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# **East Midlands Draft Regional Plan**

## **Leicestershire County Council**

### **Assessment of Highways and Transportation Implications of Sustainable Urban Extensions at Selected Broad Locations in Leicestershire**

#### **Draft Technical Report**

***The contents of this report are preliminary only,  
subject to potentially substantial revision in light of  
further work.***

## **1: PURPOSE AND LAYOUT OF REPORT**

- 1.1.** A project has been carried out to look at the transportation implications of five options for possible ‘sustainable urban extensions’ (SUE)<sup>(1)</sup> to help meet draft Regional Spatial Strategy (RSS) 2001 – 2026 housing allocations. This technical report details the project and its outcomes and also sets out recommendations for further work. Its purpose is to inform the County Council’s response to the draft Regional Plan, in particular in relation to the proposed district by district distribution of housing provision and guidance on the broad scale and location of SUEs.
- 1.2.** This report does not deal with matters outside transportation, although it is recognised that there are many other factors which may influence the final choice of locations for SUEs. Neither does it necessarily reflect the views of the County Council. Nor is it intended to prejudice district council views on the draft RSS. Indeed, its outcomes could help to inform their responses.

(Discussions have been held with district council officers, but the district councils have not given any formal views on this project and its outcomes. It is acknowledged that some district officers have expressed concerns about the draft RSS housing allocations and options for SUEs.)

- 1.3.** The remainder of this report is structured as follows:
- Section 2 : Background
  - Section 3: Project approach and technical assumptions and parameters
  - Section 4: Outcomes: impacts and mitigating measures
  - Section 5: Conclusions and planned further work
  - Appendix A: Project structure
  - Appendix B: Map indicating broad locations considered in this project
  - Appendix C: Plans indicating potential mitigating measures

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(1) Including a range of housing types; access to a range of local employment schools and services; conservation of important environmental assets and natural resources; re-use and recycling of waste; in addition to enhancements to sustainable transport modes, including walking, cycling and public transport.

## **2: BACKGROUND**

### **Policy overview**

- 2.1. Draft RSS:** It proposes considerable new housing to be delivered by 2026. A significant proportion of the Leicestershire provision is to be delivered in the form of ‘sustainable urban extensions’ (SUEs) around the Leicester Principal Urban Area and selected Sub-Regional Centres.
- 2.2.** An initial sieving exercise was carried out to establish possible broad locations for SUEs around the Leicester Principal Urban Area (PUA) and the Sub-Regional Centres. This took account of a number of constraints and opportunities, including the likely cost and feasibility of strategic transport requirements. A full analysis of the constraints and opportunities is set out in the County Council’s advice to the Regional Assembly and published on the Assembly’s website. The resulting policy in the draft Regional Plan is Three Cities SRS Policy 4 in Part 2 of the draft Plan. This project has looked at the five possible areas for SUEs:
- i) In Charnwood, adjoining Leicester: 4850 dwellings**
  - ii) In Blaby, adjoining Leicester: 4000 dwellings**
  - iii) Loughborough: 4850 dwellings**
  - iv) Hinckley/Earl Shilton/Barwell/Burbage: 4850 dwellings**
  - v) Coalville: 4850 dwellings**
- If developed, these areas are not likely to come forward before 2016.
- 2.3.** The draft RSS also contains policies to promote a more sustainable development pattern, reduce the need to travel and the rate of traffic growth, to promote a step change in the quantity and quality of public transport and to promote additional highway capacity only when all other options have been exhausted.
- 2.4. Local transport plans (LTP):** Areas i) and ii) are covered by both the Leicestershire and Central Leicestershire LTP. The others are covered by the Leicestershire LTP.
- 2.5.** These SUEs, if they proceed, would be developed outside the current LTP period to 2011. Nevertheless, it is important that they meet the LTP longer term strategies set out below.

### **Leicestershire Local Transport Plan 2006-2011**

- provide the right transport conditions to help economic growth;
- improve access to facilities for all;
- reduce transport’s impact on the environment;
- keep transport safe; and
- make sure that our highway assets are properly maintained and renewed for the long-term.

## **Central Leicestershire Local Transport Plan 2006-2011**

- tackling congestion;
- delivering accessibility;
- safer roads;
- better air quality;
- better road, footway and cycle route conditions; and
- an overarching objective to improve quality of life for all.

### **Project purpose and scope**

- 2.6. Its overall purpose has been to establish in broad transport terms whether there is a workable location for an SUE in each of the five areas. In more detail, its purpose has been:
- to assess the transport implications of possible SUEs;
  - to explore potentially achievable transport measures to mitigate these; and
  - to advise, on the basis of this analysis, whether the SUEs are achievable in transport terms.
- 2.7. The measures are believed to be deliverable given the necessary funding but that cannot be guaranteed, given the necessity for statutory procedures and work on infrastructure outside the County Council's control.

### **Summary of work carried out**

- 2.8. The project structure is shown at appendix A. The main work elements were:
- Assume a development location within each area for strategic modelling purposes:** A specific location must be chosen to allow proper testing but this does not mean that such location would be the one finally chosen. The purpose of the study is to determine whether there is a location for an SUE in each area which is acceptable in transportation terms. The actual choice is for the Local Development Framework process.
  - Model transportation impacts:** Carried out using: Central Leicester Traffic Model for north and west of Leicester; Loughborough Traffic Model; and gravity models<sup>(2)</sup> for Coalville and Hinckley/Earl Shilton/Barwell/Burbage.
  - Broadly identify impacts and wherever possible identify potential mitigating measures:** Carried out by the Project Delivery Team<sup>(3)</sup>, with input (as necessary) from public transport colleagues, the Highways Agency; district councils; and Highways Development Control Group.
  - Broadly explore measures in terms of: modelled effectiveness; deliverability; environmental impact; and indicative works' cost:** White Young Green (WYG) was commissioned to undertake 'desktop' studies. Modelling of north and west of Leicester, and of Loughborough was carried out by the County Council; WYG modelled Coalville and Hinckley.

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(2) Prepared by consultants, White Young Green based on 2001 census data.

(3) See appendix A.

- v. **On the basis of the analysis work, review whether the SUEs are deliverable in transportation terms:** This has been judged against the following criteria:
- The centres with which SUEs are associated should have a good range of employment, education, shopping and other facilities, so that journey distances are minimised.
  - Measures to mitigate the traffic impacts of the development – investment in public transport, cycling and walking coupled with any necessary highway investment – should be achievable and potentially affordable from developer and 'Growth Point' funding.
  - With the mitigation measures in place, the net additional traffic from the development on the existing road network should be such as to cause generally modest increases in traffic level, such as not to cause significant increases in accidents or congestion.
- vi. **Prepare final report, summarising project outcomes.**

### **3: PROJECT APPROACH AND TECHNICAL ASSUMPTIONS AND PARAMETERS**

#### **Approach**

- 3.1. Taking account of LTP longer term strategies and the draft RSS transport strategy, this project has first focused on identifying sustainable mitigating measures to support the possible SUEs. To maximise the use of sustainable travel modes, there is strong emphasis on providing improved bus services and route corridors, new park and ride sites and maximising walking and cycle links between the SUEs and surrounding existing employment, shopping, leisure and other facilities.
- 3.2. Where new road links have been identified, in many cases these are required not only to accommodate car trips but also to improve linkages for sustainable modes between the SUEs and the surrounding areas or to help tackle existing traffic problems, unlocking opportunities to make further walking, cycling and public transport improvements.
- 3.3. Demand management measures will be needed to complement enhanced walking, cycling and public transport provision and to encourage people to change their travel habits. But, within the scope of this project the potential effects of any demand management measures (be they significant, such as road-user charging, or 'soft', such as residential travel plans) have not been assessed.

#### **Assumptions and parameters**

- 3.4. It has been necessary to make a number of assumptions and set certain parameters when assessing the impacts of the SUEs and considering potential mitigating measures.
- 3.5. **Trip rate:** The scale of SUEs envisaged should be capable of supporting local services and employment. Although no details about such are available at this time, for the purposes of this project it has been assumed:
  - major employment sites will be co-located with major housing sites (e.g. mixed use development or in very close proximity); and
  - provision of on-site facilities such as schools; a shopping centre (not just a shop); medical facilities (surgery, dentist) and leisure (not just open space and playgrounds);

and therefore a peak hour trip rate of 0.5 per dwelling to *external* destinations, equating to around 6 to 7 trips per dwelling per day, has been used.

