

Lutterworth East Strategic Development Area

Strategic Transport Assessment: Executive Summary

Leicestershire County Council

Project Number: 60472967

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Quality information

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Appendix B – Responses to HDC comments, July 2016

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Appendix D – Responses to HE comments

Appendix E – Technical Note on Gilmorton Road Improvements

Appendix F – Technical Note on Final Model Runs and Junction Assessment

Appendix G – Technical Note on Trigger Points for Off-Site Junction Improvements

1 Background to Scheme

It is proposed to develop land to the east of the M1 at Junction 20 for use as a mixed-use development. The emerging capacity plan for the Lutterworth East Strategic Development Area (SDA) is shown in **Figure 1**.

The proposed development will comprise around:

- 2,500 to 3,000 new houses;
- 23 hectares (Ha) employment land;
- two primary schools; and
- a local centre.

The capacity plan is still evolving with the exact numbers of houses and size of employment varying slightly. Potential other land uses are also being discussed including a cemetery on land immediately to the west of the M1 and a leisure centre.

2 Transport Assessment

AECOM has conducted a Strategic Transport Assessment (STA) of the capacity plan which has been based on runs of the Leicester & Leicestershire Integrated Transport Model (LLITM). Since issuing the Draft STA in February 2016, further work on the transport assessment has been undertaken as the capacity plan has evolved and through consultation and comments received from Harborough District Council (the local planning authority), Leicestershire County Council (the local highway authority) and Highways England (the national highway authority).

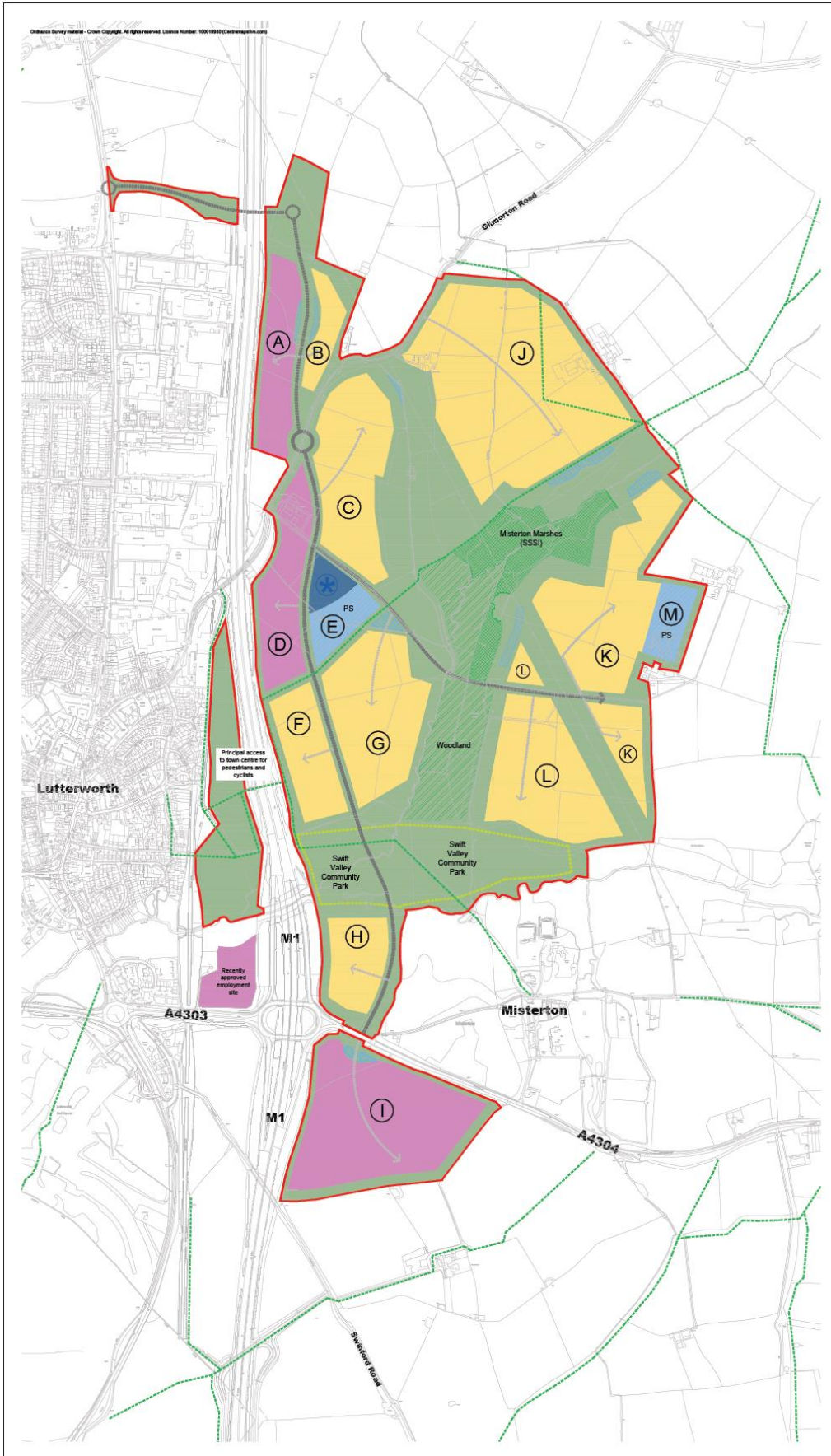
While the Draft STA provides useful background to the transport assessment work, there has since then been a series of documents produced which to varying extents supersede and/or complement the Draft STA. The purpose of this Executive Summary is therefore to bring together the various strands of work that have been undertaken for the Draft STA and subsequent technical notes into a single document.

