

Melton Mowbray Transport Study

Cumulative Development Impact Study



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Executive Summary

The Melton Cumulative Development Impact Study entailed the application of the recently updated Leicester and Leicestershire Transport Model (LLITM) v5 in order to assess the impacts of the cumulative proposed developments against the without development Core Scenario. The LLITM model was deemed suitable for this assessment based on its performance against WebTAG calibration and validation criteria.

The cumulative developments consist of six sites, three to the north of Melton Mowbray and three to the south. Each of the individual development sites are subject to planning applications and are excluded from the Local Plan. This assessment is a worst case scenario in terms of congestion impacts. Therefore, the study has considered the impacts of the proposed developments cumulatively (i.e. all together), assessing the impact of growth (core scenario) without the proposed developments included and then the same with the proposed developments included.

At present Melton Mowbray has a high level of congestion in the AM and PM peak in Melton town centre. In 2011 junctions along the A607 from Leicester Road to Thorpe End are already congested for all or part of the peak periods particularly in the AM peak. Approaches to the A607 / Scafford Road are considered the most impeded. These junctions are likely to require mitigation should traffic volumes using them continue to grow to the point that absolute capacity is reached as evident by the 2031 forecast; which shows that congestion has significantly increased on approaches to A607 / A6006, A607 / Snow Hill junctions in the AM peak. In the PM peak approaches to the A607 / A6006, A607 / Leicester Street and A606 / Sherrard Street junctions show a marked deterioration in performance, with performance declining further with the cumulative development traffic.

A severe impact on delays per mile is classified as 3 minutes or more for the purpose of this assessment, which as demonstrated in this study most of the journey time routes used for this study experience delays in excess of 3 minutes per mile. In 2011 the routes incurring the longest delay per mile are the A606 southbound and A6006/B676 westbound through the town centre in the AM peak. By 2031 delays per mile have deteriorated on all routes and further more in the 2031 with development scenario.

The LLITM model analysis has shown that under current traffic levels, congestion is having an impact on the town centre road network, and in the future without any development these problems are exacerbated and require further study to identify proportionate mitigation.

Furthermore the analysis suggests that any development irrespective of size would have a notable impact in further deteriorating traffic conditions in the town (whether measured by congestion, delay or travel times).

As a result, and as one of the central conclusions of this study, any development coming forward in the town requires a detailed transport assessment undertaken to ensure that suitable mitigation is proposed. To ensure a suitably robust assessment this should be undertaken using LLITM, which also ensures traffic re-assignment impacts are taken into account, and that the effectiveness of the mitigation proposals can be analysed in a cumulative context.

Neither of these points are met by recourse to individual site assessment, and use of a standardised LLITM assessment to meet consistency, equity and robustness needs should be maintained for any individual proposal >50 dwellings (~30 peak hour trips).

Given the limited spare capacity, and amount of development proposed, this mitigation needs to be of demonstrably sufficient magnitude to not only mitigate the impacts of the development itself, but also contribute to a wider benefit for residents and as part of the overall growth strategy for the town.

If this is not achieved, then the evidence within this document shows that the development cannot be considered sustainable.

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1 Introduction

1.1 Report Outline

Jacobs was appointed by Melton Borough Council and Leicestershire County Council to undertake transport modelling of the town and its environs in order to identify the impact of cumulative development proposals upon the functioning of its transport network.

The study entailed the application of the recently updated Leicester and Leicestershire Transport Model (LLITM) v5 in order to provide a Core Scenario reference case, and to assess the impacts of the cumulative proposed developments against it.

The cumulative developments consist of six sites, three to the north of Melton Mowbray and three to the south. Each of the individual development sites are subject to planning applications for residential development and are outside of the Local Plan for the Borough. In total this amounts to 2,550 dwellings. The proposed development sites are located on the edge of the built up area and therefore away from town centre facilities. Individually, the developments are likely to add traffic to existing congestion bottlenecks within the town centre and more so if all six went ahead.

The purpose of this report is to assess to what extent the existing transport system can absorb existing and future demand and where further interventions may be necessary in order to mitigate their effects within or without a modified Local Plan. This is achieved by use of the model, and focusing on the analysis of outputs using commonly understood indicators of impacts and graphical representation.

1.2 Report Structure

The remainder of this report is set out as follows:

- *Chapter 2 - describes the Leicester and Leicestershire Transport Model and its suitability for the assessment of Melton Mowbray;*
- *Chapter 3 – baselines Core Scenario congestion measures in Melton Mowbray;*
- *Chapter 4 presents the impacts of the cumulative developments on congestion in Melton Mowbray; and finally*
- *Chapter 5 provides conclusions on the impacts of development on Melton.*

2.1 Introduction

This chapter provides an overview of the Leicester and Leicestershire Integrated Transport Model (LLITM) used for this assessment.

2.2 Overview of LLITM

LLITM is maintained by Leicestershire County Council and consists of the following interlinked programmes:

- *SATURN - Highway Assignment Model;*
- *EMME- Public Transport Model;*
- *DELTA - Land Use Model;*
- *EASE - Environmental Module; and*
- *EMME - Demand Model.*

The model has been built in accordance with the Department for Transport’s modelling and appraisal guidance (WebTAG), and has been approved for a range of transport schemes, development impact assessment, Local Plan strategy development, and as a tool to secure wider-ranging infrastructure funding for the Council.

Figure 2-A below represents a schematic diagram of the structure of the LLITM model, as taken from the Local Model Validation Report (September 2013). The land use model generates residential and employment travel demand which is translated into trips between locations by mode and frequency using the demand model. These trips are assigned to their respective highway and public transport networks to determine route choice.

The entire process recognises the interdependency between demand, travel choices and travel costs by looping runs of each of the models until the relationship between trip patterns and trip costs are stable. The majority of routing and traffic analysis in this report is then derived from a final assignment of trips to the public transport and highway networks.

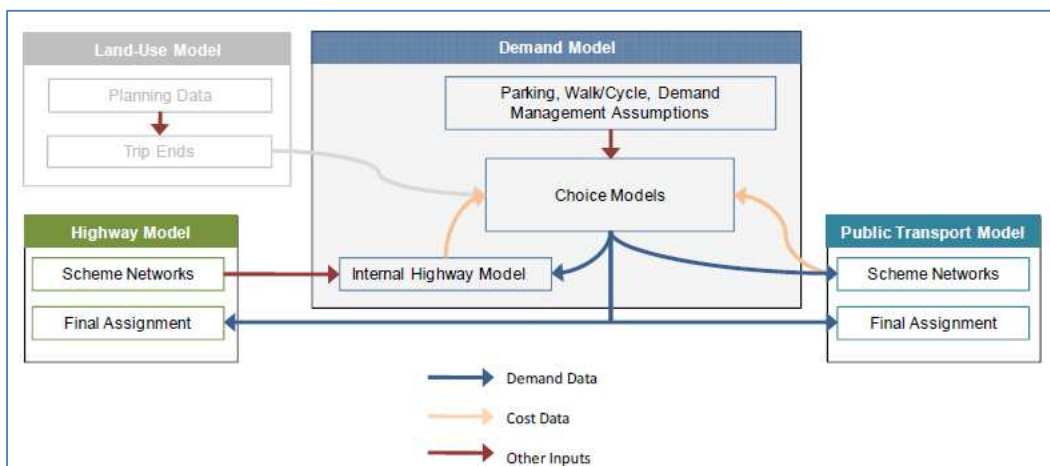


Figure 2-A Structure of LLITM

2.2.1 Forecasting

The base year for LLITM is 2008, and forecasts are produced at 5 yearly intervals from 2011 to 2031 as shown in Figure 2-B.

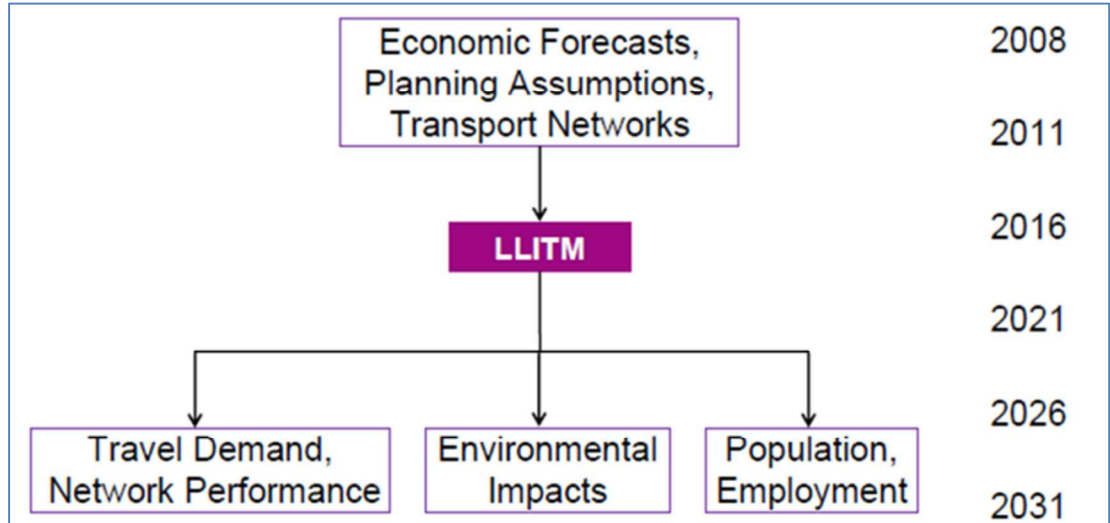


Figure 2-B Inputs and outputs of LLITM and forecast time horizons

The 2031 Year has been used as the primary year of assessment for the Melton Cumulative Impact assessments, in agreement with Melton Borough Council. 2011 has been taken to represent the closest approximation available to the current year and network conditions, and includes development in the town that was completed by 2011.

This acts as a suitable comparative for forecast background changes between today’s traffic conditions and those expected in 2031 without any further development in Melton, and the subsequent impact of the additional cumulative development proposed in the town. This is undertaken against both the 2031 ‘no development’ scenario, and current traffic conditions.

The factors applied to the transport model for the derivation of future year forecasts are based on standard Department for Transport data, including fuel prices and GDP growth forecasts, as well as local projections regarding public transport fares, future year transport schemes, and incorporation of the latest adopted Core Strategies as of September 2013.

These are documented in further detail in the Model Forecasting Report (September, 2013), and overall growth used within the model is consistent with Department for Transport forecasts produced by the National Transport Model.

Built or planned/ committed development post-2011 is also reflected in the forecasts through to 2031, and in a Melton specific context it should be noted that the forecasts include Sainsbury’s on Nottingham Road, and the council offices at Parkside.

Both of these are included in the model and are therefore reflected within the 2031 forecasts- with and without development.

2.3 LLITM Model Suitability

LLITM has been built in consideration of WebTAG guidance and this section presents the model’s performance against the prescribed criteria which demonstrate a model is a suitable representation of actuality.

Table 2-A demonstrates the model performance against commonly used criteria as outlined in WebTAG guidance for each of the following measures:

- *screenline flow differences;*
- *link flow differences;*
- *link flow difference statistical significance (GEH); and,*
- *Journey time differences.*

In comparison of modelled and observed flow and journey time data it is desirable for a model to achieve the WebTAG criteria for 85% of incidences or higher.

In the case of LLITM the model achieves an average level of over 85% and in many cases exceeds this threshold.

| Measure | WebTAG performance threshold | Am Peak | PM Peak |
|-----------------|------------------------------|---------|---------|
| Screenline flow | All or nearly All incidences | 91% | 93% |
| Link flow | >85% | 84% | 86% |
| Link flow GEH | >85% | 79% | 82% |
| Journey Times | >85% | 88% | 85% |

Table 2-A Level of LLITM performance using WebTAG criteria (comparison of modelled output and observed data).

The assessment in Table 2-A therefore demonstrates a satisfactory compliance with WebTAG performance thresholds for the entire model.

However, and of more importance for this particular study, is that further assessment was undertaken to verify the suitability of the model in the study area and the associated level of WebTAG performance for Melton Mowbray.

Figure 2-C shows the locations of traffic counts which have been used to assess the suitability of the model in and around Melton against WebTAG traffic flow criteria.

