

North and East Melton Mowbray Distributor Road

Transport Assessment

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1. Introduction

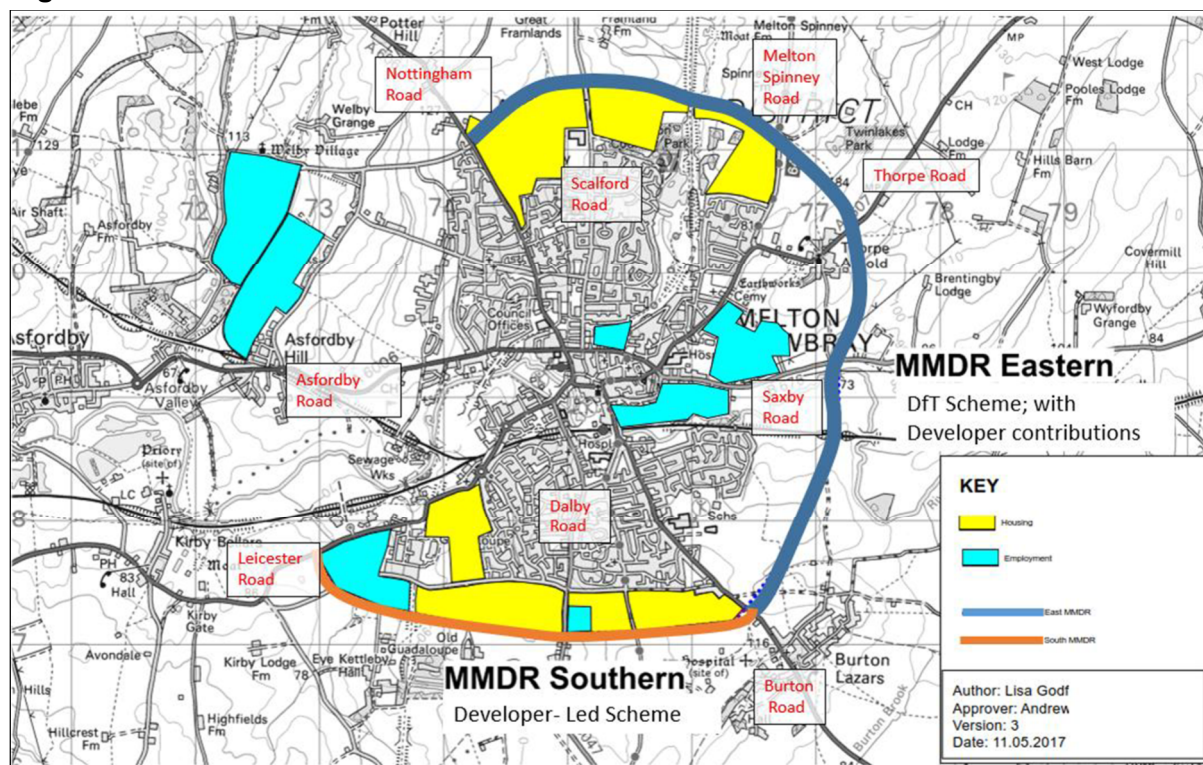
1.1 Purpose of a Transport Assessment

- 1.1.1 A Transport Assessment (TA) is a document that is submitted to support a planning application which examines the transport impacts of a proposed scheme. The Planning Practice Guidance supporting the National Planning Policy Framework (NPPF) states that: “Travel Plans, Transport Assessments and Statements are all ways of assessing and mitigating the negative transport impacts of development in order to promote sustainable development. They are required for all developments which generate significant amounts of movements.”
- 1.1.2 Importantly, a TA is usually prepared in order to identify the impacts of land-use development schemes such as housing, employment or commercial developments. The planning application that is being submitted for the North and East Melton Mowbray Distributor Road (N&E MMDR) is in support of a new road scheme, and therefore relates to the creation of a new alternative route for existing traffic, and the accommodation of future growth. A series of transport modelling reports have already been prepared assessing the scheme, and supporting funding bids for the scheme. As such, the purpose of this report is to provide a high level overview of the scheme’s main impacts, rather than to repeat the more detailed technical appraisals produced to date.
- 1.1.3 This TA is aimed at policy makers, members of the public and local business interested in understanding how the scheme is likely to change the traffic environment of Melton Mowbray.

1.2 Scheme Description

- 1.2.1 The MMDR forms an important part of the Melton Mowbray Transport Strategy, and represents the preferred option to overcome existing traffic congestion and traffic related problems in the town, whilst enabling future growth.
- 1.2.2 The scheme is a 6.9km, single carriageway road that extends from the A606 Nottingham Road at the north-western edge of the town to the A606 Burton Road in the south. The scheme will provide crossings over the railway line and the River Eye. The scheme will create new junctions with the radials along its route at: Scaford Road, Melton Spinney Road, A607 Thorpe Road and B676 Saxby Road.
- 1.2.3 The location of the proposed N&E MMDR scheme and of radial roads is shown in Figure 1.1. The section shown in blue is the subject of the planning application and will be funded from local sources and by the Department for Transport (DfT).
- 1.2.4 The N&E MMDR can function both as a stand-alone road scheme and, at a future date, combined with the southern length of the MMDR, shown in orange in Figure 1.1. This southern length of the MMDR would provide a connection between the N&E MMDR at the A606 Burton Road and the A607 Leicester Road. The southern length of the MMDR is not part of this planning application, but the new link road (“between Burton Road and Dalby Road and Kirby Lane and Leicester Road”) is part of a separate planning application submitted for 1,500 dwellings and associated development to the south of Melton Mowbray (16/00515/OUT).
- 1.2.5 Walking and cycling facilities will be provided alongside the carriageway for the full extent of the N&E MMDR’s length.

Figure 1.1: Scheme Location and Radial Routes



source: WSP

1.3 Background

- 1.3.1 Congestion in the centre of Melton Mowbray has been a long standing issue recognised by both Leicestershire County Council (LCC) and Melton Borough Council (MBC); this can be dated back to the late 1990s and early 2000s, and through successive Local Transport Plans. However, the issue has become increasingly pronounced and is likely to be exacerbated further, both in terms of recent trends in traffic growth and in light of the significant levels of development growth planned for the town as part of the emerging Local Plan.
- 1.3.2 Historically, transport improvement options have generally been developed to tackle existing localised congestion issues. The proposed MMDR will simultaneously focus on improving network conditions and accommodate the accelerating high levels of housing and employment growth now proposed in the town.
- 1.3.3 The Melton Local Plan identifies the need for 6,125 houses between 2011 and 2036 across the Borough. A significant number of dwellings (totalling more than 2,500) are currently part of active planning applications in Melton Mowbray and a total of 3,646 dwellings are allocated in the emerging Local Plan in the town. Therefore, a significant proportion of the Borough’s total housing need is expected to be met by Melton Mowbray.
- 1.3.4 It is both the existing poor travel conditions in Melton Mowbray, and the active nature of these development applications that make the MMDR a priority. Importantly, this scheme is just one part of a wider Melton Mowbray Transport Strategy, which will include other measures to address localised traffic issues, public transport improvements, walking and cycling connectivity.

1.4 Impacts of Doing Nothing

- 1.4.1 Without the scheme, the problems and issues identified will continue and likely worsen. This means that roads will remain congested, with some of the highest levels of delay per mile in the County - impacting on both local residents, and those from a wider catchment seeking to make longer distance movements to/from Leicester, Nottingham, Loughborough, or using the M1 or A1.
- 1.4.2 Melton Mowbray will continue to have high levels of through traffic - through traffic has detrimental impacts on residents as a result of the routes that such traffic is forced to take, and further impacts on the attractiveness of the town to the visitor-economy, curtailing the extent and attractiveness of the historic market town centre.
- 1.4.3 This is particularly the case given the proportion of traffic that is commercial vehicles – heavy goods vehicles and light goods vehicles – both as a percentage of overall traffic, and in absolute volumes. The movement of these vehicle types contribute to the corresponding noise, safety, severance and air quality problems experienced by people living next to the highways in Melton Mowbray. These movements are forecast to grow in the future.
- 1.4.4 As a result of the existing network configuration, which converges at several key junctions, and with additional geographical constraints provided by the river and the rail line, the resilience of the highway network will remain poor. The high traffic-flows result in corresponding detrimental impacts on the reliability of journeys. If no improvements are delivered then this situation will become exacerbated as Melton Mowbray continues to grow, with impacts over time also extending to adjacent villages as well as the town centre.
- 1.4.5 As noted in the Leicester and Leicestershire Strategic Economic Plan, Melton Mowbray is a thriving market-town, with a strong housing market and industrial base, offering significant local employment opportunities. Unemployment is exceptionally low against UK averages at <1%.
- 1.4.6 The town is the main economic centre for the Borough of Melton, providing a base for the larger employers and functioning as the key retail, leisure and service destination for the residents of the Borough.
- 1.4.7 Traffic growth for the town is anticipated within the emerging Local Plan. Some of this traffic growth would be associated with new local trips generated by over 3,500 dwellings and over 30 hectares of additional employment land to be delivered in Melton Mowbray over the plan period.
- 1.4.8 Despite previous investment in highway improvements, there continues to be traffic problems in the town and insufficient residual highway capacity to accommodate planned growth. In recent years this has become a constraint on the town's growth; with MBC, as the Local Planning Authority, having been advised by the County Council, as the Local Highway Authority, to consider refusing a number of planning applications on the grounds of severe traffic impacts.
- 1.4.9 As a result, doing nothing will lead to the above traffic problems and issues slowing (and potentially actually curtailing) the economic growth, job creation and the proposed housing delivery.

- 1.4.10 Investment will also enhance the vitality of the town centre, with the removal of through-traffic providing opportunities for:
- town centre regeneration;
 - renewal of the urban fabric;
 - opportunities for walking/cycling;
 - better bus travel times;
 - greater sustainable travel opportunities than those offered presently, which is particularly important given the level of growth in the town.

1.5 Alternative Options

- 1.5.1 The N&E MMDR scheme has been developed as the best performing option to overcome existing travel delays and the other traffic-related problems, tackle future traffic issues and thereby enable the town's future growth.
- 1.5.2 The scheme has been developed from an evidence and objective-led option identification process, which assessed a range of options across travel modes, and examined different scales and routes of highway intervention. The best option was then selected as the final preferred scheme.
- 1.5.3 Over 60 different potential interventions, covering a wide range of scheme types, were assessed against a range of criteria to identify the better performing options. This assessment was derived from the evidence base, and used local Melton Mowbray transport stakeholder reference groups as part of the decision making process.
- 1.5.4 The results demonstrated that strategic highways interventions (of various kinds) performed as the highest ranking options and the only category of options able to provide benefits to both current and future residents. The highway options would ensure sufficient longer-term highway capacity to underpin the ambitious growth proposals in the emerging Local Plan.
- 1.5.5 Testing a range of strategic highways options demonstrated that an Eastern Distributor Road was clearly the preferred option for solving congestion problems in the town and for accelerating housing delivery and economic growth (this was shown through assessment of transport user benefits, costs, wider economic benefits and a range of locally-led objectives).
- 1.5.6 As a result of this evidence, during the summer of 2016, Leicestershire County Council, Melton Borough Council and the Leicester & Leicestershire Enterprise Partnership (LLEP) submitted a bid to the DfT to seek funding towards the further development of the Distributor Road scheme.
- 1.5.7 The scheme was subject to further option development throughout 2017 as part of the outline business case (OBC) development process, using an updated transport model, and updated datasets, which showed the same comparative transport user-benefits between the options. This further independent study reinforced the findings of the earlier evidence.
- 1.5.8 In addition, within the identified corridor the scheme design has been optimised, taking account of costs, land ownership issues and environmental considerations.

1.6 Key Benefits of the Preferred Scheme

- 1.6.1 The preferred scheme is the most effective at tackling the following problems in the town, both now and in the future:
- high levels of congestion;
 - high levels of through traffic, with very limited route options (resilience);
 - delays at all key junctions in the town centre;
 - a large number of heavy goods vehicle and light goods vehicle movements to and through the town centre;
 - consequent constraint to jobs, housing delivery and economic growth;
 - future negative externalities in villages adjacent to the town, as traffic grows beyond the constraints of the town centre;
 - a limited ability to enhance public transport, walking and cycling, without removing traffic from the town centre first;
 - severance of the town centre from other parts of the town, impairing its ability to prosper and grow.
- 1.6.2 The scheme is consistent with Local, Sub-Regional and National policies, with a particular benefit of the scheme being accelerated housing delivery in support of the new dwellings and jobs in Melton Mowbray that are part of the Local Plan.
- 1.6.3 The scheme also supports the Leicester and Leicestershire Strategic Growth Plan to 2050, which identifies Melton as a future Growth Node in the County through to 2050.
- 1.6.4 The preferred option has:
- a user benefits that are 60% higher than the next nearest option;
 - the greatest benefit for through traffic and thus greatest traffic relief to the town centre and critically traffic relief to space-constrained junctions;
 - support through Consultation results, with a majority of Melton residents expressing that they agreed with the preferred route;
 - a lower cost than a similar route to the west, which had consequential impacts on the Economic Case and ability of government to fund (and afford) the scheme;
 - the ability to deliver the full extent of housing and employment growth proposed in the emerging Local Plan; unlike the Northern or Southern lengths, if they were to be delivered in isolation;
 - scored more highly on almost all qualitative scheme objectives than the alternative options, assessed from the perspective of three different transport groups;
 - the greatest opportunity to support walking, cycling, public transport and urban realm improvements in the town.

2. Method of Assessment

2.1 Overview

- 2.1.1 The Leicester and Leicestershire Integrated Transport Model (LLITM) was used to identify the likely traffic-related impacts of the N&E MMDR.
- 2.1.2 The LLITM was developed for forecasting the effects of transport and land-use policies and plans on the transport system and environment across Leicester and Leicestershire, and has been specifically developed for use in developing major transport schemes / development assessments.
- 2.1.3 The model is maintained by LCC and consists of the following interlinked programmes:
- a Highway assignment model (coded with SATURN software);
 - a Public transport assignment model (coded with Emme software);
 - A variable demand model (coded with Emme software)
 - A land-use model (implemented in DELTA software); and
 - An environmental assessment tool, named EASE.
- 2.1.4 The model has been built in accordance with the DfT's modelling and appraisal guidance (WebTAG), has been independently assured, and developed as a key tool to secure wider-ranging infrastructure funding for the Council. It is not intended to repeat the detail of the model's development within this document; however, a suite of documents supports the model including:
- LLITM Traffic Survey and Data Report;
 - LLITM Highway Model Local Model Validation Report (LMVR);
 - LLITM Public Transport Model LMVR;
 - LLITM Demand Model Development Report;
 - LLITM Traffic Forecasting Report;
 - Local Melton Mowbray Highway Model Validation Report.
- 2.1.5 All documents were independently checked to ensure compliance with DfT's transport analysis guidance (TAG).

How does LLITM forecast traffic flows?

LLITM is a computer software package used to forecast changes in traffic associated with development or road schemes.

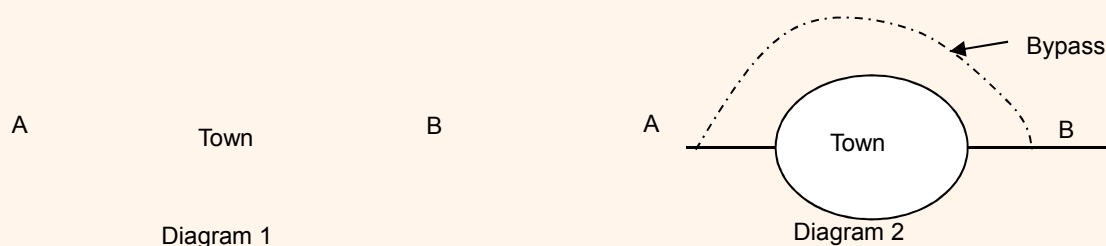
The highway assignment model within LLITM has two components:

- a **road network**; which is a representation of the highway network including all its roads and junctions; and
- a **demand matrix**; which is a representation of the individual vehicles which would seek to route from A to B.

The purpose of the highway assignment model is to predict which specific route vehicles will choose to travel from A to B, given:

- changes to the road network (i.e. as new roads are opened, or junctions improved); and
- changes to the demand matrix, i.e. as traffic levels increase (or decrease) in future.

Generic example:



In Diagram 1, traffic from A to B would route through the town centre as it is their only choice.

In Diagram 2, the choice of route has increased. Vehicles could either use the distributor road, or continue to route through the town centre. Importantly, as more traffic uses the distributor road, congestion in the town centre would decrease and this may make it a faster route for some traffic given the shorter distance.

SATURN solves the problem of *'how much traffic would use each available route'*. It bases these choices on journey cost and distance.

2.2 Future Year Traffic Forecasts

- 2.2.1 To assess the transport economic benefits over the life cycle of the scheme, there was a need for a minimum of two forecast years to demonstrate the long-term benefits. A Forecasting Report to support the MMDR's Outline Business Case (OBC) was produced in December 2017, based upon traffic forecasts prepared during the summer of 2017.
- 2.2.2 Subsequent to preparing these traffic forecasts for OBC two further updates were prepared in April 2018 to understand the impact of:
- a revision of the scheme alignment in isolation;
 - this revised scheme alignment was then tested using the latest version of LLITM (which included the December 2017 TAG update).
- 2.2.3 The outcome of this initial work was to update the forecasts for the design and environmental assessments.
- 2.2.4 In June 2018 a further update to the traffic forecasts was prepared that included:
- the May 2018 version of DfT's TAG data book and parameters,
 - changes to the assumptions regarding the northern and southern SUEs,
 - other incremental changes to LLITM.
- 2.2.5 The flows from these traffic forecasts were used for the assessments presented in this Transport Assessment.
- 2.2.6 Four forecast years were developed to support the assessment of the N&E MMDR:
- 2021: the expected opening year of the scheme;
 - 2036: the design year (fifteen years after opening);
 - 2041: the final year for the economic assessment of the scheme; and
 - 2051: a horizon year used in the sensitivity testing of the scheme economics.
- 2.2.7 The production of these four forecast years added a further level of confidence and support to the value-for-money results obtained from the scheme's appraisal. The DfT accepted the scheme's positive OBC for funding.
- 2.2.8 The impacts of a scheme are determined from the differences between the traffic forecasts "without scheme" ('Do-Minimum') and "with scheme" ('Do-Something') in each of these forecast years.
- 2.2.9 As part of the production of the forecast scenarios, a review of planning authorities' development data has been undertaken. This has provided a list of future developments, build out rates and their likelihood of coming forward prior to each forecast year. This information, along with corresponding information on the changes to the highway and public transport infrastructure, has been used to build the scheme's uncertainty log, which categorised the future developments and infrastructure changes as 'Near Certain', 'More than Likely', 'Reasonably Foreseeable' and 'Hypothetical'. These are categories defined in the DfT's TAG unit M4.
- 2.2.10 The assumptions about the employment and residential development sites that were included within the forecasts are documented in the uncertainty log tabulated at Appendix C.

2.2.11 For each forecast year, the “without scheme” and “with scheme” cases were created as follows:

- **“Without Scheme” Road Network:** included any ‘near certain’ and ‘more than likely’ residential / employment developments and infrastructure schemes within Leicestershire and the neighbouring authorities assumed to be completed within each forecast year.

This includes proposals for the Melton South Sustainable Neighbourhood and the Melton North Sustainable Neighbourhood development areas for Melton Mowbray within the emerging Local Plan, along with the phased introduction of the southern link between Burton Road and Leicester Road.

- **“With Scheme” Road Network:** this includes the assumptions defined for the “without scheme” case, with the addition of the North & East Melton Mowbray Distributor Road Scheme.

2.2.12 The forecasting of trips in the future years considered both the impacts of local and national trends in travel demand from the 2014 base year of the model through to the forecast years.

2.2.13 The future traffic growth was therefore based on the available planning data from the planning authorities within the modelled area together with the two national sources of traffic forecast growth forecasts:

- the National Trip End Model (NTEM), using version 7.2 of the forecasts;
- National Transport Model (NTM) forecasts as published by the DfT.

2.2.14 The collated future year planning inputs have been entered into the NTEM software to provide growth estimates for non-freight travel, including travel by car, public transport and active modes (walking and cycling). The growth in freight demand has been calculated based on the forecast change in employment, and has been compared to the growth contained in the DfT’s NTM forecasts.

2.2.15 In general, the pattern of trips to / from developments was based on the pattern of trips contained in the base year model. However, were the base year trip pattern was considered to not represent the future development, a gravity model distribution was used as developed and applied within LLITM for key, specific development sites.

2.3 Variable Demand Modelling

2.3.1 Any changes to transport conditions will, in principle, lead to a change in travel demand. The purpose of a variable demand model (VDM) is to predict and quantify these changes.

2.3.2 A VDM establishes, in the absence of the scheme or strategy, the response of travel demand to changes in the cost of travel (through changes in car operating costs such as fuel, public transport fares, and congestion) and the assumed development and infrastructure schemes, including the N&E MMDR.

2.3.3 All Government funded assessments of investments in highway or public transport schemes need to either model the travel demand responses to a proposed scheme, to include their effects upon the assessment of a scheme or strategy, or show that the modelling of these effects is not necessary.

2.3.4 A fully specified VDM is incorporated into the LLITM as part of its development, including the required TAG realism tests. The resulting outputs from this modelling were reported in the Forecasting Report produced as part of the Outline Business Case submission.

2.4 Supporting Future Sensitivity Tests

- 2.4.1 The Outline Business Case was developed for the most likely scenario based on the most realistic assumptions about the scheme design, changes to the transport network, traffic growth and land-use. However, to take into account uncertainty regarding those assumptions, a series of sensitivity tests were also undertaken. The sensitivity tests assessed the impacts of alternative scenarios on the Business Case for the scheme.
- 2.4.2 The following sensitivity test scenarios were undertaken as part of the Outline Business Case submission:
- ‘High’ and ‘Low’ growth scenarios, based upon WebTAG guidance; and
 - traffic forecasts based on alternative derivation of the base year highway demand, based on roadside interviews and not mobile network data.
- 2.4.3 ‘High’ and ‘low’ growth sensitivity tests were undertaken, in line with the DfT’s TAG guidance, to investigate what affect the use of alternative high and low growth traffic forecasts would have on the value-for-money of the scheme.
- 2.4.4 Following the principles set out in TAG Unit M4 section 4.2, a proportion of base year demand was added to or subtracted from the forecast demand. The proportion for each modelled year was calculated using the formula $2.5\% * \sqrt{n}$ where n is the number of years from the 2014 base year.
- 2.4.5 In line with the guidance the transport network for ‘high’ and ‘low’ growth scenarios were the same as used for the central forecasts.

