APPENDIX A1
Draft Strategic Transport Assessment, February 2016

Lutterworth East

DRAFT (Issue 4)

February 2016

47074731

Prepared for:

Leicestershire County Council

Strategic Transport Assessment

Revision Record

Rev	Date	Details	Prepared By	Reviewed By	Approved By
00	Jul 15	Draft	D Godfrey	C Posford	C Posford
01	Aug 15	Draft	D Godfrey	C Posford	C Posford
02	Aug 15	Draft (Updated Costs)	D Godfrey	C Posford	C Posford
03	Feb 16	Draft	D Godfrey	C Posford	C Posford

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INTRODUCTION

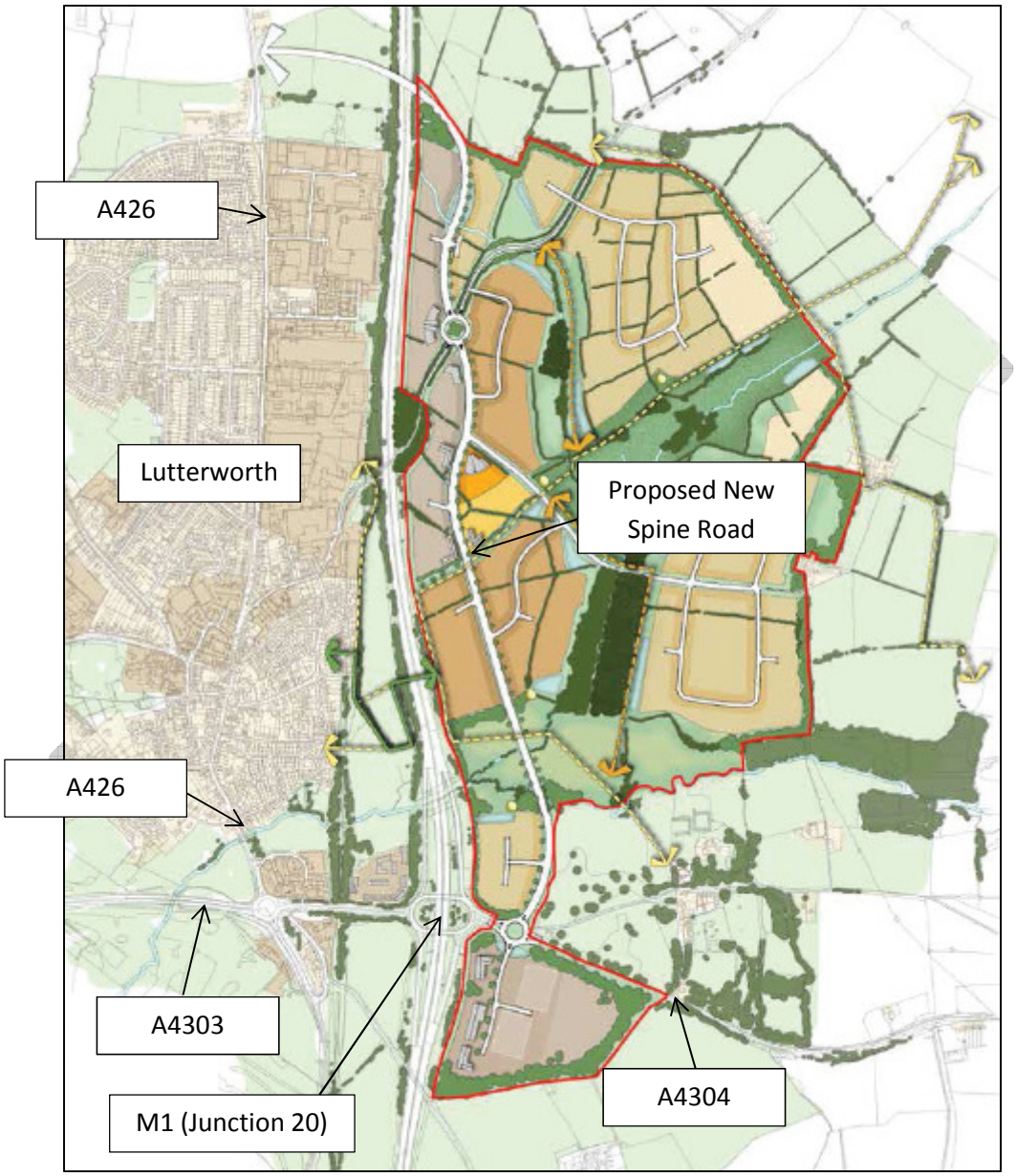
01

1 Introduction

1.1 Background to Scheme

It is proposed to develop land to the immediate east of the M1 at Junction 20 for use as a mixed-use development comprising housing and employment. Figure 1.1 shows the location of the proposed development, with the indicative masterplan used to inform this Transport Assessment (TA) provided as Appendix A.

Figure 1.1: Proposed Development (Source: Lutterworth East Vision Document, March 2015)



This Transport Assessment (TA) considers the proposed development in terms of access (by all modes) and highway capacity. It develops the above masterplan in terms of access point design and highlights the requirement for off-site highways mitigation in order to facilitate the development. Given the extensive changes proposed to the highway network, it does not specifically deal with matters of road safety; however, any highway improvements would be subject to the road safety audit process. The purpose of the report is to act as a Strategic Transport Assessment to support the proposal within the Local Plan process.

1.2 Methodology

The National Planning Policy Framework (NPPF, March 2012) states that "all developments that generate significant amounts of movement should be supported by a Transport Statement (TS) or Transport Assessment (TA)."

The online National Planning Practice Guidance (NPPG) portal states that: "local planning authorities must make a judgement as to whether a development proposal would generate significant amounts of movement on a case by case basis (i.e. significance may be a lower threshold where road capacity is already stretched or a higher threshold for a development in an area of high public transport accessibility)."

Although now withdrawn, most local highway authorities continue to use the Guidance on Transport Assessment (GTA, Department for Transport (DfT), 2007) to establish the development thresholds that trigger a TA and / or TS. However, by any measure, the Lutterworth East development is a major development and, as such, a full TA has been prepared to consider the transport impacts of the site.

The GTA also provides a useful framework around which to develop a TA document. The GTA states that "a TA is a comprehensive and systematic process that sets out transport issues relating to a proposed development. It identifies what measures will be taken to deal with the anticipated transport impacts of the scheme and to improve accessibility and safety for all modes of travel, particularly for alternatives to the car such as walking, cycling and public transport."

The GTA emphasises the relationship between a TA and a Travel Plan. In particular, the GTA identifies an iterative approach with regards to:

- assessment;
- measures to influence travel behaviour (i.e. travel planning); and
- the identification of mitigation.

The Leicester and Leicestershire Integrated Transport Model (LLITM) has been used to inform the TA. However, given initial project timescales, it has not been possible to fully iterate between these stages. The results contained in this report, therefore, do not take account of the trip reduction potential of the proposed travel planning measures. As such, this TA presents a theoretical 'worst-case' assessment of the highway network (in terms of junction capacity).

With regards to report structure, the GTA is arranged around three broad headings:

- Environmental Sustainability;
- Managing the Existing Network; and
- Mitigating Residual Impacts.

Following discussions with Leicestershire County Council (LCC), who act as the local highway authority (LHA), the use of the GTA to inform the structure and content of the TA has been agreed. As such, this TA is also structured around the above three headings, and also includes a review of existing transport conditions and relevant transport-related policy.

1.3 Scoping

The LCC highways development control team has considered the proposed site (in terms of the masterplan document provided at Appendix A) and raised the following concerns:

- connectivity with schools, shops, other facilities in Lutterworth, particularly on foot and by bike.
- potential to serve the site via public transport.
- the standard of any main route through the site. Strategic modelling work will be required to look at how attractive this would be to local traffic.

- the location of the southern-most roundabout (on the A4304) appears to be too close to M1 J20, which could cause operational / congestion problems. This appears to require some micro-simulation modelling.

Highways England was also consulted on the scheme and provided the following comments in a letter dated 4th June 2015.

"There is a risk that, due to the development's location on the other side of the M1 from the existing services and facilities located in Lutterworth, an usually high proportion of trips could be made by private car, rather than more sustainable modes. Given the location of the proposed development, the majority of vehicles trips from the site would be expected to travel through M1 J20. This traffic impact may result in the need for substantial highway infrastructure on the A4303 and at M1 J20 to mitigate the impact of the development. Alongside other infrastructure requirements comprising a 'replacement' for the A462, including new motorway crossing, this could adversely affect the viability of the development. In particular, to make an assessment, we would need further information regarding the future year operation of the proposed access roundabout on the A4304 and interaction with M1 J20 given its very close proximity to the motorway junction."

This TA has therefore been developed in the context of comments from both LCC highways development control and Highways England.

POLICY CONTEXT

02

2 Policy Context

2.1 Overview

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

The following documents have been reviewed:

- National Planning Policy Framework (NPPF, 2012);
- Harborough Core Strategy (2006 – 2028) Adopted 2011; and
- Circular 02/2013 (Strategic road network and the delivery of sustainable development, DfT).

2.2 National Planning Policy: NPPF

The NPPF sets out the Government's planning policies for England and provides a framework to develop localised planning strategies. Paragraphs 29 to 41 of the NPPF sets out the Government's development planning policies with respect to transport. These paragraphs focus on, and emphasise, the promotion of sustainable transport. NPPF states that plans and decisions should take account of whether:

- the opportunities for sustainable transport modes have been taken up depending on the nature and location of the site, to reduce the need for major transport infrastructure;
- safe and suitable access to the site can be achieved for all people; and
- improvements can be undertaken within the transport network that cost effectively limit the significant impacts of the development. Development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are "severe".

The key policy test in the NPPF, therefore, is that transport impacts are not "severe". This is confirmed by the NPPG portal which states that:

"Transport Assessments and Statements can be used to establish whether the residual transport impacts of a proposed development are likely to be "severe", which may be a reason for refusal, in accordance with the National Planning Policy Framework."

A comparison of the development against the key policy tests contained within Paragraphs 29 to 41 of the NPPF is contained within Section 8.

Also, according to NPPF:

"A key tool to facilitate this will be a Travel Plan. All developments which generate significant amounts of movement should be required to provide a Travel Plan."

2.3 Local Planning Policy: Harborough Core Strategy 2006 - 2028

The Core Strategy 2006 – 2028 (adopted 14th November 2011) is a strategic document setting out the vision and spatial planning framework for the district. It contains core strategic policies that provide for the development needs of the district.

The key policy in this document with regard to transport is Policy CS5 (Providing Sustainable Transport). This is reproduced below:

Policy CS5: Providing Sustainable Transport

Future development in Harborough District will seek to maximize the use and efficiency of existing transport facilities and seek to achieve the best overall effect for transport for the District as it looks to a lower carbon future.

In this regard:

a) The majority of future development will be located in areas well served by local services to reduce the need to travel, where people can gain convenient access to public transport services for longer journeys and where local journeys may be undertaken on foot or by bicycle.

b) All significant development proposals should provide for coordinated delivery of transport improvements as outlined in the place-based policies (Policies CS13-CS17) of this Strategy as further informed by detailed application of the Leicester and Leicestershire Integrated Transport Model.

c) The type of transport enabling and mitigation works provided by each development should be geared to transport improvements which are also strategically beneficial to the wider area and which can complement works likely to be delivered by other developments. Proposals for assessing traffic impact, highway design and parking provision associated with new development should accord with the guidance contained in "Highways Transportation and Development" published by Leicestershire County Council.

d) Settlements in the District should have safe pedestrian and cycling facilities, including facilities for people who need mobility assistance and access to public transport information and waiting facilities, where served. Control of speed and flow of vehicular traffic in settlements and at junctions should aim to use measures which avoid the need for traffic signs and signals in order to avoid street clutter.

e) Proposals to reduce the environmental effect of highway development across the District by reducing unnecessary traffic signs and road lighting during night time periods should be implemented where safety allows.

