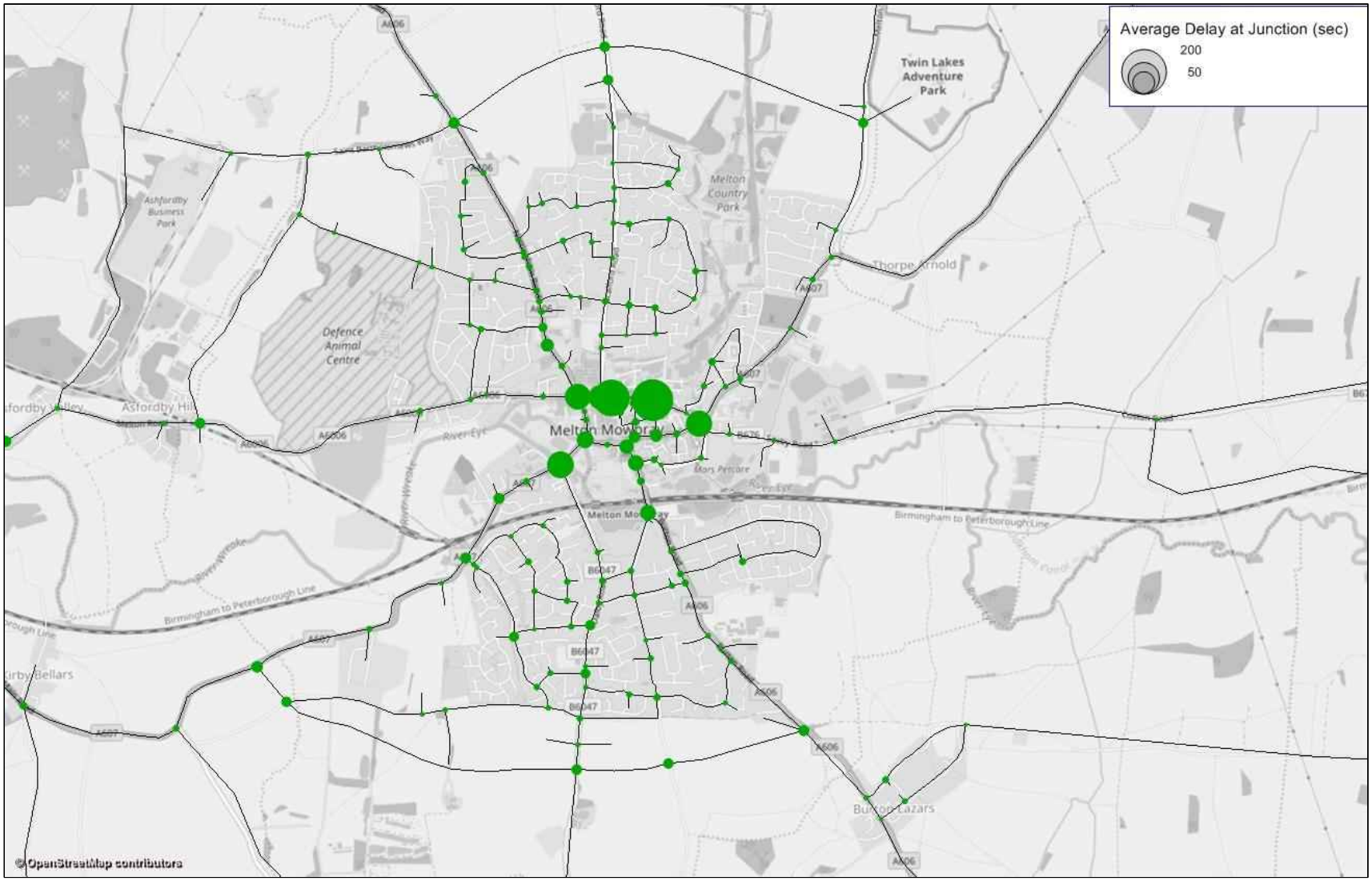


Figure D.15: LLITM 2014 Core Scenario Forecast Highway Junction Delays – 2051 Forecast Year PM Peak



Appendix E With Scheme Forecast Vehicle Flow Changes

Figure E.1: LLITM 2014 Forecast Highway Vehicle Flow Changes from Core Scenario to With Scheme – 2021 Forecast Year AM Peak

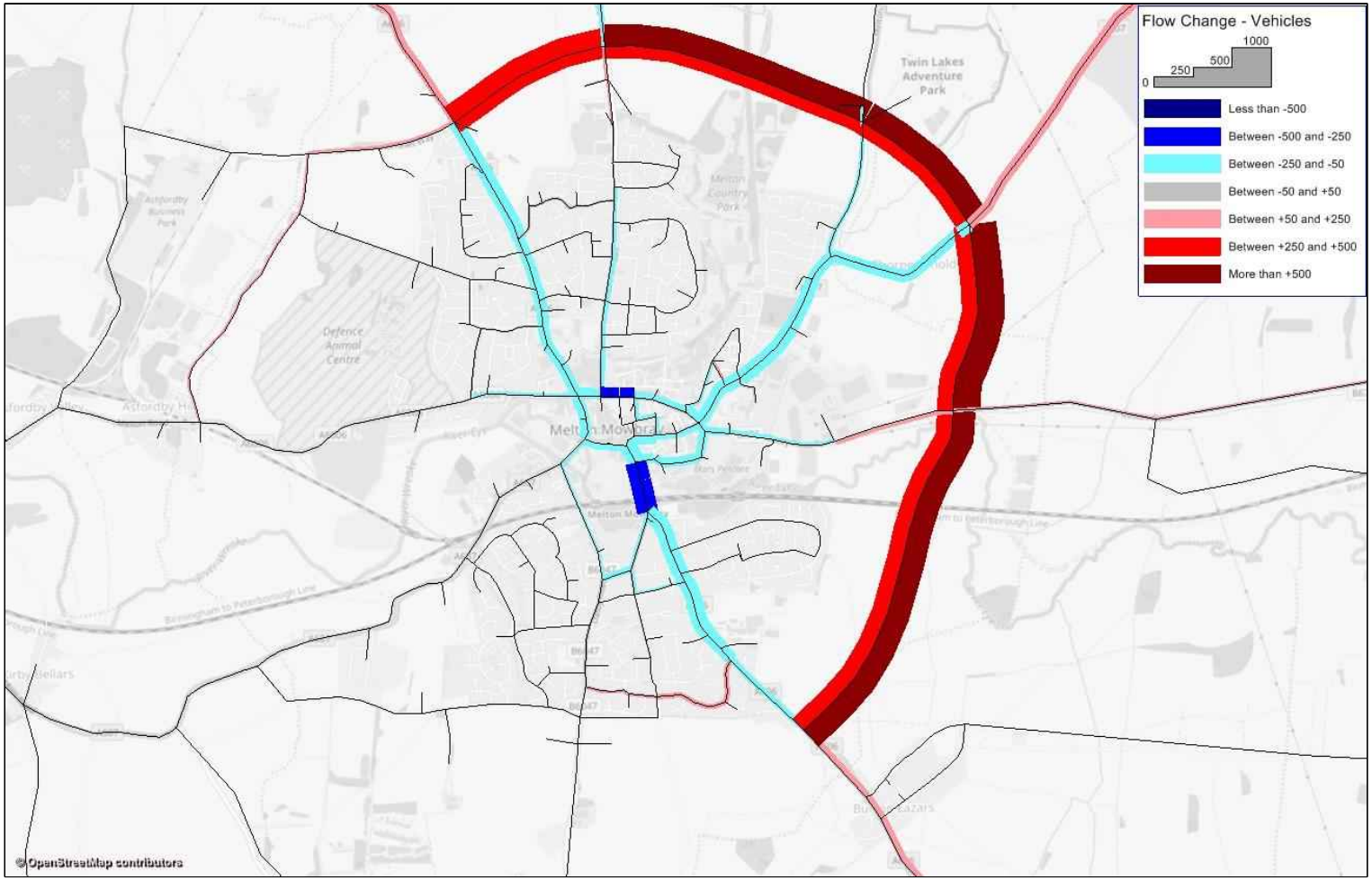


Figure E.2: LLITM 2014 Forecast Highway Vehicle Flow Changes from Core Scenario to With Scheme – 2021 Forecast Year Interpeak

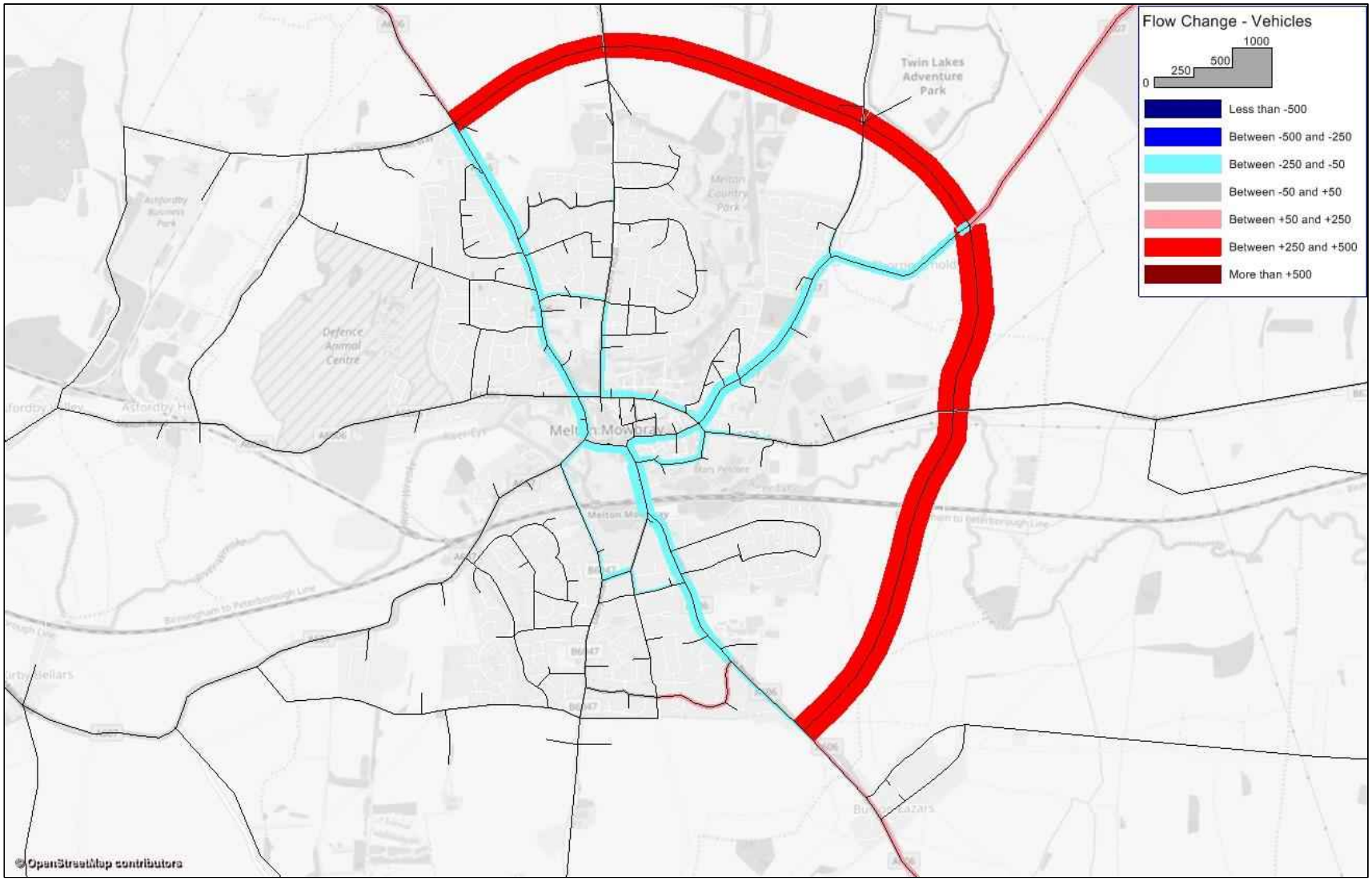


Figure E.3: LLITM 2014 Forecast Highway Vehicle Flow Changes from Core Scenario to With Scheme – 2021 Forecast Year PM Peak