As such this Executive Summary is a self-explanatory and self-contained document covering all aspects of transport affecting the proposed development. Further more detailed supporting information is contained in Appendices as follows:

- Appendix A - Draft Strategic Transport Assessment, February 2016
- Appendix B – Responses to HDC comments, July 2016
- Appendix C – Responses to HDC comments, January 2017
- Appendix D – Responses to HE comments
- Appendix E – Technical Note on Gilmorton Road Improvements
- Appendix F – Technical Note on Final Model Runs and Junction Assessment
- Appendix G – Technical Note on Trigger Points for Off-Site Junction Improvements

Figure 1

Lutterworth East SDA Capacity Plan



NOTES
 All dimensions to be verified on site. Do not scale this drawing. All dimensions to be suitable with respect to the ground conditions.
 This drawing is the property of FPCR Environment and Design Ltd and is based on the available information. It is not to be used for any other purpose, either wholly or in part without the consent of FPCR Environment and Design Ltd.
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- Proposed red line boundary
209.16 ha
- Proposed residential areas
72.5 ha
- Proposed employment areas
(within red line boundary)
23.06 ha
- Proposed schools
(2 No. @ 2.00 ha each)
4.00 ha
- Proposed local centre
1.19 ha
- Proposed green infrastructure
(incl SSSI and existing woodland)
104.71ha
- Misterton Marshes SSSI
6.51 ha
- Existing woodland
9.41 ha
- Swift Valley Community Park
(proposed)
- Potential Attenuation Areas
(subject to engineer's recommendations)
- Proposed primary routes
- Proposed secondary routes
- PROW

Individual plots

Plot	Area (ha)	Houses*
A	2.66	50
B	1.81	35
C	3.54	70
D	3.47	69
E	2.14	43
F	4.38	88
G	3.27	65
H	3.61	72
I	13.13	263
J	22.40	448
K	12.85	257
L	9.28	186
M	2.00	40
Local Centre	1.19	-
Total	100.76	2755

*The number of houses are based on a density of 35 houses per hectare applied to the gross residential area.

DRAFT

Date	Description	By
07.02.2017	Removal of Euston Retail Road	TSE / CPM
08.03.2017	Removal of Lutterworth Community Land	TSE / CPM
03.03.2017	Removal of site area within	TSE / CPM
27.07.2016	Revised area within plot areas and roads	TSE / CPM
27.07.2016	Revised area within plot areas and roads	TSE / CPM
27.07.2016	Updated housing density	LP / CPM
27.07.2016	Final issue	LP / CPM

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Client: **Hillam Land Management Ltd**
 Project: **Lutterworth East (Misterton)**
 Drawing title: **LUTTERWORTH EAST CAPACITY PLAN**
 Scale: 1:5000 @ A1
 Date: 07 February 2017
7179-L-02 **G**

3 Road Access

The development area will be accessed via a new Spine Road running from A4304 Lutterworth Road northwards to connect with A426 Leicester Road via a new bridge over the M1 motorway. The Spine Road will be a single two lane district distributor road designed to serve the new development while also facilitating some relief to through traffic within Lutterworth town centre.