Policy CS14 also identifies specific transport aspirations with regards to Lutterworth, with part of this policy reproduced below:

Policy CS14 (Lutterworth)

b) Transport interventions delivered in association with additional development in and around Lutterworth will focus on improving air quality and reducing the adverse effects of traffic flow in the town centre by:

i) Resisting development which would result in additional Heavy Goods Vehicles passing through Lutterworth town centre;

ii) Support for routeing schemes for Magna Park and other warehousing occupiers to prevent HGV traffic passing through Lutterworth;

iii) Supporting the principle of the development of other uses on land within Lutterworth presently used by HGV generating development;

iv) Locating future HGV generating business development to the south of the town with good access to the M1, A4303 and A426;

v) Improving links within the existing urban area for walking, cycling and local bus provision;

vi) Local traffic calming measures in the town centre, and appropriate junction improvements elsewhere in the town to improve traffic flow.

2.4 National Transport Policy: Circular 02/2013

The proposed site is immediately east of the M1 (Junction 20). As such, Circular 02/2013 applies which sets out how the HA will engage with planning proposals.

Importantly, Paragraph 9 of Circular 02/2013 repeats the severity test identified in both the NPPF and PPG:

"Development proposals are likely to be acceptable if they can be accommodated within the existing capacity of a section (link or junction) of the strategic road network, or they do not increase demand for use of a section that is already operating at over-capacity levels, taking account of any travel plan, traffic management and/or capacity enhancement measures that may be agreed. However, development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe".

Circular 02/203 goes onto state that:

"21. Where development proposals are consistent with an adopted Local Plan, the Highways Agency does not anticipate the need for engagement in a full assessment process at the planning application stage. In such circumstances, considerations will normally be limited to the agreement of the details of the transport solution, including any necessary mitigation measures, and to ensuring that the transport impacts are included in the overall environmental assessment provided to the local planning authority, rather than the principle of the development itself.

22. However, where proposals are not consistent with the adopted Local Plan then a full assessment of their impact will be necessary, which will be based on the performance and character of the strategic road network as determined by the presumption that the Plan proposals will be fully implemented."

2.5 Summary

The key transport policy test is contained within the NPPF which states that development should only be refused where the residual cumulative impacts of development are "severe".

A review of the development's fit with each of the above transport-related policies is provided in Section 8.

BASE CONDITIONS

03

3 Base Conditions

3.1 Overview

The purpose of this section is to describe the transport conditions which currently exist in the vicinity of the site. It details the traffic data used to inform the analysis later in this report, and considers existing provision of sustainable transport modes.

3.2 Local Highway Network

Strategic Highway Network: The M1 runs north-south to the immediate west of the site. Access to the M1 is available at Junction 20. This is an un-signalised grade-separated roundabout with a short section of dual carriageway leading east onto the A4303 to the A4303 / A426 junction (that forms the main southern access into Lutterworth town centre). The A4303 / A426 junction is an unsignalised roundabout junction with an Inscribed Circle Diameter (ICD) of 70m.

Local Highway Network: The A4303 is a dual 2-lane carriageway that runs east-west to the south of Lutterworth and connects the M1 (Junction 20) with the A5. The route provides access to both Lutterworth, and a major distribution centre known as Magna Park. To the east of the M1, the A4304 leads to Market Harborough and the A6. This is a single 2-lane carriageway route.

Running through the site, Gilmorton Road connects the village of Gilmorton with Lutterworth town centre. The route passes over the M1, and connects to the A426 at a priority junction (with right turn harbourage). The A426 is the main north-south route through Lutterworth and effectively forms the town high street. A western “bypass” (Brookfield Road – Bitteswell Road – Bill Crane Way) has been developed over a number of years to provide an alternative route between the A426 and A4303.

3.3 Previous Lutterworth Traffic Study (2008)

Scott Wilson Ltd. (a legacy company of AECOM) prepared a transport study for Lutterworth in 2008. This examined various options to provide a bypass of Lutterworth including:

- Improvement of existing western bypass;
- Creation of a new western bypass; and
- Creation of a new eastern bypass.

The main objective of the above work was to examine the potential for the removal of HGV traffic from the A426 (though Lutterworth) in order to improve air quality. However, this report also noted that a proportion of HGVs arriving at the boundary of the town on the A426 (either from the north or south) were heading to Lutterworth itself and would not be removed by any of the bypass options. Notwithstanding this, each bypass option (inclusive of weight restrictions) had the potential to remove a large proportion of HGV traffic from Lutterworth town centre.

It should be noted that none of the bypass options were tested in traffic terms, and that the ‘eastern’ bypass option included for the removal of the on/off slips on the northern side of the M1 (Junction 20) and the relocation of these slip roads to a new crossing of the M1. This scheme is shown within Appendix B.

3.4 Traffic Data

Leicester and Leicestershire Integrated Transport Model: A regional model of Leicestershire has been developed by the highway authorities of LCC and Leicester City Council. This model is informed by a variety of traffic counts, including permanent link counts, one-day turning counts and road side interviews. The most recent Local Model Validation Report (LMVR; a document which sets out how accurately a model is replicating existing conditions) is dated July 2013.

It is not intended to repeat the technical detail of the LMVR within this TA; however, the LMVR includes the following text which supports the models robustness in the Hinckley area:

- In terms of screenline performance, the percentage of screenlines meeting the WebTAG criteria are 93% in the AM Peak and PM Peak models, with all screenlines meeting the WebTAG criteria in the interpeak model within this sub-area.

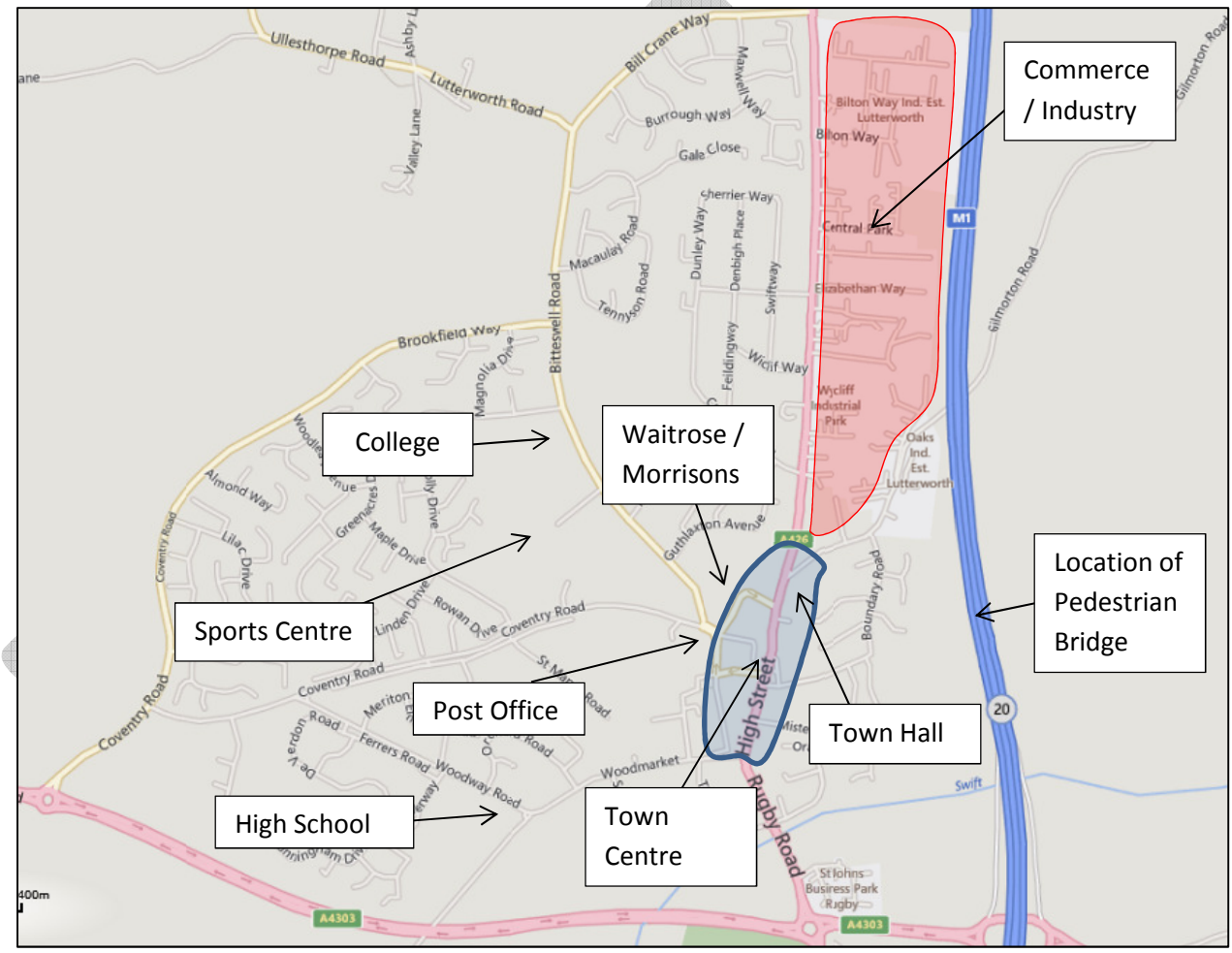
- Considering the individual link performance within this sub-area the percentage of links that meet the WebTAG 'flow' and 'GEH' criteria[1] is 95% or greater across these two measures and the three modelled time periods. This demonstrates that there is a good correspondence between modelled and observed flows within this area of the model.

For information, WebTAG refers to technical guidance issued by the DfT in the creation and application of transport models. Further detail relating to the operation of the model is provided in Section 4 and Appendix C.

3.5 Sustainable Transport

Key Facilities: The proposed development would include amenity services such as a local centre. However, the key facilities near to the site would be within the market town of Lutterworth. These are shown within Figure 3.1.

