

LCC commentary of Modelling work

Background

Despite substantial improvement schemes to junctions along Norman Way, Melton Mowbray in recent years, there are still a number of junctions which are operating at capacity in the town and journey times remain unreliable. Melton Borough Council plans to include road infrastructure for Melton Mowbray to improve this in their Core Strategy. Within the current economic climate and the likely situation for a number of years, the local highway authority is unable to promote any new major schemes for public funding. As there is currently no major scheme programme for public funding it is recommended that the Borough Council explore what other sources of funding are available to deliver this infrastructure.

The Core Strategy is to include a Sustainable Urban Extension for Melton Mowbray. Transport assessment work has shown that in order to accommodate the development and mitigate its impact on the town there is a need for some new road infrastructure to be required. Exactly which links are necessary will depend on where the development is located.

Three different transport models have been used in assessing the impact of the proposed growth in the town and to identify different options for new highway infrastructure. The models that have been used are PTOLEMY, the Melton Traffic Model (developed by LCC) and most recently the Leicester and Leicestershire Integrated Transport Model (LLITM). This report summarises the Local Highway Authority's interpretation of the LLITM outputs.

The PTOLEMY and Melton Town Centre Model work showed that new highway infrastructure associated with the development options and which could potentially form part of a future bypass could mitigate the impact of development. The LLITM modelling has confirmed this position.

LLITM Headlines (Core Scenario)

- In the Core Scenario vehicular traffic is forecast to grow by 31% within the Borough and 29% in the town (in the peak hour).
- As a result average journey speeds are forecast to reduce by 5.3% in the Borough and 7.3% in the town (in the peak hour).
- Growth in demand for Active modes (walking and cycling) in the core scenario is forecast to grow by 17% in the Borough and 19% in the town by 2026¹ (higher than the County average of 15.2% for the County).
- Whilst the lowest levels of traffic growth are predicted in the PM peak (in comparison to the AM and Interpeak), forecasts for traffic conditions in the PM peak are set to worsen to a greater extent than the AM and Interpeak periods (especially when considering vehicle speeds).
- Significant reductions in vehicle emissions are forecast in the Core Scenario (2026) as a consequence of technological advances and emission rates for vehicles.

Growth Options (1 south & 2 north)

Journey Distribution: -

- o **Option 1** – The land use model forecasts that 55% of AM peak hour journey productions from the development site will have a destination within Melton Mowbray, with 10% of journey destinations in Leicester City. The resultant forecast from the Highway demand model (taking into account journey costs, parking charges, congestion and etc.) deduces that 50% of Highway journey destinations in the peak hour from the development site to be contained within Melton Mowbray, with 12% of journey destinations from the site to Leicester City.

¹ This reflects a growth in journey productions relating to growth in population. This does not reflect a significant change in modal choice.

- **Option 2** – The land use model forecasts that 75% of AM peak hour journey productions from the development site will have a destination within Melton Mowbray, with 3% of journey destinations in Leicester City. The resultant forecast from the Highway demand model deduces that 58% of Highway journey destinations in the peak hour from the development site to be contained within Melton Mowbray, with 8% of journey destinations from the site to Leicester City.

Vehicle Impact: -

- Both growth scenarios have minimal impact on the Borough, increasing traffic levels by approximately 0.1% – 0.3% (outside of the town).
- When considering growth of traffic within Melton Mowbray (town) arising from the development, Option 2 is forecast to have a significantly greater impact than Option 1 in terms of vehicle km's in the town, especially during the Interpeak and PM peak hours. Nevertheless, there is little discernible difference in vehicle delays or vehicle speeds in the town between the two growth scenarios. The majority of this impact appears to arise from a concentration of traffic on Scalford Road, north of the town.

Emissions: -

- Both growth options are forecast to increase emissions in Melton Mowbray by relatively small amounts (approximately 1.5%).
- Option 1 would appear to result in very slight decreases in vehicle emissions in the Borough, yet option 2 would seem to increase very slightly in the Borough.
- Both growth options are forecast to decrease carbon emissions across the County, with Option 2 having the greater impact (0.6%).