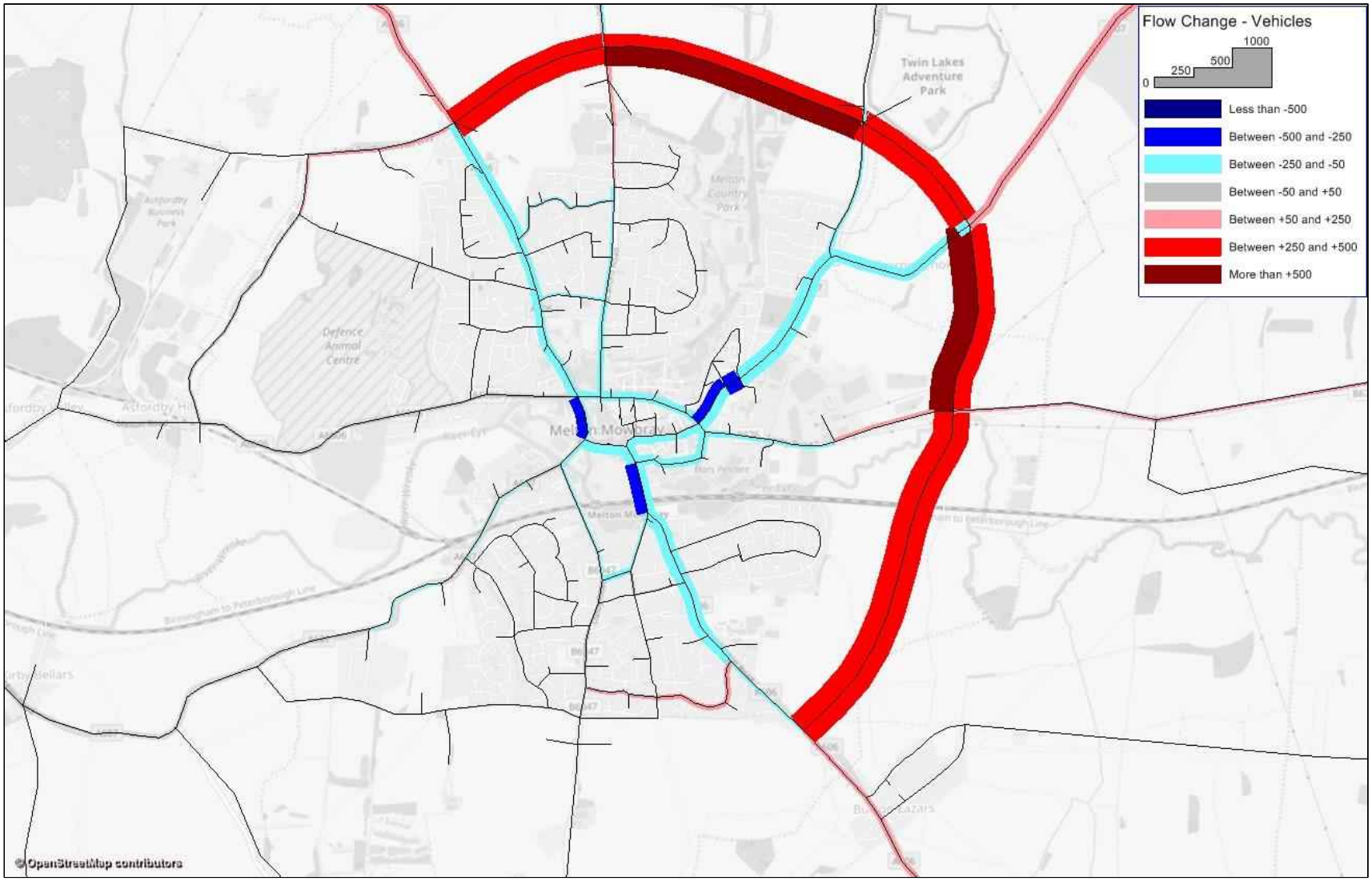


Figure E.4: LLITM 2014 Forecast Highway Vehicle Flow Changes from Core Scenario to With Scheme – 2036 Forecast Year AM Peak

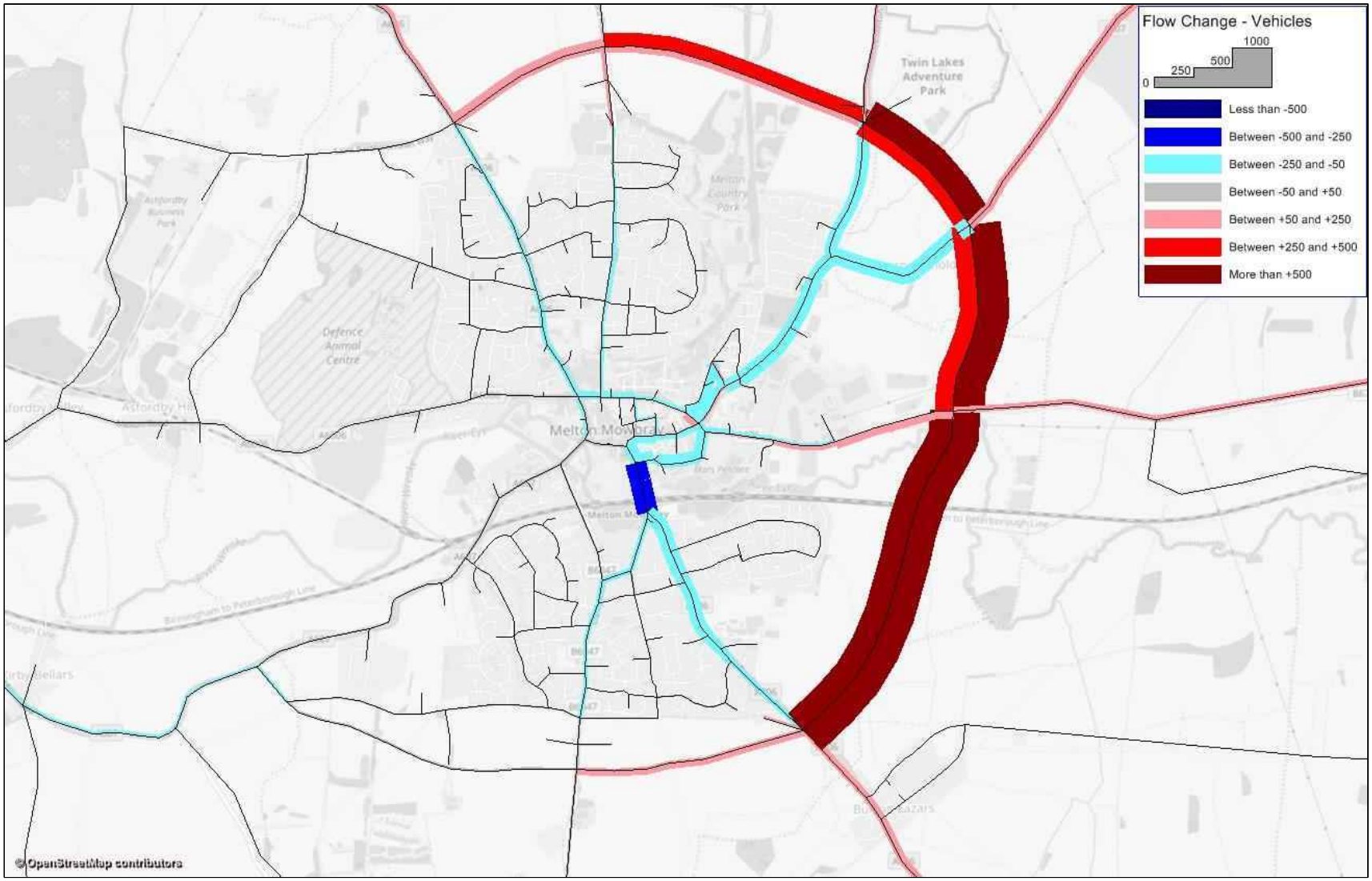


Figure E.5: LLITM 2014 Forecast Highway Vehicle Flow Changes from Core Scenario to With Scheme – 2036 Forecast Year Interpeak

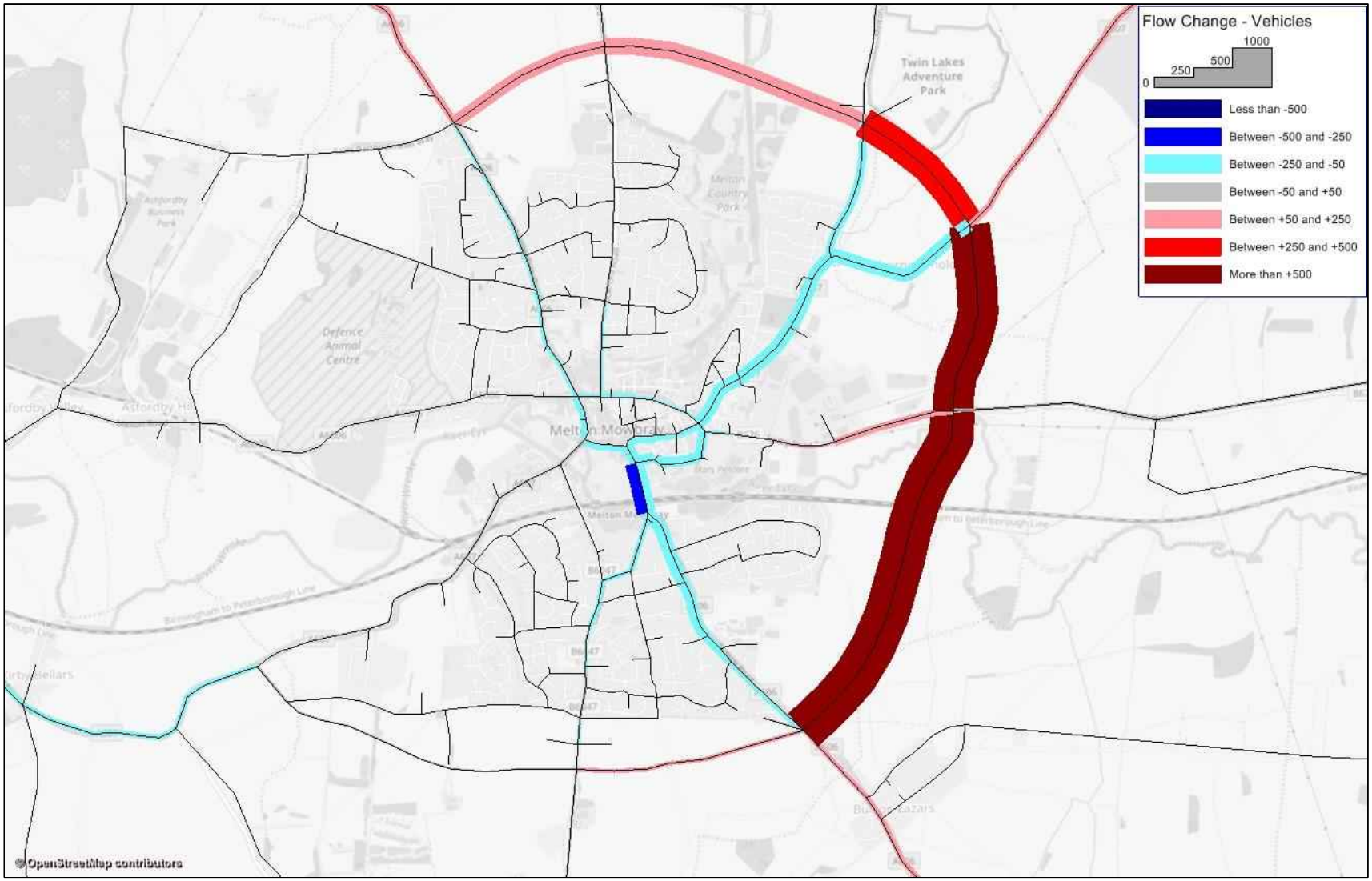


Figure E.6: LLITM 2014 Forecast Highway Vehicle Flow Changes from Core Scenario to With Scheme – 2036 Forecast Year PM Peak