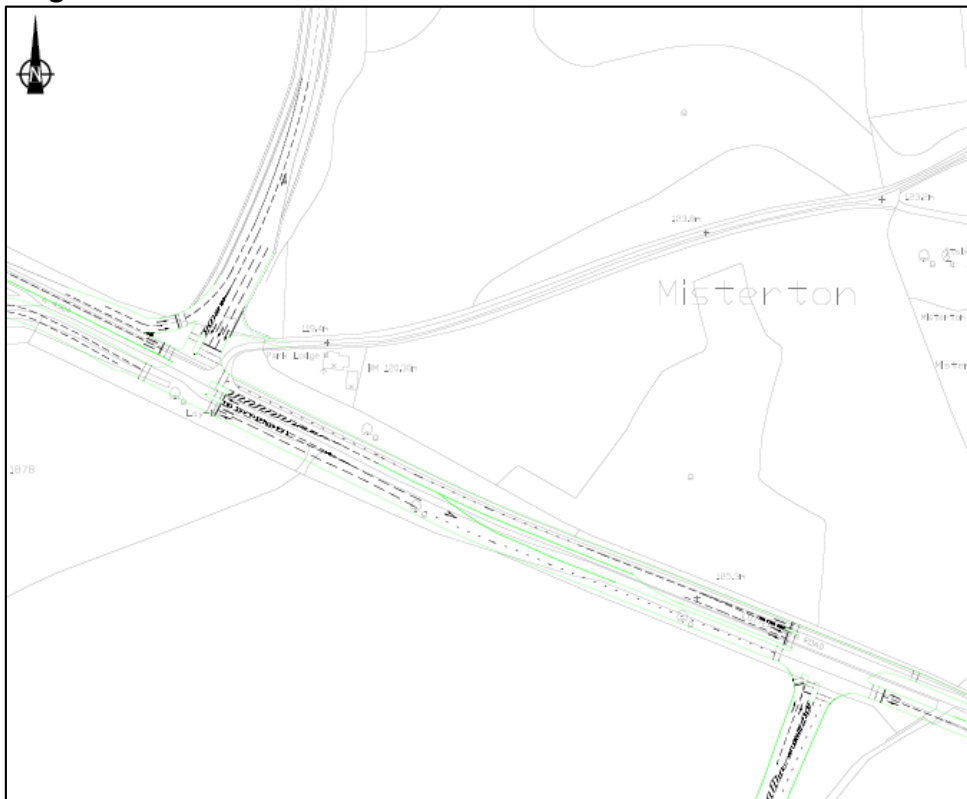
Cost estimates have been prepared for the Spine Road operating as a District Distributor road with a 7.3m wide carriageway and 30/40mph speed limit. The Spine Road design is compatible with the current capacity plan.

The Spine Road will have the following junctions:

- A426 Leicester Road / Spine Road – 40m diameter roundabout or signalised junction;
- Gilmorton Road / Spine Road – 40m diameter roundabout; and
- A4304 Lutterworth Road / Spine Road – signalised junction.

The employment area south of A4304 Lutterworth Road will be accessed via a signalised junction to the east of the Spine Road junction. **Figure 2** illustrates the two junctions along A4304 Lutterworth Road.

Figure 2 A4304 Lutterworth Road Junctions



The two junctions along A4304 Lutterworth Road have been designed to accommodate future forecast traffic. Operational junction capacity modelling has demonstrated the junctions will have spare capacity and vehicles queuing at the signals will not block back to the motorway junction or between the two junctions. Sensitivity tests have confirmed the junctions will have sufficient reserve capacity to accommodate further additional traffic, should traffic management measures be implemented within the town centre to discourage through-traffic.

4 Gilmorton Road

Gilmorton Road will provide access between the development area and town centre using the existing bridge over the M1. Due to the potential scale of traffic impact on the town centre, it is proposed that the bridge section of the road prohibits general traffic use and instead is used solely for buses, cyclists and pedestrians. Under this arrangement traffic from the development area and villages to the north east wishing to access the town centre and M1 Junction 20 will need to do so via the Spine Road.

Modifications will be required to convert Gilmorton Road bridge to a 'sustainable transport corridor'. These will include moving the crash barriers on the bridge to increase the width of the footways and to provide a new continuous footway along the northern side of the road to connect with the existing footway within the town.