3. Policy Background

3.1 Overview

3.1.1 The purpose of this section is to identify the planning policy context within which the N&E MMDR is being brought forward. It considers both national and local (transport-related) planning policy.

3.1.2 The following documents have been reviewed:

- National Planning Policy Framework (NPPF, 2018);
- Consultation Major Road Network (2017)
- Leicestershire Local Transport Plan 3 (LTP 3, 2014);
- Pre-Submission Draft Melton Local Plan (2017); and
- Leicestershire Prospectus for Growth (2017)

3.2 Revised National Planning Policy Framework (NPPF)

3.2.1 The NPPF (July 2018) sets out the Government’s planning policies for England and provides a framework to develop localised planning strategies. Paragraphs 108 to 111 set out the Government’s development planning policies with respect to transport. These paragraphs focus on, and emphasise, the promotion of sustainable transport. NPPF states that when considering planning applications for development, it should be ensured that:

- appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location;
- safe and suitable access to the site can be achieved for all users; and
- any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree.

109. Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe.

110. Within this context, applications for development should:

- give priority first to pedestrian and cycle movements, both within the scheme and with neighbouring areas; and second – so far as possible – to facilitating access to high quality public transport, with layouts that maximise the catchment area for bus or other public transport services, and appropriate facilities that encourage public transport use;
- address the needs of people with disabilities and reduced mobility in relation to all modes of transport;
- create places that are safe, secure and attractive – which minimise the scope for conflicts between pedestrians, cyclists and vehicles, avoid unnecessary street clutter, and respond to local character and design standards;
- allow for the efficient delivery of goods, and access by service and emergency vehicles; and

- be designed to enable charging of plug-in and other ultra-low emission vehicles in safe, accessible and convenient locations.

111. All developments that will generate significant amounts of movement should be required to provide a travel plan, and the application should be supported by a transport statement or transport assessment so that the likely impacts of the proposal can be assessed.

- 3.2.2 The key policy test in the NPPF, therefore, is that transport impacts are not ‘severe’. This is confirmed by the Planning Policy Guidance (PPG) portal which states that: “Transport Assessments and Statements can be used to establish whether the residual transport impacts of a proposed development are likely to be ‘severe’, which may be a reason for refusal, in accordance with the National Planning Policy Framework.”

3.3 Consultation Major Road Network

- 3.3.1 As part of the Transport Investment Strategy, the government has committed to creating a Major Road Network (MRN), which identified important national routes below the level of Strategic / Trunk Road network (managed by Highways England). The MRN will help:

- reduce congestion;
- support economic growth and rebalancing;
- support housing delivery;
- support all road users;
- support the Strategic Road Network.

- 3.3.2 The MRN will also allow for dedicated funding from the National Roads Fund to be used to improve the middle tier of our busiest and most economically important local authority 'A' roads. The draft MRN was published in December 2017, and is expected to be confirmed in mid-2018. The MRN included the A607 through Melton Mowbray. As such, improvement of the A607 is consistent with current Government thinking on the improvement of important national ‘A’ roads.

3.4 Leicestershire Local Transport Plan 3

- 3.4.1 The updated Leicestershire Local Transport Plan No. 3 (LTP 3) was adopted in April 2014, and covers the period up to 2026. It is an important local document which supports the delivery of a number of Leicestershire’s strategies and plans.

- 3.4.2 The scheme at Melton Mowbray is mentioned in the LTP, in the following extract:

“Along with partners, we studied the viability of a route around Melton Mowbray, primarily to support the delivery of housing growth. In February 2013 the Inspector at the Examination in Public into the Melton Local Development Framework Core Strategy did not support the proposals in the plan and work will now begin again to look at growth proposals, the transport impact and potential migration for Melton Mowbray.”

- 3.4.3 Melton Mowbray is identified as an area to deliver future housing growth with the submission draft Melton Local Plan (see below) and, as such, the highway authority’s position remains that the best way to deal with the proposed traffic is via the construction of new road infrastructure.

3.5 Pre-Submission Draft Melton Local Plan

- 3.5.1 In late 2017, Melton Borough Council submitted the Local Plan for examination. The examination of the Melton Local Plan has concluded; modifications were proposed by Melton Borough Council to address the Inspector’s comments. The Pre Submission Draft Plan (and subsequent modifications) sets out the development strategy, policies and proposals, including site allocations, which will guide land-use and development in the Borough up to 2036.
- 3.5.2 The scheme is mentioned in Pre-Submission Draft Policies SS4 t1a and SS5 t1a:
“A comprehensive package of transport improvements informed by an appropriate transport assessment including: A strategic road link connecting the A606 to the A607 forming part of the Melton Mowbray Distributor Road as part of a wider agreed scheme”.
- 3.5.3 The supporting text also states that:
“The Melton Mowbray Transport Studies have made clear that for the town to grow sustainably there will be a need for strategic investment in the highway network that improves the north/south connectivity. The transport evidence has appraised options to address traffic congestion within the town and has concluded that an outer distributor road is the best long-term deliverable solution. Additional traffic modelling and engineering solutions are being explored to develop the Melton Mowbray Transport Strategy in conjunction with the Highways Authority. This will include identification of the ‘preferred corridor’ for the distributor road alongside a series of other measures that will assist traffic management and improve congestion. It is expected that the full route of the distributor road will be delivered in a phased way. It is expected that development which is dependent upon the road for access will provide or contribute towards the delivery of the Melton Mowbray Distributor Road.”

3.6 Leicestershire Prospectus for Growth

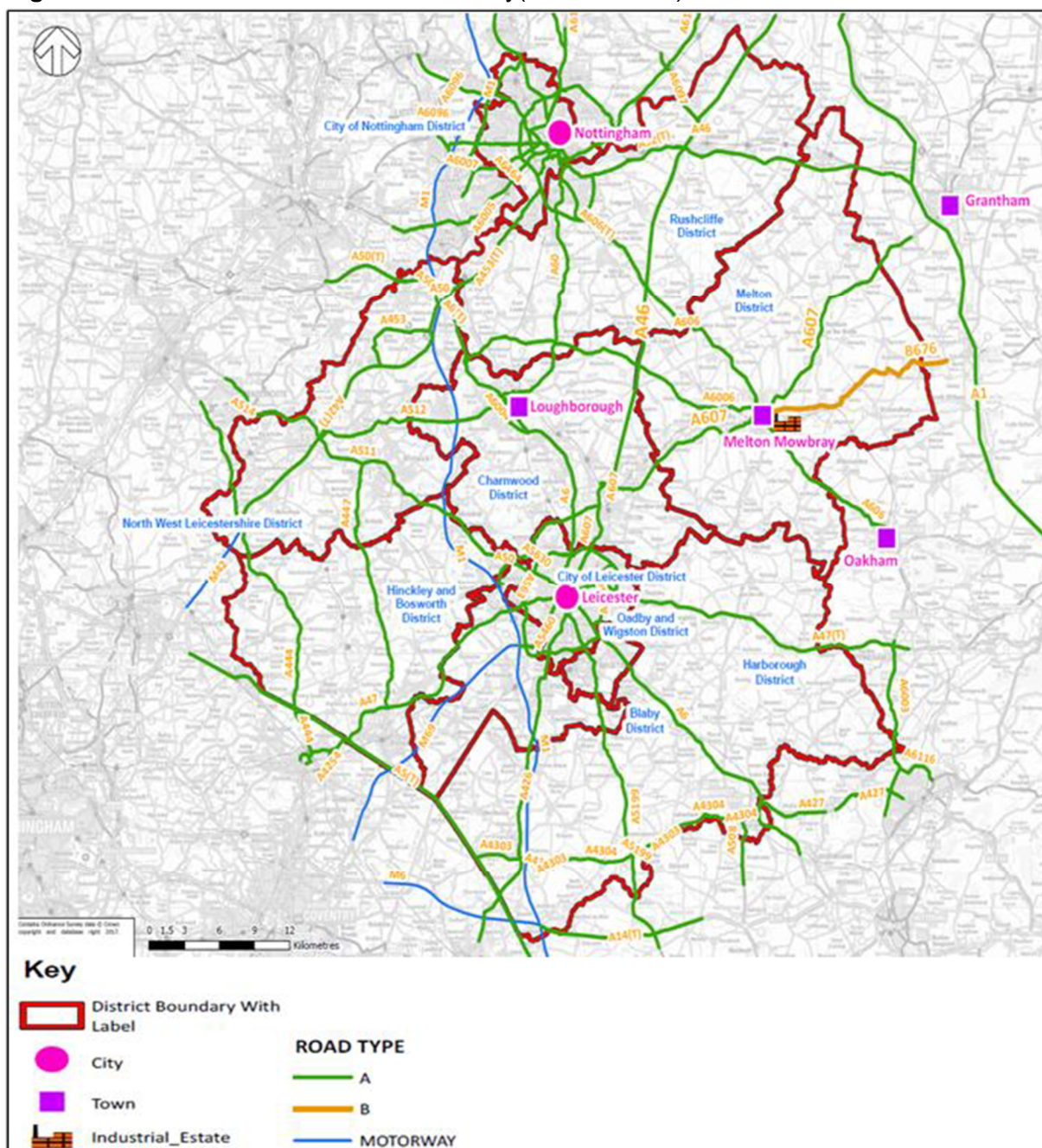
- 3.6.1 Leicestershire County Council’s Prospectus for Growth document was published in September 2017 and outlines specific transport projects at a national, regional and local level that will provide economic, housing and employment benefits to the Leicestershire area.
- 3.6.2 The Scheme is directly referenced, outlining the scheme benefits for Melton Mowbray;
“A major highway improvement to the east of the town will ease town centre congestion, and allow direct access to future housing and employment growth areas around the town. These improvements will also create opportunities to provide wider transport and environmental improvements within the town, which will be considered as part of the next stages of work”.

4. Existing Conditions

4.1 Introduction

4.1.1 This chapter describes the present transport conditions within and surrounding the market town of Melton Mowbray. It provides evidence of the problems, challenges and the need for intervention.

Figure 4.1: Melton’s location and connectivity(Source: OBC)



4.2 Melton's Location and Connectivity

- 4.2.1 As shown in Figure 4.1, the town of Melton Mowbray is located in the Borough of Melton in the north-eastern corner of the county of Leicestershire, 20 miles north-west of Leicester, 20 miles south-west of Nottingham and 15 miles east of Loughborough.
- 4.2.2 The population of the town is just over 25,000, which represents just over half of the 50,000 people who live in the Borough of Melton.
- 4.2.3 At least 6,125 new dwellings are proposed for the Borough of Melton as part of the Local Plan between the period 2011 and 2036, most of which will take place in the town of Melton Mowbray (65% approximately). This will lead to a significant increase in the size and population of Melton Mowbray given its current population of 25,000.
- 4.2.4 At present, planning applications are being progressed for the South Melton Sustainable Neighbourhood (approximately 2,000 dwellings) and the Melton North Sustainable Neighbourhood (for 1,500 dwellings).
- 4.2.5 In terms of travel patterns, around 1,000 people commute to the Borough of Melton to work from Charnwood and Leicester, and around 500 commute to the Borough from Rushcliffe and Rutland. Conversely, around 1,800 residents of the Borough of Melton travel to work in Leicester, while roughly 1,000 commute to Charnwood, 1,000 to Rutland, 850 to Nottingham.
- 4.2.6 Overall, there is a current net outflow of 4,000 people from the Borough of Melton to other districts for work, with around 6,000 people commuting into the Borough for work and 10,000 leaving it. This contributes to the through traffic issue in Melton Mowbray: since not all employment is located in the centre of the town, in-commuters must cross the town to reach employment locations on the edge of the town, with a significant amount of food manufacturing located to the east of the town centre.
- 4.2.7 The scale of commuting in and out of the town is also a factor behind the scale of future employment provision (51ha of employment land¹ leading to 6,000 jobs proposed for the Borough of Melton as part of the Local Plan up to 2036) which will help provide an enhanced local labour market for the town of Melton's key industries, and its national and international importance and reputation for food production in particular.
- 4.2.8 In terms of connectivity to other key economic centres in the Midlands, the town is connected to Nottingham and Oakham by the A606 and to Leicester and Grantham (and the A1) by the A607.
- 4.2.9 These routes provide the strategic connectivity to Melton Mowbray, but are also a key source of through traffic issues; especially in terms of access to Leicester, Nottingham and the A1.
- 4.2.10 The same radials also serve the town's residential neighbourhoods. The main industrial area is to the east of the town centre, and is served by the B676, the A606 and the A607. Melton Mowbray's manufacturing and food production activities are typically located in this area, and include some of the country's largest food producers, including Just Egg Chilled Foods, Quadex, Pukka Pies, Sundeen and Mars.

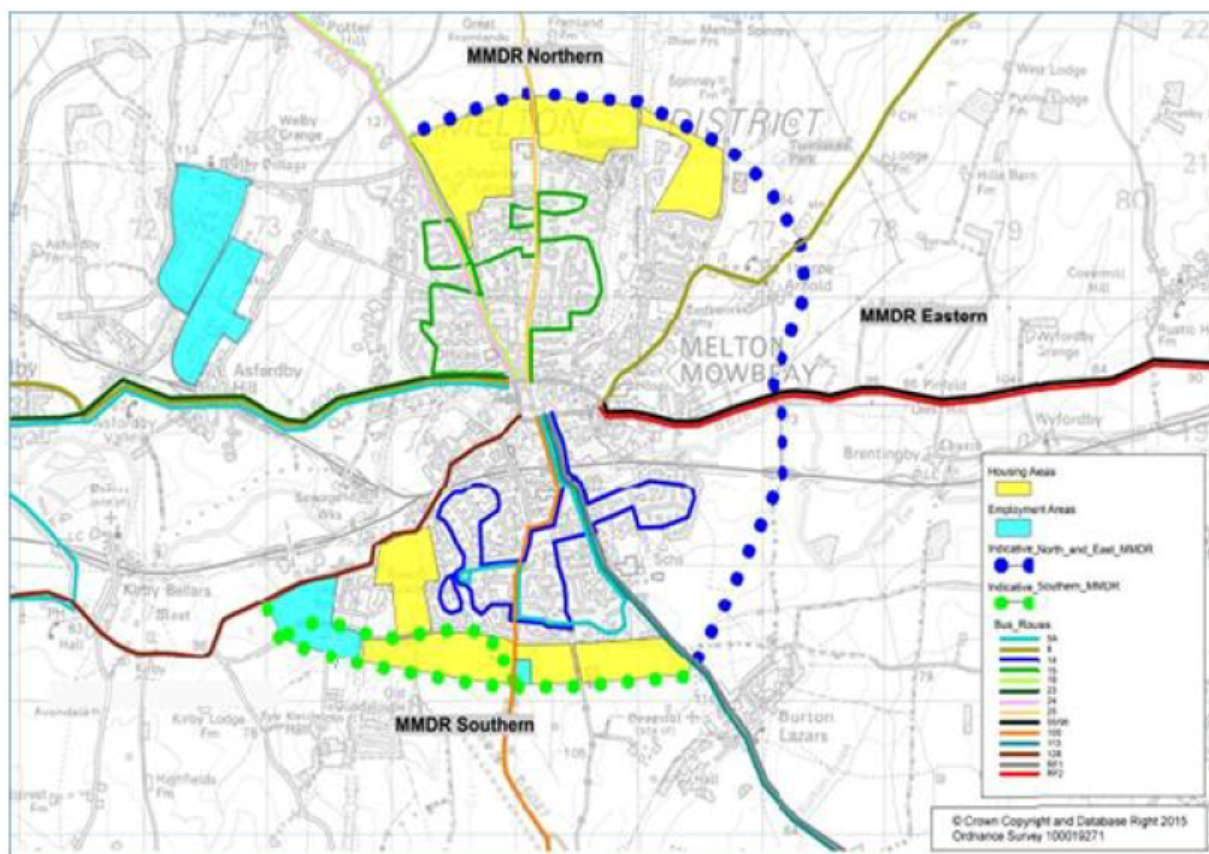
¹ The Melton Employment Land Study 2015 indicated there was a realistic supply of 19.46ha and that therefore the Local Plan should provide for an additional 31.29ha of employment land. The Local Plan therefore provides an allocation of 20ha of employment land as part of the Melton South Sustainable Neighbourhood and 10ha as extensions to the Asfordby Business Park.

- 4.2.11 These businesses serve a national and international marketplace, and as a result also generate significant HGV movements.
- 4.2.12 Market days present a particular problem whereby the strong visitor economy to Melton Mowbray interacts with current levels of local and through traffic demands. This results in levels of traffic being particularly high on these days, with capacity limitations on the network leading to consistent delay problems even outside of traditional peak periods.
- 4.2.13 Melton Mowbray is not directly served by the Strategic Road Network, but it is located roughly ten miles by car from the A46 to the west and 13 miles from the A1 to the east. However the A607 route that bisects the town is part of the Major Road Network (MRN) as proposed by the Rees-Jeffreys Road Fund report in 2016, which was consulted upon by DfT between December 2017 and March 2018.
- 4.2.14 The MRN will likely comprise approximately 3,800 miles of local authority A-roads that carry 43% of England’s traffic and therefore provide a critical function in meeting the transport and economic needs of the country.

4.3 Public Transport and Active Modes

- 4.3.1 Melton Mowbray has a railway station, located south of the town centre, which is used for longer distance trips. Situated on the Birmingham to Peterborough line, there are direct services to Stanstead Airport, Cambridge, Ely, Peterborough, Nuneaton, Leicester and Birmingham New Street. However, there are no railway stations in the suburbs of the town or in the surrounding towns and villages; therefore local public transport is comprised solely of bus services.
- 4.3.2 Public transport currently plays a limited role in meeting the transport needs of the town. In the 2011 Census, for residents of the Borough of Melton, the mode share for traveling to work for public transport was 5%, compared to 78% for car and 16% for walking and cycling, which demonstrates that public transport is currently not popular.
- 4.3.3 Walking is a more appealing alternative to car trips than bus or rail, not least because trip distances within the town are usually relatively short: it is less than three miles from the northern edge of the town to the southern edge and around 1.5 miles from east to west.
- 4.3.4 Whilst there are currently 13 bus services that serve Melton Mowbray, frequencies are generally low and require users to plan their journeys in advance (rather than “turning up” to travel). Services offer limited flexibility in terms of departure times. Service spans are limited with less frequent services in the evenings.
- 4.3.5 Bus routes within the town are short with very slow speeds as a result of being part of general traffic. Bus journey times are negatively affected by the same congestion encountered by other vehicles. Bus services are shown in Figure 4.2.

Figure 4.2: Map of bus services in Melton Mowbray -Leicestershire County Council – (Source OBC)



- 4.3.6 There are a limited number of dedicated routes for walkers and cyclists in the town at present, with particular issues for pedestrian severance crossing the Norman Way, Nottingham Road and Leicester Road junctions. The opportunity to remove traffic from the town centre, and the associated key junctions to be traversed by pedestrians, will represent an important consideration of the scheme’s benefits.
- 4.3.7 There are a number of pedestrian pinch points that become particularly apparent on market days. Crossing the A607 at Scaford Road to access the town and the market, and vice versa. There are often more pedestrians than footway space. The second is pedestrians crossing Leicester Street (A606/A607) in the town centre one way system to access the pedestrianised Market Place. There is a pelican crossing; however it is not located where most pedestrians attempt to cross. Pedestrians tend to use Park Lane and Church Street because this provides direct access to the large car park off Burton Road, and keeps them away from the busy, heavily trafficked Burton Street (A606). At the point where many pedestrians attempt to cross, the footway is very narrow on the south side of the road, and it is also where there is a pinch point in the carriageway making it a narrow point for two cars to pass each other, which inevitably leads to vehicles passing very close to the edge of the footway.
- 4.3.8 There are also issues regarding the crossing of Wilton Rd, which is significant because this road has a sizeable car park and bus drop-off location on its west side, whereas the town centre is to the east. Crossing points are not ideally located here and a refuge aligned with the entrance to the car park encourages pedestrians to cross three-lanes of traffic.
- 4.3.9 Any improvements to town centre traffic conditions, will also offer significant corresponding benefits in Melton Mowbray for both the public transport offer and the active modes too.