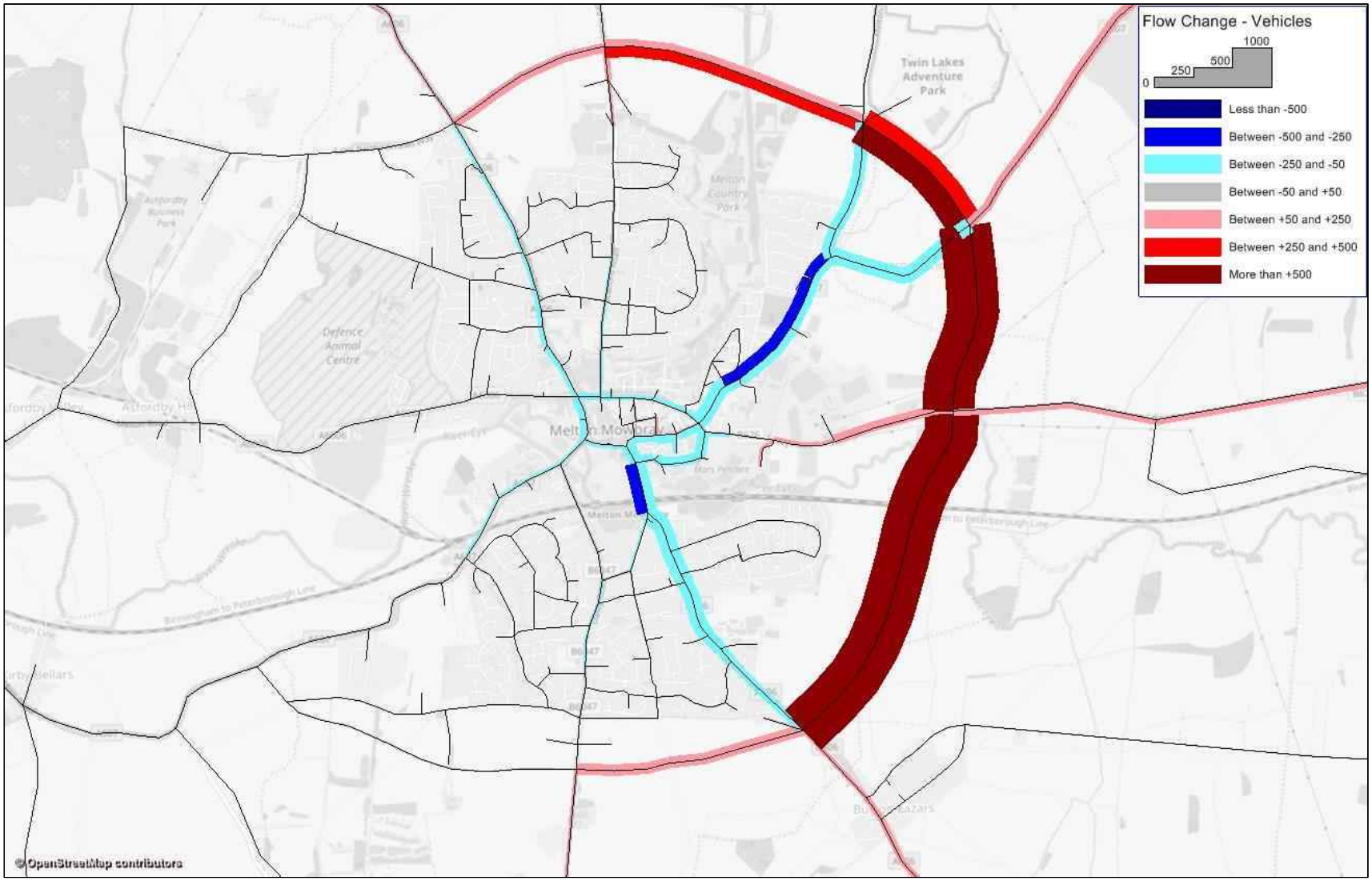


Figure E.7: LLITM 2014 Forecast Highway Vehicle Flow Changes from Core Scenario to With Scheme – 2041 Forecast Year AM Peak

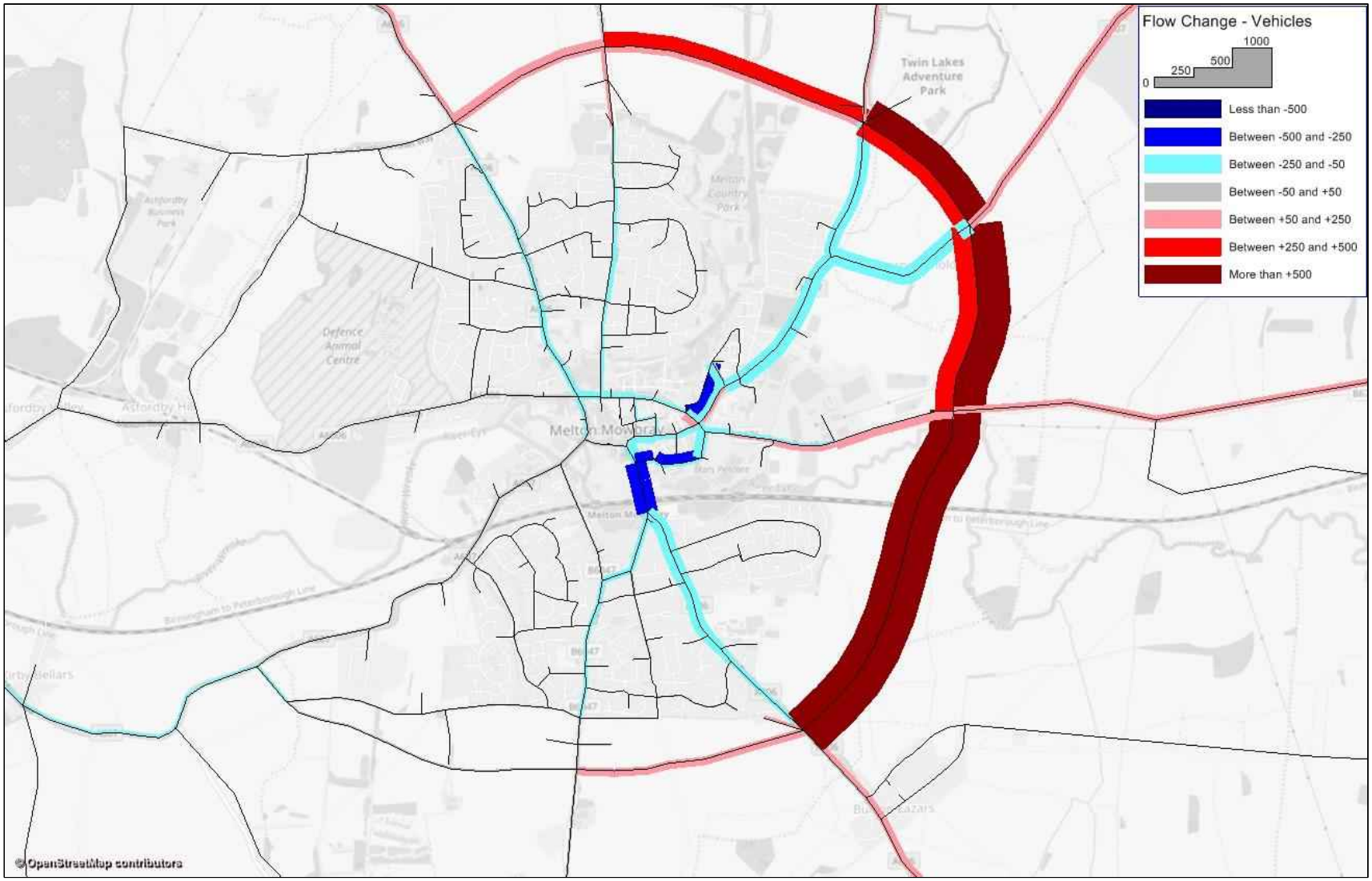


Figure E.8: LLITM 2014 Forecast Highway Vehicle Flow Changes from Core Scenario to With Scheme – 2041 Forecast Year Interpeak

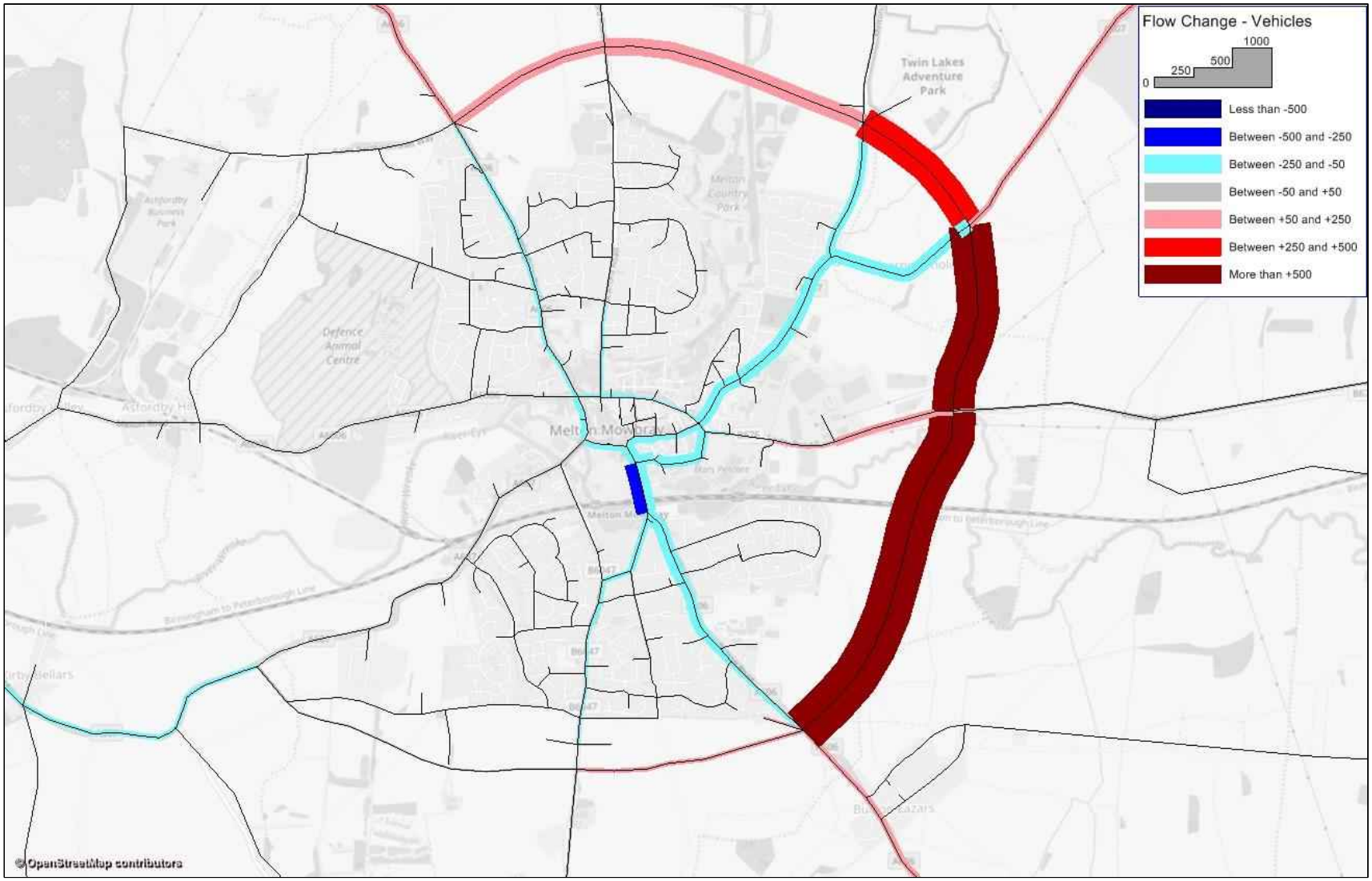


Figure E.9: LLITM 2014 Forecast Highway Vehicle Flow Changes from Core Scenario to With Scheme – 2041 Forecast Year PM Peak