Accidents: -

- Neither growth option would appear to have any apparent impact on vehicular accidents above the Core Scenario.

Bypass – Option 1

The optimum bypass scenario depends very much on which criteria are considered to be the most important measure of performance.

Highway network performance: -

- When looking at Highway network performance, Section 1 – 4 seems to provide the most benefit for comparatively little work. This would seem to reduce vehicle queuing and vehicle delays in the town to the same extent (if not greater) than Section 1 – 9. However, Section 1 – 9 would seem to provide the greatest impact on journey speeds in the town (increasing by 4kph/19.4% in the PM peak).
- It is understood the reason that Section 1 – 6 does not perform any better than 1 – 4 in the model is due to the existing Welby Road route providing a more attractive route than the new bypass, in terms of journey cost (time, distance, etc). This could be altered by making the existing route less attractive – introducing traffic management measures, but may be difficult to achieve in practice.
- In both 1 – 4 & 1 – 6 scenarios there are forecasts of reductions in traffic flows through Thrussington and Hoby as traffic chooses to use the A607.
- The worst option would appear to be section 1 – 3 which, in almost every case, increases vehicle delays and journey times.

Impact on Journey mode and origin PCU's: -

- When measuring impact of the bypass on the number of journeys made and the mode by which they are made, Section 1 – 3 of the route would seem to perform strongly with an overall reduction in highway journeys made in the Borough and Town and increases in public transport and active modes.

- Section 1 – 6 would also appear to perform relatively strongly (compared to 1 – 4) in terms of trips made and modal distribution. However this is on the basis that Section 4 – 6 fails to relieve Welby Road of traffic (as detailed above).

Increase in Air Quality Pollutants and Carbon Emissions: -

- In all bypass scenarios, pollution from emissions in the town will be reduced by incremental amounts depending upon the extent to which the town is fully bypassed, i.e. Section 1 – 3 approx 1.7% decrease, Section 1 – 9 approx 10% decrease.
- With the exception of Section 1 – 3, all other bypass scenarios result in small increases in Carbon emissions within the County by approximately 0.5%.

Impact on accidents: -

- None of the bypass options have any significant impact upon accidents in the Borough, with the exception of Sections 1 – 9 which would appear as though it may result in the saving of one serious accident per annum.

Bypass – Option 2

Highway network performance: -

- There appears to be little difference between the introduction of Sections 6 – 8 and 4 – 8 as both seem to achieve fairly modest impacts on journey speeds, queuing and delays in the town.
- Sections 3 to 8, 6 to 9 and 4 to 9 appear to make a much greater difference in terms of journey speeds in the town, with section 3 – 8 achieving greater reductions in vehicle delay and queuing times.
- Sections 3 to 9 and 1 to 9 make the greatest improvements to journey speeds in the town (18.6% and 19.7%, respectively, in the PM peak hour). However, Section 1 to 9 seems to have a much larger impact in reducing delays both in the Borough and the town.

Impact on Journey mode and origin PCU's: -

- In all bypass scenarios Highway productions are forecast to grow and sustainable travel modes are forecast to fall by relatively small amounts. Sections 3 to 8, 3 to 9 and 1 to 9 are forecast to have the greatest increases in highway productions and correspondingly the greatest decreases in sustainable travel modes.

Increase in Air Quality Pollutants and Carbon Emissions: -

- All bypass scenarios will reduce emissions across the Borough, with the greatest decreases being achieved by Sections 6 to 9 and 4 to 8 (in NOx and Hydrocarbons) of approximately 4/5%.
- However, within the town Sections 3 to 8, 3 to 9 and 1 to 9 have the largest impact in reducing emissions across the board, with the greatest decreases being achieved in Hydrocarbons of 13.0%, 11.4% and 16% respectively.
- All bypass scenarios for option 2 result in small increases in Carbon emissions within the County by approximately 0.6%.

