15.0 TRAFFIC AND TRANSPORT

15.1 INTRODUCTION AND METHODOLOGY

15.1.1 This Chapter has been prepared by Waterman-Boreham Transport Planning. The application site is located approximately 6km to the West of Leicester City Centre, south of Leicester Forest East. The land was identified in Blaby District Council's emerging Local Development Framework as a Sustainable Urban Extension (SUE) together with the Strategic Employment Site (SES).

15.1.2 This Chapter considers the environmental effects of road traffic and transportation generated by the Lubbesthorpe development on the relevant study area described in section 15.3 below.

15.1.3 The data provided within this Chapter is not reliant on data provided within other chapters of the ES, although the data within this Chapter is used by other assessments such as air quality and noise.

15.1.4 In particular it considers the likely environmental effects on the highway network in terms of severance, pedestrian amenity (including cyclists), fear and intimidation, driver and pedestrian delay, accidents and safety. It addresses the construction and operational phases of the development, for each of the potential parameters, and assesses the impact on identified sensitive receptors.

15.1.5 An outline of transport related polices and guidance is also provided, together with the methodology used in this assessment. The assessment sets out the existing baseline conditions on the transport network surrounding the application site, the future baseline, (where different), and then considers the likely impact of the development on the transport network.

15.1.6 Where appropriate potential mitigation measures have been identified to alleviate the effects of the development related traffic.

15.1.7 Details of capacity assessments and trip generations / distributions have not been included in this Chapter but are referred to in the **Transport Assessment**. Although the **Transport Assessment** is not bound as part of this **ES**, it constitutes environmental information relevant to the determination of the application that this **ES** accompanies. The **Transport Assessment** and Chapter have been prepared by Waterman Boreham Ltd.

Methodology

15.1.8 This assessment has been undertaken in accordance with guidance given in the following documents:

a) Institute of Environmental Assessment (now IEMA) Environmental Assessment of Road Traffic (1993) (IEMA Guidance); and
b) Design Manual for Roads and Bridges (DMRB), Volume 11, Environmental Assessment.

15.1.9 The significance of potential traffic and transport effects are determined in accordance with the above guidelines. The effect of significance is derived from measures of the magnitude (or scale) of the change and the sensitivity (or importance) of the receptors affected. Categories of sensitivity and magnitude are defined to determine the significance of the effect.

15.1.10 The **IEMA Guidance** lists a number of environmental impacts, of which the following are assessed in this Chapter:

a) Severance
b) Driver delay
c) Pedestrian delay
d) Pedestrian amenity
e) Fear and intimidation; and
f) Accidents and safety

1) The **IEMA Guidance** states that, *"severance is the perceived division that can occur within a community when it becomes separated by a major traffic artery."* Further, *"Changes in traffic of 30%, 60% and 90% are regarded as producing 'slight', 'moderate' and 'substantial' changes in severance respectively".* However, the Guidelines acknowledge that the measurement and prediction of severance is extremely difficult (Para 4.28 of **IEMA**);

2) Driver delay – this can be established at key junctions using conventional modelling techniques identifying the average delay in seconds. However, the advice identifies that such delays, *"…are only likely to be significant when the traffic on the network surrounding the development is already at, or close to, capacity of the system";*

3) Pedestrian delay – *"Changes in the volume, composition or speed of traffic may affect the ability of people to cross roads."* The Guidance suggests that assessors, *"...use their judgement to determine whether pedestrian delay is a significant impact".* As part of this assessment the **Department of Transports Local Transport Note 1/95 "The Assessment of Pedestrian Crossings"** has been used which reviews the average time it takes for a person to cross the road.

4) Pedestrian amenity – broadly defined as the relative pleasantness of journey, it is affected by traffic flow, traffic composition and pavement width / separation from traffic. The Guidance suggests a tentative threshold for judging the significance of change in pedestrian amenity of where traffic flow (or its lorry component) is halved or doubled;

5) Fear and intimidation – the impact of this is dependent upon the volume of traffic, its HGV composition, its proximity to people or the lack of protection caused by such factors as narrow pavement widths. The Guidance states that there are no commonly agreed thresholds for estimating this from known traffic and physical conditions, but it does nevertheless suggest some thresholds which could be used, based on previous research. The thresholds are noted in **Table 15a**.

Table 15a – Fear and Intimidation Thresholds

Degree of Hazard	Average Traffic Flow over 18hr day – vehicles / hour 2-way	Total 18 hour HGV Flow	Average Vehicle Speed over 18 hour day - mph
Extreme	+ 1,800	+ 3,000	+ 20
Great	1,200 – 1,800	2,000 – 3,000	15 - 20
Moderate	600 – 1,200	1,000 – 2,000	10 - 15

6) Accidents and safety – the Guidance states *that "Professional judgement will be needed to asses the implications of local circumstances, or factors, which may evaluate or lessen the risk of accidents, e.g. junction conflicts";*

15.1.11 The **IEMA Guidance** makes it clear that a, *"…critical feature of Environmental Assessment is determining whether a given impact is significant."* Further, *"for many effects there are no simple rules or formulae which define thresholds of significance and there is, therefore, a need for interpretation and judgement on the part of the assessor backed up by data or quantified information whenever possible. Such judgements will include the assessment of the numbers of people experiencing a change in environmental impact …. ".*

15.1.12 Categories of receptor sensitivity have been defined from the principles set out in the **IEMA Guidance**, including the following:-

1) The need to identify particularly groups or locations which may be sensitive to changes in traffic conditions;
2) The list of affected groups and special interest set out in the guidance;
3) The identification of links or locations where it is felt that specific environmental problems may occur; and
4) Such locations, *"... would include accident cluster sites, conservation areas, hospitals, and links with high pedestrian flows."*

15.1.13 These have been used to outline in broad terms the sensitivity of receptors to traffic for the categories of impact assessed in this section, although in detail, each receptor assessed would have a different sensitivity for each specific impact.

15.1.14 In the context of severance, pedestrian amenity, fear and intimidation, pedestrian and driver delay, accidents and safety, the following are identified as high, medium and low sensitivity:

15.1.15 High Sensitivity receptors include:-

1) Schools, colleges and other educational institutions;
2) Retirement / car homes for the elderly or infirm;
3) Roads used by pedestrians with no footways; and
4) Collision cluster sites.

15.1.16 Medium sensitivity receptors include:-

1) Hospitals, surgeries and clinics;
2) Parks and recreation areas;
3) Shopping areas; and
4) Roads used by pedestrians with narrow footways.

15.1.17 Low sensitivity receptors include:-

1) Open space;
2) Tourist / visitor attractions;
3) Historical buildings; and
4) Churches.

15.1.18 In addition, although not specifically identified within the **IEMA Guidance** as being sensitive for these categories of impact, it has been assumed that individual residential properties and employment areas without special characteristics have low sensitivity to these impacts.

15.1.19 The magnitude of effect depends upon the effect being assessed and this has been based on the guidance relating to severance which suggests that 30%, 60% and 90% changes in traffic levels should be considered as 'Slight', 'Moderate' and 'Substantial' impacts respectively.

15.1.20 Generic significance criteria is applied throughout this **Environmental Statement** with the degree of significance in accordance with the **DMRB guidelines HA 205/08 'Assessment and Magnitude of Environmental Effects'** assessing the developments impact based on Severe, Major, Moderate, Minor and Not significant. These are used, together with the assessment of magnitude of effect and receptor sensitivity, to determine the significance of effects.

15.1.21 **DMRB Volume 11** provides further guidance on determining severance (**Part 8, Chapter 6**). It states that new severance should be described in terms of *"Slight"*, *"Moderate"* or *"Severe"* and that these categories *"..should be coupled with an estimate of the numbers of people affected, reference to relief from existing severance"* , it acknowledges that there is a traffic flow threshold below which changes in Severance are not considered significant (existing AADT (Average Annual Daily Traffic) flow below 800 vehicles).

15.1.22 **Table 15b** below is provided in **DMRB Volume 11 'Determining Significance of Environmental Effects' (HA 205/08)** The significance of the effect is formulated as a function of the receptor or resource environmental value (or sensitivity) and the magnitude of the project value (change). The category descriptions for Sensitivity of Receptor are based upon the level of importance and rarity of that receptor. The magnitude of impact is dependent upon the level of quality and magnitude in relation to the change as a result of the Project.

Table 15b – Significance of Effect Categories

		Sensitivity of Receptor				
		Very High	**High**	**Medium**	**Low**	**Negligible**
Magnitude of Impact (Degree of Change)	**Major**	Severe	Severe or Major	Major or Moderate	Moderate or Minor	Minor
	Moderate	Major or Moderate	Major or Moderate	Moderate	Minor	Not significant or Minor
	Minor	Moderate or Minor	Moderate or Major	Minor	Not significant or Minor	Not significant or Minor
	Negligible	Minor	Minor	Not significant or Minor	Nor significant or Minor	Not significant
	No change	Not significant	Not significant	Not significant	Not significant	Not significant

15.1.23 It should be noted that on some roads a change in traffic flow of greater than 90% with a high sensitive receptor would result in a 'Severe Significance of Effect'. However, the existing base line traffic flows could be very minor and an increase of only a few vehicles would produce a large change in magnitude whereas in real terms the increase in traffic is still considered to be insignificant. Such an assessment requires appropriate judgements to be made.