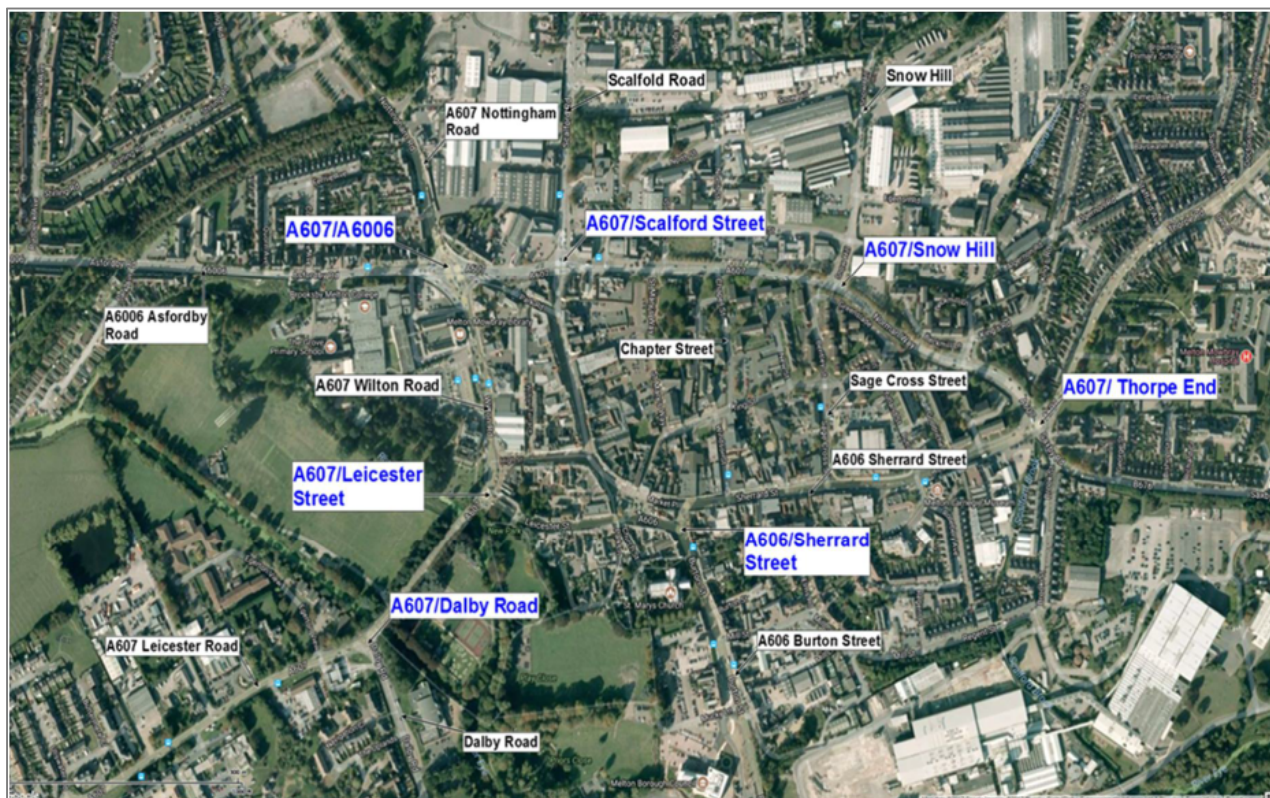
4.4 Recent NMU Surveys Undertaken

- 4.4.1 NMU Surveys were undertaken at various footpaths in and around the route of the N&E MMDR one one weekend day and two weekdays in 2017.
- 4.4.2 The times surveyed were 0530-2130 and the categories surveyed were under-11s, 11-18 year olds, adults, senior citizens, disabled and cyclists.
- 4.4.3 At each of the footpaths surveyed a low usage of the footpaths was found.

4.5 Identified Problems and Issues

- 4.5.1 As part of the process of developing the transport strategy for Melton Mowbray, detailed feasibility studies have been undertaken to evaluate the existing and future problems and issues prevailing within the town without any transport intervention - and to consider a range of potential transport measures as the Local Plan has developed.
- 4.5.2 These studies include:
 - Melton Transport Strategy Evidence Base (Stage 1 – Through Traffic Analysis, 2014);
 - Melton Transport Strategy Evidence Base (Stage 2 – Non-Through Traffic Analysis, 2014);
 - Melton Transport Strategy Evidence Base (Stage 3 – Analysis of Traffic at Points of Interest, 2015);
 - Melton Mowbray Cumulative Development Impacts Study (2014); and
 - Melton Mowbray Distributor Road Option Appraisal Report (July 2016)
- 4.5.3 Together with analysis carried out using the recently updated LLITM model, these documents provide the evidence for the current traffic-related problems and issues in Melton Mowbray.
- 4.5.4 The following section presents the results from the LLITM relating to the current extent of the traffic related issues on the Melton Mowbray highway network. Indicators derived from traffic model output have been identified to capture the extent of these issues as identified through stakeholder engagement.
- 4.5.5 These relate to slow journey times, congestion, impedance relating to through traffic and HGV movements – all of which are aligned with local and national government policy objectives in relation to transport policy, as well as removing barriers to accelerated housing delivery and industrial and economic growth. The indicators from the transport model are:
 - 1) Town Centre Junction Delays;
 - 2) Travel Speeds;
 - 3) Levels of Congestion (volume to capacity ratios on roads approaching junctions);
 - 4) Levels of through traffic in the town centre; and
 - 5) HGV movements through the town centre.
- 4.5.6 Within the analysis in this chapter and the following chapters, reference is made to locations in the town centre which may not be familiar to the reader. These locations are therefore shown on Figure 4.3.

Figure 4.3: Key Reference Locations in Melton Mowbray (Source: OBC).



Town Centre Junction Delays

- 4.5.7 The volume of through traffic passing through Melton Mowbray town centre results not only in slow journey speeds on links but also significant delays at several junctions. There are two peak traffic movements: one related to school traffic, within and across the town; and another, in the more traditional peak hours, related to commuting and trips through the town.
- 4.5.8 Figure 4.4 and Figure 4.5, which are plots extracted from the LLITM SATURN model, show the average level of delay at pinch points in the town centre in the 2014 Base AM and PM peaks respectively.

Figure 4.4: Junction delays in the AM Peak in Melton Mowbray Town Centre in 2014.

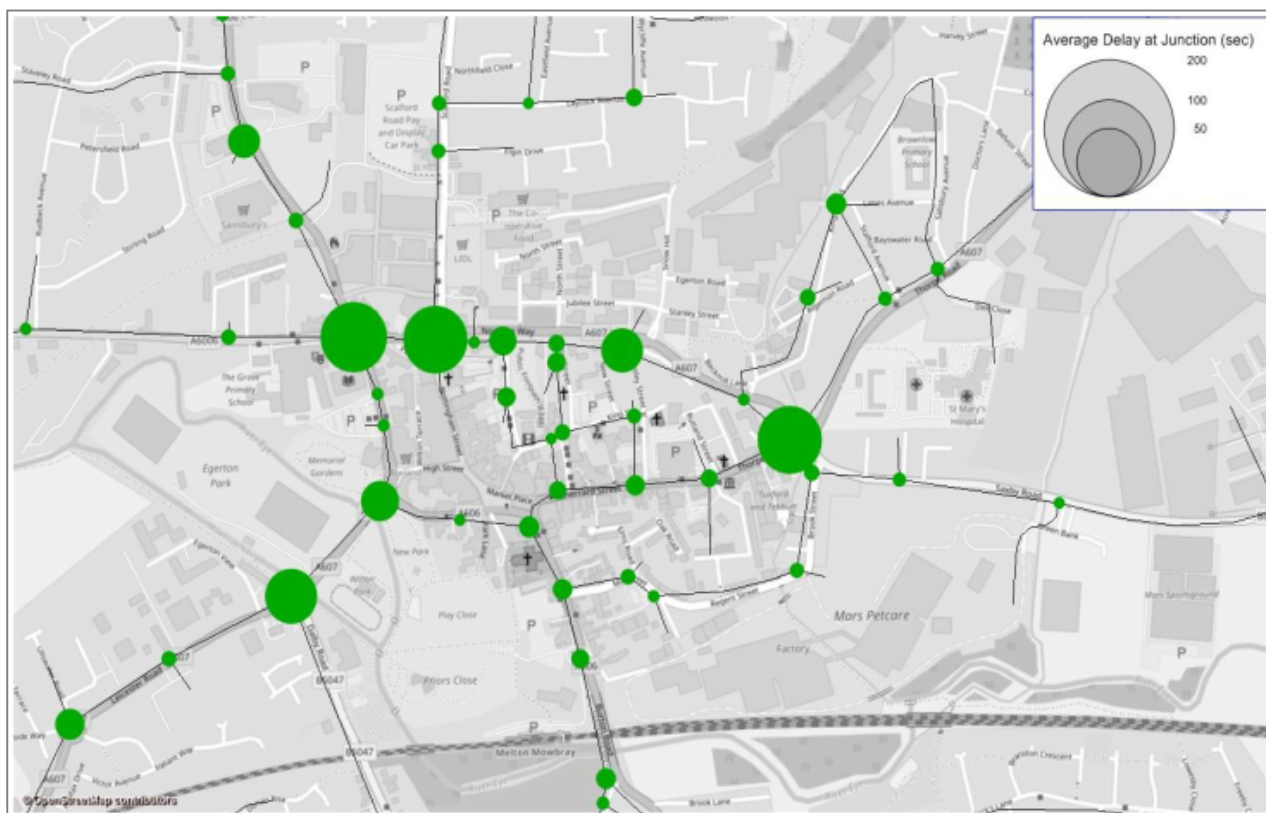
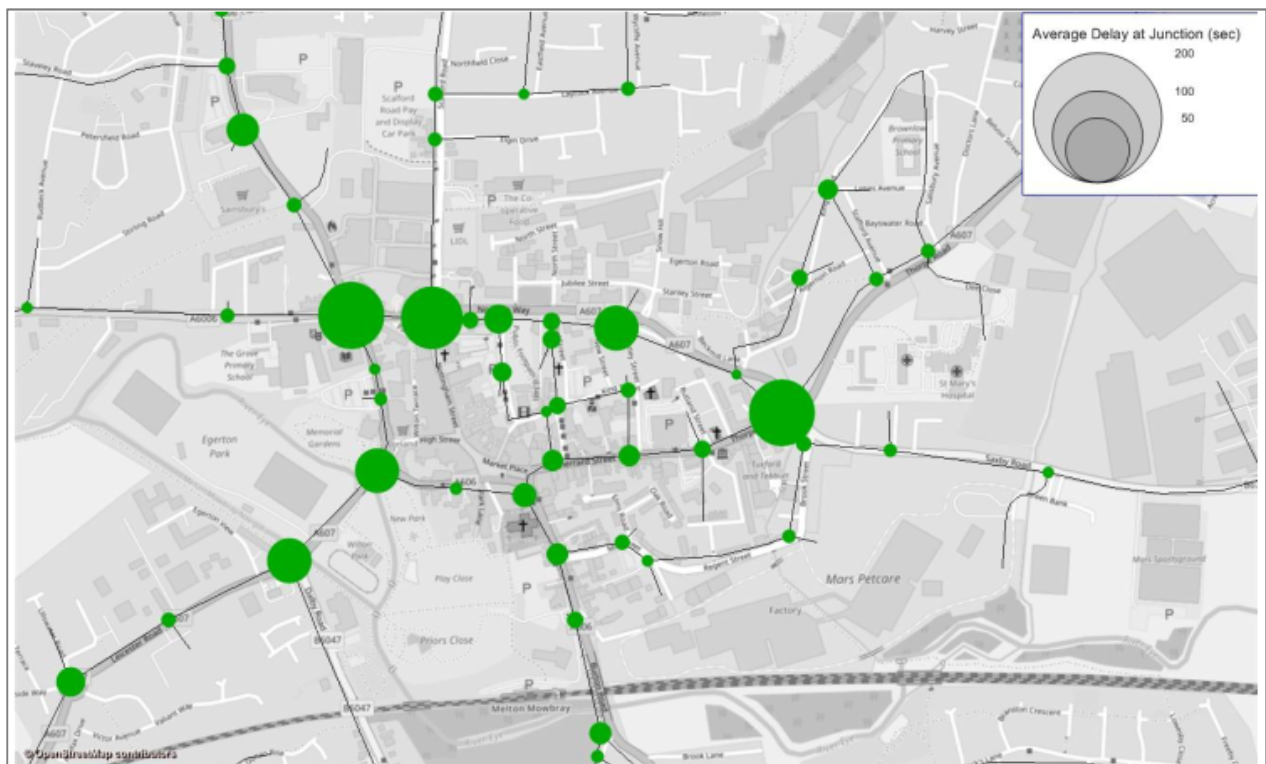


Figure 4.5: Junction delays in the PM Peak in Melton Mowbray Town Centre in 2014.



4.5.9 It should be noted that these are presented from the latest LLITM model as a demand weighted averages of the turning movements – rather than maximum delays observed for any single turning movement – and are an average across the weekday peak hours, in a neutral month.

- 4.5.10 The analysis therefore tends to underestimate peak hour congestion, but serves to highlight the relative size of the delays at a number of key junctions in and around the town centre.
- 4.5.11 As an average across all turning movements, the A607 / Nottingham Road Junction, Scaford Road, and Thorpe End Junction all experience 1.5 minutes average delay; with delays on the right-turn and straight ahead movements at these junctions much higher than this average for all-movements.
- 4.5.12 Other junctions (of notable mention the A607 / Leicester Road, Dalby Road and Snow Hill Junctions) typically experience between 30 seconds to 1 minute of delay, as an average across all turning movements.
- 4.5.13 Importantly, it should also be noted that many vehicles have to pass through several of these junctions to reach, or cross, the town centre, so the overall level of delay as a journey time route extends significantly beyond these levels.
- 4.5.14 For example, traffic crossing the town centre east-west or north-south would encounter three or four of main pinch points and delay locations sequentially, resulting in a typical (neutral day) delay of 4-5 minutes in total on this part of the journey.
- 4.5.15 To give these values some context, the centre of Melton Mowbray is little more than 500m across.
- 4.5.16 Alongside the scale of delay, this also creates network resilience limitations; with limited route choice. In the event of an incident there are no alternative routes across the town centre that don't already experience delays themselves.

Travel Speeds

- 4.5.17 Further, Melton Mowbray experiences high levels of congestion. On a delay per mile basis Melton Mowbray has one of the highest levels of delay per mile in any area of Leicestershire, including the City of Leicester (HPIG Report, 2015).
- 4.5.18 This congestion arises due to the extent of through traffic, intra-town traffic, and traffic with destinations in Melton Mowbray itself, alongside network capacity that is limited by the number (and historic scale) of cross-town routes, as well as geographical constraints from the river and rail line that funnel traffic to a limited number of key junctions.
- 4.5.19 As well as issues at these junctions, the slow speed of traffic on the main roads through the centre of Melton Mowbray also encourages the use of less suitable roads - especially through the historic centre, via routes such as Chapel Street and King Street that are not intended for such purposes.
- 4.5.20 Spatial traffic data derived from Google API, for Melton Mowbray, shown in Figure 4.6 and Figure 4.7, reveals the extent of the congestion problem. On these maps, red indicates slow-moving traffic (<10mph) while green indicates typically uncongested conditions.
- 4.5.21 These plots show that traffic congestion is demonstrated on all links in the town approaching the town centre, and across the whole extent of the town centre on a typical AM and PM peak. Vehicle movements are particularly slow on the A606 (north and south of the town), the A607 (east and west of the town) and on the western and southern sides of the town centre.
- 4.5.22 Further evidence as to the slow nature of speeds in Melton is also documented in the journey time validation section of the latest LLITM 2014 Base Model LMVR, drawing on Trafficmaster data as an additional source.

- 4.5.23 To further add to the above, Figure 4.8 indicates that on market-days there are significant levels of congestion even in the inter-peak, in addition to those experienced in the AM and PM peaks. Vehicle movements are slow in the town centre and on the northern radials across large parts of the day.
- 4.5.24 To demonstrate this is actually traffic-related congestion, Figure 4.9 shows a typical off-peak hour in Melton Mowbray for comparison. It is noted that in the off-peak, travel speeds are consistently green across the town and town centre; demonstrating that the AM and PM peak patterns, as well as non-traditional peak hours on market days, are reflective of the constraints placed on traffic-movements by the town centre network. Many routes show at least a 20mph difference in the average speeds between the peaks and off-peak periods.

Figure 4.6: AM Peak hour Speeds- Melton Mowbray.

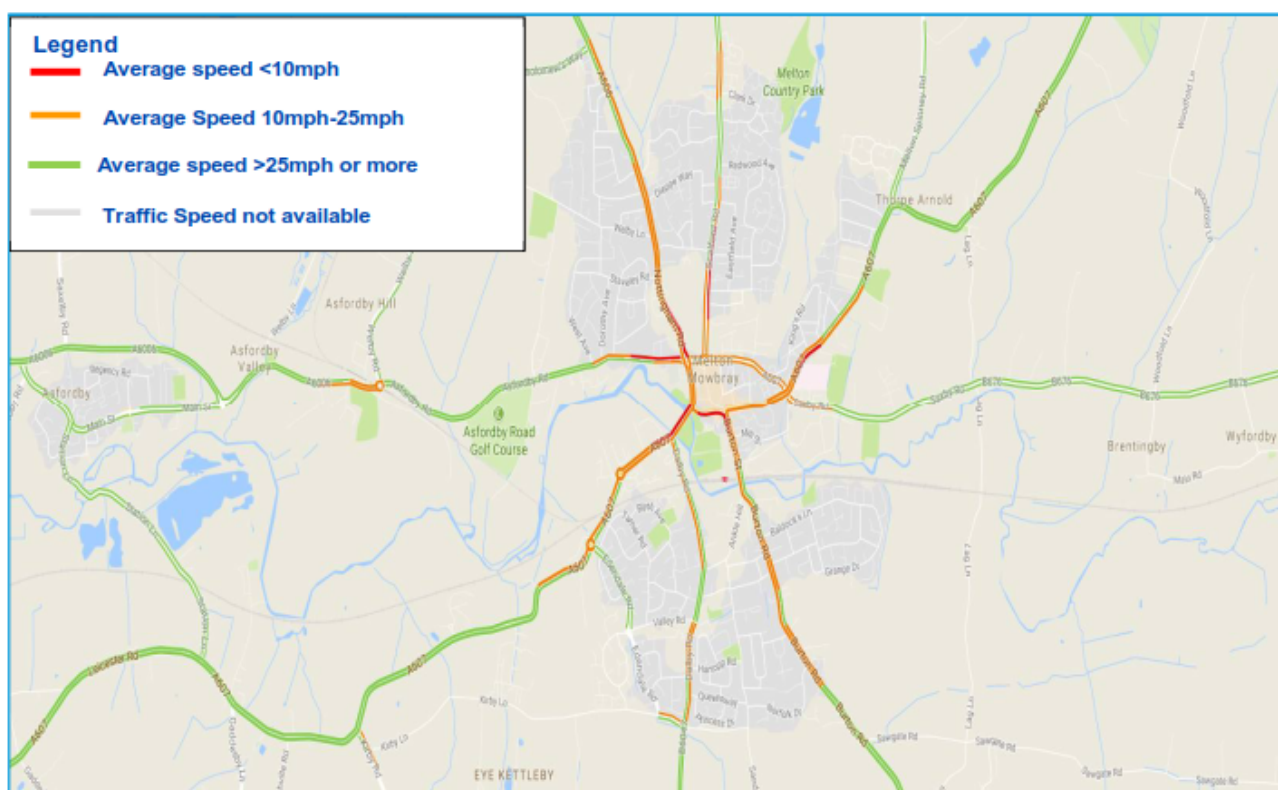


Figure 4.7: PM Peak hour Speeds- Melton Mowbray.

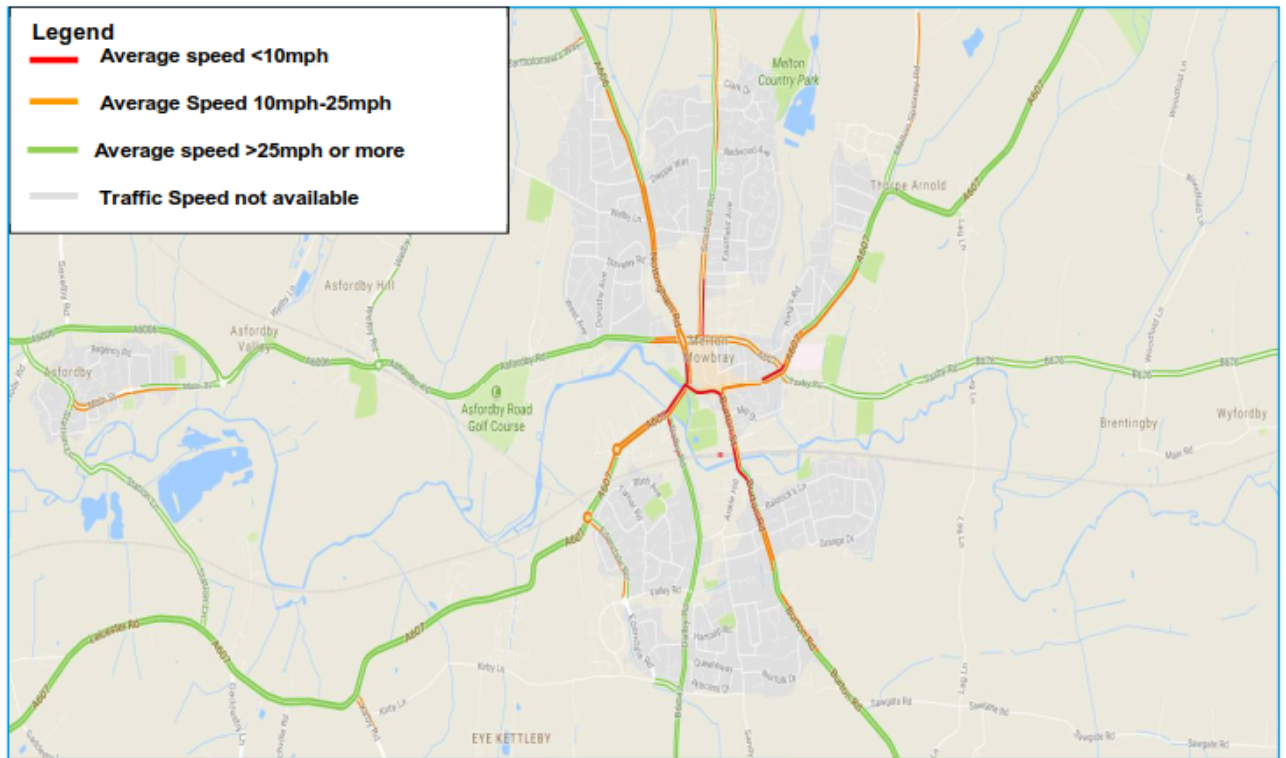


Figure 4.8: Inter-Peak Hour- Melton Mowbray on Market Days.