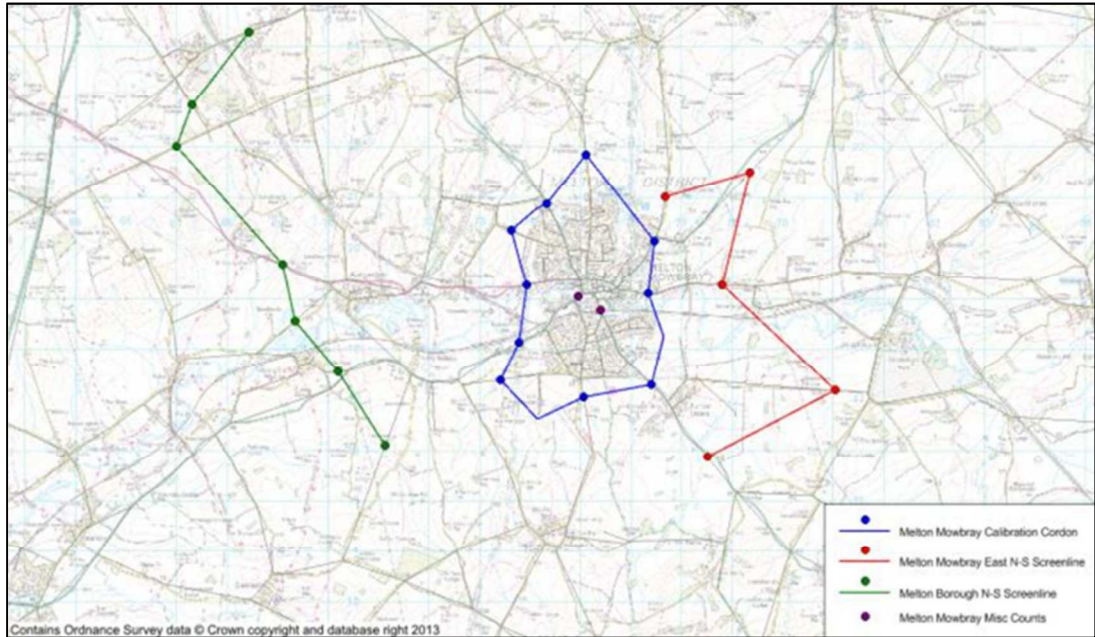


Figure 2-C Melton Mowbray Calibration Cordon & Screen lines

The assessment results are shown in Table 2 – B. As can be seen performance against all three WebTAG criteria for traffic flows is in excess of the threshold 85% in both peak hours.

| Number of Counts | AM Peak | | | PM Peak | | |
|------------------|-------------------------|-----------------------|---------------|-------------------------|-----------------------|---------------|
| | Screen line differences | Link flow differences | Link flow GEH | Screen line differences | Link flow differences | Link flow GEH |
| 48 | 100% | 98% | 94% | 100% | 96% | 92% |

Table 2-B Melton Mowbray performance against WebTAG criteria – traffic flows

An assessment of model suitability in terms of journey times has also been undertaken. The journey time routes used are shown in figure 2-D and the corresponding results shown in Table 2-C. The journey time routes extend across the urban area of Melton Mowbray and towards Leicester.

Overall the journey times have a very high pass rate. In the PM peak modelled journey times outside the WebTAG criteria are no more than three minutes faster than the observed journey time. These are small differences in absolute terms. Therefore, given the variability in journey times along congested routes the validation is acceptable.

On average the modelled journey times tend to be faster than observed. This is not surprising given that LLITM is a strategic model, but it does suggest that forecast journey times with development traffic are more likely to be under rather than overstated.

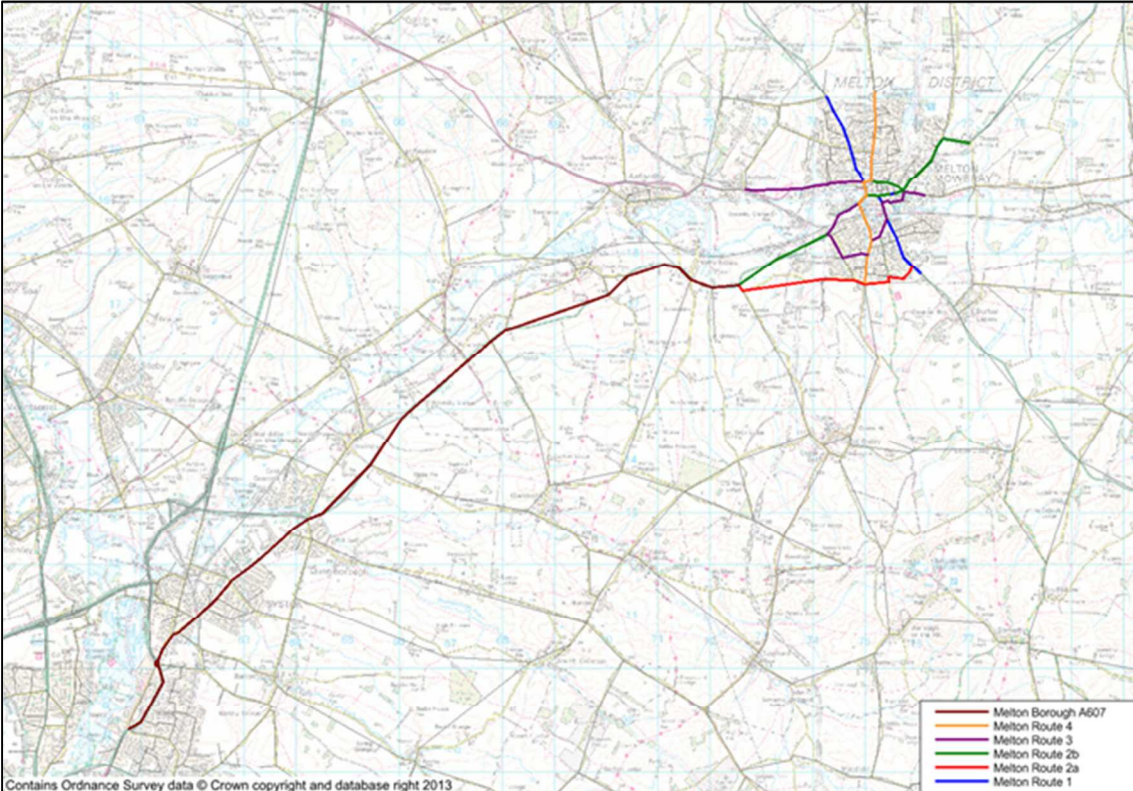


Figure 2-D Melton Mowbray Journey Time Routes

| Location | Route | AM Peak | | | Inter-Peak | | | PM Peak | | |
|--------------------------------------|-----------------|---------|--------|------|------------|--------|------|---------|--------|------|
| | | Abs. | % | Pass | Abs. | % | Pass | Abs. | % | Pass |
| Melton | 1 Northbound | -01:46 | -17.9% | ✘ | -00:16 | -3.6% | ✓ | -03:21 | -29.4% | ✘ |
| Melton | 1 Southbound | -00:46 | -5.7% | ✓ | -01:38 | -14.1% | ✓ | -00:34 | -4.9% | ✓ |
| Melton | 2a Northbound | 00:02 | 0.8% | ✓ | 00:09 | 2.9% | ✓ | -00:16 | -5.0% | ✓ |
| Melton | 2 a Southbound | -00:06 | -1.8% | ✓ | 00:03 | 1.0% | ✓ | 00:04 | 1.2 | ✓ |
| Melton | 2b Northbound | -01:48 | -11.8% | ✓ | -00:30 | -4.4% | ✓ | -01:55 | -13.0% | ✓ |
| Melton | 2b Southbound | 00:35 | 6.0% | ✓ | 00:34 | 6.3% | ✓ | 01:05 | 11.1% | ✓ |
| Melton | 3 Eastbound | -05:46 | -29.7% | ✘ | 00:53 | 7.0% | ✓ | -02:54 | -17.8% | ✘ |
| Melton | 3 Westbound | -01:40 | -12.0% | ✓ | 00:12 | 1.8% | ✓ | -02:43 | -18.2% | ✘ |
| Melton | 4 Northbound | -01:15 | -10.9% | ✓ | -00:58 | -10.3% | ✓ | -02:51 | -23.4% | ✘ |
| Melton | 4 Southbound | 00:02 | 0.2% | ✓ | -00:02 | -0.3% | ✓ | 01:05 | 13.8% | ✓ |
| Melton Borough | A607 Northbound | -01:01 | -5.5% | ✓ | -02:05 | -10.9% | ✓ | 01:50 | 10.7% | ✓ |
| Melton Borough | A607 Southbound | -00:41 | -3.6% | ✓ | -03:03 | -14.9% | ✓ | 01:02 | 6.2% | ✓ |
| Percentage achieving WebTAG criteria | | | | 83% | | | 100% | | | 67% |

Table 2-C Melton Mowbray Journey Time Validation based on WebTAG criteria.

2.4 Conclusions

This section of the report demonstrates that, based on WebTAG guidance, LLITM is suitable for outline assessment of the cumulative impact of the proposed developments.

However, being a strategic model, LLITM is not designed to model any specific location to a high level of detail and as a result its results provide an indication of the extent of impact and where congestion is and will pose a significant problem. More detailed local modelling will be required to understand congestion problems fully, and gauge the scale of any appropriate mitigation in future stages of work.

3.1 Introduction

This section of the report assesses the extent of congestion in the Core Scenario in 2011 and 2031 in Melton.

The assessment is based on the analysis of the following congestion indicators:

- Volume / capacity (V/C) ratios;
- Junction delays;
- Journey times;
- Route speeds; and
- Route delays.

In addition a comparison is made of through traffic movements within the Melton town centre.

It is important to re-iterate that the Core Scenario excludes any of the proposed developments under assessment, and as such represents a scenario in which no development beyond that presently consented, has been assumed for Melton.

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 are shown on Figure 3-A.



Figure 3-A Junctions and roads referenced in Melton town centre

3.2 2011 Congestion- Volume / Capacity ratios

The following section focuses on congestion defined in terms of volume / capacity ratios or V/C) in the AM peak (08:00 to 09:00) and PM peak (17:00 to 18:00).

The V/C ratio (typically expressed as a percentage) defines the amount of road capacity (i.e. the level of traffic the link or junction is designed to withstand) taken up by the volume of traffic using it. There are three critical threshold V/C ratios:

- *>70% V/C suggests the road link or junction is under strain and is a sign that should demand increase mitigation would be required to avoid significant congestion.*
- *>85% V/C suggests the performance of the link or junction is significantly impeded as operational capacity has been exceeded for at least part of the peak resulting in some queuing.*
- *>100% V/C suggests that traffic throughput at the link or junction has completely broken down for the entire peak resulting in potentially long queues, blocking of junctions upstream and the metering of downstream flows.*

Current levels of V/C ratios in Melton Mowbray in the AM peak are shown in Figure 3-B. Links with a V/C of 70% or less are green, links between 70% -85% are amber and links in excess of 85% are shown in red.

The V/C distribution shows that the majority of congestion is concentrated within Melton town centre where radial routes meet. Further along these radials, away from the town centre and into the wider county, V/C ratios decline to acceptable levels well below operational capacity.

The highest V/C ratios are found on approaches to the following junctions:

- *A607/Thorpe End Junction;*
- *A607/Leicester Street Junction;*
- *A607/Snow Hill Junction;*
- *A606/A6006 Junction; and*
- *Scalford Road/ A607 junction.*

The A607 southbound between Leicester Street and Dalby Road experiences a V/C ratio of 93%. This arises from capacity issues not just at the Dalby Road junction but also along the A607 itself, which is one lane southbound and two lanes northbound from the Leicester Street junction.

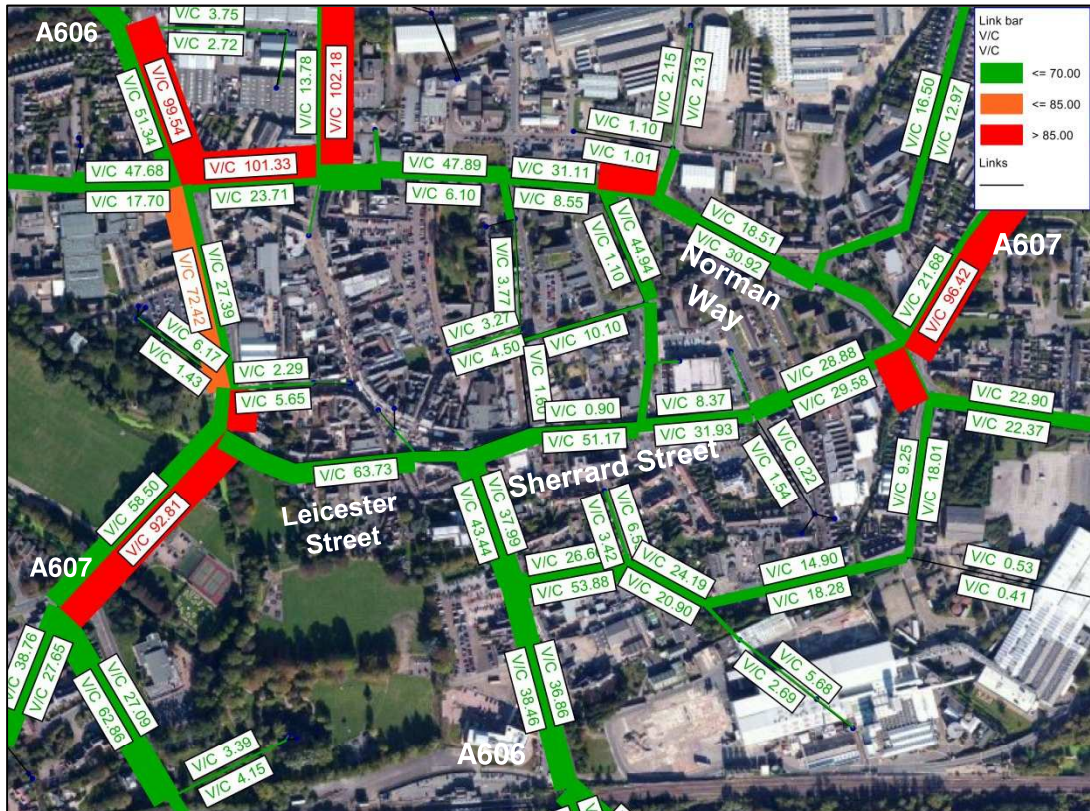


Figure 3-B Link Volume/Capacity ratios 2011 AM Peak Melton Mowbray

The Volume/Capacity ratios for Melton Mowbray town centre in the PM peak are shown in Figure 3-C for 2011. As demonstrated in Figure 3-C a number of links are approaching their operational capacity.