15.1.24 The Magnitude of Impact is quantified in terms of transportation as follows:-

Severe – This level of impact would see a significant change in vehicle movements especially HGVs and the level of pedestrian provisions would be very limited, i.e., no footway provision or crossing facilities available. The impact to drivers would also be affected through increased delay and increased delay for pedestrians crossing the road. The location of the impact would also affect local communities and sensitive environments such as schools, churches etc.

Major – A Major Impact would see fewer vehicle movements and delay compared with the severe impact, although the percentage increase in HGV movements is still high. There would also be an impact on pedestrians as there would be limited footway provision and crossing facilities available. The impact on sensitive environments would be less.

Minor – A Minor impact would see fewer movements of HGV and traffic flows would be lower in terms of percentage increase. There would also be suitable pedestrian facilities provided which includes wide footways and crossing facilities.

Negligible – A negligible impact would be when the overall impact of vehicle movements and HGV movements is very low and would not be perceptible to other local road users. There would be very minimal delay to drivers and pedestrians, and suitable pedestrian

provision would be available in terms of wide footways possible segregated from the road and controlled crossing facilities.

15.2 PLANNING CONTEXT

Planning Policy Guidance Note 13 (PPG13) (Jan 2011)

15.2.1 The key objectives of **PPG13** are to integrate planning and transport at national, strategic and local level. The objectives seek to promote more sustainable transport choices and reduce the need to travel especially by car.

15.2.2 When **PPG13** was published in March 2001, the then Planning Minister, Nick Raynsford said:-

"***PPG13*** *is about getting the right development in the right place and ensuring people have a choice in transport*."

15.2.3 This Statement remains valid today and is wholly pertinent in the context of the selection of a site or sites within the East Midlands. The location of the development proposal to the West of Leicester does provide the right development in the right place not only ensuring that people have a choice in transport, but also easy access to established local facilities.

15.2.4 **PPG13** identifies at paragraph 6 that when preparing development plans Local Authorities should:-

"…*accommodate housing principally with existing urban areas planning for increased intensity of development for both housing and other issues at locations which are highly accessibly by public transport, walking and cycling*."

15.2.5 Paragraph 14 states:-

"*Local Planning Authorities in assessing the suitability of sites for housing development should amongst other things, consider their location and accessibility to jobs, shops and services by modes other than the car and the potential for improving such accessibility*."

Planning Policy Statement 3 Housing (PPS3)

15.2.6 When considering **PPS3**, Paragraph 10 considers, "Planning for housing policy objectives". This states:-

"*These housing policy objectives provide the context for planning for housing through development plans and planning discussions. The specific outcomes that the planning system should deliver are:-*

Housing developments in suitable locations which offer a good range of community facilities and with good access to jobs, key services and infrastructure."

15.2.7 In the context of achieving high quality housing, paragraph 18 states:-

"*To facilitate efficient delivery of high quality development, Local Planning Authorities should draw on relevant guidance and standards15 and promote the use of appropriate tools and techniques such as design coding alongside urban design guidelines, detailed masterplans, village design statements, site briefs and community participation techniques*."

15.2.8 This quote references as relevant guidance and standards, **Manual for Streets**. Whilst the quote refers to the original **Manual for Streets**, **Manual for Streets 2** has recently been published which provides a comparison guide to the original document. In terms of walkable neighbourhoods, **Manual for Streets** (**MfS**) states at paragraph 4.4.1:-

"*Walkable neighbourhoods are typically characterised by having a range of facilities within 10 minutes' (up to about 800m) walking distance of residential areas which residents may access comfortably on foot. However, this is not an upper limit and **PPG13** states that walking offers the greatest potential to replace short car trips, particularly those under 2km. **MfS** encourages a reduction in the need to travel by car through the creation of mixed use neighbourhoods with interconnected street patterns, where daily needs are within walking distance of most residents*."

15.2.9 This reference to walking distances is an important consideration in the content of the development of the site as too often authorities are fixed on a distance of 400m to bus stops and 800m to Town Centre. However, it must be recognised in the context of new developments that whilst these may be goals to set for walking distances to appropriate facilities, they are not the maximum distances people are prepared to walk. In practice it is more about the quality of the walking environment and facilities at the trip end than just the distance travelled.

15.2.10 The Scott Wilson report refers to paragraph 2.3.3 of the DfT document, "**Building Sustainable Transport into New Development".** This identifies that the internal layout of developments can be important in minimising car trips by:-

"*Using traditional compact town layouts. Walking neighbourhoods are typically characterised as having a range of facilities within 10mins walking distance (around 800m). However, the propensity to walk or cycle is not only influenced by distance but also the quality of the experience; people may be willing to walk or cycle further where their surroundings are more attractive, safe and stimulating*".

15.2.11 Accordingly, it is considered that the 800m is not an upper ceiling on walk distances within a well designed neighbourhood.

15.2.12 The **Institute of Highways and Transportation: Guidelines for Providing for Journeys on Foot (2000)** highlights the significance of one mile in terms of walking journeys in urban areas (paragraph 3.3):-

"*Approximately 80% of walk journeys and walk stages in urban areas are less than one mile. The average length of a walk journey is one kilometre (0.6 miles). This differs little by*

age or sex and has remained constant since 1975/76. However, this varies according to location. Average walking distances are longest in Inner London. The main factors that influence both walking distances and walking time in a city or town centre appear to be the size of the city or town itself, the shape and the quality of the pedestrianised area, the type of shops and number of activities carried out."

15.2.13 At paragraph 36, **PPS3** addresses the issue of providing housing in suitable locations:-

"*In support of its objective of creating mixed and sustainable communities, the Government's policy is to ensure that housing is developed in suitable locations which offer a range of community facilities and with good access to jobs, key services and infrastructure. This should be achieved by making effective use of land and existing infrastructure..."*

Accessibility Planning

15.2.14 **Accessibility Planning Guidance** was published on 31st January 2006 by the Department of Transport, and is an initiative which forms part of the policy commitment to improving social inclusion. It also links directly to the aims of **PPS3** in seeking to ensure new housing has good access to jobs, key services and infrastructure. It is, however, primarily focussed on delivering good accessibility to shops and services for all sections of society. The recently published **Accessibility Planning Guidance** makes clear the key objectives:-

"*Improving social inclusion lies at the heart of Government policies. The Government wants to improve access to opportunities, and enable individuals and communities to realise their potential. Achieving these aims means making sure everyone can get to work, schools, healthcare, food shops and other key services*." (Paragraph 1 – Summary.)

15.2.15 Paragraph 2 of the Summary provides further details about what accessibility planning aims to achieve:

"*This guidance sets out how the accessibility problems faced by people from disadvantaged groups and areas can be identified and addressed through local transport plans (LTPs) and local authorities' other functions, and through working with local partners. It builds on the Social Exclusion Unit report Making Connections, which demonstrated the importance of transport and accessibility to social inclusion, and sets out a cross-Government strategy for improving access to the services with the greatest impact on life opportunities – jobs, health care, learning and food shops*."

Regional Transport Strategy

15.2.16 As part of the Government's commitment to localism and decentralisation, Ministers announced in May 2010 the Governments intention to abolish Government Office for The East Midlands, However, for the purposes of this **ES** Chapter, the aspirations of the **Regional Transport Strategy** are identified as it is considered relevant to this development proposal until such time that an alternative local strategy is put in place.

15.2.17 The **Regional Transport Strategy (RTS)** focuses on encouraging the developing of sustainable travel patterns through:-

1. Reducing the need to travel, especially by car, and managing traffic growth and congestion;
2. Significantly improving opportunities for walking and cycling;
3. Improving the reliability, capacity, quality, accessibility and coverage of the public transport network;
4. Making better use of existing transport networks through better management, and
5. Only developing additional highway capacity when all other measures have been considered.

15.2.18 When considering the **RTS**, paragraph 3.4.6 states:-

"*In considering the areas of search for these urban extensions, regard has been had to criteria in Regional Plan Policy 2 and an assessment of constraints and opportunities around Leicester. The best opportunities to meet the bulk of the additional provision for the PUA lie west of Leicester in Blaby (between the A47 and the M69) and north of Leicester in Charnwood (east of Thurmaston).*"

15.2.19 It is clear that by providing the right location and appropriate infrastructure, the objective of the **RTS** can be achieved and that the land West of Leicester is such a location. In this regard, studies have been undertaken by Leicestershire County Council to support the **RTS** with a technical report produced in April 2007. Whilst work identified specific issues which would need to be addressed, the overall conclusion states:-

"*Given the above, there is no material cause to revise the conclusions reached in the previous work that a sustainable urban extension to the north of Leicester and one to the west could be accommodated in transport terms*."

Leicestershire County Council Local Transport Plan 2 (LTP2)

15.2.20 Leicestershire County Council are currently reviewing the **LTP** and the consultation period has just finished. The new **LTP3** is due to be released on 1st April 2011. Therefore this report considers the policies set out in **LTP2**.