- 3.6. For the assumed trip rate to prove reasonable in practice, in planning for strategic employment growth account must be taken of the SUE locations. Journeys to work are a significant element of peak hour traffic and employment levels and locations will have a particularly key influence on residential trip generation; if employment and housing are not co-located then it is likely that actual residential trip rates will be higher than assumed which will affect more detailed consideration of the SUEs and mitigating measures.

**3.7. Public transport usage:** Assumed levels vary area by area (as indicated in tables in Section 4), based on:

- 2001 journey to work census data;
- the existing (mainly) market-driven bus network; and
- experience of public transport take-up in other new housing developments<sup>(4)</sup>.

**3.8. Assessment of local links:** Within the time available, the exploration of potential mitigating measures has concentrated on assessing those likely to have the more significant effects and that provide links to destinations remote from the possible SUEs. But, walking, cycling and public transport links to local facilities are also important and will be required to deliver sustainable developments; their potential traffic impacts will need to be assessed at a more detailed stage.

**3.9. Modelling:** The Central Leicestershire and Loughborough models allow for underlying traffic growth as well as growth arising from committed developments, but the gravity models used for Hinckley and Coalville are not sensitive enough to do so. It should be noted, however, that the draft regional transport strategy includes a policy aimed at achieving a zero rate of traffic growth by the end of the plan period. The impact of future demand management policies, including road user charging, is one of the main uncertainties in this exercise.

**3.10.** Within the scope of this project it has not been possible to investigate the results as thoroughly as would normally be the case. There is nevertheless a good degree of confidence in the modelling work having properly predicted the SUEs' broad impacts and also the broad effects of the mitigating measures.

**3.11. Exploration of mitigating measures:** The measures have been assessed at a broad level to establish:

- **Deliverability:** What impediments and constraints exist that would affect materially the level of risk associated with the delivery of the measure?
- **Environmental impacts:** What significant features (natural or man-made) might be affected if the measure were to be delivered
- **Indicative costs:** How much might it cost to build the scheme?

and these issues are summarised in tables in Section 4.

**3.12. Wider benefits of mitigating measures:** The potential mitigating measures will have wider benefits than simply to serve the SUEs.

In modelling the potential public transport measures for the north and west of Leicester areas, i.e. park and ride sites and high quality bus corridors, reductions have been assumed in car trips from existing areas that would be served by the measures. Because of the complexity of the Loughborough situation (see Section 4) and lack of full traffic models covering Hinckley and Coalville, it has not been possible to do this for these areas.

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In considering potential road improvements, the modelling work will have assumed diversion of some existing trips where appropriate, e.g. from Syston town centre on to the Syston eastern link road. Wider benefits are identified in tables in Section 4.



## 4: OUTCOMES: IMPACTS AND MITIGATING MEASURES

### Location i) North of Leicester in Charnwood

- 4.1. Assumed location:** The earlier sieving exercise (see para' 2.2) indicated that a location broadly to the east of Thurmaston should be subject to further investigation as a possible broad location for an SUE (see plan at appendix B).
- 4.2. Broad traffic impacts relative to base situation:** This is already a heavily trafficked area and concerns have been expressed about existing traffic conditions and impacts of developments already proposed/under construction.
- 4.3.** Looking at predicted daily traffic levels, in summary preliminary modelling work shows **without** any mitigating measures:

Route	Predicted traffic levels without SUE	Predicted traffic levels with SUE	Percentage difference
Fosse Way	7300 (north Glebe Way) 1900 (south Glebe Way)	9400 3100	+29% +63%
Glebe Way	6000	8500	+42%
Barkby Lane	6100	9900	+62%
Barkby Thorpe Lane	5800 (towards A607 end)	20700	+257%
Barkby Thorpe Road	14200 (near to H'berstone Ln) 9100 (outside built-up area)	17400 14800	+23% +63%
A563 Troon Way	22800	23700	+4%
A563 Thurmaston Lane	30500	34300	+12%
A607 Melton Road	17100	17800	+4%
Victoria Road East Extension	7400	9000	+22%

**Table 4.1**

- 4.4.** There also appears to be a diversion of trips from the A607 to the route through Thurmaston, likely due to modelled congestion at junctions either end of the Thurmaston bypass.
- 4.5. Potential mitigating measures:** In conducting this project, measures have been identified which seek not only to support the possible SUEs but that will also potentially deliver wider benefits. This is especially so in this area, in the light of concerns about current traffic conditions. The measures listed in Table 4.2 have been identified and explored. They represent the nature and scale of works required not only to mitigate the impacts of an SUE in this area but also to help to address existing problems.

Plan Ref <sup>(a)</sup>	Potential measure LC = affects transport infrastructure in City	Delivery risk <sup>(b)</sup>	Environment impact <sup>(b)</sup>	Cost <sup>(c)</sup>	Examples of potential wider benefits
<b>County and City</b>					
<b>T1</b>	Syston eastern link road	<b>Medium</b>	<b>High</b>	<b>£10.5m</b>	Scope to improve environment in Syston, including improvements for walking, cycling and buses
<b>T1A</b>	Syston eastern link road – reduced scale	<b>Medium</b>	<b>High</b>	<b>£6.9m</b>	Scope to improve environment in Syston, including improvements for walking, cycling and buses
<b>T2 &amp; T8</b>	Improve link to A607, including 'ASDA' roundabout	<b>Medium(T2) High(T8)</b>	<b>Medium(T2) Low(T8)</b>	<b>£4.9m</b>	Further improve walking and cycling routes and also better bus linkages between Syston and Thurmaston
<b>T3</b>	Improve linkages to A563 (LC)	<b>Medium</b>	<b>Medium</b>	<b>£4.8m</b>	Opportunity to remove traffic from Barkby Thorpe Road
<b>T4<sup>(d)</sup></b>	Extend A607 bus corridor in City – aim for 20% usage of buses for trips to City (LC)	<b>Medium</b>	<b>Medium</b>	<b>£1.8m<sup>(d)</sup></b>	Improved reliability of existing bus services
<b>T5<sup>(d)</sup></b>	Bus corridor to City via Barkby Thorpe Road/ Barkby Road/ Catherine Street/ Dysart Way/Belgrave Rd – aim for 20% use of buses for trips to City (LC)	<b>High</b>	<b>High</b>	<b>Circa £15m<sup>(e)</sup></b> (may need new bridge under railway)	Improved reliability of existing bus services
<b>T6</b>	Bus, walking cycling and local traffic links to Syston and Thurmaston	<b>High</b> (as it depends on T1+T2)	<b>Low</b>	<b>£1.0m</b>	Provides links to existing developments to help attract existing car-borne trips
<b>T7</b>	Bus, walking, cycling & local traffic links to Hamilton (LC)	<b>Medium</b>	<b>Low</b>	<b>£1.2m</b>	Provides links to existing developments to help attract existing car-borne trips
<b>T9</b>	Bus lanes on A607: Inbound = Humberstone Lane to Troon Way; outbound = on approach to Troon Way (LC)	<b>Medium</b>	<b>Low</b>	<b>Included in T4</b>	Improved reliability of existing bus services
<b>T10</b>	Measures on routes east and south (e.g. Hamilton Lane) to minimise risk of traffic rat-running around eastern edge of City via Keyham Lane, Scraftoft, Thurnby (LC)	<b>High</b> (as success depends on T3)	<b>Low</b>	<b>£0.1m</b>	Should help to deter existing 'rat-running'
<b>T11</b>	Bus only link to Colby Drive to extend bus route in area east of A607, giving links to local facilities and maximising public transport access to the area	<b>Medium</b>	<b>Low</b>	<b>£0.6m</b>	May help to deliver improved bus services to existing areas of Thurmaston
<b>Total</b>				<b>£46.8m+</b>	
<b>Potential Motorway and Trunk road issues</b>					
	A46/A607 'Hobby Horse' junction	Not believed to be any significant concerns, though continuing liaison with the Highways Agency is required			

**Table 4.2: Thurmaston potential mitigating measures**

**Notes**

- (a) See appendix C.
- (b) Rankings are relative to one another, e.g. a measure ranked "low" has less of an impact in relative terms than other measures. But, this is not to imply that there are no issues relating to that measure's delivery or that it has no environmental impact.
- (c) Works cost plus broad estimate of land acquisition, design and supervision and utilities diversion costs. There is at this stage substantial uncertainty in these estimates.
- (d) T4 is identified in the Central Leicestershire LTP. T5 could either be alternative too or complement T4, although both appear difficult to deliver.
- (e) There may also be a requirement for revenue funding for bus service improvements.