Figure 3.1: Lutterworth Town Centre

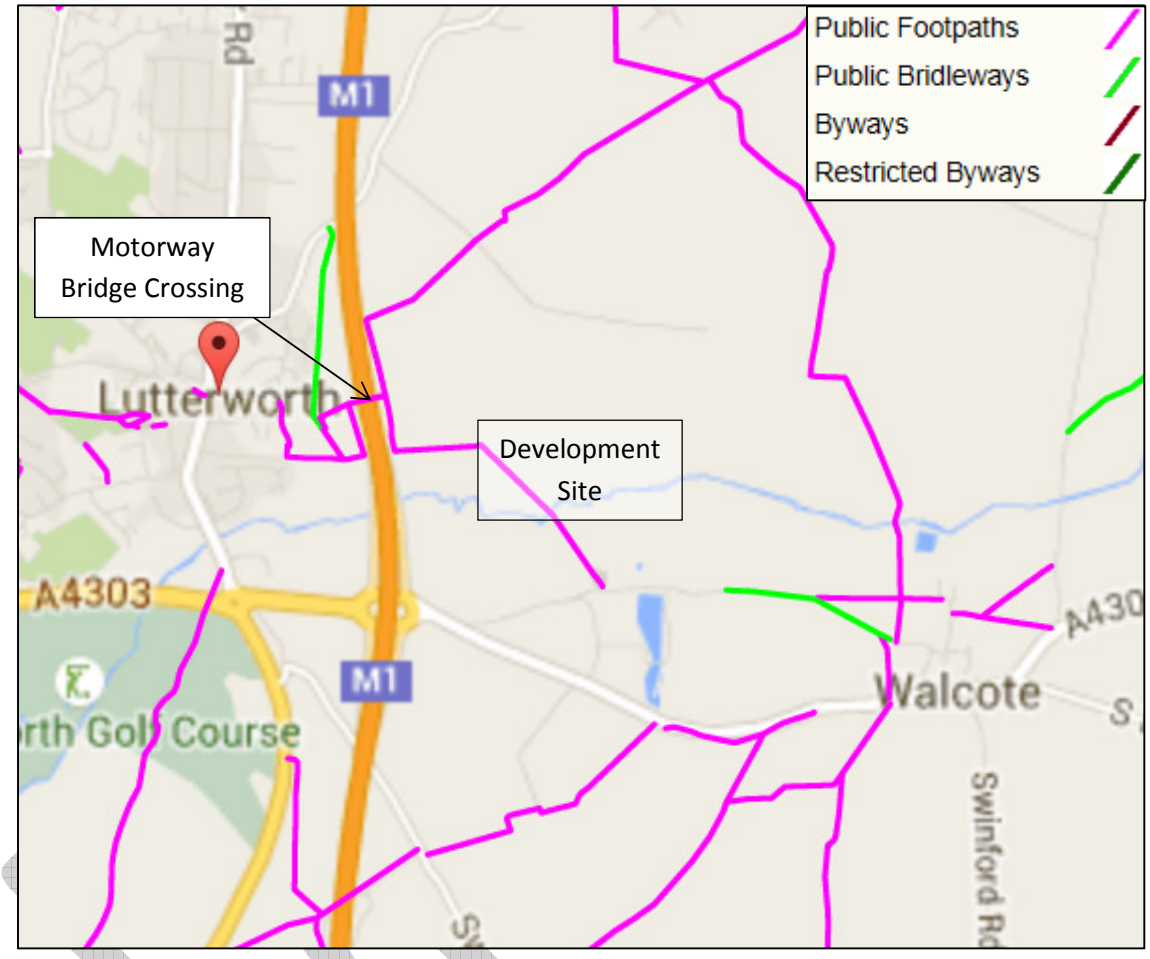


The key barrier between the site and Lutterworth town centre is the M1. There are currently two crossings of this route. Firstly, Gilmorton Road, which runs north-east to south-west from the village of Gilmorton and, secondly, a footbridge which crosses the M1 to the south of Gilmorton Road. These routes could potentially provide access from the northern and southern ends of the site; however, Gilmorton Road has no pedestrian provision along much of its length and therefore could not accommodate large increases in pedestrian flow without improvement.

[1] The GEH Statistic is a formula used in traffic engineering, traffic forecasting, and traffic modelling to compare two sets of traffic volumes. Although its mathematical form is similar to a chi-squared test, is not a true statistical test. Rather, it is an empirical formula that has proven useful for a variety of traffic analysis purposes.

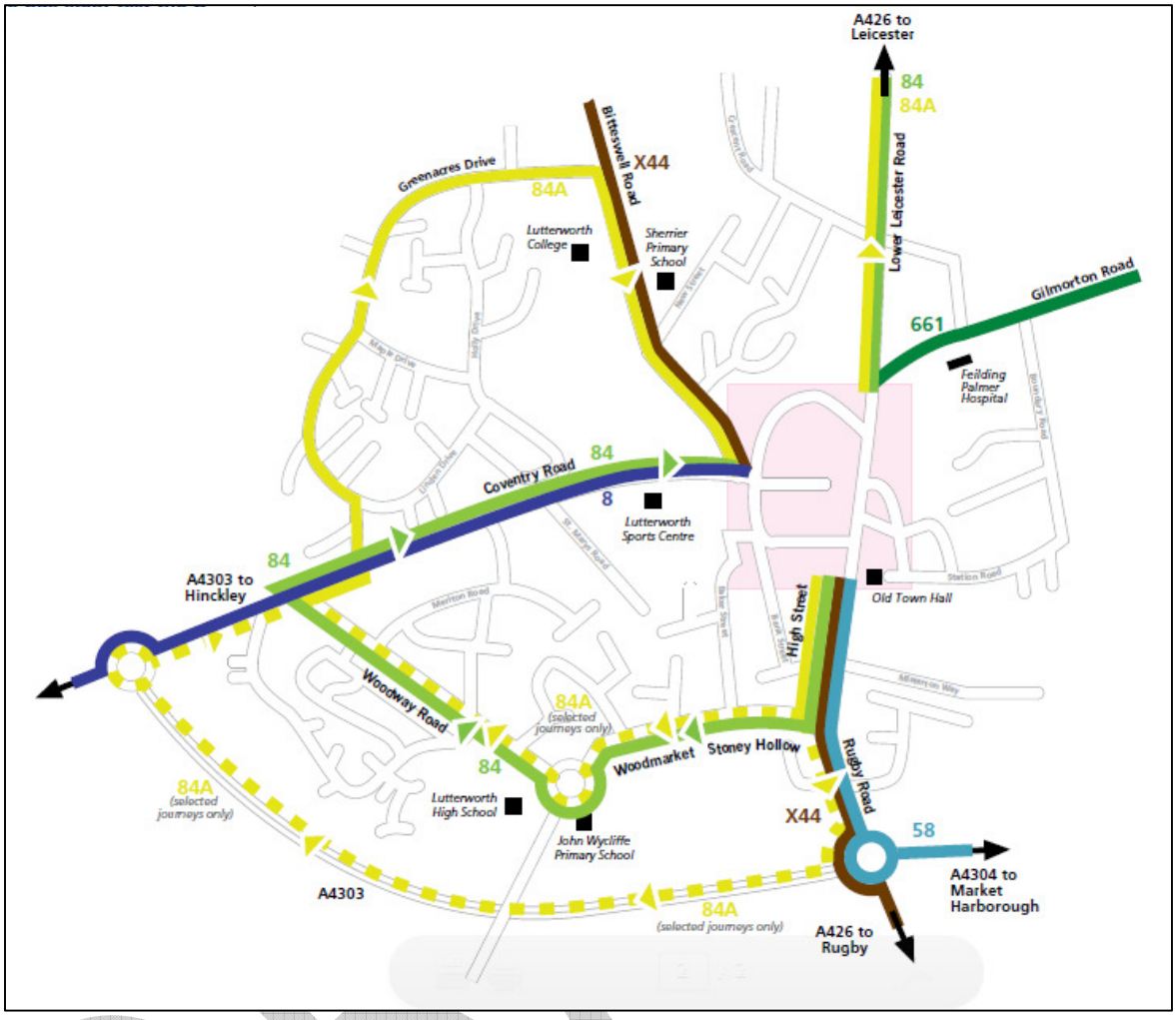
Figure 3.2 shows the public rights of way as identified on LCC's website. Although not definitive, this does indicate the sparse nature of crossings of the M1 from the proposed development parcel. Although not shown on this map, there is an off-road cycle route running along the northern edge of the A4304 and that continues (at uncontrolled crossing points) across the northern slip roads of the M1 (Junction 20).

Figure 3.2: Lutterworth Public Rights of Way (PRoW) (Source: Leicestershire CC)



Public Transport: Current bus services within Lutterworth are shown in Figure 3.3. This identifies the main operators as being Arriva and Hinckley Bus. The 84 (Arriva) is a frequent service (every 20 – 40 minutes) which runs from Lutterworth to Leicester. Service 58 (Hinckley Bus) runs past the proposed southern access on the A4304 and is an infrequent service (6 per day in each direction) running between Lutterworth and Market Harborough.

Figure 3.3: Public Transport (Source: Leicestershire Choose How You Move website)



Section 5 provides further details as to how the site could be served by sustainable transport.

MODELLING APPROACH

04

4 Modelling Approach

4.1 Overview

The purpose of this section is to describe how the impact of the proposed Lutterworth East development on the local and strategic highway network has been calculated. In general, there are four steps in the modelling of development impacts on the highway network:

- Trip Generation (i.e. how many vehicles will be added to the network);
- Trip Distribution (i.e. from which origins, and to which destinations these vehicles are likely to route);
- Assignment (i.e. which roads are likely to be chosen by drivers); and
- Junction modelling (i.e. examining how flows at individual junctions are likely to change, and calculating impact on capacity at these locations).

The above four steps are discussed within this section.

4.2 Modelling Methodology

LLITM is a SATURN-based model[2] that represents the whole of Leicestershire, including the Leicester City Region. The model is used by LCC within this area to model future transport policy and strategy development, as well as to forecast the estimated impacts of proposed developments.

From the baseline model (discussed in Section 3), the following design years have been produced by incorporating the proposed Lutterworth East development (and other committed developments) into the model:

- 2031 – Reference Case (Background Traffic Growth + Committed Developments);
- 2031 – Design Case (including Lutterworth East accessed from the A4303 only); and
- 2031 – Design Case (including Lutterworth East, accessed from both the A4303 and Leicester Road).

A Technical Note (TN) has been prepared to describe the modelling approach, and this was circulated to officers at LCC for comment prior to undertaking the modelling work. The TN is provided as Appendix C; however, a précis of the TN is also included in this Section. The above modelled scenarios have also been described in more detail later in this report.

[2] See the "What is a SATURN model?" box within this section for background information on this model type.

What is a SATURN model?

SATURN (Simulation and Assignment of Traffic in Urban Road Networks) is a computer software package used to forecast changes in traffic associated with development or road schemes. It has been used to support many large infrastructure schemes, and is a DfT approved tool.

A SATURN model has two components:

- A Supply Network; which is a representation of the highway network including all its roads and junctions; and
- A Demand Matrix; which is a representation of the individual vehicles which would seek to route from A to B.

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

Changes to the Supply Network (i.e. as new roads are opened, or junctions improved); and

Changes to the Demand Matrix (i.e. as traffic levels increase (or decrease) in future).

For example:

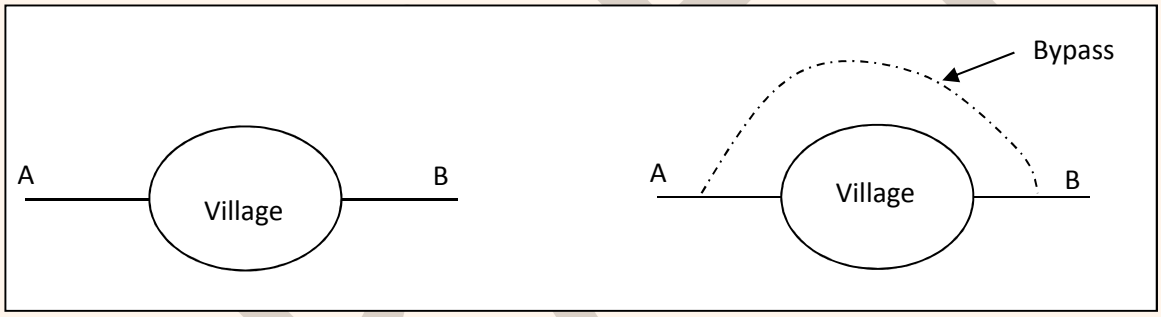


Diagram 1

Diagram 2

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

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

SATURN software seeks to forecast 'how much traffic would use each route available'. It bases these choices on journey cost and distance.