15.2.21 The current **LTP** was issued in March 2006 and covers the period 2006 to 2011. The LCC **LTP** covers the Leicestershire area excluding Leicester City which is covered under its own **LTP** and is reviewed below.

15.2.22 The County's key objectives as identified a paragraph 3.9 of the **LTP** are:-

- **To provide the right conditions to support and encourage economic growth.** This will require continued work to tackle congestion, improve both local and longer distance access and integrate transport and land use planning fully both locally and in the region.

- **To improve access to facilities for all.** This will require continued investment in bus services and walking and cycling, as well as effective management of land-use planning decisions.
- **To reduce transport's impact on the environment.** This will include not only local pollution and traffic nuisance issues but also an increasing focus on our contribution to national efforts to reduce global warming.
- **To keep transport safe.** This will require the continuation of our excellent progress to date in making our roads safe and helping to encourage more walking and cycling.
- **To make sure that our highway assets are properly maintained and renewed for the long term.**

15.2.23 The development proposal will provide opportunities to use modes other than the private car by providing a regular and frequent bus service between the site and the City Centre, as well as providing links with the surrounding employment areas. In addition, cycle routes would be provided within the site, linking with the existing cycle route infrastructure.

Local Transport Plan – Leicester City Council

15.2.24 The City Council's transport vision for central Leicestershire, is to develop a transport system that enables everyone to take part in all aspects of everyday life at a reasonable cost. The key priorities that emerge from the **LTP** relate to:-

1. Tackling congestion
2. Delivering accessibility
3. Safer roads
4. Better air quality

15.2.25 Such issues are key to the selection of the PUA sites to ensure that such sites address these issues in the context of the impact on the transport network, and also in the context of improving the current conditions.

15.2.26 The **LTP** includes measures to enhance bus and cycle travel. Currently, park and ride bus facilities exist on the A47, the Quicksilver Shuttle, the recently opened site at junction 21 and the proposals at Birstall. The junction 21 site makes use of the A47 bus priority corridor into the city routing buses along the Ring Road up to the A47. The cycle routes to the west of Leicester are extensive with measures proposed to extend these further. More information is provided within the **Transport Assessment** report.

15.2.27 Clearly it is important, given the growth in employment and retail areas of Fosse Park and around junction 21, to improve transport links within this area for non car modes and also ensure good links exist between this area and the City Centre.

Blaby Local Development Framework

15.2.28 As has been identified as part of the LDF process, an assessment of the transport implications of the various potential sustainable urban extensions was undertaken by Scott Wilson on behalf of Blaby District Council. This report was published in July 2009 and reference to this is made in the **Transport Assessment** report.

15.3 BASELINE CONDITIONS

Study Area

15.3.1 The **IEMA Guidance** described under the Methodology section identifies that traffic flow increases of 30% represent a reasonable threshold for inclusion of highway links within the assessment process, although a lower threshold may be appropriate where there are higher HGV flows. It also suggests that other specifically sensitive areas should be included where traffic flows have increased by 10% or more. Such sensitive areas may include accident cluster sites or links with high pedestrian flows.

15.3.2 For the purpose of this assessment, the consideration of the effects of the development are undertaken on the following links and junctions, and the effects of the changes in traffic composition and volume are assessed in relation to the significance criteria. The extent of network to be assessed has been agreed with the Local Highway Authorities and includes the following links and junctions:

Link Ref :-

1) Beggars Lane just south of the junction with the A47;
2) The A47 to the west of the Beggars Lane junction;
3) The A47 fo the east of the Beggars Lane junction;
4) Desford Road to the south of the A47 junction;
5) Beggars Lane on approach to the Mill Hill / Desford Road junction;
6) Mill Hill to the south of the Beggars Lane junction (As this route crosses the M69);
7) The A47 to the west of the Braunstone Lane junction;
8) The A47 to the east of the Braunstone Lane junction;
9) The A563 Lubbesthorpe Way north of the Meridian Way junction;
10) The A563 Lubbesthorpe Way south of th Meridian Way junction;
11) Meridian Way to the west of the junction with Lubbesthorpe Way;
12) The extended Meridian Way crossing the M1 (the main site access just before the entry into the site);
13) Leicester Lane to the east of the new site access;
14) Leicester Lane to the west of the new site access;
15) The new site access link from Leicester Lane;
16) The A5460 link to the east of the M1 / M69 junction at Junction 21.

Junctions:-

1) A47 / Desford Road;
2) A47 / Beggars Lane;

3) A47 / Braunstone Lane / Ratby Lane;
4) Meridian Way / A563 / Withers Way;
5) Meridian Way/ A563 / Retail Park;
6) Meridian Way / Foxon Way;
7) B4114 / Leicester Lane;
8) Leicester Lane / Proposed Site Access;
9) Leicester Lane / Blaby Road (B582);
10) Beggars Lane / Desford Road.

15.3.3 A plan identifying the above links and junctions is referenced in accordance with **Figures 15.1 and 15.2.**

15.3.4 Baseline conditions comprise both the existing situation and the future baseline at the opening year.

15.3.5 For assessment purposes the following timescale applies:-

- Opening year 2016
- Future year 2026

Existing Highway Network

15.3.6 The links and junctions surrounding the site are described in more detail below:-

Strategic Highway Network

M1

15.3.7 The M1 forms the eastern boundary of the site and runs to the east of Leicester. The M1 is a north to south arterial route stretching 193 miles from London to Leeds at the north of England. The M1 provides links to major centres including Luton, Leicester, Derby, Nottingham and Sheffield. It also provides access to southwest Leicester via Junction 21 and northwest of Leicester via Junction 21a.

15.3.8 To the southwest of the site the M1 connects to the M69 and A5460 via Junction 21, a large roundabout. The strategic network suffers congestion with queuing at peak time on the motorway as a consequence of traffic exiting at Junction 21 and also traffic moving between the M1 and M69. The primary congestion at Junction 21 relates to traffic in the AM peak exiting the M1 to access Leicester, and in the PM peak traffic exiting Leicester to access the M1.

M1 Proposed Improvements – Now on Hold

15.3.9 In relation to the strategic network, measures were proposed for the M1 between Junction 21 and 30, including widening over parts of this section. Specifically to the north Junction 21 consideration is being given to the introduction of active traffic management (ATM) which would operate at peak times and improve the flow and the operational performance of the motorway at these times. However, to achieve such ATM measures, it would be

necessary to achieve a full hard shoulder over this section of the M1. This is currently restricted by the Leicester Forest East Motorway Services and also the farm accommodation bridge serving the land to the west of the motorway services. These works are currently on hold whilst the new Localism Bill and new strategy for the Midlands is being developed.

M69

15.3.10 The M69 forms the southern boundary of the site and runs between Blaby and Coventry and between the M1 and M6 on the northeast to southwest alignment. The eastern end of the M69 terminates at its junction with the M1, access onto the M1 north is via a free flow slip road. Access to the M1 south and A5460 is taken via the M1 Junction 21 roundabout.

M69 Improvements

15.3.11 In addition to the ATM scheme proposed on the M1, consideration has been given to the provision of free flowing slip roads between the M69 and M1. To achieve such slip roads, the Leicester Forest Services would be closed and would need relocating to maintain core MSA facilities on this part of the strategic road network.

15.3.12 The timing of the delivery of the M1 upgrading including the ATM and also the M1/ M69 roads has been considered post 2015. However, as with the M1 improvements, these proposals are being reviewed as part of the new Localism Bill and new strategy for the Midlands.

Local Highway Network

Beggars Lane

15.3.13 Beggars Lane forms the western boundary of the site and runs between the A47 Hinckley Road to the north and the B582 Desford Road to the south. Beggars Lane is single carriageway and predominantly rural in character although in part is fronted by residential development associated with Leicester Forest East to the north and Enderby CP to the south.

15.3.14 The northern end of Beggars Lane forms a signalised junction with the A47 Hinckley Road. The Beggars Lane arm of the junction has a 30mph speed limit, provided with street lighting and subject to a 7.5 tonne weight limit. No footways are provided in the immediate vicinity of the signalised junction on Beggars Lane. A wide footway is provided on the eastern side of Beggars Lane to the south of the junction with Mallards Close and is associated with the residential properties that front the southbound carriageway. This footway continues in a southerly direction on the eastern side of Beggars Lane until a point 100 metres to the south of the junction with Forest House Lane.

15.3.15 Beggars Lane takes on a rural character to the south of the Leicester Forest East Residential area and reverts to national speed limit with no street lighting or footpath provision. Beggars Lane forms a priority junction with Lubbesthorpe Bridle Road which is a

single carriageway road with passing places and runs on an east / west alignment linking with the A5460 to the east.

15.3.16 Continuing southward, Beggars Lane is bound by agricultural fields until it reaches the northern boundary of Enderby and forms a signalised cross road with Desford Road. The Beggars Lane northern arm of the junction is provided with a left turn lane and combined ahead and right turn lane. No pedestrian crossing facilities are provided at this junction. The southern Beggars Lane arm of the junction serves an industrial / retail area and is provided with footways on both sides with street lighting and is subject to a 30 mph speed limit.