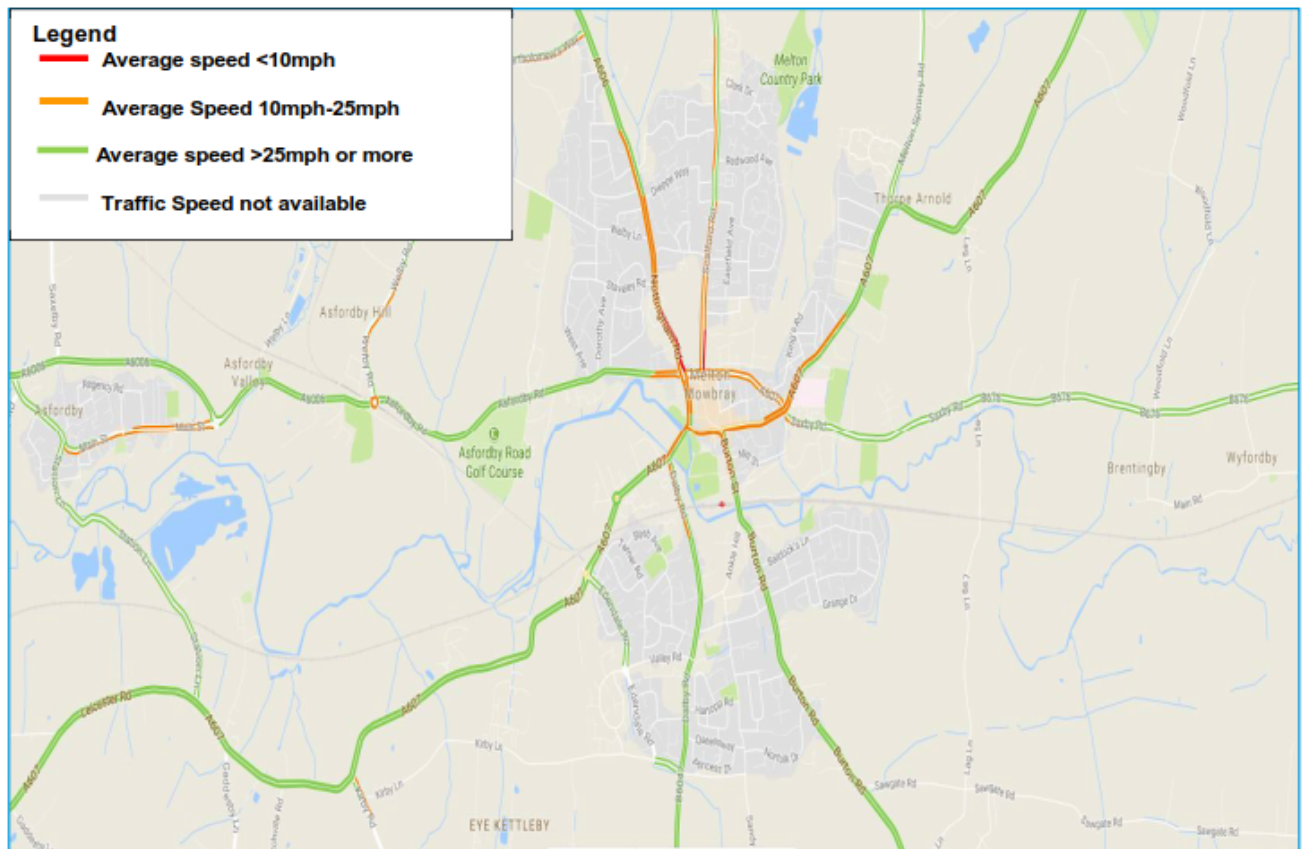


Figure 4.9: Off-Peak Hour- Melton Mowbray (as comparative).



Volume to Capacity (V/C) Ratio on Approaches

- 4.5.25 Previous studies have shown that Melton Mowbray experiences congestion at numerous points in the town centre and along key approach routes to the town centre. This section refreshes the evidence using volume to capacity ratio plots from the latest LLITM 2014 Base and spatial traffic data derived from historic Google API.
- 4.5.26 The V/C ratio (typically expressed as a percentage) defines the amount of road capacity (C) (i.e. the level of traffic per hour that the link approaching the junction is designed to withstand – above which queuing will occur throughout the hour) taken up by the volume of modelled traffic flow (V) using it.
- 4.5.27 The V/C on the roads is represented by the colours of the bands along the links with dark green for less than 60%, light green for 60% - 70%, yellow for 70% - 80%, orange for 80% - 90% and red for more than 90% V/C in the respective peak hour for the area around Melton.
- 4.5.28 This section assesses the congestion on the Melton highway network based on the following two critical threshold V/C ratios:
 - 80% to 90% V/C suggests the performance of the junction is impeded as operational capacity has been exceeded for at least part of the peak resulting in some queuing.
 - >90% V/C suggests that traffic throughout the junction is on the verge of breaking down for the entire peak resulting in potentially long queues, blocking of junctions upstream and the metering of downstream flows.

4.5.29 Figure 4.10 and Figure 4.11 show the volume to capacity ratios (V/C) for the junction approaches, in Melton Mowbray, in the 2014 base year AM and PM peak periods respectively.

Figure 4.10: AM Peak hour 2014 Base Volume / Capacity Ratio at Approaches.

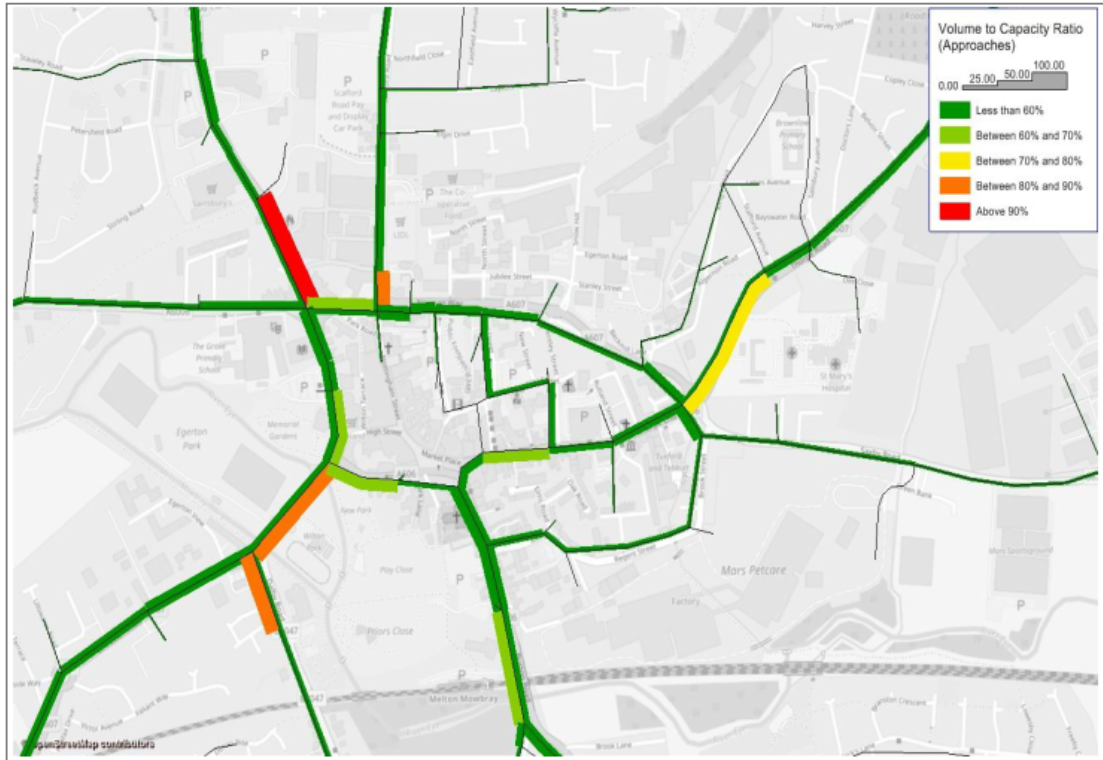
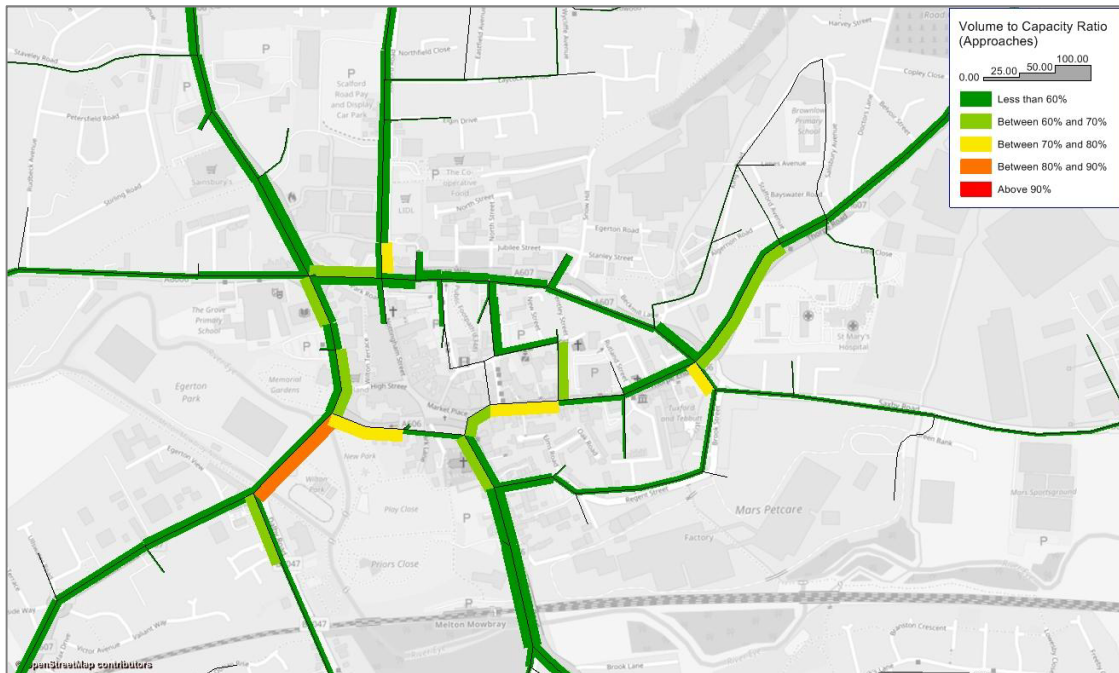


Figure 4.11: PM Peak hour 2014 Base Volume / Capacity Ratio at Approaches



4.5.30 As shown in Figure 4.10 and Figure 4.11, the highest V/C ratios in the AM peak are found on approaches to the following junctions, which all operate at practical capacity with a V/C ratio over 80% :

- A607 / Dalby Road Junction;
- A606 Nottingham / A6006 Junction; and
- A607 / Scalford Road Junction.

4.5.31 The V/C distribution shows that the majority of congestion is concentrated within Melton Mowbray town centre where the approaches meet the radial routes. The extent of congestion is therefore critical on the cross-town routes. This represents a key point in terms of the need for intervention.

Levels of Through Traffic

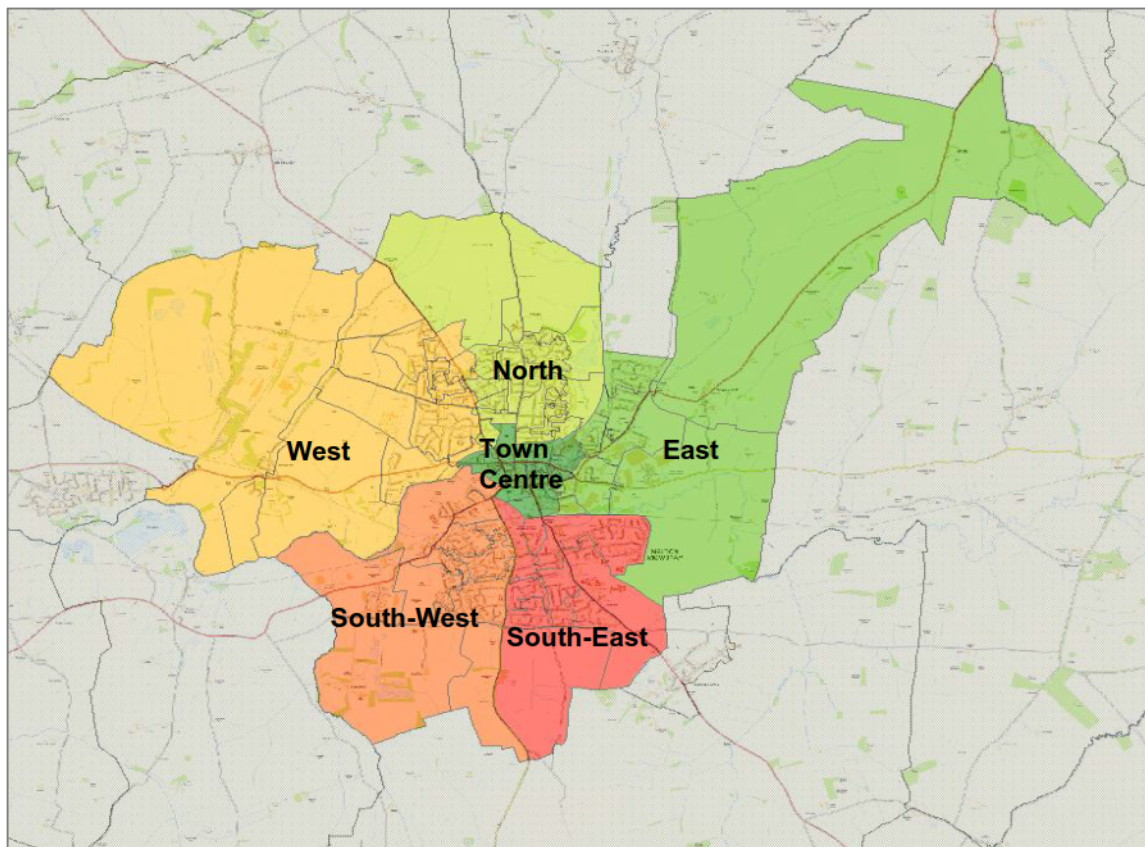
4.5.32 To highlight the levels and patterns of through traffic in the town, sector-to-sector trip analyses have been undertaken using 2014 base year traffic data.

4.5.33 Table 4-1 provides a list of the internal and external sector zones considered in this process, and Figure 4.12 shows the location of internal sector zones within Melton.

Table 4-1: Internal and External Sector References.

SECTOR	DESCRIPTION	LOCATION
1	Town Centre	Internal
2	East	Internal
3	North	Internal
4	West	Internal
5	South-West	Internal
6	South-East	Internal
11	A606_NottinghamRd	External
12	ScalfordRd	External
13	MeltonSpinneyRd	External
14	A607_ThorpeRd	External
15	B676_SaxbyRd	External
16	A606_BurtonRd	External
17	DalbyRd	External
18	KirbyRd	External
19	A607_LeicesterRd	External
20	A6006_AsfordbyRd	External

Figure 4.12: Internal Sector Locations.



4.5.34 Total overall (12-hour) volumes of through traffic by route are shown in Table 4-2 below.

Table 4-2: 2014 External to External Traffic Flow – All Vehicles.

2014_Base	A606_NottinghamRd	ScalfordRd	MeltonSpinneyRd	A607_ThorpeRd	B676_SaxbyRd	A606_BurtonRd	DalbyRd	KirbyRd	A607_LeicesterRd	A6006_AsfordbyRd	Total
A606_NottinghamRd	0	0	0	4	77	885	56	0	2	8	1,033
ScalfordRd	0	0	0	0	0	80	0	0	0	9	90
MeltonSpinneyRd	0	0	0	5	1	114	31	0	16	2	170
A607_ThorpeRd	3	0	6	0	1	19	151	0	246	79	505
B676_SaxbyRd	23	0	1	1	0	0	5	0	328	106	465
A606_BurtonRd	1,304	0	29	19	0	0	54	0	977	237	2,620
DalbyRd	63	0	25	133	5	72	0	0	6	18	323
KirbyRd	0	0	0	0	0	0	0	0	202	0	203
A607_LeicesterRd	5	16	3	216	225	840	7	237	0	1	1,549
A6006_AsfordbyRd	9	16	2	119	147	187	22	0	1	0	501
Total	1,408	33	66	497	456	2,196	326	237	1,779	461	7,458

4.5.35 Analysis of the LLITM 2014 base model shows that there are approximately 7,500 through traffic movements (7am-7pm) per day across all routes.

4.5.36 When looking at the breakdown by route, the largest concentration of through traffic movement is along the A606 axis, constituting more than 40% of total traffic on that route.

4.5.37 The percentage of through traffic in the east-west direction is also high, at 25 to 30% of traffic on these routes, with similar through traffic percentages also observed on Dalby Road and Melton Spinney Road.

4.5.38 A full analysis of traffic movements in the town, incorporating traffic levels and percentages of through traffic by route is shown in Appendix C.

4.5.39 Importantly, this shows that:

- whilst most traffic to/from the town has origins and destinations in the town centre, there is a significant amount of through traffic in Melton Mowbray in total;
- this varies by route, but is highest for the A606 Burton Road, followed by the A606 Nottingham Road (the A607 Leicester Road and Saxby Road have the next highest percentages);
- internal through traffic within the town is also apparent, with the north and south of Melton creating the most traffic demands (origin and destination);
- East-west movements internally across Melton Mowbray are typically lower than those north-south and that represents the greater total traffic volume.

4.5.40 It is important to note, however, that being able to cater for east-west movements is important from a network resilience point of view. Melton Mowbray is not a main through-route for freight between the M1 (including East Midlands Airport) and the A1 (onto ports such as Felixstowe), but is an alternative freight route for such movements during periods of network disruption; as well as being a key freight trip generator and attractor in its own right.

4.5.41 Total through traffic volumes on all routes are shown graphically in Figure 4.13 for the 2014 Base AM Peak, Figure 4.14 for the 2014 base-year interpeak and Figure 4.15 for the 2014 Base PM Peak.

4.5.42 Figure 4.13 to Figure 4.15 also show the use of Church Street and King Street as an alternative route through the town centre, as well as Dalby Road and minor routes such as Ankle Hill to the south of the town centre. These minor routes are being used to avoid the key, capacity constrained junctions.

Figure 4.13: Through Traffic in the AM Peak in 2014 (All vehicles).

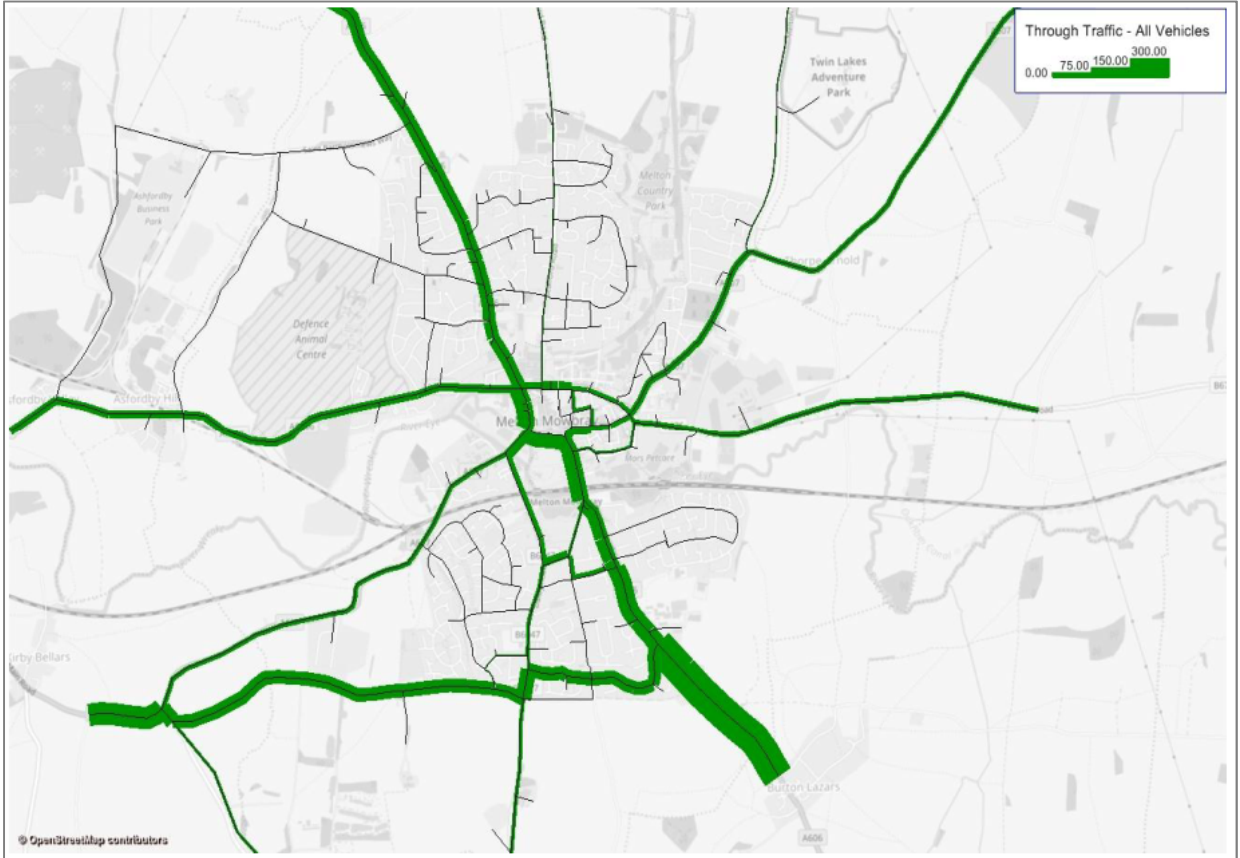


Figure 4.14: Through Traffic in the Interpeak in 2014 (All vehicles).