4.3 Reference Case

As part of the development of LLITM v5, a 'core scenario' was produced in late-2013 using the most up-to-date forecast assumptions at the time in terms of land-use development, highway network improvements, public transport service changes, investment in Smarter Choices initiatives and other model inputs. The land-use assumptions and forecasts which form part of this 'core scenario' is referred to as planning scenario 'sp'.

This 'sp' land-use scenario has been forecast using the full land-use transport interaction (LUTI) model available within LLITM. This allows for iteration between the transport and land-use models whereby the forecast costs of travel influence the future location of land-use, and the location of land-use changes influences the costs of travel.

The 2031 land-use forecasts from this 'core scenario' have been used as the input to the 2031 'without development' scenario, and also as the basis for the 'with development' scenarios.

4.4 Development Assumptions

The primary drivers of trip generation and attraction within LLITM are the population and employment forecasts. LLITM uses the DfT's National Trip-End Model software (CTripEnd) to forecast trip-ends based on input planning data. The population data required by this process needs to be classified by age, economic status and gender, with the employment data required by thirteen employment categories.

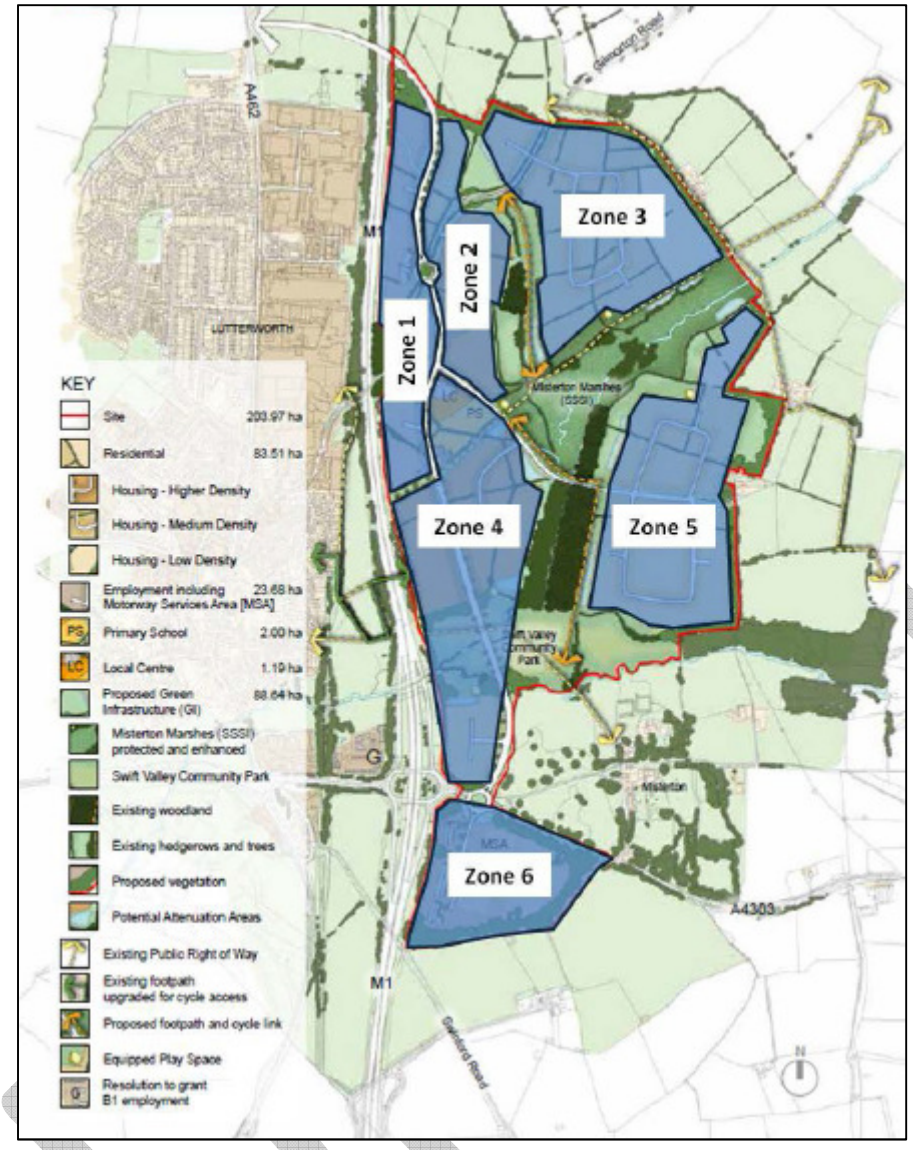
The information provided within the masterplan contains information on the number of dwellings and the hectares of employment development. These have been converted into the required inputs to the model as is described below.

Given the nature of the proposed development, a total of six development zones have been used. These development zones and their definition are shown in Table 4.1 and Figure 4.1.

Table 4.1: Development Assumptions and Zone Structure (see Figure 4.1)

Zone	Dwellings	Employment Land
1	0	10 ha
2	400	0
3	800	0
4	500	Primary school and local centre (~3 ha in total)
5	800	0
6	0	10 ha
Total	***2,500***	***20 ha plus primary school and local centre***

Figure 4.1: Development Masterplan and Zone Structure (see Table 4.1)



4.5 Trip Generation - Residential

The key driver for trip generation for the proposed Lutterworth East residential development is the forecast population resident within the development. It is therefore required that the forecast dwellings within the proposed development are converted to resident population. To do this information from the zones within LLITM representing Lutterworth have been used, and it has been assumed that the proposed development will be similar in nature to the existing urban area in terms of average household size. The forecast average household size within Lutterworth is 2.27 people per household in 2031, and we have therefore converted the proposed number of dwellings to a population estimate using this figure. Applying this assumption gives an estimate of population for the proposed development of 5,675.

4.6 Trip Generation – Employment

For Zone 1 and Zone 6, the 10 hectares of employment land contained in each zone is assumed to be equally split between office (B1), warehousing / distribution (B8) and general (B2) land-uses.

These inputs on the area of employment land have been converted into an estimate of the number (and type) of jobs that will be generated by this development. The first assumption applied converts the total employment land into an approximation of the internal area of the buildings. Then, using employment densities from the Homes and Communities Agency, these floorspace estimates have been converted to employment estimates.

Table 4.2 sets out the assumptions proposed to derive an estimate of the number of jobs generated by the employment in Zone 1 and Zone 6 of the proposed development. This methodology uses the following assumptions:

- the internal area of the employment buildings is 40% of the total land area; and
- office buildings are on average two storeys high, general (B2) buildings being on average 1.5 storeys high, and warehouse buildings being one storey high.

This results in an estimated total employment for this site of around 3,400 jobs for each model zone.

Table 4.2: Assumptions for Northern Employment Zones

	Office (B1)	General (B2)	Warehouse / Distribution (B8)
Total employment land (ha)	3.33	3.33	3.33
Internal floorspace (%)		40%	
Internal floorspace (ha)	1.33	1.33	1.33
Building Storeys	2	1.5	1
Total Internal floorspace (ha)	2.67	2.00	1.33
Total Internal floorspace (m^2)	26,667	20,000	13,333
Average employee density (m^2 per FTE)	10	36	75
Estimated Employees	2,667	556	178

A similar process has been adopted for the local centre contained within Zone 4. This assumed a single storey retail centre (land-use A1), which equated to an estimated employment of around 265 for this element of the employment within Zone 4.

In addition to this there is proposed to be a primary school located within this zone. The estimated employment at the primary school has been based on the following assumptions:

- that there is one employee per 10 pupils attending the school;
- that all children of primary school age resident within the proposed development will attend the school, with children attending secondary schools and higher education travelling elsewhere; and
- that 35% of the children forecast to be resident within the proposed development are of primary school age.

This equates to around 400 primary school pupils, and therefore 40 jobs relating to the primary school.

Within LLITM employment is classified into thirteen categories defined by the DfT's National Trip-End Model (NTEM). Based on the employment estimates detailed above, the following correspondence to the required employment categories has been applied:

- B1 (office) employment has been classified as 'services (business, other, postal/courier) & equipment rental';
- B8 (warehouse / distribution) employment has been classified as 'industry, construction and transport';
- B2 (general) employment has been split equally between services (business, other, postal/courier) & equipment rental', 'industry, construction and transport' and 'business';
- employment relating to the primary school has been classified as 'primary & secondary schools'; and
- employment relating to the local centre has been classified as 'retail trade'.

4.7 Total Trip Generation and Comparison with TRICS

Based on the above residential and employment assumptions, Table 4.3 shows the total trip generation as forecast by the LLITM model.

Table 4.3: Trip Generation Totals (PCUs)

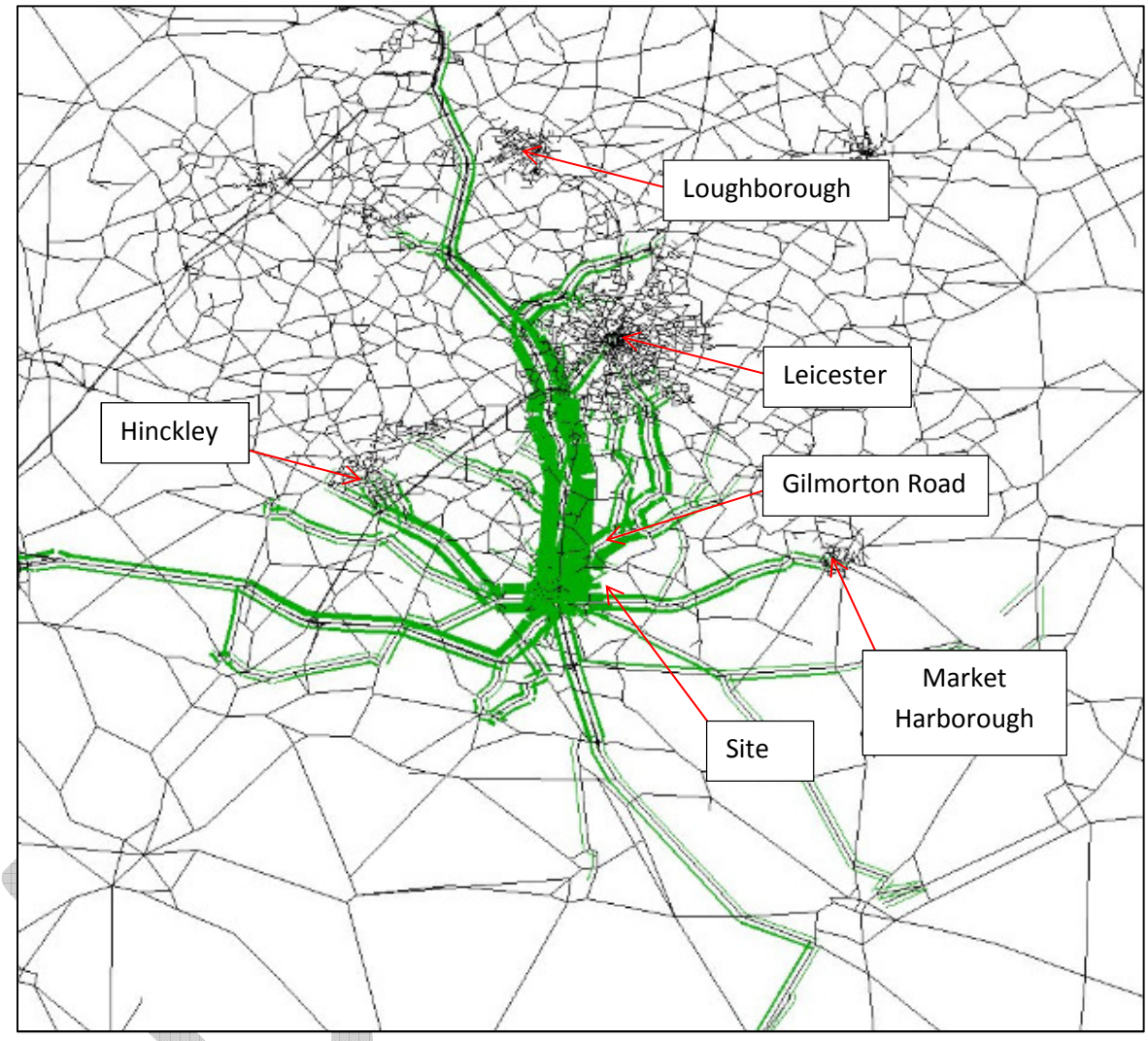
AM Peak Hour		PM Peak Hour	
Arrivals	**Departures**	**Arrivals**	**Departures**
1,795	1,419	1,402	1,721

It should also be noted that the balance of eventual employment land-use developed will have a large impact on trip rates: for instance, if the development creates more B1 (Office) land than assumed then it will generate more trips; whereas if it is mainly B8 (warehousing) then fewer trips than forecast could be expected.