Impact on accidents: -

- None of the bypass options have any significant impact upon accidents in the Borough. Sections 4 to 9, 3 to 9 and 1 to 9 all result in the reduction of 1 accident per annum from the core scenario.

General Bypass Observations

The AECOM report highlights two observations on the way in which LLITM forecasts the use of the bypass. The first has been referred to earlier in relation to impact of Section 4 – 6 and the existing Welby Road and St. Bartholomews Way route which would appear to offer more attractive conditions than the bypass. Traffic management may be used on both the existing

route and the proposed route to encourage traffic to use the bypass (in fact, I would expect this to be the case to discourage 'rat-running').

The other issue highlighted in the report is the impact of sections 1 to 6 in alleviating through traffic from the town. When Sections 1 to 6 are simulated in LLITM, traffic travelling through Melton on the A606 continues to travel through the town rather than using the bypass. Whilst journey times are broadly similar, the bypass route would add a considerable distance to journeys through the town. Speed limits on the bypass may be altered to increase journey speeds and, consequently, the attractiveness of the route. Equally traffic conditions on the existing through routes within the town may be constrained, however this is unlikely to be satisfactory to those communities within the town that currently experience congestion.

Conclusions

Growth Options

Option 2 seems to produce a lower number of tours over 24 hours and, of those tours produced, a much greater concentration of them travelling to the town. Average journey lengths are approximately 3/4km's shorter for journeys to/from the development site.

As a result of the nature of journey distributions extracted from the land-use model, the impact of Option 2 in terms of increases in Vehicle Distance travelled in the AM, PM and interpeak hours is greater in the town and lower in the Borough (than Option 1). Despite this there is very little difference between the core scenario and both of the growth options in vehicle delays, queuing and speed in both the Borough and Town.

Both growth options have modest increases in emissions in the Town, with Option 1 providing some slight improvement to air quality in the Borough. However, Option 2 would appear to have a bigger impact on Carbon Emissions across the County, reducing the amount of emissions in the County considerably.

Considering the merits of both growth options on the above basis, it would seem that Option 2 would conform, to a greater extent than Option 1, to the principles of Sustainable Urban Extensions, with the greatest level of containment and links to the adjacent urban area.

Bypass Scenarios

On the basis that Option 2 would seem the most appropriate location for strategy growth, it would not be appropriate to give further consideration to bypass scenarios for Option 1.

Drawing conclusions on the various bypass scenarios for growth options is not especially easy from the data presented in the report. In most cases it would appear that the provision of any bypass scenario modelled would return traffic conditions in both the Town and the Borough, to similar levels to those forecast in the core scenario. The exceptions to this are shown in Sections 6 to 8 and Sections 4 to 8 in the Interpeak and PM peak hours.

When focussing on traffic conditions within the town, Sections 3 to 8 and 6 to 9 offer broadly similar benefits, with 6 to 9 offering greater benefits to average traffic speeds in the town, however greater delays and queuing (from 4 – 2% poorer than the Core Scenario in the AM and Interpeak hours).

Unsurprisingly, Section 1 to 9 achieves the highest impact in reducing vehicle delays and queuing in the town. Section 3 to 9 also achieves significant reductions in vehicle delays and queuing in the peak hour and, given apparent behaviour of traffic travelling through Melton on the A606 (choosing not to use the bypass), may be a more practical long term solution.

It would be useful for the AECOM report to clarify what the impacts of the bypass scenarios are more centrally within the town, i.e. on Norman Way, Wilton Road, Thorpe End etc. A tighter cordon around these central areas of the town would be beneficial to report the impacts of the bypass.

The overall conclusion is that new road links will be needed to mitigate the impact of this development on the town centre, however whether the development goes north or south there are links that can be identified to mitigate this impact and it depends on what criteria is considered most important to the Borough Council as to which overall benefit to use. Therefore as long as appropriate mitigation can be identified there is no strong highways

reason on which to base the decision on location of development and that it is wider planning issues that will determine this.

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