The transport assessment work has highlighted the potential for increases in traffic through Gilmorton village to the north east of the development area. It is recommended that future traffic volumes are monitored and, if flows increase and result in queuing within the village, that measures such as traffic calming are investigated and implemented to discourage through movements.

Further information on the proposals for Gilmorton Road bridge and connection to the town centre are contained in **Appendix E**.

5 Off-site Junction Improvements and Trigger Points

The transport assessment work has indicated the need to make the following improvements:

- M1/Junction 20 – Signalisation of all approach arms and widening the circulating lanes from two to three lanes on the east and west sides of the interchange, with associated pedestrian crossing facilities. Operational junction capacity modelling has demonstrated the junctions will have spare capacity and vehicles queuing at the signals will not block back around the gyratory, onto the motorway, to the A4304 Lutterworth Road / Spine Road junction or A4303 Lutterworth Road / A426 Rugby Road junction.
- A4303 Lutterworth Road / A426 Rugby Road – Replacing the existing roundabout with a signalised crossroads junction and associated pedestrian crossing facilities. A 30m diameter roundabout immediately to the north of the junction at the access for the hotel/business site is proposed to provide U-turn facilities for traffic wishing to access the development site to the north of A4303 Lutterworth Road and west of the M1, as the site will only have left-in/left out access. Operational junction capacity modelling indicates the junction will have spare capacity and queues will not block back to upstream junctions.
- A426 Leicester Road / Gilmorton Road – The Draft STA proposed converting the current priority junction into a mini-roundabout. However, it has since been proposed to prohibit general traffic from using the bridge section of Gilmorton Road and to prioritise bus, cycle and pedestrian use. The current proposals will therefore reduce traffic volumes at the A426 Leicester Road / Gilmorton Road junction thereby no longer requiring the need for improvements.
- A426 Leicester Road / Bill Crane Way – Converting the existing priority junction into a signalised junction and associated pedestrian crossing facilities. Due to the housing development currently under construction on the site opposite Bill Crane Way, the proposed signalised junction will incorporate a fourth arm for access to/from the site.

Further information on the improvement proposals and associated modelling of the off-site junctions are contained in **Appendix F**.

Analysis has been undertaken into how much of the SDA may be developed prior to triggering the need for the off-site improvements, which is reported in **Appendix G**. The work has concluded that the improvements are required at A4303 Lutterworth Road / A426 Rugby Road junction and at A426 Leicester Road / Bill Crane Way prior to the SDA development as the Reference Case forecasts indicate both junctions to operate close to or above capacity.

It may be possible for some SDA development to occur prior to triggering the improvements to M1/Junction 20. Sensitivity tests have shown that the junction will reach capacity on the approaches from A4303 Lutterworth Road and A4304 Lutterworth Road with around 125 houses and 1.4Ha employment land. Although forecast to operate at capacity with such development, it is important to note that there will still be ample spare capacity on the motorway slip road approaches.

6 Public Transport

The development area will be accessed via new bus routes and services. The routes can use the Gilmorton Road bridge over the M1 to connect the development with the town centre. Bus stops will need to be provided along the Spine Road as well as at key locations along estate roads.

Further details on how best to provide bus services will need to be investigated as work on the SDA progresses.

7 Walking and Cycling

The capacity plan proposes a network of pedestrian and cycle routes within the development area. It also proposes routes running the length of the Spine Road and connections across the M1 to Lutterworth town centre.

Gilmorton Road bridge will be a 'sustainable transport corridor' for use by buses, walking and cycling only. Improvements are proposed to the west side of the bridge to connect to the existing footpath within the built-up area.

The existing farm bridge over the M1 to the north of Junction 20 will provide a further pedestrian and cycle link, with new paths to connect with Station Road and Misterton Way, both of which lead to/from the town centre.

Further pedestrian and cycle links over the M1 will be provided once the northern section of the Spine Road is completed with a bridge over the M1 to link with A426 Leicester Road.

A pedestrian and cycle route is currently provided on the north side of both A4303 and A4304 Lutterworth Road across M1 Junction 20.

In summary, the pedestrian/cycle crossing points will be:

- Spine Road bridge
- Gilmorton Road bridge
- Farm bridge
- Junction 20

8 Role and Function of Spine Road

The role of the Spine Road will predominantly be to provide access to the new SDA development areas. In addition, it will provide some traffic relief to Lutterworth town centre.