**4.6. Effects of mitigating measures:** Looking at predicted daily traffic levels, in summary preliminary modelling work of the mitigating measures (as set out in Table 4.2) shows:

Route	Predicted traffic levels without SUE & measures	Predicted traffic levels with SUE & measures	Percentage difference
Fosse Way	7300 (north Glebe Way) 1900 (south Glebe Way)	8000 1900	+10% 0%
Glebe Way	6000	5900	-2%
Barkby Lane	6100	2200	-64%
Barkby Thorpe Lane	5800 (towards A607 end)	16900	+191%
Barkby Thorpe Road	14200 (near to H'berstone Ln) 9100 (outside built-up area)	0	-100%
		Assumes closed to all but buses, local traffic and walking and cycling; in practice reduction will not be 100%	
A563 Troon Way	22800	24800	+9%
A563 Thurmaston Lane	30500	34000	+11%
A607 Melton Road	17100	18500	+8%
Victoria Road East Extension	7400	8500	+15%

**Table 4.3**

**4.7.** There is also much less of an apparent problem with trips diverting through Thurmaston.

**4.8. Conclusion – subject to revision following further analysis:** Reviewing the analysis against the criteria set out in para' 2.8(v):

- There is a range of nearby facilities employment, shopping, schools, etc in Syston, Thurmaston and Hamilton, with opportunities to provide good linkages to these by walking, cycling and public transport.
- There is the potential to provide a range of supporting transportation measures to encourage trips by public transport, walking and cycling. Such measures should also help to attract existing trips, helping to address concerns about the current traffic situation. How best to deliver the high quality bus service to the city centre, which should be seen as a key to the successful delivery of an SUE in this area, is a potentially significant issue. It will require either further improvements along the A607 route (which is already identified in the Central Leicestershire LTP) or improvements to Catherine Street (giving the most direct route to the city centre) which would require the restricted road layout at the Midland Main Line railway bridge to be addressed. If neither of these can be delivered another route would need to be considered, possibly via Victoria Road East Extension.

- With the mitigation measures in place, the impacts of the SUE are generally modest.

The exception is on Barkby Lane at its western end, in the vicinity of the A607 junction; this length of the road has been incorporated as part of the Syston Eastern link road and hence the figures include existing trips diverted from the centre of Syston as well as trips from the possible SUE.

Mitigating measures T2 and T8 are required to address this predicted increase in traffic flows on Barkby Lane so as to minimise the risk of increased congestion and delays. The modelling work appears to demonstrate that with the appropriate level of improvements, the road network should function acceptably.

- 4.9.** Given the above, it has been concluded that the SUE could be accommodated in transport terms.

### **Location ii) West of Leicester in Blaby**

**4.10. Assumed location:** The earlier sieving exercise (see para' 2.2) indicated that a location broadly to the west of the M1 between Leicester Forest East and Enderby should be subject to further investigation as a possible broad location for a sustainable urban extension (see plan at appendix B).

**4.11. Broad traffic impacts relative to base situation:** Particular concerns exist about the current traffic situation in the M1 J21 area; any developments which exacerbate this situation significantly should not be supported.

**4.12.** Looking at daily traffic levels, in summary preliminary modelling work shows **without** any mitigating measures:

Route	Predicted traffic levels without SUE	Predicted traffic levels with SUE	Percentage difference
Beggars Lane	10400 (at A47 end) 6300 (at Enderby end)	22000 12400	+112% +97%
A563 Lubbesthorpe Way	36600	37200	+2%
A5460 link to M1 J21	60500	63200	+5%
A47	15100 (Beggars Ln to 'Red Cow') 30400 ('Red Cow to Braunstone Xrds) 24600 (Braunstone Xrds to A563))	16600 31300 25000	+10% +3% +2%
Ratby Lane	11700 (at J21A) 11100 (near Wembley Road)	16100 12500	+38% +13%
Leicester Lane and Hall Walk/Mill Lane, Enderby	<i>Figures awaited</i>	<i>Figures awaited</i>	?%

**Table 4.4**

**4.13.** It appears that the model is possibly diverting existing trips on the A47 through Leicester Forest East to other routes<sup>(5)</sup> – initial view is that the model is reassigning this traffic around through the Ratby/Kirby Muxloe areas, a view which may be supported by the scale of predicted increases on Ratby Lane.

**4.14. Potential mitigating measures:** In conducting this project, measures have been identified which seek not only to support the possible SUEs but that will also potentially deliver wider benefits. This is especially so in this area, in the light of concerns about current traffic conditions.

**4.15.** The measures listed in Table 4.5 have been identified and explored. They represent the nature and scale of works required not only to mitigate the impacts of an SUE in this area but also to help to address existing problems.

(5) Subject to further investigation, this is likely to account for the apparently significant discrepancy in modelled traffic levels on the A47 to the east and west of Beggars Lane.

Plan Ref <sup>(a)</sup>	Potential measure LC = affects transport infrastructure in City	Delivery risk <sup>(b)</sup>	Environment rating <sup>(b)</sup>	Cost <sup>(c)</sup>	Examples of potential wider benefits
<b>County and City</b>					
<b>Lb1</b>	Improve link between Enderby and A47: either upgrade Beggars Lane or provide new route on alternative alignment	<b>Medium</b>	<b>Medium</b>	<b>£5.5m</b>	Opportunity to provide existing LFE residents with better walking and cycling links to employment and shopping facilities in the Enderby area
<b>Lb2</b>	Enderby Relief Road	<b>Medium</b>	<b>Medium</b>	<b>£2.7m</b>	Significant traffic relief gives opportunities for environmental improvements, including measures to improve walking and cycling
<b>Lb3</b>	Strategic traffic link to the A563 Lubbesthorpe Way	<b>High</b>	<b>High</b>	<b>£8.7m</b>	In conjunction with Lb5 & Lb9 may help to deliver improved public transport to Thorpe Astley and Meridian Business Park
<b>Lb4</b>	Improvements (both for general traffic and public transport) to A47 corridor, including Desford Crossroads (traffic impacts overlap with those of Hinckley area)	<b>High</b>	<b>High</b>	<b>£3.3m</b>	Opportunities to build on success of existing Meynells Gorse park and ride site
<b>Lb5 &amp; Lb9</b>	Bus corridor to City via A563, including bus lanes on link from area to A563 – <b>aim for 20% public transport usage in trips to City (possible LC)</b>	<b>High</b>	<b>Medium</b>	<b>£1.6m<sup>(d)</sup></b>	In conjunction with Lb3 may help to deliver improved public transport to Thorpe Astley and Meridian Business Park
<b>Lb6</b>	Establish local bus linkages to Junction 21/Enderby area	<b>Medium</b>	<b>Medium</b>	<b>£3.7m<sup>(d)</sup></b>	In conjunction with Lb8 & Lb10 opportunity to provide existing LFE residents with better public transport links to employment and shopping facilities in the Enderby area
<b>Lb7</b>	Increase capacity at Meynells Gorse park and ride site	<b>Medium</b>	<b>Low</b>	<b>£5m+<sup>(e)</sup></b>	Opportunity to build on success of existing Meynells Gorse park & ride site
<b>Lb8 &amp; Lb10</b>	Linkages to Leicester Forest East (LFE) for public transport, walking, cycling and local traffic, including possible bus only link to A47	<b>Medium (but High for bus only link)</b>	<b>Low (but Medium for bus only link)</b>	<b>£3.8m + £3.3m for bus only link</b>	Provides access for existing LFE residents to facilities in the SUE
<b>Total</b>				<b>£37.6m+</b>	
<b>Potential Motorway and Trunk road issues</b>					
	M1 widening, including major improvements to J21	Not believed to be any significant concerns, though continuing liaison with the Highways Agency is required			

**Table 4.5: West of M1 potential mitigating measures**

**Notes**

- (a) See appendix C.
- (b) Rankings are relative to one another, e.g. a measure ranked “low” has less of an impact in relative terms than other measures. But, this is not to imply that there are no issues relating to that measure’s delivery or that it has no environmental impact.
- (c) Works cost plus broad estimate of land acquisition, design and supervision and utilities diversion costs. There is at this stage substantial uncertainty in these estimates.
- (d) There may also be a requirement for revenue funding for bus service improvements.
- (e) Would probably require some decking.