4.8 Trip Distribution

Figure 4.2 shows the distribution of trips from the site (at a county level as estimated by LLITM). This shows a strong 'pull' of traffic towards the urban conurbation of Leicester, particularly along the M1 but also using secondary routes such as Gilmorton Road. Traffic is also drawn to Hinckley and Market Harbourough.

Figure 4.2: Trip Distribution from the site – County level (Source: LLITM)



Traffic flows from the LLITM are provided in Appendix D, including the Reference and Design Year flows.

4.9 Junction Performance

The LLITM is a strategic model and, as such, the performance of individual junctions has been assessed using specific software developed for the assessment of each junction type (based on the traffic flows extracted from LLITM).

A range of software tools are available to assess the performance of isolated junctions including PICADY (for priority junctions), ARCADY (for roundabout junctions) and LINSIG or TRANSYT (for signalled junctions). All of these software tools are recommended for this use by the DfT.

The inputs to the above models are geometrical parameters and traffic flows. Geometrical parameters have been taken from OS mapping and confirmed on-site using spot measurements.

As is standard practice, results are presented for the standard network weekday AM (typically 0800 – 0900hrs) and PM (typically 1700 – 1800hrs) peak hours.

Interpretation of Results: ARCADY software provides outputs in the form of Ratios of Flow to Capacity (RFC) and queue length (Q). For a new roundabout, a worst-arm target RFC value of 0.85 during a single time segment is preferred as this minimises the chance that queuing will occur at a new junction on opening. For existing junctions, RFC values above 0.85 are likely to produce queues which increase slowly. Above an RFC value of 1.0, a junction is more than likely to be at capacity (with resulting larger increases in queue length).

PICADY software provides outputs in the form of Ratios of Flow to Capacity (RFC) and queue length (Q). For a new junction, a worst-arm target RFC value of 0.85 during a single time segment is preferred (0.75 in a rural area) as this minimises the chance that queuing will occur at a new junction on opening. For existing junctions, RFC values above 0.85 are likely to produce queues which increase slowly. Above an RFC value of 1.0, a junction is more than likely to be at capacity (with resulting larger increases in queue length).

Both ARCADY and PICADY can be run using both a synthesised and a 'flat' profile. To robustly test the performance of the junction, a synthesised profile includes a 12.5% mid-peak 'surge'. A 'flat' profile assumes that the same quantity of traffic flow will arrive at a junction in each fifteen minute segment of the peak hour. In reality, as traffic flow increases, the profile of traffic arriving at a junction is likely to move from a synthesised 'surge' profile to a 'flat' profile. This is due to the phenomenon of 'Peak Spreading' which "describes the broadening of traffic flow profiles in peak periods which can occur in congested urban networks as traffic demand increases" (Source: Transport Research Laboratory (TRL), 1991). For information, traffic flows have, in any case, been derived from the LLITM highway model which uses a 'flat' profile.

LINSIG3 / TRANSYT software provides outputs for both individual entry 'arms' and the junction as a whole. For the individual arms, the outputs are Degree of Saturation (DoS) and Mean Maximum Queue Length (MMQ). Within LINSIG, a total-junction statistic known as the Practical Reserve Capacity (PRC) is also reported, which shows the percentage of "spare" capacity left at the junction.

LINSIG / TRANSYT work on the basis that a junction is considered to be at capacity when the individual junction arm DoS values exceeds 90%. Below this threshold, queues begin to increase slowly as the DoS increases. Above this threshold, queues begin to elongate rapidly. As the DoS on any arm increases, the PRC remaining at the junction decreases.

Both LINSIG and TRANSYT use a 'flat' profile as standard. Indeed, LINSIG / TRANSYT software does not include the facility to add any other type of profile to the traffic flow inputs.

4.10 Micro-simulation

Given the proximity of the M1 (Junction 20) and the proposed access junction (and, indeed, the junction of the A426), the proposed junction arrangements have also been modelled using the micro-simulation package VISSIM. A model of the existing network was already available having been produced by the Highways Agency / Highways England. This model was provided to AECOM, and the development-related trips added as described later in this report.

ENCOURAGING ENVIRONMENTAL SUSTAINABILITY

05

5 Encouraging Environmental Sustainability

5.1 Overview

The purpose of this section is to identify how the development could be served by sustainable transport. It considers access by walking, cycling and public transport. It is anticipated that the overall scheme would be supported by a Framework Travel Plan.

5.2 Framework Travel Plan

The NPPF states that all significant generators of travel should be governed by a Travel Plan. According to the DfT, a travel plan is "a package of measures produced …to encourage … (the) use (of) alternatives to single-occupancy car-use". The recently published National Planning Policy Framework (NPPF, 2012) goes on to say that a Travel Plan is "a long-term management strategy for an organisation or site that seeks to deliver sustainable transport objectives through action and is articulated in a document that is regularly reviewed."

There are six standard components to a Travel Plan, which are summarised below:

- A commitment from the developer to minimise Single Occupancy Vehicle (SOV) use by promoting and supporting alternative modes;
- The identification of a Travel Plan Co-ordinator to manage travel to and from the site;
- The setting of Targets with respect to the number of vehicles using a site;
- The adoption of measures to reduce SOV travel in line with the Targets set;
- The adoption of a monitoring regime to report achievement against Targets to the Council; and
- The commitment to review and update the Travel Plan in response to monitoring against Targets, which may include for the provision of fall back measures.

Typical Travel Plan targets would be to reduce single occupancy trips by an agreed percentage over the lifetime of the travel plan. This trip reduction has not been taken into account in the junction capacity forecasts included in Section 6.

5.3 Non-Motorised Users

At present, the only realistic opportunity to travel from the proposed development site to the employment opportunities, services and facilities is via an existing pedestrian bridge across the M1. The routes leading to / from this bridge are intended for leisure use and, as a minimum these would need upgrading to allow a high value of utility and realistic opportunity to encourage walking and cycling from the site.

With upgrades of routes to / from the bridge, a large proportion of the southern side of the site would fall within 2km of Lutterworth town centre. For information, 2km is the upper threshold given by the Chartered Institution for Highways and Transportation (CIHT) when considering the accessibility of a site on foot. Those zones north of Gilmorton Road (zones 1, 2, 3) would continue to fall outside this walking catchment. There are three options to address this:

- Provision of footpaths to the proposed (northern) access onto the A426. This would not create a direct route to any of Lutterworth's services and facilities and is not preferred.
- Provision of footpaths along Gilmorton Road. This could be delivered within the proposed development on the eastern side of the M1, but would likely require land acquisition on the western side of the M1. At the bridge over the M1 itself (and adjacent historic railway bridge), it would also likely require the introduction of shuttle-working over the bridge due to the narrowness of the carriageway and the presence of a vehicle restraint system. Such shuttle working has been assessed using LINSIG and found to be viable (albeit with very long intergreens which would need highway authority approval) although geometrical feasibility has not been confirmed.

- It has been suggested that the parapets of the existing bridge could be strengthened such that the existing restraint systems could be removed (and therefore allow space for a footpath across the bridge). However, the safety fence protects a substandard parapet. To allow for removal of the safety fence it would be necessary to replace the parapet and strengthen the supporting structure. Whilst this is technically feasible it is very complex work to undertake over a major Motorway.

- A new footbridge across the M1 to the north of Gilmorton Road and potentially linking in to Central Park (an industrial estate spine road).

An alternative option would be to close Gilmorton Road (and use it as a fully pedestrian / cycle route) and seek to redirect all traffic using this route onto the new route connecting to the A426 (north of Lutterworth). This is not considered feasible, however, given that such a strategy would increase ahead movements through the junction of A426 / Bill Crane Way and would also likely increase traffic movements through the access onto the A4304 and M1 (Junction 20), the performance of which is described in the following sections.

The preferred option is therefore to create a new pedestrian bridge to the north of Gilmorton Road and link it into Central Park (an industrial estate spine road)

Figure 5.1: Potential Options to Improve Access for Non-Motorised Users

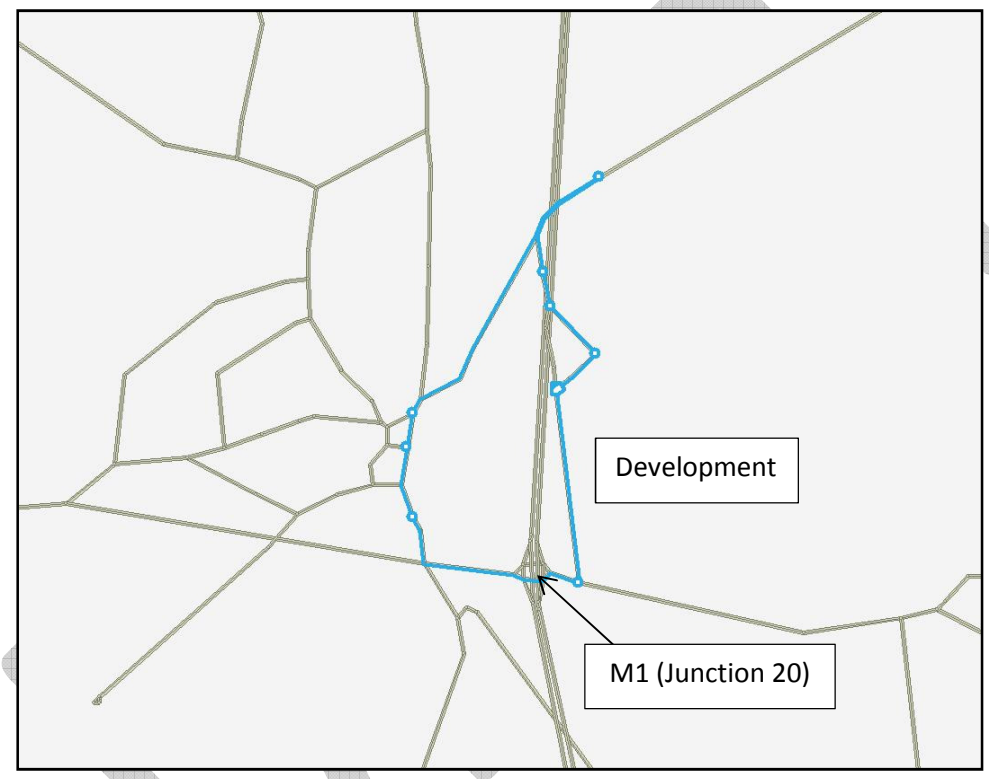
5.4 Public Transport

There are three main options to serve the site by public transport:

- Extension of the 58 service (Hinckley Bus) into the site, and increase its frequency;
- Extension of the 84 service (Arriva) into the site (which would be most viable if a loop could be created using the potential second access onto the A426); and
- Dedicated shuttle service from the site to Lutterworth town centre.