A47 Hinckley Road to the West of Beggars Lane

15.3.17 The A47 runs between Great Yarmouth, Norwich, Kings Lynn, Peterborough, Leicester and Hinckley to west of Leicester.

15.3.18 Travelling in the westbound direction from the signalised junction with Beggars Lane, the A47 is subject to a 30mph speed limit with street lighting and a footway on the northern side. In addition, an on-road cycleway is provided on the eastbound carriageway. The A47 reverts to national speed limit at the western edge of Leicester Forest East and the northern footway provision also stops at the residential boundary. Approximately a mile west of the junction with Beggars Lane the A47 forms a staggered signalised junction with the B582 Desford Road and Leicester Lane. The Leicester Lane arm of the junction is subject to a 40mph speed limit and is provided with a combined ahead and right turn and left turn lane. There are no pedestrian crossing facilities provided at the junction.

A47 Hinckley Road to the east of Beggars Lane

15.3.19 The A47 Hinckley Road to the east of Beggars Lane runs on a west to east alignment through the middle of Leicester City Centre. It also provides links to the A563 Leicester Ring Road.

15.3.20 To the east of Beggars Lane, the A47 Hinckley Road is subject to a 40mph speed limit with residential development and associated footways on both sides of the carriageway. The A47 is also provided with central hatching and regular traffic islands that accommodate uncontrolled pedestrian crossing facilities. Cycle lanes are provided on both sides of the carriageway for approximately 50 metres to the east of the junction with Beggars Lane and start again to the east between Warren Lane and Ellis Drive there they then terminate.

15.3.21 The A47 Hinckley Road forms a signalised Y junction arrangement with Kirby Lane to the west of the M1 which links to Kirby Muxloe. An uncontrolled pedestrian crossing is located on the Kirby Lane arm of the junction and on the A47 Hinckley Road western arm. The eastern A47 arm of the junction is not provided with any pedestrian facilities. A stand alone signalised pedestrian crossing is provided to the east of the junction adjacent to a convenience food store.

15.3.22 The A47 crosses the M1 via a bridge and cycle lanes are located on both sides of the carriageway. Approximately 500 metres to the east of the M1 and A47 forms a signalised cross road with Braunstone Lane and B5380 Ratby Lane. Ratby Lane provides access to the M1 via Junction 21 a. In addition Ratby Lane accesses the A46 which runs to the north of Leicester. Braunstone Lane, the southern arm is provided with a staggered signalised pedestrian crossing. The eastern Hinckley Road arm of the junction is also provided with a controlled signalised pedestrian crossing, no other crossing facilities are provided at this junction.

15.3.23 Ratby Road also provides access to the Meynells Gorse Park and Ride Site approximately 200 metres north of the A47 junction. Approximately 1 mile to the east of the M1, the A47 forms a signalised roundabout junction with the A563 new Parks Way (Leicester Ring Road). Bus lanes are provided on the A47 to the west of the signalised roundabout and continue on a sporadic basis into the City Centre.

A563 Lubbesthorpe Way

15.3.24 The A563 is effectively Leicester's Outer Ring Road and as such is primarily for the movement of traffic and links with a number of other roads, including M1 / M69, A47, A5460, A426, A5199, A6 and A6030. As such, no footway or pedestrian facilities are provided to the south of the signalised junction with the A47. To the south of the A47 the A563 is single carriageway south of Braunstone Lane Bridge. The A563 provides on and off slips to access Meridian Way and associated retail employment and residential areas.

Meridian Way

15.3.25 Meridian Way runs to the west of the A563 and provides access to Braunstone and associated retail and residential development.

15.3.26 Meridian Way forms roundabout junctions either side of the A563 which connect to the on and off slip roads. The eastern most roundabout provides access to a retail park via the eastern arm and the southbound carriageway of the A563. The roundabout located to the west of the A563 provides access to the northbound carriageway of the A563 via the northern Withers Way arm. A bridge links the two roundabouts and crosses the A564. Footways are provided on both sides of the bridge and around both roundabouts. Uncontrolled pedestrian facilities are provided on all arms of the two roundabouts.

15.3.27 To the west of the A563, Meridian Way is a dual carriageway until the roundabout junction with Foxon Way and Meridian Way East where it reverts to single carriageway. Combined cycleway footways are provided on both sides of Meridian Way for the dual carriageway section.

A5460

15.3.28 The A5460 runs between Junction 21 of the M1/ M69 to the A47 west of Leicester. Four lanes are provided in both directions between the M1 and the junction with the A563 Lubbesthorpe Way. To the east of the junction with the A563 the A5460 reduces to three lanes in both directions and forms a large signalised junction with Fosse Park Avenue and

the B4114. The A5460 then continues in a north easterly direction linking to the A47 to the west of Leicester City Centre.

B582 Desford Road

15.3.29 The B582 Desford Road runs between the A47 to the north and the M69 to the south on a north west to south east alignment. The majority of Desford Road is subject to national speed limit and rural in character with no street lights. Desford Road is subject to a 40 mph speed limit at the southern end at the beginning of residential development located on the northern side of the carriageway.

15.3.30 The B582 forms a signalised junction with Beggars Lane at its southern end. A footway is provided on the eastern side of Desford Road, beginning approximately 100 metres to the north of the Beggars Lane junction. To the south of the junction footways are provided on both sides.

B582 Mill Hill

15.3.31 The B582 runs between the bridge over the M69 and the junction to the south with Leicester Lane and is subject to a 30mph speed limit with development on both sides of the road.

15.3.32 Mill Hill forms a signalised cross road junction with Leicester Lane / High Street and Blaby Road. The Mill Hill arm of the junction provides a single lane approach and accommodates a signalised pedestrian crossing. The Leicester Lane arm of the junction provides a single lane approach to the junction and does not provide any pedestrian crossing facilities. Blaby Road arm of the junction accommodates a combined ahead and left turn lane and a right turn lane. The High Street arm of the junction is one way in a west bound direction and provides an uncontrolled pedestrian crossing.

Leicester Lane

15.3.33 Leicester Lane runs between the signalised cross roads of High Street and Blaby Road to the west and the B4114 Narborough Road to east. A footway is provided on the northern side with street lights and is derestricted. As Leicester Lane passes under the M1 it reverts to a 50 mph speed limit and to the east forms a signalised junction with Smith Way. Staggered signalised crossings are provided on the Smith Way arm and on the eastern Leicester Lane arm.

Traffic Flows

15.3.34 To establish the existing traffic movements in the vicinity of the site, traffic surveys have been undertaken at the following junctions:-

July 2008

- Beggars Lane / A47 Hinckley Road – priority junction
- Leicester Lane / Blaby Road / High Street / Mill Hill – signalised crossroads

- Braunstone Lane / Hinckley Road / Ratby Lane – signalised crossroads
- Meridian Way / Lubbesthorpe Way / Retail Park – roundabouts
- Meridian Way / Foxton Way / Meridian Foot – roundabout junction
- Leicester Lane / Marlborough Road B4114 / Police Headquarters – signalised junction

15.3.35 The above traffic surveys were undertaken on behalf of WB by Traffic Surveys UK Ltd in July 2008.

May 2010

- Leicester Lane / Hinckley Road / Desford Road – priority junction
- New Parks Way / Hinckley Road / Braunstone Way – signalised junction

15.3.36 The above traffic surveys were undertaken on behalf of WB by Community Systems Ltd (CSC).

15.3.37 In addition to the manual turning counts, 4 automated traffic counts (ATC) including vehicle speeds have been undertaken on the following links:-

- Beggars Lane (2008)
- Hinckley Road (2010)
- Leicester Lane (2010)
- Meridian Way (2010)

15.3.38 All manual turning counts were undertaken between the following hours:-

- Weekday 0700 – 1000
- Weekday 1600 – 1900

15.3.39 Resultant highway peaks are as follows:-

- 0800 – 0900
- 1700 – 1800

15.3.40 Junctions that have been assessed are identified on **Figure 15.2**.

15.3.41 Full details of the traffic surveys are provided as part of the **Transport Assessment**.

Accident Analysis

15.3.42 Personal Injury Collision (PIC) data has been obtained from Leicestershire County Council (LCC) over a five year period from July 2005 to July 2010. Data was obtained for the local highway network surrounding the site including Beggars Lane, between its junction with Hinckley Road and Mill Hill, Hinckley Road (A47) between the junction with Beggars Lane and where it crosses the M1, Leicester Lane between its junction with Mill Hill and St. John's and Meridian Way, west of its junction with Lubbesthorpe Way (A563). The location of the PIC's that have occurred are identified on **Figure 15.3**.

15.3.43 A detailed analysis of the PIC's is provided in the **Transport Assessment** and a summary of the collisions on a link by link basis is provided below:-

A47 Hinckley Road

15.3.44 During the five year period 20 accidents were recorded on Hinckley Road. 19 PIC's resulted in slight and 1 serious injuries. 3 of the collisions involved pedestrians, all recorded as slight.

Leicester Lane

15.3.45 No PIC's were recorded between 2005 and 2006. In total, 6 collisions have been recorded during the past three years, four of the collisions resulted in slight, 1 serious and 1 fatal injuries.