**4.16. Effects of mitigating measures:** Looking at predicted daily traffic levels, in summary preliminary modelling work of the mitigating measures (as set out in Table 4.5) shows:

Route	Predicted traffic levels without SUE & measures	Predicted traffic levels with SUE & measures	Percentage difference
Beggars Lane	10400 (at A47 end) 6300 (at Enderby end)	14800 10800	+42% +71%
A563 L'besthorpe Way	36600 (north of Meridian junction)	37900	+4%
A5460 link to M1 J21	60500	60800	+0.5%
A47 Hinckley Road	15100 (Beggars Ln to 'Red Cow') 30400 ('Red Cow to Braunstone Xrds) 24600 (Braunstone Xrds to A563))	13400 27800 23600	-11% -9% -4%
Ratby Lane	11700 (at J21A) 11100 (near Wembley Road)	10900 10600	-7% -5%
Leicester Lane and Hall Walk/Mill Lane, Enderby	<i>Figures awaited</i>	10000 9600	?% ?%

**Table 4.6**

**4.17.** It would appear that there is a lesser diversion of existing trips from the A47 through Leicester Forest East as compared to the without measures situation.

**4.18. Conclusion – subject to revision following further analysis:** Reviewing the analysis against the criteria set out in para' 2.8(v):

- There is an extensive range of nearby facilities, including, employment, shopping and leisure) with opportunities to provide good linkages to these by walking, cycling and public transport.
- There is the potential to provide a range of supporting transportation measures to encourage trips by public transport, walking and cycling. Such measures should also help to attract existing trips, helping to address concerns about the current traffic situation. The area is adjacent to the proposed Enderby park and ride bus corridor and there is the opportunity to link the area into this service, providing a direct, high quality route to the City centre. (There may also be a possibility of creating a public transport 'hub' serving the SUE, Thorpe Astley, Meridian Business Park and Meridian Leisure). There are also potential opportunities for extending the existing A47 bus corridor to serve the area.
- With the mitigation measures in place, the impacts of the SUE are generally modest. The exception is on Beggars Lane; but it is intended that the current route would be replaced by a much upgraded road, which will not only provide safely for the increased traffic levels but also provide for much improved facilities for pedestrians and cyclists.

**4.19.** Given the above, it has been concluded that the SUE could be accommodated in transport terms.

### **Location iii) Loughborough area**

**4.20. Assumed location:** The earlier sieving exercise (see para' 2.2 above) indicated that a location broadly to the west of Loughborough should be subject to further investigation as a possible broad location for a sustainable urban extension (see plan at appendix B).

**4.21. Broad traffic impacts relative to base situation:** There are two issues which have a fundamental bearing on the traffic situation:

- **Separation of housing and employment:** Broadly speaking, a significant proportion of existing and proposed (e.g. Dishley Grange) employment areas in Loughborough are to the north and east of the town centre with the main housing areas to the south and west. This results in significant cross town movements as people travel to and from work.
- **Town road network:** Routes through the centre are few and constrained in nature. This severely limits opportunities to improve connectivity between housing and employment areas by all modes, e.g. making it difficult to deliver bus priority measures or improved walking and cycling environments. Epinal Way severs residential areas and also affects the Loughborough University campus where there are substantial pedestrian and cycle movements.

**4.22.** Looking at daily traffic levels, in summary preliminary modelling work shows **without** any mitigating measures:

**NB:** Garendon Park link road assumed to be in place. This provides a route for traffic from the SUE to the north and provides some traffic relief to roads in the north-west of the town, such as Old Ashby Road and Warwick Way.

Route	Predicted traffic levels without SUE	Predicted traffic levels with SUE	Percentage difference
Snell's Nook Lane	11200	18300	+63%
Woodhouse Lane	4400	6700	+52%
Nanpantan Road	17100	21200	+24%
Ashby Road	18800 (near to Old Ashby Rd) 10300 (inside Epinal Way)	21100 11300	+12% +10%
Old Ashby Road	12200 (near school)	11200	-8%
Epinal Way	18700 (at Quorn end) 16700 (south Forest Rd) 23000 (by University) 15000 (at Warwick Way end)	19700 19200 25000 16100	+5% +15% +7% +7%



Route	Predicted traffic levels without SUE	Predicted traffic levels with SUE	Percentage difference
Warwick Way	17200	15300	-11%
Belton Road West	9700	13700	+41%
Belton Road	15600	17000	+9%
Meadow Lane	7800	8600	+10%
Alan Moss Road	13100	14000	+7%
A6 Derby Road	18400 (south of Alan Moss Rd)	21300	+16%
A6 Leicester Road	17500 (near Grammar school)	17400	-1%
Shelthorpe Road	5300	5600	+6%

**Table 4.7**

**4.23. Potential mitigating measures:** Because of the particular issues pertaining to Loughborough, it has not proved possible to identify one single package of measures capable of mitigating the predicted impacts of an SUE. Instead, three different options have been explored, as listed in Tables 4.8(a) to 4.8(c).

**4.24.** The three options are broadly:

- a. To create a new orbital route around the southern and western edges of the town. This would involve the previously suggested 'Garendon Park' link road, running between the A6(N) and A512, along with a route running close to the edge of the built-up area between the A512 and A6(S).
- b. To upgrade Epinal Way, including dualling, and improvements to Warwick Way.
- c. To create a new orbital route around the eastern edge of the town, possibly making use of the already proposed Burder Street link road.

**NB:** Each option includes complementary walking, cycling and public transport measures.

**4.25.** Each option mitigates the predicted impacts with varying degrees of success (see Table 4.9).

Plan Ref <sup>(a)</sup>	Potential measure <sup>(b)</sup>	Delivery risk <sup>(c)</sup>	Environment rating <sup>(c)</sup>	Cost <sup>(d)</sup>	Examples of potential wider benefits
<b>County</b>					
Lo1	Link road south of town, between A512 and end A6 Quorn bypass	High	High	£11.7m	Opportunity to remove 'rat-running' traffic from existing residential areas
Lo2A	A512 widening B591 to M1 J23, improvements to J23 and completion of dualling thereafter to Snell's Nook Lane junction	High	Medium	£7.3m	Reduce congestion at junction and opportunity to provide improved facilities for pedestrians and cyclists
Lo4	Park and ride site east of M1, adjacent to A512, including associated corridor improvements into town centre – <b>potential usage to be established from Loughborough model</b>	High (depends on Lo2A)	Medium	£5.3m <sup>(e)</sup>	Should attract existing car-borne trips to town centre, helping to reduce traffic levels
Lo5 <sup>(f)</sup>	Park and ride site on A6 south, with a bus route between it and proposed A512 P & R site, via town centre, Ashby Road, university and SUE – <b>potential use to be established from L'boro model</b>	Medium	Medium	£1.9m <sup>(e)</sup>	Should attract some existing car-borne trips to town centre, helping to reduce traffic levels
Lo6	Park and ride site on A6 north, with similar routeing to Lo5 – <b>potential use to be established from L'boro model</b>	High	Medium	£5.7m <sup>(e)</sup>	Should attract existing car-borne trips to town centre, helping to reduce traffic levels
Lo7	High quality bus service linking to town centre and railway station – <b>aim for 20% public transport usage in trips to town centre</b>	Not assessed at this stage			
Lo8	Bus service linking to east midlands airport	Not assessed at this stage			
Lo10	Hathern bypass	High	High	£5.2m <sup>(g)</sup>	Should provide significant traffic relief, with environmental benefits
-	<b>Garendon Park link:</b> Previously identified: indicative cost included for completeness & equality of assessment with other areas			£8.3m	Helps to provide some general traffic relief to the town
				<b>Total</b>	<b>£45.4m+</b>
<b>Potential Motorway and Trunk road issues</b>					
	M1 Widening, particularly J23/J23A/J24 and Kegworth bypass	Not believed to be any significant concerns, though continuing liaison with the Highways Agency is required			

**Table 4.8(a): Option a Loughborough potential mitigating measures**

**Notes**

- (a) See appendix C.
- (b) Garendon Park link road is assumed to be in place.
- (c) Rankings are relative to one another, e.g. a measure ranked "low" has less of an impact in relative terms than other measures. But, this is not to imply that there are no issues relating to that measure's deliver or that it has no environmental impact.
- (d) Works cost plus broad estimate of land acquisition, design and supervision and utilities diversion costs. There is at this stage substantial uncertainty in these estimates.
- (e) There may also be a requirement for revenue funding for bus service improvements.
- (f) A southern link road (Lo1) provides relatively limited relief to A6 through the south of the town in comparison with the other two options. In turn, this limits options for bus priority measures along the A6 corridor.
- (g) Cost for a single carriageway.