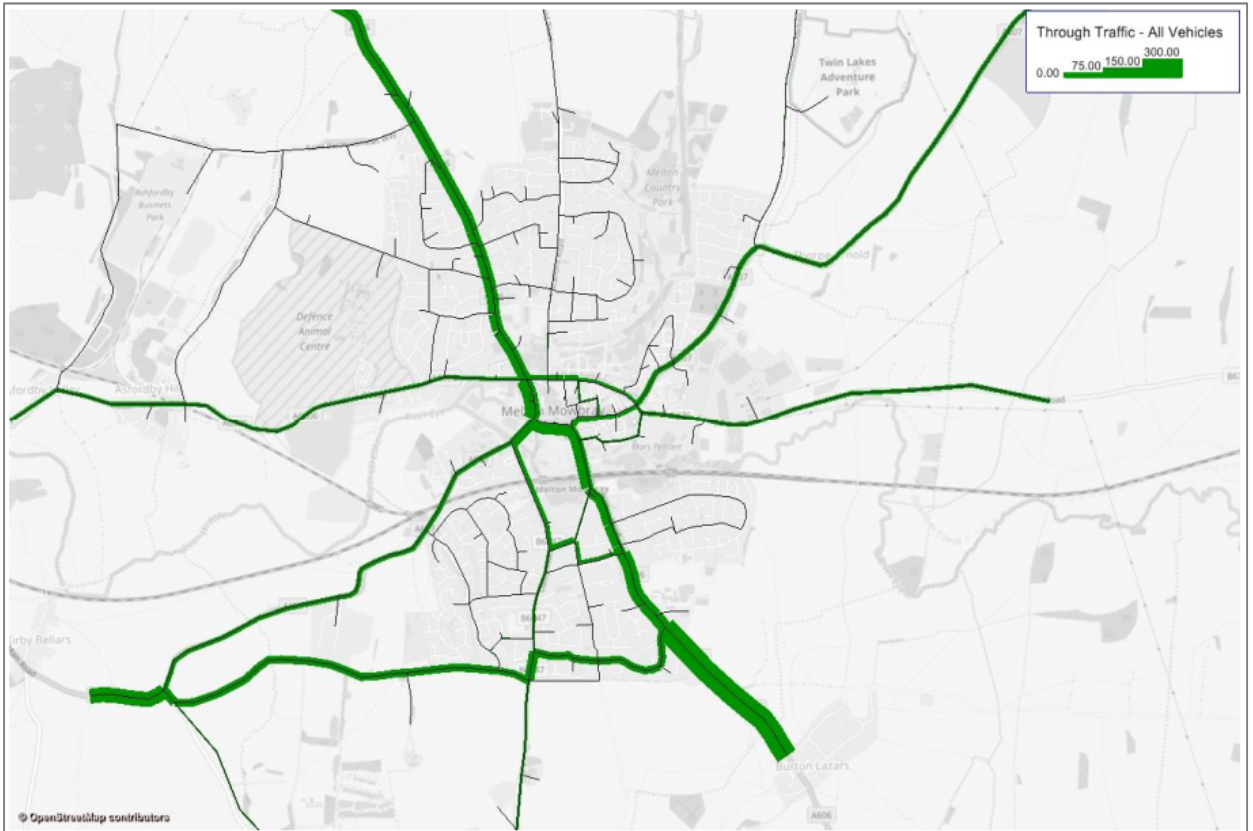
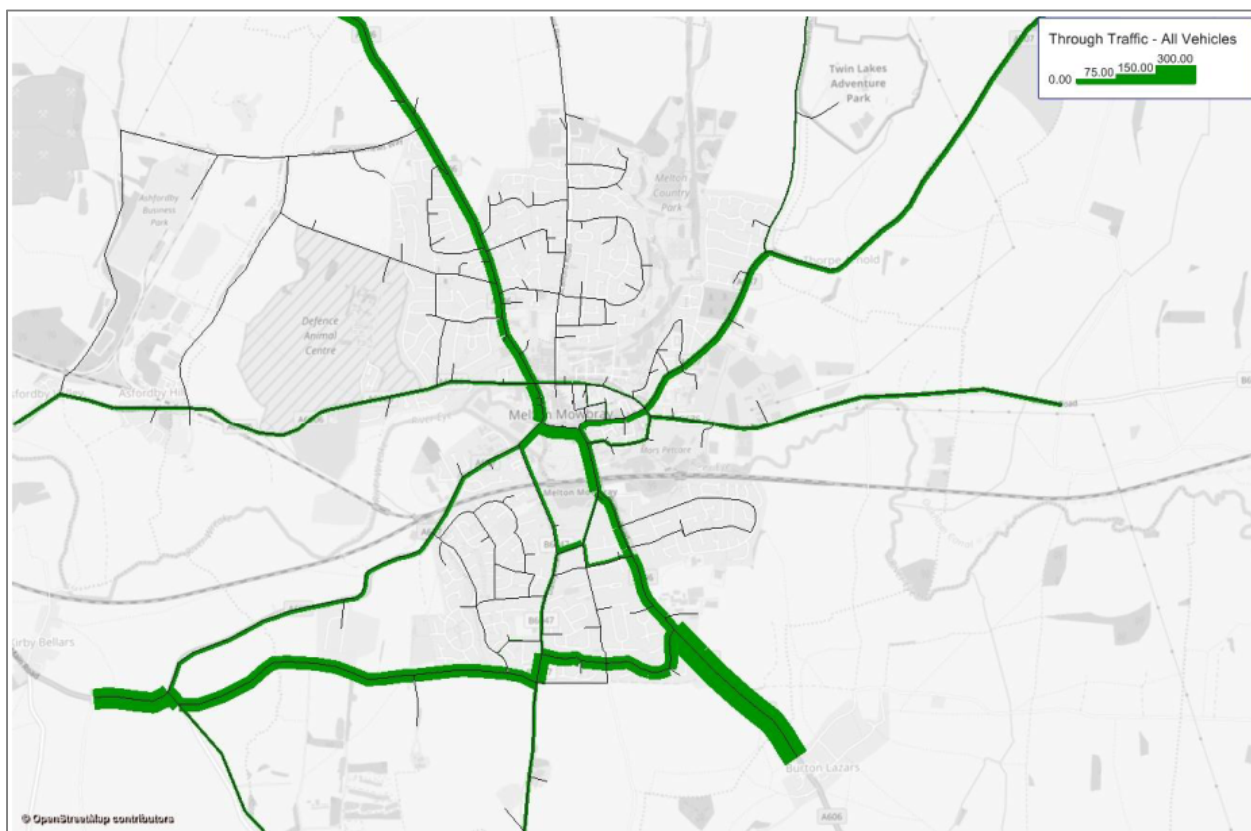


Figure 4.15: Through Traffic in the PM Peak in 2014 (All vehicles).



HGV Movements through the Town Centre

- 4.5.43 The centre of Melton Mowbray faces two traffic problems related to Heavy Goods Vehicle (HGV) movements.
- 4.5.44 First, the industrial area to the east of the town centre generates a significant number of HGV movements, many of which use the town centre to access or egress manufacturing premises (particularly for the industrial estate in the east of the town). These are identified in the observed analysis in **Appendix C**, indicating 170 daily two-way HGV movements to/from the East of the town, and a similar number to/from the South West employment area of Melton.
- 4.5.45 Secondly, there are a significant number of through traffic HGV movements, with non-Melton Mowbray destinations. Both types of HGV movement create problems in the town centre, including safety, noise and air quality problems.
- 4.5.46 Analysis in **Appendix C** indicates that typically around 50-70% of LGV traffic, and typically 70- 90% of HGV traffic on routes to/from Melton is through traffic.
- 4.5.47 Figure 4.16 to Figure 4.18 show the pattern of current HGV through-traffic for the AM, Inter-peak and PM peaks respectively.
- 4.5.48 Through HGV movement is generally south-east to west in the morning peak, although more evenly spread between routes in other time periods.

Figure 4.16: AM Peak hour 2014 Base HGV Through-Traffic.

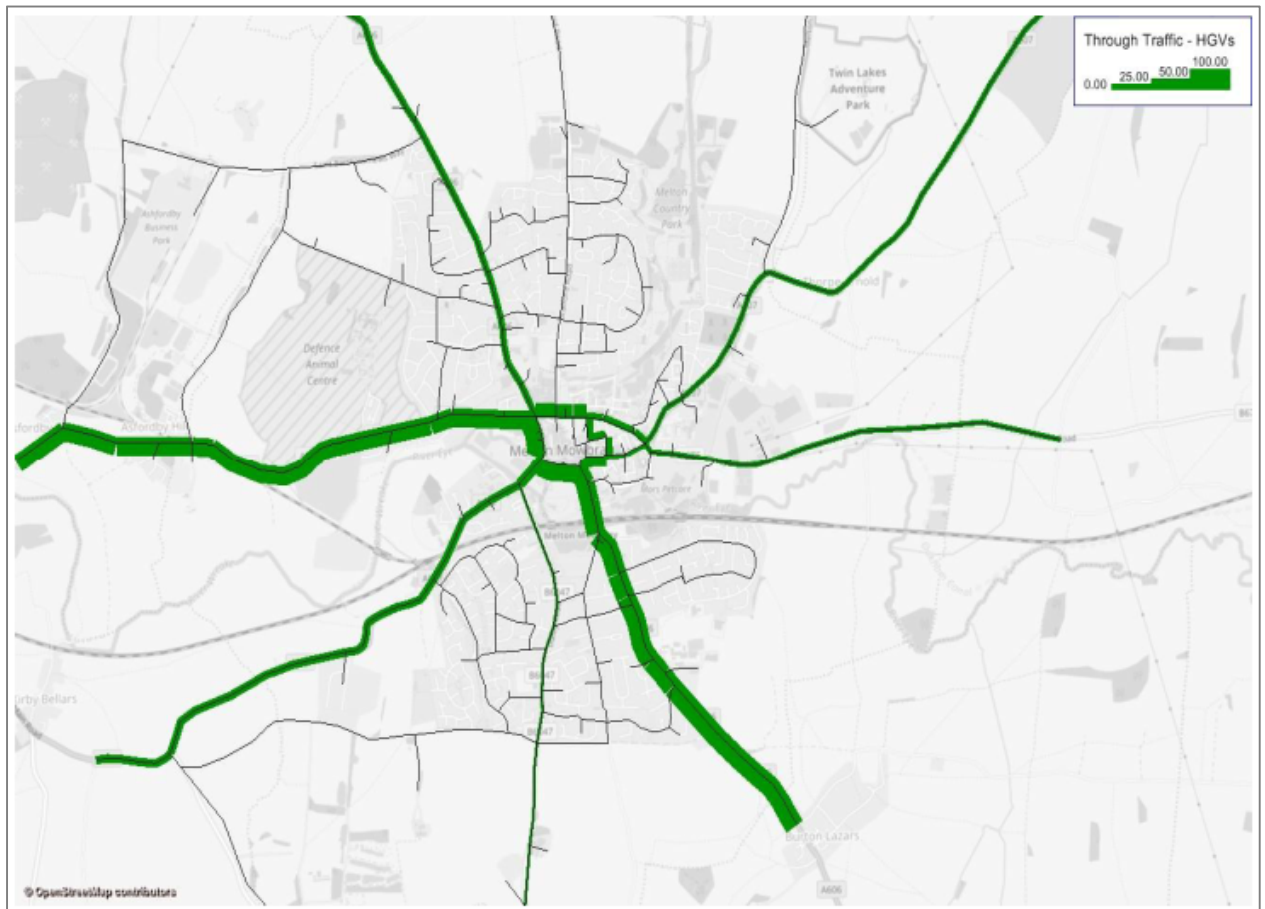


Figure 4.17: Inter-peak hour 2014 Base HGV Through-Traffic.

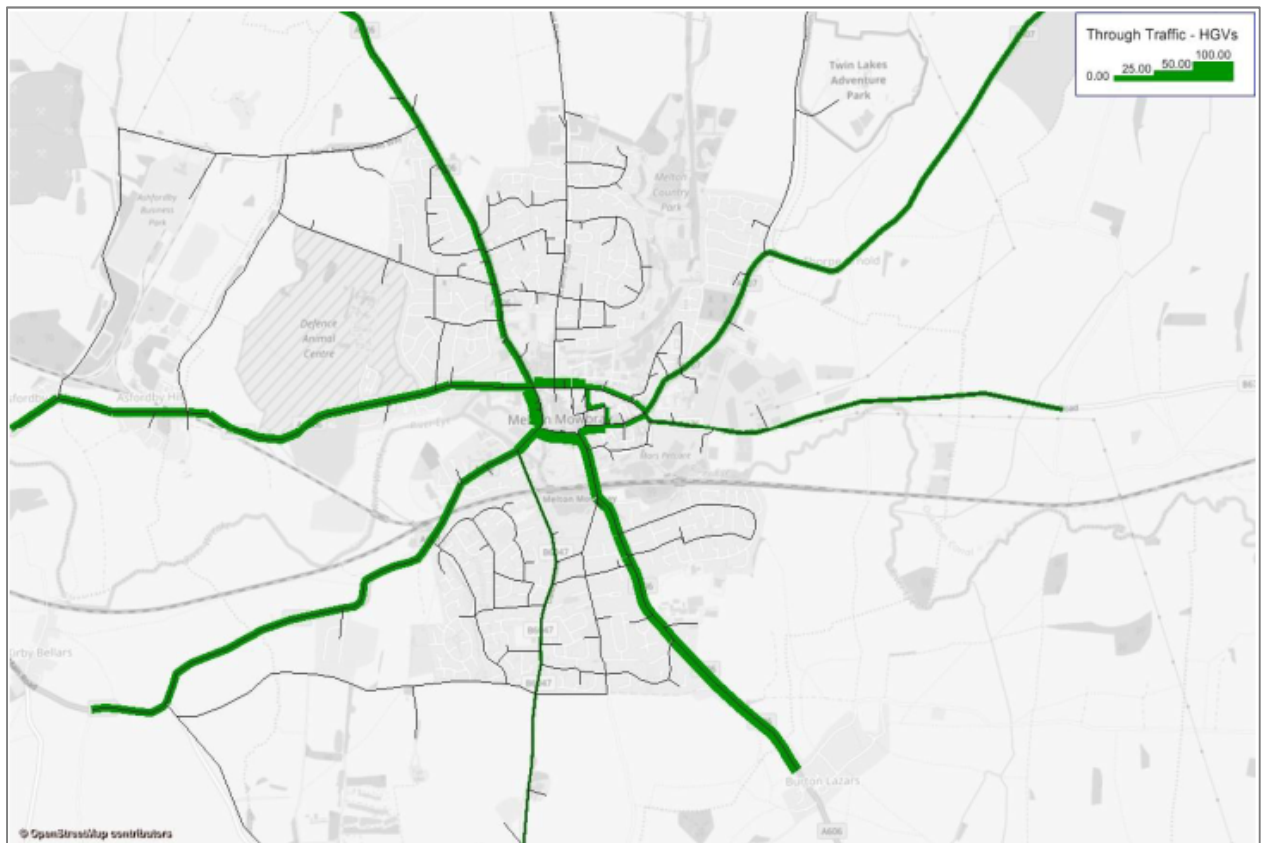
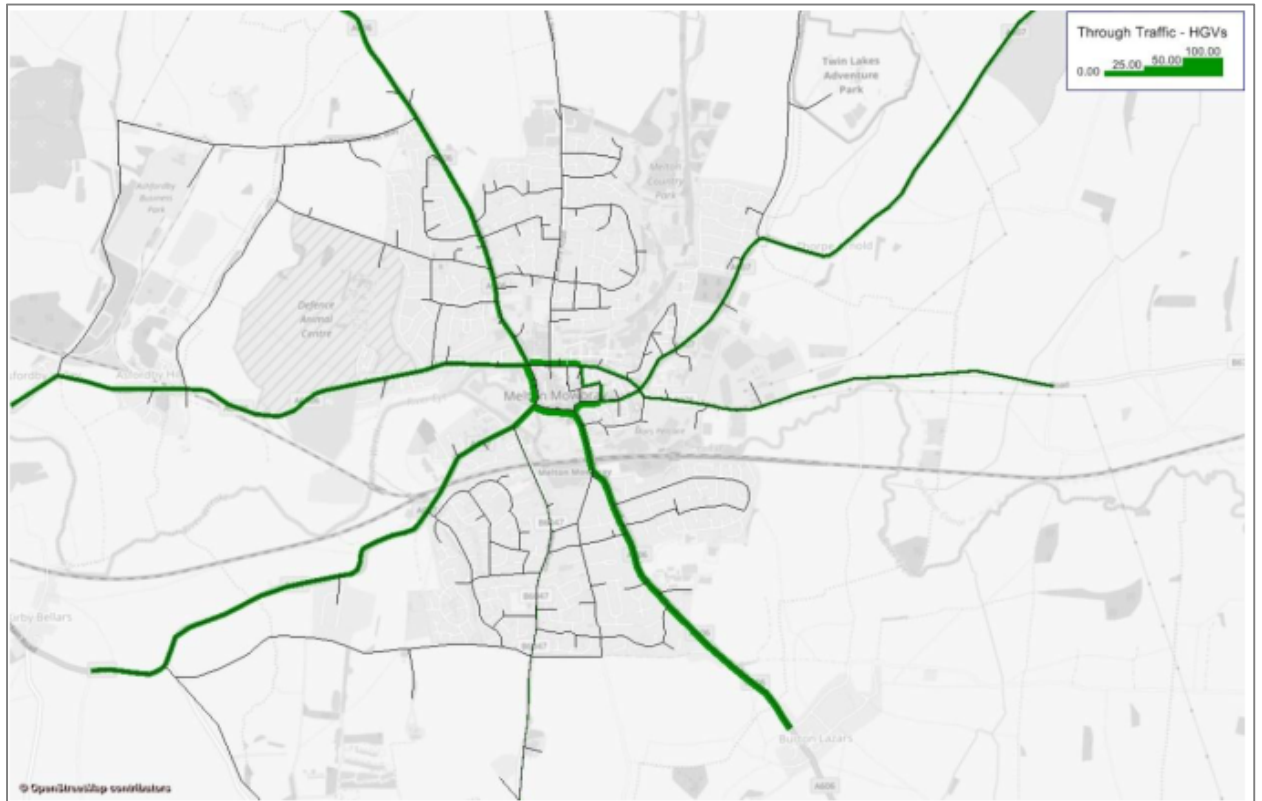


Figure 4.18: PM Peak hour 2014 Base HGV Through-Traffic.



4.6 Summary of key findings

4.6.1 The key findings of the study of the existing transport conditions surrounding Melton Mowbray are provided below.

- Highly significant levels of congestion - several of the junctions and approach routes leading to the town centre experience high levels of congestion.
- Several of the town centre junctions experience very high delays, of notable mention are the A607/ Nottingham Road Junction, Scalford Road, and Thorpe End Junction all of which experience 1.5 minutes average delay during peaks; with right and straight ahead movements at these junctions higher than this average. It should be noted that many vehicles pass through several of these junctions to reach or cross the town centre, therefore the overall level of delay as a journey time route extends significantly beyond these levels.
- Alongside the scale of delay, this also creates network resilience issues; with limited route choice, and no alternatives across the town centre that don't already experience delay themselves.
- There is a high level of through traffic travelling via Melton Mowbray town centre. The through traffic along A606 axis accounts for more than 40% of total traffic on that route, with significant proportions on other routes.
- The slow speed of traffic through the centre of Melton Mowbray, resulting from congestion, also encourages rat-running - especially through the historic centre, via routes such as Chapel Street and King Street that are not intended for such purposes.
- The industrial areas to the east and south west of the town centre generate a significant number of HGV movements, many of which use the town centre to access or egress manufacturing premises (particularly for the industrial estate in the east of the town). Secondly, there is a significant number of through traffic HGV movements, with non-Melton Mowbray destinations. Both types of HGV movement create problems in the town centre with the likelihood of associated safety, noise and air quality problems.

5. Future Year Traffic

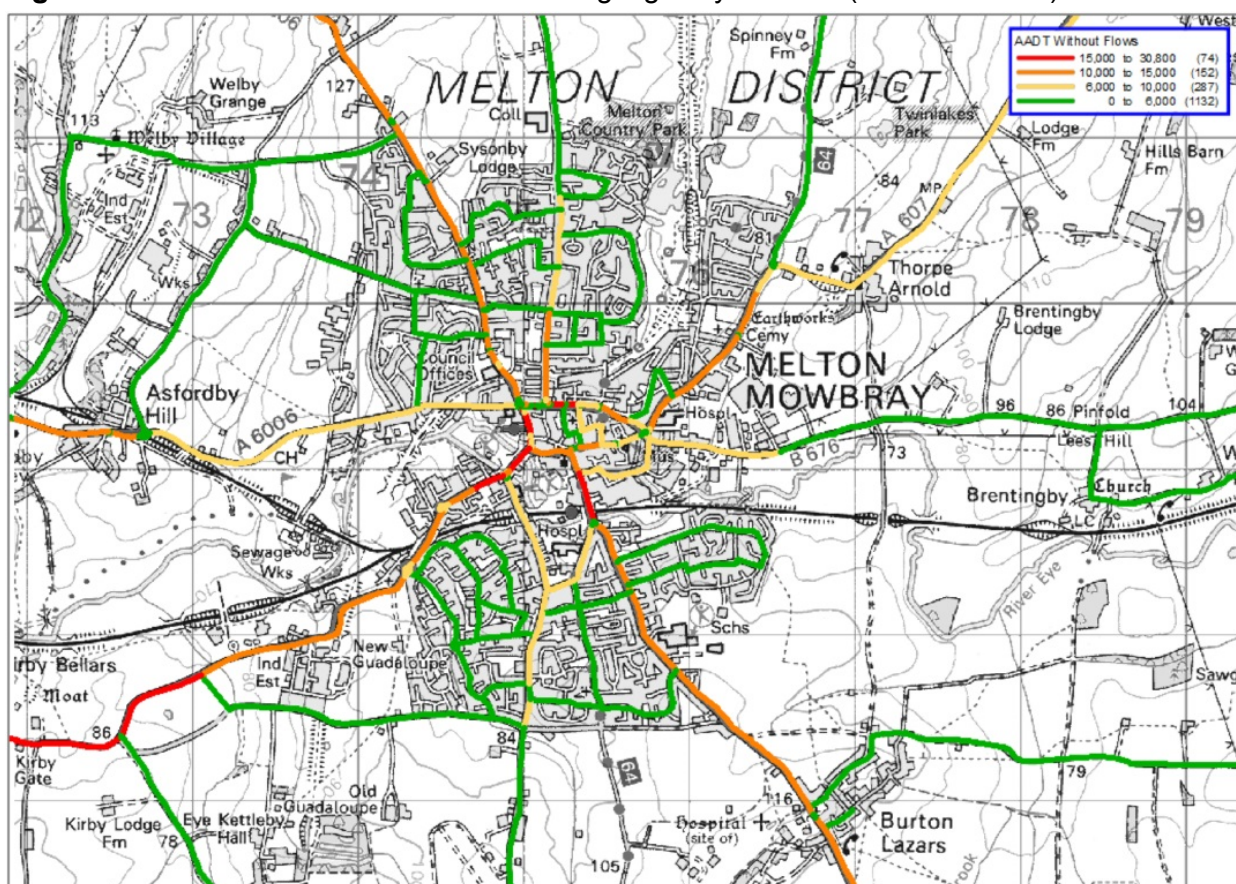
5.1 Overview

5.1.1 The purpose of this section is to identify the changes in traffic flows both with and without the N&E MMDR.

5.2 Without Scheme Forecasts

5.2.1 Figure 5.1 shows the level of traffic flow that the existing highway network (without N&E MMDR) is forecast to accommodate in 2021.