With Gilmorton Road bridge prohibited for general traffic use, the Spine Road will divert traffic that is currently travelling to/from areas to the north east including Gilmorton village. Traffic currently using Gilmorton Road bridge to travel to/from M1/J20 and the town centre will instead use the Spine Road, thereby providing a reduction in traffic volumes along A426 Leicester Road.

The Spine Road could also potentially divert some traffic away from the town centre through its design and by traffic management measures designed to discourage use of the A426 by through traffic.

The potential for the Spine Road to provide relief to the town centre and how it may be designed has been investigated and is discussed further in **Appendix C**.

9 Lutterworth Town Centre

The 2031 Early Phases development runs (reported in **Appendix C**) have indicated increases in traffic within Lutterworth town centre as a result of the SDA development. The early phases tests (1,290 dwellings and 14Ha employment land) assumed Gilmorton Road bridge to still be open for traffic but without completion of the Spine Road bridge over the M1. In contrast, the 2031 final model runs (reported in **Appendix F**), with full SDA development (2,960 dwellings and 23Ha employment land), completion of the Spine Road bridge over the M1 and Gilmorton Road bridge closed for general traffic use, has indicated reductions in traffic when compared with the 2031 Reference Case forecasts without the SDA and associated transport infrastructure.

For the Early Phases development tests, three highway scenarios have now been investigated:

- Scenario 1 - Spine Road only provides access for the SDA area and does not connect with any other roads;
- Scenario 2 - Spine Road connects with Gilmorton Road; and
- Scenario 3 - Spine Road connects with Gilmorton Road and with A426 Leicester Road (via new bridge over M1), with Gilmorton Road bridge closed for general traffic use.

The resulting forecasts for A426 Leicester Road within the town centre are shown in **Table 1**, for the Reference Case, three Early Phases scenarios and Final development. The initial increases and subsequent reductions in traffic are summarised in **Table 1** for the A426 Leicester Road north and south of Gilmorton Road. This shows initial increases of between 10% and 17% and subsequent reductions of between 8% and 34%.

The forecasts show the following when compared with the Reference Case:

- Early Phases - Scenario 1 = Increased traffic within the town centre;
- Early Phases - Scenario 2 = A mix of increases and decreases;
- Early Phases - Scenario 3 = Generally decreases; and
- Final Development = Decreases.

Early Phases - Scenario 2 shows mixed results, as this is largely related to how traffic may re-route as a result of the Spine Road connecting with Gilmorton Road. From analysis of the operational capacity performance at the associated junctions, it would appear the re-routing is very sensitive to junction delays and hence leading to increases and decreases.

Scenario 2 also shows the benefits of an early connection between the Spine Road and Gilmorton Road, as this allows a degree of route choice for Gilmorton Road traffic as well as for development traffic. Scenario 3 shows the best result the town centre and it is interesting to note that the forecast volumes are generally only slightly lower than those for the Final Development.

All of the forecasts assume no traffic management measures within the town centre, which if implemented could possibly provide further relief by forcing some through-traffic to use the Spine Road.

In 2007, LCC appointed Scott Wilson (a legacy company of AECOM) to prepare a Lutterworth Traffic Study which reported in May 2008. The study identified options for removing HGVs from the town centre including a possible eastern relief road route which was broadly similar to the Spine Road now being proposed. The report indicated the highest 2-way HGV 12-hour volume on the A426 south of the town centre to be 1,453 vehicles. From an automatic number plate recognition (ANPR) survey, the report also estimated the 12-hour HGV through-traffic movements (i.e. vehicles without an original or destination in Lutterworth) to be 374 vehicles northbound and 320 vehicles southbound, and therefore totalling 694 vehicles. Based on the Scott Wilson report, the Spine Road together with suitable traffic management measures (e.g. a 7.5 tonne weight limit) could potentially help to reduce HGVs travelling through the town centre. However, it is not known what the environmental impact would be on the Lutterworth East development area.