Plan Ref <sup>(a)</sup>	Potential measure <sup>(b)</sup>	Delivery risk <sup>(c)</sup>	Environment rating <sup>(c)</sup>	Cost <sup>(d)</sup>	Examples of potential wider benefits
<b>County</b>					
<b>Lo2A &amp; Lo2B</b>	A512 widening B591 to M1 J23, improve J23 and complete dualling thereafter to <b>Epinal Way</b> junction	<b>High</b>	<b>Medium (Lo2A)</b> <b>High (Lo2B)</b>	<b>£7.3m (Lo2A)</b> <b>£3.0m (Lo2B)</b>	Reduce congestion at junctions and opportunity to provide improved facilities for pedestrians and cyclists
<b>Lo3</b>	Improve Epinal Way/Warwick Way – including likely dualling of Epinal Way	<b>High</b>	<b>High</b>	<b>£7.1m</b>	Reduce congestion along the route and opportunity to provide improved facilities for pedestrians and cyclists
<b>Lo4</b>	Park and ride site east of M1, adjacent to A512, including associated corridor improvements into town centre – <b>potential usage to be established from Loughborough model</b>	<b>High (depends on Lo2A)</b>	<b>High<sup>(e)</sup></b>	<b>£5.9m<sup>(e)(f)</sup></b>	Should attract existing car-borne trips to town centre, helping to reduce traffic levels
<b>Lo5<sup>(g)</sup></b>	Park and ride site on A6 south, with a bus route between it and proposed A512 P & R site, via town centre, Ashby Road, university and SUE – <b>potential use to be established from L'boro model</b>	<b>Medium</b>	<b>Medium</b>	<b>£3.5m<sup>(f)</sup></b>	Should attract existing car-borne trips to town centre, helping to reduce traffic levels
<b>Lo6</b>	Park and ride site on A6 north, with similar routeing to Lo5 – <b>potential use to be established from L'boro model</b>	<b>High</b>	<b>Medium</b>	<b>£5.7m<sup>(f)</sup></b>	Should attract existing car-borne trips to town centre, helping to reduce traffic levels
<b>Lo7</b>	High quality bus service linking to town centre and railway station – <b>aim for 20% public transport usage in trips to town centre</b>	Not assessed at this stage			
<b>Lo8</b>	Bus service to east midlands airport	Not assessed at this stage			
<b>Lo10</b>	Hathern bypass	<b>High</b>	<b>High</b>	<b>£5.2m<sup>(h)</sup></b>	Should provide significant traffic relief, with environmental benefits
<b>-</b>	<b>Garendon Park link:</b> Previously identified: indicative cost included for completeness & equality of assessment with other areas			<b>£8.3m</b>	Helps to provide some general traffic relief to the town
<b>Total</b>				<b>£46m+</b>	
<b>Potential Motorway and Trunk road issues</b>					
	M1 Widening, particularly J23/J23A/J24 and Kegworth bypass	Not believed to be any significant concerns, though continuing liaison with the Highways Agency is required			

**Table 4.8(b): Option b Loughborough potential mitigating measures**

**Notes**

- (a) See appendix C.
- (b) Garendon Park link road is assumed to be in place.
- (c) Rankings are relative to one another, e.g. a measure ranked “low” has less of an impact in relative terms than other measures. But, this is not to imply that there are no issues relating to that measure’s deliver or that it has no environmental impact.
- (d) Works costs plus broad estimate of land acquisition, design and supervision and utilities diversion costs. There is at this stage substantial uncertainty in these estimates.
- (e) Takes into account additional impacts and costs of widening on A512 approach to Epinal Way to provide for bus priority measures as part of dualling works.
- (f) There may also be a requirement for revenue funding for bus service improvements.
- (g) Significantly improving Epinal Way and Warwick Way provides greater relief to A6 through the south of the town than does a southern link road (Option 1 Lo1). In turn, this provides greater scope for bus priority measures along the A6 corridor – hence the cost difference of this measure over Option 1.
- (h) Cost for a single carriageway.

Plan Ref <sup>(a)</sup>	Potential measure <sup>(b)</sup>	Delivery risk <sup>(c)</sup>	Environment rating <sup>(c)</sup>	Cost <sup>(d)</sup>	Examples of potential wider benefits
<b>County</b>					
Lo2A	A512 widening B591 to M1 J23, improve J23 and complete dualling thereafter to <b>Snell's Nook Lane</b> junction	High	Medium	£7.3m	Reduce congestion at junction and opportunity to provide improved facilities for pedestrians and cyclists
Lo4	Park and ride site east of M1, adjacent to A512, including associated corridor improvements into town centre – <b>potential usage to be established from L'boro model</b>	High (depends on Lo2A)	Medium	£5.3m <sup>(e)</sup>	Should attract existing car-borne trips to town centre, helping to reduce traffic levels
Lo5 <sup>(f)</sup>	Park and ride site on A6 south with a bus route between it and proposed A512 P & R site, via town centre, Ashby Road, university and SUE – <b>potential use to be established from L'boro model</b>	High	Medium	£3.5m <sup>(e)</sup>	Should attract existing car-borne trips to town centre, helping to reduce traffic levels
Lo6	Park and ride site on A6 north, with similar routing to Lo5 – <b>potential use to be established from Loughborough model</b>	High	Medium	£5.7m <sup>(d)</sup>	Should attract existing car-borne trips to town centre, helping to reduce traffic levels
Lo7	High quality bus service linking to town centre and railway station – <b>aim for 20% public transport usage in trips to town centre</b>	Not assessed at this stage			
Lo8	Bus service linking to east midlands airport	Not assessed at this stage detail			
Lo9	Loughborough eastern link road	High	High	Circa £30m <sup>(g)</sup>	Provides significant traffic relief, unlocking opportunities for environmental improvements, including measures for walking, cycling and public transport
Lo10	Hathern bypass	High	High	£5.2m <sup>(h)</sup>	Should provide significant traffic relief to village, with environmental benefits
-	<b>Garendon Park link:</b> Previously identified: indicative cost included for completeness & equality of assessment with other areas			£8.3m	Helps to provide some traffic relief to town
<b>Total</b>				<b>£65.3m+</b>	
<b>Potential Motorway and Trunk road issues</b>					
	M1 Widening, particularly J23/J23A/J24 and Kegworth bypass	Not believed to be any significant concerns, though continuing liaison with the Highways Agency is required			

**Table 4.8(c): Option c Loughborough potential mitigating measures**

**Notes**

- (a) See appendix C.
- (b) Garendon Park link road is assumed to be in place.
- (c) Rankings are relative to one another, e.g. a measure ranked "low" has less of an impact in relative terms than other measures. But, this is not to imply that there are no issues relating to that measure's deliver or that it has no environmental impact.
- (d) Works costs plus broad estimate of land acquisition, design and supervision and utilities diversion costs. There is at this stage substantial uncertainty in these estimates.
- (e) There may also be a requirement for revenue funding for bus service improvements.
- (f) An Eastern link road (Lo10) provides significant relief to routes in the town centre, including to the A6 through the south of the town. In turn, this provides scope for bus priority measures along the A6 corridor – hence the cost difference of this measure over Option 1.
- (g) The route would cross a flood plain, affect the main electricity supply to Loughborough and require demolition of commercial property, which the broad estimate applied elsewhere cannot take account of. Thus, the cost is likely to be considerably greater than that shown.
- (h) Cost for a single carriageway.