Figure 5.1: Forecast AADT in 2021 on existing highway network (without MMDR)

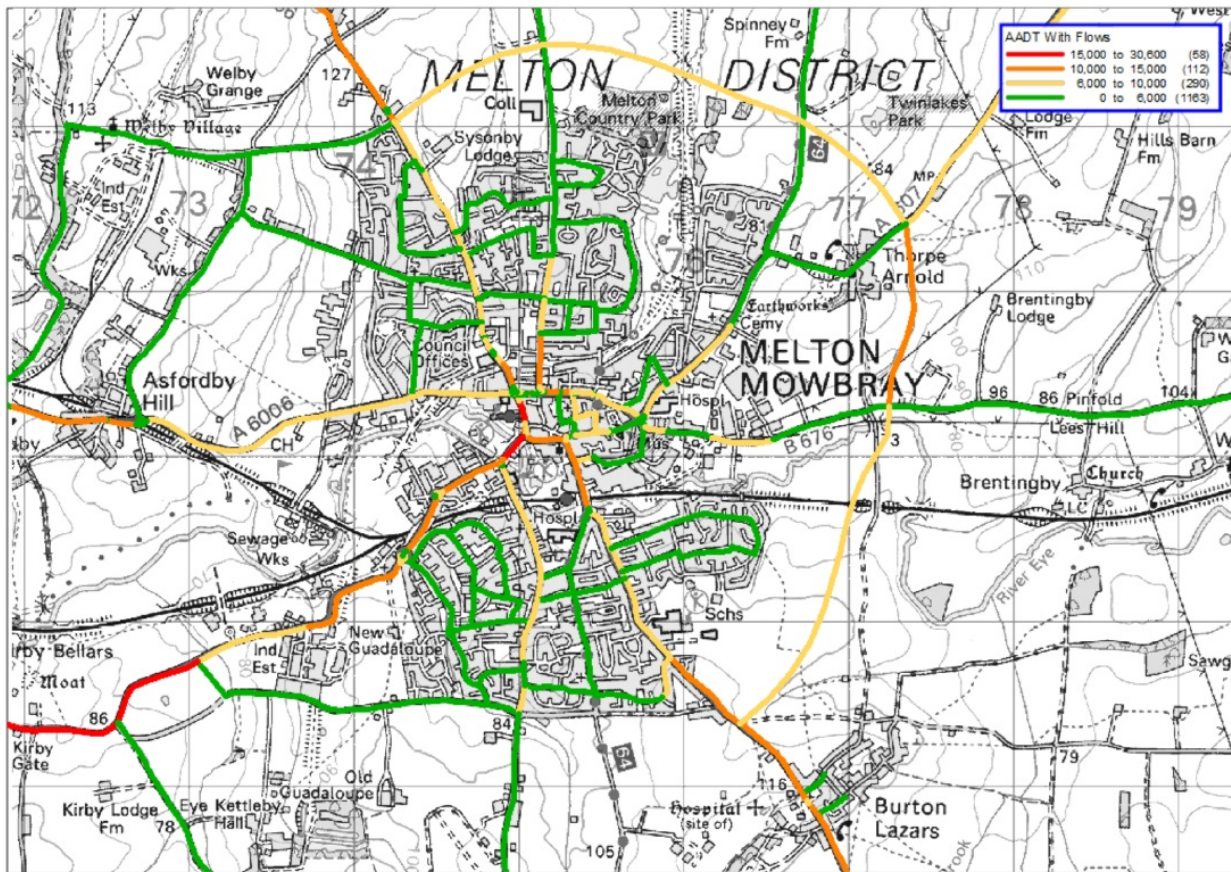


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5.3 With Scheme Forecasts

5.3.1 Figure 5.2 shows the level of traffic flow that the proposed highway network (with N&E MMDR) is forecast to accommodate in 2021.

Figure 5.2: Forecast AADT in 2021 on proposed highway network (with N&E MMDR)

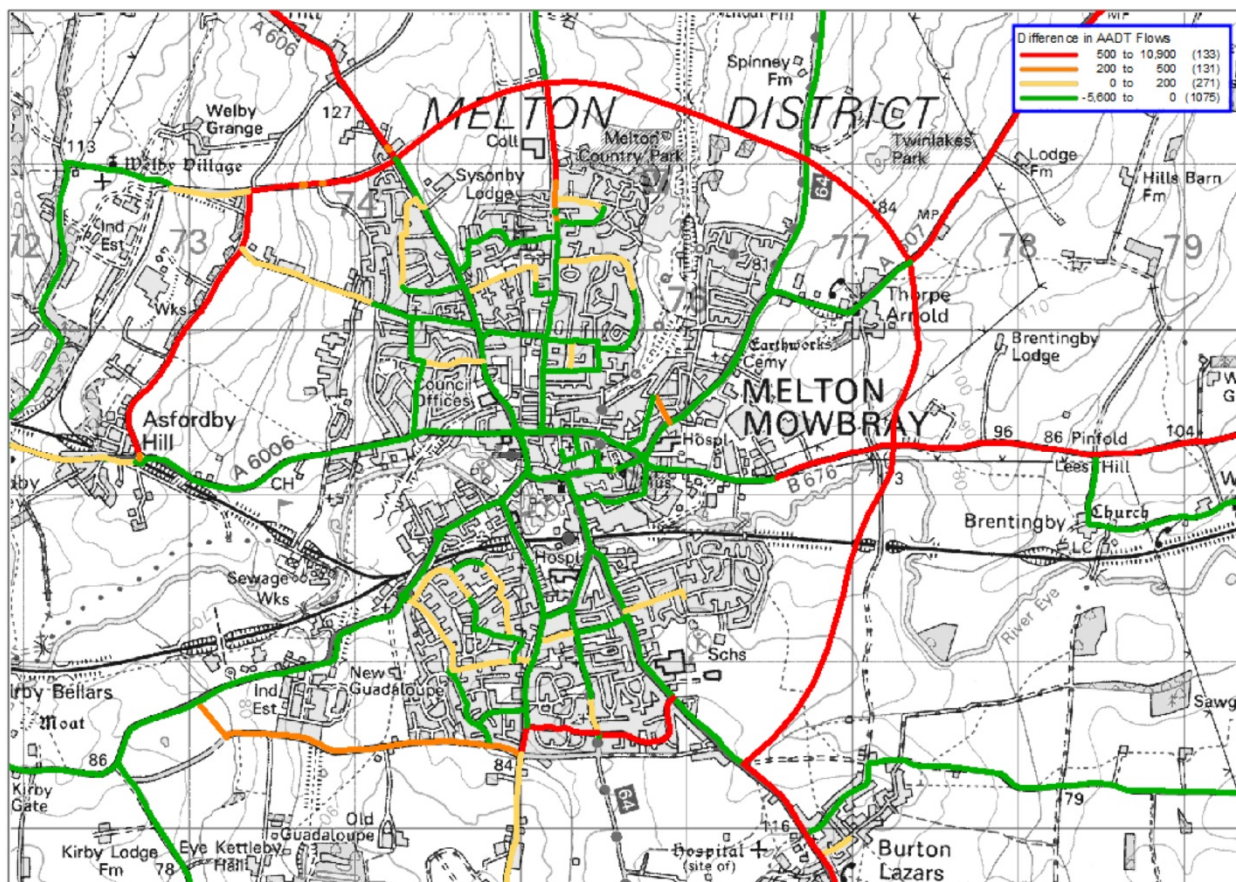


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5.4 Main Locations of Traffic Flow Change

5.4.1 Figure 5.3 shows the level of traffic flow change on the highway network (i.e. the differences between Figure 5.1 and 5.2). This forecast is prior to the completion of the southern link road between Burton Road and Leicester Road.

Figure 5.3: Forecast AADT flow changes on highway network (flow-difference for N&E MMDR) – Green relates to decreases in traffic flow.



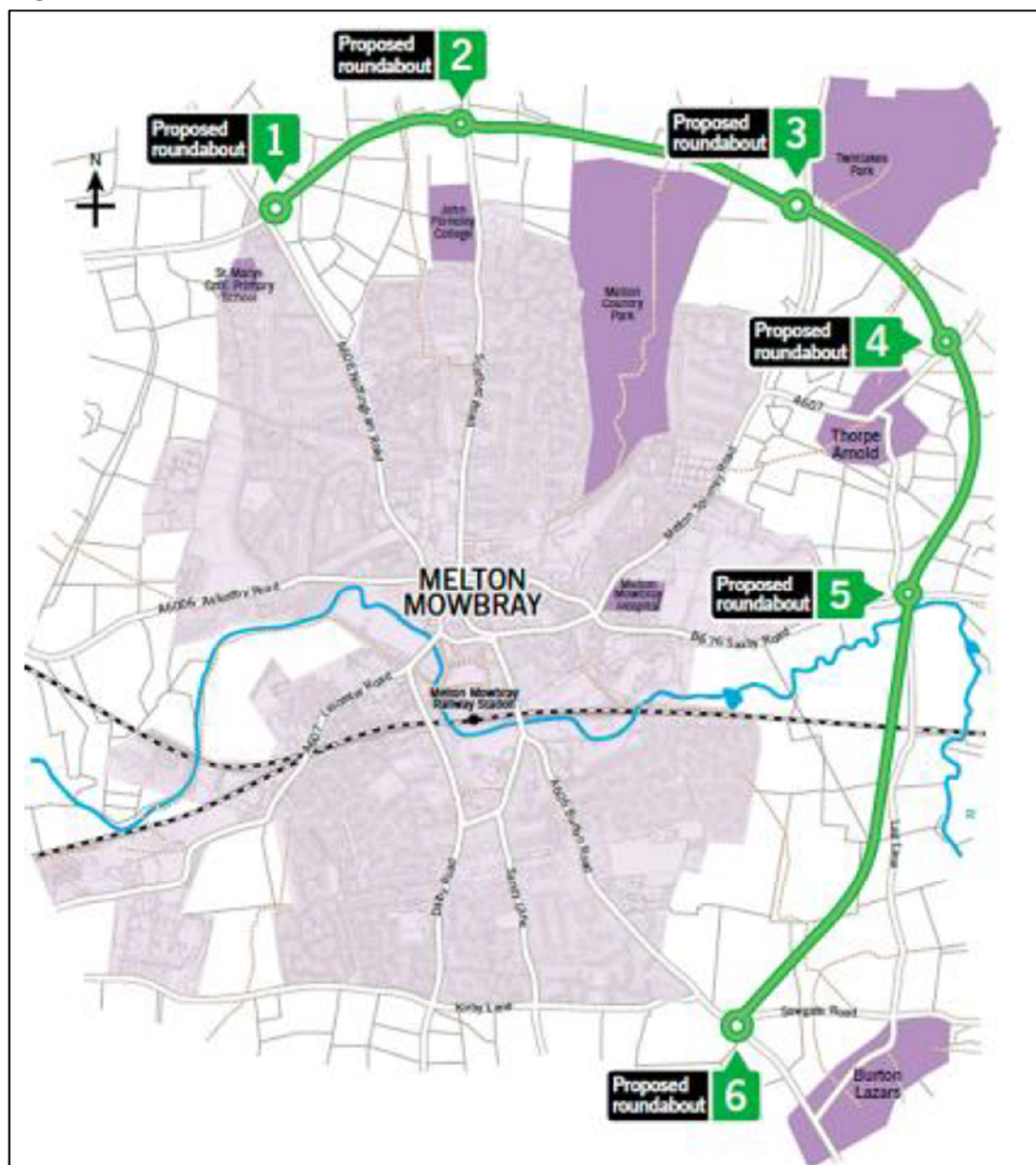
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6. N&E MMDR Junction Performance

6.1 Overview

- 6.1.1 Although LLITM can calculate overall changes in traffic flow across a highway network study area, the impacts of such changes can be modelled at a finer level of detail using junction-specific models.
- 6.1.2 The six scheme-junctions will be roundabouts. Their locations are indicated and numbered in Figure 6.1.

Figure 6.1: Overview of Junctions



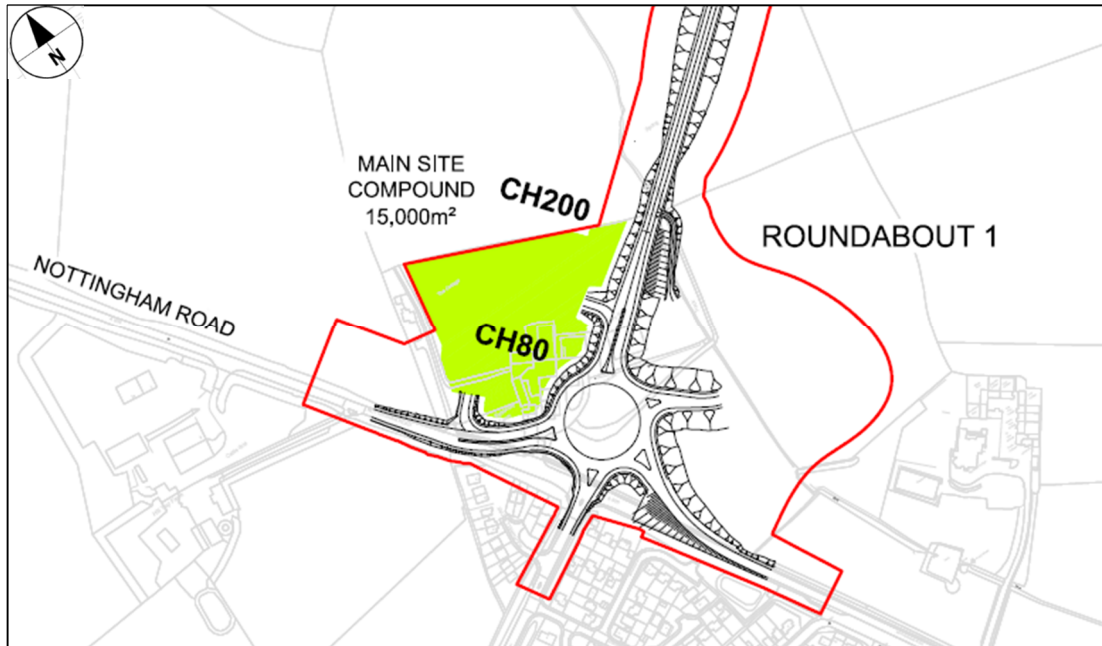
6.2 Junction Assessments – Reference Case

- 6.2.1 Junction assessments of the six N&E MMDR junctions have been carried out using the ARCADY module of the “Junctions” software, version 9.0.2.
- 6.2.2 ARCADY software has been run using a synthesised profile and provides outputs in the form of Ratios of Flow to Capacity (RFC) and queue length (Q). A synthesised

profile includes a 12.5% mid-peak ‘surge’ to robustly test the performance of the junction. For a new junction, a worst-arm target RFC value of 0.85 during a single time segment is preferred as this minimises the chance that queuing will occur at a new junction on opening. For existing junctions, RFC values above 0.85 are likely to produce queues which increase slowly. Above an RFC value of 1.0, a junction is more than likely to be at capacity (with resulting larger increases in queue length).

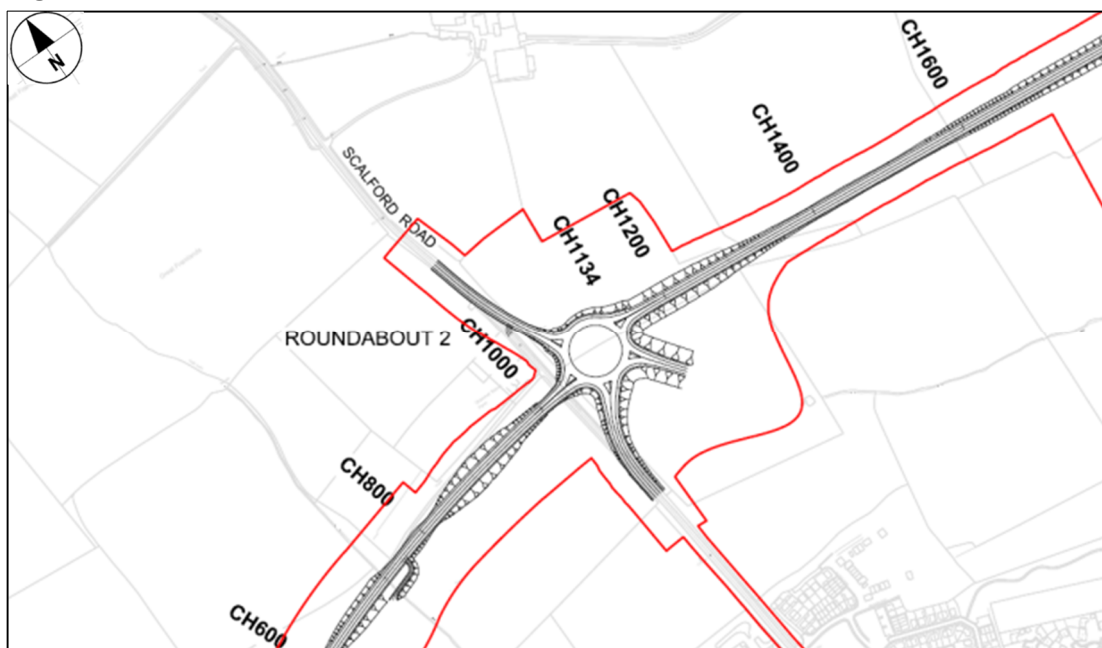
- 6.2.3 The geometric parameters used at the six junctions are shown Appendix D. The flows used to model the AM and PM peak period are set out in Appendix E.

Figure 6.2: Roundabout 1



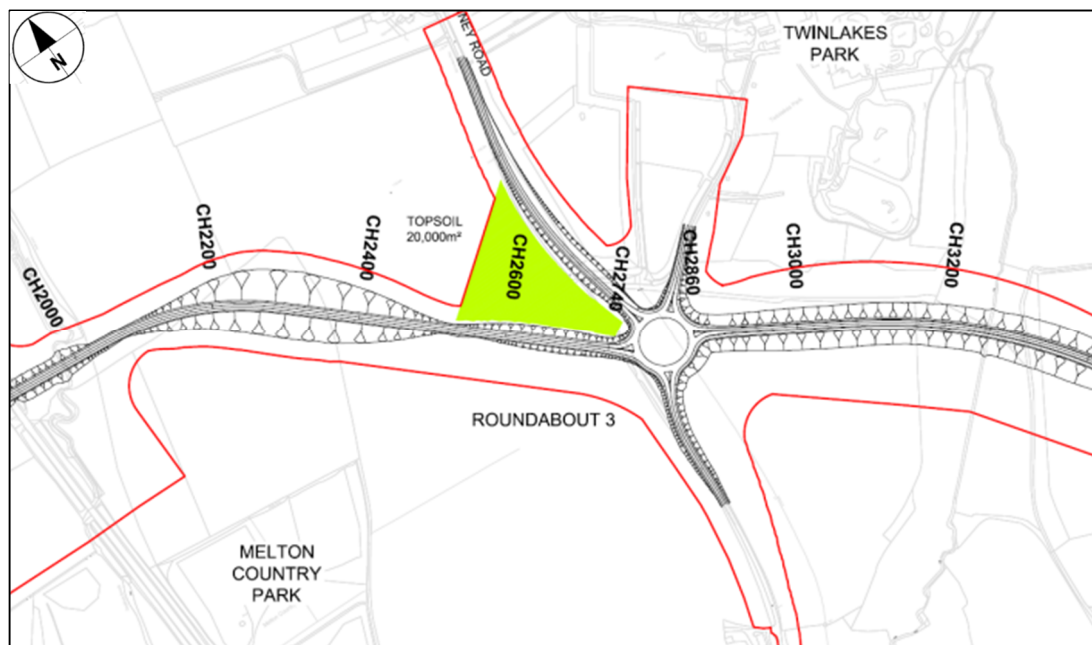
- 6.2.4 Roundabout 1 replaces an existing priority T junction on Nottingham Road and St Bartholomew’s Way and forms the Western end of the scheme. This also includes an access road to planned residential development.

Figure 6.3: Roundabout 2



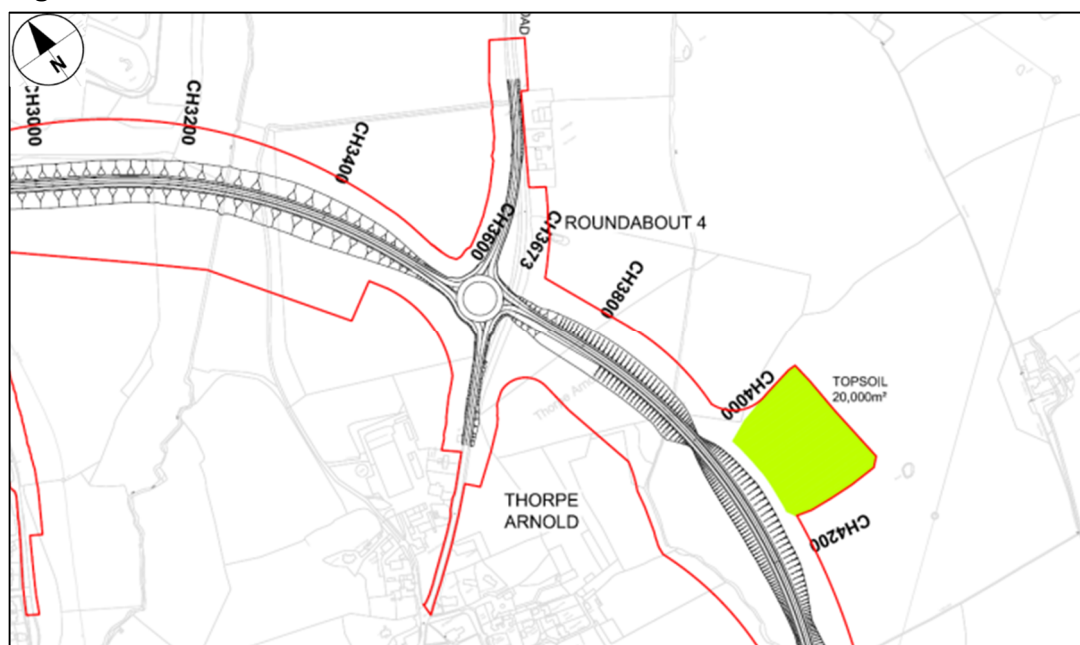
- 6.2.5 Roundabout 2 will be located on Scaford Road, allowing the scheme to cross west to east and provides an access to planned residential development.