The A607 southbound either side of the town centre experiences the highest V/C ratios at over 96%.

Currently in Melton in the PM Peak approaches to the following junctions are considered to have a critical Volume/Capacity Ratio:

- A607 / Leicester Street;
- A607 / Dalby Road;
- A607 / Snow Hill;
- A607 / Thorpe End; and
- A607 / Scafford Road.

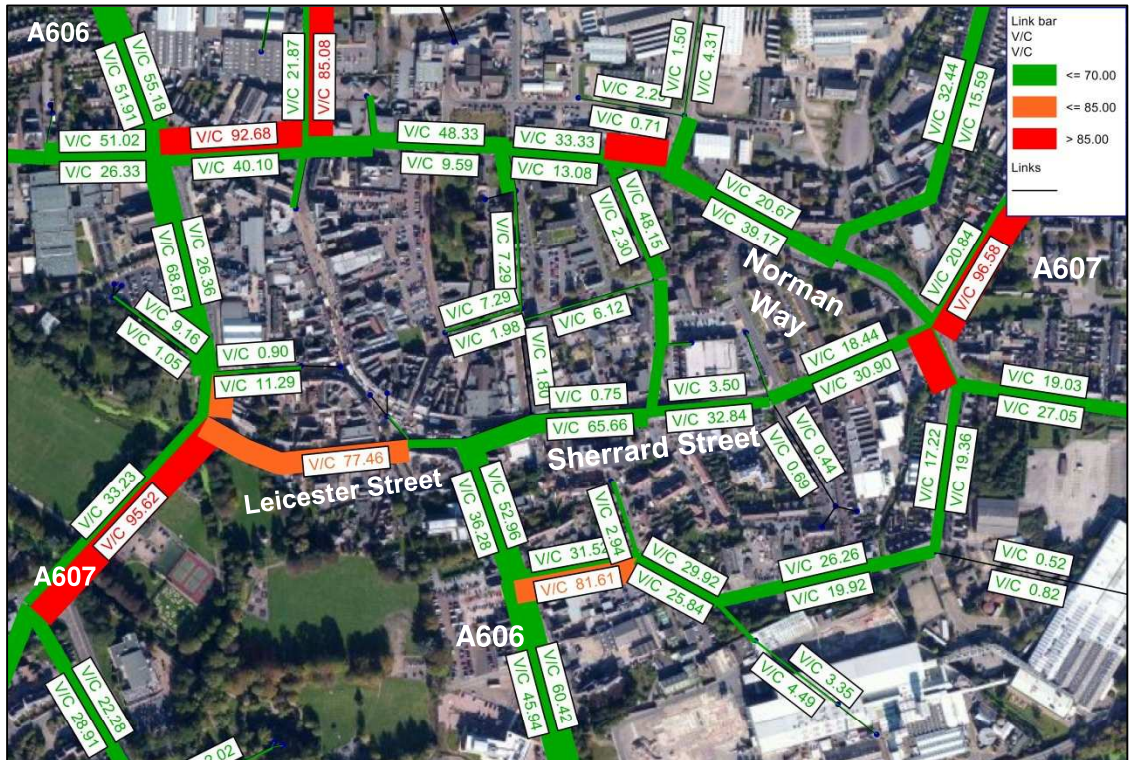


Figure 3-C Link Volume/Capacity ratios 2011 PM Peak Melton Mowbray

Changes in the level of congestion from 2011 to 2031 in Melton based upon the Core Scenario as outlined in Chapter 2 (section 2.2.1) of this report are also reported in this chapter.

The changes relate to the following congestion indicators as defined in Chapter 3:

- Volume / capacity (V/C) ratios;
- Junction delays;
- Journey times;
- Speeds; and
- Route delays.

3.3 2031 Changes in Congestion- Volume/Capacity ratios

By 2031, the V/C ratios deteriorate as a result of traffic growth as shown in Figure 3-D for the AM peak and Figure 3-E for the PM peak.

Generally, the same locations are experiencing congestion as in 2011, though the level of congestion in 2031 has increased. In 2011 AM peak only Scafford Road (southbound) and A607 Norman Way (eastbound towards Scafford Road) were over 100% V/C, but with the impact of growth two additional links the A606 (Nottingham Road, southbound) and A607 eastbound at Snow Hill respectively, are over 100% V/C.

Radial routes heading in to and out of Melton are not experiencing capacity issues outside of the town centre.

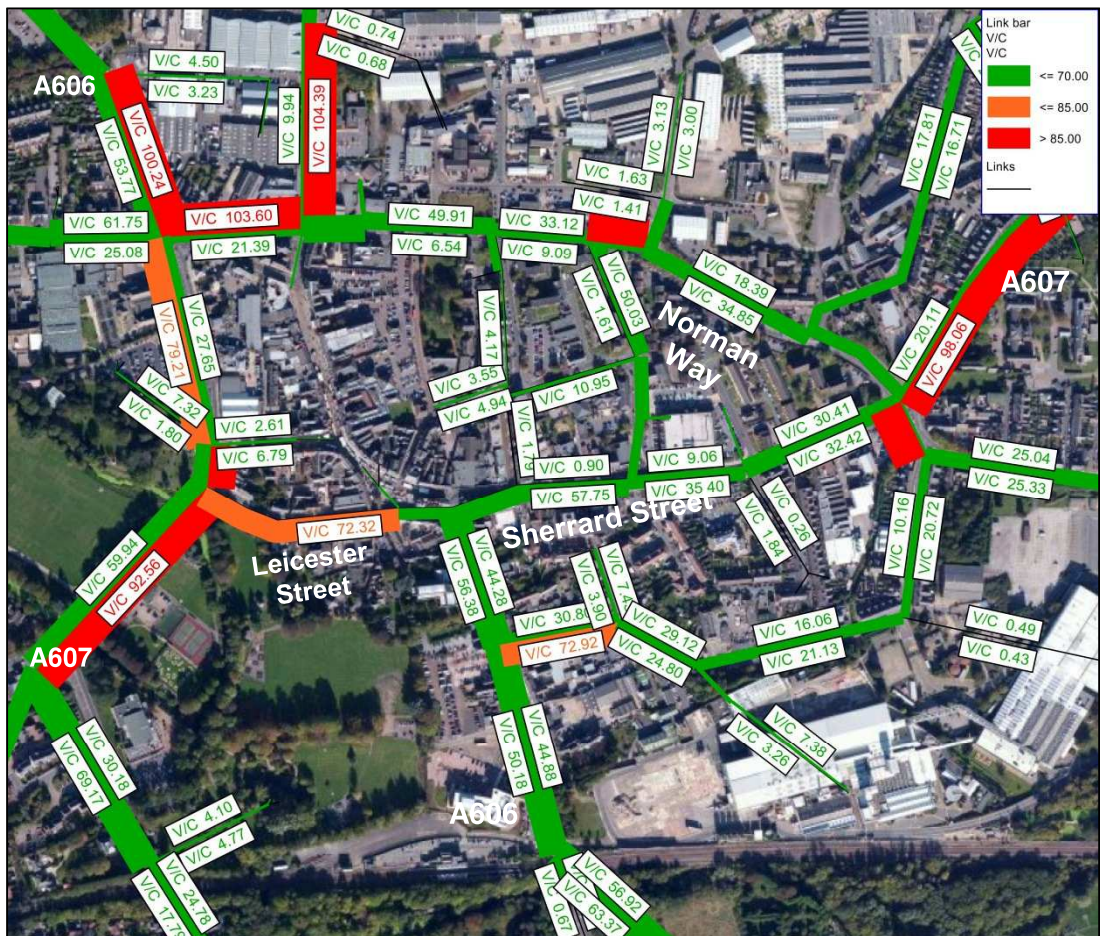


Figure 3-D Link Volume/Capacity % 2031 AM Peak Melton Mowbray

In the PM peak Figure 3-E shows that A607 Leicester Road and Leicester Street have increased from between 75-85% to a V/C ratio in excess of 85%.

By 2031 Sherrard Street approaching the A606 junction and Wilton Road see their V/C ratios increase above 75%.

By 2031 congestion at the A607/Leicester Street junction has increased significantly. Leicester Street is at operational capacity. The A607 travelling away from the Leicester Street junction at 97% is very close to absolute capacity. At 95% V/C queues along the A607 Norman Way are impacting on traffic throughput at the A607/A6006 junction.

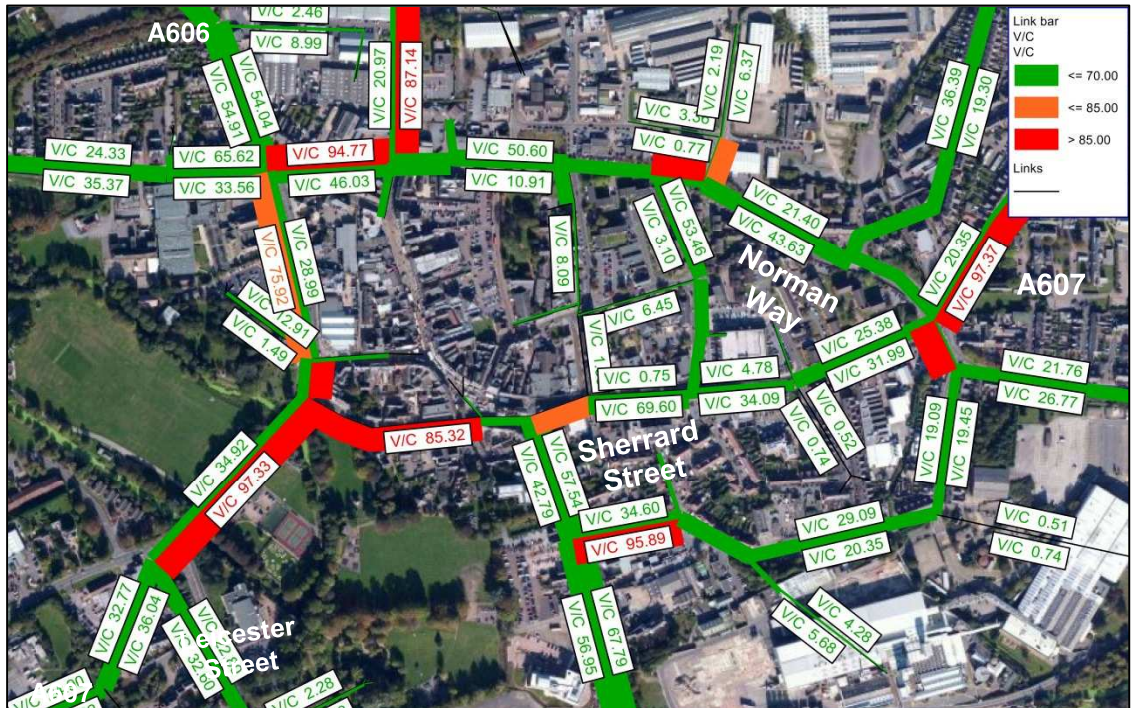


Figure 3-E Link Volume/Capacity % 2031 PM Peak Melton Mowbray

3.4 2011 to 2031- Changes in Delay (seconds per vehicle)

This section focuses on the changes in delay from 2011 and 2031 and their associated impacts on travel across Melton. Delay measurements are extracted from the SATURN model outputs and represent the additional time taken to traverse a link or junction when traffic is moving at below free-flow speeds.

When calculating delay the SATURN software averages the delays across turning movements and therefore individual turning delays can be greater than stated.

Figure 3-F shows the changes in delay for the town centre in the AM peak. Where the links are shown in blue the delay has decreased and green means the delay has increased. Overall the delay has increased on key radial routes into and out of Melton Mowbray in the AM Peak, this is a product of an increase in congestion at key junctions in and around Melton Mowbray.

As shown in Figure 3-F the main radial routes heading in to Melton Mowbray; (A6007, A606, Scalford Road and the A607) experience an increase in delay. Approaches to the Scalford Road/A607 junction experience the greatest increase in delay; with an increase of 42 seconds on Scalford Road and 45 seconds on the A607.

The A607/Thorpe Road Junction and A6006/A606 junction also experience a significant increase in delay in the AM peak. The A6006/A607 junction has an increase in delay on all approaches. The A607/Thorpe End junction sees an increase in delay on the Thorpe Road and Saxby Road approaches.

The junctions that will experience the greatest increase in delay per vehicle are:

- A607/Thorpe End Junction;
- A6006/A606 Junction; and,
- A607/Scalford Road.