**4.26. Effects of mitigating measures:** Taking each of the three options in turn, preliminary modelling work looking at predicted daily traffic levels shows:

Assumed SUE west of Loughborough, including Garendon Park link				
Route	Traffic levels no SUE & measures	Traffic levels with SUE & measures		
		Option a	Option b	Option c
Snell's Nook Lane	11200	22400 (+100%)	17400 (+55%)	13700 (+22%)
Woodhouse Ln	4400	5800 (+32%)	6100 (+39%)	5000 (+14%)
Nanpantan Rd	17100	14800 (-13%)	21200 (+24%)	18700 (+9%)
Ashby Road	18800 (near Old Ashby Rd) 10300 (inside Epinal Way)	18800 (0%) 11100 (+8%)	18800 (0%) 9200 (-11%)	16900 (-10%) 10400 (+1%)
Old Ashby Road	12200 (near school)	9500 (-22%)	11700 (-4%)	7100 (-42%)
Epinal Way	18700 (at Quorn end) 16700 (south Forest Rd) 23000 (by University) 15000 (at Warwick Way end)	22300 (+20%) 17000 (+2%) 23800 (+3%) 16400 (+9%)	24000 (+28%) 33500 (+100%) 28000 (+22%) 19100 (+27%)	19600 (+5%) 16400 (-2%) 23200 (+1%) 12500 (-17%)
Warwick Way	17200	16000 (-7%)	18100 (+5%)	12300 (-28%)
Belton Road West	9700	12500 (+29%)	13300 (+37%)	8400 (-13%)
Belton Road	15600	16400 (+5%)	16900 (+8%)	13900 (-11%)
Meadow Lane	7800	8200 (+5%)	8600 (+10%)	9300 (+19%)
Alan Moss Rd	13100	13600 (+4%)	14700 (+12%)	11200 (-15%)
A6 Derby Rd	18400 (south Alan Moss Rd)	20100 (+9%)	21800 (+19%)	16100 (-13%)
A6 Leicester Road	17500 (near Grammar school)	16800 (-4%)	15400 (-12%)	10600 (-39%)
Shelthorpe Rd	5300	5900 (+11%)	5300 (0%)	5100 (-4%)

**Table 4.9**

**4.27. Broadly summarising the above:**

**Option a:** Reduces impacts of an SUE on routes in the town centre. But, on some lengths of Epinal Way and Warwick Way predicted traffic levels are actually above the predicted base situation without an SUE and the mitigating measures (Table 4.7) It may be that in reassigning traffic to new orbital routes around the southern and western edges of the town, the model has released some extra capacity on Epinal Way and Warwick Road which it has then filled with traffic diverted from (relatively) more congested areas of the model network.

It should be emphasised that the above changes stem from the combined impacts of a southern link road and a western link road (Garendon Park). Whilst it would help to accommodate some development traffic, a southern link road alone would not mitigate the impacts of an SUE.

**Option b:** Would benefit roads in the town centre. But, on Epinal Way/ Warwick Way it would exacerbate existing problems of community severance and worsen the impacts of traffic around the university campus.

**Option c:** In traffic terms, this has the widest benefits for the town and fewest disbenefits. But, an eastern link road appears to be the most technically challenging and costly of the three options and it may prove impossible to deliver in practice.

**4.28. Conclusion – *subject to revision following further analysis*:** Reviewing the analysis work so far against the criteria set out in para' 2.8(v):

- Loughborough has an extensive range of facilities, including, employment, shopping and leisure. But, opportunities to provide good linkages to these by walking, cycling and public transport are restricted given the layout of the town's road network.
- It has not been possible at this stage to identify one single package of measures capable of mitigating the impact of an SUE to Loughborough (wherever it might be located). Of the range of measures considered some, such as the Garendon Park link, southern link road and eastern link road, are expensive and may not in practice be deliverable because of environmental and other constraints. Significant improvements to Epinal Way are likely to be controversial and would exacerbate existing problems of community severance and impact adversely on the University campus. But, without measures to free-up road space within the town, it will be very difficult to deliver significant walking, cycling and public transport improvements.
- Options **a** and **b** do not appear to deliver a sufficient level of mitigation to enable an SUE to be accommodated in Loughborough without exacerbating existing congestion and environmental problems. Other than the proposed Inner Relief Road, there are currently no other significant transport proposals which would help to overcome this difficulty.
- Option **c** would appear to deliver the required level of mitigation. But there are very significant questions about whether it could be delivered and afforded in practice. As the level of doubt in this case is so great, it would be injudicious for this report to advise progressing with a development strategy based firmly on the delivery of an Eastern link road.

**4.29.** Given the above, it is concluded at this stage that the SUE for Loughborough could not be accommodated without substantial increases in congestion or investment in roads that may not either be affordable, or potentially deliverable. This conclusion is subject to a further modelling iteration to test redistribution,

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to other broad locations adjoining Loughborough, of the development that would otherwise have gone into this broad location.

### **Location iv) Hinckley/Earl Shilton/Barwell/Burbage area**

**4.30. Assumed location:** The initial sieving exercise (see para' 2.2 above) did not identify any specific location for a SUE. At the outset of this project, two locations were considered, to the north of the Hinckley Northern Perimeter Road and another to the south of Burbage (see plan at appendix B); both appeared to offer opportunities for an SUE in this area. It was not possible readily to dismiss either one at that stage, so both have been examined.

**4.31.** No traffic model exists covering this entire area and the Earl Shilton bypass model was not considered appropriate. Therefore, a simple gravity model has been constructed, based on 2001 journey to work census data. Whilst the overall trip distribution pattern is likely to be a reasonable prediction for the purposes of this project, it has not been possible to model this area to the same degree as areas i), ii) and iii).

**4.32. Broad traffic impacts of Location 1 (north of Hinckley Northern Perimeter Road) relative to base situation:** Looking at daily traffic levels, the gravity model results indicate that:

- external (to the conurbation) trips to/from the north are split as follows: increases of around 4900 2-way trips A47(N), 2900 2-way trips M69(N) and 1400 2-way trips A447;
- the remaining external trips are split as follows: increases of around 900 2-way trips A5(N), 2900 2-way trips A47(S), 2300 2-way trips M69(S) and 2900 2-way trips A5(S); and
- there are around 10500 2-way trips with either a destination or origin in Hinckley.

**4.33. Broad traffic impacts Location 2 (north of Hinckley Northern Perimeter Road) relative to base situation:** Looking at daily traffic levels, the gravity model results indicate that:

- external (to the conurbation) trips to/from the north are split as follows: increases of around 600 2-way trips A47(N), 5200 2-way trips M69(N) and 600 2-way trips A447;
- the remaining external trips are split as follows: around 900 2-way trips A5(N), 1500 2-way trips A47(S), 5000 2-way trips M69(S) and 3500 2-way trips A5(S); and
- there are around 10700 2-way trips with either a destination or origin in Hinckley.

**4.34. Potential mitigating measures:** The measures listed in Table 4.10 have been identified and explored. They represent the nature and scale of works required to mitigate the impacts of an SUE in this area.



Plan Ref <sup>(a)</sup>	Potential measure	Delivery risk <sup>(b)</sup>	Environment rating <sup>(b)</sup>	Cost <sup>(c)</sup>	Examples of potential wider benefits
<b>County</b>					
<b>Location 1</b>					
HEB2	Improvements to A47/A5 'Longshoot' junction <b>Alternative A:</b> Improvements including diversion of length of Hinckley Northern Perimeter Road and of A47 in Nuneaton to the west of junction + new junction on A5 <sup>(d)</sup>	Medium High	Medium High	£4.4m £9.1m	Tackles congestion problems and may also provide opportunity to improve pedestrian and cycle facilities
HEB3	Linkages to the existing urban area for public transport (particularly the railway station), walking, cycling and local traffic	Medium	Medium	£1.2m <sup>(e)</sup>	May help to support regeneration of town centre
HEB4	Improve Hinckley Northern Perimeter Road junctions	Medium	Medium	£7.0m	Opportunities to improve pedestrian and cyclist facilities
HEB7	Park and ride site vicinity of A5/A47 'Longshoot' junction; seek to develop in conjunction with Warwick-shire CC, serving both Hinckley and Nuneaton and helping to remove existing traffic from road network – <b>aim for 20% public transport use in trips to town centre</b>	Medium	High	£2.2m <sup>(e)</sup>	Should attract existing car-borne trips to Hinckley town centre, helping to reduce traffic levels
<b>Total</b>				<b>£23.9m+</b>	
<b>Location 2</b>					
HEB2	Improvements to A47/A5 'Longshoot' junction <b>Alternative B:</b> Improvements including new link road from A5 Dodwells Bridge south to new junction on A47 in N'ton <sup>(d)</sup>	Medium High	Medium High	£4.4m £6.8m	Tackles congestion problems and may also provide opportunity to improve pedestrian and cycle facilities
HEB3	Linkages to the existing urban area for public transport (particularly the railway station), walking, cycling and local traffic	Medium	High	£0.1m <sup>(e)</sup> (extra over HEB6)	May help to support town centre regeneration
HEB5	Link road between A5070 and B4109 <sup>(f)</sup>	High	High	£6.5m	May help to support town centre regeneration
HEB6	Improvements (both for general traffic and public transport) to the B4669 and B578 routes to Hinckley town centre	Medium	Medium	£1.8m <sup>(e)</sup>	May help to support town centre regeneration
HEB7	Park and ride site in vicinity of A5/A47 'Longshoot' junction; seek to develop in conjunction with Warwickshire CC, serving both Hinckley and Nuneaton and helping to remove existing traffic from road network – <b>aim for 20% public transport use in trips to town centre</b>	Medium	High	£2.2m <sup>(e)</sup>	Should attract existing car-borne trips to Hinckley town centre, helping to reduce traffic levels
<b>Total</b>				<b>£21.8m+</b>	
<b>Potential Motorway and Trunk road issues</b>					
	Other improvements to A5, including M69 J1	Not believed to be any significant concerns, though continuing liaison with the Highways Agency is required			