Figure 6.4: Roundabout 3



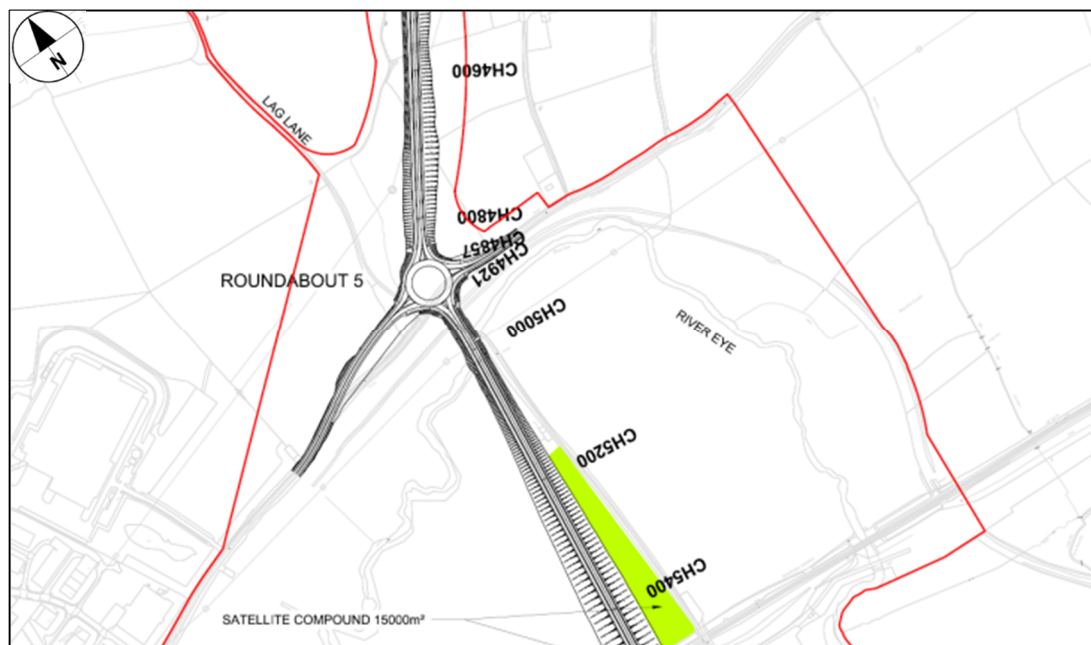
6.2.6 Roundabout 3 replaces an existing T Junction on Melton Spinney Road with a 5 arm roundabout. While providing access to the N&E MMDR route, it also maintains access to Twinlakes Park from Melton Spinney Road.

Figure 6.5: Roundabout 4



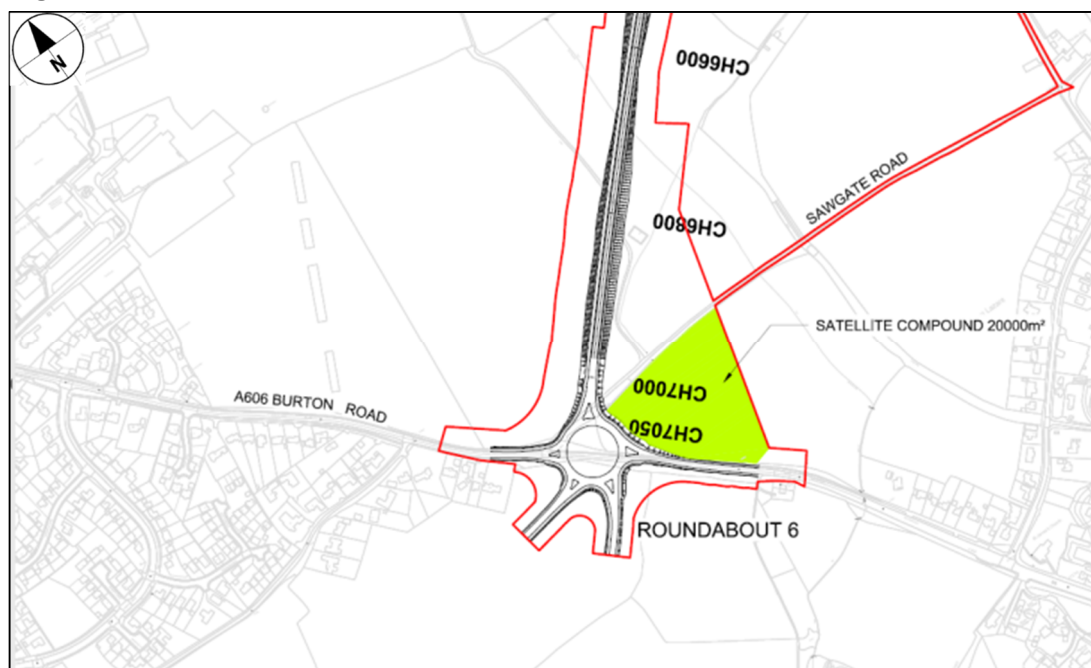
6.2.7 The fourth roundabout allows the N&E MMDR to cross the A607 Melton Road.

Figure 6.6: Roundabout 5



6.2.8 The fifth roundabout is located on B676 Saxby Road.

Figure 6.7: Roundabout 6



6.2.9 The sixth roundabout is the south-eastern end of the Eastern N&E MMDR Route. It intersects the A606 Burton Road and also provides an access road to future residential development.

6.2.10 The following tables (Table 6-1 to Table 6-6) provide the ARCADY model results of each of junctions described above.

Table 6-1: ARCADY Results for Roundabout 1

Jct 1	AM			PM		
	Queue (PCU)	Delays (s)	RFC	Queue (PCU)	Delays (s)	RFC
Arm 1	0.6	2.84	0.38	0.9	3.53	0.45
Arm 2	0.3	2.43	0.23	0.4	2.84	0.24
Arm 3	0.2	3.2	0.15	0	3.14	0.03
Arm 4	0.4	4.46	0.31	0.2	4.06	0.18
Arm 5	0.2	3.03	0.20	0.2	2.85	0.13

Notes: RFC = Ratio of Flow to Capacity. A measure of the demand at the junction in relation to its ability to accommodate such flow, reported on a worst-arm basis. Q = Mean Maximum Vehicle Queue, reported on a 'worst arm' basis

6.2.11 The highest RFC for an arm at this junction is 0.38 and 0.45 for the AM and PM periods respectively. This is comfortably below the target RFC value of 0.85, which is the target value for a new junction. Therefore this junction is likely to operate below capacity and minimal queuing can be expected.

Table 6-2: ARCADY Results for Roundabout 2

Jct 2	AM			PM		
	Queue (PCU)	Delays (s)	RFC	Queue (PCU)	Delays (s)	RFC
Arm 1	0.1	2.96	0.07	0.1	2.96	0.05
Arm 2	0.3	2.69	0.23	0.6	3.65	0.39
Arm 3	0.2	2.69	0.18	0	2.52	0.04
Arm 4	0.2	3.01	0.19	0.2	2.97	0.19
Arm 5	0.4	3.04	0.31	0.6	3.28	0.36

Notes: RFC = Ratio of Flow to Capacity. A measure of the demand at the junction in relation to its ability to accommodate such flow, reported on a worst-arm basis. Q = Mean Maximum Vehicle Queue, reported on a 'worst arm' basis

6.2.12 The highest RFC for an arm at this junction is 0.31 and 0.39 for the AM and PM periods respectively. This is comfortably below the target RFC value of 0.85, which is the target value for a new junction. Therefore this junction is likely to operate below capacity and minimal queuing can be expected.

Table 6-3: ARCADY Results for Roundabout 3

Jct 3	AM			PM		
	Queue (PCU)	Delays (s)	RFC	Queue (PCU)	Delays (s)	RFC
Arm 1	0.4	3.84	0.29	0.1	2.96	0.09
Arm 2	0.1	2.54	0.06	0.1	2.48	0.09
Arm 3	0.3	2.79	0.23	0.6	3.6	0.36
Arm 4	0.1	2.14	0.06	0.1	2.67	0.10
Arm 5	0.7	3.34	0.40	0.4	3.07	0.26

Notes: RFC = Ratio of Flow to Capacity. A measure of the demand at the junction in relation to its ability to accommodate such flow, reported on a worst-arm basis. Q = Mean Maximum Vehicle Queue, reported on a 'worst arm' basis

6.2.13 The highest RFC for an arm at this junction is 0.29 and 0.36 for the AM and PM periods respectively. This is comfortably below the target RFC value of 0.85, which is the target value for a new junction. Therefore this junction is likely to operate below capacity and minimal queuing can be expected.

Table 6-4: ARCADY Results for Roundabout 4

Jct 4	AM			PM		
	Queue (PCU)	Delays (s)	RFC	Queue (PCU)	Delays (s)	RFC
Arm 1	0.7	3.3	0.41	0.4	3.02	0.26
Arm 2	0.6	3.82	0.39	0.5	3.31	0.30
Arm 3	0.4	2.8	0.29	0.9	4.01	0.46
Arm 4	0.1	3.14	0.11	0.2	4.32	0.18

Notes: RFC = Ratio of Flow to Capacity. A measure of the demand at the junction in relation to its ability to accommodate such flow, reported on a worst-arm basis. Q = Mean Maximum Vehicle Queue, reported on a 'worst arm' basis

6.2.14 The highest RFC for an arm at this junction is 0.41 and 0.46 for the AM and PM periods respectively. This is comfortably below the target RFC value of 0.85, which is the target value for a new junction. Therefore this junction is likely to operate below capacity and minimal queuing can be expected.

Table 6-5: ARCADY Results for Roundabout 5

Jct 5	AM			PM		
	Queue (PCU)	Delays (s)	RFC	Queue (PCU)	Delays (s)	RFC
Arm 1	0.3	3.52	0.23	0.2	3.17	0.19
Arm 2	0.7	3.81	0.42	0.9	3.95	0.46
Arm 3	0.2	2.99	0.16	0.5	4.24	0.35
Arm 4	1.4	5.62	0.59	0.6	3.92	0.38

Notes: RFC = Ratio of Flow to Capacity. A measure of the demand at the junction in relation to its ability to accommodate such flow, reported on a worst-arm basis. Q = Mean Maximum Vehicle Queue, reported on a 'worst arm' basis

6.2.15 The highest RFC for an arm at this junction is 0.59 and 0.46 for the AM and PM periods respectively. This is comfortably below the target RFC value of 0.85, which is the target value for a new junction. Therefore this junction is likely to operate below capacity and minimal queuing can be expected.

Table 6-6: ARCADY Results for Roundabout 6

Jct 6	AM			PM		
	Queue (PCU)	Delays (s)	RFC	Queue (PCU)	Delays (s)	RFC
Arm 1	1	4.43	0.5	1.4	5.36	0.58
Arm 2	0.4	3.47	0.3	0.5	3.83	0.35
Arm 3	0.2	3.51	0.2	0.1	3.09	0.08
Arm 4	0.3	2.96	0.21	0.3	3.03	0.23
Arm 5	0.9	3.91	0.46	0.7	3.52	0.41

Notes: RFC = Ratio of Flow to Capacity. A measure of the demand at the junction in relation to its ability to accommodate such flow, reported on a worst-arm basis. Q = Mean Maximum Vehicle Queue, reported on a 'worst arm' basis

6.2.16 The highest RFC for an arm at this junction is 0.50 and 0.58 for the AM and PM periods respectively. This is comfortably below the target RFC value of 0.85, which is the target value for a new junction. Therefore this junction is likely to operate below capacity and minimal queuing can be expected.

6.2.17 Full ARCADY outputs are contained within Appendix B.

6.3 Summary

- 6.3.1 The junctions proposed for the N&E MMDR have been designed to accommodate the traffic flow which is likely to re-assign onto the new route and each junction is expected to operate within capacity in the design year.
- 6.3.2 This will make the N&E MMDR an attractive alternative route for otherwise through-traffic.

7. Town Centre Impacts

7.1 Overview

- 7.1.1 The purpose of this section is to describe the impacts of the distributor road, whether beneficial or negative, on the centre of Melton Mowbray.
- 7.1.2 It outlines the change in traffic flows that could be expected from the new distributor road, how such changes in flow might change the town centre environment, as well as the effect this will likely have on trips being made by pedestrians, cyclists and public transport within the town centre.

7.2 Changes in Town Centre Traffic Flows

- 7.2.1 Table 7-1 below outlines the change in traffic flows that could be expected as a result of the distributor road, on key roads into the centre of Melton Mowbray.

Table 7-1: Changes in Town Centre Traffic Flow - AADT

Key Roads	Baseline Flow	Forecast Flow	Change (%)
A606 Burton Street / Burton Road	12,731	9,348	-26.6%
A606 Leicester Street	12,545	10,191	-18.8%
A606 Sherrard Street	12,122	9,793	-19.2%
A606 Thorpe End	5,678	4,083	-28.1%
A606 Wilton Road	14,614	12,479	-14.6%
A606 Nottingham Road	9,926	8,508	-14.3%
A607 Leicester Road	10,436	10,001	-4.2%
A607 Thorpe Road	9,728	5,624	-42.2%
A607 Norman Way	8,076	6,615	-18.1%
B676 Saxby Road	6,319	5,328	-15.7%
A6006 Asfordby Road	7,342	6,730	-8.3%
Scalford Road	5,737	5,157	-10.1%
Average	9,605	7,821	-18.6%

- 7.2.2 The Institute for Environmental Assessment (IEA) *Guidelines for the Environmental Assessment of Road Traffic* can be used to judge in broad terms the environmental impact of the development in terms of its traffic impact.
- 7.2.3 The purpose of the Guidelines is to provide the basis for a systematic, consistent and comprehensive coverage for the appraisal of traffic impacts for a variety of development projects. In terms of general environmental assessment, the guidelines were effectively superseded by the Guidelines for Environmental Impact Assessment but they still provide a useful rule of thumb since the focus of the IEA guidelines is on assessment thresholds relating to traffic impact and not on assessment methodologies for specific types of environmental assessment.
- 7.2.4 The impacts considered by the IEA Guidelines include; noise, vibration, visual effects, severance, driver delay, pedestrian delay, pedestrian amenity, fear and intimidation, accidents and safety, hazardous loads, air pollution, dust and dirt, ecological effects, and impact on heritage and conservation areas.

7.2.5 As a guideline, the IEA suggest that highway links (i.e. roads) should be separately assessed when:

Rule 1: Include highway links where traffic flows will increase by more than 30% (or the number of HGVs will increase by more than 30%)

Rule 2: Include any other specifically sensitive areas where traffic flows have increased by 10% or more.

7.2.6 The IEA Guidelines go on to state that:

“At a basic level, it should...be assumed that projected changes in traffic of less than 10% create no discernible environmental impact,” and that;

“Previous research has indicated that the most discernible environmental impacts of traffic are noise, severance, pedestrian delay and intimidation,” and that;

“Other environmental impacts are less sensitive to traffic flow changes, and it is recommended that, as a starting point, a 30% change in traffic flow represents a reasonable threshold for including a highway link within the assessment”.

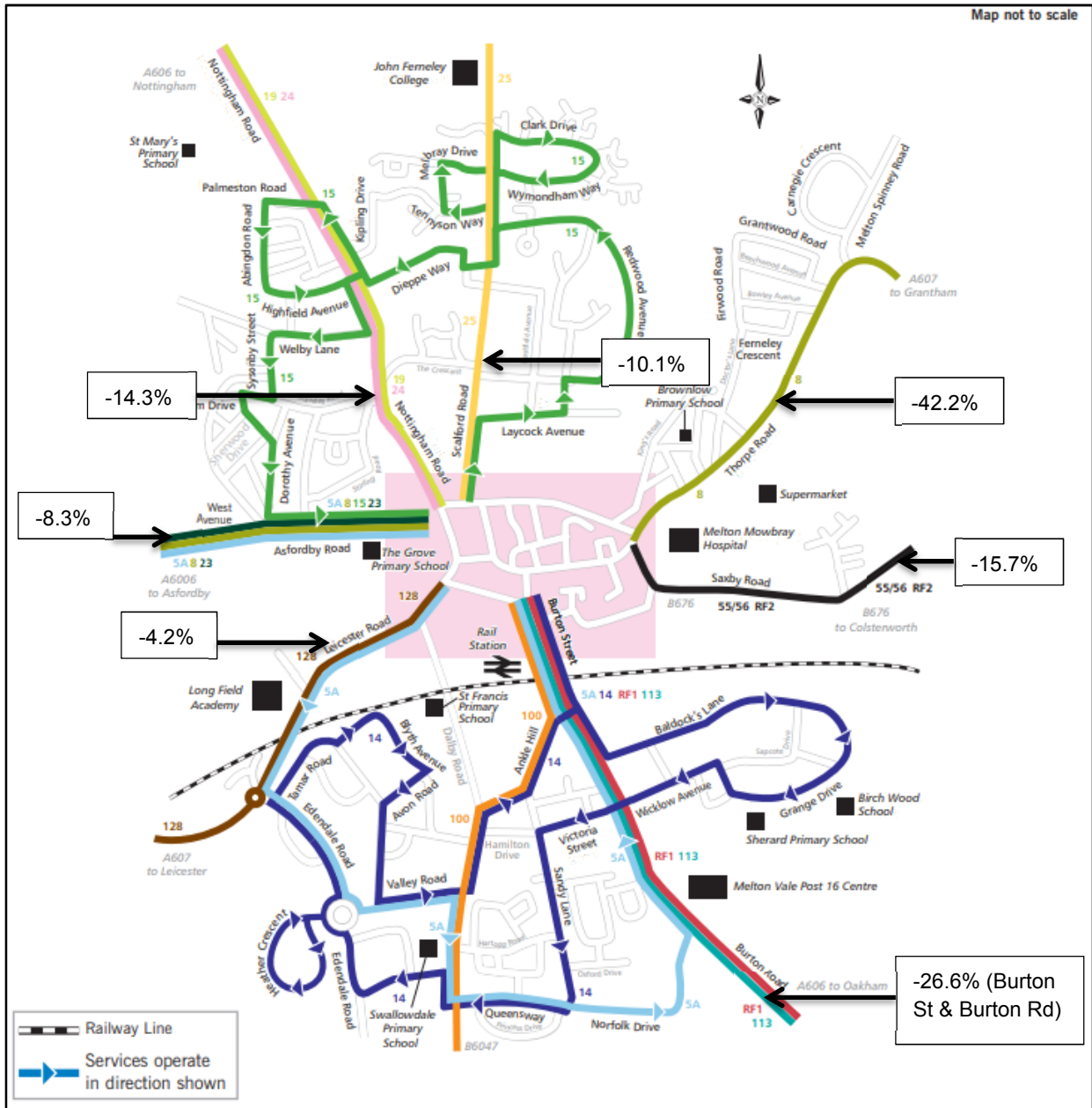
7.2.7 It can be seen that several routes within Melton Mowbray town centre are expected to experience decreases in traffic volumes of greater than 10% and 30%. This should therefore represent a material improvement to environmental conditions related to traffic, as listed in the above paragraphs. (Separate noise and air quality assessments are contained in the Environmental Statement, which is part of the wider planning application submission).

7.3 Impact on Public Transport Services

7.3.1 Whilst existing bus services are not expected to divert to the N&E MMDR, the existing services would experience an improvement in journey time reliability and journey speed as a result of decongestion in central Melton Mowbray arising from the distributor road’s traffic relief effects.

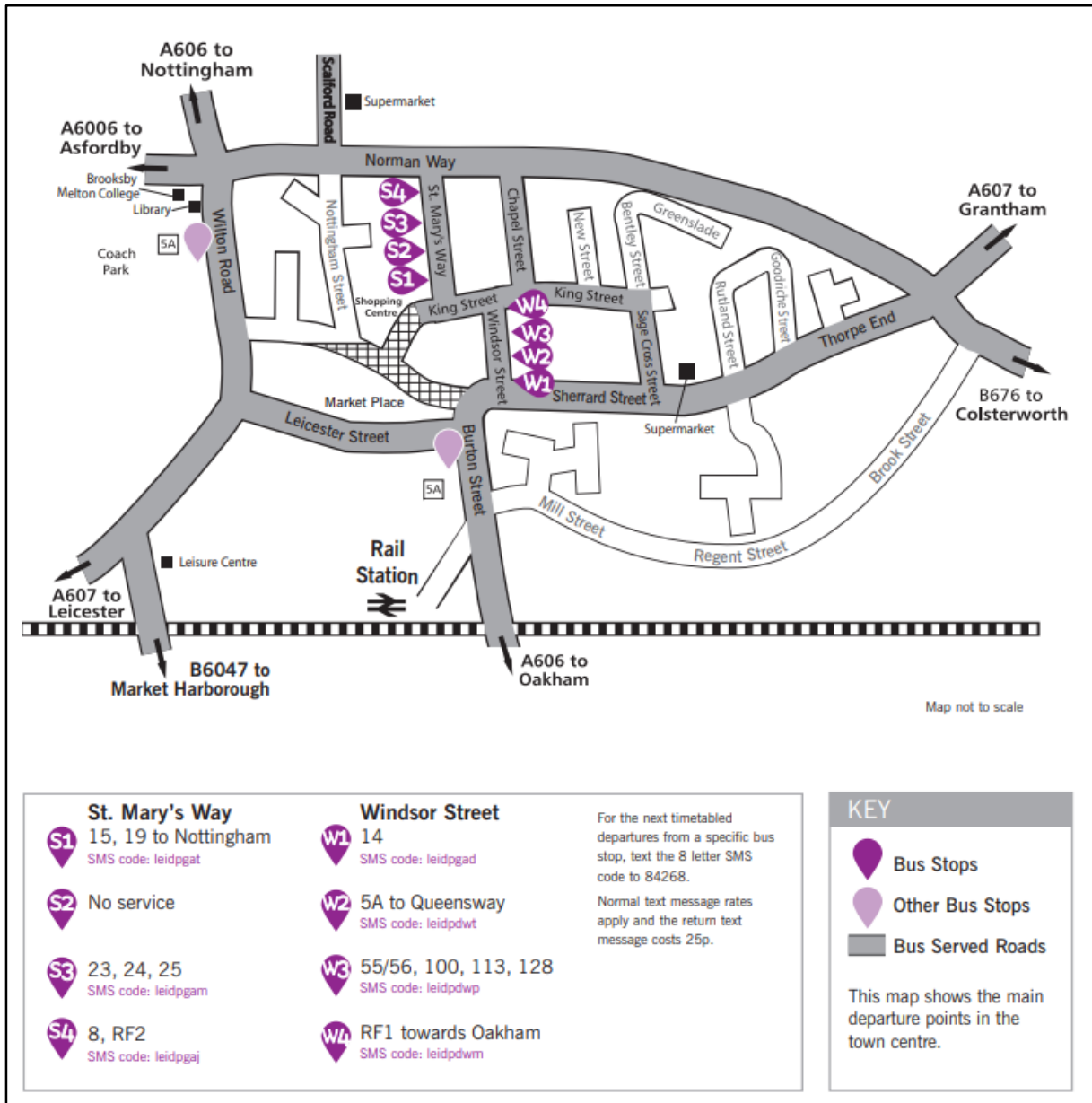
7.3.2 Figure 7.1 and Figure 7.2 below show the bus routes and stops that operate within Melton Mowbray. It is evident that all of these bus routes use roads highlighted in Table 7-1 that would likely experience journey time savings and reliability benefits as a result of the distributor road.