Figure 3-F Changes in Delay (Seconds) per vehicle Town Centre AM Peak 2031 – 2011

The increase in delay in the PM peak is shown in Figure 3-G. An overall increase in delay occurs in the direction of Melton Mowbray, along with an increase in delay on the majority of links heading away from Melton.

Due to the more varied travel patterns that occur in the PM peak, traffic is more evenly distributed between the A607 (Nottingham Road) and Scalford Road, and therefore the increase in delay is not as great as in the AM peak. However the A607 has greater flows along the A607 Leicester Road and Leicester Street Southbound in the PM peak.

In the PM peak the junctions with the great increases in delay are:

- A607/Leicester Street;
- A607/Thorpe End;
- A607 / Snow Hill and
- A607/ Scalford Road.

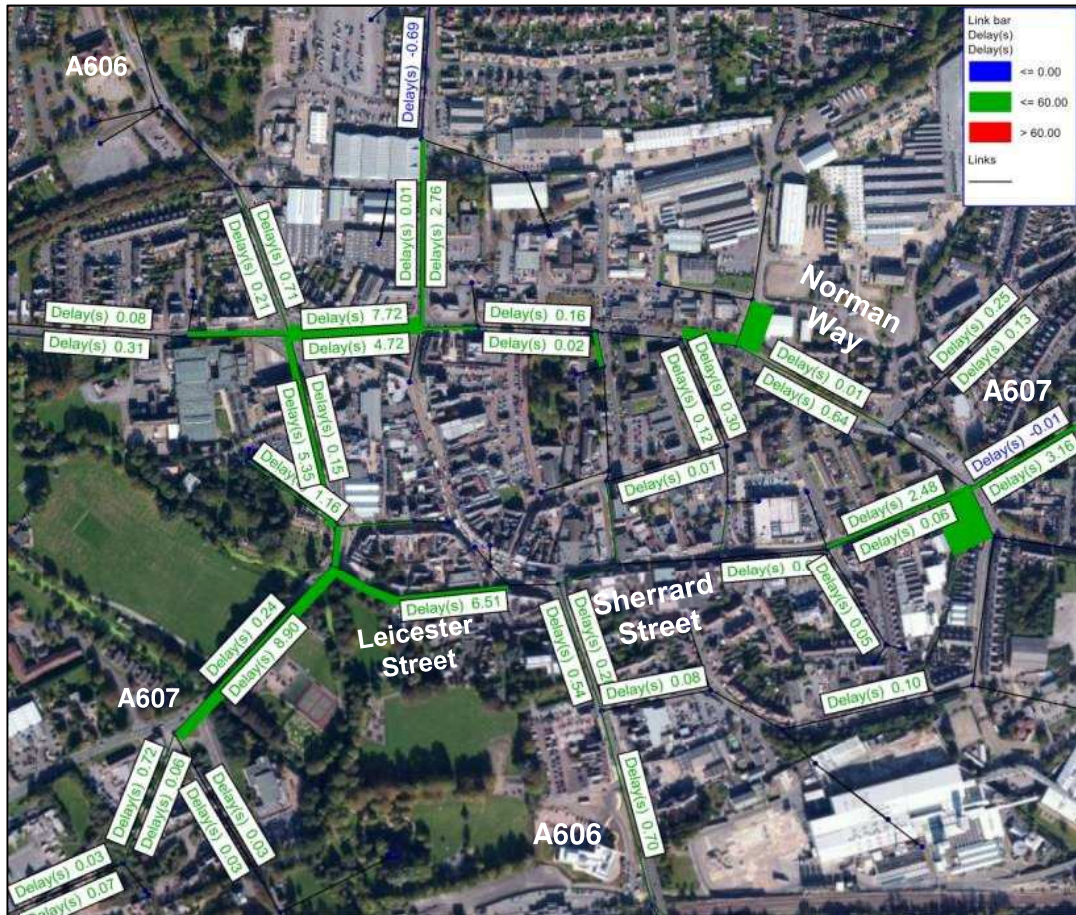


Figure 3-G Changes in Delay (Seconds) per vehicle Town Centre PM Peak 2031 – 2011

3.5 Changes in Through Traffic

This section assesses the changes in through traffic from 2011 to 2031, looking at the AM and PM peaks in turn.

The changes in traffic travelling through Melton Mowbray Town Centre in the AM Peak are represented below in Figure 3-H which shows 2031 traffic flows and 2011 traffic flows. The largest change in through traffic from 2011 to 2031 occurs on the A6006 Asfordby Road and A606 Burton Street. These experience an increase of through traffic of just over 70 vehicles per hour each.

A number of routes see a decline in through traffic. This indicates that congestion in the town centre is causing some through traffic to change routes through the town centre and possibly avoid the town centre completely. The most notable reduction in through traffic is on the A606 Nottingham Road (-29 vehicles per hour).

In 2031 in the AM peak a total of 2194 vehicles per hour travel through Melton Town compared with 2061 in 2011 (a 6% increase).

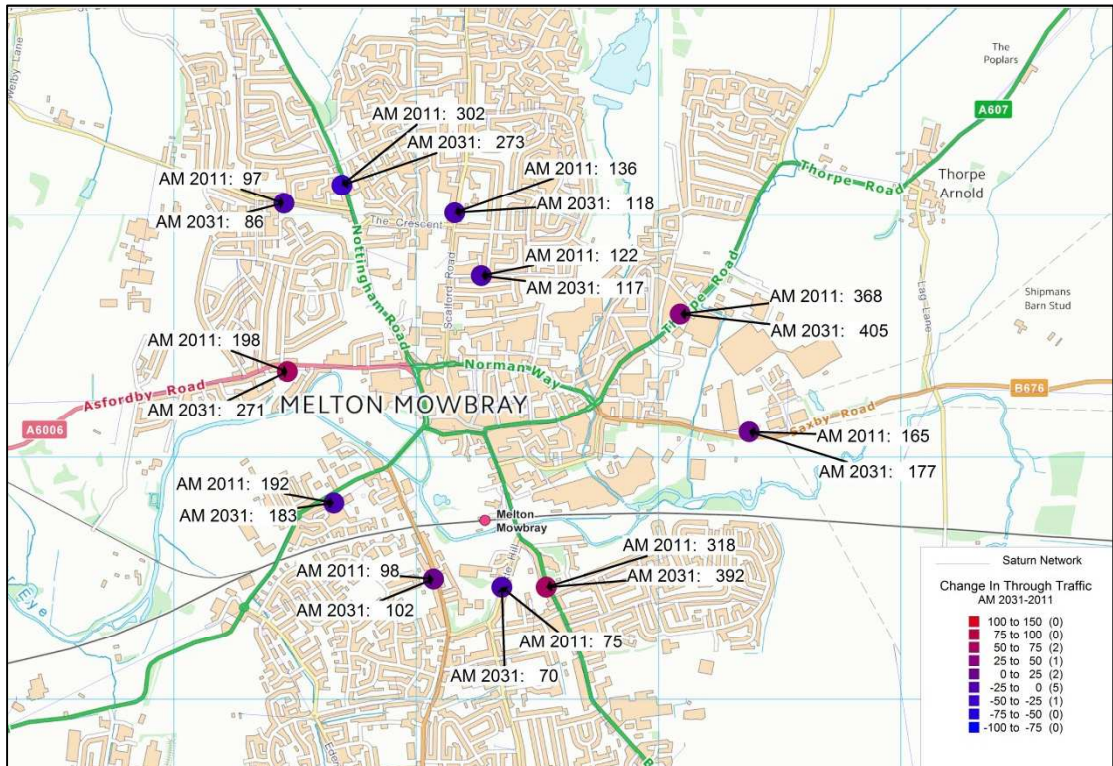


Figure 3-H Changes in Through Traffic AM Peak 2031 – 2011

In the PM peak the route which experiences the highest increase in through traffic is the A606 Burton Street with an increase of 103 vehicles per hour in the PM peak as shown in Figure 3-I, the A607 Thorpe Road and A6006 Asfordby Road see more modest increases of around 30 vehicles per hour respectively.

As in the AM peak; congestion within the town centre results in changes in the routing of through traffic particularly on the A606 Nottingham Road (-38 vehicles per hour), B676 Saxby Road (-29 vehicles per hour) and Scaford Road (-28 vehicles per hour).

In 2031 in the PM peak a total of 2,461 vehicles per hour travel through Melton town centre compared with 2,400 in 2011 (a 3% increase).



Figure 3-I Changes in Through Traffic PM Peak 2031 - 2011

3.6 Changes in Journey Time

The following paragraphs outline the changes in journey time on each of the journey time routes through Melton Mowbray as shown in Figure 3-J.

As the congested section of Route 5 is largely represented by Route 1 it is not included in the analysis to avoid double counting.

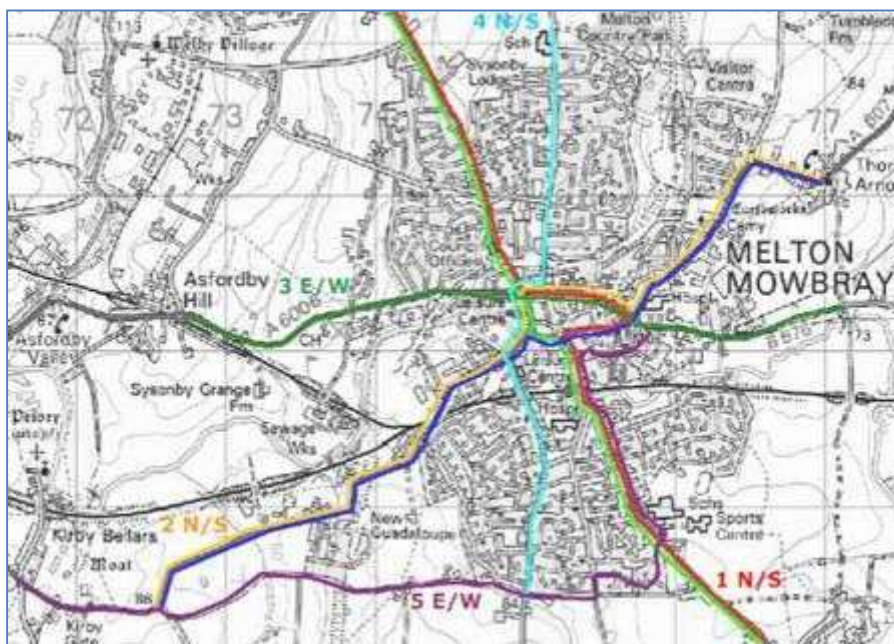


Figure 3-J Journey time routes

The modelled journey times for 2011 and 2031 are shown in Table 3-A. As modelled journey times represent “average” conditions across the peak hour, an increase of around one minute would suggest a higher likelihood of significant deterioration in journey time reliability than currently experienced.

All routes in the AM peak experience an increase in journey time. The greatest increase in journey time in the AM peak is 59 seconds on Route 1 Southbound (A606).

In the PM peak one route (Route 2 northbound, A607) experiences a decrease in journey time of 31 seconds this could be due to traffic rerouting to avoid congestion on the network and therefore decreasing the demand and congestion along route 2. The most notable increase in journey time in the PM peak is 62 seconds on Route 1 northbound.

The analysis shows overall that the diagonal movements across the town from North/South, that generally show the greatest changes i.e. Routes 1 and 2.

| Route | | Time Period | Change (2031-2011) (seconds) |
|-------------------------------|-------------------------|-------------|------------------------------|
| 1 (A606) | North to South (Red) | AM | + 00:59 |
| | | PM | + 00:32 |
| | South to North (Green) | AM | + 00:27 |
| | | PM | + 01:02 |
| 2 (A607) | South to North (Yellow) | AM | + 00:37 |
| | | PM | + 00:20 |
| | North to South (Blue) | AM | + 00:05 |
| | | PM | - 00:31 |
| 3 (A6006/B676) | East to West (Green) | AM | + 00:16 |
| | | PM | + 00:52 |
| | West to East (Green) | AM | + 00:44 |
| | | PM | + 00:21 |
| 4 (Scaford Road / Dalby Road) | North to South (Blue) | AM | + 00:35 |
| | | PM | + 00:18 |
| | South to North (Blue) | AM | + 00:35 |
| | | PM | + 00:18 |

Table 3-A Change in overall journey time (seconds) 2011 to 2031

3.7 Changes in route speeds and delays

Table 3-B shows the change in delay per mile calculated from the delay time on each route in 2011 and 2031. In a previous study in Cheshire an increase in delay per mile of three minutes or more was considered to represent severe congestion, the same assumption has been made for the purpose of this study, irrespective of location. Using this measure Route 1 southbound and Route 3 westbound in 2011 AM peak show significant delays per mile in excess of five minutes. By 2031 Route 1 (A606) southbound experiences the highest increase in delay per mile at 48 seconds in the AM peak.