**Table 4.10: Hinckley/Earl Shilton/Barwell/Burbage potential mitigating measures**

**Notes**

- (a) See appendix C.
- (b) Rankings are relative to one another, e.g. a measure ranked "low" has less of an impact in relative terms than other measures. But, this is not to imply that there are no issues relating to that measure's deliver or that it has no environmental impact.
- (c) Works cost plus broad estimate of land acquisition, design and supervision and utilities diversion costs. There is at this stage substantial uncertainty in these estimates.
- (d) To include any improvements in Warwickshire, as necessary.
- (e) There may also be a requirement for revenue funding for bus service improvements.
- (f) The original suggestion was to provide south facing slip roads at M69 J2. But, this would have far reaching traffic impacts which it is has not been possible to assess within the scope of this project. The alternative proposal included above serves a similar role; a link road would give traffic access to the south facing slip roads at J1 and providing that it is carefully designed should not attract the significant volumes of traffic into the area that the provision of the extra slip roads at J2 might.

**4.35. Effects of mitigating measures:** The measures identified will be of benefit in reducing the impact of an SUE and should also help to attract existing car-borne trips, although the lack of a full traffic model covering this area has meant that it has not been possible to quantify these potential effects as yet. Further work is required in respect of this issue.

**4.36. Conclusion – subject to revision following further analysis:** Reviewing the analysis work so far against the criteria set out in para' 2.8(v):

- The Hinckley/Earl Shilton/Barwell/Burbage area has a range of employment, shopping and leisure facilities. In particular, an SUE towards the southern end of the Hinckley Northern Perimeter Road (HNPR) would be adjacent to existing employment areas and there appears to be scope to co-locate new employment.
  - There is the potential to provide a range of supporting transportation infrastructure to encourage trips by public transport, walking and cycling. But the less sophisticated modelling exercise carried out so far means that it has not been possible to quantify their effects and benefits.
  - It is believed that the area towards the southern end of the HNPR has the potential to be best served by public transport and is also best placed to deliver a park and ride site as part of the development. The same area also appears to offer the best potential for addressing problems on the A5 in the vicinity of the A5/A47 'Longshoot' junction.
  - The lack of a full traffic model has meant that it has not been possible to quantify the traffic impacts at this time. However, on the basis of the expected capacity of the various mitigating measures compared to the additional flows predicted, it is believed that the road network could be made to function acceptably under the impacts of an SUE. It should be possible to deliver the scale of measures likely to be required to accommodate an SUE providing that there is the necessary level of funding and that environmental impacts can be properly addressed.
- 4.37.** Given the above, it has been concluded that there appears to be some scope to accommodate an SUE in the Hinckley area, albeit the risk of error is relatively higher and further work is necessary to ensure that any case for an SUE is robust.

## **Location v) Coalville area**

**4.38. Assumed location:** The initial sieving exercise (see para' 2.2 above) did not identify any specific location for a SUE. For the purposes of this project, an area south of Bardon Road, to the west of the existing Bardon 22 employment development has been assumed (see plan at appendix B).

**4.39.** No traffic model exists covering this area (an assessment has been carried out using the M1 widening model - courtesy of the Highways Agency and consultants Arup - but it was of insufficient detail to enable proper identification of mitigating measures). Therefore, a simple gravity model has been constructed, based on 2001 journey to work census data. Whilst the overall trip distribution pattern is likely to be a reasonable prediction for the purposes of this project, it has not been possible to model this area to the same degree as areas i), ii) and iii).

**4.40.** Looking at daily traffic levels, the gravity model results indicate that:

- the majority of external (to the conurbation) trips are to the east, with an increase of around 12850 2-way trips split as follows: around 1750 2-way trips M1(N), 2600 2-way trips B591 towards Loughborough, 5000 2-way trips A50 beyond M1 J22 towards Leicester and 3500 2-way trips M1(S);
- the remaining external trips are split as follows: increases of around 2900 2-way trips A511(W) towards M42, 1150 2-way trips A447(N), 1150 2-way trips Swepstone Road and 1750 2-way trips A447(S); and
- there are around 9600 2-way trips with either a destination or origin in the Coalville/Whitwick/Bardon 22 area.

**4.41. Potential mitigating measures:** The measures listed in Table 4.11 have been identified and explored. They represent the nature and scale of works required to mitigate the impacts of an SUE in this area.<sup>(6)</sup>

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(6) Certain of these measures, including the Bardon Road link, are required in any event to support the lower level of development in this area allocated in the North West Leicestershire Local Plan.

Plan Ref <sup>(a)</sup>	Potential measure	Delivery risk <sup>(b)</sup>	Environment rating <sup>(b)</sup>	Cost <sup>(c)</sup>	Examples of potential wider benefits
<b>County roads</b>					
C1	Improve A511/A42 junction <sup>(d)</sup>	Low	Low	£0.4m	Tackling existing congestion and opportunities to improve walking and cycling facilities
C2	Improve A511 Stephenson Way – possible four lanes/dualling – and its junctions, particularly with Broom Leys Road	Medium	High	£5.0m	Tackling existing congestion and safety issues and opportunities to improve walking and cycling facilities
C3	Improve A511 between Coalville and M1 J22, including 'Birch Tree', 'Bardon Chapel' and 'Flying Horse' roundabouts	Medium	High	£5.2m	Tackling existing congestion and safety issues and opportunities to improve walking and cycling facilities
C4	Linkages to adjoining existing employment area and Coalville town centre, particularly for walking, cycling, local buses and local traffic	Low	Low	£1.7m	Improved access to the employment area for existing Coalville residents
C5	Improve public transport links between Coalville town centre, SUE and Leicester (i.e. potential to divert Coalville – Leicester buses from A511 through SUE + existing employment area)	Low	Low	£0.5m <sup>(e)</sup>	Improved public transport access for existing Coalville residents to employment shopping and other facilities in City
C6	New express bus service linking to Burton, Ashby, Coalville Town Centre and Leicester (and possibly to Loughborough, too) – service at least half-hourly six days a week – aim for <b>12% public transport usage in trips to these destinations</b>	Medium (as depends on C2+C4)	Low	Not assessed in detail at this time	Improved public transport access for existing Coalville residents to employment shopping and other facilities in surrounding towns
C7	Local bus link to town centre, Coalville Hospital, Stephenson's College, schools – service at least every 10mins during the day on weekdays and Saturday, with at least half-hourly in evenings and Sundays – aim for <b>12% public transport usage in trips to town centre</b>	Medium (as depends on C2)	Low	£1.0m <sup>(e)</sup> (allowance for works extra over those required for C2 & C4)	Improved public transport access for existing Coalville residents to local facilities
-	<b>Bardon Road link:</b> Previously identified: indicative cost included for completeness & equality of assessment with other areas			£7.6m	Addresses traffic concerns on Bardon Road
<b>Total</b>				<b>£21.4m+</b>	
<b>Potential Motorway and Trunk road issues</b>					
	M1 J22 (part of M1 widening)	Not believed to be any significant concerns, though continuing liaison with the Highways Agency is required			

**Table 4.11: Coalville potential mitigating measures**

**Notes**

- (a) See appendix C.
- (b) Rankings are relative to one another, e.g. a measure ranked "low" has less of an impact in relative terms than other measures. But, this is not to imply that there are no issues relating to that measure's deliver or that it has no environmental impact.
- (c) Works cost plus broad estimate of land acquisition, design and supervision and utilities diversion costs. There is at this stage substantial uncertainty in these estimates.
- (d) Includes some allowance for other improvements to A511 between Coalville and A42.
- (e) There may also be a requirement for revenue funding for bus service improvements.