For the purposes of modelling the site within LLITM, a circular route was defined calling at a number of locations within the proposed development and Lutterworth town centre. It was assumed to run every half hour throughout the day. This shuttle service is shown in Figure 5.2, with the circles along the route showing the location of the assumed bus stops for this service.

Figure 5.2: Modelled Lutterworth East Shuttle Service



As such, there are several options with which the development could be served by public transport; with the eventual decision likely to require the view of the commercial public transport operators at the time the development is brought forward. Given the strong draw of traffic towards Leicester, the preference would be an extension of the service number 84.

Notwithstanding the above, it is likely that all of the above options would require revenue funding to 'pump prime' a service during the build-out phases. For information, the cost of operating / resourcing a bus is approximately £150,000 per annum.

5.5 Summary

To ensure residents / employees of the proposed development have options to travel to / from the site by sustainable means, the following interventions are likely required (with alternative options as set out in this chapter):

- Framework Travel Plan;
- Improvement of routes to / from existing footbridge;
- New footbridge to the north of Gilmorton Road connecting to Central Park; and
- 'Pump priming' of new or improved / extended bus service.

MANAGING THE EXISTING NETWORK

06

6 Managing the Existing Network

6.1 Overview

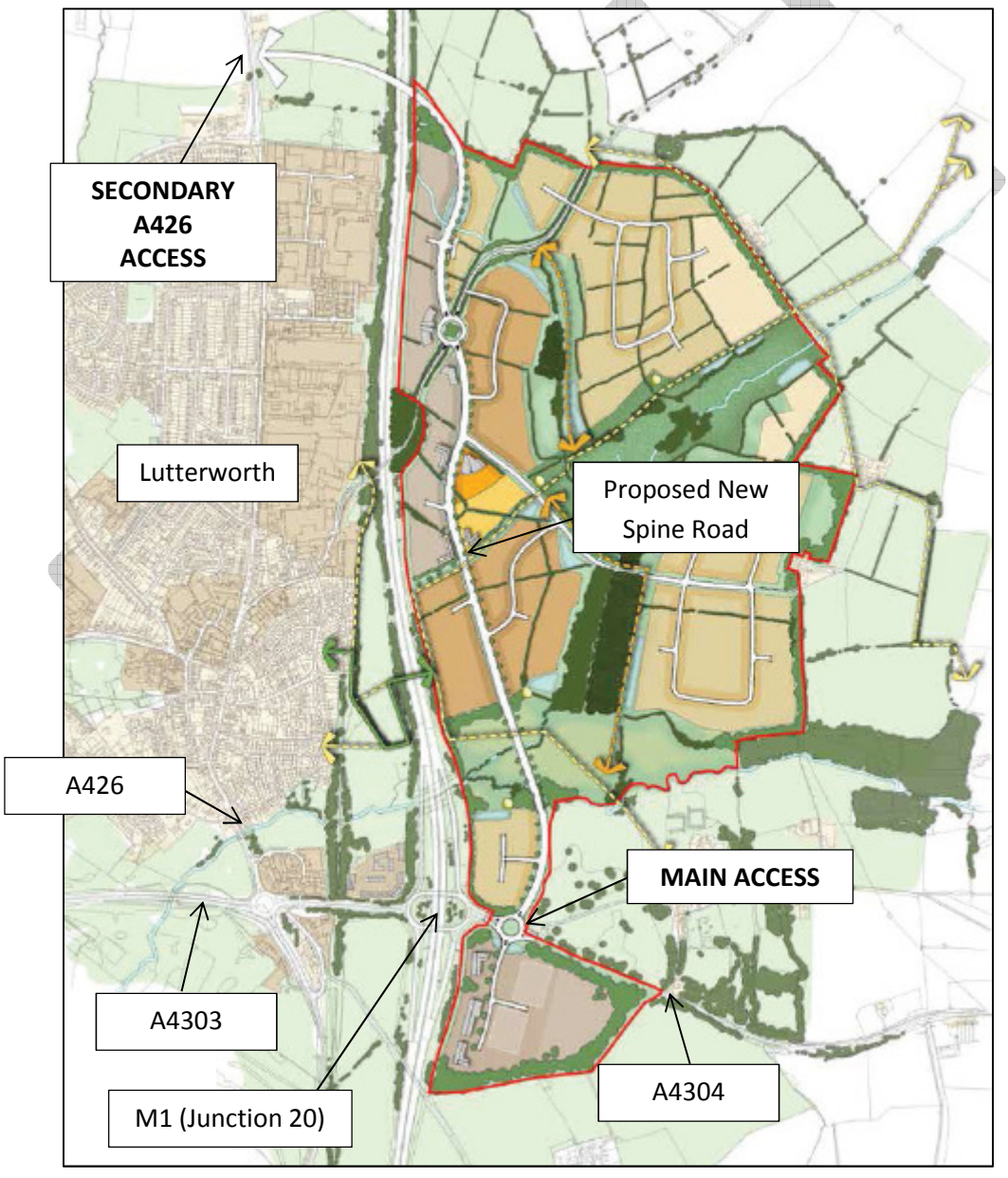
The purpose of this section is to identify the impact of the proposed Lutterworth East development on the local highway network. It focuses on vehicular access and off-site highway impacts. Where any such off-site highway impacts are identified, they are considered further in Section 7 (Mitigation).

6.2 Access

Two access scenarios have been considered; one in which the site is accessed only from the A4304 (albeit with a connection via Gilmorton Road), and one in which the site also benefits from an access onto the A426 north of Lutterworth. This latter option would require an additional motorway bridge.

Access locations are shown indicatively on the masterplan shown in Figure 6.1.

Figure 6.1: Proposed Development (Source: Lutterworth East Vision Document, March 2015)



Main Access: Two options have been assessed for the main access onto the A4304, being a roundabout junction (modelled in ARCADY) and a traffic signalled junction (modelled in LINSIG).

For both the ARCADY and LINSIG modelling, traffic flows have been obtained from the LLITM model and have been used to identify geometries which would produce an appropriate junction performance. The ARCADY assessment is contained within Appendix E, with a summary provided in Table 6.1, and the LINSIG analysis is contained within Appendix E. The LINSIG results have a positive Percentage Reserve Capacity (PRC) in the PM of 13.1% and a slight negative PRC of -1.9% in the AM peak hour. However, resultant queuing in the AM peak hour is not between the junction and the M1 (Junction 20). Indeed, the key consideration for the access design is the interaction with the M1 (Junction 20). In this regard, both a roundabout and a signalised crossroads have been tested in VISSIM, and the signalised crossroads provides a better (and satisfactory) performance, particularly given the ability to co-ordinate the signals with the (signalised) M1 (Junction 20).

Table 6.1: Junction Performance of the A4304 Access (with no A426 Access)

Arm	AM (0800 – 0900hrs)		PM (1700 – 1800hrs)	
	RFC	Q	RFC	Q
A4304 (W)	0.82	4	0.78	3
Development (N)	0.83	5	0.69	2
A4304 (E)	0.73	3	0.37	1
Development (S)	0.54	1	0.76	3

Layouts of the proposed A4304 main access (both the roundabout and preferred signalised crossroad option) are provided within Appendix E.

Secondary (A426) Access: An option has been assessed wherein the site also benefits from an access onto the A426 to the north of Lutterworth. Provision of such a route has the potential to divert trips from the A426 onto the development spine road. As such, this option has been tested separately within LLITM.

Results from the model show the creation of a strong demand for right-turns from the proposed new spine road to the A426 (North). Several potential junction types have been considered at this location, including:

- Priority junction with the development spine road as the minor arm;
- Priority junction with the A426 (south, into Lutterworth) becoming the minor arm;
- A signalised T-junction; and
- A roundabout.

The two priority junction options would not provide sufficient capacity to accommodate the modelled flows, with RFC values about 1.0 in the peak hours. The signalised option would perform adequately in the AM and PM peak hours, with positive PRC values (16.3% and 4.4% in the AM and PM peak, respectively) and DoS values on individual arms below 90%. The preferred option in capacity terms would be the construction of a roundabout (with RFCs less than 0.85 in both the AM and PM peak hours) as this would minimise delays in the inter-peak and off-peak periods. This junction type also accommodates right-turning traffic better than either priority or signal controlled junctions; however, later in this report a mitigation option is described wherein the A426 / Bill Crane Way is signalised. As such, and given the proximity of the two junctions, a signalised northern access point is preferred.

Layouts (roundabout and signal control) of the proposed A426 access are provided in Appendix F, alongside ARCADY and LINSIG results.

6.3 Spine Road

The spine road through the site has been designed to recognise its potential as a distributor road for the development, and as an alternative route between the A426 and A4304. As such, Appendix G contains a drawing of a potential alignment of the road based on a 40mph design speed. A roundabout junction with Gilmorton Road has also been shown within this drawing. The spine road includes for shared use footway / cycleways on both sides of the carriageway.

The design of roads leading away from the main spine road would need to be developed at the time of a detailed planning application.

6.4 Off-Site Highway Impacts

Overview: Individual junction modelling within SATURN is not as detailed as the functionality available within ARCADY, PICADY, LINSIG etc. However, the modelling software can be used to identify those junctions that are approaching capacity. The two development scenarios (i.e. 'with' and 'without' the access onto the A426) have been assessed to identify those junctions with a traffic volume:capacity ratio of 85% or more. These junctions are provided in Table 6.2.

Table 6.2: Junctions with LLITM V/C values of 85% of more

Scenario	AM Peak Hour	PM Peak Hour
Without A426 Access	M1 (Junction 20) – 96% A4303 / A426 rdbt – 89%	M1 (Junction 20) – 93%
With A426 Access	M1 (Junction 20) – 92% A4303 / A426 rdbt – 86%	M1 (Junction 20) – 86%

Table 6.2 shows that, although the same junctions are identified as requiring further analysis in each development scenario, the impacts at each junction are less with a secondary access onto the A426.

In addition to the above junctions, from site visits and an overview of the scheme, the A426 / Gilmorton Road and A426 / Bill Crane Way junctions have also been assessed within this TA.

M1 (Junction 20): This is an un-signalised grade-separated roundabout junction. The location of the junction is shown in Figure 6.2.

Figure 6.2: Location of (M1 Junction 20)

To illustrate the expected changes in traffic flows at this location, Table 6.3 shows how traffic flows are anticipated to grow at M1 (Junction 20) both with and without the proposed development. For simplicity, the baseline flows have been indexed to 100. (For example, it can be seen that the Reference AM case is expected to mean the junction having to accommodate 32% more traffic prior to the Lutterworth East development being delivered).

Table 6.3: Changes in Traffic Flow – M1 (Junction 20)

Scenario	AM Peak	PM Peak
Base	100	100
Reference	132	136
Design (without link)	183	198
Design (with link)	178	188

It can therefore be seen that the junction would be expected to accommodate a significant increase in traffic flow with the proposed development. As such, an initial analysis has been undertaken using

ARCADY making use of the grade-separated and large roundabout parameters within the software, and Table 6.4 summarises the performance of the junction (using a synthesised profile).