Increase in journey times means a decrease in speed. The slowest net speed (miles per hour) in 2011 is just less than 7 miles per hour on Route 3 (A6006/B676). By 2031 the lowest speed is around 6.5 miles per hour on Route 1 (A606). The largest decrease in speed is on Route 1 northbound in the PM peak with a drop of -4.28 miles per hour. The speeds on the journey time routes are significantly lower than the average speed limit on the validated routes indicating a substantial amount of congestion across Melton Mowbray.

| Route | | Time Period | Speed (Miles Per Hour) | | | Delay (MM:SS) Per Mile | | |
|--------------------------------|-------------------------|-------------|------------------------|-------|-------------|------------------------|-------|-------------|
| | | | 2011 | 2031 | 2031 - 2011 | 2011 | 2031 | 2031 - 2011 |
| 1 (A606) | North to South (Red) | AM | 7.16 | 6.52 | -0.64 | 05:06 | 05:55 | 00:48 |
| | | PM | 9.11 | 8.53 | -0.58 | 03:24 | 03:53 | 00:29 |
| | South to North (Green) | AM | 15.99 | 14.52 | -1.46 | 00:02 | 00:02 | 00:00 |
| | | PM | 19.47 | 15.19 | -4.28 | 00:04 | 00:04 | 00:00 |
| 2 (A607) | South to North (Yellow) | AM | 8.69 | 8.14 | -0.55 | 04:10 | 04:46 | 00:36 |
| | | PM | 9.35 | 9.00 | -0.35 | 03:21 | 03:39 | 00:18 |
| | North to South (Blue) | AM | 9.81 | 9.71 | -0.10 | 04:17 | 04:20 | 00:03 |
| | | PM | 9.00 | 9.56 | 0.56 | 04:26 | 04:46 | 00:19 |
| 3 (A6006/B676) | East to West (Green) | AM | 6.94 | 6.77 | -0.18 | 06:45 | 07:05 | 00:19 |
| | | PM | 10.22 | 9.10 | -1.13 | 03:56 | 04:31 | 00:35 |
| | West to East (Green) | AM | 10.20 | 9.23 | -0.97 | 03:45 | 04:21 | 00:36 |
| | | PM | 10.90 | 10.35 | -0.55 | 03:17 | 03:35 | 00:18 |
| 4 (Scalford Road / Dalby Road) | North to South (Blue) | AM | 8.82 | 8.17 | -0.65 | 04:47 | 05:21 | 00:34 |
| | | PM | 11.20 | 10.65 | -0.55 | 03:27 | 03:46 | 00:19 |
| | South to North (Blue) | AM | 8.58 | 7.97 | -0.62 | 04:47 | 05:22 | 00:34 |
| | | PM | 10.83 | 10.31 | -0.52 | 03:28 | 03:48 | 00:20 |

Table 3-B Delay (Minutes) Per Mile 2011 and 2031

3.8 Conclusion

The three junctions that have the highest levels of Volume/Capacity Ratios also experience the greatest increase in delay per vehicle at the A607/Thorpe End Junction; A6006/A606 Junction and A607/Scalford Road junction.

The increase in through traffic is greater in the AM peak hour at 6% than the PM peak hour, but the PM peak has a higher volume of through traffic at 2461 vehicles in 2031. The increase in congestion in the town centre in both the AM and PM peak hours results in a decline in through traffic due to re-routing at key town centre junctions from 2011 to 2031.

Modelled journey times represent “average” conditions across the peak hour, the analysis shows that journey times increase on diagonal movements across the town from North/South significantly in the AM and PM peak hours.

For the purpose of this assessment a 3 minute increase in delay per mile is considered severe, this threshold is exceeded across all journey time routes in 2031 without the inclusion of the proposed cumulative developments.

4 Impact of Cumulative Development

4.1 Introduction

This section of the report demonstrates the impact that the cumulative development proposals will have on Melton Mowbray in 2031.

Like the previous section, analysis is undertaken using the same primary indicators and comparatives, with this section assessing the local and wider impacts of the proposed developments on the highway infrastructure through assessment of:

- *Development flows;*
- *Changes in Volume/Capacity ratios;*
- *Changes in delay per vehicle;*
- *Changes in Through Traffic;*
- *Changes in Journey Times; and*
- *Changes in route speeds and delay per mile.*

4.2 The Development

The development includes a total of 2,550 dwellings which are spread across 6 sites as shown in Figure 4-A. Table 4-A shows the distribution of dwellings across the development sites.

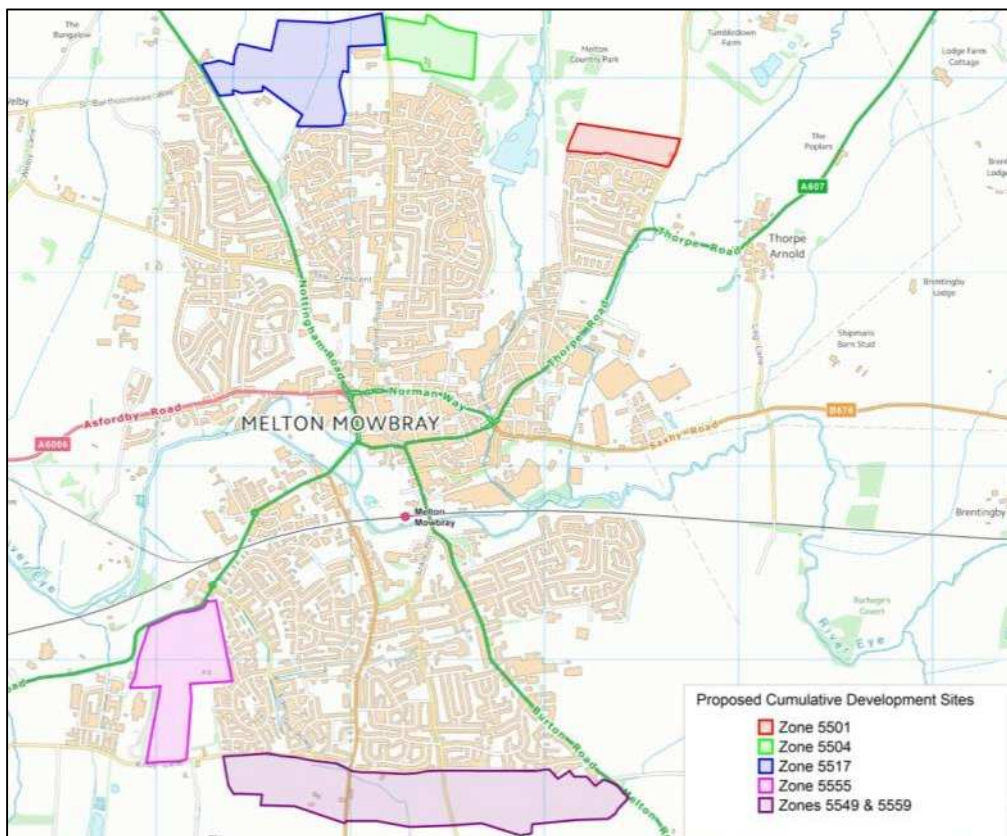


Figure 4-A Proposed Development Locations

| Development Sites (Zone Number) | Total Dwellings |
|------------------------------------|-----------------|
| 5517 | 650 |
| 5555 | 650 |
| 5549 | 600 |
| 5504 | 300 |
| 5559 | 200 |
| 5501 | 150 |
| Total | 2,550 |

Table 4-A Proposed Development Sites’ Dwelling Numbers

4.3 Development Flows

In the AM peak the combined cumulative development flows are shown in Figure 4-B. The radial routes in an inbound direction have a high increase in flow caused by the cumulative developments. In the southern area of Melton Mowbray the development causes an increase in vehicles heading away from Melton Mowbray in the direction of Leicester on the A607 and towards Oakham on the A606. Whereas in the northern area of Melton Mowbray a relatively even split in the increase in traffic occurs between heading towards Melton Mowbray, and northbound trips away from the town centre.

The LLITM model shows that due to significant growth in the Leicester’s Principal Urban Area (PUA), and at Thurmaston and Southern Charnwood by 2031, the distribution of traffic towards Leicester, whilst primarily of importance in terms of current travel patterns, becomes of even more importance by 2031.

At the time of publishing this report Melton Mowbray the Local Plan was out of date and a new Local Plan had not been released, therefore no significant employment growth was forecasted for the future year scenarios. With limited employment growth forecasted for Melton, and an increase in population; a subsequent increase in commuting to adjacent areas such as the Leicestershire PUA and Thurmaston Sustainable Urban Extension (SUE) occurs. These out commuting trips further acts to enhance levels of out-commuting due to the locations of the proposed cumulative developments generating trips from across Melton in 2031.

The diagonal north/south routes through Melton town centre experience a significant increase in vehicles with the cumulative development generating over 300 vehicles on the A607/Leicester Road and Wilton Road in the AM peak.

Significant volumes of development traffic occur on the Kirby Lane and Dalby Road owing to proximity to some of the development sites. On the A606/Nottingham Road the demand from the cumulative development is in excess of 200 vehicles, with around an additional 100 vehicles on Scalford Road, A607/Thorpe Road and Kings Road respectively.



Figure 4-B Development Flows AM Peak

For the PM peak as shown in Figure 4-C a significant increase in flows on the roads to the South of Melton including Kirby Lane as well as the key radial routes heading to and from Melton Mowbray.

The development has a significant impact on the following routes in the PM peak; A606 Northbound (from Leicester) which equates to just fewer than 200 vehicles. The A606 and Melton Spinney Road heading into Melton Mowbray, each experience an increase of around 100 vehicles in the PM peak.

On the north/south diagonal routes across Melton town centre an increase of over 200 vehicles occurs on the A607/Leicester Road, Nottingham Road/A606 respectively, and just under 200 vehicles on the A606/Burton Street. The cumulative development generates an increase of just under 300 vehicles in the town centre on Wilton Road.

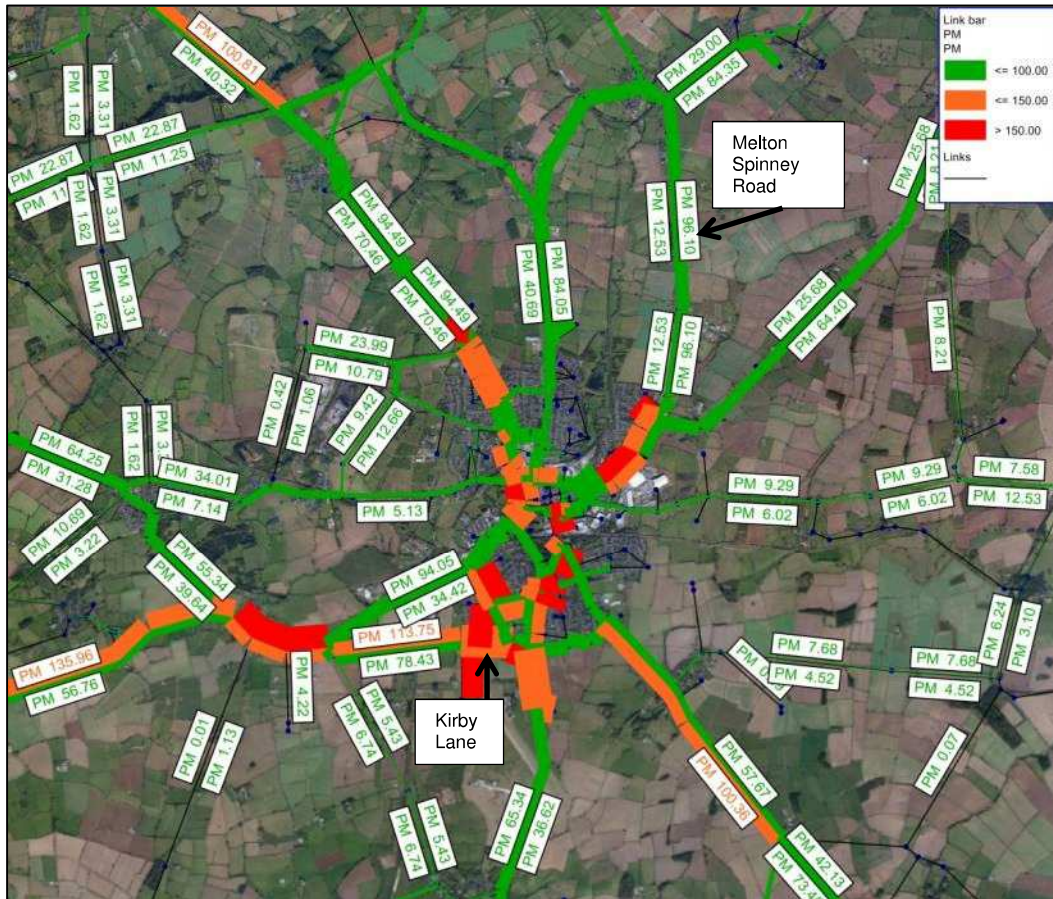


Figure 4-C Development Flows PM Peak

The additional trips on the network generated by the cumulative development are as follows:

- 1,409 Trips in the AM Peak; and,
- 1,408 Trips in the PM Peak.

These volumes are equivalent to a lane of traffic added to the Melton network.

Table 4-B shows the modal share analysis output from LLITM for 2011, 2031 core scenario and without the development and 2031 with cumulative developments.

From 2011 to 2031 without the cumulative developments the percentage of highway (car) modal share increases from 59% to 61% which is reflected in a decline in the modal share of public transport (PT) and a decline in active modes such as walking and cycling. In comparison the modal share for 2031 with development scenario has a slightly higher percentage of active modes of travel from the 2031 without development scenario, and therefore a slightly lower percentage of car users.