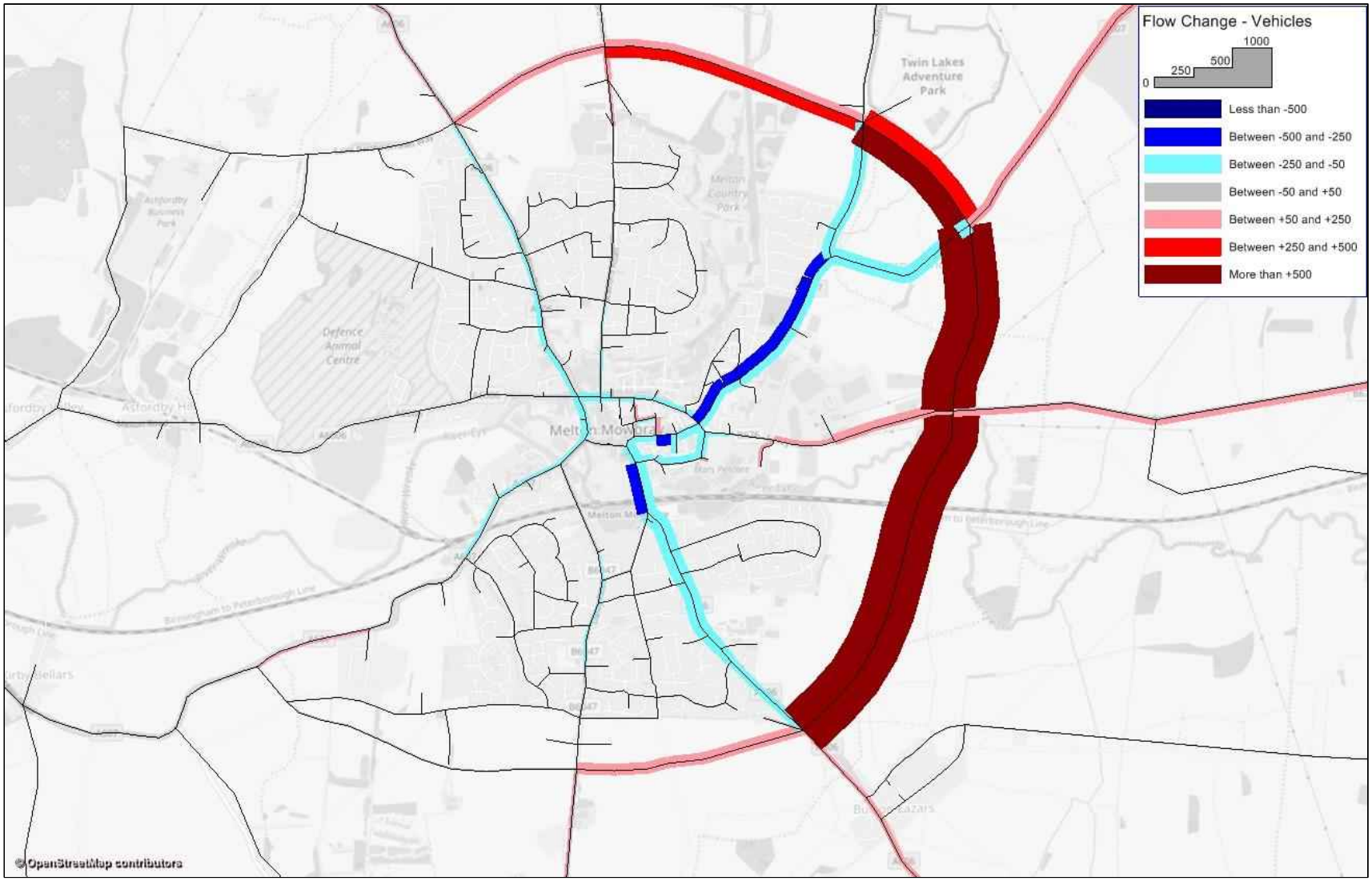


Figure E.10: LLITM 2014 Forecast Highway Vehicle Flow Changes from Core Scenario to With Scheme – 2051 Forecast Year AM Peak

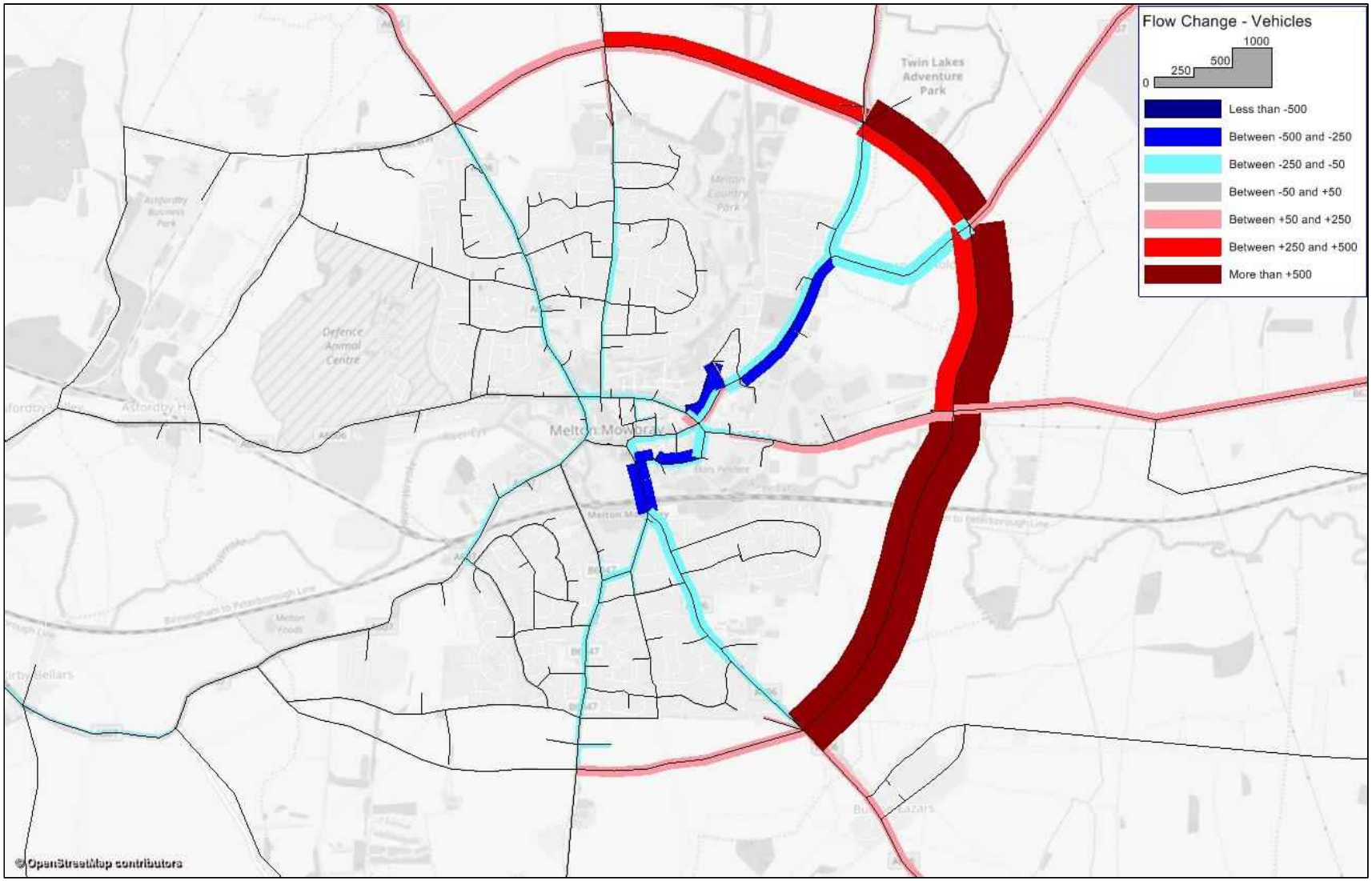


Figure E.11: LLITM 2014 Forecast Highway Vehicle Flow Changes from Core Scenario to With Scheme – 2051 Forecast Year Interpeak

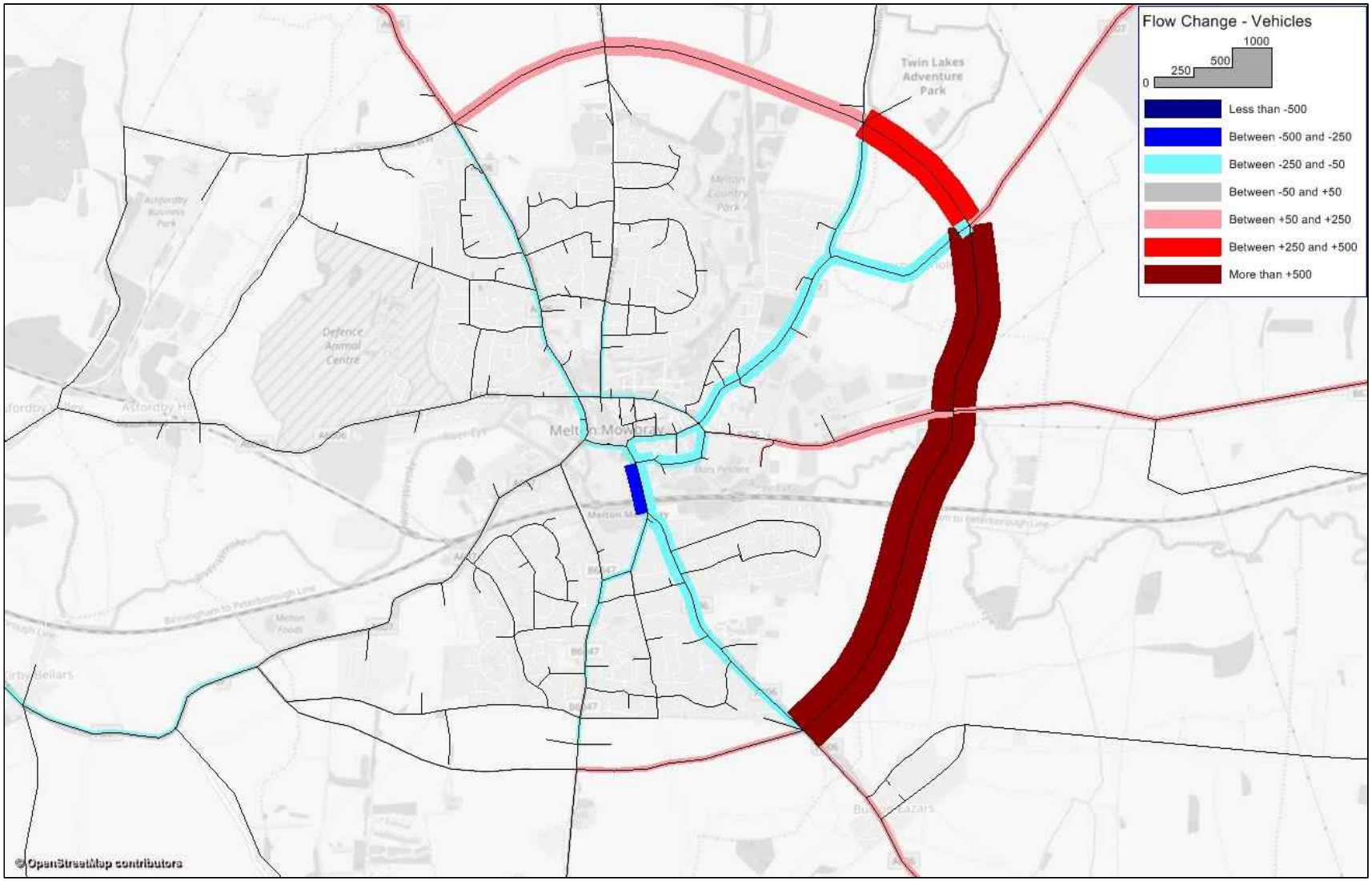
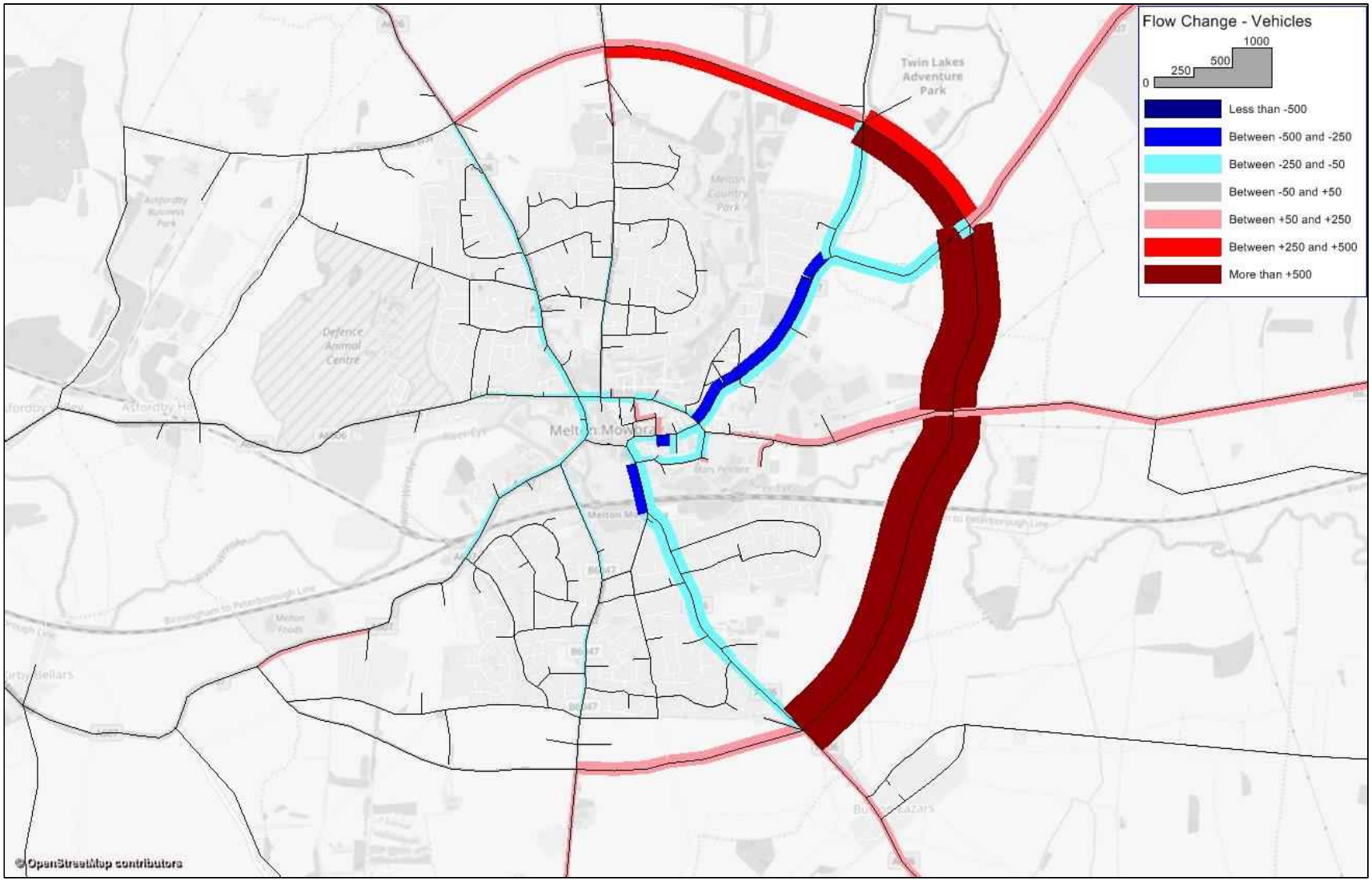