Beggars Lane

15.3.46 13 collisions were recorded on Beggars Lane. All 13 were classified as slight with 1 pedestrian collision recorded

Meridian Way

15.3.47 In total, 3 accidents were recorded during the five year period 2 accidents were classified as slight and the remaining collision serious.

Existing Public Footpaths and Cycle Routes

15.3.48 A number of public footpaths currently run across the proposed development site and are described below.

15.3.49 A public footpath runs along the northern boundary of the site on an east / west alignment. The footpath crosses beneath the M1 to the south of the Leicester Forest East services and continues in a westerly direction until it follows the southern boundary of Leicester Forest East. The footpath crosses Beggars Lane and continues in a south westerly direction until it joins Desford Road. The northern public right of way also provides access to Leicester Forest East Services and the bridge that crosses the M1 and leads to Baines Lane and the A47 Hinckley Road.

15.3.50 To the west of the site, a short length of public footpath runs to the south west of Beggars Lane, past Enderby Lodge Farm, and links to the northern end of Desford Road.

15.3.51 Another public footpath also runs on an east to west alignment to the south of the northern footpath. The footpath begins at Meridian Way to the east of the M1 and crosses the motorway via a footbridge. The footpath then leads to the access road that serves Old Warren Farm and joins Lubbesthorpe Bridle Road.

15.3.52 A public footpath begins to the north of the Leicester Forest East Services to the west of the M1, crosses Lubbesthorpe Bridle Road and continues in a southerly direction where it

connects to Mill Lane just to the west of the M69. Another footpath runs on a south to north alignment from the previous footpath from New House Farm to the southern boundary of Leicester Forest East linking to Forest House Lane.

15.3.53 A bridleway runs between Lubbesthorpe Bridle Road and Leicester Lane just to the west of the M1 on a north to south alignment and crosses the M69 via a footbridge. A public footpath leads from the bridleway in a westerly direction and connects with Harold's Lane and joins the B582 Mill Hill which runs through Enderby.

15.3.54 A plan detailing the existing public rights of way surrounding the site are shown on **Figure 15.4**.

Cycle Routes

15.3.55 The A47 Hinckley Road runs to the north of the site on an east to west alignment. The A47 Hinckley Road accommodates sporadic on-road cycle lanes between the junction with Beggars Lane and Leicester City Centre. A short length of on-road cycle lane is provided on both sides of the A47 for approximately 100 metres to the east of the junction with Beggars Lane. In addition, cycle lanes are provided on both sides of the carriageway between the junctions with Warren Lane and Ellis Drive. Cycle lanes then continue in an easterly direction from the point where the A47 crosses the M1.

15.3.56 The bridleway that runs between Lubbesthorpe Bridle Road and Leicester Lane to the south of the site connects to an existing combined footway / cycleway on the northern side of Leicester Lane. The combined footway / cycleway runs from the M1 in an easterly direction until the junction with the B4114 Narborough Road South. Narborough Road provides traffic free cycle facilities in both a northerly and southerly direction. Narborough Road also provides cycle links to Fosse Park retail development.

15.3.57 Traffic free cycle routes run alongside the A563 Lubbesthorpe Way (Leicester Ring Road) and provide links to the wider Leicester cycle network. Meridian Way runs to the west of the A563 and provides access to Braunstone and associated residential and retail development. Combined footway / cycleway are provided on both sides of Meridian Way for the dual carriageway section.

15.3.58 A plan detailing the existing cycle routes surrounding the site are shown on **Figure 15.5**.

Baseline Road Network

Table 15c – Baseline Road Network Traffic Flows (2010)

Link ID See Fig 15.1	Link	Speed Limit (mph)	AM / PM 2-Way All Vehicle Flow	18 hour 2-Way All Vehicle Flow	24 hour 2-Way All Vehicle Flow	18 hour HGV %	24 hour HGV %
1	Beggars Lane just south of the junction with the A47	30	624 685	4,461	4,756	0	0
2	The A47 to the west of the Beggars Lane junction	40	1,043 1,266	18,210	18,574	3	5
3	The A47 to the east of the Beggars Lane junction	40	1,442 1,684	24,674	25,168	2	5
4	Desford Road to the south of the A47 junction	60	1,092 1,128	11,761	11,996	2	2
5	Beggars Lane on approach to the Mill Hill / Desford Road junction	40	649 722	9,318	9504	0	0
6	Mill Hill to the south of the Beggars Lane junction	30	1,511 1,507	21,710	22,145	1	1
7	The A47 to the west of the Braunstone Lane junction	30	1,896 1,989	16,386	16,976	1	1
8	The A47 to the east of the Braunstone Lane junction	40	1,604 1,575	18,533	19,139	1	1
9	The A563 Lubbesthorpe Way north of the Meridian Way junction	50	2,605 2,778	32,540	33,583	10	10
10	The A563 Lubbesthorpe Way south of the Meridian Way junction	50	2863 2733	33,516	34,590	10	10
11	Meridian Way to the west of the junction with Lubbesthorpe Way	30	934 1120	10,410	10,890	3	3
12	The extended Meridian Way crossing the M1. (The main access just before the entry into the site)	30	-	-	-	-	-
13	Leicester Lane to the east of the new site access	50	996 649	14,866	15,164	1	1
14	Leicester Lane to the west of the new site access	50	1214 1123	17,784	18,139	2	2
15	The new site access link from Leicester Lane	30	-	-	-	-	-

Link ID See Fig 15.1	Link	Speed Limit (mph)	AM / PM 2-Way All Vehicle Flow	18 hour 2-Way All Vehicle Flow	24 hour 2-Way All Vehicle Flow	18 hour HGV %	24 hour HGV %
16	The A5460 link to the east of the M1 / M69 junction at junction 21	30	-	-	72,826	-	6

15.4 PROJECT DESIGN

Potential Effects

15.4.1 Potential sensitivity once the proposed development is operational.

15.4.2 Based upon the methodology and baseline conditions described previously in sections 15.1 and 15.3, the considered sensitivity of the assessed highway links is given in **Table 15d** below. The groups assessed under this category are based on those identified in the **IEMA Guidance** under 'Affected parties' and include the following:-

1) People at home;
2) People in work places;
3) Sensitive groups including children, elderly and disabled;
4) Sensitive locations, e.g. hospitals, churches, schools, historical buildings;
5) People walking;
6) People cycling;
7) Open spaces, recreational sites, shopping areas;
8) Sites of ecological / nature conservations value; and
9) Sites of tourist / visitor attraction.

Table 15d – Sensitivity of the Assessed Highway Links

Link ID Ref	Highway Link	Sensitive to Change	Reason
1	Beggars Lane just south of the junction with the A47 Hinckley Road	Yes	Beggars Lane forms the western boundary of the site and runs between the A47 Hinckley Road to the north and the B582 Desford Road to the south. Beggars Lane is single carriageway and predominantly rural in character although in part is fronted by residential development associated with Leicester Forest East on the east side. The western side of Beggars Lane is fronted by agricultural land. On this basis, east to west pedestrian movements across Beggars Lane would be limited. A wide footway is provided on the eastern side to accommodate the pedestrian movements associated with the residential development.
2	The A47 to the west of the Beggars Lane junction	Yes	Some pedestrian activity; and is within a residential area
3	The A47 to the east of the Beggars Lane junction	Yes	The A47 is fronted by residential properties on both sides of the carriageway with footways provided on both sides and sporadic provision of on-road cycle lanes. The A47 is also located in close proximity to schools and retail facilities, there is likely to be some pedestrian and cycle activity.
4	Desford Road to the south of the A47 junction	No	Very low pedestrian activity. No footways provided or access to residential properties.
5	Beggars Lane on approach to the Mill Hll / Desford Road junction	No	Very low pedestrian activity. No footways provided or access to residential properties.
6	Mill Hill to the south of the Beggars Lane junction (at the point it crosses the M69)	Yes	Some pedestrian activity, and is within a residential area.
7	The A47 to the west of the Braunstone Lane junction	Yes	The A47 is fronted by residential properties on both sides of the carriageway with footways provided on both sides and sporadic provision of on-road cycle lanes. The A47 is also located in close proximity to schools and retail facilities, there is likely to be some pedestrian and cycle activity.
8	The A47 to the east of the Braunstone Lane junction	Yes	Very low pedestrian activity limited frontage development.

Link ID Ref	Highway Link	Sensitive to Change	Reason
9	The A563 Lubbesthorpe Way north of the Meridian Way junction	No	Very low pedestrian activity no footways provided and no frontage development.
10	The A563 Lubbesthorpe Way south of the Meridian Way junction.	No	Very low pedestrian activity no footways provided and no frontage development.
11	Meridian Way to the west of the junction with Lubbesthorpe Way	Yes	Combined footway, cycleway on both sides of the carriageway and employment and residential development.
12	The extended Meridian Way crossing the M1. (The main site access just before the entry into the site).	Yes	Proposed combined footway / cycleway to tie into the existing provision to the east, likely to be some pedestrian and cycle activity associated with the proposed residential development.
13	Leicester Lane to the east of the new site access	Yes	Limited pedestrian activity, footway provided on the northern side of the carriageway but limited frontage development.
14	Leicester Lane to the west of the new site access	No	Limited pedestrian activity. No frontage development
15	The new site access link from Leicester Lane	No	Anticipated limited pedestrian and cycle activity although footways would be provided as part of the development proposal.
16	The A5460 link to the east of the M1 / M69 at junction 21	No	Very low pedestrian activity. No footways or access to residential properties or other facilities. The A5460 is principally concerned with the movement of traffic.