Figure 7.1: Bus Routes Operating in Melton Mowbray with % Change in Traffic Flows on Key Public Transport Corridors



Source: Melton Mowbray Area Guide, Choose How you Move.
 Available from: <http://www.choosehowyoumove.co.uk/everyday/public-transport/> (2017)

Figure 7.2: Bus Stops in Melton Mowbray Town Centre



Source: Melton Mowbray Area Guide, Choose How you Move.
Available from: <http://www.choosehowyoumove.co.uk/everyday/public-transport/> (2017)

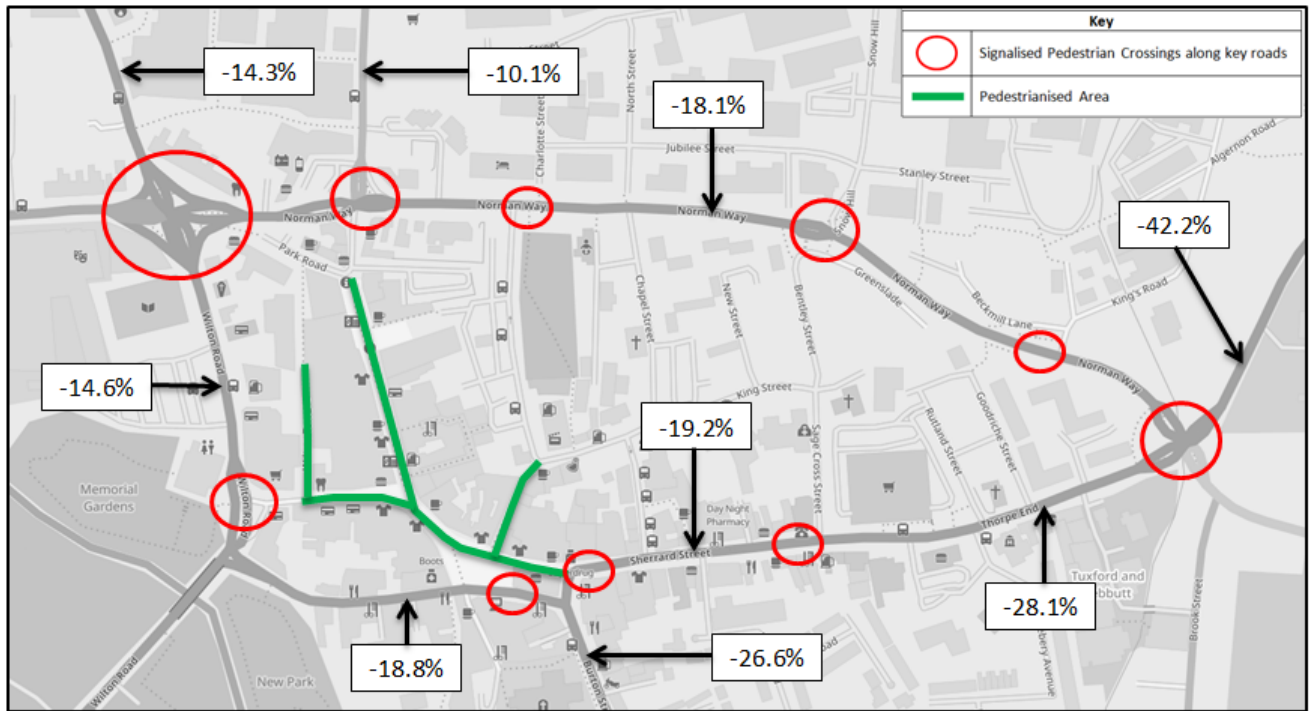
7.3.3 The distributor road would facilitate increased reliability and decreased journey times for buses using the routes shown in Figure 7.1.

7.4 Pedestrian Infrastructure

7.4.1 Figure 7.3 shows the existing pedestrian infrastructure on key roads surrounding the town centre, highlighting signalised pedestrian crossings and the town centre pedestrianised zone.

7.4.2 Quieter and safer roads around the town centre will encourage more walking trips.

Figure 7.3: Pedestrian Infrastructure and % Change in Traffic Flows along Key Roads in Melton Mowbray Town Centre



7.4.3 According to thresholds provided in the Design Manual for Roads and Bridges (DMRB), relief from existing severance can be described using the terms ‘Slight’, ‘Moderate’ or ‘Substantial’. These thresholds are shown in Table 7-2.

Table 7-2: Categorising Relief from Severance by Reductions in Existing Traffic Levels

	Level of Relief from Severance		
	Slight	Moderate	Substantial
Built up Area	30%	30 – 60%	60%+
Rural Area	60-75%	75-90%	90%+

7.4.4 A guide to the extent of the relief can be gained by considering the reduction in traffic on the existing highway network in the opening or selected year. Table 7-3 summarises the level of relief from severance.

Table 7-3: Relief from Severance by Reductions in Existing Traffic Levels within Melton Mowbray Town Centre - AADT

Key Roads	Baseline Flow	Forecast Flow	Change (%)
A606 Burton Street / Burton Road	12,731	9,348	-26.6%
A606 Leicester Street	12,545	10,191	-18.8%
A606 Sherrard Street	12,122	9,793	-19.2%
A606 Thorpe End	5,678	4,083	-28.1%
A606 Wilton Road	14,614	12,479	-14.6%
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A607 Norman Way	8,076	6,615	-18.1%
B676 Saxby Road	6,319	5,328	-15.7%
A6006 Asfordby Road	7,342	6,730	-8.3%
Scalford Road	5,737	5,157	-10.1%
Average	9,605	7,821	-18.6%

7.4.5 There is little formal cycle infrastructure within Melton Mowbray town centre; however, it could be expected that reductions in road traffic would also make the road environment more conducive to cycling than at the current time.

7.5 Summary

7.5.1 As could be expected, the removal of traffic from Melton Mowbray town centre will improve the town centre environment. This will also improve the reliability of town centre bus services, and improve the environment for pedestrians and cyclists.

8. NPPF Policy Compliance

8.1.1 Table 8-1 sets out how the N&E MMDR would be compliant with the NPPF.

Table 8-1: NPPF Policy Review

Para	Question
102	<p><u>Have relevant transport issues been considered from the earliest stages of plan making so that potential impacts can be addressed?</u></p> <p>Yes. The local highway authority included the N&E MMDR in their traffic model testing at the time the Local Plan emerged. The traffic models have been continuously updated to take into account updated traffic forecasts of committed and new planned developments. The latest traffic model was developed in July 2018.</p>
	<p><u>Have opportunities from existing or proposed transport infrastructure, and changing transport technology and usage, been realized?</u></p> <p>The N&E MMDR will provide a new route which will allow traffic to avoid existing congestion within Melton Mowbray.</p>
	<p><u>Have opportunities to promote walking, cycling and public transport use been identified and pursued?</u></p> <p>Yes. The N&E MMDR incorporates footways / cycleways.</p>
108	<p><u>Have the environmental impacts been identified, assessed and taken into account?</u></p> <p>Yes. The environmental impacts are reported within the Environmental Statement.</p>
	<p><u>Have the opportunities for sustainable transport modes been taken up?</u></p> <p>Yes. The N&E MMDR incorporates footways and cycleways alongside the relief road. The assessment of options considered alternative modes to address the problems of air quality, noise and road capacity shortfall in Melton Mowbray and considered implementing sustainable transport measures in isolation. The options appraisal showed the distributor road would be the best option when assessed against all others. The N&E MMDR would indirectly improve the environment for pedestrians, cyclists and bus passengers, by:</p> <ul style="list-style-type: none"> • reducing the traffic flows on key bus routes, • removing traffic from the town centre, thus enhancing the pedestrian / cycling environment • reducing severance.
	<p><u>Can safe and suitable access to the site can be achieved for all people?</u></p> <p>This criterion is less relevant for a road scheme than an office or residential development site. However, implications of the scheme for farm accesses, severance, access for walkers and cyclists and, where relevant, use of bridges by various transport modes have all been taken into account in the design.</p>
	<p><u>Can improvements be undertaken within the transport network that cost effectively limit the significant impacts of the development?</u></p> <p>Yes. The scheme will facilitate and limit impacts of future housing and employment development in the town on existing residents and areas.</p>
109	<p><u>Is there an unacceptable impact on road safety and / or a severe residual cumulative impact on the road network?</u></p> <p>No.</p>
110	<p><u>Does the development give priority first to pedestrian and cycle movements, and second to facilitate access to high quality public transport infrastructure?</u></p> <p>n/a.</p>
	<p><u>Does the development address the needs of those with disabilities and reduced mobility in relation to all modes of transport?</u></p> <p>Yes. The N&E MMDR includes new footways and cycleways. Appropriate crossing points will be provided.</p>

Para	Question
	<p><u>Does the development create safe, secure and attractive layouts which minimize conflicts between traffic and cyclists or pedestrians, avoiding street clutter and where appropriate establishing home zone?</u></p> <p>Yes. The N&E MMDR incorporates footways and cycleways. Appropriate crossing points will be provided.</p>
	<p><u>Does the development allow for efficient delivery of goods, and access by service and emergency vehicles?</u></p> <p>Yes. Goods vehicles routeing through the Melton area will no longer have to use the town centre highway network; and goods vehicles serving Melton will be using a less congested network. Emergency vehicles will also benefit from a less congested network.</p>
	<p><u>Does the development enable charging of plug-in and other ultra-low emission vehicles in safe, accessible and convenient locations?</u></p> <p>n/a.</p>

9. Conclusion

- 9.1.1 The North and East Melton Mowbray Distributor Road (N&E MMDR) is a 6.9km, single carriageway road that extends from the A606 Nottingham Road at the north-western edge of the town to the A606 Burton Road in the south. The route will cross the radial roads of: Scalford Road, Melton Spinney Road, A607 Thorpe Road and B676 Saxby Road.
- 9.1.2 The N&E MMDR is an important component of the Melton Mowbray Transport Strategy. The N&E MMDR represents the preferred option to overcome existing traffic congestion and traffic related problems in the town, whilst enabling future growth.
- 9.1.3 The impact of the N&E MMDR has been modelled using the Leicester and Leicestershire Integrated Transport Model (LLITM), which has been developed to be compliant with guidance produced by the Department for Transport (DfT).
- 9.1.4 This Transport Assessment has been produced to provide a high-level overview of the impact of the scheme. It has shown that:
- the scheme is supported by local planning policy;
 - has been assessed using an appropriate modelling software package;
 - provides traffic relief through Melton Mowbray town centre;
 - that the level of traffic relief will generate material improvements in the town centre environment (relating to aspects related to road traffic);
 - will improve the town centre transport environment for pedestrians, cyclists, and public transport services; and
 - the N&E MMDR been designed to accommodate the forecast level of traffic that it would be expected to accommodate.
- 9.1.5 The scheme would be fully compliant with the NPPF.

Appendix A – Glossary

ARCADY	<i>Assessment of Roundabout Capacity and DelaY</i> . A software tool used to assess the capacity of roundabouts under differing traffic scenarios.
Design Manual for Roads and Bridges	A highway design guide, commonly used for analysis and design of the trunk road network but also used for local roads, where appropriate.
Gravity Model	A simple method of calculating the likely destinations of trips from a given location based on the distance to prospective destinations and the number of people or jobs in the prospective destinations. The model pre-supposes that a destinations attractiveness is a function of its size and proximity.
Guidance on Transport Assessment (GTA)	A guidance document prepared by the Department for Transport setting out how a Transport Assessment should be prepared.
Inscribed Circle Diameter (ICD)	The largest circle which can be drawn within the kerbs of a roundabout. It is a measure of the overall junction size.
Junction Capacity	The number of vehicles which can be accommodated by a junction within a given period. Capacity can be calculated using software such as ARCADY, PICADY or LINSIG. Where a junction is operating “at capacity”, queues are likely to form because the number of vehicles approaching the junction is more than that which can pass through it.
Local Highway Authority	The body responsible for the local road network in a particular area, in particular with regards network improvements and the control of development that could affect the local highway.
Local Plan	A document produced by Local Authorities containing the development plans and policy documents for the local area.
Local Transport Plan	<p>The Transport Act 2000 required Local Highway Authorities to produce and maintain an LTP. The LTP sets out transport strategies and policies for a given area and how these will be implemented.</p> <p>The plans cover a defined period and are used by the DfT to make decisions on capital funding, and for Local Authorities to monitor the delivery of key objectives and targets. The current LTP document covers the period 2011-2026.</p>
Manual Classified Count (MCC)	A count of traffic on a particular road, or at a junction, which is usually undertaken by a team of enumerators, usually over a 12-hour period. Traffic is classified by vehicle type.

MOVA	<i>Microprocessor Optimised Vehicle Actuation</i> is an adaptive signal control system. It uses advanced traffic control algorithms to increase capacity and minimise delay at traffic signals. It is used at a range of junctions from high speed to smaller suburban and urban sites.
Ratio of Flow to Capacity (RFC)	A measure of the performance of a junction, with a measure of 1.0 or above indicating that a junction is operating above capacity. A Target value of 0.85 is required for a new junction.
SATURN	A software tool used to model traffic flows on a highway network that is responsive to congestion and reassignment issues.
Severance	The separation of residents from facilities and services they use within their community caused by new or improved roads or by changes in traffic flows. An objective measurement of severance can be calculated with reference to guidance contained in the DMRB.
Transport Analysis Guidance (TAG)	A set of documents (or Units) published by the Department for Transport which sets out how a particular transport scheme should be assessed, principally in terms of economic analysis and calculating a Benefit:Cost ratio. Guidance on the assessment of environmental impacts of highway schemes are also contained in the guidance. Sometimes referred to as WebTAG.
Transport Assessment (TA)	A document submitted in support of a planning application which sets out the likely impact of a proposed development on the transport network. Guidance on the content of a Transport Assessment is provided in the GTA.
Travel Plan	A document submitted in support of a planning application which sets out how trips to / from a development would be managed on opening. Its objective is usually to reduce single occupancy car trips by promoting sustainable travel options.
Trip Assignment	A stage in the estimation of future traffic conditions. The process of “assigning” traffic flows to particular links and junctions to and from a particular destination. As a part of the traffic modelling process, trip assignment is preceded by Trip Distribution.
Trip Distribution	A stage in the estimation of future traffic conditions. The process of determining the likely origins and destinations of traffic to and from a proposed development. This stage does not make any assumptions about routeing. As a part of the traffic modelling process, trip distribution is followed by Trip Assignment.
Trip End Model Programme (TEMPRO)	The TEMPRO database contains information relating to land-use developments across the United Kingdom. It is used to forecast traffic growth in / from specific areas.
Trip Generation	A stage in the estimation of future traffic conditions. Trip Generation is an estimate of the total arrivals and departures that could be generated by a development

within a specific time period. As a part of the traffic modelling process, trip generation is followed by Trip Distribution and Trip Assignment.

WebTAG

See TAG.

Appendix B – ARCADY Outputs

Appendix C – Residential and Employment Development Assumptions

Table C1: 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 - Salford 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, Salford 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.

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

Table 2: 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).

Appendix D – Junction Geometry

Jct 1	V	E	I	R	D	PHI
Arm 1	7.7	7.3	8.8	24.8	79	43
Arm 2	6.5	7.4	14.7	24.6	79	33
Arm 3	4.8	7.2	11	19.6	79	52
Arm 4	3.8	7.5	9.9	19.6	79	45
Arm 5	4.3	7.2	14.7	22	79	31

Jct 2	V	E	I	R	D	PHI
Arm 1	4.3	7.3	8.1	29.7	79	46
Arm 2	4.1	7.7	15.6	23	79	42
Arm 3	4.5	7.5	12.3	25.5	79	33
Arm 4	4.5	7.5	9	17.8	79	47
Arm 5	4.4	7.3	16.8	29	79	41

Jct 3	V	E	I	R	D	PHI
Arm 1	3.8	7.8	12	25.1	83	42
Arm 2	4.8	7.4	14.9	35.6	83	26
Arm 3	3.9	7.4	16.5	25.8	83	31
Arm 4	5.1	7.3	14.9	35.6	83	33
Arm 5	4.8	7.4	14.2	23.4	83	42

Jct 4	V	E	I	R	D	PHI
Arm 1	5.3	7.5	13.8	32	63	31
Arm 2	4.4	7.5	15.2	25	63	33
Arm 3	5.1	7.4	15.1	21	63	35.5
Arm 4	3.7	7.5	10.1	24.8	63	40

Jct 5	V	E	I	R	D	PHI
Arm 1	3.7	7.7	17.7	31	63.7	42
Arm 2	4	8.7	16.6	32	63.7	55
Arm 3	3.6	10.1	11.3	35	63.7	47
Arm 4	3.7	7	16.3	25	63.7	37

Jct 6	V	E	I	R	D	PHI
Arm 1	3.7	7.7	24	19.4	80	45
Arm 2	3.7	8.2	29.4	19.5	80	56
Arm 3	3.7	7.5	28.8	19.7	80	45
Arm 4	4.9	7.4	30	27	80	44
Arm 5	4.7	7.4	23	25.8	80	37

V = the approach half width GH
 E = The entry width AB
 I = Length over with flare develops (CF)
 R = Entry Radius
 D = The roundabout inscribed diameter.
 PHI = The conflict angle of traffic entering the roundabout with circulating traffic.

V = the approach half width GH
 E = The entry width AB
 I = Length over with flare develops (CF)
 R = Entry Radius
 D = The roundabout inscribed diameter.
 PHI = The conflict angle of traffic entering the roundabout with circulating traffic.

V = the approach half width GH
 E = The entry width AB
 I = Length over with flare develops (CF)
 R = Entry Radius
 D = The roundabout inscribed diameter.
 PHI = The conflict angle of traffic entering the roundabout with circulating traffic.

Appendix E – Junction Turning Flows

AM

		To					
		Junction 1	1	2	3	4	5
From	Junction 1	1	0	326	12	309	47
	1	2	293	0	0	30	77
	2	3	77	0	0	62	37
	3	4	243	36	14	0	36
	4	5	86	113	6	63	0

PM

		To					
		Junction 1	1	2	3	4	5
From	Junction 1	1	0	345	70	334	85
	1	2	266	0	0	33	111
	2	3	18	0	0	12	5
	3	4	91	32	31	0	41
	4	5	41	91	32	31	0

AM

		To					
		Junction 2	1	2	3	4	5
From	Junction 2	1	0	19	1	51	10
	1	2	3	0	6	99	262
	2	3	8	40	0	117	99
	3	4	33	173	16	0	29
	4	5	23	421	8	25	0

PM

		To					
		Junction 2	1	2	3	4	5
From	Junction 2	1	0	4	6	36	16
	1	2	6	0	42	165	354
	2	3	1	8	0	29	11
	3	4	44	91	87	0	29
	4	5	34	318	82	138	0

AM

		To					
		Junction 3	1	2	3	4	5
From	Junction 3	1	0	22	132	130	65
	1	2	4	0	53	14	18
	2	3	53	59	0	0	236
	3	4	31	13	0	0	50
	4	5	9	79	508	58	0

PM

		To					
		Junction 3	1	2	3	4	5
From	Junction 3	1	0	5	63	48	9
	1	2	13	0	55	11	70
	2	3	108	41	0	0	412
	3	4	76	5	0	0	77
	4	5	50	21	295	55	0

AM

		To				
		Junction 4	1	2	3	4
From	Junction 4	1	0	153	541	0
	1	2	91	0	272	180
	2	3	258	203	0	11
	3	4	0	99	31	0

PM

		To				
		Junction 4	1	2	3	4
From	Junction 4	1	0	134	279	0
	1	2	143	0	223	107
	2	3	418	282	0	56
	3	4	0	173	13	0

AM

		To				
		Junction 5	1	2	3	4
From	Junction 5	1	0	67	155	56
	1	2	64	0	204	364
	2	3	80	80	0	51
	3	4	172	574	99	0

PM

		To				
		Junction 5	1	2	3	4
From	Junction 5	1	0	69	53	123
	1	2	74	0	117	517
	2	3	140	153	0	117
	3	4	40	427	49	0

AM

		To					
		Junction 6	1	2	3	4	5
From	Junction 6	1	0	195	9	294	248
	1	2	212	0	8	4	189
	2	3	30	1	0	63	138
	3	4	233	3	10	0	56
	4	5	401	197	32	92	0

PM

		To					
		Junction 6	1	2	3	4	5
From	Junction 6	1	0	280	24	227	307
	1	2	203	0	1	5	255
	2	3	8	3	0	18	64
	3	4	219	1	16	0	82
	4	5	258	198	127	66	0