Figure E.12: LLITM 2014 Forecast Highway Vehicle Flow Changes from Core Scenario to With Scheme – 2051 Forecast Year PM Peak



Appendix F With Scheme Forecast Volume-Capacity Ratio Changes

Figure F.1: LLITM 2014 Forecast Highway Volume-Capacity Ratio Changes from Core Scenario to With Scheme – 2021 Forecast Year AM Peak

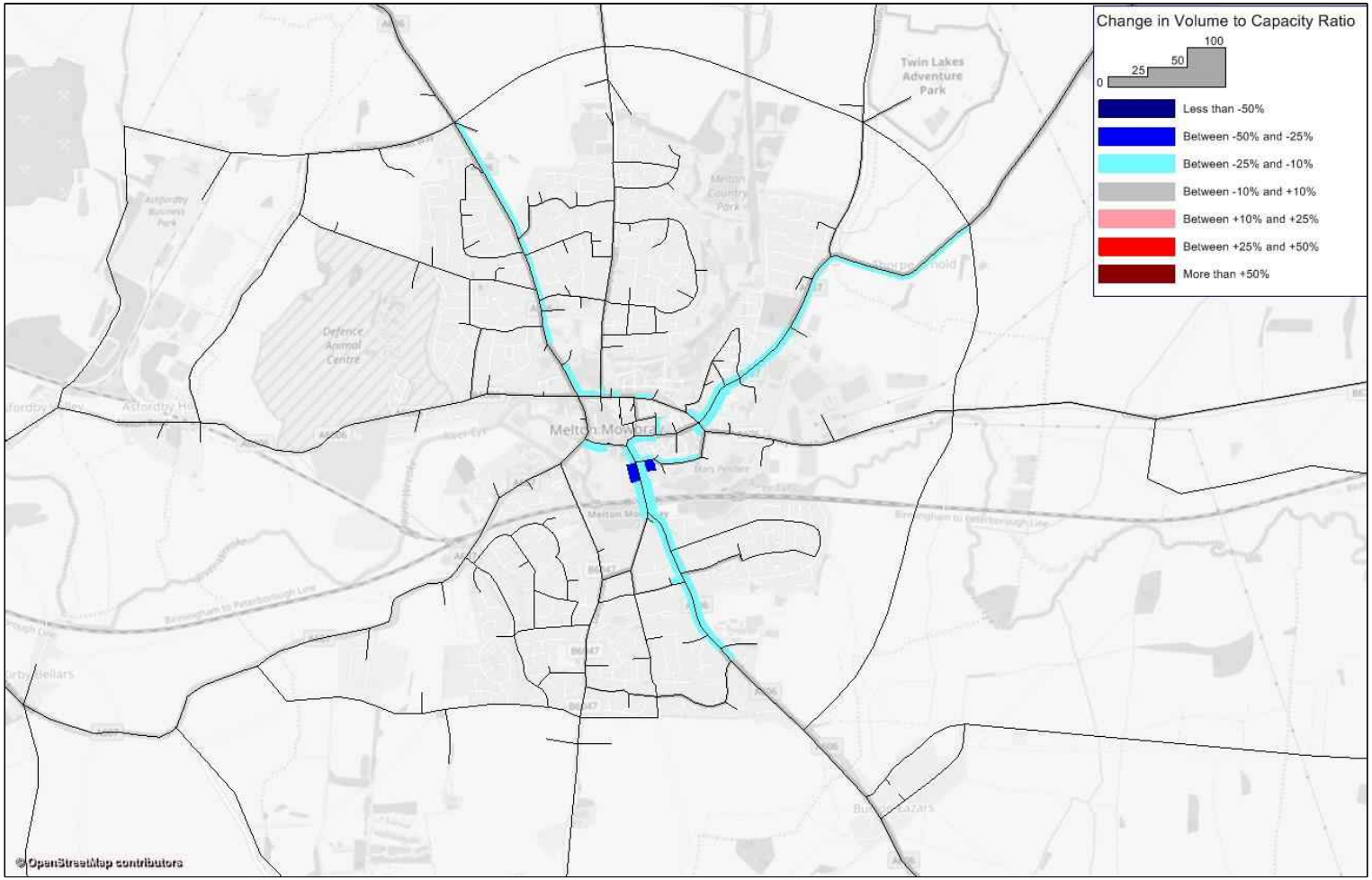


Figure F.2: LLITM 2014 Forecast Highway Volume-Capacity Ratio Changes from Core Scenario to With Scheme – 2021 Forecast Year Interpeak

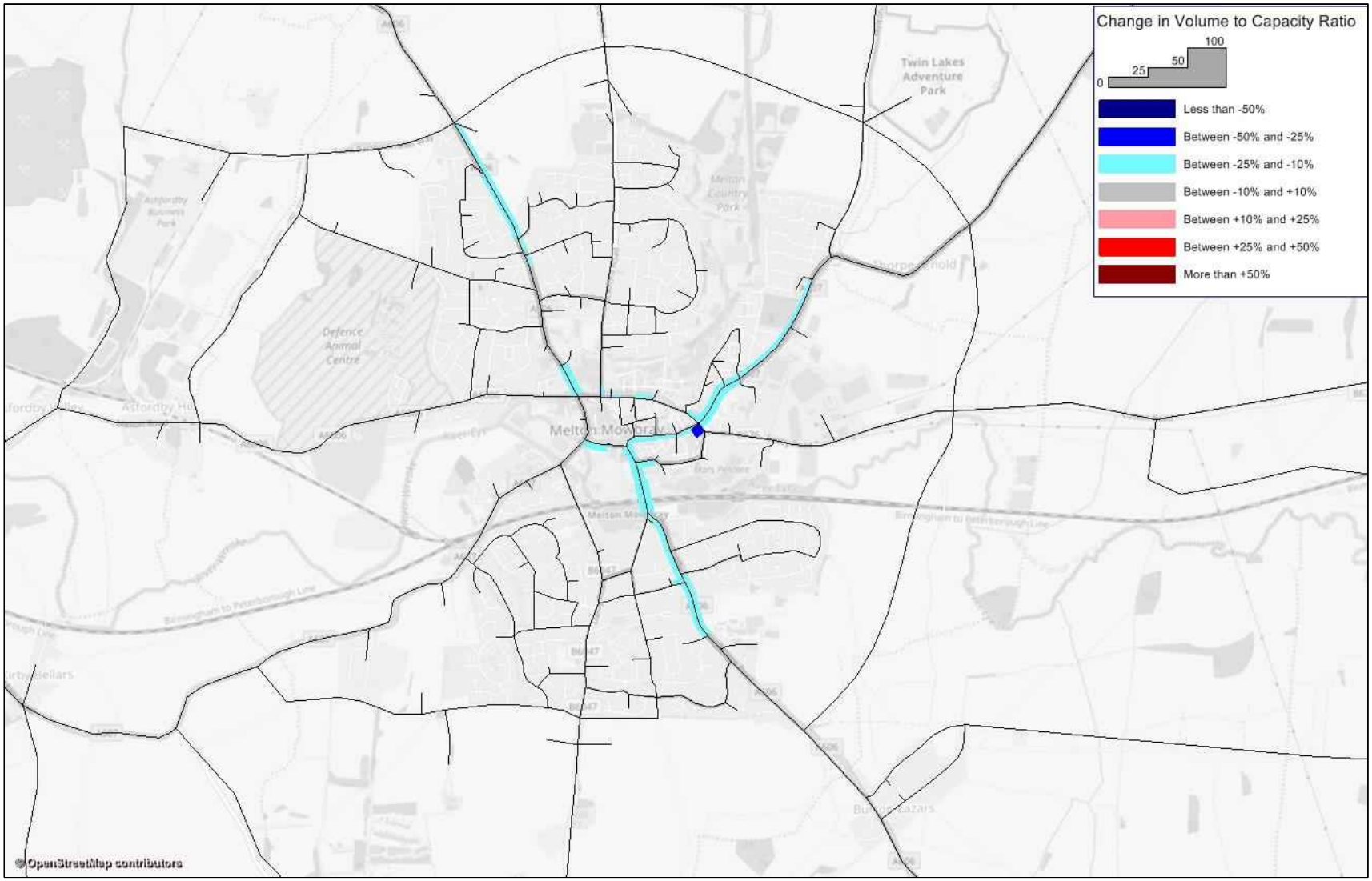


Figure F.3: LLITM 2014 Forecast Highway Volume-Capacity Ratio Changes from Core Scenario to With Scheme – 2021 Forecast Year PM Peak

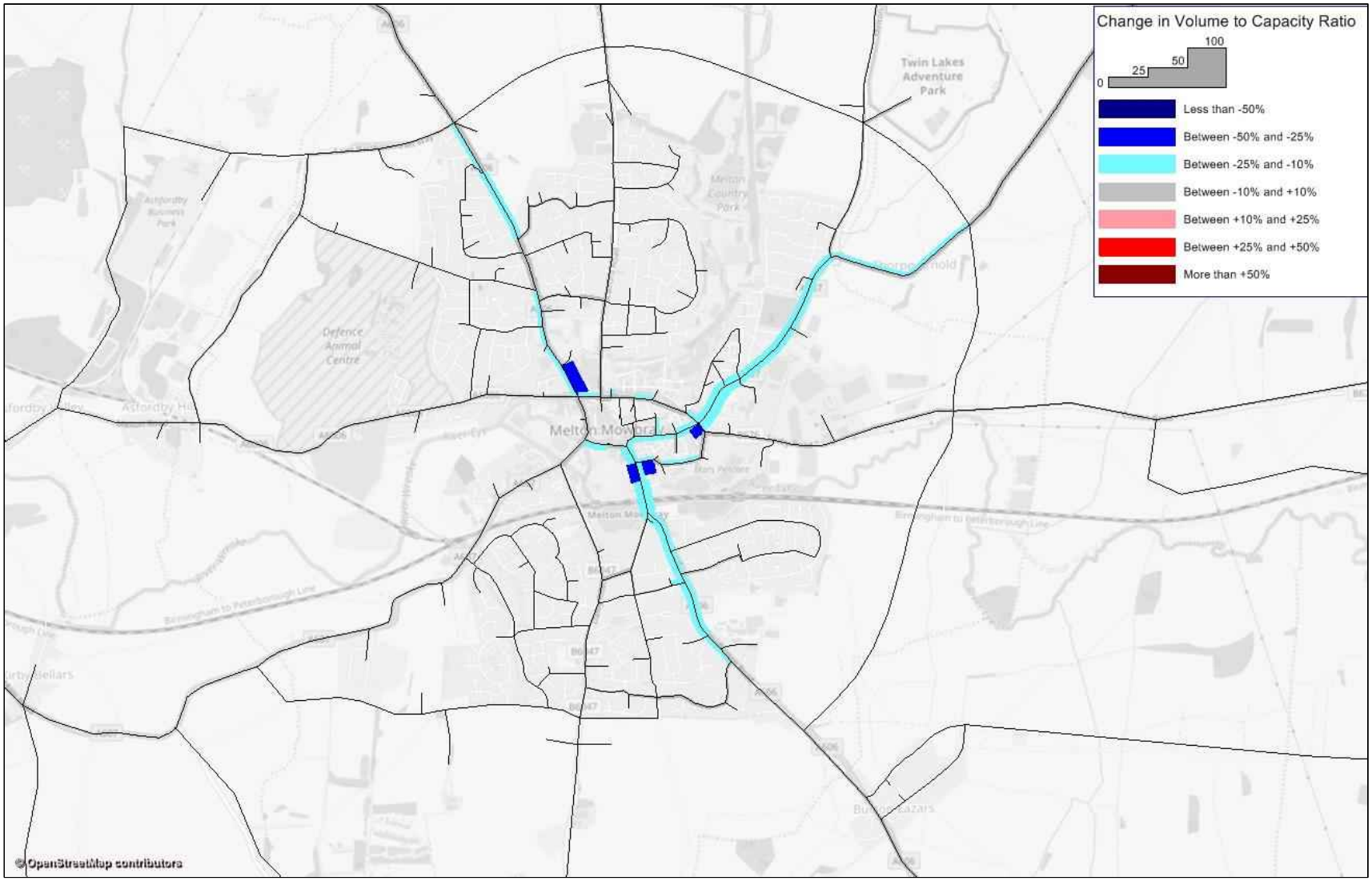


Figure F.4: LLITM 2014 Forecast Highway Volume-Capacity Ratio Changes from Core Scenario to With Scheme – 2036 Forecast Year AM Peak