15.5 ASSESSMENT OF EFFECTS

15.5.1 The assessment of effects determines both the change in magnitude of the impact as well as their absolute levels. In determining the extent of the study area to be included as part of the **ES**, reference is made to the **IEMA Guidance** which states that as a rule of thumb highway links, only need to be considered where there is a change in traffic greater than 30% (or the number of heavy goods vehicles would increase by more than 30%) (Rule 1), or more than 10% where the links contain sensitive links (rule 2). The percentage impact of the development traffic on the local highway network is detailed in **Table 15e** below on a link by link basis. It should be noted that the predicted flows in 2026, including development traffic, are considered to be robust as the trip rates do not reflect the full potential benefit of the public transport provision, nor the full effect of retaining trips within the development associated with employment, shopping or schools. **Chapter 12: Noise and Vibration/Acoustics** and **Chapter 13: Air Quality** are based on this data.

Table 15e – Predicted Residential Development Traffic Impact over a 24 hour day (2026) – (Two-Way)

Link ID Ref	Highway Link	Total Vehicle Flow Two-Way			
		Base (2016)	Development	Total (2026)	% Increase
1	Beggars Lane just south of the junction with the A47	4,756	5,550	10,305	117%
2	The A47 to the west of the Beggars Lane junction	19,776	4,001	23,776	20%
3	The A47 to the east of the Beggars Lane junction	26,796	1,549	28,345	6%
4	Desford Road to the south of the A47 junction	12,596	59	12,655	0%
5	Beggars Lane on approach to Mill Hill / Desford Road junction	9,979	701	10,680	7%
6	Mill Hill to the south of the Beggars Lane junction (At the point it crosses the M69)	23,252	759	24,011	3%
7	The A47 to the west of the Braunstone Lane junction	17,825	652	18,477	4%
8	The A47 to the east of the Braunstone Lane junction	20,096	0	20,096	0%
9	The A3563 Lubbesthorpe Way north of the Meridian Way junction	35,262	3,433	38,695	10%
10	The A583 Lubbesthorpe Way south of the Meridian Way junction	36,320	7,384	43,704	20%
11	Meridian Way to the west of the junction with Lubbesthorpe Way	11,434	11,991	23,425	105%
12	The extended Meridian Way crossing the M1. (The main site access just before the entry into the site).	-	13,323	13,232	-
13	Leicester Lane to the east of the new site access	15,922	5,871	21,793	37%
14	Leicester Lane to the west of the new site access	19,046	920	19,966	5%
15	The new site access link from Leicester Lane	-	6,791	6,791	-
16	The A5460 link to the east of the M1 / M69 junction at junction 21.	77,538	1,639	79,177	2%

15.5.2 From the above table it is shown that links are considered necessary to include as part of this assessment. These links are as follows:-

1) Sensitive Links – 10% or greater impact (Rule 2)

- 1. Beggars Lane just south of the junction with A47;
- 2. The A47 to the west of the Beggars Lane junction;
- 11. Meridian Way to the west of the junction with Lubbesthorpe Way;
- 13. Leicester Lane to the east of the new site access;

2) No Links are identified that are sensitive to change – 30% or greater impact (Rule 1)

Severance

15.5.3 Severance is the perceived division that can occur within a community when it becomes separated by a major traffic artery. **Table 15f** identifies the roads that are considered to have a Slight, Moderate or Substantial impact as a result of the development proposal.

15.5.4 The significance categories used in **Table 15f** are based upon the **MEA (Manual of Environmental Appraisal – DfT 1983)** indicators which determine the significance of the relief from severance. The categories identified are 'Slight' being an increase of vehicle movements of 30%, 'Moderate' being an increase of 60% and 'Substantial' being an increase of 90% or more.

Severance Effects

15.5.5 **Table 15f** below provide predicted total daily profiles of the movements associated with development traffic which have been reviewed in line with the magnitude of effect assessing the level of severance using the **IEMA Guidance** as identified above. Details of the daily trip movement profile by hour for the development scenario during the average weekday are provided within the **Transport Assessment**.

Table 15f – Predicted Severity of Development Traffic Impact over a 24 Hour Day (2026) (two-way)

Link ID Ref	Highway Link	Total Vehicle Flow Two-Way				
		Base (2016)	Development	Total (2026)	% Increase	Severity of Impact
1	Beggars Lane just south of the junction with the A47	4,756	5,550	10,305	117%	Substantial
2	The A47 to the west of the Beggars Lane junction	19,776	4,001	23,776	20%	Less than Slight
3	The A47 to the east of the Beggars Lane junction	26,796	1,549	28,345	6%	Less than Slight
4	Desford Road to the south of the A47 junction	12,596	59	12,655	0%	Less than Slight

Link ID Ref	Highway Link	Total Vehicle Flow Two-Way				
		Base (2016)	Development	Total (2026)	% Increase	Severity of Impact
5	Beggars Lane on approach to Mill Hill / Desford Road junction	9,979	701	10,680	7%	Less than Slight
6	Mill Hill to the south of the Beggars Lane junction (At the point it crosses the M69)	23,252	759	24,011	3%	Less than Slight
7	The A47 to the west of the Braunstone Lane junction	17,825	652	18,477	4%	Less than Slight
8	The A47 to the east of the Braunstone Lane junction	20,096	0	20,096	0%	Less than Slight
9	The A3563 Lubbesthorpe Way north of the Meridian Way junction	35,262	3,433	38,695	10%	Less than Slight
10	The A583 Lubbesthorpe Way south of the Meridian Way junction	36,320	7,384	43,704	20%	Less than Slight
11	Meridian Way to the west of the junction with Lubbesthorpe Way	11,434	11,991	23,425	105%	Substantial
12	The extended Meridian Way crossing the M1. (The main site access just before the entry into the site).	-	13,323	13,232	-	N/A
13	Leicester Lane to the east of the new site access	15,922	5,871	21,793	37%	slight
14	Leicester Lane to the west of the new site access	19,046	920	19,966	5%	Less than Slight
15	The new site access link from Leicester Lane	-	6,791	6,791	-	N/A
16	The A5460 link to the east of the M1 / M69 junction at junction 21	77,538	1,639	79,177	2%	Less than Slight

15.5.6 The results in the above table identify that increased traffic on Beggars Lane to the south of the junction with the A47 and Meridian Way to the West of the A563 junction would result in a substantial impact in terms of severance. Although increases in traffic would be evident, the level of impact is based upon the percentage change compared to the base figures. The existing movements on both Beggars Lane and Meridian Way are relatively low. Whilst an increase in movements along these routes would result in a significant increase in terms of percentage change, traffic levels would remain relatively low in absolute terms, and well within the capacity of these routes.

Driver Delay

15.5.7 Driver delay can be established at key junctions using conventional modelling techniques identifying the average delays in seconds. However, the advice within the **IEMA Guidance** identifies that such delays *"... are only likely to be significant when traffic on the network surrounding the development is already at, or close to, the capacity of the system".*

15.5.8 Driver delay has been determined for the base situation and the proposed, using the Department of Transport's computerised junction assessment package ARCADY for the roundabouts and LINSIG programme for the signalised junctions. The junctions assessed reflect those detailed in the **Transport Assessment**. The average delay in terms of minutes is provided in **Tables 15g and 15h** below.

Table 15g – Predicted Driver Delay (2026) to occur during the Proposed Scenario – Roundabout Junctions

Junction	Average Vehicle Delay per Junction (Min/Veh)			
	Base (2016)		Proposed (2026)	
	AM	PM	AM	PM
Meridian Way / Meridian Way East / Foxon Way	0.03	0.04	0.05	0.05
Meridian Way / Withers Way / A563 Off Slip	0.04	0.04	0.06	0.07
Meridian Way / Retail Park / A563 On and Off Slips	0.06	0.06	0.10	0.09
Proposed Leicester Lane . Southern Access	-	-	0.08	0.10

Table 15h – Predicted Driver Delay (2026) to occur during the Proposed Scenario – Signalised Junctions

Junction	Average Vehicle Delay per Junction (Sec/Pcu)			
	Base (2016)		Proposed (2026)	
	AM	PM	AM	PM
A47 Hinckley Road / New Parks Way / Braunstone Way	11	11	12	12
A47 Hinckley Road / Ratby Lane / Braunstone Way	37	34	37	35
A47 Hinckley Road / Beggars Lane Existing Layout	19	24	-	-
A47 Hinckley Road / Beggars Lane Proposed Layout	-	-	22	26
A47 Hinckley Road / Desford Road	56	60	60	68
Desford Road / Beggars Lane	49	48	49	50
Narborough Road / Leicester Lane /	22	19	-	-

Junction	Average Vehicle Delay per Junction (Sec/Pcu)			
	Base (2016)		Proposed (2026)	
	AM	PM	AM	PM
Police HQ – Existing Layout				
Narborough Road / Leicester Lane / Police HQ – Proposed Layout	-	-	48	31
Leicester Lane / Blaby Road / Hall Walk / High Street	70	69	175	131

15.5.9 The above results demonstrate that the impact of the Project on the local highway network is minimal with only very marginal increases in delay. The only junction to show a significant increase in delay is Leicester Lane/ Blaby Road/ High Street junction. This junction is constrained by the limited highway land available and is already operating using MOVA. MOVA improves the capacity of a junction by around 13%. The delay identified above does not, however, take into account the full benefits of MOVA as it is not possible to accurately model. MOVA operates by determining the amount of green time based on demand which is always varying. Accordingly, it is considered that the increase in delays identified above at this junction would not occur to the level identified. It is however, considered that any improvement to this junction would only increase traffic through Enderby. Managing queues in this location would avoid further rat-running through Enderby. In practice, traffic would re-route through the development site making use of the new M1 and M69 bridge crossings. Further details on this are provided in the **Transport Assessment** report.