Table 6.4: Junction Performance of the M1 (Junction 20) (Synthesised Profile)

Arm	Scenario	AM (0800 – 0900hrs)		PM (1700 – 1800hrs)	
		RFC	Q	RFC	Q
M1 (N)	Baseline	0.34	1	0.32	1
A4304		0.45	1	0.22	0
M1 (S)		0.28	0	0.11	0
A4303		0.41	1	0.42	1
M1 (N)	Reference	0.57	1	0.43	1
A4304		0.75	3	0.35	1
M1 (S)		0.53	1	0.23	0
A4303		0.59	1	0.59	1
M1 (N)	Design (without A426 Access)	1.14	108	0.78	3
A4304		1.19	165	0.95	14
M1 (S)		0.90	8	0.61	2
A4303		0.83	5	0.83	5
M1 (N)	Design (with A426 Access)	1.08	73	0.68	2
A4304		1.19	135	0.86	6
M1 (S)		0.87	6	0.48	1
A4303		0.81	4	0.76	3

Table 6.4 indicates the junction will operate at capacity in the design year. Performance is better, however, 'with' the proposed northern access than 'without'. The key issue is within the AM peak hour, at which time there are large queues of traffic heading towards Junction 20 from the development (i.e. on the westbound A4303 arm) and on the M1 (southbound) off-slip.

Given that the M1 off-slips both already have three lane entries into the junction, it is unlikely that sufficient capacity could be wrought from amending the geometrical form of the existing slips. Tests of increasing the entry width of the A4304 has shown that this would have a negative impact on the M1 (northbound) off-slip, as it would create additional traffic passing the entry of this junction.

Given the above, a LINSIG model of a potential signalisation scheme of the M1 (Junction 20) has been developed, and this indicates that mitigation is likely to be required in the form of:

- full entry signalisation;
- increasing the number of circulatory lanes on the eastern side of the junction to three lanes; and
- provision of a short flare on the westbound (A4304) entry to allow three entry lanes into the junction (two heading over the bridge, and one onto the southbound on-slip).

The LINSIG results are provided in Appendix E, with a Scheme drawing provided within Appendix H. The LINSIG model was developed to include the proposed A4304 access, given the proximity of the two junctions.

A4303 / **A426 roundabout:** This is an un-signalised roundabout junction. The location of the junction is shown in Figure 6.3, and Table 6.5 summarises the performance of the junction (using a synthesised profile).

Figure 6.3: Location of A4303 / A426 roundabout

Table 6.5: Junction Performance of the A4303 / A426 roundabout (Synthesised Profile)

Arm	Scenario	AM (0800 – 0900hrs)		PM (1700 – 1800hrs)	
		RFC	Q	RFC	Q
A4303 W)	Baseline	0.32	1	0.41	1
A426 (N)		0.69	2	0.67	2
A4303 (E)		0.65	2	0.38	1
A426 (S)		0.64	2	0.52	1
A4303 W)	Reference	0.50	1	0.64	2
A426 (N)		0.96	15	0.92	10
A4303 (E)		0.84	5	0.54	1
A426 (S)		1.07	38	0.86	6
A4303 W)	Design (without A426 Access)	0.65	2	0.76	3
A426 (N)		1.02	28	0.97	14
A4303 (E)		0.93	11	0.70	2
A426 (S)		1.17	74	1.00	21
A4303 W)	Design (with A426 Access)	0.60	2	0.80	4
A426 (N)		1.00	21	0.96	13
A4303 (E)		0.90	9	0.68	2
A426 (S)		1.17	76	0.97	15

The results in the above table show that the junction would likely operate at capacity in the AM peak with queues worse on the approach from the South (the A426, Rugby Road). It is unlikely that a signalised roundabout on the current layout would operate satisfactorily given the volumes of traffic turning right towards Lutterworth and from the A426 (S). Options to accommodate the development traffic have included entry width improvements, signalisation of the existing roundabout junction and replacement of the junction with a signalised crossroads. The signalised crossroads mitigation option offers the best junction performance although does require land-take on all sides of the existing roundabout.

A scheme drawing is included in Appendix H, alongside the LINSIG results. The LINSIG operates with a PRC of 5.7% in the AM peak hour, and 13.5% in the PM peak hour.

VISSIM Modelling (A4303 – A4304 Corridor): The mitigation schemes described above require the creation of a signalised crossroads access to the development, the signalisation and widening of sections of the M1 Junction 20 gyratory, and the replacement of the A4303 / A426 (Frank Whittle Roundabout) with a signalised crossroads. These three junctions are in close proximity to each other and therefore have been tested using the VISSIM model provided Highways England. We have modified the HE VISSIM model to take account of the LLITM 'with development' forecast traffic flows and added a flow-profile based on traffic survey data for the A4304 (at the point of the proposed access and undertaken in fifteen minute intervals). This modelling work has shown that the junctions operate satisfactorily in both the AM and PM peak hours.

The VISSIM model is illustrated in Figures 6.4 to 6.7, overleaf; although it should be noted that this model is in essence about the movement of vehicles on the network and cannot be described fully be a still image.

Figure 6.4: VISSIM Model (All Junctions)

Figure 6.5: VISSIM Model (Frank Whittle Junction)

Figure 6.6: VISSIM Model (M1 Junction 20)

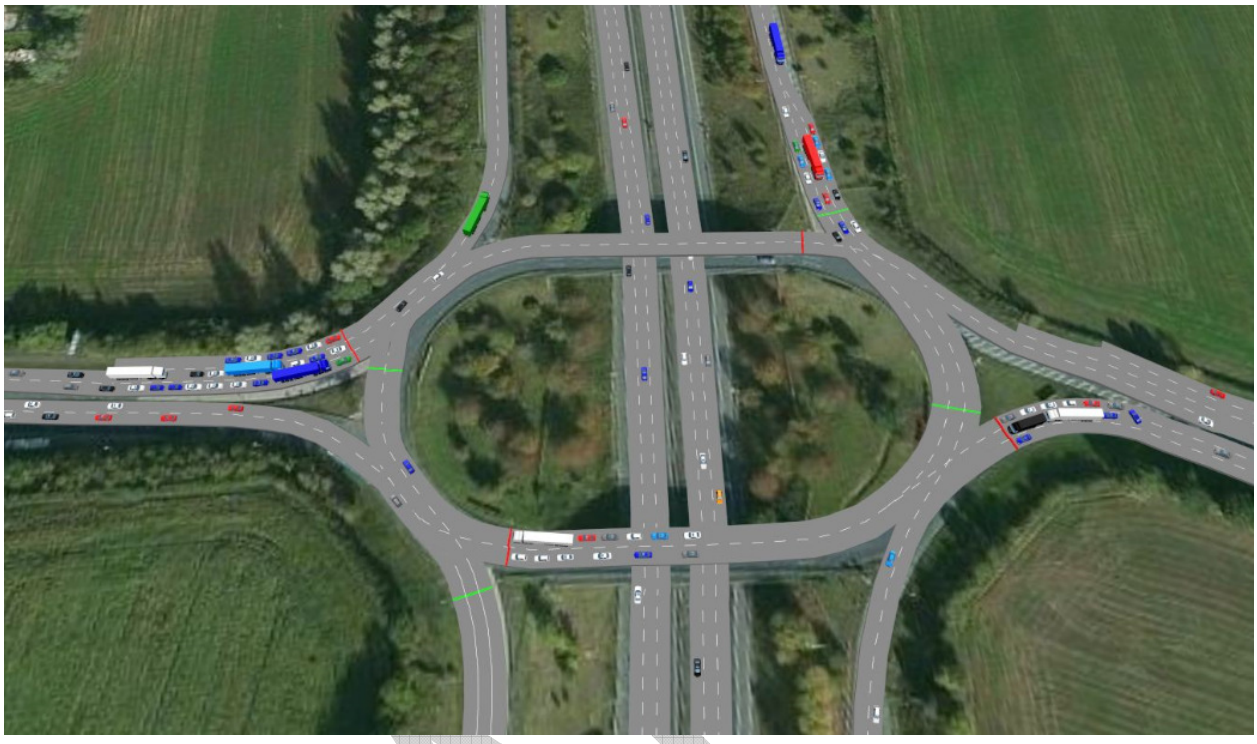


Figure 6.7: VISSIM Model (M1 Junction 20)

A426 / Gilmorton Road: This is a priority junction. The location of the junction is shown in Figure 6.8 and Table 6.6 summarises the performance of the junction.

Figure 6.8: Location of A426 / Gilmorton Road junction

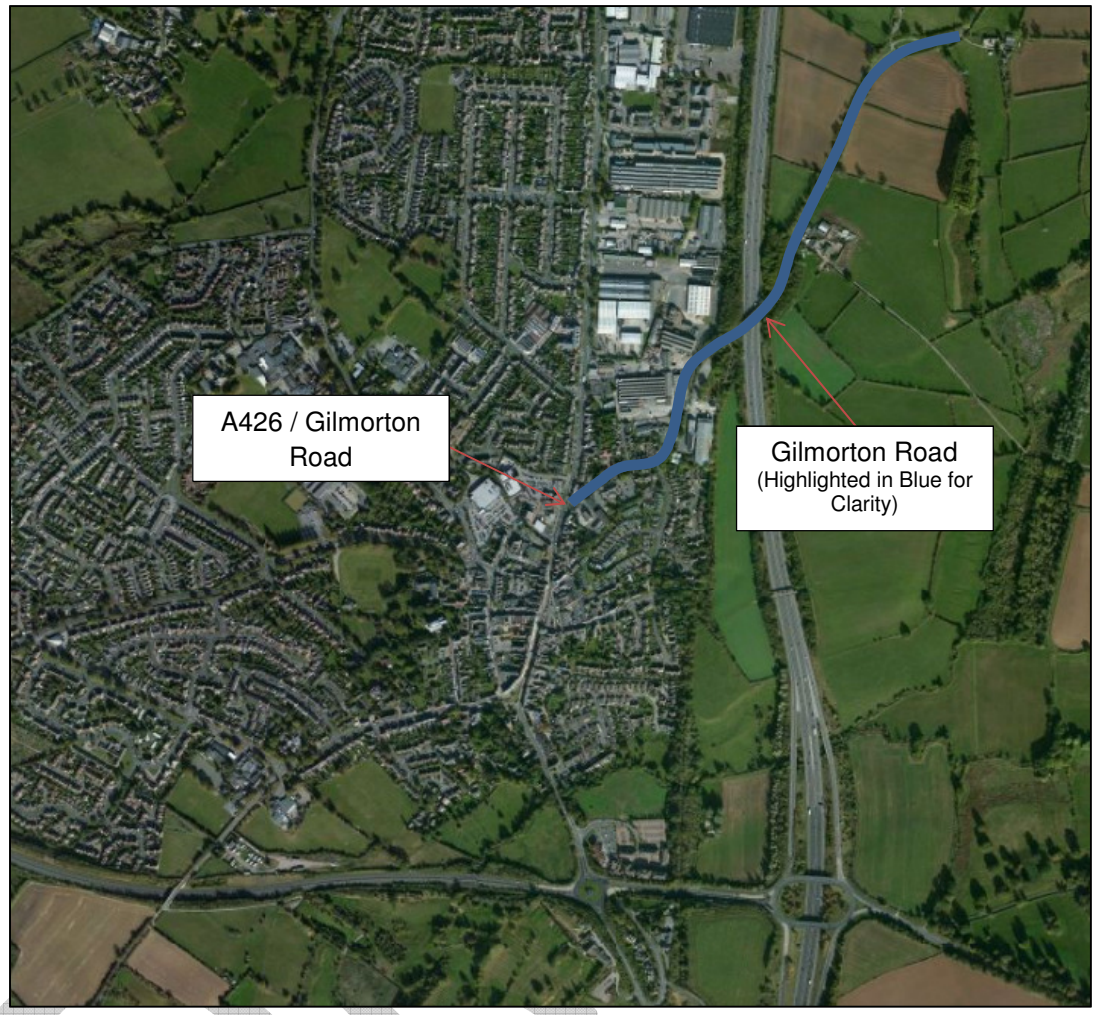


Table 6.6: Junction Performance of the A426 / Gilmorton Road – Worst Arm only

Scenario	AM (0800 – 0900hrs)		PM (1700 – 1800hrs)	
	RFC	Q	RFC	Q
Baseline	0.54	1	0.64	2
Reference	1.15	28	1.86	67
Design (without A426)	2.94	164	7.85	188
Design (with A426)	1.16	30	1.48	48

The results in Table 6.6 indicate the junction would operate above capacity in every development scenario except the Baseline. As could be expected, the worst-arm is always the minor arm; however, queues also form (RFC ~ 1.0) for every scenario (except the baseline) for the right-turn into the minor arm although these are minimised in the Design (with A426 Access scenario). Indeed, with the link to a potential northern access direct onto the A426 in place, the junction performs better than it is forecast to in the Reference Case (i.e. without development). As such, the provision of the northern access would be an appropriate mitigation strategy for the Gilmorton Road junction.