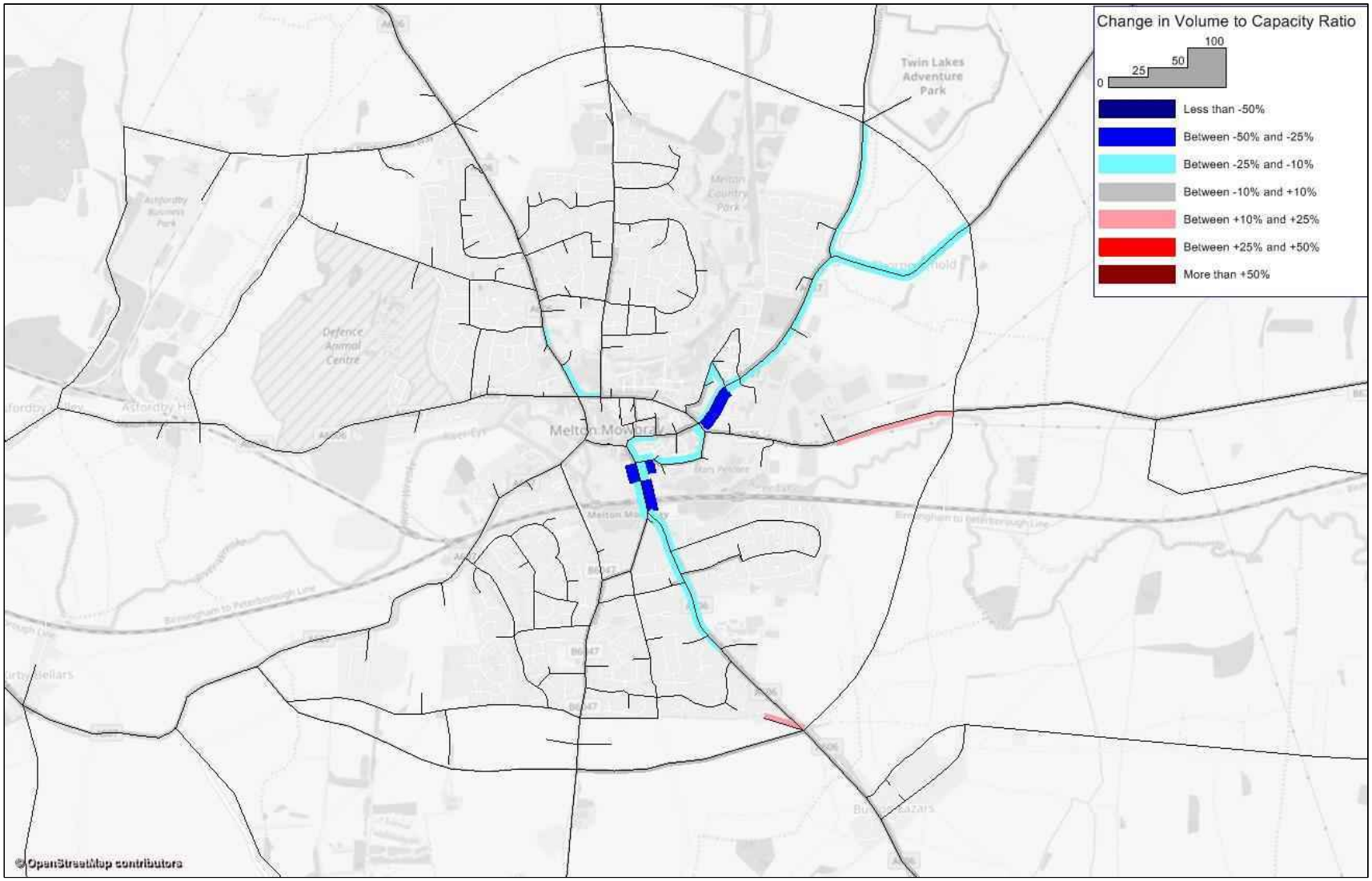


Figure F.5: LLITM 2014 Forecast Highway Volume-Capacity Ratio Changes from Core Scenario to With Scheme – 2036 Forecast Year Interpeak

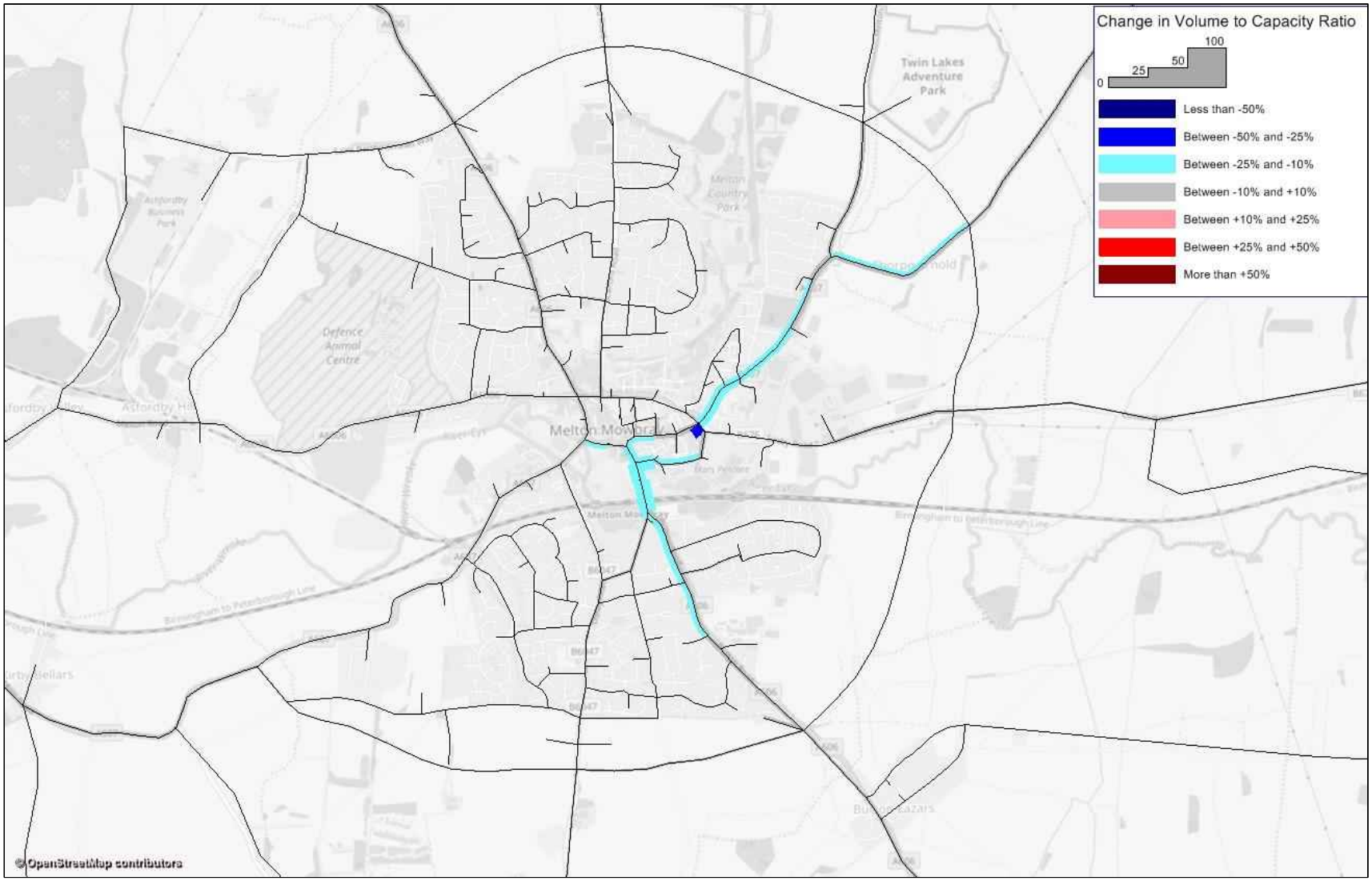


Figure F.6: LLITM 2014 Forecast Highway Volume-Capacity Ratio Changes from Core Scenario to With Scheme – 2036 Forecast Year PM Peak

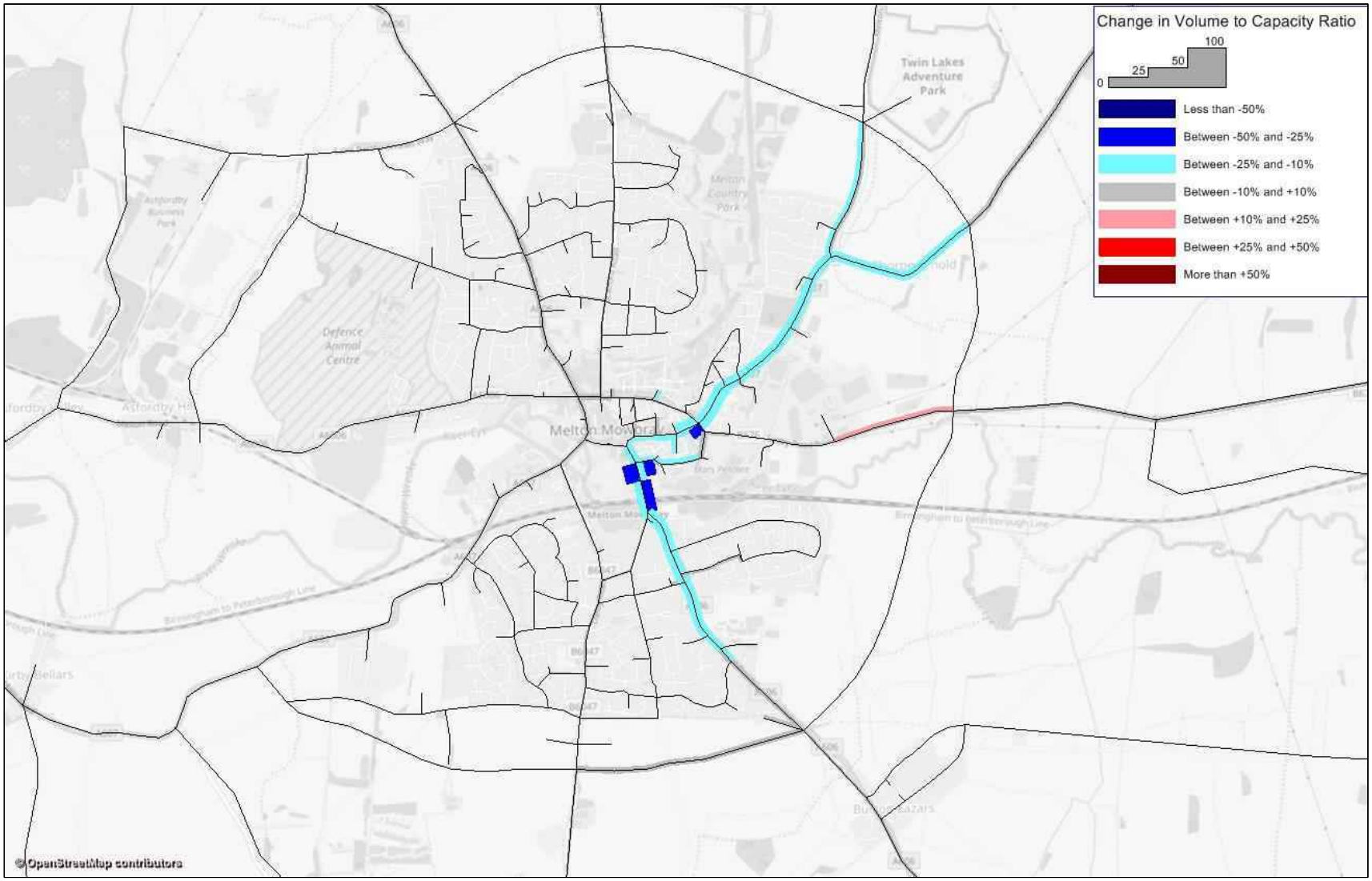


Figure F.7: LLITM 2014 Forecast Highway Volume-Capacity Ratio Changes from Core Scenario to With Scheme – 2041 Forecast Year AM Peak