Pedestrian Delay

15.5.10 This section reviews the potential delay that is likely to occur as result of the development traffic.

15.5.11 In order to gain an understanding of how the increase in traffic affects pedestrian movements, reference is made to the **Department of Transports Local Transport Note 1/95 "The Assessment of Pedestrian Crossings".** This provides a general guide on the average time it takes to cross a two lane road. For all able bodied people this is between 4-6 seconds on a typical urban road and between 10-12 seconds for elderly or disabled people.

15.5.12 **Table 15i** shows the average length of gap in traffic flow that pedestrians currently have when trying to cross the various links and how they are likely to be affected by the development proposals. The links assessed are those identified as sensitive to change (paragraph 15.5.2)

Table 15i – Assessment of Pedestrian Delay Base Compared to Proposed Scenario

Link ID Ref	Highway Link	Average Pedestrian Delay (08:00 – 09:00)			
		Base 2016		Proposed 2026	
		Maximum Vehicle Flow	Ave. Gap in Seconds	Maximum Vehicle Flow	Ave. Gap in Seconds
1	Beggars Lane just south of the junction with the A47	655	6	1175	3
2	The A47 to the west of the Beggars Lane junction	1023	4	1375	3
11	Meridian Way to the west of the junction with Lubbesthorpe Way	981	4	2052	2
13	Leicester Lane to the east of the new site access	1046	3	1578	2

15.5.13 The assessment identifies that during the base flow the average gap in seconds for all links with the exception of Link 13 which is just within the 4-6 seconds acceptable for able bodied pedestrians. The addition of the development traffic reduces the average gap by an average of 2 seconds. This level of reduction is not considered to represent a change that would be perceptible to pedestrians.

15.5.14 All of the links are provided with pedestrian crossing facilities. In addition, improvements are proposed at the Beggars Lane / A47 Hinckley Road signalised junction which would include the provision of signalised pedestrian crossing facilities, and the new junction on Leicester Lane would include crossing facilities on all arms. The above vehicle flows are also based on two-way traffic movements, however on all links centre island crossing points are provided, allowing more time for pedestrians to cross which increases the gap acceptance to a minimum 4 seconds.

Pedestrian Amenity

15.5.15 This section reviews pedestrian amenity during the proposed development scenario. The term pedestrian amenity is included in **MEA (Manual of Environmental Appraisal – DfT 1983).** It is broadly defined as the relative pleasantness of a journey and is considered to be affected by traffic flow, traffic composition and pavement width / separation from traffic.

15.5.16 The **IEMA Guidance** suggests that a tentative threshold for judging the significance of changes in pedestrian amenity would be where traffic (omits Heavy Good Vehicle (HGV) component) is halved or doubled.

15.5.17 The development proposal would result in traffic flows on Beggars Lane and Meridian Way increasing above 100% over a 24 hour period. This level of increase however, is not considered to affect the amenity for pedestrians. Although increases in traffic would be evident, the level of impact is based upon the percentage change compared to the base figures. The movements on both Beggars Lane and Meridian Way are relatively low.

Whilst an increase in movements along these routes would result in a significant increase in terms of percentage change, traffic levels would remain relatively low in absolute terms.

Cyclist Impact

15.5.18 The proposed residential and employment developments would include extensive combined footway and cycleway networks which would link to the existing public footpath and cycleway networks.

15.5.19 The principal accesses to the site would be via a new bridges across the M1 and M69 linking to Thorpe Astley, Enderby and St.John's via Meridian Way and Leicester Lane. These accesses would also provide the main pedestrian and cycle connections to the site. It is proposed that the bridges and link roads accommodate a combined footway / cycleway that would connect to extensive walking and cycling networks within the site and to the existing Leicester walking and cycle networks.

15.5.20 In addition, the development proposals include for a high quality bus service linking the site with the City Centre. Such services would utilise the Leicester Forest Motorway Service Area accommodation bridge to access the A47 via a bus gate within the site. The Leicester Forest East Motorway Service Area accommodation bridge would also accommodate pedestrian and cycle facilities to link the development to the A47 Hinckley Road.

15.5.21 The above measures will result in improved amenity for pedestrians and cyclists within the local area.

Fear and Intimidation

15.5.22 To assess the levels of fear and intimidation, the thresholds in the **IEMA Guidance** have been used. These are set out in **Table 15j** below.

Table 15j – Example of Fear and Intimidation

Degree of Hazard	Average Traffic Flow over 18 Hour Day (veh/hr)	Average Traffic Flow 18 Hour HGV's	Average Speed over 18 Hour Day mph
Extreme	1,800 +	3,000 +	20 +
Great	1,200 – 1,800	2,000 – 3,000	15 - 20
Moderate	600 – 1,200	1,000 – 2,000	10 - 15
Low	0 - 600	0 – 1,000	0 - 10

15.5.23 By applying the above criteria to the base and predicted traffic flows within the study area identified, only those links have been assessed that currently have existing pedestrian provisions and are identified as sensitive links. The potential impacts are shown in **Table 15k**.

Table 15k – Levels of Fear and Intimidation – Proposed Development

Link ID Ref	Highway Link	Degree of Hazard without the Development		Degree of Hazard with Development Traffic	
		Average Traffic Flow 18 Hour Day (veh/hr)	Total 18 Hour HGV Flow	Average Traffic Flow 18 Hour Day (veh/hr)	Total 18 Hour HGV Flow
1	Beggars Lane just south of the junction with the A47	260	10	563	10
	Degree of Hazard based on Table 15j	Low	Low	Low	Low
2	The A47 to the West of Beggars Lane junction	1062	649	1280	649
	Degree of Hazard based on Table 15j	Moderate	Low	Great	Low
11	Meridian Way to the west of the junction with Lubbesthorpe Way	607	296	1262	296
	Degree of Hazard based on Table 15j	Moderate	Low	Great	Low
13	Leicester Lane to the East of the new site access	867	178	1189	178
	Degree of Hazard based on Table 15j	Moderate	Low	Moderate	Low

15.5.24 In relation to the effect of average vehicular flows over 18 hours, the degree of hazard changes on two routes, namely Meridian Way and the A47 west of Beggars Lane, from Moderate to Great. However, the extent to which the flow exceeded the moderate level is minor. Furthermore, it is not considered that the level of pedestrian activity is high on the A47. Turning to the effect of HGV's this remains low in all cases. Accordingly, although there would be an increase in vehicle movements to the development site, the above table demonstrates that this increase would not be sufficient to affect the degree of fear and intimidation, ensuring that the experience for pedestrians walking along these roads is not adversely affected.

15.5.25 In terms of vehicle speeds, the average speeds recorded on all the above links are likely to be above 20mph and therefore classified as extreme. However, this needs to be reflected against the number of vehicle movements and type as well the local environment.

15.5.26 The main access roads leading into the development would be subject to a 30mph speed limit with pedestrian and cycle routes. The 'Streets' and other residential roads within the development would be subject to a 20mph speed limit, which would be incorporated as part of the internal road network design. The 20mph zones would be situated in areas of high pedestrian activity providing a less vulnerable environment for both pedestrians and cyclists. Further details of the proposed routes are provided with the **Transport Assessment** report.

Impact Interactions

15.5.27 Transport and Access has influenced a number of other topic areas and been informed by other topic areas. Those interactions are detailed in **Table 5l** below.

Table 15l– Impact Interactions

Topic Area	Interaction
Design Development and Consideration of Alternatives	An understanding of the variety of 'audiences' that have views towards the application site and the traffic movements which are associated with the application site have been inputted into the design of the access arrangements to the Project. Consideration has been given to:- • The volume and type of vehicle movements accessing the site; • The directions in which these movements are to be made and the enforcement of such movements; • Pedestrian and cycle movements and accessibility to the site by these modes; • Improvements to existing pedestrian and cycle facilities linkages to the surrounding area.
Ecology and Nature Conservation	Transport and access has informed the production of a 'Landscape Strategy', based upon the predicted vehicle movements associated with the development proposal. The Strategy considers the impact on wildlife with regard to noise, air quality and traffic movements.
Noise	The Noise modelling has been based upon the traffic movements predicted as part of the transport assessment work. This has allowed a noise model to be produced of the local highway network and access roads identifying the levels of noise associated with the development proposal and location of dwellings in relation to the M1 and M69. The noise modelling work played an important role in determining the height of the bunding required within the site, this in turn has informed the transport assessment work in determining traffic movements to the Site.
Air Quality	The Air Quality modelling has also been based upon the traffic movements predicted as part of the transport assessment work. This has allowed an assessment to be made in relation to the pollution levels on roads used to access the site during operational phases.
Landscape and Visual Impacts	The Traffic and Access has informed the LVIA in terms of its assessment of the setting of the Project as the visual impact considers the traffic activity likely to be associated with the Project. Also the traffic movements have informed the LVIA in determining the impact on Conservation Areas.