Alternatively, the junction could be replaced by a mini-roundabout (for which a drawing is provided in Appendix H). This type of junction would accommodate right turn demands into and from Gilmorton Road better than a priority junction, at the expense of introducing delay on the A426. The summary ARCADY results for this type of junction shown in Table 6.7.

Table 6.7: Junction Performance of the A426 / Gilmorton Road – Worst Arm only – Mini Roundabout

Scenario	AM (0800 – 0900hrs)		PM (1700 – 1800hrs)	
	RFC	Q	RFC	Q
Design (without A426)	1.18	100	1.27	157
Design (with A426)	0.93	10	1.11	56

The results in the above table show that the mini-roundabout would not operate within capacity within either of the design scenarios or peak hours. However, the performance of the junction would be better that of the Reference Case if the junction were arranged as a priority junction.

It is not considered that this junction could be signalised without the removal of some accesses on the western side of the junction which may require land acquisition.

A426 / Bill Crane Way: This is a priority junction. As such, it has been assessed using PICADY. Table 6.8 summarises the performance of the junction.

Figure 6.9: Location of A426 / Bill Crane Way junction

Table 6.8: Junction Performance of the A426 / Bill Crane Way – Worst Arm only

Scenario	AM (0800 – 0900hrs)		PM (1700 – 1800hrs)	
	RFC	Q	RFC	Q
Baseline	0.67	2	0.52	1
Reference	1.00	12	0.64	2
Design (without A426)	1.27	35	1.14	19
Design (with A426)	0.95	8	0.67	2

The results in Table 6.8 indicate the junction would operate above capacity in the AM peak hour for every development scenario except the Baseline, and the PM peak hour in the case where there is no northern access onto the A426. Increased traffic on the A426 means that queues form on the minor arm (Bill Crane Way). As per the junction with Gilmorton Road, in the scenario with the access onto the A426, the junction performs better than it is forecast to in the Reference Case (i.e. without development). As such, the provision of the northern access may be an appropriate mitigation strategy for the Bill Crane Way junction.

An alternative mitigation strategy would be to signalise this junction. A LINSIG analysis of this junction has shown that such a mitigation scheme would operate with PRC values of over 10% in all design scenarios. A design for this junction is provided in Appendix H.

6.5 Impact of Potential Bypass

As discussed above, the creation of a northern access into the site (connecting to the A426) would allow the removal of some traffic from Lutterworth town centre, including potentially the removal of many HGVs (if supported by a weight limit). The forecasts also show a removal of traffic from Gilmorton Road (when comparing the two 'with' development scenarios). Total forecast removal of traffic is given in Table 6.9. This supports the findings of the junction capacity assessments in the section above.

Table 6.9: Forecast Removal of Traffic with Northern Site Access (Two-Way PCUs) – Comparison of two 'With' Development Scenarios

Road	Two-way PCUs removed with access onto the A426	
	AM Peak Hour	PM Peak Hour
A426 (S of Bill Crane Way)	448	494
Gilmorton Road	431	285

6.6 Summary

To facilitate the development, the following infrastructure would likely be required:

- Provision of main access onto the A4304 (in the form of a signalised crossroads);
- Mitigation at M1 (Junction 20), likely to be in the form of:
    - Full entry signalisation
    - increasing the number of circulatory lanes on the eastern side of the junction to three lanes; and
    - provision of a short flare on the westbound entry to allow three entry lanes into the junction (two heading over the bridge, and one to the southbound on-slip).
- Replacement of the A4303 / A426 junction with a signalised crossroads;
- Mitigation at A426 / Gilmorton Road, likely to be in the form of a mini-roundabout; and
- Potential mitigation at the A426 / Bill Crane Way junction in the form of a signalisation scheme.

The analysis contained within this section indicates that a northern access onto the A426 would likely be required to facilitate the development. Providing an access onto the A426 improves the performance of the A426 / Bill Crane Way, A426 / Gilmorton Road and A426 / A4303.

MITIGATING RESIDUAL IMPACTS

07

7 Mitigating Residual Impacts

The site infrastructure / mitigation identified in this report includes:

- the main site infrastructure (i.e. main access (signalled), amendments to A4304 to M1 (Junction 20), spine road through the site, crossing of River Swift, spine road crossing of M1, access onto A426 (signalled)).
- amendments to M1 (Junction 20).
- mini-roundabout scheme at A426 / Gilmorton Road junction.
- Signalisation of A426 / Bill Crane Way.
- Signalisation of A426 / A4303 (Frank Whittle Junction).
- New pedestrian bridge to Central Park.
- Pump priming bus service.
- Travel Plan implementation.

It is likely that the Travel Plan supporting the development would need to be associated with a monitoring scheme to assess how traffic actually routes on the network as opposed to the forecasts prepared by the LLITM model.

POLICY COMPLIANCE

08

8 Policy Compliance

As noted in Section 2, the NPPF identifies a series of questions through which the overall 'sustainability' of a development can be considered. The key policy test contained within NPPF, however, is that a development does not lead to a 'severe' impact on the highway network.

The following table summarises the information contained within this TA with regards to the questions posed by NPPF.

Para	Question
30	Does the development support reductions in greenhouse gas emissions? No; the development is seeking to generate local housing and employment opportunities.
	Does the development support reductions in congestion? If delivered alongside a northern access onto the A426, the scheme does provide the potential to reduce HGV traffic through Lutterworth.
	Does the development facilitate the use of sustainable modes of transport? Yes, the proposed development could be connected to Lutterworth via improved and new pedestrian and public transport connections.
31	Have the opportunities for sustainable transport modes been taken up? The proposed development could be connected to Lutterworth via improved and new pedestrian and public transport connections.
	Can safe and suitable access to the site can be achieved for all people? Yes.
	Can improvements be undertaken within the transport network that cost effectively limit the significant impacts of the development? Feasibility is considered separately from this report.

34	For developments that generate significant movement, is it located where the need to travel will be minimised and the use of sustainable transport modes can be maximised? No.
35	Does the development accommodate the efficient delivery of goods and supplies? Yes, it provides the opportunity to remove HGVs from the local road network.
	Does the development give priority to pedestrian and cycle movements, and have access to high quality public transport facilities? The proposed development could be connected to Lutterworth via improved and new pedestrian and public transport connections.
	Does the development create safe and secure layouts which minimise conflicts between traffic and cyclists or pedestrians, avoiding street clutter and where appropriate establishing home zones. This will be addressed at the time of Reserved Matters / Detailed Applications.
	Does the development incorporate facilities for charging plug-in and other ultra-low emission vehicles? This could be included in the Framework Travel Plan (at the time of its preparation).
	Does the development consider the needs of people with disabilities by all modes of transport? This will be addressed at the time of Reserved Matters / Detailed Applications.
37	Does the development encourage a balance of land-uses? Yes, the proposed development includes residential and employment uses.
38	Are key facilities within walking distance of the development? Yes, local facilities will be provided both within the scheme, and within the bordering settlement of Lutterworth.

The following table summarises the information contained within this TA with regards to the questions posed by Local Plan policy.

CS5	
a) The majority of future development will be located in areas well served by local services to reduce the need to travel, where people can gain convenient access to public transport services for longer journeys and where local journeys may be undertaken on foot or by bicycle.	The proposed development could be connected to Lutterworth via improved and new pedestrian and public transport connections.
b) All significant development proposals should provide for coordinated delivery of transport improvements as outlined in the place-based policies (Policies CS13-CS17) of this Strategy as further informed by detailed application of the Leicester and Leicestershire Integrated Transport Model.	The proposed has been assessed using the LLITM as dictated by b)
c) The type of transport enabling and mitigation works provided by each development should be geared to transport improvements which are also strategically beneficial to the wider area and which can complement works likely to be delivered by other developments. Proposals for assessing traffic impact, highway design and parking provision associated with new development should accord with the guidance contained in "Highways Transportation and Development" published by Leicestershire County Council.	The scheme could facilitate the removal of HGVs through Lutterworth if delivered alongside a northern access onto the A426.
d) Settlements in the District should have safe pedestrian and cycling facilities, including facilities for people who need mobility assistance and access to public transport information and waiting facilities, where served. Control of speed and flow of vehicular traffic in settlements and at junctions should aim to use measures which avoid the need for traffic signs and signals in order to avoid street clutter.	The proposed development could be connected to Lutterworth via improved and new pedestrian and public transport connections. The remaining aspects of this policy requirement would be dealt with at Reserved Matters.
e) Proposals to reduce the environmental effect of highway development across the District by reducing unnecessary traffic signs and road lighting during night time periods should be implemented where safety allows.	N/A
CS14	
b) Transport interventions delivered in association with additional development in and around Lutterworth will focus on improving air quality and reducing the adverse effects of traffic flow in the town centre by: i) Resisting development which would result in additional Heavy Goods Vehicles passing through Lutterworth town centre; ii) Support for routeing schemes for Magna Park and other warehousing occupiers to prevent HGV	The scheme could facilitate the removal of HGVs through Lutterworth if delivered alongside a northern access onto the A426.

traffic passing through Lutterworth; iii) Supporting the principle of the development of other uses on land within Lutterworth presently used by HGV generating development; iv) Locating future HGV generating business development to the south of the town with good access to the M1, A4303 and A426; v) Improving links within the existing urban area for walking, cycling and local bus provision; vi) Local traffic calming measures in the town centre, and appropriate junction improvements elsewhere in the town to improve traffic flow.	

CONCLUSIONS AND SUMMARY

09

9 Conclusions and Summary

It is proposed to develop land to the immediate east of the M1 at Lutterworth to provide 2,500 residential units and 20Ha of employment land.

The proposed development has been modelled by the Leicester and Leicestershire Integrated Transport Model (LLITM) which was designed specifically for the purpose of testing the impact of new development and infrastructure on the highway network. Results from this modelling have been used to design an appropriate main access onto the A4304 and a potential secondary access onto the A426 (north of Lutterworth). The benefit of providing a 'northern' access would be that it would enable a large proportion of HGV traffic to be removed from Lutterworth town centre; and would also provide mitigation in its own right for some of the likely transport impacts of the development through Lutterworth to its junction of the A426 / A4303. This is particularly pertinent at the A426 / Gilmorton Road junction, which would be the location of significant queueing without the access onto the A426.

APPENDICES

ABOUT AECOM

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