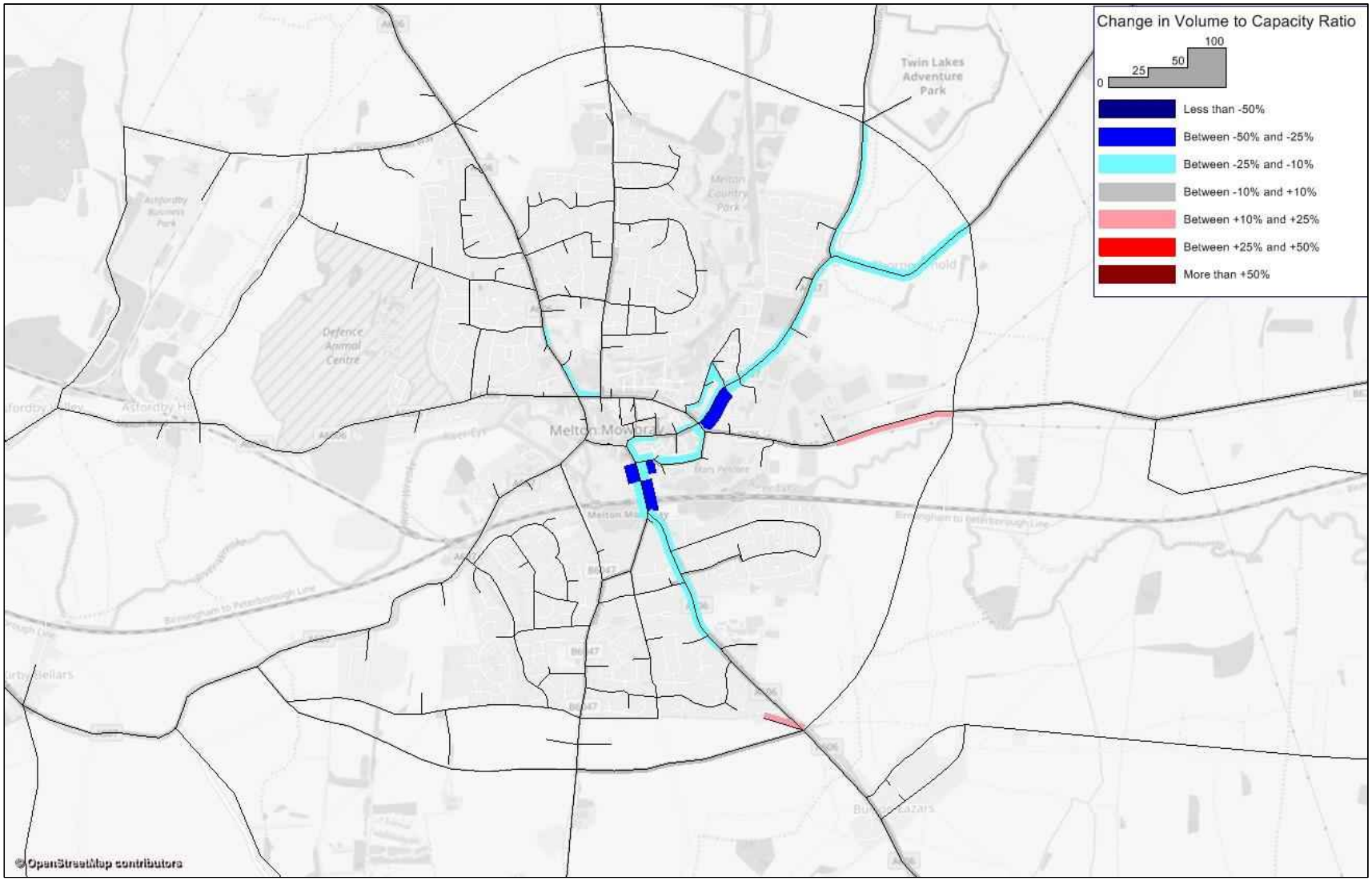


Figure F.8: LLITM 2014 Forecast Highway Volume-Capacity Ratio Changes from Core Scenario to With Scheme – 2041 Forecast Year Interpeak

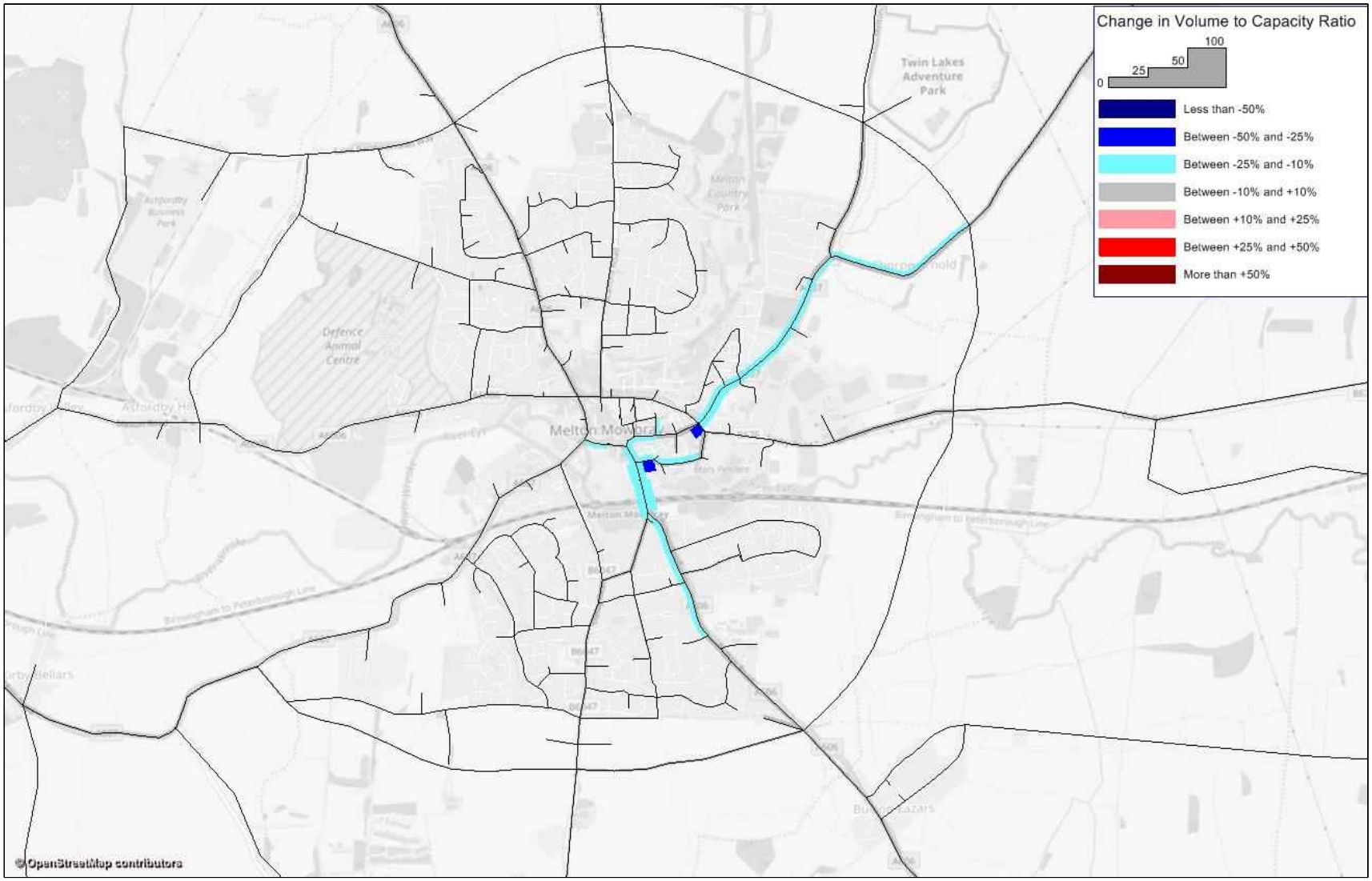


Figure F.9: LLITM 2014 Forecast Highway Volume-Capacity Ratio Changes from Core Scenario to With Scheme – 2041 Forecast Year PM Peak

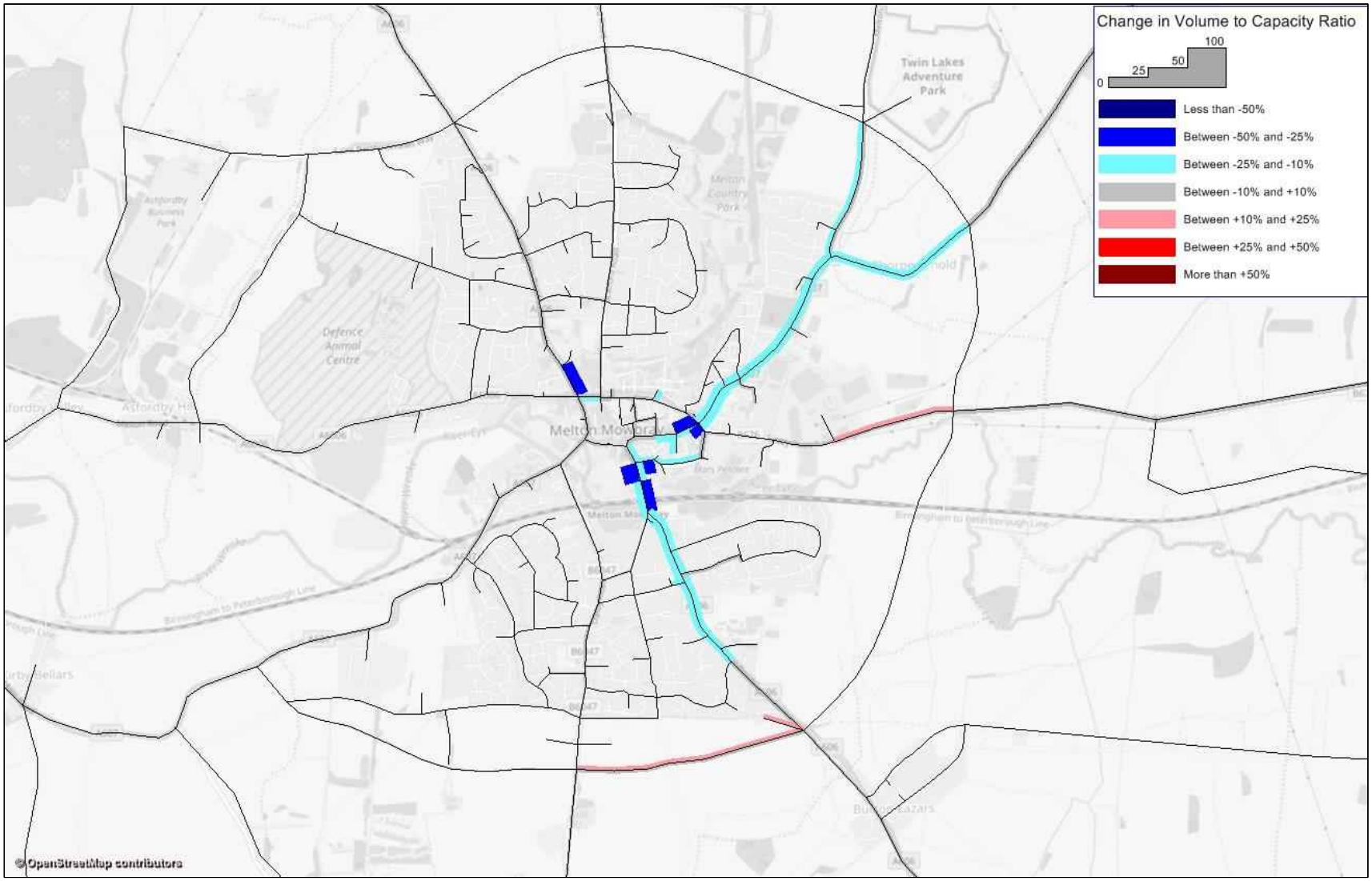


Figure F.10: LLITM 2014 Forecast Highway Volume-Capacity Ratio Changes from Core Scenario to With Scheme – 2051 Forecast Year AM Peak