Qualitative Assessment of Programme Extension

15.5.28 The predicted construction year of the development is 2014 with the development completed in 2026. Should the construction slip by a year, the assessment undertaken would change very little. The volumes of traffic associated with the Project would remain the same and as the background traffic increases slightly the potential impact of the proposed traffic flows associated with the Project reduces.

15.5.29 The **Transport Assessment** reviews the impact of the Project on the local highway network during 2026, providing a future year assessment which is in accordance with the **Department of Transports Guidance on Transport Assessment (March 2007).** This requires an assessment 10 years after the year in which the Project is registered. As such any potential extension of the opening year is accounted for as part of the future year assessment.

Proposed Mitigation

15.5.30 To mitigate the impact of the development, the consortium of Hallam Land Management, Barratt David Wilson and Davidson Developments propose the following mitigation measures which would be considered in the context of the assessment.

Traffic Movement Control

Construction Phase

15.5.31 The development would be phased over a 12 year period with the initial construction phase considered via Beggars Lane. This phase is also likely to see the construction of the road bridge across the M1 and the bus lane on the A47. The phases would then continue southwards. In order to minimise the impact of HGV movements associated with the construction process, construction times would be controlled together with lorry routing plans which would be agreed with the local authority. Parking on site would be restricted and construction related staff encouraged where feasible to use alternative modes of transport to access the site or car share.

Physical Measures

15.5.32 To mitigate the impact of the development proposal, Hallam Land Management, Barratt David Wilson and Davidson Developments propose the following mitigation measures:-

15.5.33 Access into the residential development would be via Beggars Lane, Leicester Lane and Meridian Way. Access to the employment site would be via Leicester Lane with links to the residential site. The proposed highway infrastructure would include:-

- A new bridge across the M1 linking with Meridian Way;
- A new bridge across the M69 linking with Leicester Lane;
- Re-alignment of Beggars Lane to provide two points of access;
- Bus only link utilising the existing bridge across the M1 which currently serves the Motorway service areas;

- A new roundabout on Leicester Lane, providing access to the employment and southern part of the residential site;
- The existing Lubbesthorpe Bridle Road through the site would be closed to vehicular traffic but retained as a pedestrian/cycle and equestrian route. This route would be maintained however, as access to existing properties at either end of the route.

15.5.34 The offsite highway measures currently being proposed include:-

- Improvements to the Beggars Lane/ A47 junction
- Improvements along the A47 to improve bus accessibility.
- Improvements to Leicester Lane / Narborough Road junction
- Links with existing cycle and pedestrian routes.

15.5.35 The key infrastructure provision is the bus link to the A47 and the proposed high quality bus service which would link the site with the City Centre with a 20 min frequency bus service. Such public transport infrastructure is intended to be in place at the early stages of the development.

15.5.36 The full details of the above proposed mitigation measures are contained within the **Transport Assessment**.

Determining the Significance of Cumulative Effects

15.5.37 When considered in isolation, the environmental effects of any single project upon any single receptor / resource may not be significant. However, when individual effects are considered in combination, the resulting cumulative effect may be significant.

15.5.38 **Table 15m** below summarises the cumulative effect of the development proposal.

15.5.39 This assessment has been undertaken in line with the **DMRB guidelines HA 205/08 'Assessment and Magnitude of Environmental Effects'** assessing the significance of the Project's cumulative impact based on table 2.6 of HA 205/ 08 which is the generic significance criteria used within this EIA.

Table 15m – Significance of Cumulative Effects of the Development Proposal

Link ID. Ref. No	Highway Link	Environmental Effect of Change – Construction Phase						
		Severance	Driver Delay	Pedestrian Delay	Pedestrian Amenity	Fear & Intimidation	Accidents & Safety	Cyclist Impact
1	Beggars Lane just south of the junction with the A47	Major	Moderate*	Moderate*	Minor	Minor	Minor	Minor
2	The A47 to the west of the Beggars Lane junction	Minor	Moderate*	Moderate*	Minor	Minor	Minor	Minor
3	The A47 to the east of the Beggars Lane junction	Minor	Minor	Minor	Minor	Minor	Minor	Minor
4	Desford Road to the south of the A47 junction	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
5	Beggars Lane on approach to Mill Hill / Desford Road junction	Minor	Minor	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
6	Mill Hill to the south of the Beggars Lane junction (At the point it crosses the M69)	Moderate	Minor	Minor	Minor	Minor	Minor	Minor
7	The A47 to the west of the Braunstone Lane junction	Moderate	Minor	Minor	Minor	Minor	Minor	Minor
8	The A47 to the east of the Braunstone Lane junction	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
9	The A3563 Lubbesthorpe Way north of the Meridian Way junction	Minor	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
10	The A583 Lubbesthorpe Way south of the Meridian Way junction	Minor	Minor	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
11	Meridian Way to the west of the junction with Lubbesthorpe Way	Major	Minor	Minor	Minor	Minor	Minor	Minor
12	The extended Meridian Way crossing the M1. (The main site access just before the entry into the site).	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
13	Leicester Lane to the east of the new site access	Moderate	Moderate	Minor	Minor	Minor	Minor	Minor
14	Leicester Lane to the west of the new site access	Minor	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant

Link ID. Ref. No	Highway Link	Environmental Effect of Change – Construction Phase						
		Severance	Driver Delay	Pedestrian Delay	Pedestrian Amenity	Fear & Intimidation	Accidents & Safety	Cyclist Impact
15	The new site access link from Leicester Lane	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
16	The A5460 link to the east of the M1 / M69 junction at junction 21.	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant

Note: * Reduces to Minor effect with proposed improvements

15.6 STATEMENT OF EFFECTS

15.6.1 Although there are a number of measures proposed to reduce the transport and assess the impact of the Project, there would still be some residual effects.

15.6.2 The analysis undertaken within this Chapter shows that in terms of Severance, there would be a substantial effect on Beggars Lane to the south of the junction with A47, and Meridian Way west of the junction with Lubbesthorpe Way.

15.6.3 Beggars Lane is predominantly rural in character although the northern section is fronted by residential development on the eastern side. The western side of Beggars Lane is fronted by agricultural land and as such there are limited pedestrian movements across Beggars Lane. A footway is provided on the eastern side of Beggars Lane to accommodate the pedestrian movements associated with the residential development, which in turn leads to the signalised junction with A47.

15.6.4 To accommodate the additional traffic associated with the development, traffic improvements are proposed at the Beggars Lane signalised junction with the A47 Hinckley Road. These improvements would assist in mitigating the increase in vehicle movements and ensure that the junction operates within capacity.

15.6.5 It is considered that the increase in vehicle movements would not have a detrimental effect on Beggars Lane in terms of severance. There is currently no footpath provision south of the A47 junction along Beggars Lane, and there are no controlled pedestrian crossing facilities provided. However, as part of the proposed improvements, new pedestrian crossings facilities would be provided at the junction with the A47, accommodating pedestrian movements at the junction and as such mitigating for any increases in severance.

15.6.6 Meridan Way runs west of the A563 (Lubbesthorpe Way) providing access to Thorpe Astley and associated residential and retail areas. Part of Meridian Way is dual carriageway allowing sufficient capacity to accommodate the increase in vehicle movements. All of the junctions on Meridian Way have been assessed and found to have sufficient capacity to accommodate the additional traffic movements without adding significant driver delay. The percentage increase in vehicle movements is based on the base traffic movements, which on Meridian Way are relatively low. Whilst an increase in movements along this route would result in a significant increase in terms of percentage change, traffic levels would remain relatively low in absolute terms.

15.6.7 **Table 15n** below identifies the residual effects associated with the development proposals from the short term to long term.

Table 15n – Residual Effects

Impact	Description of Impact	Mitigation Measures	Residual Effect
Increase in traffic to and from the Project during both the short term construction and longer term occupation phase	Some additional queuing at the junctions tested in the TA using conventional modelling techniques.	The effect as a result of the increased traffic movements has been assessed in the **Transport Assessment** and a package of highway improvements and accessibility measures are proposed to mitigate the effects. A **Framework Travel Plan** would be provided to reduce employees' private car movements to the employment use. A **Residential Travel Pack** would be issued to all new residents. New footway and cycle ways are proposed to improve pedestrian amenity together with new crossing facilities.	Minor increases in delay for vehicles improved accessibility by bus and for pedestrians and cyclists. The residual effect is considered to be **Minor**.