**4.42. Effects of mitigating measures:** The measures identified will be of benefit in reducing the impact of an SUE and should also help to attract existing car-borne trips, although the lack of a full traffic model covering this area has meant that it has not been possible to quantify these potential effects as yet.

**4.43. Conclusion– subject to revision following further analysis:** Reviewing the analysis work so far against the criteria set out in para' 2.8(v):

- In comparison with the other areas, Coalville currently has a relatively limited range of employment, shopping and leisure facilities; this appears to lead to a large outflow of residents to work, shop, etc. elsewhere. A SUE may have the potential to help address this by supporting the regeneration of the town centre. Also, if major employment growth is provided for in the town through the RSS process to complement an SUE, which it must if a proper balance is to be struck between housing and employment supply, then this too may help to ensure that Coalville is not just a 'dormitory' settlement.
  - There is the potential to provide a range of supporting transportation infrastructure to encourage trips by walking, cycling and public transport, both locally and further afield. But the less sophisticated modelling exercise carried out so far means that it has not been possible to quantify their effects and benefits.
  - It should be possible to build on the already relatively good levels of public transport to and within the town; the deliverability of a 'Bardon Road Bypass' has been established as part of other development proposals in this area; and the A511 route towards Leicester runs mainly through rural areas so the opportunities to improve it are relatively less constrained.
  - The lack of a full traffic model has meant that it has not been possible to quantify the traffic impacts at this time. However, on the basis of the expected capacity of the various mitigating measures compared to the additional flows predicted, it is believed that the road network could be made to function acceptably under the impacts of an SUE. It should be possible to deliver the scale of measures likely to be required to accommodate an SUE providing that there is the necessary level of funding and that environmental impacts can be properly addressed.
- 4.44.** Given the above, it has been concluded that there appears to be some scope to accommodate an SUE in the Coalville area, providing that significant employment growth is also provided for in the area through the RSS process. However, the risk of error is relatively higher and further work is necessary to ensure that any case for an SUE is robust.

## 5: CONCLUSIONS AND PLANNED FURTHER WORK

### Conclusions – *subject to revision following further analysis*

- 5.1. The project was designed to assess whether it would be possible in transport terms to accommodate five sustainable urban extensions (SUEs) in Leicestershire. Two of these would be in central Leicestershire and the other three associated with Coalville, Hinckley and Loughborough respectively. To analyse this it was necessary to define specific locations. This does not mean that these would ultimately be the chosen sites – that is for the district councils' Local Development Frameworks – but a defined location is necessary to act as the basis for analysis. If one site in the general area is acceptable in transport terms, then there can be reasonable confidence in putting that area forward into the regional spatial strategy, provided there are no other impediments.
- 5.2. The analysis has had to be done quickly and as a consequence has not been carried out to the level of detail that would normally be expected. The result is that the conclusions reached carry higher risk of error than is ideal. Overall, however, it is believed that the results summarised below are sufficiently robust to contribute towards the County Council's response to consultation on the regional spatial strategy. ***(Note – the final version of this report will contain more analysis of risk.)***
- 5.3. Further analysis will be carried out over coming months to reduce the main areas of risk. This should provide increased confidence in time for the public examination of the strategy expected in summer 2007. It is considered highly unlikely that the further work will lead to a reversal of the conclusions set out here, and that one or more of the SUEs now thought to be acceptable in transport terms no longer is. However, that possibility cannot be discounted.
- 5.4. The criteria for 'acceptability' in transport terms are inevitably subjective. The ones used in this analysis are:
- The centres with which SUEs are associated should have a good range of employment, education, shopping and other facilities, so that journey distances are minimised.
  - Measures to mitigate the traffic impacts of the development – investment in public transport, cycling and walking coupled with any necessary highway investment – should be achievable and potentially affordable from developer, 'Growth Point' and other funding.
  - With the mitigation measures in place, the net additional traffic from the development on the existing road network should be such as to cause generally modest increases in traffic level such as not to cause significant increases in accidents or congestion.
- 5.5. Against those criteria, the findings of the study are:

- The SUEs to the north and west of Leicester could be accommodated in transport terms.
  - The SUE for Hinckley could also be accommodated, though the less sophisticated transport modelling here, coupled with some concerns about interaction with the planned growth of Nuneaton, make the risk of error also relatively higher.
  - The SUE for Coalville could also be accommodated, though the less sophisticated transport modelling used here, coupled with the relatively limited employment and other infrastructure currently existing in the town, make the risk of error relatively higher.
  - The SUE for Loughborough could not be accommodated without either very substantial congestion in the town centre or investment in new roads well beyond what is likely to be affordable, or potentially deliverable. It is estimated that development of no more than around 1500 homes could be accommodated as a SUE in the broad location analysed in this assessment.
- 5.6. The conclusion on Loughborough requires an iteration to be carried out, testing a redistribution, to other broad locations adjoining the town, of the development which would otherwise have gone into this broad location. ***The final version of this report will detail the results of that iteration.***

## **Planned further work**

### **By summer 2007**

- 5.7. Further work over this period will be designed to reduce areas of risk in the analysis carried out to date.

### ***General – all areas***

- 5.8. **Ptolemy model:** This regional transport model, its development led by the Highways Agency, should be available early in 2007. It will be used to crosscheck the modelling work already carried out and should be particularly helpful for Coalville and Hinckley where it has been possible in the timescale only to use simple gravity models.
- 5.9. **RSS employment data:** Once this is available, potential locations will be assessed in transportation terms. The infrastructure requirements identified as part of this project will need to be reviewed to ensure that they are capable of mitigating the combined impacts of housing and employment proposals.
- 5.10. **Funding and affordability:** The analysis to date has assumed a likely level of funding from developers, after allowing for the other infrastructure that the SUEs will have to support. A more detailed analysis of likely developer funding needs to be carried out.

### ***Thurmaston and West of M1 areas***

- 5.11.** These areas have been assessed in isolation, but their combined effects, with that of other development around the city, could produce a cumulative worsening of traffic conditions beyond what would be expected from the developments considered separately. A joint exercise with the city council is required, to assess these effects and any further mitigation measures that may be necessary.
- 5.12.** The bus corridor for the Thurmaston area is a key piece of infrastructure and needs further exploration, particularly in respect of achieving further bus priorities on the A607 route into the city and overcoming the problem of the restricted railway bridge on Barkby Road.

### ***Hinckley and Coalville areas***

- 5.13.** The lack of traffic models covering these areas has meant that there is a greater risk in the conclusions for here than for elsewhere. The Ptolemy model may produce more accurate results and reduce this risk. If it does not, it may be necessary to develop new models specifically for this task

### ***Loughborough area***

- 5.14.** *(Work to be specified once the iteration on the Loughborough SUE is completed for the final version of this report)*

### **Longer term**

- 5.15.** This work is expected eventually to result in the adoption of SUEs within district Local Development Frameworks. These may or may not be in the same locations as have been studied for this project. In the process leading up to and beyond the adoption of the Local Development Frameworks much transport work will be required, including particularly:
- *Further modelling*, in particular associated with the preliminary specification of mitigation measures.
  - *Other development work* on the mitigation measures, including defining land requirements and ensuring necessary funding is planned for.
  - *Further liaison with the Highways Agency* to ensure the impacts on motorways and trunk roads are properly planned for.
  - *Develop further the work identified above* to examine, and plan for, the cumulative impact of development around the edge of Leicester.
  - *Integrate the SUEs into the Council's wider transport planning work* so that the future development of park and ride, bus corridors, cycle networks and other measures take full account of the new pattern of growth.
  - *Explore demand management measures* and how they might help to support SUEs and bolster the greater use of sustainable transport modes. Funding



for this could come about as a result of the successful Three-Cities Transport Initiative Fund bid to explore road-user charging in the Sub-Area.

- *Liaise with Warwickshire County and Nuneaton and Bedworth District* to ensure that the transport impacts of developments in Hinckley and Nuneaton are planned for in an integrated way.

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# **Appendix A**

## **Project structure**

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## **Appendix B**

### **Map indicating broad locations considered in this project**

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## **Appendix C**

# **Plans indicating potential mitigating measures**