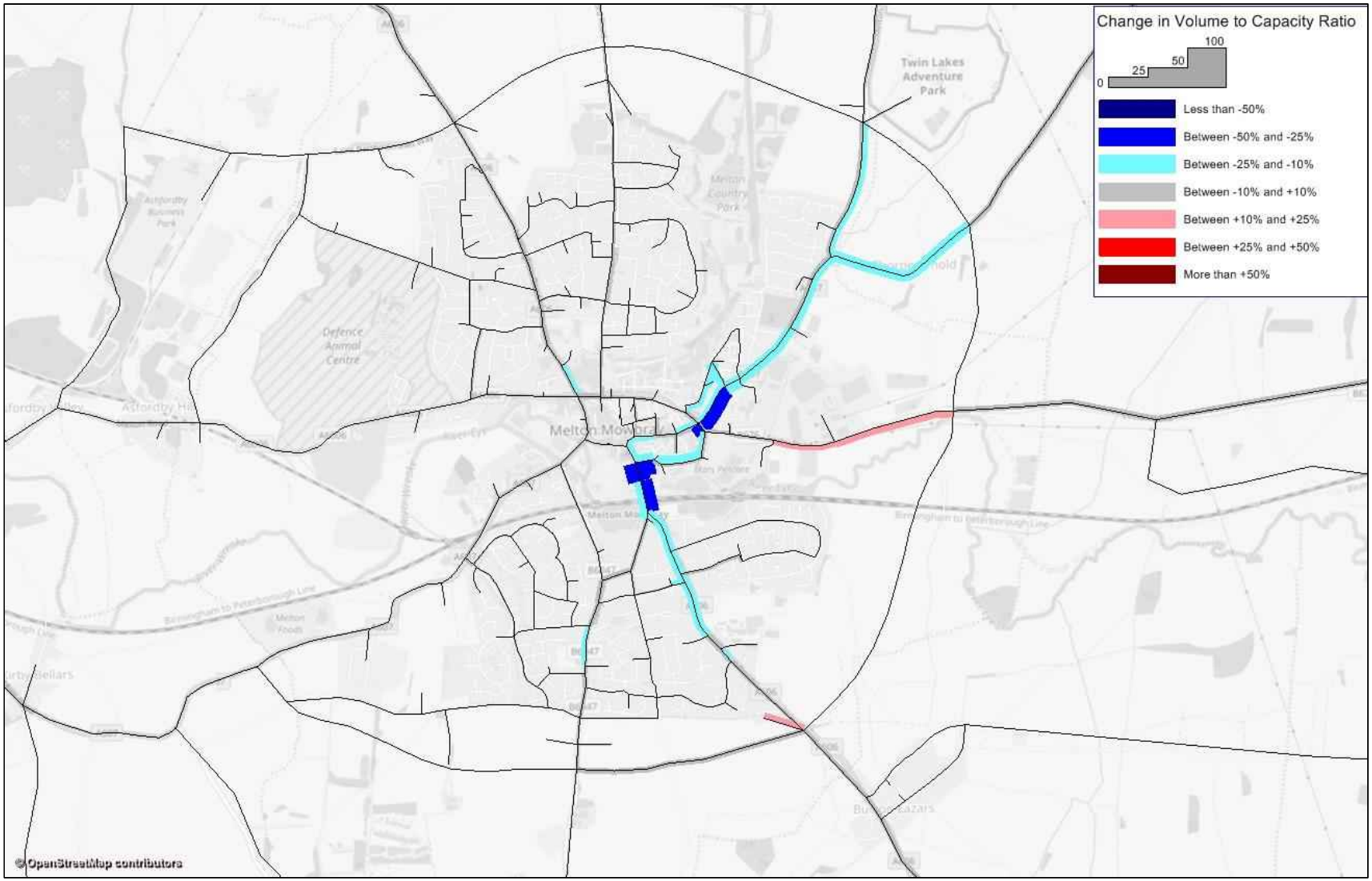


Figure F.11: LLITM 2014 Forecast Highway Volume-Capacity Ratio Changes from Core Scenario to With Scheme – 2051 Forecast Year Interpeak

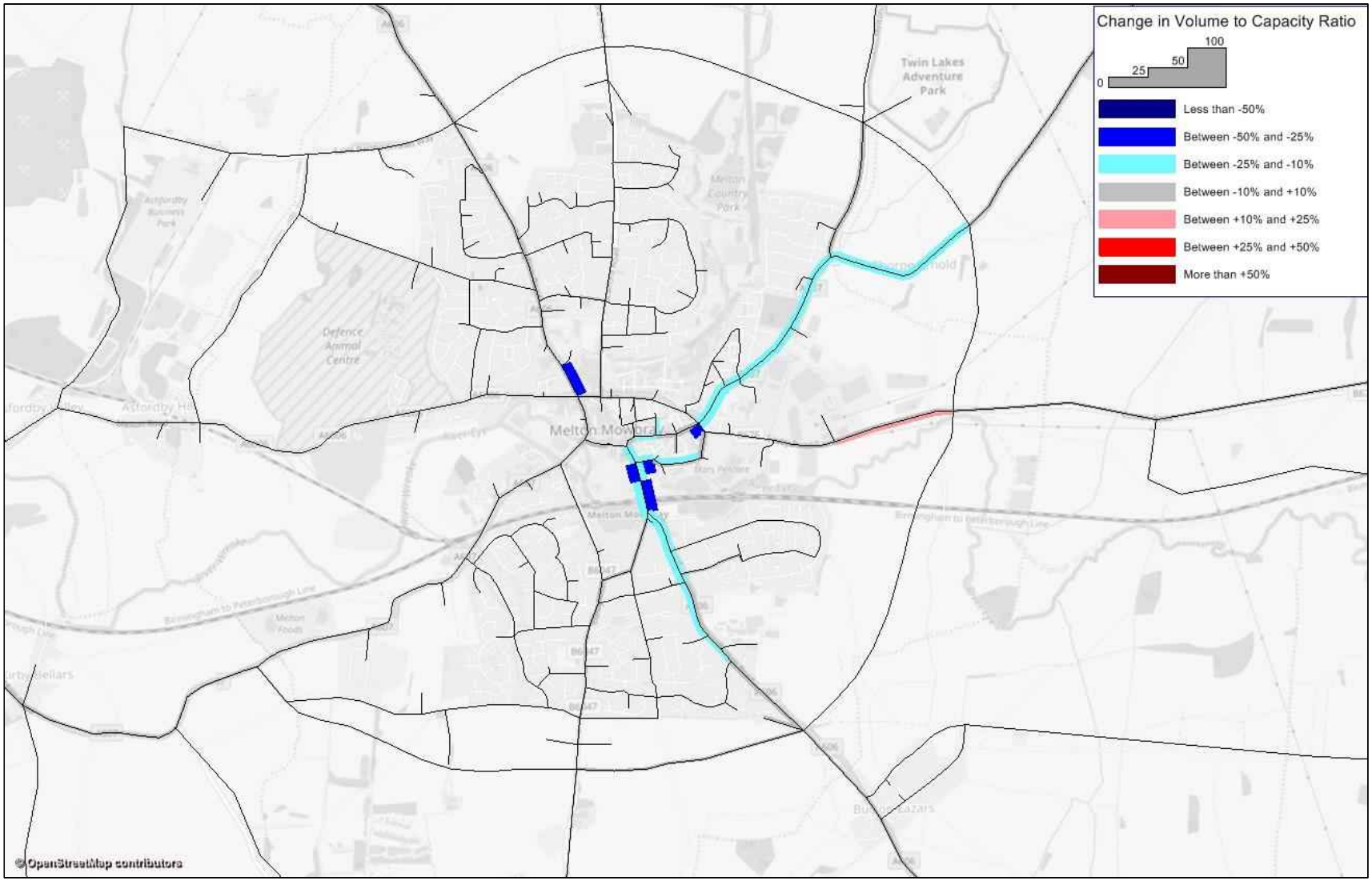
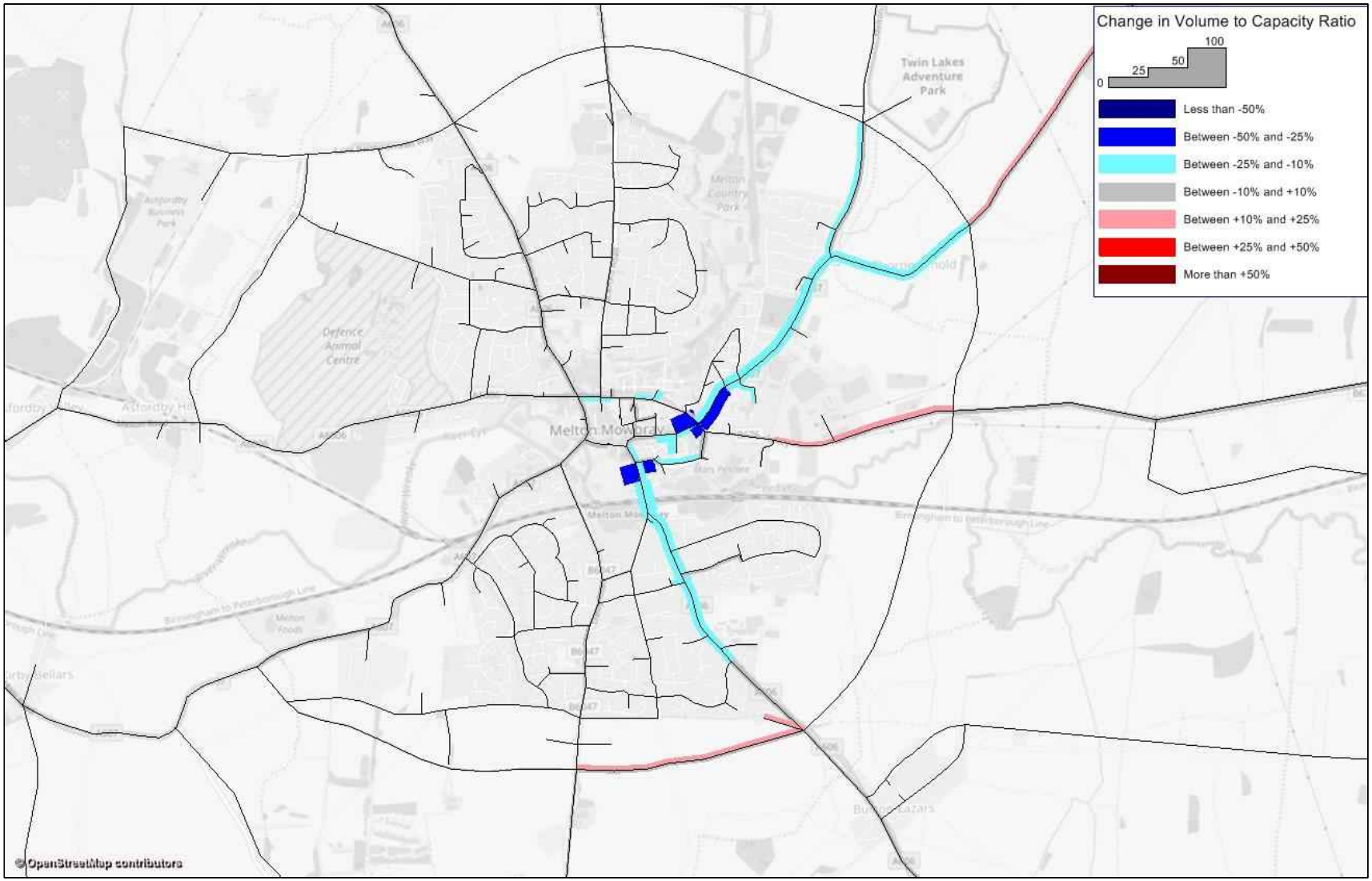


Figure F.12: LLITM 2014 Forecast Highway Volume-Capacity Ratio Changes from Core Scenario to With Scheme – 2051 Forecast Year PM Peak



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