The decrease in car modal share is a reaction to the increase in congestion arising from the increase in traffic as a result of the developments.

| Area | % mode share 2011 | | | % mode share 2031 Core Scenario | | | % mode share 2031 With Development | | |
|-----------------|-------------------|-------|--------|---------------------------------|-------|--------|------------------------------------|-------|--------|
| | Highway | PT | Active | Highway | PT | Active | Highway | PT | Active |
| Melton Mowbray | 59.20% | 3.30% | 37.40% | 61.00% | 2.90% | 36.10% | 60.70% | 2.90% | 36.40% |
| Melton District | 67.10% | 2.30% | 30.60% | 69.90% | 2.00% | 28.20% | 69.80% | 2.00% | 28.20% |

Table 4-B Modal Share Impact

4.4 Congestion Impacts- Volume / Capacity Ratios

The following section focuses on the changes in the levels of congestion (measured in terms of volume/capacity) due to the impacts of the cumulative developments scenario for the AM peak and PM peak respectively.

4.4.1 AM Peak

Figure 4-D shows that in Melton Mowbray town centre the introduction of the development in 2031, has increased the V/C on the A607 from 100% (Figure 3-B) to 102%.

Scalford Road has increased from 104% to 106% in the inbound direction this is significant as V/C ratios at 100% or over implies serious congestion impacts including poor journey time reliability and localised gridlock. The B6047/Dalby Road has escalated to a V/C ratio of over 75%, and is approaching operational capacity.

In 2031 with the cumulative developments the following junctions are exceeding operational capacity in the AM peak as shown in figure 4-F.

- A607/Thorpe End Junction;
- A607/Wilton Road Junction;
- A607 Norman Way/Snow Hill Junction;
- A607/A6006 Junction; and,
- A607 junction/ Scalford Road.

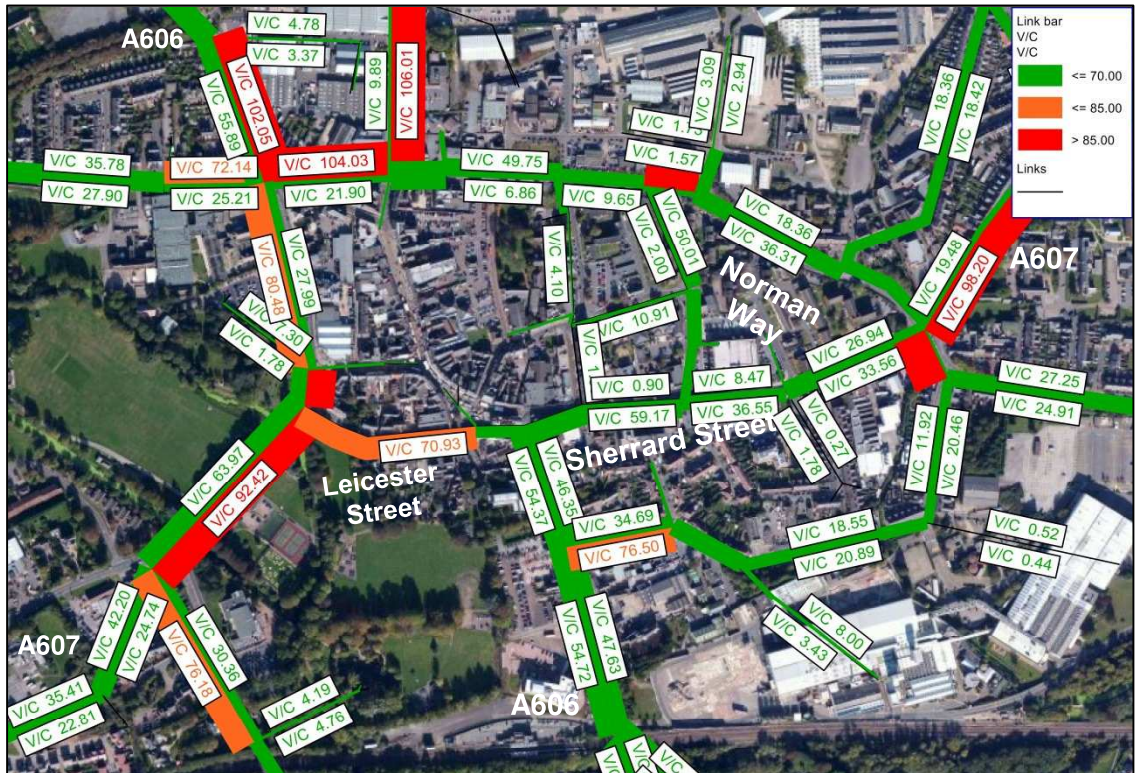


Figure 4-D Volume/Capacity Percentage 2031 AM Peak with Development

4.4.2 PM Peak

As shown in Figure 4-E for Melton Mowbray town centre, four junctions are at operational capacity with approaching link V/C ratios in excess of 85%. These are:

- A607/Thorpe End Junction;
- A607/Wilton Road Junction;
- Norman Way/Snow Hill Junction; and
- A607 Junction/ Scaford Road.

Combined with the A607/A6006 and A606/Sherrard Street junctions, which have approaching links in excess of 75% V/C; there are a total of 6 junctions with V/C issues within Melton town centre.

The A607/Scaford Road junction is the worst performing junction with approaches in excess of 90% (91% on the Scaford Road approach and 96% on the A607 from the west).

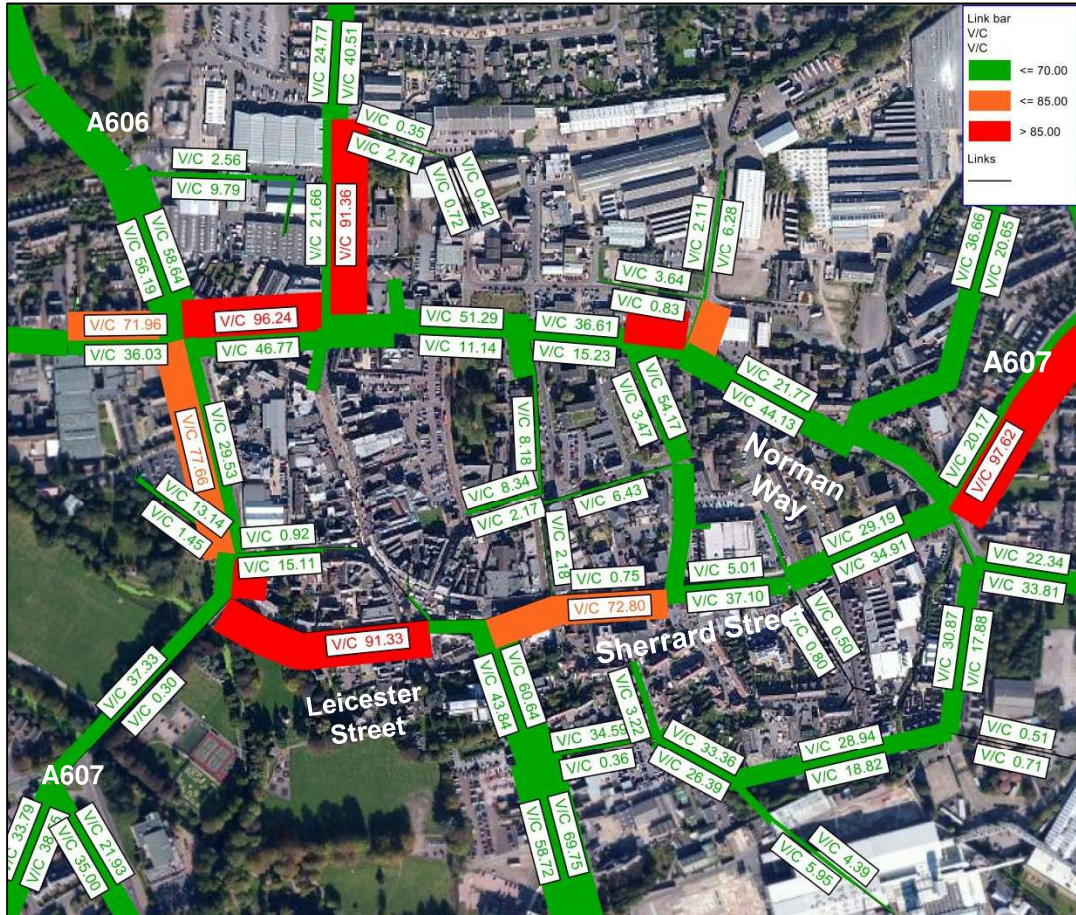


Figure 4-E Volume/Capacity Percentage 2031 PM Peak with Development

4.5 Changes in Delay (Seconds)

The following paragraphs explore the changes in delay (seconds) per vehicle through the comparison of 2031 with and without cumulative developments; for proposed the AM and PM peaks.

4.5.1 AM Peak

Figure 4-F shows the delay for the AM peak for the Melton Mowbray town centre, blue represents a decrease in delay per vehicle, and green an increase in delay per vehicle ,overall an increase in delay occurs within Melton town centre as shown in Figure 4-F.

The junction approach roads with the longest delay are A606 on the approach to the A606/A606 junction and Scaford Road on the approach to the A607/Scaford Road junction, which experience 32.90 seconds per vehicle 29.45 delay seconds per vehicle respectively. These delays are significantly greater than the increase in delays elsewhere in Melton Mowbray.

The junctions that will experience the greatest increase in delay per vehicle in the AM peak are:

- A607/Thorpe End Junction;
- A6006/A606 Junction; and
- A607/Scaford Road.

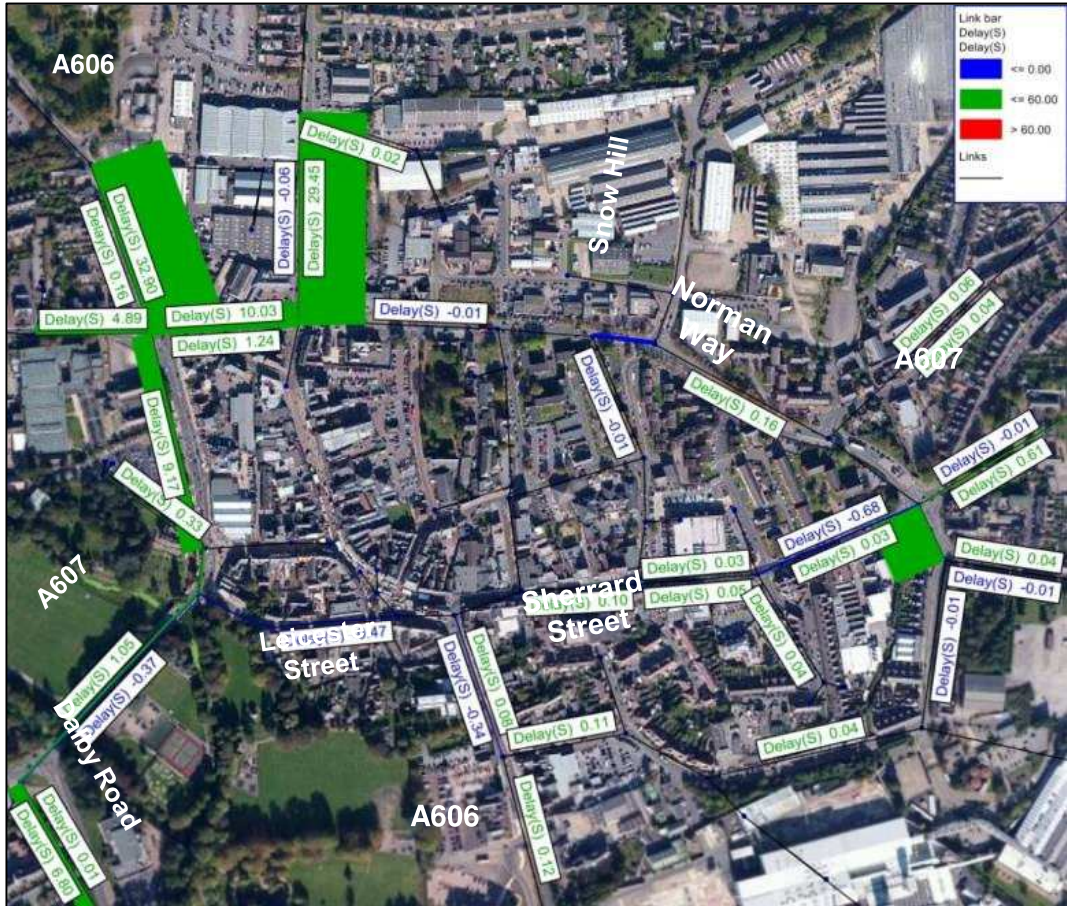


Figure 4-F AM peak - Impact on delay (seconds per vehicle) of cumulative development in 2031

4.5.2 PM Peak

Figure 4-G shows the delay per vehicle for the PM peak for Melton town centre. Links that are shown in green have an increase in delay per vehicle and those in blue a decrease.