Table 1 Traffic Within Lutterworth Town Centre

Link	Direction	2031 Forecast Scenario				
		Ref	EP - Sc1	EP - Sc2	EP-Sc3	Final
AM Peak Hour						
A426 Leicester Road – North of Gilmorton Road	NB	734	811	745	649	680
	SB	806	914	661	592	663
A426 Leicester Road – South of Gilmorton Road	NB	990	1,089	907	747	743
	SB	995	1,150	607	555	658
PM Peak Hour						
A426 Leicester Road – North of Gilmorton Road	NB	508	593	630	483	522
	SB	940	1,032	960	793	821
A426 Leicester Road – South of Gilmorton Road	NB	1,033	1,150	1,048	699	687
	SB	919	1,043	670	669	700

Link	Direction	2031 Forecast Scenario							
		Ref Vs Ep-Sc1		Ref Vs EP-Sc2		Ref Vs EP-Sc3		Ref Vs Final	
		Traffic	%	Traffic	%	Traffic	%	Traffic	%
AM Peak Hour									
A426 Leicester Road – North of Gilmorton Road	NB	77	10%	11	1%	-85	-12%	-54	-8%
	SB	108	13%	-145	-18%	-214	-27%	-143	-18%
A426 Leicester Road – South of Gilmorton Road	NB	99	10%	-83	-8%	-243	-25%	-247	-25%
	SB	155	16%	-388	-39%	-440	-44%	-337	-34%
PM Peak Hour									
A426 Leicester Road – North of Gilmorton Road	NB	85	17%	122	24%	-25	-5%	14	3%
	SB	92	10%	20	2%	-147	-16%	-119	-13%
A426 Leicester Road – South of Gilmorton Road	NB	117	11%	15	1%	-334	-32%	-346	-34%
	SB	124	13%	-249	-27%	-250	-27%	-219	-24%

Ref = Reference Case, EP-Sc1/2/3 = Early Phases Scenarios 1/2/3, Final = Full Development, NB = Northbound, SB = Southbound, Traffic Flows in PCUs per hour.

10 Independent Review

An independent review has been undertaken of AECOM's work on the transport assessment for the SDA. HDC appointed Jacobs to conduct independent traffic modelling using the LLITM and operational junction capacity modelling to assess the impact of the SDA traffic and associated capacity plan transport infrastructure and off-site junction improvements proposed by AECOM.

In the report Lutterworth East SDA Junctions Operational Assessment, December 2016, Jacobs concluded the following:

The LinSig modelling shows that all four junctions are able to accommodate the predicted 2031 Option 6A traffic flows for both the AM and PM peaks.

The M1 Junction 20 and A4304 / Eastern link roads will operate with considerable spare capacity for both peaks, with fairly low cycle times.

The Frank Whittle and A426 / Bill Crane Junctions operate closer to capacity; however still operate with some spare capacity.

The iteration process in combination with the junction operational optimisation resulted in reduced transient queueing, higher average speeds and reduced overall travel time in the AM peak hour for Option 6A.

Various measures are available to consider for the reduction of HGV traffic through the A426 High Street in Lutterworth. This includes height and width restriction signing supported by appropriate enforcement, and physical measures such as width restriction bollards and low speed zones.

Source: Section 5 Conclusions of 'Lutterworth East SDA Junctions Operational Assessment', Jacobs, December 2016.

It is concluded from this, that Jacobs' report is in broad agreement with the findings of the transport assessment work undertaken by AECOM.

11 Summary & Conclusion

Summary

AECOM has undertaken a Strategic Transport Assessment for the Lutterworth East SDA. Through consultation and a series of comments and responses and associated documents, the transport assessment work has expanded to address wider issues including cumulative development impacts and traffic relief to the town centre.

The detailed transport assessment as documented in the Appendices to this Executive Summary demonstrate the SDA and its proposed transport infrastructure and off-site junction improvements can accommodate the forecast traffic demands. Furthermore, the proposed closure of Gilmorton Road bridge and the Spine Road will help to relieve traffic levels within Lutterworth town centre.

Gilmorton Road bridge will be converted to a sustainable transport corridor to connect the SDA area with the town centre via bus, walking and cycling. The existing farm bridge across the M1 to the north of Junction 20 will provide further pedestrian and cycle linkages to the town centre.

The independent review of AECOM's work undertaken by Jacobs on behalf of HDC, demonstrates that the Spine Road and improvements to the off-site junctions will operate with satisfactory reserve capacity.

Conclusion

It is concluded the SDA and associated transport infrastructure, can accommodate future transport demands, provide the necessary connectivity and help to relieve traffic in Lutterworth town centre.