As shown in Figure 4-G the links at the A607/Scalford Road and the A6006/A607 junctions experience a significant increase in delay per vehicle. The link with the greatest delay is the A607 heading southbound between Leicester Street and Dalby Road with an increase in delay of 25 seconds per vehicle.

The junctions that experience the greatest increase in delay per vehicle in the PM peak are:

- A607/Leicester Street;
- A607/Dalby Road;
- A607/Thorpe End;
- A607/Scalford Road; and
- Norman Way/ Snow Hill.

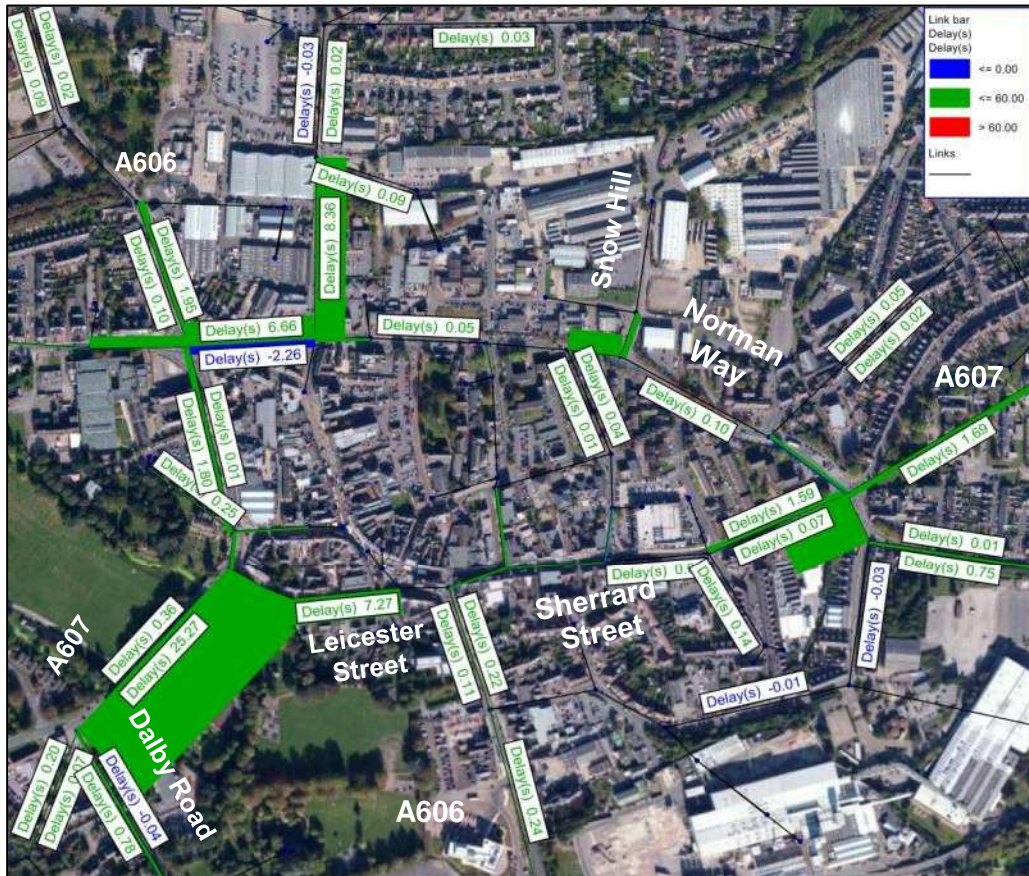


Figure 4-G PM Peak – impact on delay (seconds per vehicle) of cumulative development in 2031

4.6 Changes in Through Traffic

The changes in through traffic for 2031 AM peak are shown in Figure 4-H followed by the PM peak in Figure 4-I.

With the addition of the cumulative proposed developments, in the AM peak the A606 has an increase in through traffic of around 40 vehicles per hour, followed by the A607 with an increase of approximately 30 vehicles per hour travelling through Melton Mowbray.

In the AM peak a significant number of vehicles travel through Melton town with a total of 2,319 vehicles per hour with the proposed cumulative developments. This compares with 2,194 vehicles per hour without development.

The PM peak there is an increase in through traffic of 91 vehicles per hour (from 2,461 without development to 2,552 with development) travelling through Melton Mowbray in total.

Figure 4-I shows that just under half of these are on the A607, which experiences an increase of 36 vehicles per hour.

On the above basis, developments to the North of the town can therefore be seen to have a tendency to produce slightly larger traffic volumes through the town centre than development to the south of Melton on a per dwelling basis.

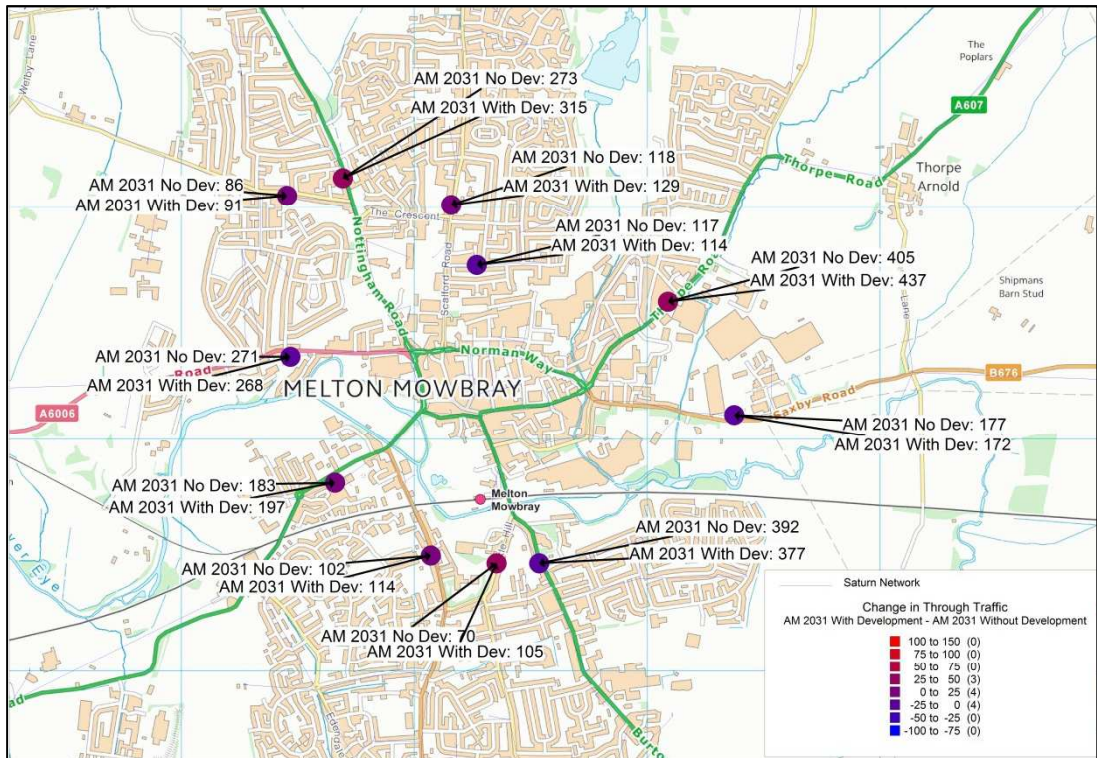


Figure 4-H AM peak changes in through traffic with and without development in 2031

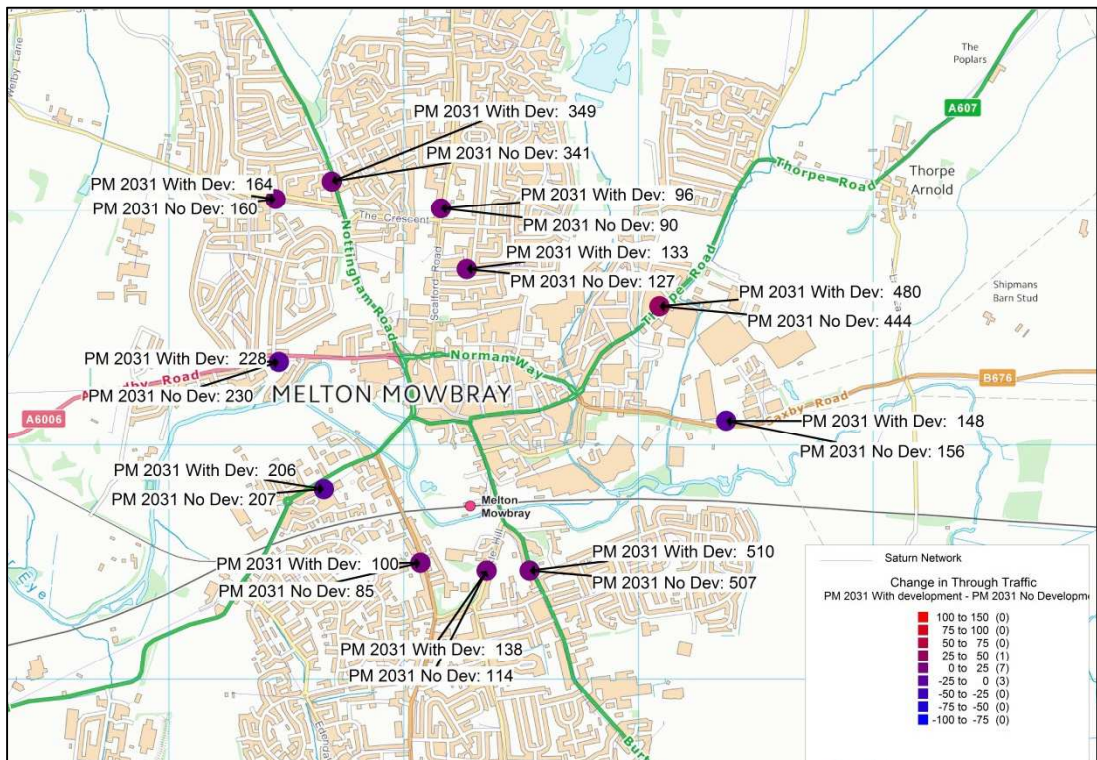


Figure 4-I PM Peak changes in through traffic in with and without development in 2031

4.7 Changes in Journey Time

The following section analyses the impacts of the cumulative developments on journey times. For the Journey time assessment the same routes were used as shown in Figure 3-J of this report.

To appreciate the full impact of the development in relation to the present day situation in Melton Table 4-C shows the changes relative to 2011 as well as 2031 journey times without development.

Journey times increase significantly from the present day by up to 49% with the proposed cumulative developments. The greatest increase in journey time is on Route 1 (A606) southbound in the AM peak which increases by 1 minute and 41 seconds. Other significant increases in the AM peak are:

- Route 1 northbound (+42 seconds);
- Route 2 (A607) northbound (+52 seconds);
- Route 3 (A6006/A607) eastbound (+57 seconds); and
- Route 4 (Scalford Road / Dalby Road) southbound (+1 minute 4 seconds).

In the PM peak significant increases are:

- Route 1 southbound (+1 minute 4 seconds);
- Route 1 northbound (+1 minute 15 seconds);
- Route 3 westbound (+1 minute 8 seconds); and
- Route 4 southbound (+53 seconds).

| Route | Time Period | Difference | | %Change | | |
|--------------------------------|-------------------------|------------|-------|---------|------|-----|
| | | 2011 | 2031 | 2011 | 2031 | |
| 1 (A606) | North to South (Red) | AM | 01:41 | 00:42 | 17% | 6% |
| | | PM | 01:04 | 00:32 | 14% | 6% |
| | South to North (Green) | AM | 00:42 | 00:15 | 16% | 5% |
| | | PM | 01:15 | 00:13 | 34% | 5% |
| 2 (A607) | South to North (Yellow) | AM | 00:52 | 00:15 | 9% | 3% |
| | | PM | 00:31 | 00:11 | 6% | 2% |
| | North to South (Blue) | AM | 00:08 | 00:03 | 2% | 1% |
| | | PM | 00:02 | 00:29 | 0% | 6% |
| 3 (A6006/B676) | East to West (Green) | AM | 00:37 | 00:21 | 6% | 3% |
| | | PM | 01:08 | 00:16 | 16% | 3% |
| | West to East (Green) | AM | 00:57 | 00:13 | 14% | 3% |
| | | PM | 00:38 | 00:17 | 10% | 4% |
| 4 (Scalford Road / Dalby Road) | North to South (Blue) | AM | 01:04 | 00:29 | 15% | 6% |
| | | PM | 00:53 | 00:35 | 15% | 10% |
| | South to North (Blue) | AM | 00:52 | 00:17 | 11% | 3% |
| | | PM | 00:41 | 00:23 | 11% | 6% |

Table 4-C Increases in journey times 2011 to 2031 with and without development

4.8 Changes in route speeds and delays

The delay per mile are presented in Table 4-D providing a comparison of 2031 with and without the proposed cumulative developments. Typically delays in excess of three minutes per mile represent severe levels of congestion.

The proposed developments would add additional delay on all routes where this critical value is exceeded by 2031 in the core scenario.

The amount of delay added is of particular concern on Route 1 southbound (A606) where at least an additional 30 seconds per mile are added to delays in both AM and PM peaks.

On borderline routes in 2031 where delays are near the three minutes per mile threshold the development traffic makes a noticeable difference. For example on Route 3 west bound in the AM peak (A6006 / B676) and Routes 4 southbound and northbound in the AM peak (Scalford Road / Dalby Road).

Table 4-D also shows the changes in speeds (mph) arising from the proposed cumulative developments for each journey time route.

Overall journey speeds are particularly low, with an average speed of 7-8mph across Melton in the peaks on average with the development in place. The slowest journey time route in 2031 with the proposed cumulative developments is Route 1 southbound in the AM peak with a speed of 6.13mph. This is both very slow in absolute terms, and also 0.4 mph slower than in 2031 without the proposed cumulative development.

| Route | | Time Period | Speed (Miles Per Hour) | | | Delay (MM:SS) Per Mile | | |
|--------------------------------|-------------------------|-------------|------------------------|---------------|---------------------|------------------------|---------------|-----------------|
| | | | 2031 | 2031 With Dev | Change in net speed | 2031 | 2031 With Dev | Change in Delay |
| 1 (A606) | North to South (Red) | AM | 6.52 | 6.13 | -0.39 | 05:55 | 06:31 | 00:36 |
| | | PM | 8.53 | 8.02 | -0.51 | 03:53 | 04:25 | 00:31 |
| | South to North (Green) | AM | 14.52 | 13.82 | -0.70 | 00:02 | 00:03 | 00:00 |
| | | PM | 15.19 | 14.52 | -0.67 | 00:04 | 00:05 | 00:00 |
| 2 (A607) | South to North (Yellow) | AM | 8.14 | 7.94 | -0.20 | 04:46 | 05:00 | 00:14 |
| | | PM | 9.00 | 8.82 | -0.18 | 03:39 | 03:51 | 00:12 |
| | North to South (Blue) | AM | 9.71 | 9.65 | -0.06 | 04:20 | 04:23 | 00:03 |
| | | PM | 9.56 | 9.03 | -0.52 | 04:46 | 05:06 | 00:20 |
| 3 (A6006/B676) | East to West (Green) | AM | 6.77 | 6.55 | -0.22 | 07:05 | 07:27 | 00:21 |
| | | PM | 9.10 | 8.80 | -0.30 | 04:31 | 04:49 | 00:17 |
| | West to East (Green) | AM | 9.23 | 8.98 | -0.25 | 04:21 | 04:32 | 00:10 |
| | | PM | 10.35 | 9.94 | -0.41 | 03:35 | 03:50 | 00:14 |
| 4 (Scalford Road / Dalby Road) | North to South (Blue) | AM | 8.17 | 7.70 | -0.47 | 05:21 | 05:50 | 00:28 |
| | | PM | 10.65 | 9.72 | -0.93 | 03:46 | 04:17 | 00:30 |
| | South to North (Blue) | AM | 7.97 | 7.70 | -0.27 | 05:22 | 05:51 | 00:29 |
| | | PM | 10.31 | 9.72 | -0.59 | 03:48 | 04:19 | 00:30 |

Table 4-D Delay (minutes per mile) and speeds by journey time route 2031 with development and without development

Table 4-E shows the changes in delay per mile from the present day to 2031 with the proposed cumulative developments. A significant increase in delay per mile occurs from present day to 2031 with the proposed cumulative development, in the AM peak Route 1 experiences an increase in delay of 1 minute 24 seconds southbound.

Route 1 northbound has the slowest net speeds of 6mph in the AM peak in 2031 with the proposed cumulative developments.

The largest increases in delays and net speeds occur on the diagonal routes across Melton which is already under pressure and the situation will significantly deteriorate by 2031 with the proposed cumulative development.

| Route | | Time Period | Speed (Miles Per Hour) | | | Delay Per Mile (MM:SS) | | |
|--------------------------------|-------------------------|-------------|------------------------|---------------|---------------------|------------------------|---------------|-----------------|
| | | | 2011 | 2031 With Dev | Change in net speed | 2011 | 2031 With Dev | Change in Delay |
| 1 (A606) | North to South (Red) | AM | 7.16 | 6.13 | -1.04 | 05:06 | 06:31 | 01:24 |
| | | PM | 9.11 | 8.02 | -1.09 | 03:24 | 04:25 | 01:01 |
| | South to North (Green) | AM | 15.99 | 13.82 | -2.17 | 00:02 | 00:03 | 00:00 |
| | | PM | 19.47 | 14.52 | -4.95 | 00:04 | 00:05 | 00:00 |
| 2 (A607) | South to North (Yellow) | AM | 8.69 | 7.94 | -0.75 | 04:10 | 05:00 | 00:50 |
| | | PM | 9.35 | 8.82 | -0.53 | 03:21 | 03:51 | 00:30 |
| | North to South (Blue) | AM | 9.81 | 9.65 | -0.16 | 04:17 | 04:23 | 00:06 |
| | | PM | 9.00 | 9.03 | 0.03 | 04:26 | 05:06 | 00:39 |
| 3 (A6006/B676) | East to West (Green) | AM | 6.94 | 6.55 | -0.39 | 06:45 | 07:27 | 00:41 |
| | | PM | 10.22 | 8.80 | -1.43 | 03:56 | 04:49 | 00:52 |
| | West to East (Green) | AM | 10.20 | 8.98 | -1.22 | 03:45 | 04:32 | 00:47 |
| | | PM | 10.90 | 9.94 | -0.96 | 03:17 | 03:50 | 00:32 |
| 4 (Scalford Road / Dalby Road) | North to South (Blue) | AM | 8.82 | 7.70 | -1.12 | 04:47 | 05:50 | 01:02 |
| | | PM | 11.20 | 9.72 | -1.48 | 03:27 | 04:17 | 00:50 |
| | South to North (Blue) | AM | 8.58 | 7.70 | -0.88 | 04:47 | 05:51 | 01:03 |
| | | PM | 10.83 | 9.72 | -1.11 | 03:28 | 04:19 | 00:50 |

Table 4-E Delay (minutes per mile) and speeds by journey time route 2031 with development and 2011

The Leicester and Leicestershire Integrated Transport Model (LLITM) has been used to assess the implications of the six proposed developments in Melton Mowbray.

Based on its performance against WebTAG calibration and validation criteria, LLITM is suitable for assessment at an outline level of the extent and location of congestion issues.

Combined together, the proposed developments generate around 1,400 vehicle trips in the AM and PM peak hours. This equates to the same number of vehicles as an additional lane of carriageway for Melton Mowbray, with little impact on mode share to sustainable modes of travel such as; walking, cycling and public transport.

In a sense this is the worst case scenario in terms of congestion impacts. Therefore, the study has considered the impacts of the proposed developments cumulatively (i.e. all together) using an approach which first considers the impact of growth (core scenario) without the proposed developments included and then the same with the proposed developments included.

This enables an understanding of the extent to which the proposed developments contribute to changes in congestion between today (2011 as proxy) and 2031.

5.1 Impacts on hot spots in Melton Mowbray town centre

At present Melton Mowbray has a high level of congestion in the AM and PM peak in Melton town centre as indicated in Table 5-A.

This table overleaf highlights those junctions in the town centre where the level of traffic is impeding the throughput on approach roads as indicated by the volume to capacity ratio (V/C).

| Scenario | Approaches at operational capacity V/C 70%-85% | Exceeding operational capacity V/C 85%-100% | Exceeding absolute capacity V/C >100% |
|-------------------------------|--|---|--|
| Core 2011 AM peak | | A607 / A6006 A607 / Snow Hill A607 / Leicester Street A607 / Dalby Road. A607 / Thorpe End | A607 / Scafford Road. |
| Core 2011 PM peak | A607 / Leicester Street | A607 / Scafford Road A607 / Snow Hill A607 / Dalby Road A607 / Thorpe End | |
| Core 2031 AM peak | | A607 Leicester Street A607 / Dalby Road A607 / Thorpe End | A607 / A6006 A607 / Scafford Road A607 / Snow Hill |
| Core 2031 PM peak | A607 / A6006 A606 / Sherrard Street | A607 / Scafford Road A607 / Snow Hill A607 / Leicester Street A607 / Dalby Road A607 / Thorpe End | |
| 2031 with development AM peak | | A607 / Leicester Street A607 / Dalby Road A607 / Thorpe End | A607 / A6006 A607 / Scafford Road A607 / Snow Hill |
| 2031 with development PM peak | A607 / A6006 A606 / Sherrard Street | A607 / Scafford Road A607 / Snow Hill A607 / Leicester Street A607 / Thorpe End | |

Table 5-A Junctions with critical V/C ratios on approach arms.

In 2011 junctions along the A607 from Leicester Road to Thorpe End are already congested for all or part of the peak periods particularly in the AM peak. Approaches to the A607 / Scafford Road are considered the most impeded.

These junctions are likely to require mitigation should traffic volumes using them continue to grow to the point that absolute capacity is reached as evident by the 2031 forecast which shows that congestion has significantly increased on approaches to A607 / A6006, A607 / Snow Hill junctions in the AM peak. In the PM peak approaches to the A607 / A6006, A607 / Leicester Street and A606 / Sherrard Street junctions show a marked deterioration in performance.

The picture is similar with the addition of the development traffic in that the same junctions have approach roads which breach absolute capacity, suggesting immediate attention. It is noted that A607 Leicester Road between Leicester Street and Dalby Road sees its V/C decline below the operational capacity threshold reflecting traffic re-routing in the Kirby Lane area.

5.2 Impacts on delays on routes through Melton Mowbray town centre

Table 5-B summarises the impact on the level of delay for traffic using routes through the town centre expressed in minutes per mile. In 2011 the routes incurring the highest delay per mile are the A606 southbound and A6006/B676 westbound through the town centre in the AM peak. Most routes experience significant delays in excess of 3 minutes per mile.

| Scenario | Routes | | | |
|-------------------------------|---------------------|---|---|----------------------|
| | <3 minutes per mile | 3-5 minutes per mile | 5-7 minutes per mile | >7 minutes per mile |
| Core 2011 AM peak | A606 northbound | A607 northbound A607 southbound A6006/B676 eastbound Scalford Rd./ Darby Rd. southbound Scalford Rd. / Darby Rd. northbound | A606 southbound A6006/B676 westbound | |
| Core 2011 PM peak | A606 northbound | A606 southbound A607 northbound A607 southbound A6006/B676 westbound A6006/B676 eastbound Scalford Rd./ Darby Rd. southbound Scalford Rd. / Darby Rd. northbound | | |
| Core 2031 AM peak | A606 northbound | A607 northbound A607 southbound A6006/B676 eastbound | A606 southbound Scalford Rd. / Darby Rd. southbound Scalford Rd. / Darby Rd. northbound | A6006/B676 westbound |
| Core 2031 PM peak | A606 northbound | A606 southbound A607 northbound A607 southbound A6006/B676 westbound A6006/B676 eastbound Scalford Rd. / Darby Rd. southbound Scalford Rd. / Darby Rd. northbound | | |
| 2031 with development AM peak | A606 northbound | A607 southbound A6006/B676 eastbound | A606 southbound A607 northbound Scalford Rd./ Darby Rd. southbound Scalford Rd. / Darby Rd. northbound | A6006/B676 westbound |
| 2031 with development PM peak | A606 northbound | A606 southbound A607 northbound A6006/B676 westbound A6006/B676 eastbound Scalford Rd./ Darby Rd. southbound Scalford Rd. / Darby Rd. northbound | A607 southbound | |

Table 5-B Level of delay per mile along routes through Melton Mowbray town centre

By 2031 delays per mile have deteriorated on all routes. On average, the increase in delay per mile is around 23 seconds with the A606 southbound in the AM peak seeing the largest increase (48 seconds per mile).

With development in 2031 the average increase in delay per mile compared with 2011 is 42 seconds per mile with A606 southbound (both peaks), Scalford Road / Darby Road southbound and Scalford Road / Dalby Road northbound (both in AM peak) seeing delay increases in excess of 1 minute per mile.

5.3 Conclusions

The LLITM model analysis has shown that under current traffic levels congestion is having an impact on the town centre road network.

Even without any development these problems are exacerbated and require further study to identify proportionate mitigation, which may or may not focus on infrastructure measures at junctions.

Furthermore the analysis suggests that any development (whether those proposed or adopted as part of a growth strategy) would have a notable impact in further deteriorating traffic conditions in the town (whether measured by congestion, delay or travel times).

As a result, any development coming forward in the town- irrespective of size- requires a detailed transport assessment undertaken to ensure that suitable mitigation is proposed.

To ensure a suitably robust assessment this should be undertaken using LLITM, which also ensures traffic re-assignment impacts are taken into account, and that the effectiveness of the mitigation proposals can be analysed in a cumulative context.

Neither of these points are met by recourse to individual site assessment, and use of a standardised LLITM assessment to meet consistency, equity and robustness needs should be maintained for any individual proposal >50 dwellings (~30 peak hour trips).

Given the limited spare capacity, and amount of development proposed, this mitigation needs to be of demonstrably sufficient magnitude to not only mitigate the impacts of the development itself, but also contribute to a wider benefit for residents and as part of the overall growth strategy for the town.

If this is not achieved, then the evidence within this document shows that the development cannot be considered sustainable.